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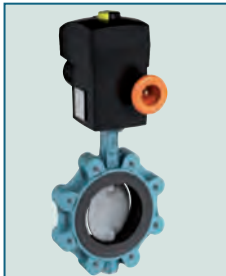
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QUALITY FEATURES

RESILIENT SEATED VALVE Z 011-A

NARROW TOLERANCES

Precision-machined bodies form the basis for perfect seating of the liner and precise positioning of the shaft.

SHAFT RETAINER

The shaft retainer guarantees blow-out resistance of the shaft.

MULTIPLE BEARINGS

The shafts have multiple bearings. Optimal guidance even after many years of use. No contact corrosion.

CONTINUOUS FORMING LOBE

The continuous forming lobe fits perfectly in the relevant groove of the body, stabilising the liner.

POLISHED SEALING SURFACES

The sealing surfaces are mirror polished and guarantee low torque combined with tightness.

DOUBLE-SIDED PROFILES

Double-sided profiles ensure the sleeve-body engagement in the outer body recess.

MADE BY  EBRO

WAFER PATTERN BUTTERFLY VALVE TYPE Z 011-A



A universally applicable wafer type valve acc. to EN 593.
The large variety of basic materials allows applications in different industries.

TECHNICAL DATA

Nominal diameter:	DN 20 - DN 1200 (DN 20 only PN 10/16)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150 AS 4087 PN 16
Flange Surface Design:	EN 1092 Form A / B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-40°C to +200°C (depending on pressure, medium and material)
Operating pressure:	max. 16 bar

FEATURES

- Absolutely tight sealing with flow in either direction
- The valve body and disc are accurately machined which results in low operating torque and long service life and reliability
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operational service
- Four flange mounting holes ensure correct valve location when installing
- Single flange mounting is possible (please request details from our Technical Department)
- Can be installed in any desired position
- Maintenance-free
- Can be disassemble, material-specific recycling possible

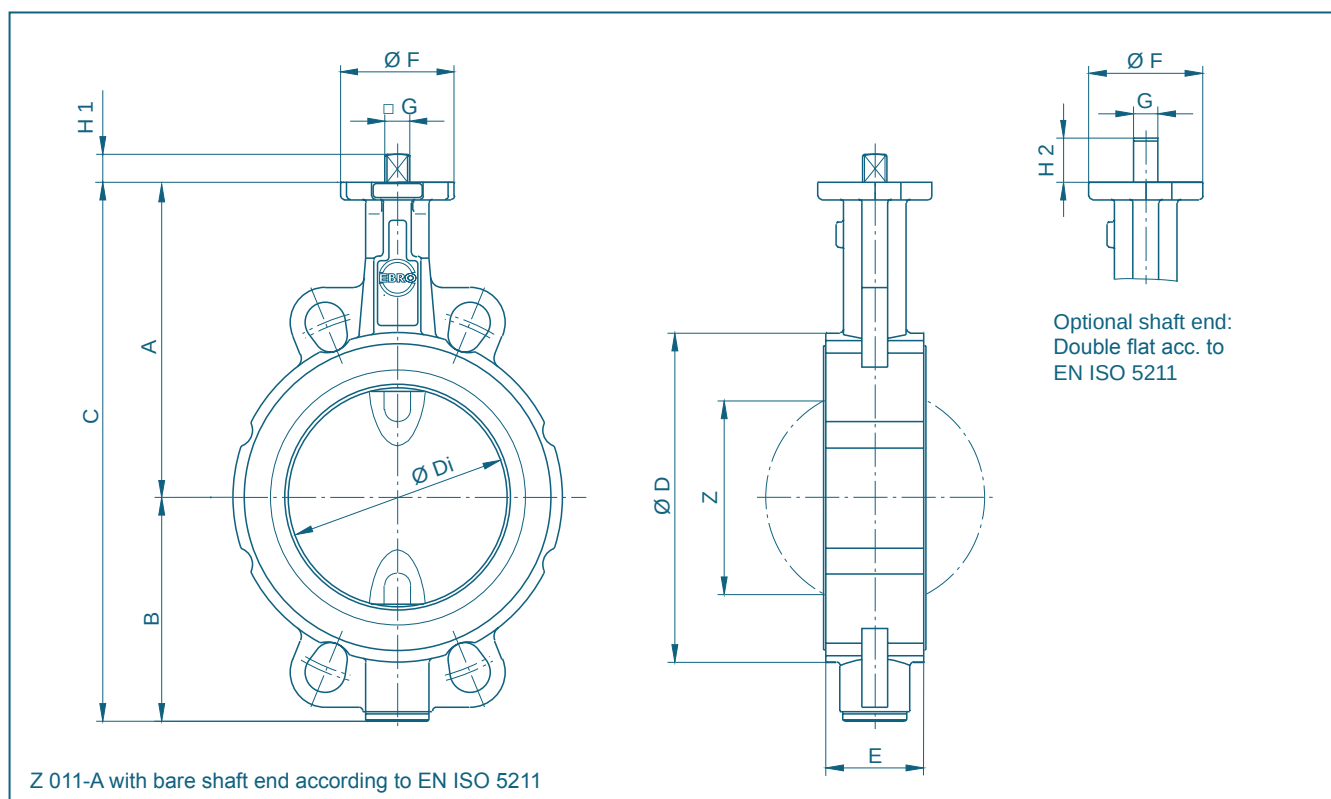
GENERAL APPLICATIONS:

- Chemical and petrochemical industries
- Water and waste water technology
- Pneumatic materials handling technology
- Shipbuilding
- Power generation industry
- Food industry
- For paint and lacquers, a silicon-free version is available
- Transport of hazardous materials (EN 14432)



Aluminium version. Available Sizes: DN 50 - DN 400

WAFFER PATTERN BUTTERFLY VALVE TYPE Z 011-A



Z 011-A with bare shaft end according to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]												Weight [kg] (GG-25)	
		A	B	C	D	Di	E	F	Flange	G	H1	H2	Z	2 Piece shaft	TS- shaft
20	¾	104	45	149	59	31,5	33	54	F04	11	12	19	-	1,3	-
25	1	104	45	149	63	31,5	33	54	F04	11	12	19	-	1,3	-
32	1¼	104	50	154	68	31,5	33	54	F04	11	12	19	-	1,4	-
40	1½	113	66	179	80	38	33	54	F04	11	12	19	22	1,8	-
50	2	126	84	210	95	48,5	43	54	F04	11	12	19	25	2,2	-
65	2½	134	93	227	115	63,5	46	54	F04	11	12	19	45	2,9	-
80	3	157	104	261	138	78,5	46	65	F05	14	16	25	65	4,0	4,5
100	4	167	115	282	158	98,5	52	65	F05	14	16	25	85	5,2	5,8
125	5	180	127	307	188	123,5	56	65	F05	14	16	25	111	6,9	7,5
150	6	203	150	353	212	148	56	90	F07	17	19	30	139	9,5	11,0
200	8	228	176	404	268	199	60	90	F07	17	19	30	190	13,2	15,0
250	10	266	212	478	320	248	68	125	F10	22	24	39	240	22,5	25,5
300	12	291	237	528	370	296	78	125	F10	22	24	39	287	31,5	35,0
350	14	332	269	601	408	338	78(92)**	150	F12	*	*	-	330	39,4	45,0
400	16	363	314	677	470	388	102	150	F12	*	*	-	378	58,7	64,5
450	18	397	335	732	530	430,5	114	210	F16	*	*	-	417	91,0	95,5
500	20	437	405	842	574	494,5	127	210	F14/F16	*	*	-	474	107,0	113,5
600	24	498	469	967	675	590	154	300	F16/F25	*	*	-	563	171,0	198,0
700	28	581	507	1088	772	680	165	300	F16/F25	*	*	-	660	251,0	304,0
800	32	630	556	1186	874	780	190	300	F25	*	*	-	757	355,0	375,0
900	36	696	617	1313	973	880	203	300	F25	*	*	-	860	456,0	498,0
1000	40	771	675	1446	1070	980	216	350	F30	*	*	-	956	570,0	718,0
1200	48	880	810	1690	1510	1170	254	350	F30	*	*	-	1154	-	1156,0

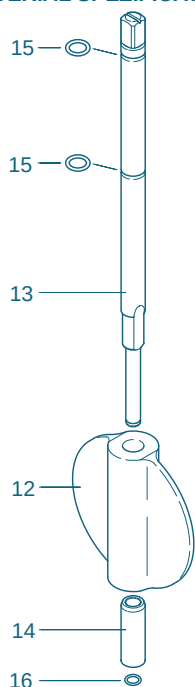
* according to mounted actuator

** face to face dim. acc. to EN 558 Tab. 20 (92 mm)

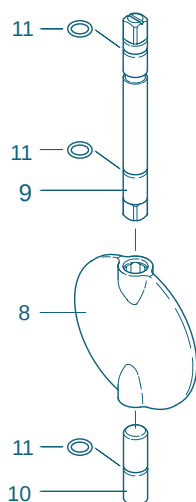
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WAFER PATTERN BUTTERFLY VALVE TYPE Z 011-A

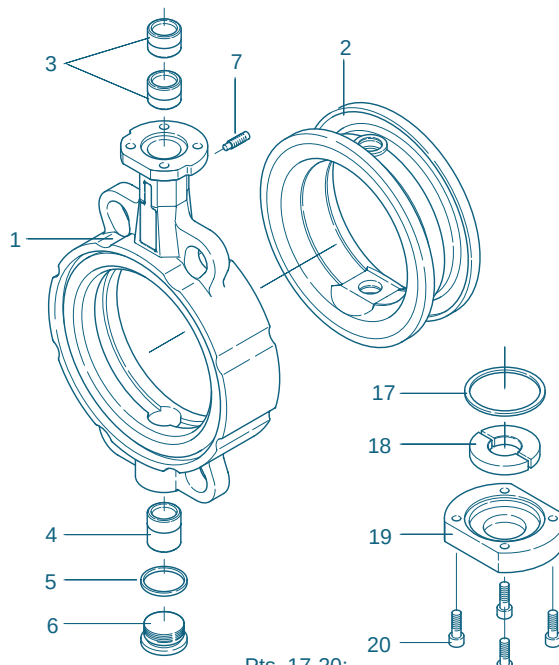
MATERIAL SPEZIFICATION AND PARTS LIST



TS-Version



Version with splitted shaft



Pts. 17-20:
Cover plate for
valve ≥ DN 350

Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				9/10	Shafts			
	Aluminiumalloy	G-AISI9Cu3	3.2163	B 380.1		Stainless Steel	X39CrMo17-1	1.4122	
		G-AISI10Mg	3.2381	361.1			X14CrMoS17	1.4104	430 F
	Grey Cast Iron	GG-25	0.6025	40 B			X5CrNiMo 17-12-2	1.4401	316
	Nodular Cast Iron	GGG-40	0.7040	60-40-18			Hastelloy	2.4883	Hastelloy
		GGG-40.3	0.7043			Aluminum Bronze	CuAl10Ni	2.0975	
	Carbon Steel	GS-C25	1.0619	WCB	11	O-ring			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		NBR	Acrylonitrile butadiene rubber		
	Aluminium Bronze	G-CuAl10Ni	2.0975	C 95800		FPM	Fluorocarbon caoutchouc		
2	Seat				12	TS-disc			
	NBR	Acrylonitrile butadiene rubber				Nodular Cast Iron	GGG-40	0.7040	60-40-18
	EPDM	Ethylene propylene caoutchouc				Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
	CSM	Chlorsulphonated polyethylene				Aluminium Bronze	G-CuAl10Ni	2.0975	C 95800
	FPM	Fluorocarbon caoutchouc				Coating	Halar, Rilsan		
	VSI	Silicon rubber				Surface quality	electropolished, mirror finished		
	AU	Polyurethane elastomer			13	TS-shaft			
3/4	Bearing bush					Stainless Steel	X14CrMoS17	1.4104	430 F
	Brass	MS 58	2.0401	B 45			X39CrMo17-1	1.4122	
	Polyamide	PA 66					X5CrNiMo17-12-2	1.4401	316
	PTFE	Polytetrafluorethylene				Aluminum Bronze	CuAl10Ni	2.0975	
5	Seal DIN 7603				14	Sleeve			
	Copper	Cu		Copper		Stainless Steel	X5CrNi18-10	1.4301	304
6	Plug screw DIN 908				15	O-ring			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		NBR	Acrylonitrile butadiene rubber		
7	Set screw DIN 915					FPM	Fluorocarbon caoutchouc		
	Steel	45 H galvanized			16	Retaining ring			
	Stainless Steel	A4-70		B8M		Stainless Steel	X39CrMo17-1	1.4122	
8	Disc				17	O-ring			
	Steel	St 52.3	1.0570	572-50		NBR	Acrylonitrile butadiene caoutchouc		
	Stainless Steel	G-X5CrNiMo19-11-2	1.4301	304	18	Shaft retainer			
		G-X6CrNiMo18-10	1.4408	CF8M		Brass	MS 58	2.0401	B 45
		X2CrNiMo17-12-2	1.4404	316 L	19	Cover plate			
		X6CrNiMoTi17-12-2	1.4571	316 Ti		Grey Cast Iron	GG-25	0.6025	40 B
		G-X2CrNiMoN26-7-4	1.4469	F 51	20	Screw			
		Hastelloy	2.4883	Hastelloy		Steel	45 H galvanized		
	Aluminium Bronze	G-CuAl10Ni	2.0975	C 95800		Stainless Steel	A2-70		B 8
	Coating	Halar, Rilsan					A4-70		B8M
	Surface quality	electropolished, mirror finished				Other materials upon request			

Subject to change without notice

WAFER PATTERN BUTTERFLY VALVE TYPE Z 011-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure			
		3 [bar]	6 [bar]	10 [bar]	16 [bar]
20	¾	5	5	5	-
25	1	5	5	5	-
32	1¼	5	5	5	-
40	1½	8	8	8	8
50	2	9	9	9	9
65	2½	18	18	18	18
80	3	8	10	18	24
100	4	9	18	28	37
125	5	15	22	45	59
150	6	36	45	110	125
200	8	59	76	140	200
250	10	150	180	200	240
300	12	200	240	280	360
350	14	350	540	610	700
400	16	420	620	750	850
450	18	720	746	860	1500
500	20	900	1100	2255	3690
600	24	1050	2100	3000	5830
700	28	1560	2240	3450	8100
800	32	2070	3800	6600	11200
900	36	2700	4900	7100	14500
1000	40	4600	6780	11500	24400
1200	48	7800	12000	21000	44000

All values in Nm

K_V-VALUES

- The K_V-values [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

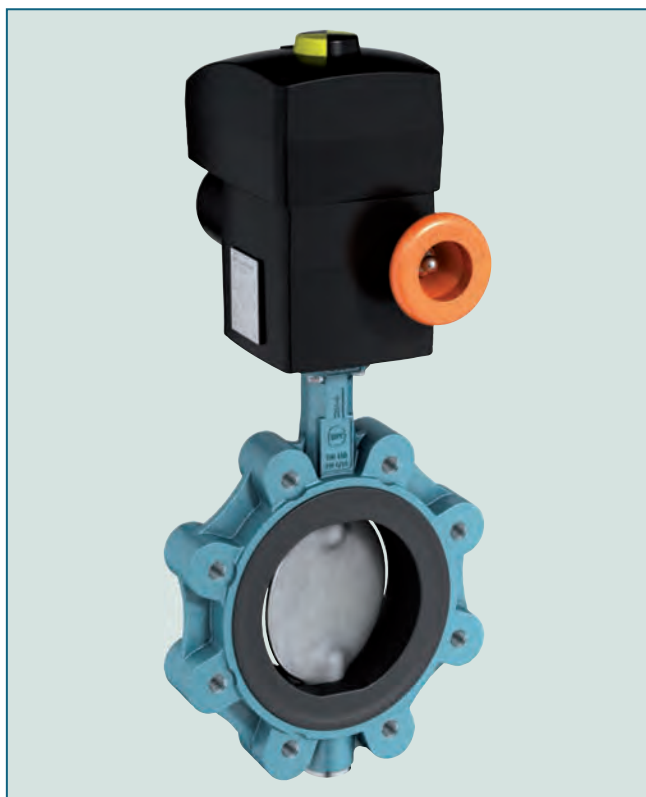
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
20	¾	-	1	4	8	11	19	27	32
25	1	-	1,5	5	10	15	24	32	36
32	1¼	-	1,5	5	11	16	27	35	40
40	1½	-	2,2	8	15	21	33	43	50
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500
350	14	350	780	1400	2400	4000	8000	10800	11500
400	16	490	1050	1800	3100	5500	11000	12000	14500
450	18	510	1080	2040	3350	6100	11500	14600	20500
500	20	520	1100	2200	3500	6200	12000	15100	21000
600	24	750	1400	2800	5100	8800	14000	22000	29300
700	28	770	1755	3260	5980	10600	17100	25300	36000
800	32	1200	2260	4550	8230	12900	20300	29300	44600
900	36	1540	2280	6030	10500	17600	29200	42150	59000
1000	40	2200	3970	8300	14480	24000	37100	60300	81500
1200	48	5050	7900	13800	19700	33500	53300	73050	102650

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 014-A



Lug type butterfly valve with threaded holes. This type enables the one-sided lugging of pipes.

TECHNICAL DATA

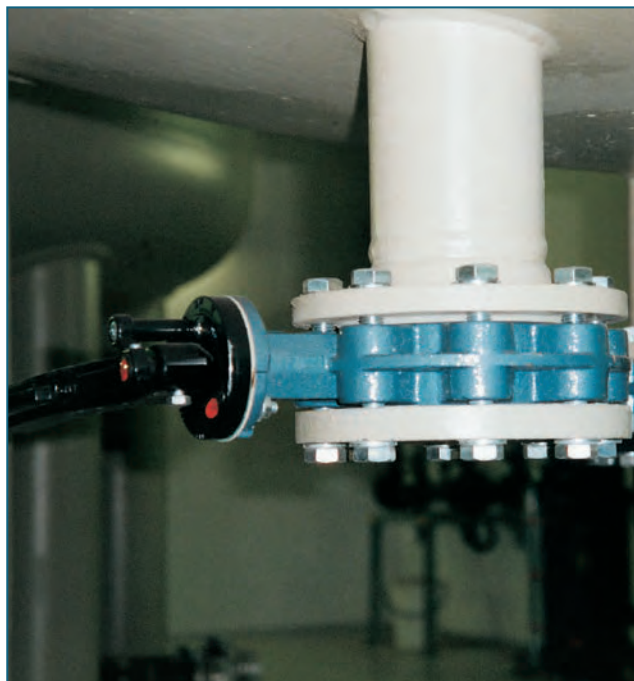
Nominal diameter:	DN 20 - DN 600 (DN 20 only PN10/16)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150 AS 4087 PN 16
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-40°C to +200°C (depending on pressure, medium and material)
Operating pressure:	max. 16 bar

FEATURES

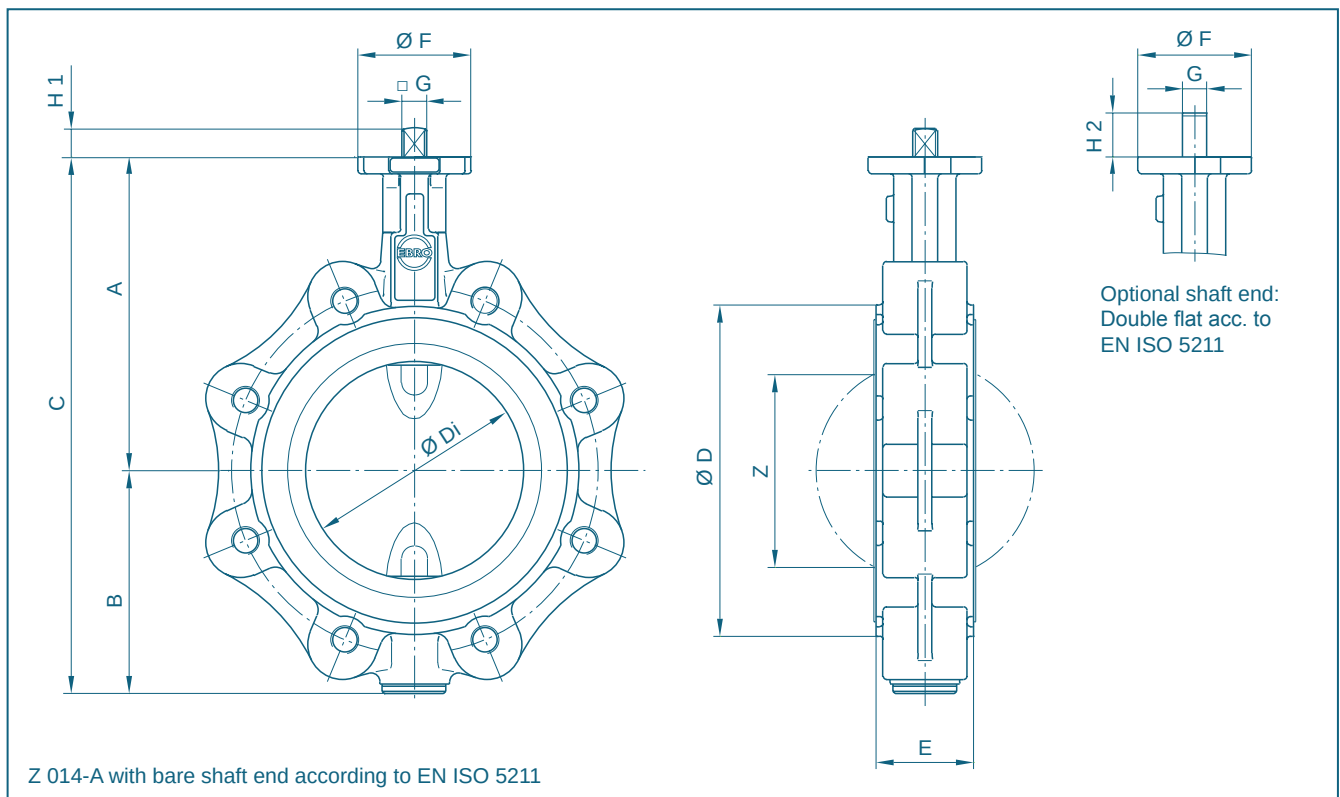
- Absolutely tight sealing with flow in either direction
- The valve body and disc are accurately machined which results in low operating torque and long service life and reliability
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operating service
- Can be disassembled, material-specific recycling possible
- Single flange mounting is possible
- Can be installed in any desired position
- Maintenance-free

GENERAL APPLICATIONS

- Chemical and petrochemical industries
- Water and waste water technology
- Pneumatic materials handling technology
- Shipbuilding
- Power generation industry
- Food industry
- Civil engineering
- For paint and laquers, a silicone-free version is available



LUG TYPE BUTTERFLY VALVE Z 014-A



DN [mm]	Size [in]	Dimensions [mm]												Weight[kg] (GG-25)	
		A	B	C	D	Di	E	F	Flange	G	H1	H2	Z	Splitted shaft	TS- shaft
20	¾	104	45	149	63	31,5	33	54	F04	11	12	19	-	2,1	-
25	1	104	45	149	63	31,5	33	54	F04	11	12	19	-	2,1	-
32	1¼	104	50	154	68	31,5	33	54	F04	11	12	19	-	2,1	-
40	1½	113	66	179	80	38	33	54	F04	11	12	19	22	4,0	-
50	2	126	84	210	95	48,5	43	54	F04	11	12	19	25	4,8	-
65	2½	134	93	227	115	63,5	46	54	F04	11	12	19	45	5,5	-
80	3	157	104	261	138	78,5	46	65	F05	14	16	25	65	8,6	9,1
100	4	167	115	282	158	98,5	52	65	F05	14	16	25	85	9,8	10,4
125	5	180	127	307	188	123,5	56	65	F05	14	16	25	111	10,1	10,7
150	6	203	150	353	210	148	56	90	F07	17	19	30	139	13,1	14,6
200	8	228	176	404	268	199	60	90	F07	17	19	30	190	18,8	20,6
250	10	266	212	478	320	248	68	125	F10	22	24	39	240	29,5	32,5
300	12	291	237	528	370	296	78	125	F10	22	24	39	287	37,0	40,5
350	14	332	269	601	408	338	78(92)**	150	F12	*	*	-	330	54,8	60,4
400	16	363	314	677	470	388	102	150	F12	*	*	-	378	81,5	87,3
450	18	397	335	732	530	430,5	114	210	F16	*	*	-	417	101,4	105,9
500	20	437	405	842	574	494,5	127	210	F14/F16	*	*	-	474	136,3	142,8
600	24	498	469	967	675	590	154	300	F16/F25	*	*	-	563	240,5	267,5

* according to mounted actuator

** face to face dim. acc. to EN 558 Tab. 20 (92 mm)

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 014-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
- Powdery (non-lubricant) media Md x 1,3
- Dry gases/ high viscous media Md x 1,2
- The values specified are based on the initial breakaway torque
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure			
		3 [bar]	6 [bar]	10 [bar]	16 [bar]
20	¾	5	5	5	-
25	1	5	5	5	-
32	1¼	5	5	5	-
40	1½	8	8	8	8
50	2	9	9	9	9
65	2½	18	18	18	18
80	3	8	10	18	24
100	4	9	18	28	37
125	5	15	22	45	59
150	6	36	45	110	125
200	8	59	76	140	200
250	10	150	180	200	240
300	12	200	240	280	360
350	14	350	540	610	700
400	16	420	620	750	850
450	18	720	746	860	1500
500	20	900	1100	2255	3690
600	24	1050	2100	3000	5830

All values in Nm

K_V-VALUES

- The K_V-values [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases
- The throttle function is linear at an angle 30° to 70°
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
20	¾	-	1	4	8	11	19	27	32
25	1	-	1,5	5	10	15	24	32	36
32	1¼	-	1,5	5	11	16	27	35	40
40	1½	-	2,2	8	15	21	33	43	50
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500
350	14	350	780	1400	2400	4000	8000	10800	11500
400	16	490	1050	1800	3100	5500	11000	12000	14500
450	18	510	1080	2040	3350	6100	11500	14600	20500
500	20	520	1100	2200	3500	6200	12000	15100	21000
600	24	750	1400	2800	5100	8800	14000	22000	29300

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 014-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/ high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure			
		3 [bar]	6 [bar]	10 [bar]	16 [bar]
20	¾	5	5	5	-
25	1	5	5	5	-
32	1¼	5	5	5	-
40	1½	8	8	8	8
50	2	9	9	9	9
65	2½	18	18	18	18
80	3	8	10	18	24
100	4	9	18	28	37
125	5	15	22	45	59
150	6	36	45	110	125
200	8	59	76	140	200
250	10	150	180	200	240
300	12	200	240	280	360
350	14	350	540	610	700
400	16	420	620	750	850
450	18	720	746	860	1500
500	20	900	1100	2255	3690
600	24	1050	2100	3000	5830

All values in Nm

K_V-VALUES

- The K_V-values [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
20	¾	-	1	4	8	11	19	27	32
25	1	-	1,5	5	10	15	24	32	36
32	1¼	-	1,5	5	11	16	27	35	40
40	1½	-	2,2	8	15	21	33	43	50
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500
350	14	350	780	1400	2400	4000	8000	10800	11500
400	16	490	1050	1800	3100	5500	11000	12000	14500
450	18	510	1080	2040	3350	6100	11500	14600	20500
500	20	520	1100	2200	3500	6200	12000	15100	21000
600	24	750	1400	2800	5100	8800	14000	22000	29300

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-AS



A low weight wafer type valve (body aluminium) which is optimally suited for applications in public swimming pools.

TECHNICAL DATA

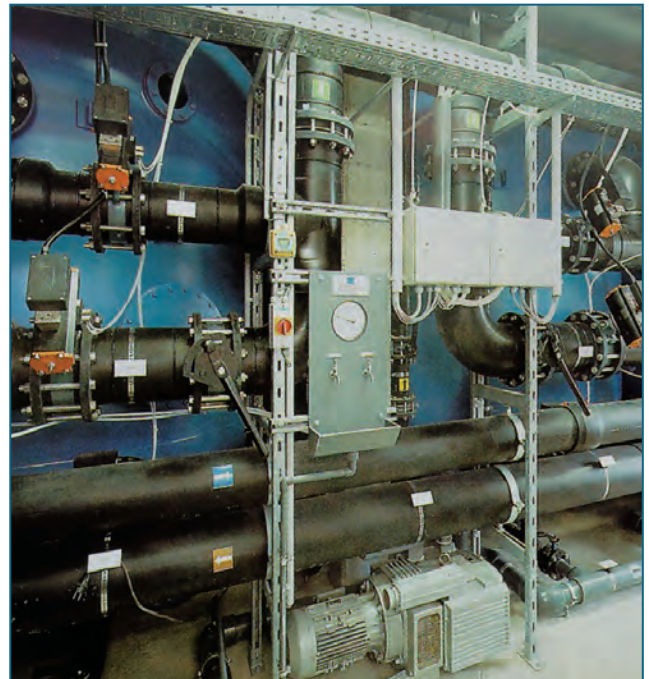
Nominal diameter:	DN 50 - DN 300 Larger diameters: See Z 011-A with aluminium body
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150 AS 4087 PN 16
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +100°C (depending on pressure, medium and material)
Operating pressure:	max. 3 bar

FEATURES

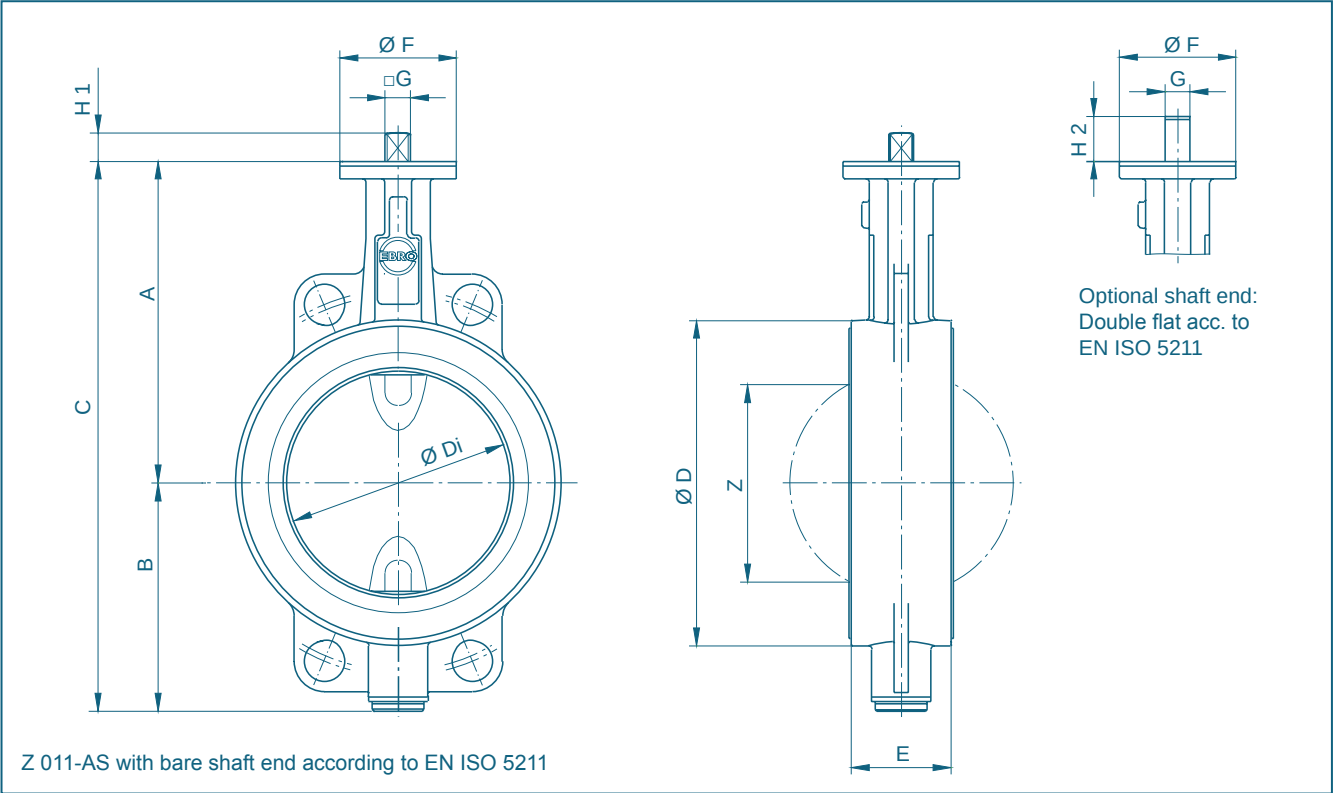
- Low weight aluminium body
- Can be used as control valve or shut-off valve
- Triple shaft bearing
- Interchangeable seat
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material specific recycling possible

GENERAL APPLICATIONS

- Public swimming pools



WAFFER TYPE BUTTERFLY VALVE Z 011-AS



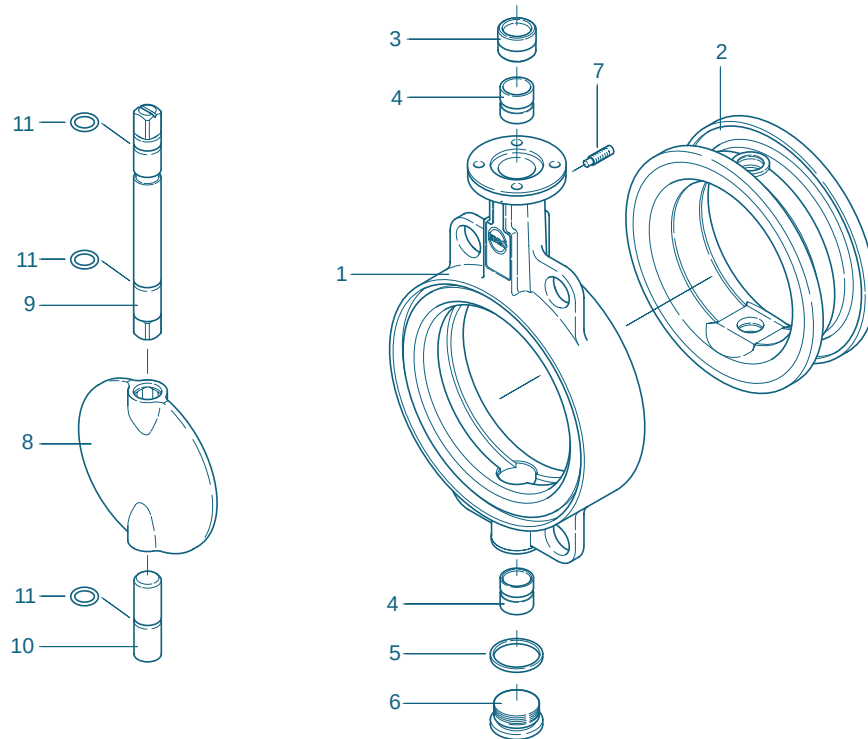
DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	H2	Z	
50	2	126	84	210	95	48,5	43	54	F04	11	12	19	25	0,8
65	2½	134	93	227	115	63,5	46	54	F04	11	12	19	45	1,0
80	3	157	104	261	131	78,5	46	65	F05	14	16	25	65	1,3
100	4	167	115	282	151	98,5	52	65	F05	14	16	25	85	1,6
125	5	180	127	307	182	123,5	56	65	F05	14	16	25	111	2,1
150	6	203	150	353	200	141,6	56	90	F07	17	19	30	130	3,3
200	8	228	176	404	260	199	60	90	F07	17	19	30	190	4,6
250	10	266	212	478	316	248	68	125	F10	22	24	39	240	9,6
300	12	291	237	528	360	281,1	78	125	F10	22	24	39	270	16,3

For larger diameters:, see Z 011-A (Aluminium version)

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-AS

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				8	Disc			
	Aluminiumalloy	GD-AISI9Cu3	3.2163.05	B 380.1		Stainless Steel	X6CrNiMo18-10	1.4408	CF8M
2	Seat						G-X2CrNiMoN26-7-4	1.4469	F 51
	CSM	Chlorsulphonated polyethylene			9/10	Shaft			
	FPM	Fluorocarbon caoutchouc				Stainless Steel	X14CrMoS17	1.4104	430
3/4	Bearing bush						X5CrNiMo17-12-2	1.4401	316
	Brass	MS 58	2.0401	B 45	11	O-ring			
5	Seal DIN 7603					NBR	Acrylonitrile butadiene rubber		
	Copper	Cu		Copper		FPM	Fluorocarbon caoutchouc		
6	Plug screw DIN 908								
	Stainless Steel	G-X5CrNiMo18-10	1.4408	CF8M					
7	Set screw DIN 915								
	Steel	45 H galvanized							
	Stainless Steel	X5CrNiMo17-12-2	1.4401	B8M		Other materials upon request			

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-AS

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
65	2 ½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	30	90	190	320	510	650	970	1200
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

For further values, please contact our engineers.

DOUBLE FLANGED BUTTERFLY VALVE F012-A



The double flanged design is suitable for high pressure loading and is excellently suited for use in heavy industry, shipbuilding and waterworks.

TECHNICAL DATA

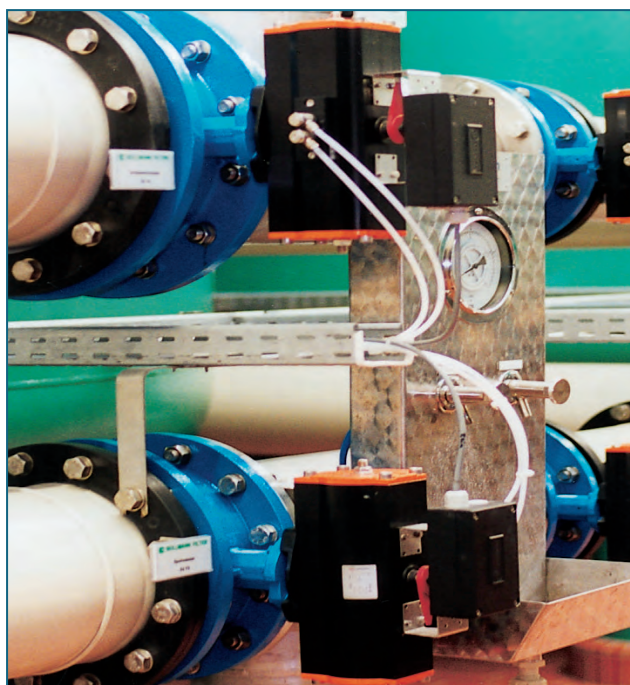
Nominal diameter:	DN 50 - DN 1200
Face-to-face:	EN 558 Series 13 ISO 5752 Series 13 API 609 Table 2C
Flange accommodation:	EN 1092 PN 6/10/16/25 ASME Class 150/300 AS 4087 PN 16/21
Flange Surface Design:	EN 1092 Form A/B, ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-40°C to +200°C (depending on pressure, medium and material)
Operating pressure:	max. 25 bar
Vacuum:	up to 1 mbar absolute

FEATURES

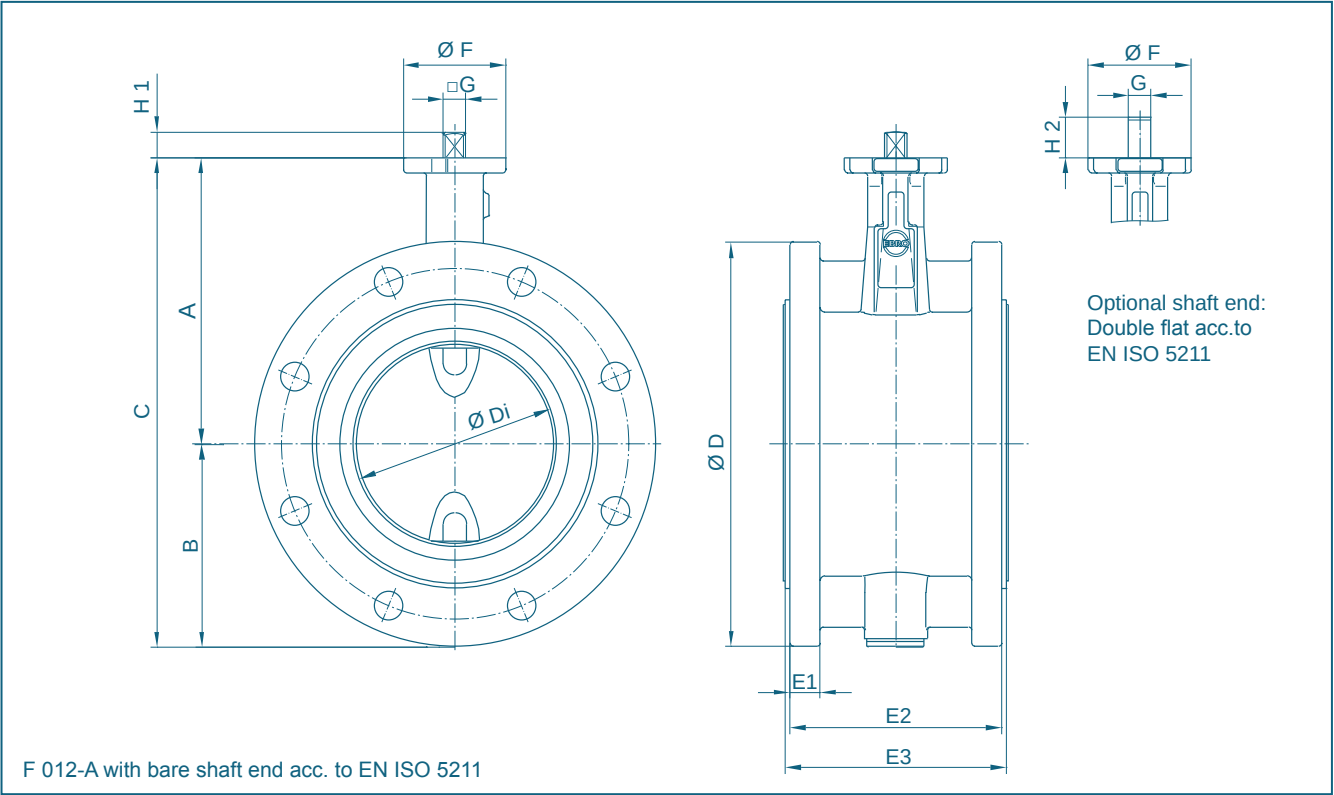
- Absolutely tight sealing with flow in either direction
- The valve body and disc are accurately machined which results in low operating torque and long service life and reliability
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operating service
- Can be disassembled, material-specific recycling possible
- Single flange mounting possible
- Can be installed in any desired position
- Maintenance-free
- Fully repairable valve

GENERAL APPLICATIONS

- Offshore
- Water and waste water technology
- Shipbuilding
- Seawater desalination



DOUBLE FLANGED BUTTERFLY VALVE F012-A



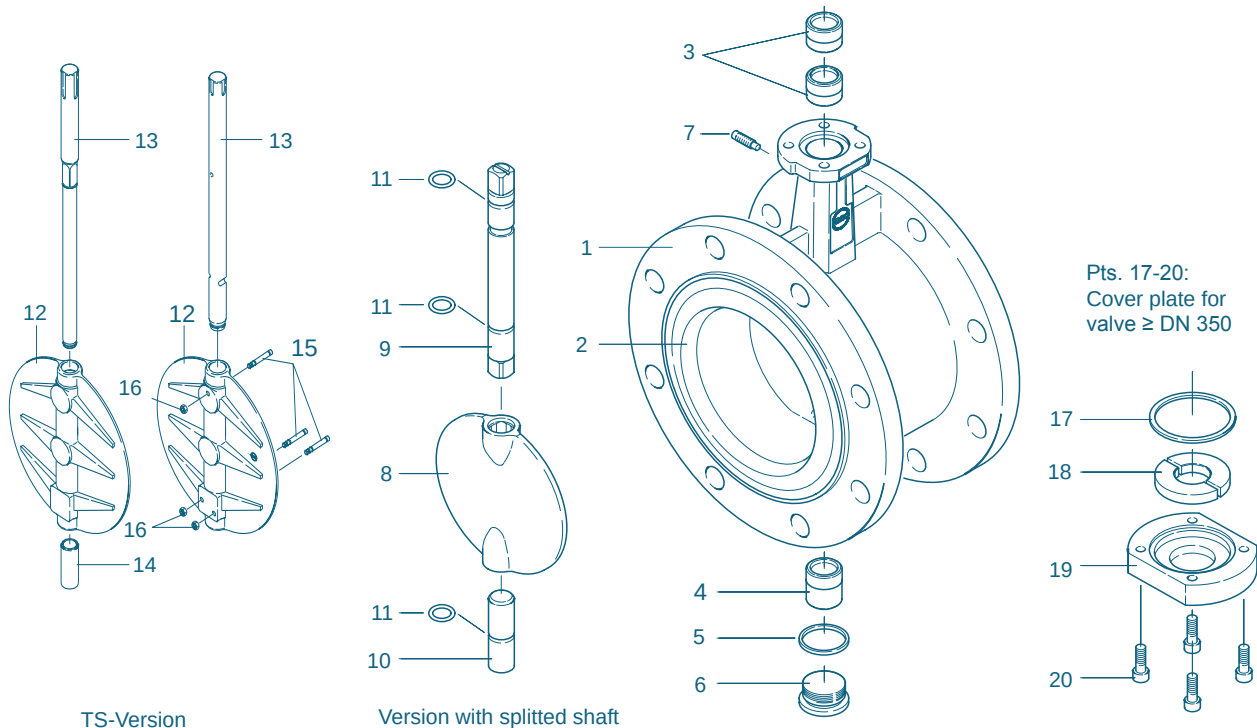
DN [mm]	Size [in]	Dimensions [mm]													Weight [kg] (GGG-40)	
		A	B	C	Di	D	E1	E2	E3	F	Flange	G	H1	H2	Splitted shaft	TS- shaft
50	2	126	84	210	48,5	165	15	102	108	54	F04	11	12	19	9,3	-
65	2½	134	93	227	63,5	185	15	106	112	54	F04	11	12	19	10,1	-
80	3	157	104	261	78,5	200	17	108	114	65	F05	14	16	25	12,2	12,7
100	4	167	115	282	98,5	229	17	121	127	65	F05	14	16	25	16,1	16,7
125	5	180	127	307	123,5	254	19	134	140	65	F05	14	16	25	24,0	24,6
150	6	203	150	353	148	285	19	134	140	90	F07	17	19	30	29,0	30,5
200	8	228	176	404	199	343	21	146	152	90	F07	17	19	30	39,1	40,9
250	10	266	212	478	248	406	23	159	165	125	F10	22	24	39	61,2	64,2
300	12	291	237	528	296	483	24	170	178	125	F10	22	24	39	81,4	84,2
350	14	332	269	601	338	533	24	182	190	150	F12	*	*	-	107,0	112,6
400	16	363	314	677	388	597	28	208	216	150	F12	*	*	-	142,0	147,8
450	18	397	335	732	430,5	640	33	214	222	175	F14	*	*	-	183,0	188,0
500	20	437	405	842	494,5	710	40	223	229	210	F14/16	*	*	-	233,0	240,0
550	22	456	435	891	540	750	40	219	229	210	F16	*	*	-	268,0	285,0
600	24	502	465	967	590	840	40	257	267	300	F16/25	*	*	-	303,0	330,0
700	28	581	507	1088	680	920	41	286	292	300	F16/25	*	*	-	407,0	460,0
800	32	630	556	1186	780	1050	47	312	318	300	F25	*	*	-	604,0	624,0
900	36	696	617	1313	880	1178	47	320	330	300	F25	*	*	-	745,0	787,0
1000	40	771	675	1446	980	1280	47	404	410	350	F30	*	*	-	942,0	1090,0
1200	48	905	810	1715	1170	1510	55	460	470	350	F30	*	*	-	--	1400,0

* according to the mounted actuator

Subject to change without notice

DOUBLE FLANGED BUTTERFLY VALVE F012-A

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				9/10	Shafts			
	Nodular Cast Iron	GGG-40	0.7040	60-40-18		Stainless Steel	X14CrMoS17	1.4104	430 F
	Carbon Steel	GS-C25	1.0619	WCB			X5CrNiMo17-12-2	1.4401	316
2	Seat						Hastelloy	2.4883	Hastelloy
	NBR	Acrylonitrile butadiene rubber				Bronze	CuAlNiBZ	2.0975	
	EPDM	Ethylene propylene caoutchouc			11	O-ring			
	CSM	Chlorsulphonated polyethylene				NBR	Acrylonitrile butadiene rubber		
	FPM	Flouorocarbon caoutchouc				FPM	Fluorocarbon caoutchouc		
	VSI	Silicon rubber			12	TS-disc			
3/4	Bearing bush					Nodular Cast Iron	GGG-40	0.7040	60-40-18
	Bronze	RG 5				Stainless Steel	G-X6CrNiMo10-20	1.4408	CF8M
	Polyamide					Aluminium Bronze	CuAl10Ni	2.0975	C 95800
	PTFE					Coating	Halar, Rilsan		
5	Seal DIN 7603					Surface quality	electropolished, mirror finished		
	Copper	Cu		Copper	13	TS-shaft			
6	Plug screw DIN 908					Stainless Steel	X14CrMoS17	1.4104	430 F
	Stainless Steel	11SMnPb30	1.0718 galv.	SAE12L14			X39CrMo17-1	1.4122	
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M			X5CrNiMo17-12-2	1.4401	316
7	Threaded pin DIN 915					Bronze	CuAlNiBZ	2.0975	
	Steel	45 H galvanized			14	Sleeve			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	B8M		Stainless Steel	X5CrNi18-10	1.4301	304
8	Disc				15	Taper pin			
	Steel	St52.3	1.0570	572-50		Stainless Steel	X6CrNiMoTi17-12-2	1.4571	
	Stainless Steel	X5CrNi18-10	1.4301	304	16	Hex. nut			
		G-X5CrNiMo19-11-2	1.4408	CF8M		Stainless Steel	A2		
		X2CrNiMo17-12-2	1.4404	316 L	17	O-ring			
		X6CrNiMoTi17-12-2	1.4571	316 Ti		NBR	Acrylonitrile butadiene rubber		
		X2CrNiMo22-5-3	1.4462	F 51	18	Shaft retention			
		Hastelloy	2.4883	Hastelloy		Bronze	RG 5		
	Aluminium Bronze	CuAl10Ni	2.0975	C 95800	19	Cover plate			
	Coating	Halar, Rilsan				Grey Cast Iron	GG-25	0.6025	40 B
	Surface quality	electropolished, mirror finished			20	Screw			
						Steel	45 H galvanized		
						Stainless Steel	X5CrNiMo17-12-2		B8M
	Other materials upon request								

Subject to change without notice

DOUBLE FLANGED BUTTERFLY VALVE F012-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure				
		3 [bar]	6 [bar]	10 [bar]	16 [bar]	25 [bar]
20	¾	5	5	5	-	-
25	1	5	5	5	-	-
32	1¼	5	5	5	-	-
40	1½	8	8	8	8	-
50	2	5	7	7	9	30
65	2½	7	9	15	18	40
80	3	8	10	18	24	58
100	4	9	18	28	37	90
125	5	15	22	45	59	150
150	6	36	45	110	125	230
200	8	59	76	140	200	350
250	10	150	180	200	240	600
300	12	200	240	280	360	950
350	14	350	540	610	700	1400
400	16	420	620	750	850	2050
450	18	720	746	860	1500	3200
500	20	900	1100	2255	3690	5500
600	24	1050	1200	3000	5830	8000
700	28	1560	2240	3450	8100	13000
800	32	2070	3800	6600	11200	20000
900	36	2700	4900	7100	14500	30000
1000	40	4600	6780	11500	24400	44000
1200	48	7800	12000	21000	44000	60000

All values in Nm

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
20	¾	-	1	4	8	11	19	27	32
25	1	-	1,5	5	10	15	24	32	36
32	1¼	-	1,5	5	11	16	27	35	40
40	1½	-	2,2	8	15	21	33	43	50
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500
350	14	350	780	1400	2400	4000	8000	10800	11500
400	16	490	1050	1800	3100	5500	11000	12000	14500
450	18	510	1080	2040	3350	6100	11500	14600	20500
500	20	520	1100	2200	3500	6200	12000	15100	21000
600	24	750	1400	2800	5100	8800	14000	22000	29300
700	28	770	1755	3260	5980	10600	17100	25300	36000
800	32	1200	2260	4550	8230	12900	20300	29300	44600
900	36	1540	2280	6030	10500	17600	29200	42150	59000
1000	40	2200	3970	8300	14480	24000	37100	60300	81500
1200	48	5050	7900	13800	19700	33500	53300	73050	102650

Subject to change without notice

DOUBLE FLANGED BUTTERFLY VALVE F 012-K1



Double flanged butterfly valve with short construction length to be used in heavy duty applications.

TECHNICAL DATA

Nominal diameter:	DN 150 - DN 2200 bigger sizes upon request
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16/25 ASME Class 150/300 AS 4087 PN16/21
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-40°C to +200°C (depending on pressure, medium and material)
Operating pressure:	max. 16 bar

FEATURES

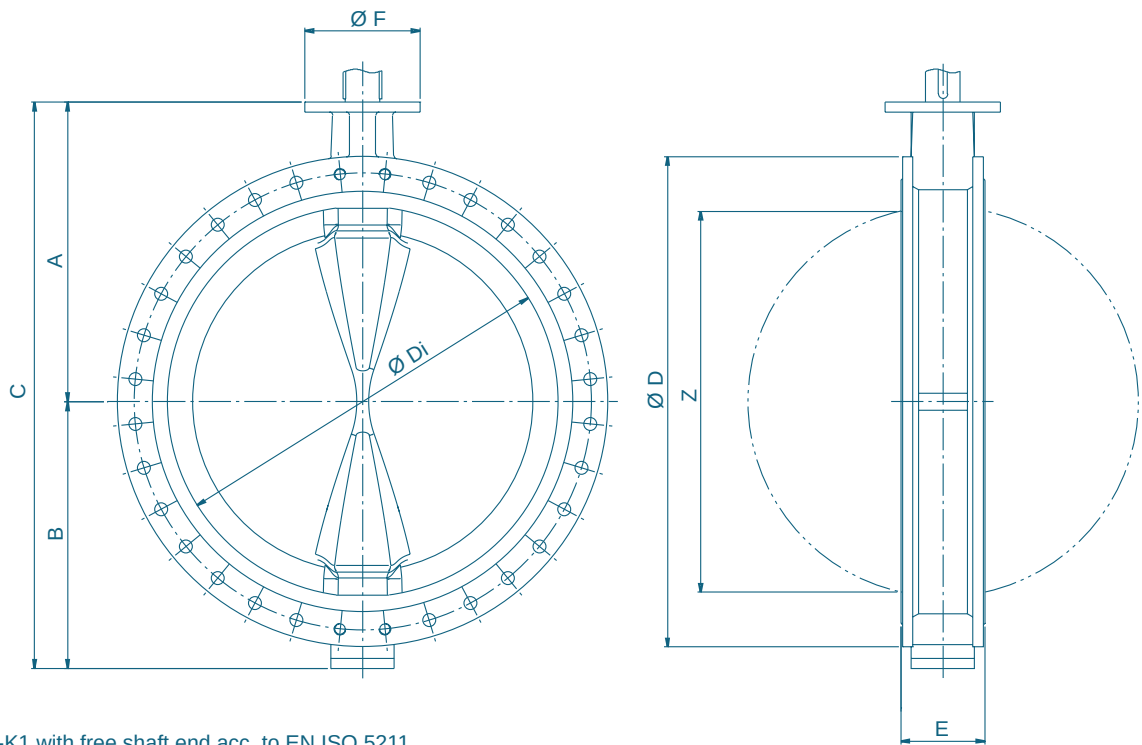
- Absolutely tight sealing with flow in either direction
- The valve body and disc are accurately machined which results in low operating torque and long service life and reliability
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operating service
- Can be disassembled, material-specific recycling possible
- Single flange mounting is possible
- Can be installed in any desired position
- Maintenance-free
- Fully repairable valve

GENERAL APPLICATIONS

- Offshore
- Water and waste water technology
- Shipbuilding
- Power plants



DOUBLE FLANGED BUTTERFLY VALVE F 012-K1



F012-K1 with free shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]									Weight [kg] GGG 40	
		A	B	C	D	Di	E	F	Flange	Z	Splitted shaft	TS- shaft
150	6	203	150	353	305	148	56	90	F07	139	22	23
200	8	228	176	404	350	199	60	90	F07	190	32	34
250	10	266	212	478	430	248	68	125	F10	240	47	50
300	12	291	237	528	480	296	78	125	F10	287	69	72
350	14	332	269	601	540	338	92	150	F12	330	80	86
400	16	363	314	677	605	388	102	150	F12	378	120	128
450	18	397	335	732	675	430	114	210	F16	417	144	150
500	20	437	405	842	710	494,5	127	210	F14/F16	474	163	170
600	24	498	469	967	830	590	154	300	F16/F25	563	233	260
700	28	581	507	1088	905	680	165	300	F16/F25	660	292	345
750	30	590	550	1140	1000	728	190	298	F25	703	-	470
800	32	630	556	1186	1250	780	190	300	F25	757	446	466
850	34	641	590	1201	1005	1031	254	298	F25	807	-	600
900	36	696	617	1313	1120	880	203	300	F25	860	568	610
1000	40	771	675	1446	1020	980	216	350	F30	956	624	722
1050	42	817	725	1542	1346	1031	254	350	F30	998	-	1020
1100	44	840	755	1595	1405	1078	254	350	F30	1046	-	1180
1200	48	905	810	1715	1480	1170	254	350	F35	1154	-	980
1300	52	970	910	1880	1630	1275	280	415	F35	1244	-	1607
1350	54	1000	905	1905	1685	1340	280	415	F35	1310	-	1760
1400	56	1025	965	1990	1685	1375	280	415	F35	1346	-	1806
1500	60	1115	1060	2175	1855	1472	280	475	F40	1444	-	2210
1600	64	1115	1090	2205	1830	1570	280	475	F40	1545	-	2310
1650	66	1225	1150	2375	2035	1646	280	475	F40	1622	-	2560
1800	72	1320	1195	2515	2130	1769	280	475	F40	1747	-	3140
2000	78	1400	1310	2710	2265	1962	525	525	F48	1890	-	4126
2200	86	1550	1430	2980	2555	2170	646	1030	F48	-	-	-

Subject to change without notice



Subject to change without notice

Subject to change without notice

DOUBLE FLANGED BUTTERFLY VALVE F 012-K1

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure			
		3 [bar]	6 [bar]	10 [bar]	16 [bar]
150	6	36	45	110	125
200	8	59	76	140	200
250	10	150	180	200	240
300	12	200	240	280	360
350	14	350	540	610	700
400	16	420	620	750	850
450	18	720	746	860	1500
500	20	900	1100	2255	3690
600	24	1050	2100	3000	5830
700	28	1560	2240	3450	8100
800	32	2070	3800	6600	11200
900	36	2700	4900	7100	14500
1000	40	4600	6780	11500	24400
1200	48	7800	12000	21000	44000

Bigger sizes upon request

All values in Nm

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

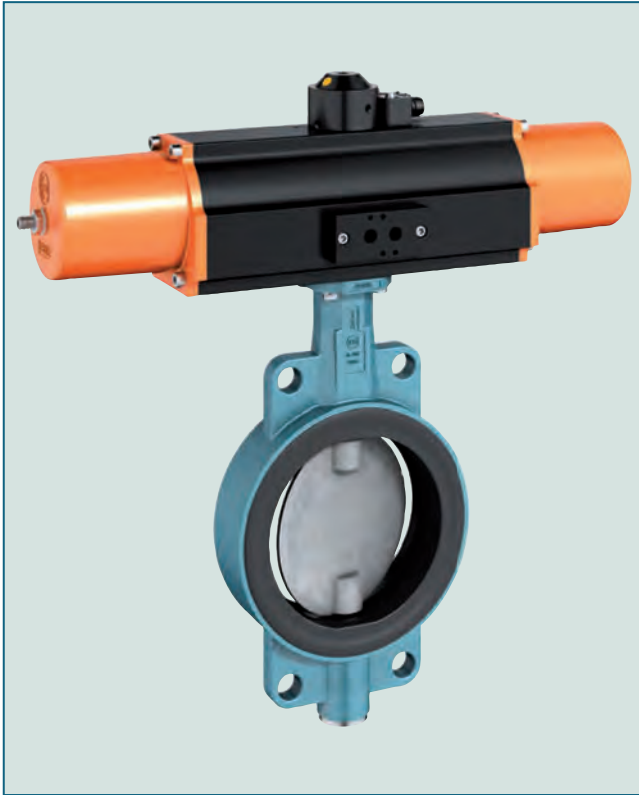
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500
350	14	350	780	1400	2400	4000	8000	10800	11500
400	16	490	1050	1800	3100	5500	11000	12000	14500
450	18	510	1080	2040	3350	6100	11500	14600	20500
500	20	520	1100	2200	3500	6200	12000	15100	21000
600	24	750	1400	2800	5100	8800	14000	22000	29300
700	28	770	1755	3260	5980	10600	17100	25300	36000
800	32	1200	2260	4550	8230	12900	20300	29300	44600
900	36	1540	2280	6030	10500	17600	29200	42150	59000
1000	40	2200	3970	8300	14480	24000	37100	60300	81500
1200	48	5050	7900	13800	19700	33500	53300	73050	102650

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 411-A



Resilient seated, centrally mounted wafer type valve with reduced inside diameter for PE/PP piping systems.

TECHNICAL DATA

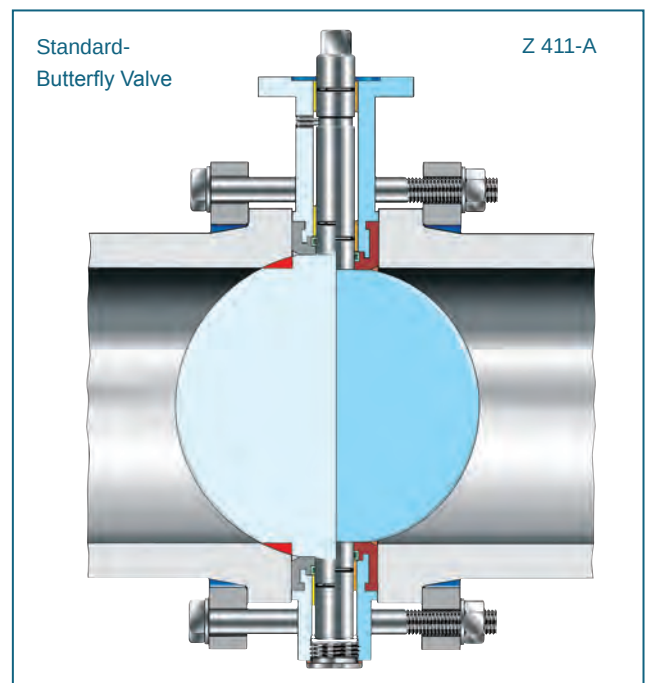
Nominal diameter:	da 50 (DN 40) - da 630 (DN 600) (SDR11) da 50 (DN 40) - da 500 (DN 500) (SDR17 / SDR17,6 / SDR33)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +160°C (depending on pressure, medium and material)
Operating pressure:	max. 10 bar SDR 11,0 (PE-80) max. 10 bar SDR 17,0 (PE-100) max. 6 bar SDR 17,6 (PE-80) max. 5 bar SDR 33,0 (PE-100)

FEATURES

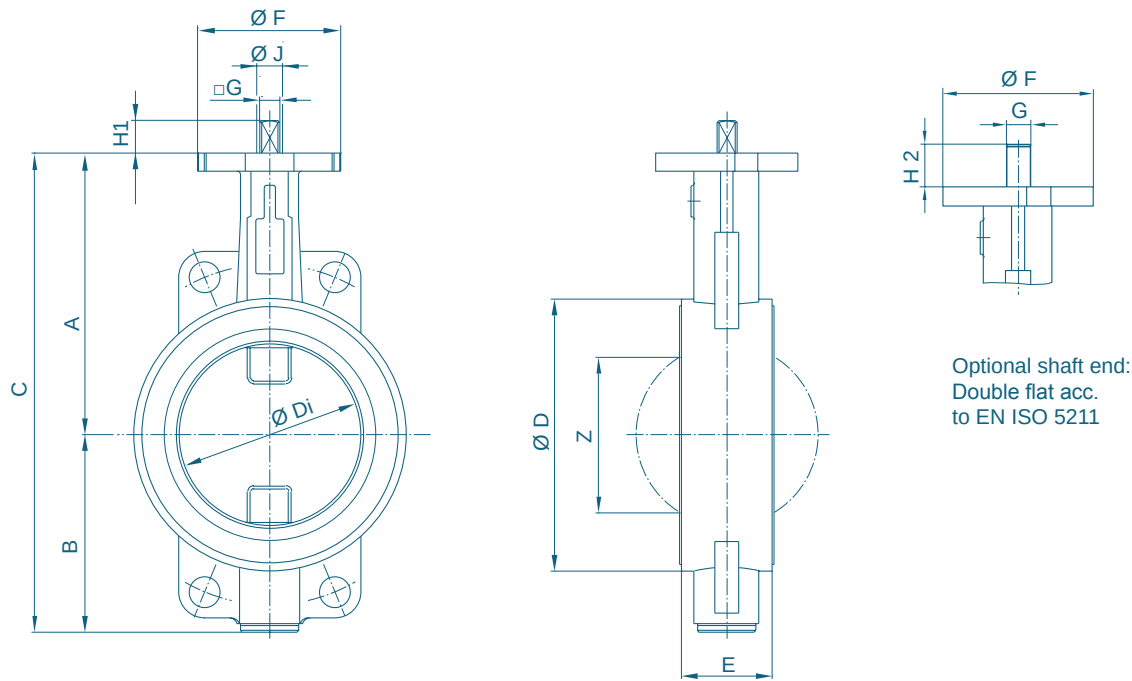
- Adapted butterfly valve for PE/PP piping systems
- The disc diameter corresponds to the inside diameter of PE HD and PP pressure pipes (SDR11 / SDR17 / SDR17,6 / SDR33)
- Short stubs must not be removed by boring. The plant reliability will not be reduced
- There is no need to manufacture and install complicated spacers
- Can be mounted in any desired position
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operational service
- Interchangeable seat
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- For max. pressure, a through-going shaft (TS) is mounted for sizes $\geq$ da 400

GENERAL APPLICATIONS

- Where PE/PP pipes are used



WAFER TYPE BUTTERFLY VALVE Z 411-A



Z 411-A with bare shaft end

		Dimensions [mm]																				Weight [kg]			
DN [mm]	Ø = da [mm]				SDR 11			SDR 17/ 17,6			SDR 33														
		A	B	C	ØD	ØDi	Z	ØD	ØDi	Z	ØD	ØDi	Z	E	ØF	Flange	G	H1	H2	ØJ					
40	50	113	66	179	80	37	22	80	37	22	80	37	22	33	54	F04	11	12	19	14	1,8				
50	63	126	84	210	95	48,5	25	95	48,5	25	95	48,5	25	43	54	F04	11	12	19	14	2,2				
65	75	134	93	227	115	63,5	45	115	63,5	45	115	63,5	45	46	54	F04	11	12	19	14	2,9				
80	90	157	104	261	138	78,5	65	138	78,5	65	138	78,5	65	46	65	F05	14	16	25	18	4,0				
100	110	167	115	282	158	98,5	85	158	98,5	85	158	98,5	85	52	65	F05	14	16	25	18	5,2				
100	125	167	115	282	158	98,5	85	158	98,5	85	158	98,5	85	52	65	F05	14	16	25	18	7,5				
125	140	180	127	307	166	111,2	98	188	123,5	111	188	123,5	111	56	65	F05	14	16	25	18	8,5				
150	160	203	150	353	186	123,2	111	186	123,2	111	212	148	139	56	90	F07	17	19	30	22	10,0				
150	180	203	150	353	212	148	139	212	148	139	212	148	139	56	90	F07	17	19	30	22	10,8				
200	200	228	176	404	226	161,5	151	226	161,5	151	250	182	173	60	90	F07	17	19	30	22	11,2				
200	225	228	176	404	250	182	173	268	198,2	190	268	198,2	190	60	90	F07	17	19	30	22	12,5				
250	250	266	212	478	268	198,2	188	268	198,2	188	308	224,3	215	68	90	F07	17	19	30	22	19,0				
250	280	266	212	478	315	224,3	215	320	248	240	320	248	240	68	125	F10	22	24	39	30	20,5				
300	315	293	237	528	358	255	244	358	255	244	358	279,6	270	78	125	F10	22	24	39	30	28,0				
350	355	332	269	601	365	285,7	272	392	311,4	299	392	311,4	299	92	125	F10	22	24	39	30	36,0				
400	400	363	314	677	428	327	312	437	349,6	336	437	349,6	336	102	150	F12	**	**	-	40	75,0*				
500	450	437	405	842	454	365,8	345	454	365,8	345	508	409	390	127	150	F12	**	**	-	40	105,0*				
500	500	437	405	842	508	409	390	546	439,6	422	546	439,6	422	127	150	F12	**	**	-	40	112,0*				
600	560	475	418	893	530	426	412	-	-	-	-	-	-	127	210	F16	**	**	-	50	120,0*				
600	630	475	418	893	574	488	473	-	-	-	-	-	-	127	211	F17	**	**	-	50	135,0*				

* through going shaft only (TS-version)

** according to the mounted actuator

Subject to change without notice

The diagram illustrates the exploded view of a butterfly valve assembly. It shows two configurations: the TS-version and the Version with splitted shaft. Key components are numbered as follows:

- TS-version components:** 12 (Body), 13 (Shaft), 14 (Pin), 15 (Washer), 16 (Nut).
- Version with splitted shaft components:** 8 (Disc), 9 (Shaft), 10 (Pin), 11 (Washer).
- Main assembly components:** 1 (Body), 2 (Cover plate), 3 (Pin), 4 (Pin), 5 (Pin), 6 (Pin), 7 (Pin), 17 (Cover plate for valve $\geq da 350$), 18 (Cover plate for valve $\geq da 350$), 19 (Cover plate for valve $\geq da 350$), 20 (Pin).

*da 63 - da 355 only Subject to change without notice

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 411-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
 - Powdery (non-lubricant) media Md x 1,3
 - Dry gases/high viscous media Md x 1,2
 - The values specified are based on the initial breakaway torque
 - Dynamic torque specification available upon request
- Regarding the dimensioning of actuators, please contact our engineers.

da [mm]	Size [in]	Operating pressure		
		SDR 11 10 bar	SDR 17 / 17,6 10 bar	SDR 33 6 bar
50	1½	6	6	6
63	2	7	7	7
75	2½	15	15	9
90	3	18	18	10
110	4	28	28	18
125	4	28	28	18
140	5	45	45	22
160	6	110	110	45
180	6	110	110	45
200	8	140	140	76
225	8	140	140	76
250	10	200	200	180
280	10	200	200	180
315	12	220	220	200
355	14	360	360	310
400	16	620	620	540
450	20	730	730	650
500	20	960	960	890
560	24	1580	-	-
630	24	2000	-	-

All values in Nm

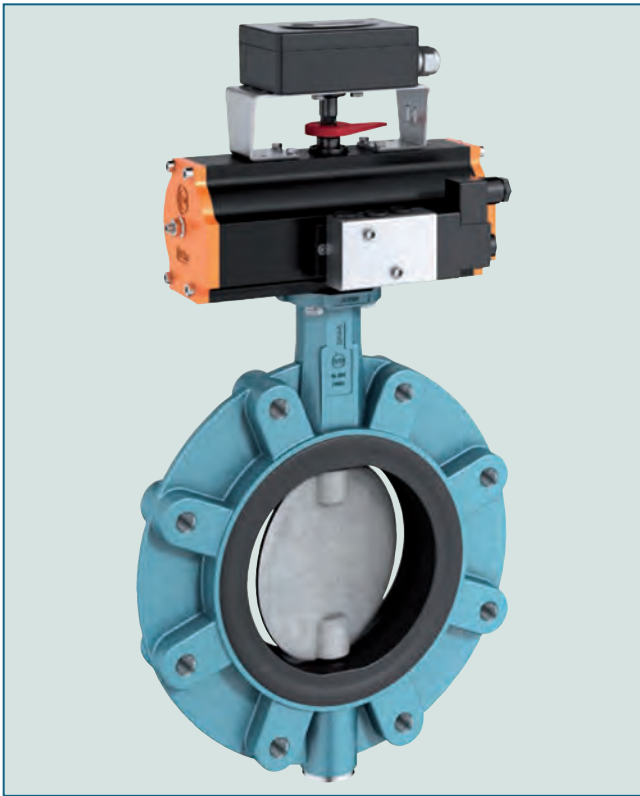
K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
 - The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
 - Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases
 - The throttle function is linear at an angle 30° to 70°
 - Avoid cavitation
- For further values, please contact our engineers.

da [mm]	DN [mm]	Size [in]	SDR	Opening angle α°							
				20°	30°	40°	50°	60°	70°	80°	90°
50	40	1½	11	-	2,2	8	15	21	33	43	50
			17	-	2,2	8	15	21	33	43	50
			33	-	2,2	8	15	21	33	43	50
63	50	2	11	1,2	8	13	22	38	50	65	85
			17	1,2	8	13	22	38	50	65	85
			33	1,2	8	13	22	38	50	65	85
75	65	2½	11	2	9	22	42	77	115	170	215
			17	2	9	22	42	77	115	170	215
			33	2	9	22	42	77	115	170	215
90	80	3	11	8	24	50	95	150	240	330	420
			17	8	24	50	95	150	240	330	420
			33	8	24	50	95	150	240	330	420
110	100	4	11	13	28	65	130	180	340	550	800
			17	13	28	65	130	180	340	550	800
			33	13	28	65	130	180	340	550	800
125	100	4	11	13	28	65	130	180	340	550	800
			17	13	28	65	130	180	340	550	800
			33	13	28	65	130	180	340	550	800
140	125	5	11	19	46	98	183	272	445	720	950
			17	26	65	130	230	350	530	870	1010
			33	26	65	130	230	350	530	870	1010
160	150	6	11	26	65	130	230	350	530	870	1010
			17	26	65	130	230	350	530	870	1010
			33	35	90	200	360	640	900	1350	2100
180	150	6	11	35	90	200	360	640	900	1350	2100
			17	35	90	200	360	640	900	1350	2100
			33	35	90	200	360	640	900	1350	2100
200	200	8	11	37	120	240	429	740	1100	1870	2650
			17	37	120	240	429	740	1100	1870	2650
			33	41	160	310	520	900	1420	2480	3390
225	200	8	11	41	160	310	520	900	1420	2480	3390
			17	43	180	350	580	1000	1600	3000	4000
			33	43	180	350	580	1000	1600	3000	4000
250	250	10	11	43	180	350	580	1000	1600	3000	4000
			17	43	180	350	580	1000	1600	3000	4000
			33	85	270	510	840	1410	2400	4150	5200
280	250	10	11	85	270	510	840	1410	2400	4150	5200
			17	125	360	660	1100	1800	3100	5300	6400
			33	125	360	660	1100	1800	3100	5300	6400
315	300	12	11	133	390	710	1160	1900	3400	5500	6600
			17	133	390	710	1160	1900	3400	5500	6600
			33	170	480	870	1410	2300	4250	6650	7690
355	350	14	11	185	500	920	1480	2420	4500	7000	8000
			17	240	610	1110	1820	3000	5750	8400	9320
			33	240	610	1110	1820	3000	5750	8400	9320
400	400	16	11	285	680	1230	2050	3400	6680	9300	10200
			17	350	780	1400	2400	4000	8000	10800	11500
			33	350	780	1400	2400	4000	8000	10800	11500
450	500	20	11	395	870	1530	2630	4500	8900	11100	12500
			17	395	870	1530	2630	4500	8900	11100	12500
			33	480	1030	1800	3120	5500	10700	12700	16000
500	500	20	11	480	1030	1800	3120	5500	10700	12700	16000
			17	500	1070	2000	3300	5900	11300	14000	18800
			33	500	1070	2000	3300	5900	11300	14000	18800
560	600	24	11	540	1120	2100	3500	6300	11600	15000	21000
630	600	24	11	610	1300	2400	4100	7200	12500	17600	24000

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 414-A



Resilient seated, centrally mounted lug type butterfly valve with reduced inside diameter for PE/PP piping systems.

TECHNICAL DATA

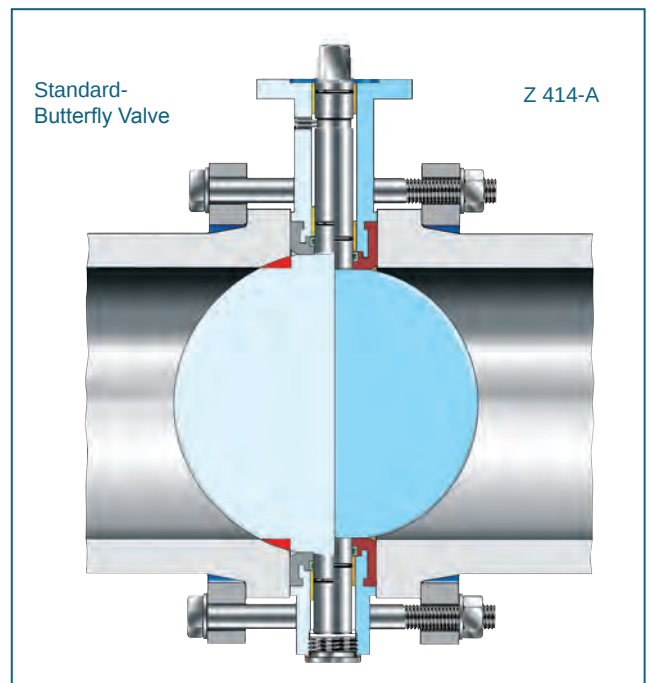
Nominal diameter:	da 50 (DN 40) - da 630 (DN 600) SDR 11 da 50 (DN 40) - da 500 (DN 500) (SDR 17 / SDR 17,6 / SDR 33)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +160°C (depending on pressure, medium and material)
Operating pressure:	max. 10 bar SDR 11,0 (PE-80) max. 10 bar SDR 17,0 (PE-100) max. 6 bar SDR 17,6 (PE-80) max. 5 bar SDR 33,0 (PE-100)

FEATURES

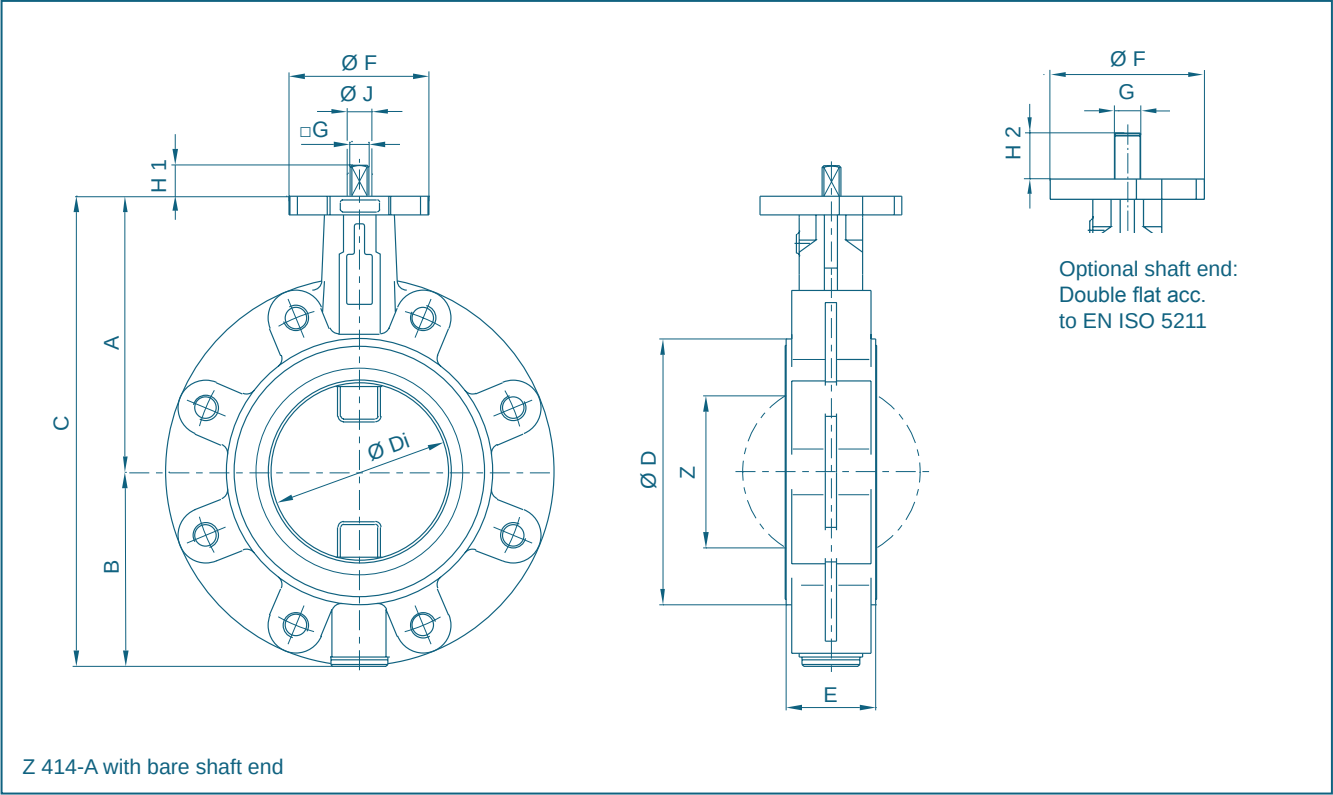
- Adapted butterfly valve for PE/PP piping systems
- The disc diameter corresponds to the inside diameter of PE HD and PP pressure pipes (SDR 11 / SDR 17 / SDR17,6 / SDR 33)
- Short stubs must not be removed by boring. The plant reliability will not be reduced
- There is no need to manufacture and install complicated spacers
- Can be mounted in any desired position
- Triple shaft bearing prevent shaft deflection and guarantee optimum guidance even after many years of operational service
- Interchangeable seat
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- For max. pressure, a through-going shaft (TS) is mounted for sizes $\geq$ da 400.

GENERAL APPLICATIONS

- Where PE/PP pipes are used



LUG TYPE BUTTERFLY VALVE Z 414-A



		Dimensions [mm]																			Weight [kg]		
DN [mm]	Ø = da [mm]				SDR 11			SDR 17/ 17,6			SDR 33												
		A	B	C	ØD	ØDi	Z	ØD	ØDi	Z	ØD	ØDi	Z	E	ØF	Flange	G	H1	H2	ØJ			
40	50	113	66	179	80	37	22	80	37	22	80	37	22	33	54	F04	11	12	19	14	4,0		
50	63	126	84	210	95	48,5	25	95	48,5	25	95	48,5	25	43	54	F04	11	12	19	14	4,8		
65	75	134	93	227	115	63,5	45	115	63,5	45	115	63,5	45	46	54	F04	11	12	19	14	5,5		
80	90	157	104	261	138	78,5	65	138	78,5	65	138	78,5	65	46	65	F05	14	16	25	18	8,6		
100	110	167	115	282	158	98,5	85	158	98,5	85	158	98,5	85	52	65	F05	14	16	25	18	9,8		
100	125	167	115	282	158	98,5	85	158	98,5	85	158	98,5	85	52	65	F05	14	16	25	18	11,0		
125	140	180	127	307	166	111,2	98	188	123,5	111	188	123,5	111	56	65	F05	14	16	25	18	13,5		
150	160	203	150	353	186	123,2	111	186	123,2	111	212	148	139	56	90	F07	17	19	30	22	16,0		
150	180	203	150	353	212	148	139	212	148	139	212	148	139	56	90	F07	17	19	30	22	15,5		
200	200	228	176	404	226	161,5	151	226	161,5	151	250	182	173	60	90	F07	17	19	30	22	22,0		
200	225	228	176	404	250	182	173	268	198,2	190	268	198,2	190	60	90	F07	17	19	30	22	23,5		
250	250	266	212	478	268	198,2	188	268	198,2	188	308	224,3	215	68	90	F07	17	19	30	22	34,0		
250	280	266	212	478	315	224,3	215	320	248	240	320	248	240	68	125	F10	22	24	39	30	37,0		
300	315	293	237	528	358	255	244	358	255	244	358	279,6	270	78	125	F10	22	24	39	30	48,0		
350	355	332	269	601	365	285,7	272	392	311,4	299	392	311,4	299	92	125	F10	22	24	39	30	62,0		
400	400	363	314	677	428	327	312	437	349,6	336	437	349,6	336	102	150	F12	**	**	-	40	96,0*		
500	450	437	405	842	454	365,8	345	454	365,8	345	508	409	390	127	150	F12	**	**	-	40	145,0*		
500	500	437	405	842	508	409	390	546	439,6	422	546	439,6	422	127	150	F12	**	**	-	40	154,0*		
600	560	475	418	893	530	426	412	-	-	-	-	-	-	127	210	F16	**	**	-	50	165,0*		
600	630	475	418	893	574	488	473	-	-	-	-	-	-	127	211	F17	**	**	-	50	178,0*		

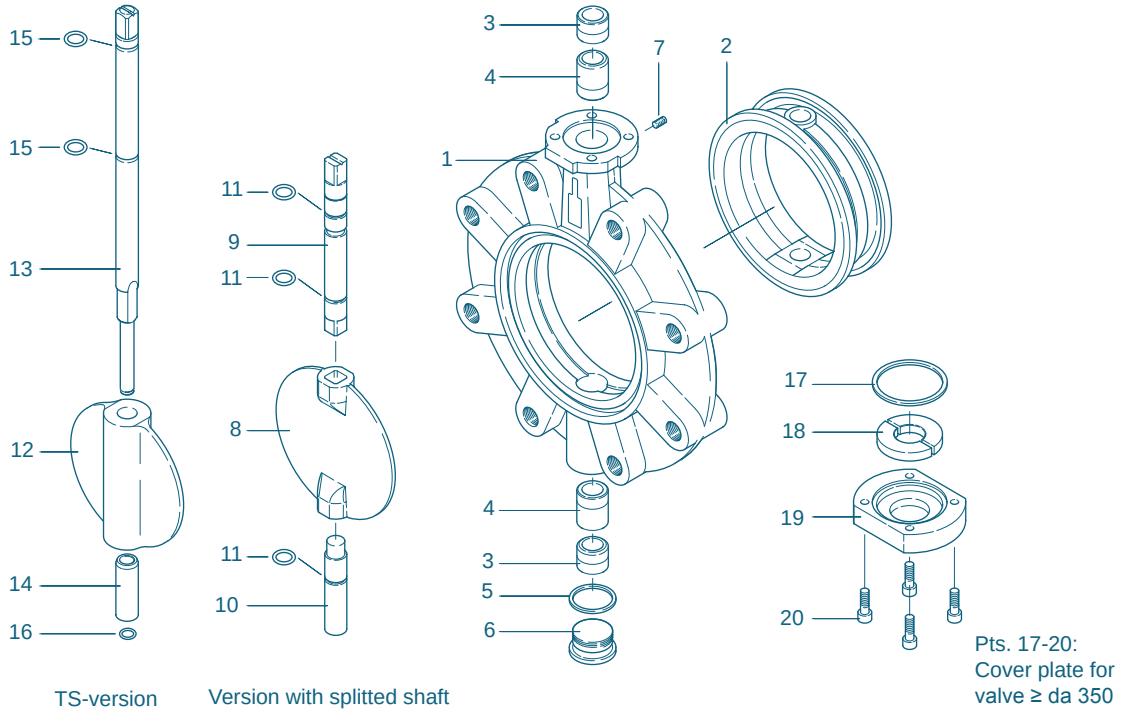
* through going shaft only (TS-version)

** according to the mounted actuator

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 414-A

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				12	TS-disc da 250 - da 630			
	Nodular Cast Iron	GGG-40	0.7040	A 395		Nodular Cast Iron	GGG-40	0.7040	60-40-18
2	Seat					Stainless Steel	X6CrNiMo10-20	1.4408	CF8M
	NBR	Acrylonitrile butadiene rubber				Aluminium Bronze	CuAl10Ni	2.0975	C 95800
	EPDM	Ethylene propylene caoutchouc				Coating	Halar, Rilsan		
	FPM	Fluorocarbon caoutchouc				Surface quality	electropolished, mirror finished		
3/4	Bearing bush				13	TS-shaft da 250 - da 630			
	Brass	MS 58	2.0401	B 45		Stainless Steel	X14CrMoS17	1.4104	430 F
	Polyamide						X39CrMo17-1	1.4122	
5	Seal DIN 7603						X5CrNiMo17-12-2	1.4401	316
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316	14	Sleeve			
	PTFE					Stainless Steel	X5CrNi18-10	1.4301	304
	Copper	Cu		Copper	15	O-ring			
6	Plug screw DIN 908					NBR	Acrylonitrile butadiene rubber		
	Stainless Steel	G-X6CrNiMo18-10	1.4408	CF8M		FPM	Fluorocarbon caoutchouc		
7	Set screw DIN 915				16	Retaining ring			
	Steel	45 H galvanized				Stainless Steel	X39CrMo17-1	1.4122	
	Stainless Steel	A4-70		B8M	17	O-ring da 400 - da 630			
8	Disc					NBR	Acrylonitrile butadiene rubber		
	Stainless Steel	X5CrNi18-10	1.4301	304	18	Shaft retainer da 400 - da 630			
		X5CrNiMo18-10	1.4401	316		Brass	MS 58	2.0401	B 45
		G-X6CrNiMo18-10	1.4408	CF8M	19	Cover plate da 400 - da 630			
	Coating	Halar, Rilsan				Grey Cast Iron	GG-25	0.6025	40 B
	Surface quality	electropolished, mirror finished			20	Screw da 400 - da 630			
9/10	Shaft					Steel	45 H galvanized		
	Stainless Steel	X14CrMoS17	1.4104	430 F		Stainless Steel	A2-70		B 8
		X5CrNiMo17-12-2	1.4401	316			A4-70		B8M
11	O-ring								
	NBR	Acrylonitrile butadiene rubber							
	FPM	Fluorocarbon caoutchouc				Other materials upon request			

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 414-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
 - Powdery (non-lubricant) media Md x 1,3
 - Dry gases/high viscous media Md x 1,2
 - The values specified are based on the initial breakaway torque
 - Dynamic torque specification available upon request
- Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure		
		SDR 11 10 bar	SDR 17/17,6 10 bar	SDR 33 6 bar
50	1½	6	6	6
63	2	7	7	7
75	2½	15	15	9
90	3	18	18	10
110	4	28	28	18
125	4	28	28	18
140	5	45	45	22
160	6	110	110	45
180	6	110	110	45
200	8	140	140	76
225	8	140	140	76
250	10	200	200	180
280	10	200	200	180
315	12	220	220	200
355	14	360	360	310
400	16	620	620	540
450	20	730	730	650
500	20	960	960	890
560	24	1580	-	-
630	24	2000	-	-

All values in Nm

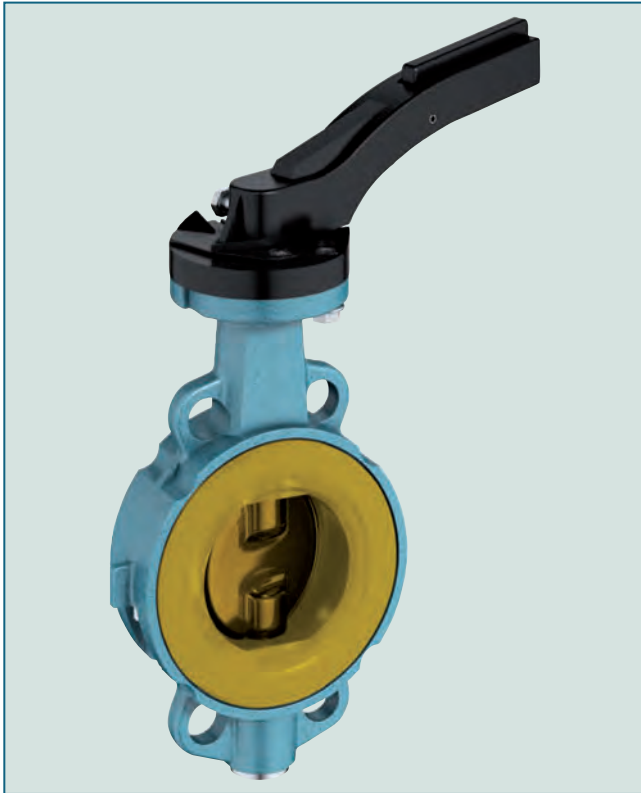
K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
 - The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
 - Permissible velocity of flow
Vmax 4,5 m/s for liquids,
Vmax 70 m/s for gases
 - The throttle function is linear at an angle 30° to 70°
 - Avoid cavitation
- For further values, please contact our engineers.

da [mm]	DN [mm]	Size [in]	SDR	Opening angle α°							
				20°	30°	40°	50°	60°	70°	80°	90°
50	40	1½	11	-	2,2	8	15	21	33	43	50
			17	-	2,2	8	15	21	33	43	50
			33	-	2,2	8	15	21	33	43	50
63	50	2	11	1,2	8	13	22	38	50	65	85
			17	1,2	8	13	22	38	50	65	85
			33	1,2	8	13	22	38	50	65	85
75	65	2½	11	2	9	22	42	77	115	170	215
			17	2	9	22	42	77	115	170	215
			33	2	9	22	42	77	115	170	215
90	80	3	11	8	24	50	95	150	240	330	420
			17	8	24	50	95	150	240	330	420
			33	8	24	50	95	150	240	330	420
110	100	4	11	13	28	65	130	180	340	550	800
			17	13	28	65	130	180	340	550	800
			33	13	28	65	130	180	340	550	800
125	100	4	11	13	28	65	130	180	340	550	800
			17	13	28	65	130	180	340	550	800
			33	13	28	65	130	180	340	550	800
140	125	5	11	19	46	98	182	272	445	720	950
			17	26	65	130	230	350	530	870	1010
			33	26	65	130	230	350	530	870	1010
160	150	6	11	26	65	130	230	350	530	870	1010
			17	26	65	130	230	350	530	870	1010
			33	35	90	200	360	640	900	1350	2100
180	150	6	11	35	90	200	360	640	900	1350	2100
			17	35	90	200	360	640	900	1350	2100
			33	35	90	200	360	640	900	1350	2100
200	200	8	11	37	120	240	429	740	1100	1870	2650
			17	37	120	240	429	740	1100	1870	2650
			33	41	160	210	520	900	1420	2480	3390
225	200	8	11	41	160	310	520	900	1420	2480	3390
			17	43	180	350	580	1000	1600	3000	4000
			33	43	180	350	580	1000	1600	3000	4000
250	250	10	11	43	180	350	580	1000	1600	3000	4000
			17	43	180	350	580	1000	1600	3000	4000
			33	85	270	510	840	1410	2400	4150	5200
280	250	10	11	85	270	510	840	1410	2400	4150	5200
			17	125	360	660	1100	1800	3100	5300	6400
			33	125	360	660	1100	1800	3100	5300	6400
315	300	12	11	133	390	710	1160	1900	3400	5500	6600
			17	133	390	710	1160	1900	3400	5500	6600
			33	170	480	870	1410	2300	4250	6650	7690
355	350	14	11	185	500	920	1480	2420	4500	7000	8000
			17	240	610	1110	1820	3000	5750	8400	9320
			33	240	610	1110	1820	3000	5750	8400	9320
400	400	16	11	285	680	1230	2050	3400	6680	9300	10200
			17	350	780	1400	2400	4000	8000	10800	11500
			33	350	780	1400	2400	4000	8000	10800	11500
450	500	20	11	395	870	1530	2630	4500	8900	11100	12500
			17	395	870	1530	2630	4500	8900	11100	12500
			33	480	1030	1800	3120	5500	10700	12700	16000
500	500	20	11	480	1030	1800	3120	5500	10700	12700	16000
			17	500	1070	2000	3300	5900	11300	14000	18800
			33	500	1070	2000	3300	5900	11300	14000	18800
560	600	24	11	540	1120	2100	3500	6300	11600	15000	21000
630	600	24	11	610	1300	2400	4100	7200	12500	17600	24000

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-GMX



Wafer type butterfly valve with special lining and disc for abrasive media.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Marking:	EN 19
Tightness check:	EN 12266 (Leckrate A) ISO 5208, Category 3
Temperature range:	-10°C to +90°C (depending on pressure, medium and material)
Operating pressure:	max. 6 bar

FEATURES

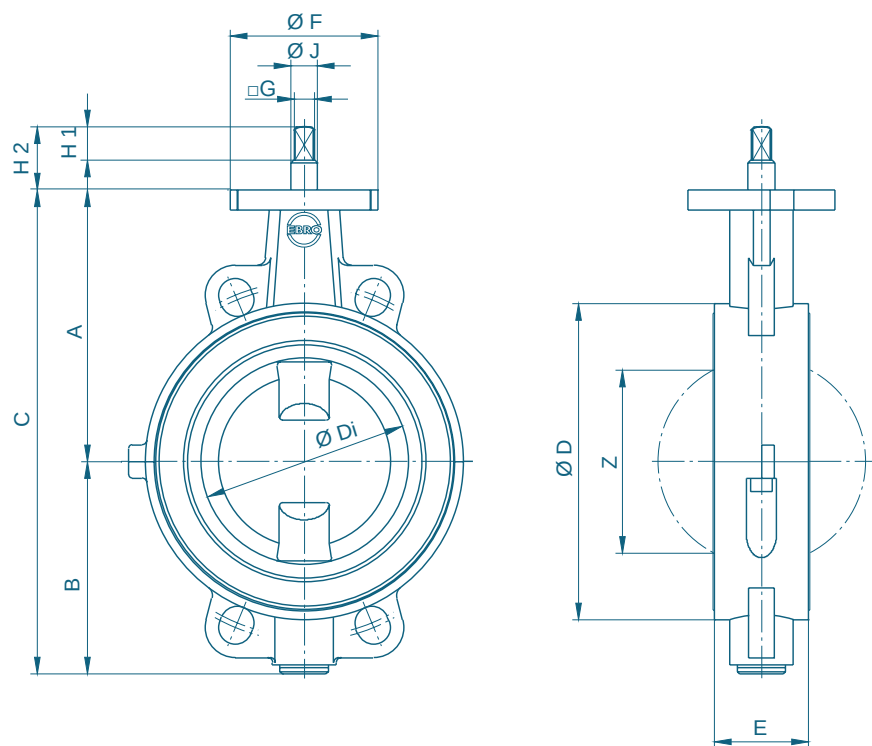
- Shut-off and controlling of strong abrasive media, e.g. sand, cement, flue ash
- High abrasion strength of valve disc and seal
- Two-part body
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operational service
- Absolutely tight sealing with flow in either direction
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material specific recycling possible

GENERAL APPLICATIONS

- Bulk handling technology
- Weighting technology
- Pneumatic conveying systems



WAFER TYPE BUTTERFLY VALVE Z 011-GMX



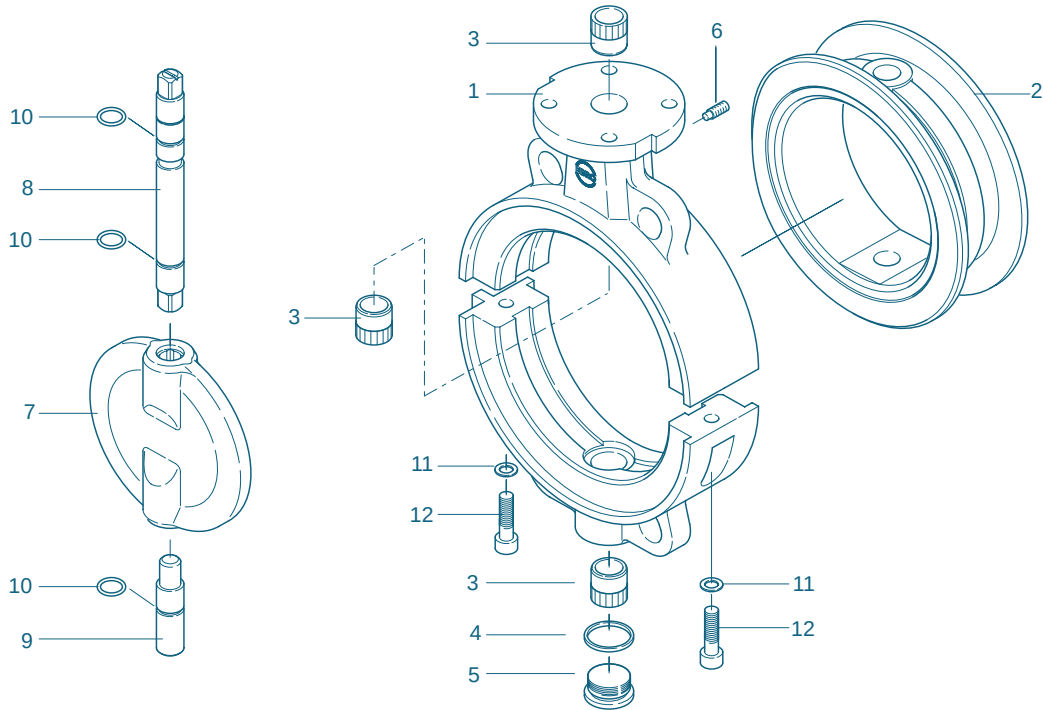
Z 011-GMX with bare shaft end

DN [mm]	Size [in]	Dimensions [mm]													Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	H2	J	Z	
50	2	126	84	210	105	49	43	90	F07	12	20	38	16	24	1,6
65	2½	134	93	227	125	64,3	46	90	F07	12	20	38	16	45	1,9
80	3	140	104	244	140	78,2	46	90	F07	12	20	38	16	64	2,2
100	4	150	115	265	160	98,6	52	90	F07	12	20	38	16	84	2,8
125	5	163	127	290	190	123,6	56	90	F07	12	20	38	16	111	3,5
150	6	193	150	343	217	148,5	56	90	F07	16	20	38	20	138	4,6
200	8	218	176	394	272	198,2	60	90	F07	16	20	38	20	190	6,8
250	10	266	212	478	327	250	68	125	F10	24	20	38	30	240	12,3
300	12	293	237	530	377	297	78	125	F10	24	20	38	30	289	17,0

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-GMX

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				7	Disc			
	Aluminiumalloy	G-AlSi10Mg	3.2381	361.1		Stainless Steel	G-X6CrNiMo18-10	1.4401	CF8M
2	Seat					Coating	GMX Polyurethane		
	GMX	Polyurethane			8/9	Shaft			
3	Bearing sleeve					Stainless Steel	X14CrMoS17	1.4104	430 F
	Brass	MS 58	2.0401	B 45			X5CrNiMo17-12-2	1.4401	316
4	Seal DIN 7603				10	O-ring			
	Copper	Cu		Copper		NBR	Acrylnitrile butadiene rubber		
5	Plug screw DIN 908				11	Washer			
	Stainless Steel	G-X6CrNiMo18-10		CF8M		Stainless Steel	X5CrNiM17-12-2	1.4401	316
6	Set screw DIN 915				12	Screw			
	Steel	45 H galvanized	1.4408			Stainless Steel	A2-70		B 8
	Stainless Steel	A4-70		B8M			A4-70		B8M
						Other materials upon request			

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-A



Resilient seated wafer type butterfly valve for semi-corrosive media.

TECHNICAL DATA

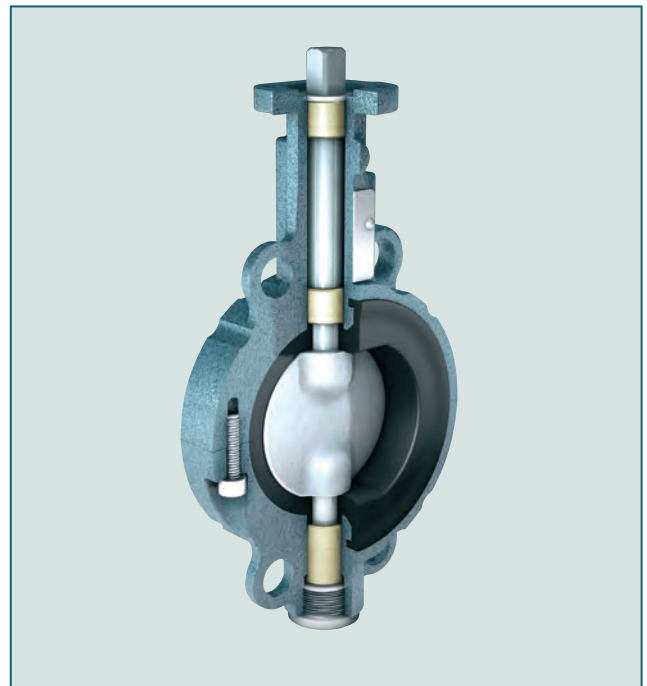
Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange surface design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	DIN EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +160°C (depending on pressure, medium and material)
Operating pressure:	max. 10 bar

FEATURES

- One piece disc/shaft
- Split body with stainless steel screws
- Insulation height as per plant regulations
- Optional: Special design RWTÜV certified to TA-Air/ VDI 2440
- Triple shaft bearing
- Disc's sealing surface mirror polished
- Materials complying with FDA standards available
- Can be disassembled, material-specific recycling possible

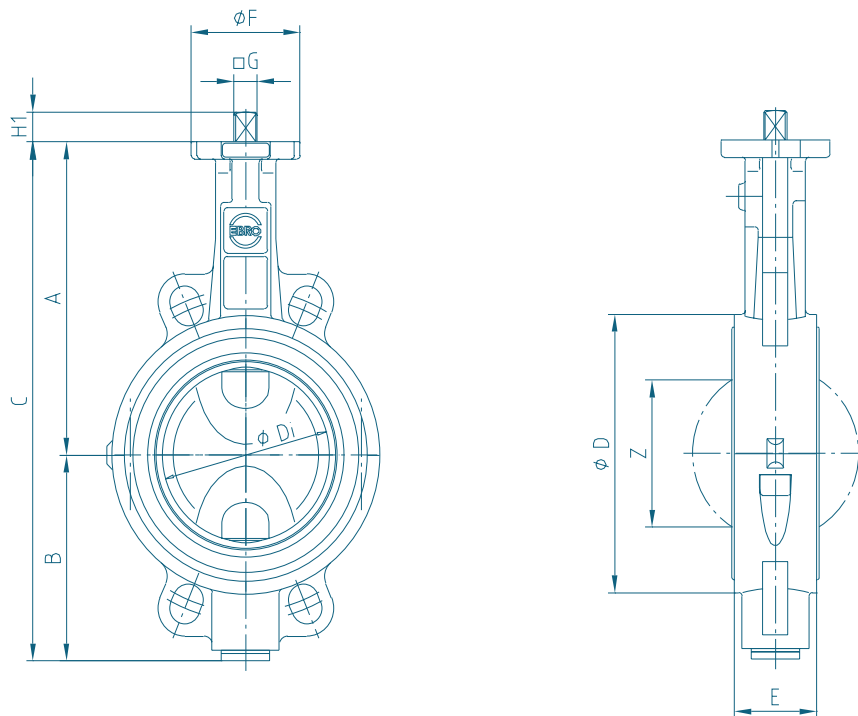
GENERAL APPLICATIONS

- Food and beverage industry
- Purification plants
- Pharmaceutical industry
- Chemical and petrochemical industry
- Water and waste water industry
- Pneumatic materials handling technology
- Shipbuilding
- Power plants
- Civil engineering
- For paint and lacquers a silicone-free version is available



The split body design allows quick and easy maintenance.

WAFER TYPE BUTTERFLY VALVE Z 611-A



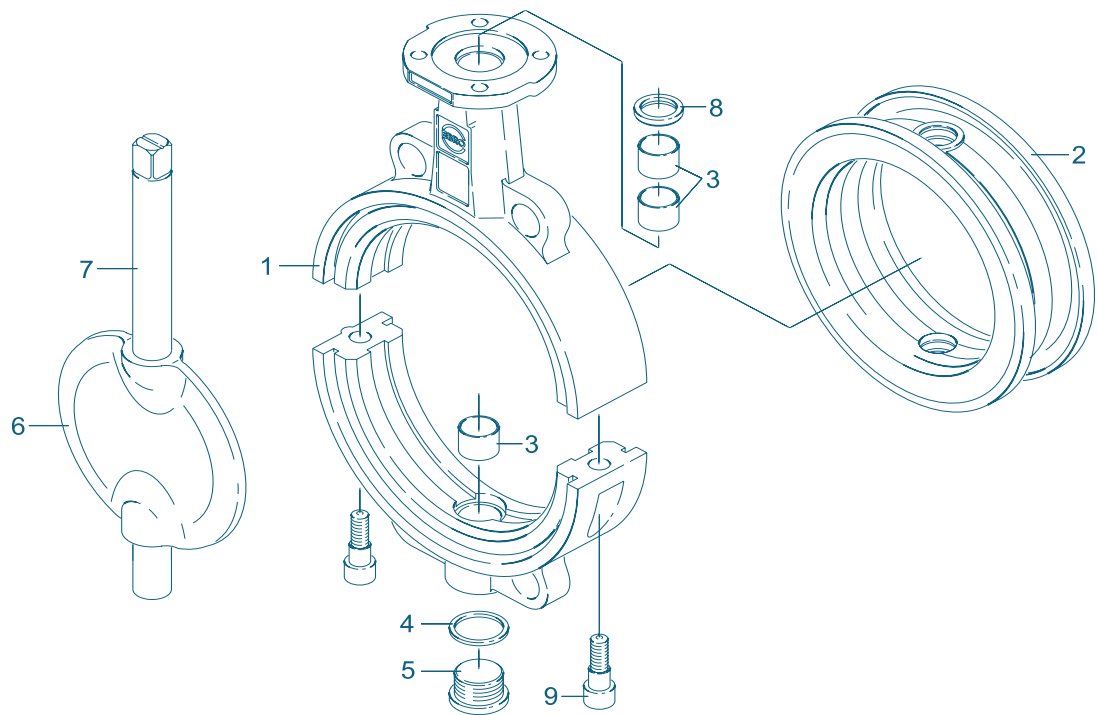
Z 611-A with bare shafts end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	H2	Z	
50	2	126	84	210	112	49	43	54	F04	11	13,5	19	25	2,2
65	2½	134	93	227	120	64	46	54	F04	11	13,5	19	45	2,9
80	3	157	104	261	138	79	46	65	F05	14	17	25	64	4,0
100	4	167	115	282	160	99	52	65	F05	14	17	25	84	5,2
125	5	180	127	307	190	124	56	65	F05	14	17	25	110	6,9
150	6	203	150	353	215	149	56	88	F07	17	20	30	138	9,5
200	8	228	176	404	269	199	60	88	F07	17	20	30	189	13,2
250	10	266	212	478	324	249	68	125	F10	22	23,5	39	239	22,5
300	12	291	237	528	374	297	78	125	F10	22	23,5	39	286	31,5

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-A

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				5	Plug screw DIN 908			
	Nodular cast iron	EN-JS 1030	GGG 40	60-40-18		Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
2	Seat				6/7	Shaft/Disc one piece			
	NBR	Acrylonitrile butadiene rubber				Stainless Steel	G-X2CrNiMoN26-7-4	1.4469	A 995
	EPDM	Ethylene propylene caoutchouc			8	Wiper ring			
	CSM	Chlorsulphonated polyethylene				PTFE	Polytetrafluorethylene	PTFE	PTFE
	FPM	Fluorocarbon caoutchouc			9	Screw			
	VSI	Silicone rubber				Stainless Steel	A4-70	1.4401	B8M
	AU	Polyurethane elastomer							
3	Bearing bush								
	Brass	MS 58	2.0401	B 45					
4	Seal DIN 7603								
	Copper	Cu		Copper					
						Above-mentioned materials of the basic version, other materials upon request			

Above-mentioned materials of the basic version, other materials upon request

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
- Powdery (non-lubricant) media Md x 1,3
- Dry gases/high viscous media Md x 1,2
- The values specified are based on the initial breakaway torque
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	50	65	80	100	125	150	200	250	300
Size [in]	2	2½	3	4	5	6	8	10	12
MD [Nm]	7	15	18	28	45	110	140	200	280

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases
- The throttle function is linear at an angle 30° to 70°
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 614-A



Resilient seated lug type butterfly valve for semi-corrosive media.

TECHNICAL DATA

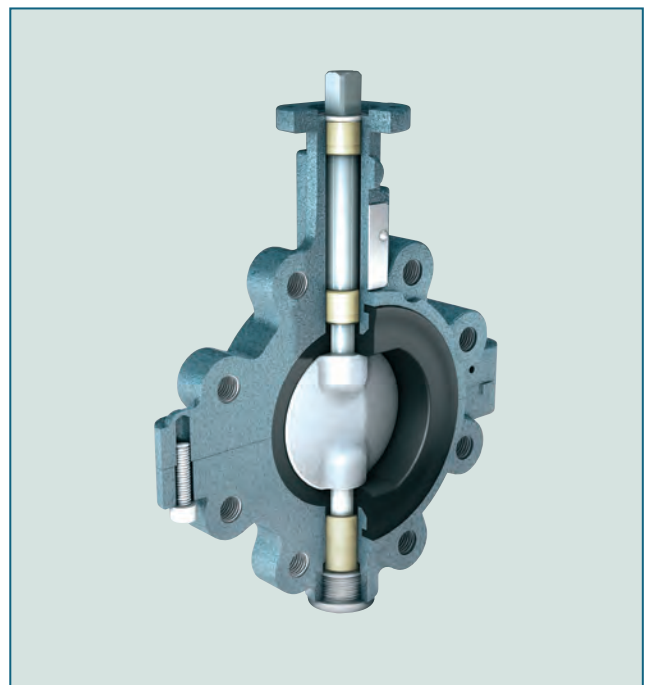
Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +160°C (depending on pressure, medium and material)
Operating pressure:	max. 10 bar

FEATURES

- One piece disc/shaft
- Split body with stainless steel screws
- Insulation height as per plant regulations
- Optional: Special design RWTÜV certified to TA-Air/ VDI 2440
- Triple shaft bearing
- Disc's sealing surface mirror polished
- Materials complying with FDA standards available
- Can be disassembled, material-specific recycling possible

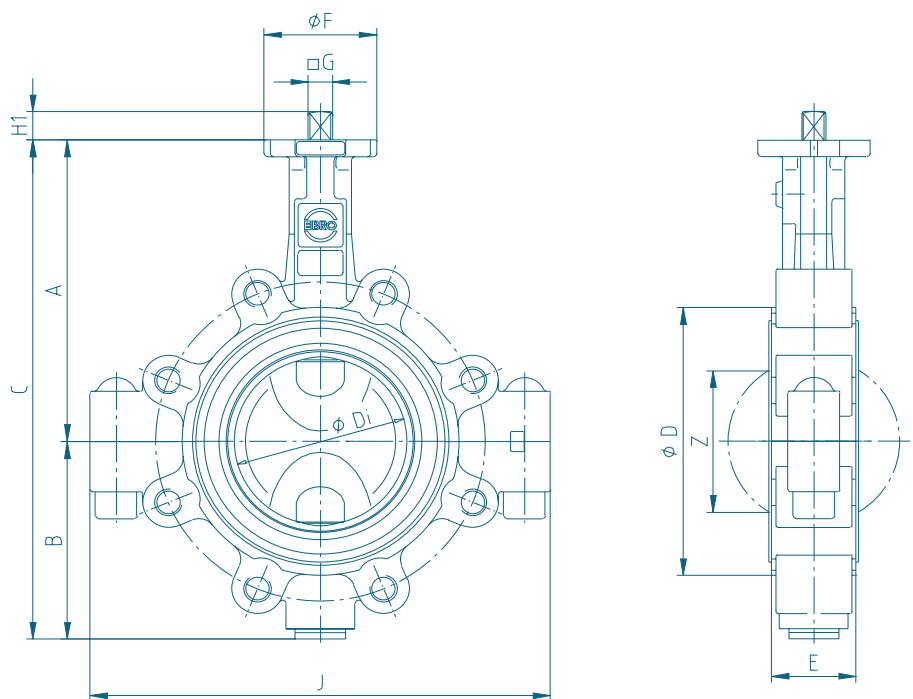
GENERAL APPLICATIONS

- Food and beverage industry
- Purifications plants
- Pharmaceutical industry
- Chemical and petrochemical industry
- Water and waste water industry
- Pneumatic materials handling technology
- Shipbuilding
- Power plants
- Civil engineering
- For paint and laquers, a silicone-free version is available



The split body design allows quick and easy maintenance.

LUG TYPE BUTTERFLY VALVE Z 614-A



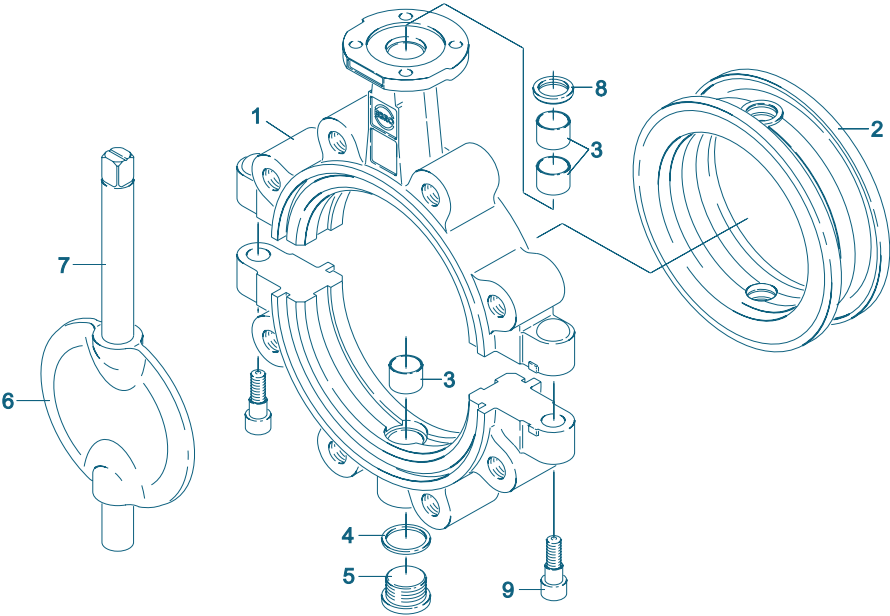
Z 614-A with bare shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	J	Z	
50	2	126	84	210	112	49	43	54	F04	11	13,5	167	25	4,9
65	2½	134	93	227	120	64	46	54	F04	11	13,5	181	45	5,6
80	3	157	104	261	138	79	46	65	F05	14	17	227	64	8,7
100	4	167	115	282	160	99	52	65	F05	14	17	266	84	10,0
125	5	180	127	307	190	124	56	65	F05	14	17	300	110	10,2
150	6	203	150	353	215	149	56	88	F07	17	20	322	138	13,2
200	8	228	176	404	269	199	60	88	F07	17	20	390	189	19,0
250	10	266	212	478	324	249	68	125	F10	22	23,5	481	239	29,7
300	12	291	237	528	374	297	78	125	F10	22	23,5	558	286	37,2

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 614-A

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				5	Plug screw DIN 908			
	Nodular cast iron	EN-JS 1030	GGG 40	60-40-18		Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
2	Seat				6/7	Shaft/Disc one piece			
	NBR	Acrylonitrile butadiene rubber				Stainless Steel	G-X2CrNiMoN26-7-4	1.4469	A 995
	EPDM	Ethylene propylene caoutchouc			8	Wiper ring			
	CSM	Chlorsulphonated polyethylene				PTFE	Polytetrafluorethylene	PTFE	PTFE
	FPM	Fluorocarbon caoutchouc			9	Screw			
	VSI	Silicone rubber				Stainless Steel	A4-70	1.4401	B8M
	AU	Polyurethane elastomer							
3	Bearing bush								
	Brass	MS 58	2.0401	B 45					
4	Seal DIN 7603								
	Copper	Cu	Copper						
						Above-mentioned materials of the basic version, other materials upon request			

Above-mentioned materials of the basic version, other materials upon request

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 614-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
- Powdery (non-lubricant) media Md x 1,3
- Dry gases/high viscous media Md x 1,2
- The values specified are based on the initial breakaway torque
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN (mm)	50	65	80	100	125	150	200	250	300
Size (in)	2	2½	3	4	5	6	8	10	12
MD (Nm)	7	15	18	28	45	110	140	200	280

All values in Nm

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases
- The throttle function is linear at an angle 30° to 70°
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-C



Wafer type butterfly valve for shut-off and control services in the chemical industry.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 SO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19 PAS 1085
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +120°C (depending on working pressure)
Operating pressure:	max. 16 bar

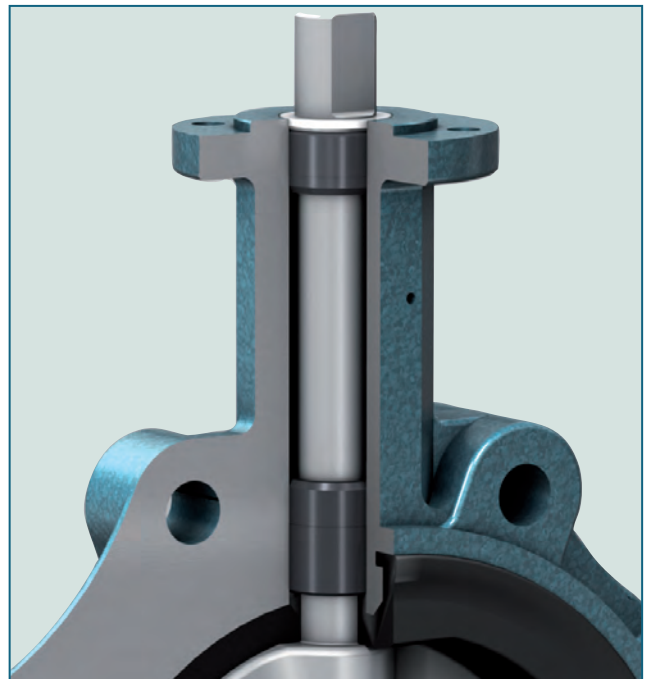
Valve Design
acc. to PAS 1085

FEATURES

- Environmental protection via EBRO-Safety seal
- Split body with stainless steel screws
- Isolation height according to plant prescription
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- TA-Luft/ VDI 2440, RWTÜV certified

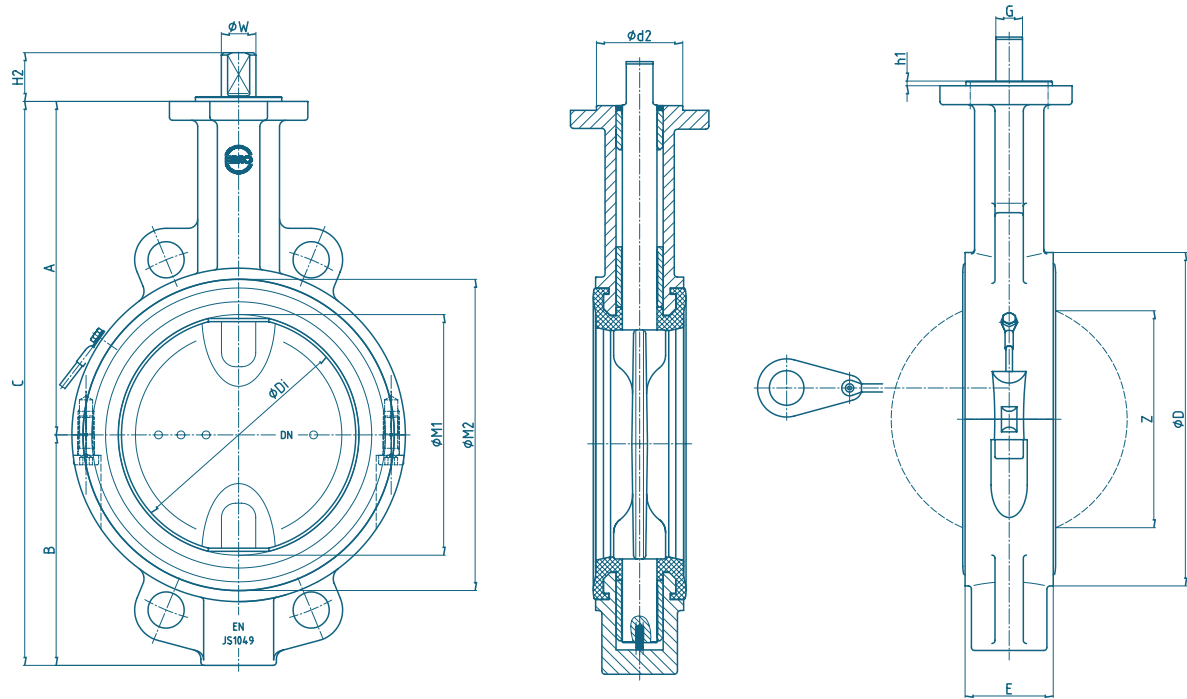
DESIGN FEATURES

- Optimized low torques
- FEM dimensioned components
- Valve neck for 100mm isolation
- Centering holes for easy installation
- Triple shaft bearing
- One-piece shaft and disc
- Double flat shaft acc. to EN standards



Safety seal acc. to TA-Luft/ VDI 2440, RWTÜV

WAFER TYPE BUTTERFLY VALVE Z 611-C



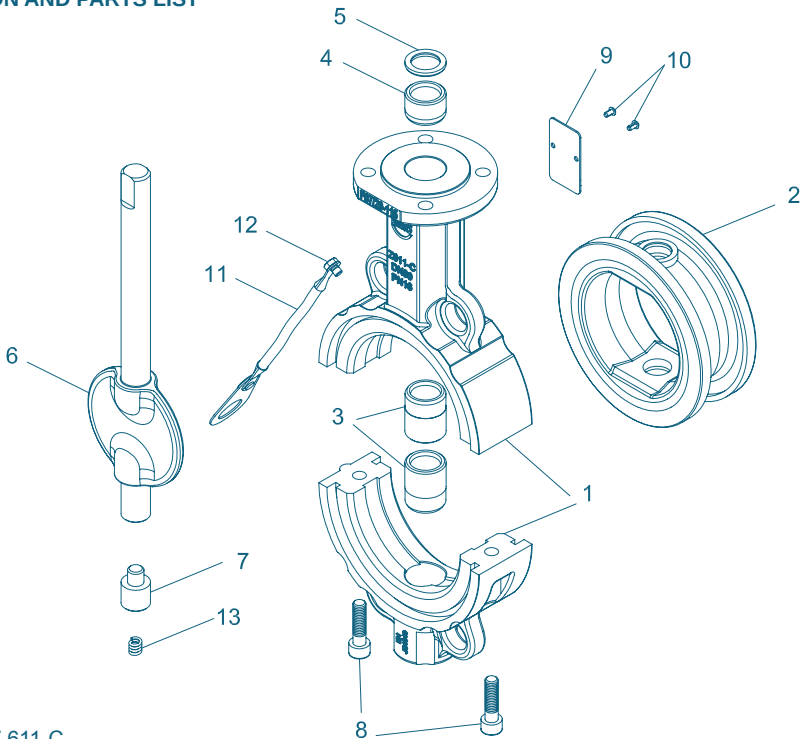
Z 611-C with bare shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]															Weight [kg]
		A	B	C	ØD	ØDi	Ød2	E	ØF	Flange	G	h1	H2	ØM1	ØM2	ØW	
50	2	135	80,5	215,5	95	49	55	43	90	F07	11	3	22	53	86	14	3,2
65	2½	143,5	89	232,5	120	65	55	46	90	F07	11	3	22	68	106	14	4,0
80	3	165	100	265	138	79	55	46	90	F07	14	3	26	82,5	123	18	4,5
100	4	174	111	285	158	99	55	52	90	F07	14	3	26	102	145	18	6,0
125	5	195	124	319	190	124	55	56	90	F07	14	3	26	127	174	18	7,7
150	6	212	147	359	212	149	55	56	90	F07	17	3	31	153	198	22	10,0
200	8	238	172	410	268	199	70	60	125	F10	17	3	31	203	253	22	16,0
250	10	275	209	484	320	249	70	68	125	F10	22	3	40,5	253	305	28	24,5
300	12	303	234	537	370	299	85	78	150	F12	22	3	40,5	301	356	28	33,5

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-C

MATERIAL SPECIFICATION AND PARTS LIST



Wafer type butterfly valve Z 611-C

Pos.	Description	Material	Material-No.	ASTM	Pos.	Description	Material	Material-No.	ASTM
1	Body				8	Screw			
	Nodular Cast Iron	GJS-400-18U-LT	EN-JS 1049	A395		Stainless Steel	A4-70	1.4401	
2	Seat				9	Type plate			
	EPDM-C *					Stainless Steel	A2		
3	Bearing bush				10	Groove pin			
	Steel	42Cr Mo 4 V (nitrided)	1.7225			Stainless Steel	A2		
4	Bearing bush				11	Buttstrap			
	Steel	42Cr Mo 4 V (nitrided)	1.7225						
5	Scraper				12	Screw			
	PTFE	Polytetrafluorethylen	PTFE			Stainless Steel	A4-70	1.4401	
6	Shaft/Disc	one-piece			13	Spiral spring			
	St. Steel /St. Steel *	GX2CrNiMoN26-7-4	1.4469	EN 10213		Spring steel	X10CrNi 18-8	1.4310	301
7	Lower shaft stub (DN 50 - DN 80 only)								
	Stainless Steel	1.4462		EN 10088					

* Other materials upon request

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-C

TORQUE

- The values specified are based on the initial breakaway torque (disc engages from seat, torque than drops)

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN (mm)	50	65	80	100	125	150	200	250	300
Size (in)	2	2½	3	4	5	6	8	10	12
Case of operation I									
MD (Nm) bei Δp=3 bar	7	8	14	18	22	45	70	115	175
MD (Nm) bei Δp=6 bar	8	9	16	22	28	53	95	190	220
MD (Nm) bei Δp=10 bar	9	10	18	26	34	60	125	245	290
MD (Nm) bei Δp=16 bar	10	14	23	30	48	80	165	330	380
Case of operation II									
MD (Nm) bei Δp=3 bar	14	15	21	23	30	90	160	295	335
MD (Nm) bei Δp=6 bar	15	16	23	27	35	96	170	345	360
MD (Nm) bei Δp=10 bar	16	17	25	30	41	100	180	330	380
MD (Nm) bei Δp=16 bar	16	19	31	37	51	105	210	400	430
MAST (Nm)*	105	105	250	250	250	484	484	1020	1020

Case of operation I: Fluid or lubricant media

*Maximum torques (Nm)

Case of operation II: Powder or gases (dry seat)

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at a Δp of 1 bar

- Permissible velocity of flow
- Vmax 4,5 m/s for liquids
- Vmax 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

Subject to change without notice

For further values, please contact our engineers.

LUG TYPE BUTTERFLY VALVE Z 614-C



Lug type butterfly valve for shut-off and control services in the chemical industry.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 SO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19 PAS 1085
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +120°C (depending on working pressure)
Operating pressure:	max. 16 bar

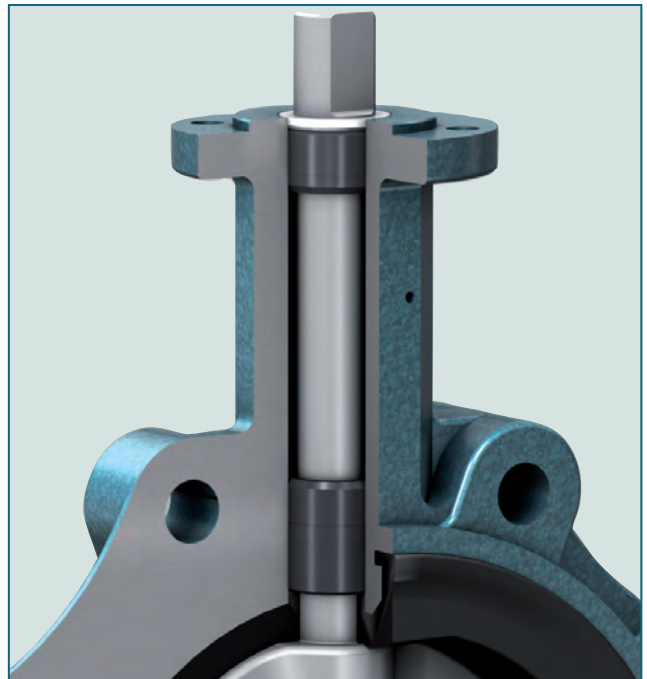
Valve Design
acc. to PAS 1085

FEATURES

- Environmental protection via EBRO-Safety seal
- Split body with stainless steel screws
- Isolation height according to plant prescription
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- TA-Luft/ VDI 2440, RWTÜV certified

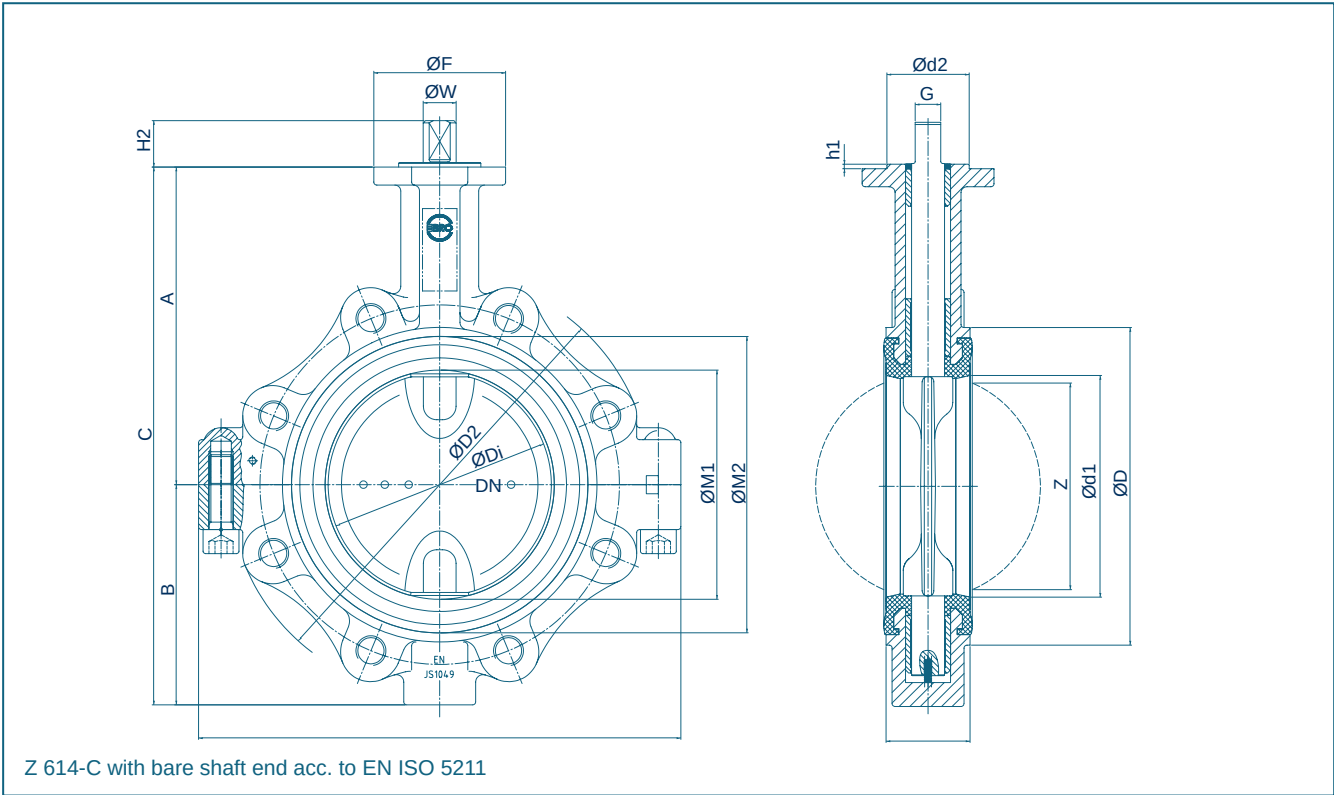
DESIGN FEATURES

- Optimized low torques
- FEM dimensioned components
- Valve neck for 100mm isolation
- Triple shaft bearing
- One-piece shaft and disc
- Double flat shaft acc. to EN standards



Safety seal acc. to TA-Luft/ VDI 2440, RWTÜV.

LUG TYPE BUTTERFLY VALVE Z 614-C

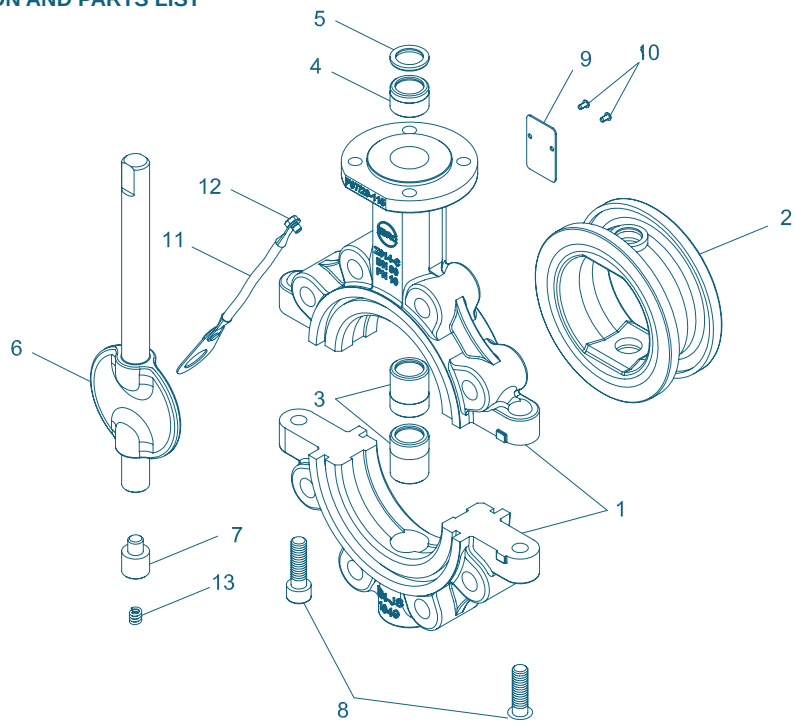


DN [mm]	Size [in]	Dimensions [mm]																	Weight [kg]	
		A	B	C	ØD	ØD2	ØDi	Ød2	E	Flange	ØF	G	h1	H2	J	ØM1	ØM2	ØW		Z
50	2	135	80,5	215,5	95	155	49	55	43	F07	90	11	3	22	167	53	86	14	25	3,7
80	3	165	100	265	138	192	79	55	46	F07	90	14	3	26	227	82,5	123	18	65	6,3
100	4	174	111	285	158	212	99	55	52	F07	90	14	3	26	266	102	145	18	85	8,5
150	6	212	147	359	212	280	149	55	56	F07	90	17	3	31	322	153	198	22	139	13,5
200	8	238	172	410	268	335	199	70	60	F10	125	17	3	31	390	203	253	22	190	21,5
250	10	275	209	484	320	395	249	70	68	F10	125	22	3	40,5	481	253	305	28	240	32,5
300	12	303	234	537	370	460	299	85	78	F12	150	22	3	40,5	558	301	356	28	287	48,5

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 614-C

MATERIAL SPECIFICATION AND PARTS LIST



Lug type butterfly valve Z 614-C

Pos.	Description	Material	Material-No.	ASTM	Pos.	Description	Material	Material-No.	ASTM
1	Body				8	Screw			
	Nodular Cast Iron	GJS-400-18U-LT	EN-JS 1049	A395		Stainless Steel	A4-70	1.4401	
2	Seat				9	Type plate			
	EPDM-C *					Stainless Steel	A2		
3	Bearing bush				10	Groove pin			
	Steel	42Cr Mo 4 V (nitrided)	1.7225			Stainless Steel	A2		
4	Bearing bush				11	Buttstrap			
	Steel	42Cr Mo 4 V (nitrided)	1.7225						
5	Scraper				12	Screw			
	PTFE	Polytetrafluorethylen	PTFE			Stainless Steel	A4-70	1.4401	
6	Shaft/Disc	one-piece			13	Spiral spring			
	St. Steel /St. Steel *	GX2CrNiMoN26-7-4	1.4469	EN 10213		Spring steel	X10CrNi 18-8	1.4310	301
7	Lower shaft stub (DN 50 - DN 80 only)								
	Stainless Steel		1.4462	EN 10088					

* Other materials upon request

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 614-C

TORQUE

- The values specified are based on the initial breakaway torque (disc engages from seat, torque than drops)

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN (mm)	50	80	100	150	200	250	300
Size (in)	2	3	4	6	8	10	12
Case of operation I							
MD (Nm) bei $\Delta p=3$ bar	7	14	18	45	70	115	175
MD (Nm) bei $\Delta p=6$ bar	8	16	22	53	95	190	220
MD (Nm) bei $\Delta p=10$ bar	9	18	26	60	125	245	290
MD (Nm) bei $\Delta p=16$ bar	10	23	30	80	165	330	380
Case of operation II							
MD (Nm) bei $\Delta p=3$ bar	14	21	23	90	160	295	335
MD (Nm) bei $\Delta p=6$ bar	15	23	27	96	170	345	360
MD (Nm) bei $\Delta p=10$ bar	16	25	30	100	180	330	380
MD (Nm) bei $\Delta p=16$ bar	16	31	37	105	210	400	430
MAST (Nm)*	105	250	250	484	484	1020	1020

Case of operation I: Fluid or lubricant media

Case of operation II: Powder or gases (dry seat)

*Maximum torques (Nm)

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at a Δp of 1 bar

- Permissible velocity of flow
 - V_{max} 4,5 m/s for liquids
 - V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-K



Resilient seated wafer type butterfly valve in split - body design for semi-corrosive media.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150 AS 4087 PN16/21
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C bis +120°C (depending on seat material)
Operating pressure:	max. 10 bar

FEATURES

- One piece disc/shaft, centric bearing
- Split body with stainless steel screws
- Insulation height as per plant regulations
- Can be installed in any desired position
- Triple shaft bearing
- Disc's sealing surface mirror polished
- Materials complying with FDA standards available
- Can be disassembled, material-specific recycling possible

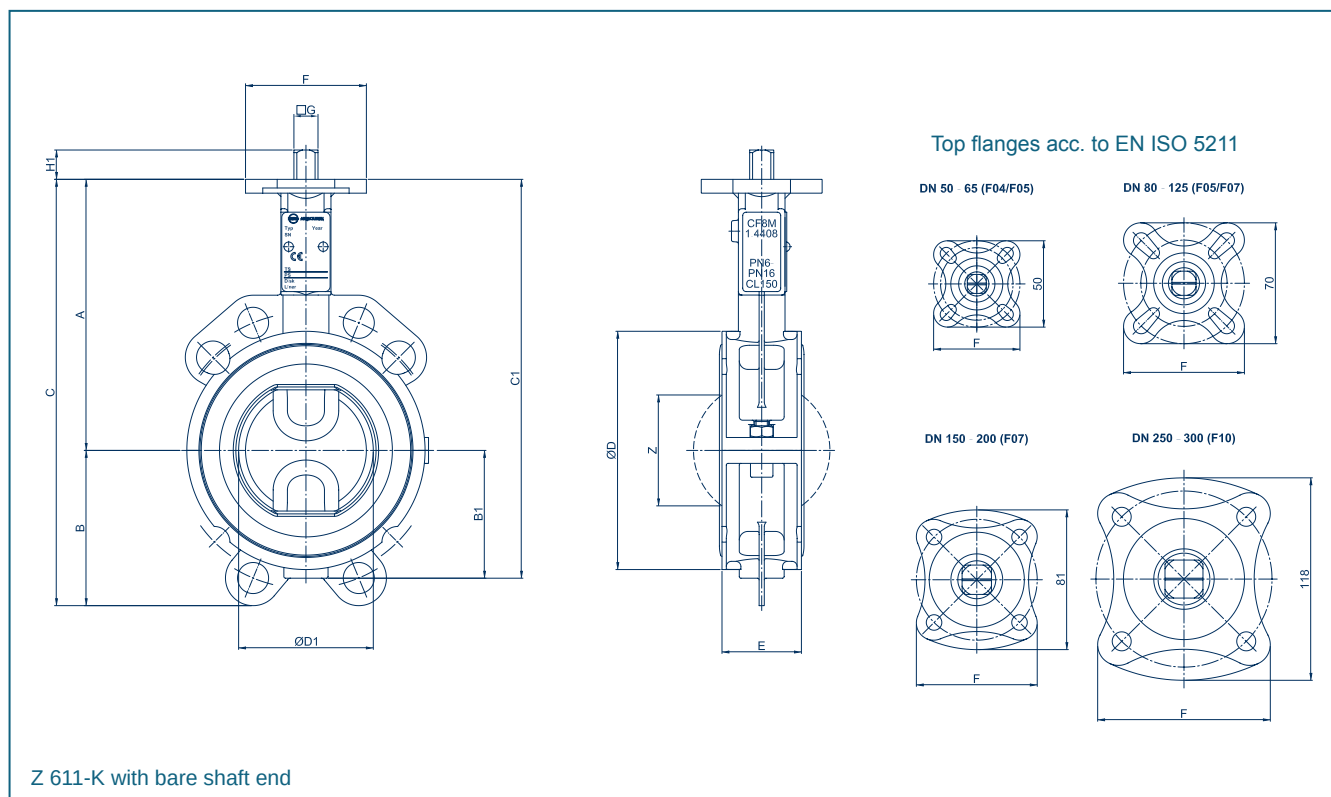
GENERAL APPLICATIONS

- Food and beverage industry



The split body design allows quick and easy maintenance. Illustration with EHEDG certified flanges.

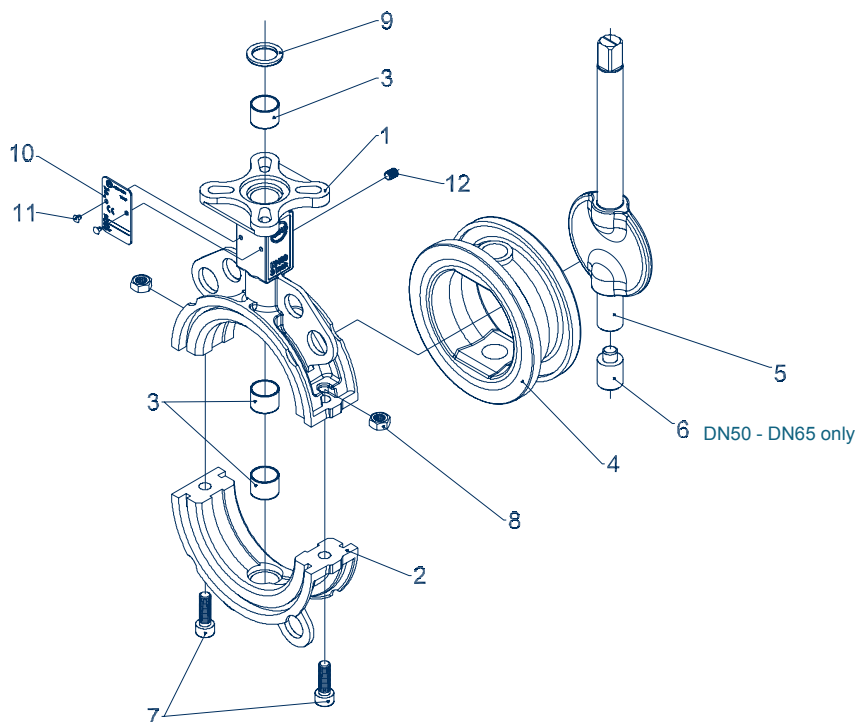
WAFER TYPE BUTTERFLY VALVE Z 611-K



DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	B1	C	C1	ØD	ØD1	E	F	□G	H1	Z	
50	2	126	-	68	-	194	106	49	43	50	11	13,5	25	1,8
65	2½	134	83	77	217	211	120	64	46	50	11	13,5	45	2,2
80	3	157	90	74	247	231	138	79	46	70	14	17,0	64	2,9
100	4	167	104	84	271	251	160	99	52	70	14	17,0	84	3,6
125	5	180	118	98	298	278	190	124	56	70	14	17,0	110	4,8
150	6	203	130	132	333	335	215	149	56	70	17	20,0	138	6,3
200	8	228	161	157	389	385	269	199	60	70	17	20,0	189	10,3
250	10	266	195	195	461	461	324	249	68	100	22	23,5	239	18,5
300	12	291	229	220	520	511	380	297	78	100	22	23,5	286	25,0

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-K



Pos.	Description	Material	Material-Nr.	ASTM	Pos.	Description	Material	Material-Nr.	ASTM
1	Upper body				7	Screw			
		Stainless Steel	1.4408	CF8M			Stainless Steel	A4-70	B8M
2	Lower body				8	Hex- nut			
		Stainless Steel	1.4408	CF8M			Stainless Steel	A4	
3	Bearing bush				9	Wiper ring			
		Steel / PTFE					PTFE		
4	Seat				10	Type plate			
		NBR					Stainless Steel	1.4301	
		EPDM			11	Round head grooved pin			
		PTFE					Stainless Steel	A2	
5	Disc/ Shaft				12	Screw			
		Stainless Steel	1.4469				Stainless Steel	A4	
6	Lower shaft stub								
		Stainless Steel	1.4469						

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-K

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media and EPDM liner

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	50	65	80	100	125	150	200	250	300
Size [in]	2	2½	3	4	5	6	8	10	12
MD [Nm]	7	15	18	28	45	110	140	200	280

All values in Nm

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
Vmax 4,5 m/s for liquids,
Vmax 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-B



A universally applicable wafer type valve with vulcanised liner according to EN 593.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 600
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +120°C (depending on pressure, medium and material)
Operating pressure:	max. 16 bar
Vacuum:	0,1 bar absolute

FEATURES

- Vulcanised liner
- Triple shaft bearing prevent shaft deflection
- The valve body and disc are accurately machined which results in low operating torque and long service life
- Four flange mounting holes ensure correct valve location when installing
- Can be installed in any desired position
- Maintenance-free
- Single flange mounting wafer type: DN 50 - 250: 3 bar
DN 300 - 600: 2 bar

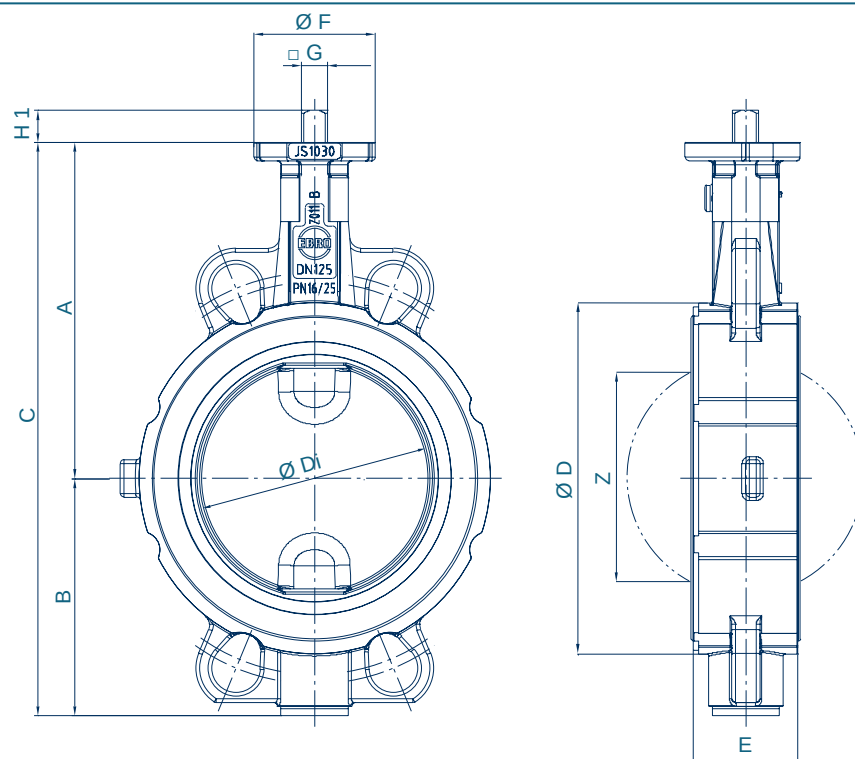
GENERAL APPLICATIONS:

- Chemical and petrochemical industries
- Water and waste water technology
- Pneumatic materials handling technology
- Shipbuilding
- Power generation industry
- Food industry
- Civil engineering



Lug type version Z014-B

WAFER TYPE BUTTERFLY VALVE Z 011-B



Z 011-B with bare shaft end according to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]											Weight [kg] (EN-JS 1030)	
		A	B	C	D	Di	E	F	Flange	G	H1	Z	2 Piece shaft	TS- shaft
50	2	126	84	210	95	49	43	54	F04	11	14	25	2,5	-
65	2½	135	93	227	115	64	46	54	F04	11	14	45	3,0	-
80	3	157	104	261	138	79	46	65	F05	14	17	65	4,0	4,5
100	4	168	115	282	158	99	52	65	F05	14	17	85	5,0	5,6
125	5	180	127	307	188	124	56	65	F05	14	17	111	7,0	7,6
150	6	203	151	354	212	148	56	88	F07	17	20	139	9,5	11,0
200	8	229	177	405	268	199	60	88	F07	17	20	190	13,5	15,3
250	10	266	212	478	320	248	68	125	F10	22	24	240	22,5	25,5
300	12	291	240	531	370	296	78	125	F10	22	24	287	30,5	34,0
350	14	332	270	602	415	338	78	150	F12	27	29	330	43,5	49,1
400	16	363	314	677	473	390	102	150	F12	27	29	378	62	67,8
450	18	397	335	732	530	426	114	175	F16	36	38	417	98	102,5
500	20	437	371	808	574	489	127	175/210	F14/F16	36	38	474	110	116,5
600	24	498	435	933	675	582	154	210/300	F16/F25	46	48	563	185	212,0

Subject to change without notice

Exploded view diagram of a butterfly valve assembly. The main components are labeled with numbers 1 through 17. The diagram shows the valve body (1), cover plate (2), and various internal components like the shaft (10), disc (7), and bearings (3, 4, 5). Callouts 14-17 point to specific parts of the assembly.

TS-Version Version with splitted shaft

Pts. 14-17:
Cover plate for
valve $\geq$ DN 350

Subject to change without notice

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-B

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
 - Powdery (non-lubricant) media
Md x 1,3
 - Dry gases/high viscous media
Md x 1,2
 - The values specified are based on the initial breakaway torque
 - Dynamic torque specification available upon request
- Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure			
		3 [bar]	6 [bar]	10 [bar]	16 [bar]
50	2	5	7	7	9
65	2½	7	9	15	18
80	3	14	18	24	28
100	4	9	18	25	30
125	5	15	22	45	59
150	6	36	45	80	100
200	8	59	76	140	200
250	10	150	180	200	300
300	12	200	240	280	360
350	14	350	540	640	1200
400	16	650	900	1300	1700
450	18	720	1000	1400	2000
500	20	1100	1400	2255	3000
600	24	1200	2100	3000	4000

All values in Nm

K_V-VALUES

- The K_V-values [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
- Permissible velocity of flow
Vmax 4,5 m/s for liquids,
Vmax 70 m/s for gases
- The throttle function is linear at an angle 30° to 70°
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,3	5,5	13	23	35	48	62	76
65	2½	3,8	8,2	22	44	73	108	148	192
80	3	11	14	37	77	132	200	277	363
100	4	17	22	93	180	277	366	429	448
125	5	26	34	305	521	769	1027	1273	1484
150	6	38	49	187	385	640	918	1184	1406
200	8	67	87	315	640	1093	1645	2268	2934
250	10	105	136	501	947	1574	2366	3305	4374
300	12	152	197	670	1526	2655	3905	5124	6159
350	14	206	267	997	2076	3456	4965	6429	7676
400	16	269	349	1141	2567	4419	6439	8357	9920
450	18	341	442	1356	3140	5520	8187	10827	13130
500	20	421	546	1986	4312	7465	11123	14962	18659
600	24	606	786	2778	5822	9976	14889	20208	25583

Subject to change without notice

INFLATABLE SEAT “INFLAS”



Resilient seated butterfly valve type Z011-A with inflatable liner.

TECHNICAL DATA

The sealing system was developed for highly abrasive or very sensitive media.

Available for all resilient seated butterfly valves with interchangeable seat.

In closed position, the liner will be pressed against the disc using low air pressure. The media is sealed off securely.

Before opening the disc, the chamber is vented behind the liner. This creates an air gap between the liner and the disc, hence low torque is required to open the valve.

ADVANTAGES

Extremely low wear of parts even in contact with abrasive media

Low sized actuators due to reduced torques

Low grinding/-clamping of sensitive media between disc and liner

THE EBRO CONTROL

1. Signal “OPEN” appears as a digital signal
2. The air pressure is reduced behind the liner
3. The valve will open if there is no pressure on the liner
4. Position “OPEN” will be confirmed
5. When the signal disappears, the valve will close
6. Position „CLOSED“ will be confirmed
7. When the valve is closed, the liner will be pressurised
8. When pressure is on the liner „OK“ will be reported

GENERAL APPLICATIONS

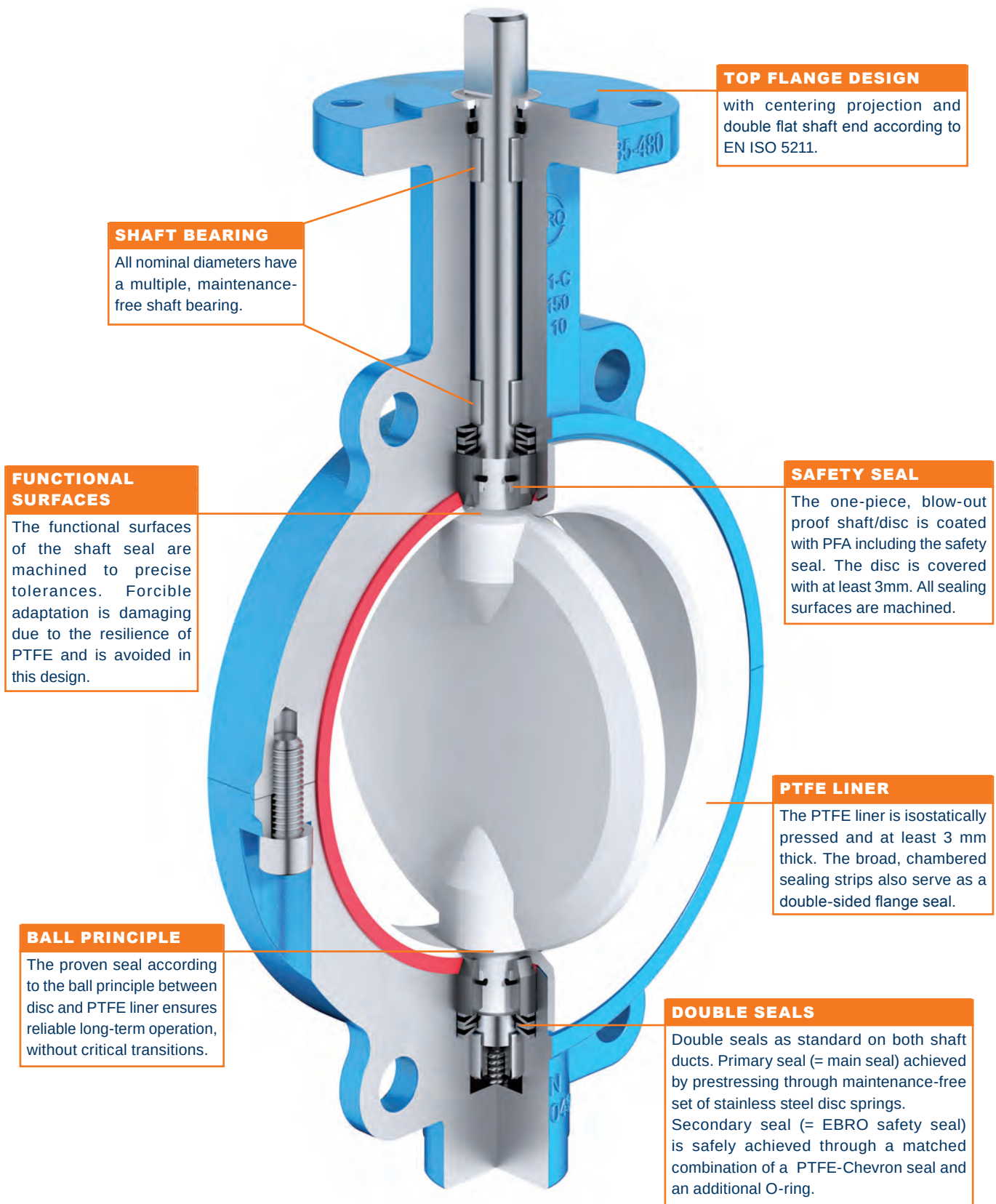
- Bulk goods
- Food industry
- Pneumatic conveying systems
- Weighing technology



EBRO pressure control/-monitoring

QUALITY FEATURES

PTFE-VALVE T 211-C



PTFE-LINED BUTTERFLY VALVE T 211-A



Fully PTFE-lined wafer type valve for corrosive and aggressive media. The patented shaft seal design ensures reliability even with high-corrosive applications.

TECHNICAL DATA

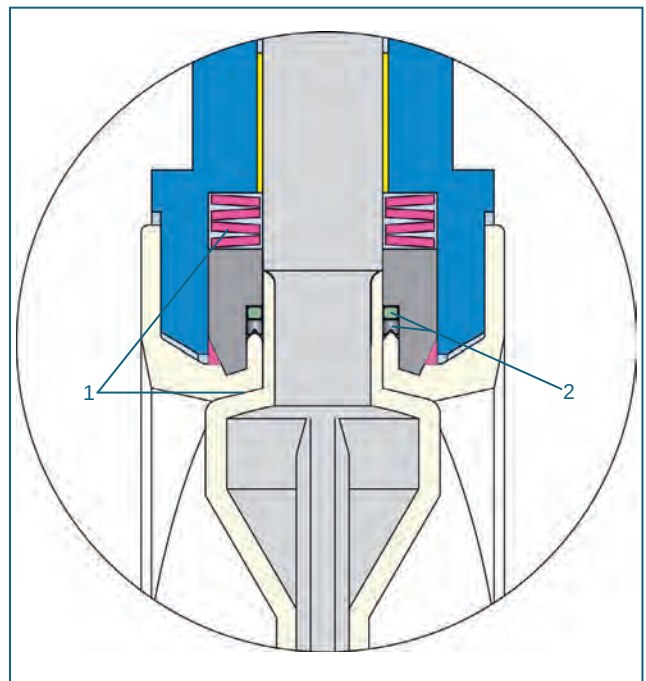
Nominal diameter:	DN(40) 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150 AS 4087
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	-40°C to +200°C (depending on operation pressure)
Operating pressure:	max. 10 bar (16 bar for special version)
Vacuum:	up to 1 mbar absolute (with silicon elastomer inserts) from -10°C bis +160°C

FEATURES

- PTFE-lined butterfly valve for chemically toxic and highly corrosive media
- Environmental protection via EBRO-Safety seal
- Splitted body design
- Isolation height according to plant prescription
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- Material conform to FDA EG 1935/2004
- Optional: Special design RWTÜV certified to TA-Air/ VDI 2440

GENERAL APPLICATIONS

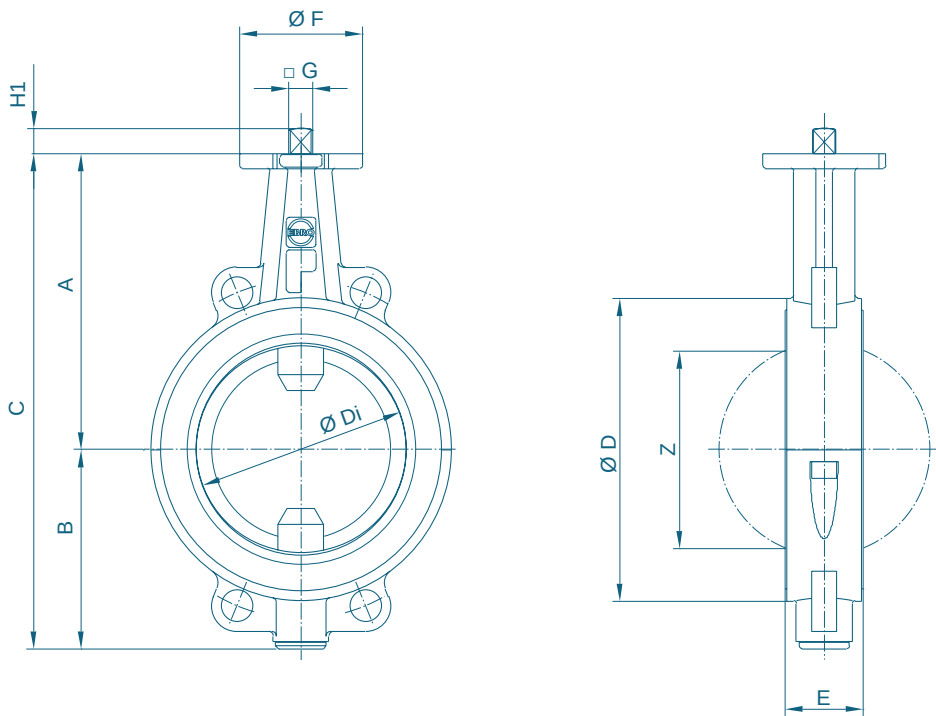
- Chemically highly corrosive and toxic media
- Purification plants
- Pharmaceutical industry
- Adhesives, paper industry, dissolver
- Paint manufacture and processing
- Food industry
- Transport of hazardous materials (EN 14432)
- Chlorine production
- Processing of ore



Safety seal at both shaft ends:

1. Primary sealing by means of a belleville spring washer, transmitting prestress on the spherical segment area.
2. Secondary sealing of the shaft by means of PTFE-Chevron and o-ring.

PTFE-LINED BUTTERFLY VALVE T 211-A



T 211-A with bare shaft end acc. to EN ISO 5211

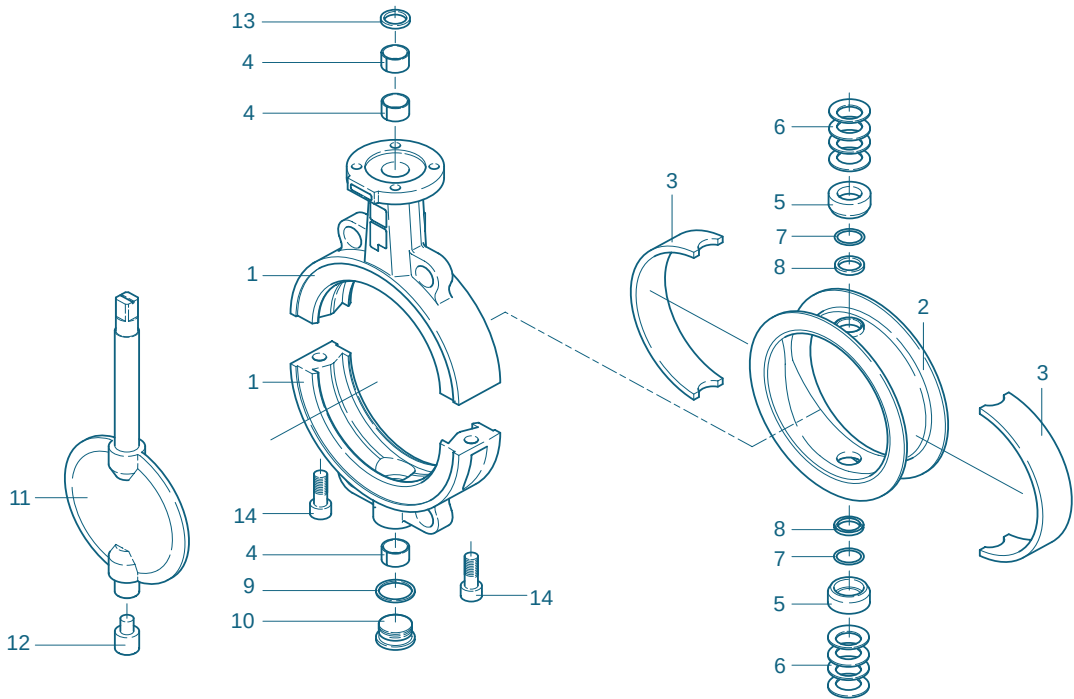
DN [mm]	Size [in]	Dimensions [mm]											Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	Z	
40*/50	2	135	80	215	112	60,8	46	54	F04	11	12	41	2,8
65	2½	150	82	232	120	60,8	46	54	F04	11	12	41	3,4
80	3	157	108	265	138	79,5	46	65	F05	14	16	66	4,5
100	4	180	118	298	160	99,0	52	65	F05	14	16	85	5,9
125	5	195	130	325	190	124,5	56	90	F07	17	19	112	8,1
150	6	210	142	352	215	150,5	56	90	F07	17	19	141	9,5
200	8	240	169	409	269	195,5	60	90	F07	17	19	187	15
250	10	275	217	492	324	247,5	68	125	F10	22	24	239	24
300	12	300	240	540	374	292,5	78	125	F10	22	24	283	34

*DN 50 drilled DN 40

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 211-A

MATERIAL SPECIFICATION AND PARTS LIST



PTFE-lined butterfly valve DN 80 - DN 200

Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				8**	Chevron seal			
	Nodular Cast Iron	GGG-40.3	EN-JS 1025	A 395		PTFE	Polytetrafluorethylene	PTFE	PTFE
	Stainless Steel	G-X6CrNiMo18-10	1.4408	CF8M	9	Seal			
		X2CrNiMo17-12-2	1.4404	316 L		Stainless Steel	X5CrNi18-10	1.4301	304
2**	Seat				10	Plug screw DIN 908			
	PTFE	Polytetrafluorethylene	PTFE	PTFE *		Stainless Steel	G-X6CrNiMo18-10	1.4408	CF8M
3**	Elastomer insert				11***	Disc/Shaft	one-piece		
	Silicon	Silicon rubber	MVQ	VMQ		St.Steel/ St.Steel	G-X2CoNiMoN26-7-4	1.4469	Duplex
4	DU-bearing					St.Steel/ PTFE	G-X2CoNiMoN26-7-4	1.4469/	Duplex
	PTFE coated						Polytetrafluorethylene	PTFE	PTFE *
5**	Trust collar				12	Lower shaft stub			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		Stainless Steel	X39CrMo17-1	1.4122	
6	Bellev. spr. washer				13	Wiper ring			
	Stainless Steel	X12CrNi177	1.4568	631		PTFE	Polytetrafluorethylene	PTFE	PTFE
7**	O-ring				14	Screw			
	FPM	Fluorocarbon caoutchouc	FPM	FKM		Stainless Steel	A4-70	1.4401	B8M
					Above-mentioned materials of the basic version, other materials upon request				

* optional: electrically conductive

** recommended spare parts

*** recommended for coated discs

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 211-A

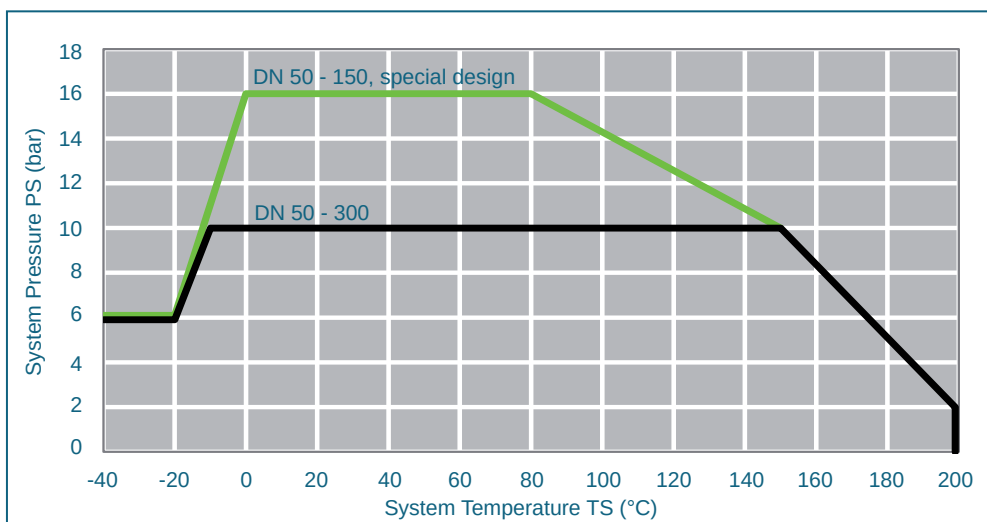
TORQUE

- The torque values specified (Md) are based on dry media and are measured with air at a temperature of 20 °C
- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

PRESSURE/TEMPERATURE DIAGRAM

DN [mm]	40/50	65	80	100	125	150	200	250	300
Size [in]	2	2½	3	4	5	6	8	10	12
MD [Nm]	40	40	70	95	130	170	230	350	480



Pressure-Temperature-Diagram for valves with Silicone elastomer inserts

Service limitation with EPDM elastomer inserts from -10°C up to +120°C

Service limitation with Fluor carbon inserts (FPM) from -10°C up to +180°C

Vacuum service to 1mbar absolute, from -10°C up to +160°C. Valve installation between flanges

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

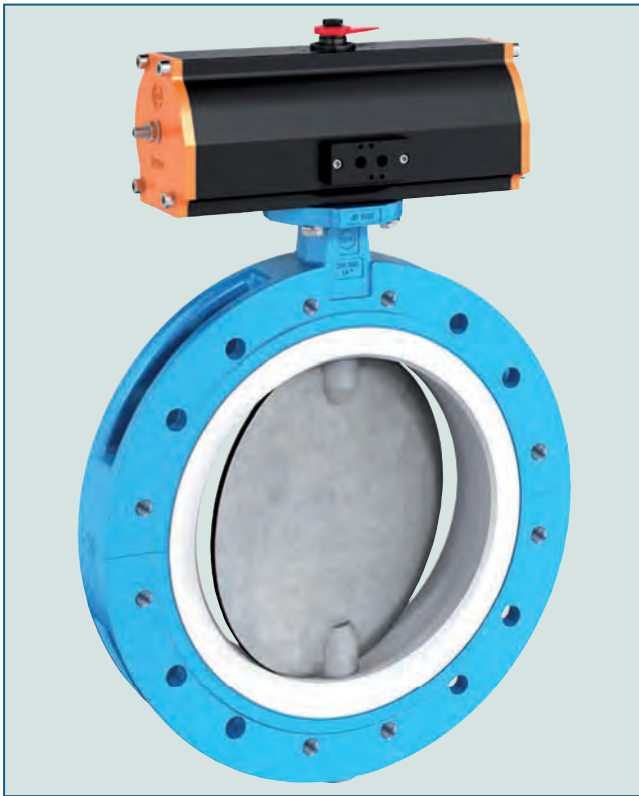
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
1) K _V -values metal disc									
40/50	2	1	8	24	50	70	100	140	210
65	2½	1	8	24	50	70	100	140	210
80	3	1,2	15	44	95	124	180	300	520
100	4	8	25	60	170	210	280	540	980
125	5	15	52	125	250	350	520	840	1400
150	6	35	95	190	350	460	850	1300	2300
200	8	69	253	457	729	1110	1783	2570	3020
250	10	120	380	690	1200	1680	2650	4500	6600
300	12	165	504	937	1512	2275	3795	6810	12800
2) K _V -values PTFE-disc									
40/50	2	1,5	12	28	52	70	96	110	150
65	2½	1,5	12	28	52	70	96	110	150
80	3	2,5	20	48	88	118	160	200	250
100	4	12	32	68	170	210	260	500	780
125	5	18	60	135	260	380	480	790	1250
150	6	45	105	205	370	490	720	1250	2200
200	8	88	297	520	695	1130	1700	2500	2700
250	10	148	430	695	1250	1800	2520	4350	5400
300	12	263	557	960	1560	2450	4300	6700	9400

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 212-A



Double flanged PTFE-lined butterfly valve for shut-off and control services in the chemical industry.

TECHNICAL DATA

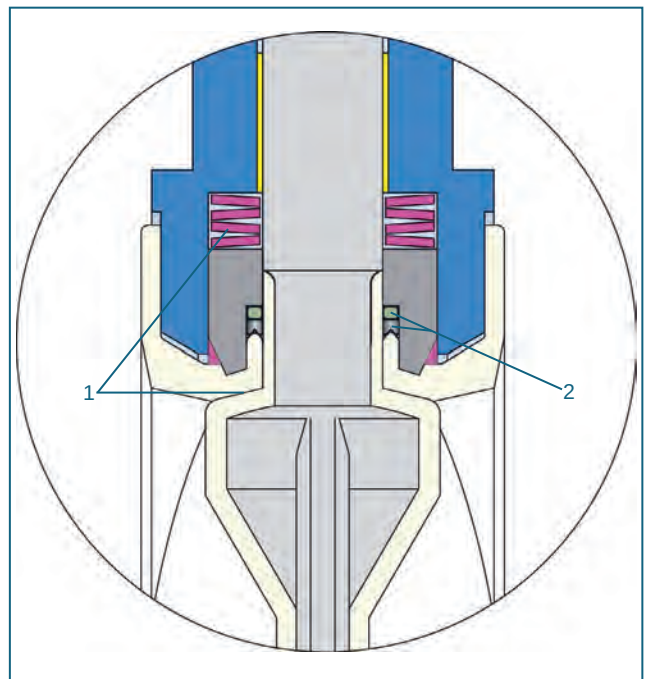
Nominal diameter:	DN 350 - DN 900
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150 ASME B16.47, Series A, Series B AS 4087
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	-40°C to +200°C (depending on nominal diameter and operation pressure)
Operating pressure:	max. 6 bar (10 bar for special version)
Vacuum:	DN 350 - 600 max. 200mbar absolut DN 700 - 900 max. 500mbar absolut (with silicon elastomer inserts)

FEATURES

- PTFE-lined butterfly valve for chemically toxic and highly corrosive media
- Environmental protection via EBRO-Safety seal
- Splitted body design
- Isolation height according to plant prescription
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- Material conform to FDA to EG 1935/2004
- Optional: Special design RWTÜV certified to TA-Air/ VDI 2440

GENERAL APPLICATIONS

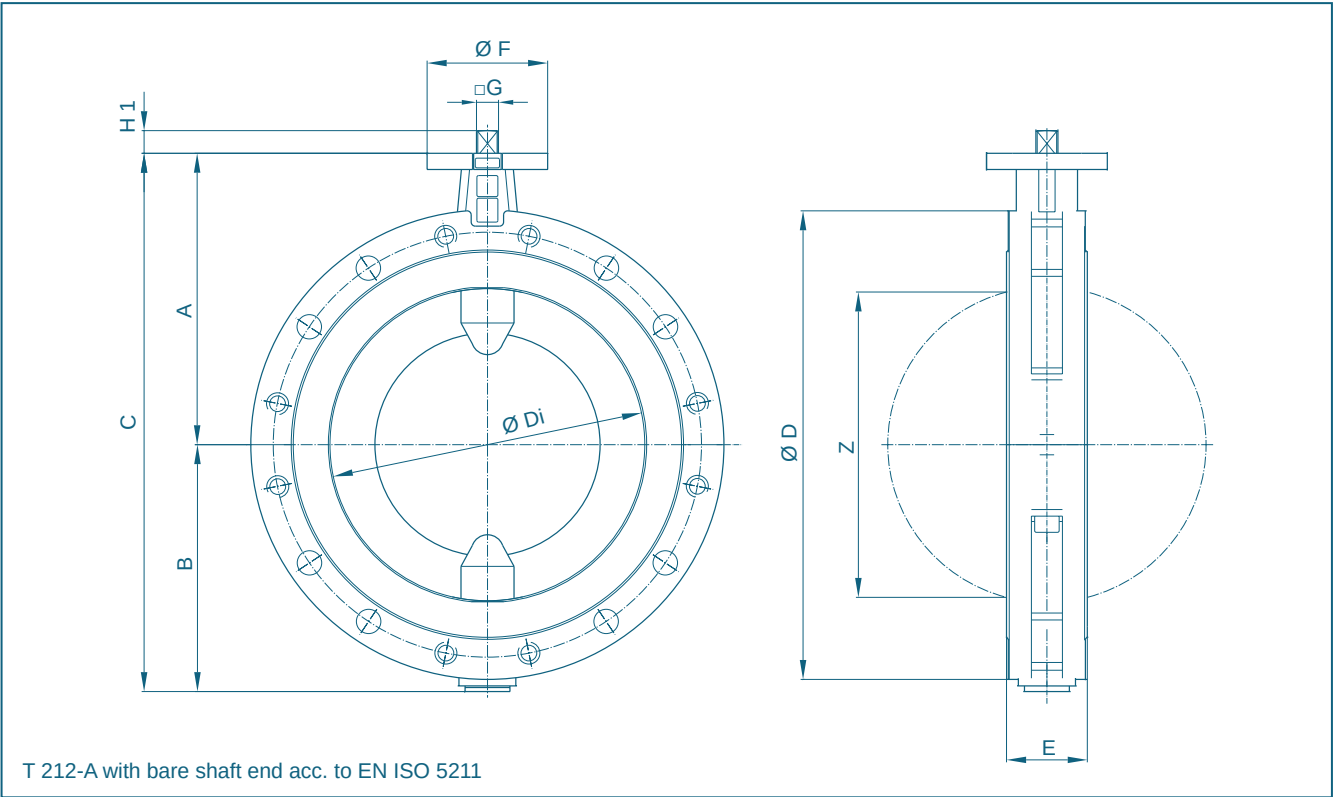
- Chemically highly corrosive and toxic media
- Purification plants
- Pharmaceutical industry
- Adhesives, paper industry, dissolver
- Paint manufacture and processing
- Food industry
- Chlorine production
- Processing of ore



Safety seal at both shaft ends:

- 1.Primary sealing by means of a bellville spring washer, transmitting prestress on the spherical segment area.
- 2.Secondary sealing of the shaft by means of PTFE-Chevron and o-ring.

PTFE-LINED BUTTERFLY VALVE T 212-A



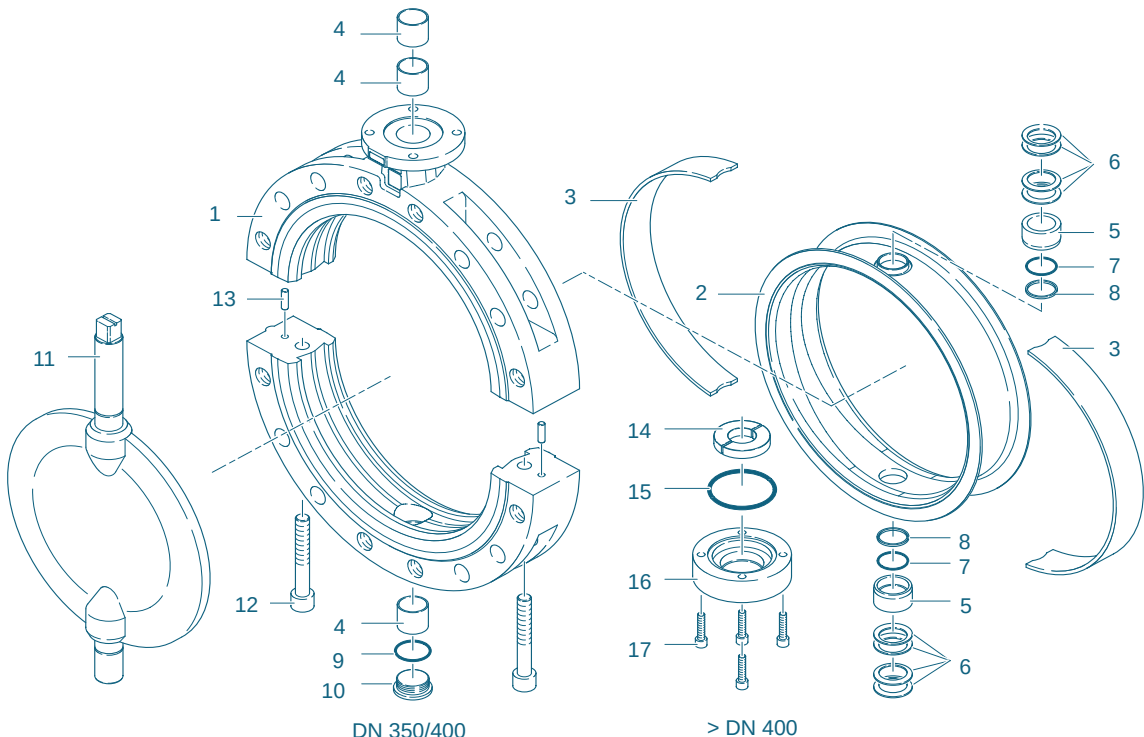
DN [mm]	Size [in]	Dimensions [mm]											Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	Z	
350	14	330	277	607	535	338	78(92)*	150	F12	27	29	327	68
400	16	360	305	665	580	389	102	150	F12	27	29	377	95
450	18	397	363	760	639	437	114	175	F14	36	38	423	130
500	20	437	390	827	715	490	127	175	F14	36	38	475	170
600	24	498	462	960	830	579	154	210	F16	46	48	560	270
700	28	580	496	1076	927	676	165	210	F16	46	47	662	410
750	30	610	538	1148	985	724	165	298	F25	72	108	712	465
800	32	630	563	1193	1060	770	190	298	F25	72	108	759	570
900	36	696	640	1336	1170	881	203	298	F25	80	110	859	750

* Face to face dim. acc. to EN 558 Tab. 20 (92mm)

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 212-A

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				11***	Disc/Shaft (one-piece type)			
	Nodular Cast Iron	GGG-40.3	EN-JS 1025	A 395		St. Steel/St. Steel	X2CrNiMo22-5-3/	1.4462/	Duplex
2**	Seat						X2CrNiMo 22-5.-3	1.4462	
	PTFE	Polytetrafluorethylene	PTFE	PTFE *		St.Steel/PFA coated	X2CrNiMo22-5-3/	1.4462/	Duplex/
3**	Elastomer insert						St52.3-Perfluorakoxy	1.0570-PFA	St./PFA*
	Silicon	Silicon rubber	MVQ	VMQ	12	Screw			
4	DU-bearing					Stainless Steel	A4-70	1.4401	B8M
	PTFE coated				13	Set screw			
5**	Thrust collar					Steel	9SMnPb28K	1.0718	SAE12L14
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316	14	Shaft retainer			
6	Belleville spring washer					Steel	St37-2		
	Stainless Steel	X12CrNi177	1.4568	631	15**	O-ring			
7**	O-ring					FPM	Fluorocarbon caoutchouc	FPM	FKM
	FPM	Fluorocarbon caoutchouc	FPM	FKM	16	Cover plate			
8**	Chevron seal					Steel	St37-2		
	PTFE	Polytetrafluorethylene	PTFE	PTFE	17	Screw			
9	Seal					Stainless Steel	A4-70	1.4401	B8M
	Stainless Steel	X5CrNi18-10	1.4301	304					
10	Plug screw DIN 908								
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M					
						Above-mentioned materials of the basic version, other materials upon request			

* optional: electrically conductive

** recommended spare parts

*** recommended for coated discs

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 212-A

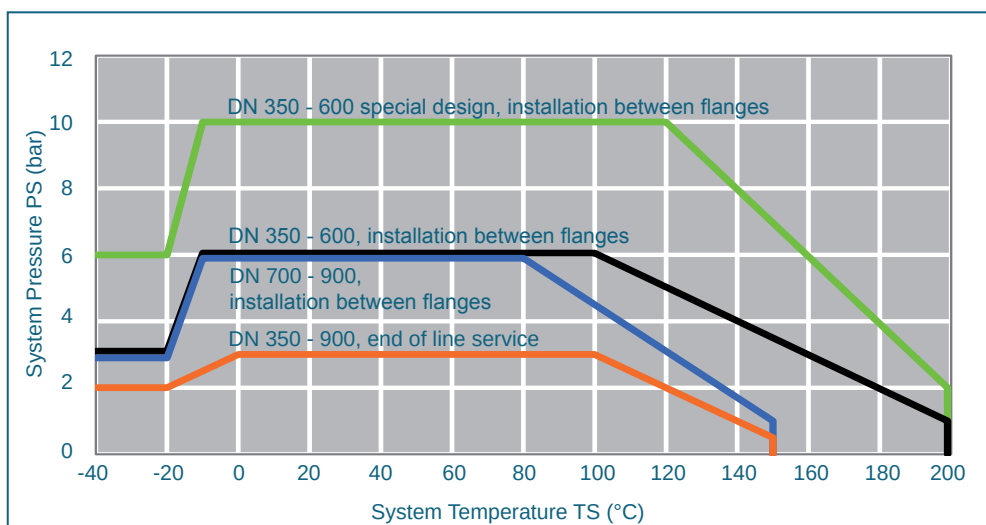
TORQUE

- The torque values specified (Md) are based on dry media and are measured with air at a temperature of 20 °C
- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	350	400	450	500	600	700	750	800	900
Size [in]	14	16	18	20	24	28	30	32	36
MD [Nm]	720	980	1200	1500	2500	3000	3500	4500	6000

PRESSURE/TEMPERATURE DIAGRAM



Pressure-Temperature-Diagram for valves with Silicone elastomer inserts.

Other elastomer inlays on request

Vacuumservice for Sizes DN 350 - 600 to 200mbar absolut, depending on medium and temperature.
Valve installation between flanges

Vacuumservice for Sizes DN 700 - 900 to 500mbar absolut, depending on medium and temperature.
Valve installation between flanges

K_V-VALUES

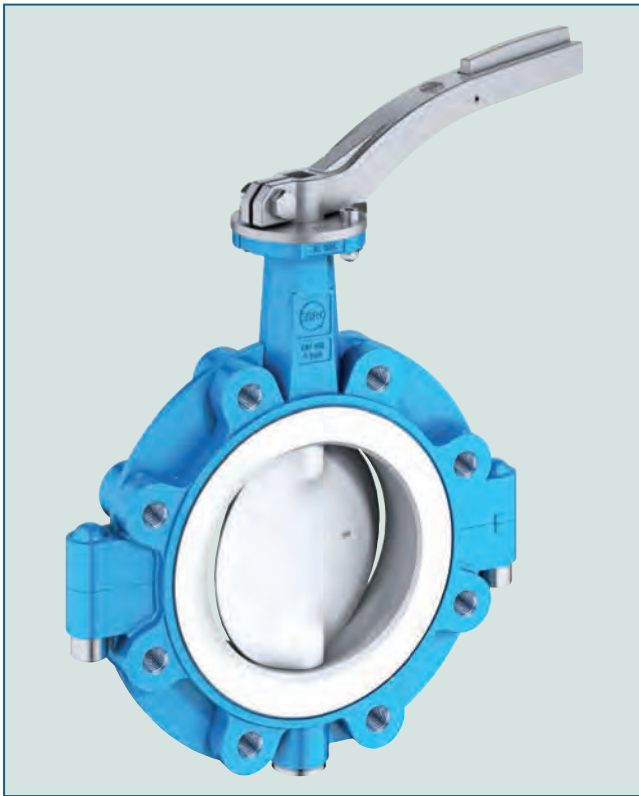
- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases
- The throttle function is linear at an angle 30° to 70°

DN [mm]	Size [in]	K _V -Values (Valve fully opened)
350	14	11500
400	16	12000
450	18	14000
500	20	16000
600	24	20000
700	28	28000
750	30	33000
800	32	37000
900	36	48000

Subject to change without notice

For further values, please contact our engineers.

PTFE-LINED BUTTERFLY VALVE T 214-A



Lug type valve for corrosive and aggressive media. The patented shaft seal design ensures reliability even with high- corrosive applications.

FEATURES

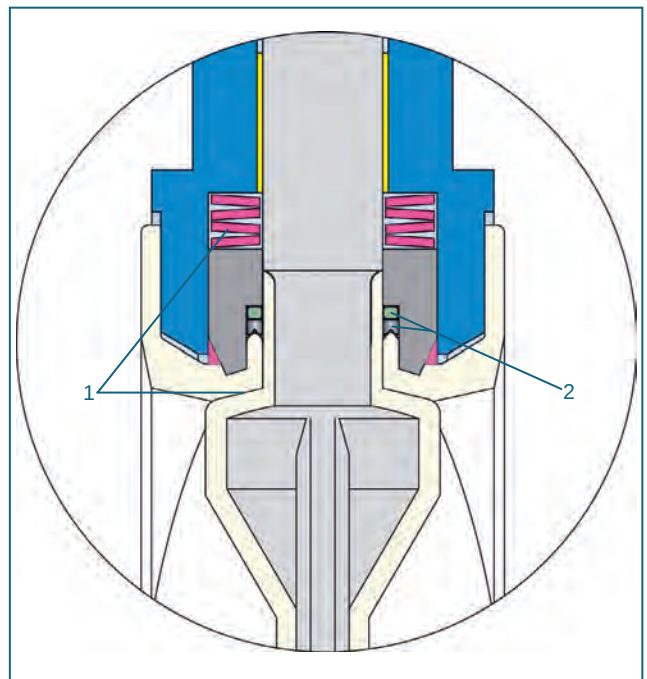
- PTFE-lined butterfly valve for chemically toxic and highly corrosive media
- Environmental protection via EBRO-Safety seal
- Splitted body design
- Isolation height according to plant prescription
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- Material conform to FDA to EG 1935/2004
- Optional: Special design RWTÜV certified to TA-Air/ VDI 2440

GENERAL APPLICATIONS

- Chemically highly corrosive and toxic media
- Purification plants
- Pharmaceutical industry
- Adhesives, paper industry, dissolver
- Paint manufacture and processing
- Food industry
- Chlorine production
- Processing of ore

TECHNICAL DATA

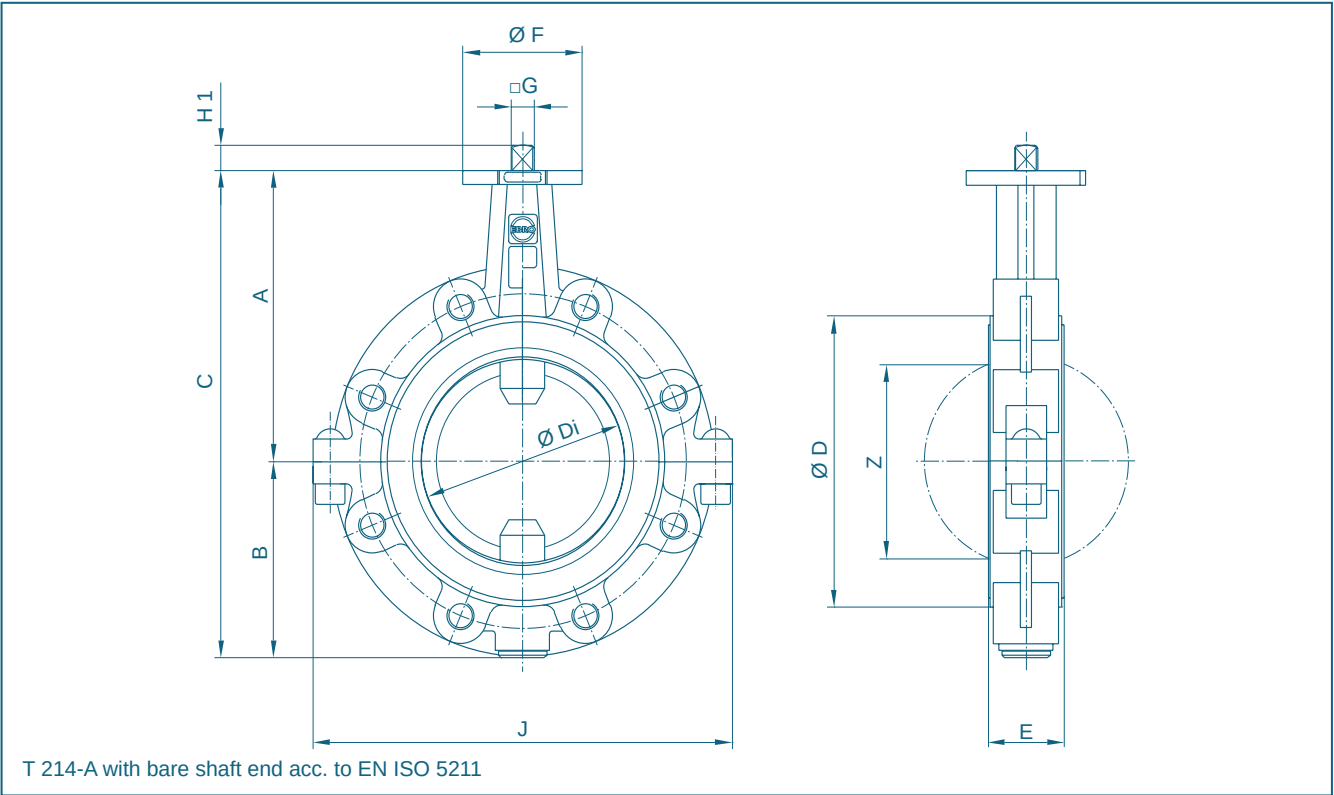
Nominal diameter:	DN(40) 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150 AS 4087
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	-40°C to +200°C (depending on operation pressure)
Operating pressure:	max. 10 bar (16 bar for special version)
Vacuum:	up to 1 mbar absolute (with silicon elastomer inserts) from -10°C bis +160°C



Safety seal at both shaft ends:

- 1.Primary sealing by means of a Belleville spring washer, transmitting prestress on the spherical segment area.
- 2.Secondary sealing of the shaft by means of PTFE-Chevron and O-ring.

PTFE-LINED BUTTERFLY VALVE T 214-A



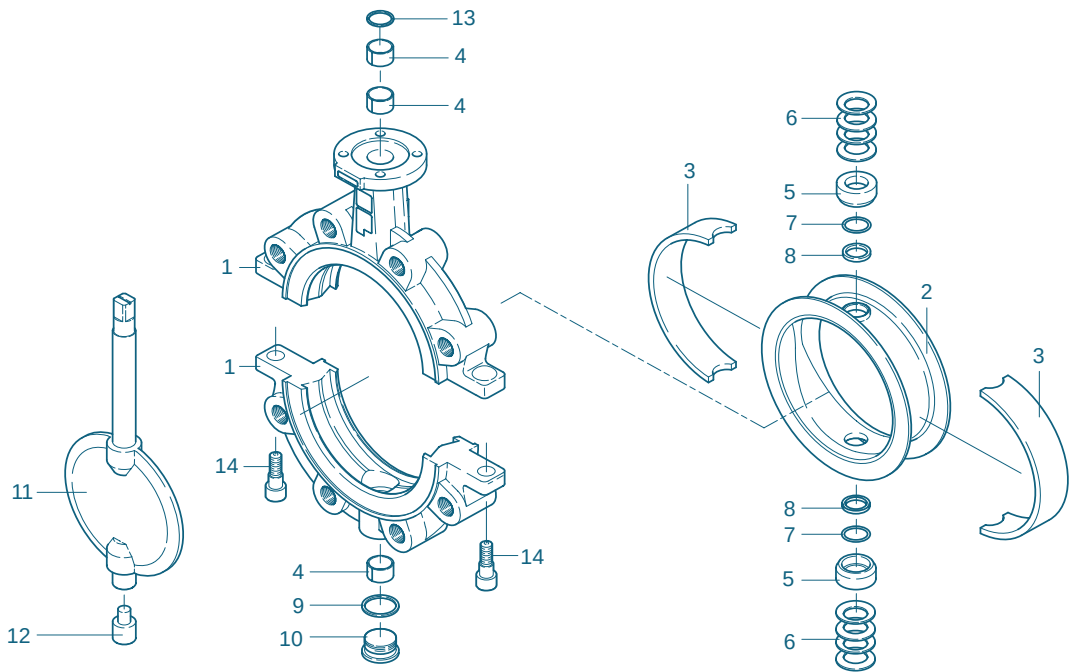
DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	J	Z	
40*50	2	135	80	215	104	60,8	46	54	F04	11	12	160	41	3,8
65	2½	150	82	232	104	60,8	46	54	F04	11	12	176	41	4,5
80	3	157	108	265	130	79,5	46	65	F05	14	16	230	66	6,2
100	4	180	118	298	160	99,0	52	65	F05	14	16	255	85	9,7
125	5	195	130	325	190	124,5	56	90	F07	17	19	290	112	12,0
150	6	210	142	352	210	150,5	56	90	F07	17	19	310	141	13,5
200	8	240	169	409	268	195,5	60	90	F07	17	19	390	187	22,0
250	10	275	217	492	324	247,5	68	125	F10	22	24	480	239	37,0
300	12	300	240	540	374	292,5	78	125	F10	22	24	550	283	55,0

*DN 50 drilled DN 40

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 214-A

MATERIAL SPECIFICATION AND PARTS LIST



PTFE-lined butterfly valve DN 80 - DN 200

Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body	Nodular cast iron	GGG-40.3	EN-JS 1025 A 395	9	Seal	Stainless Steel	X5CrNi18-10	1.4301 304
2**	Seat	PTFE	Polytetrafluorethylene	PTFE PTFE *	10	Plug screw DIN 908	Stainless steel	G-X6CrNiMo18-10	1.4408 CF8M
3**	Elastomer insert	Silicon	Silicon rubber	MVQ VMQ	11***	Disc/Shaft	St.Steel/ St.Steel	G-X2CoNiMoN26-7-4	1.4469 Duplex
4	DU-bearing	PTFE coated					St.Steel/ PTFE	G-X2CoNiMoN26-7-4	1.4469/ Duplex
5**	Thrust collar	Stainless Steel	X5CrNiMo17-12-2	1.4401 316	12	Lower shaft stub	Polytetrafluorethylene	PTFE PTFE *	
6	Belleville spring washer	Stainless Steel	X12CrNi177	1.4568 631	13	Wiper ring	Stainless Steel	X39CrMo17-1	1.4122
7**	O-ring	FPM	Fluorocarbon caoutchouc	FPM FKM	14	Screw	PTFE	Polytetrafluorethylene	PTFE PTFE
8**	Chevron seal	PTFE	Polytetrafluorethylene	PTFE PTFE			Stainless Steel	A4-70	1.4401 B8M
Above-mentioned materials of the basic version, other materials upon request									

* optional: electrically conductive

** recommended spare parts

*** recommended for coated discs

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 214-A

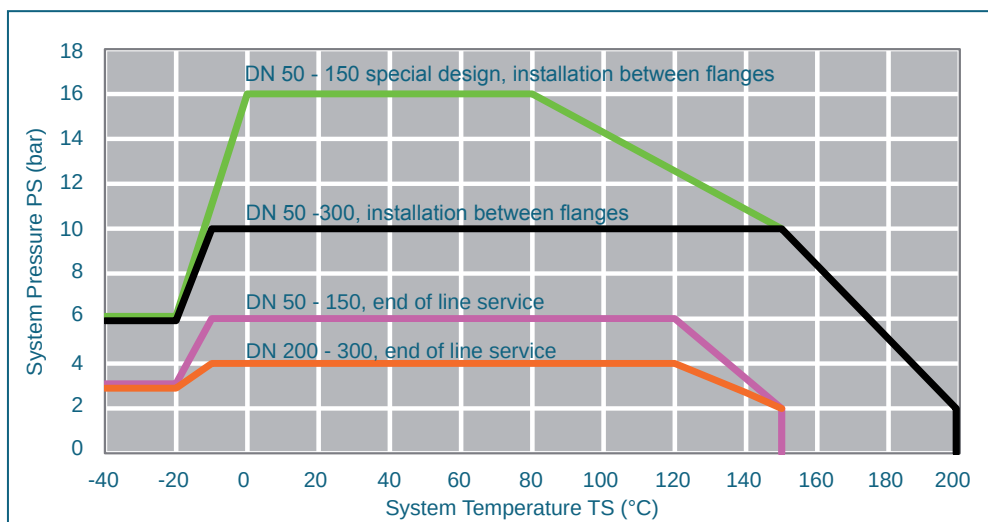
TORQUE

- The torque values specified (Md) are based on dry media and are measured with air at a temperature of 20 °C
- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

PRESSURE/TEMPERATURE DIAGRAM

DN [mm]	40/50	65	80	100	125	150	200	250	300
Size [in]	2	2½	3	4	5	6	8	10	12
MD [Nm]	40	40	70	95	130	170	230	350	480



Pressure-Temperature-Diagramm for valves with Silicone elastomer inserts

Service limitation with EPDM elastomer inserts from -10°C up to +120°C

Service limitation with Fluor carbon inserts (FPM) from -10°C up to +180°C

Vacuum service to 1mbar absolute, from -10°C up to +160°C. Valve installation between flanges

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
 - The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
 - Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases
 - The throttle function is linear at an angle 30° to 70°
 - Avoid cavitation
- For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
1) K _V -values metal-disc									
40/50	2	1	8	24	50	70	100	140	210
65	2½	1	8	24	50	70	100	140	210
80	3	1,2	15	44	95	124	180	300	520
100	4	8	25	60	170	210	280	540	980
125	5	15	52	125	250	350	520	840	1400
150	6	35	95	190	350	460	850	1300	2300
200	8	69	253	457	729	1110	1783	2570	3020
250	10	120	380	690	1200	1680	2650	4500	6600
300	12	165	504	937	1512	2275	3795	6810	12800
2) K _V -values PTFE-disc									
40/50	2	1,5	12	28	52	70	96	110	150
65	2½	1,5	12	28	52	70	96	110	150
80	3	2,5	20	48	88	118	160	200	250
100	4	12	32	68	170	210	260	500	780
125	5	18	60	135	260	380	480	790	1250
150	6	45	105	205	370	490	720	1250	2200
200	8	88	297	520	695	1130	1700	2500	2700
250	10	148	430	695	1250	1800	2520	4350	5400
300	12	263	557	960	1560	2450	4300	6700	9400

Subject to change without notice

WAFER TYPE PROCESS VALVE T 211-C



PTFE-lined wafer type valve for chemically toxic and highly corrosive media.

TECHNICAL DATA

Nominal diameter:	DN (40)50 - DN 300
Face-to-face:	EN 558 Table 20
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19 PAS 1085
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	-40°C to +200°C (depending on working pressure)
Operating pressure:	max. 10 bar (16 bar special version)
Vacuum:	up to 1 mbar absolute, (with silicon elastomer inserts) from -10°C to +160°C

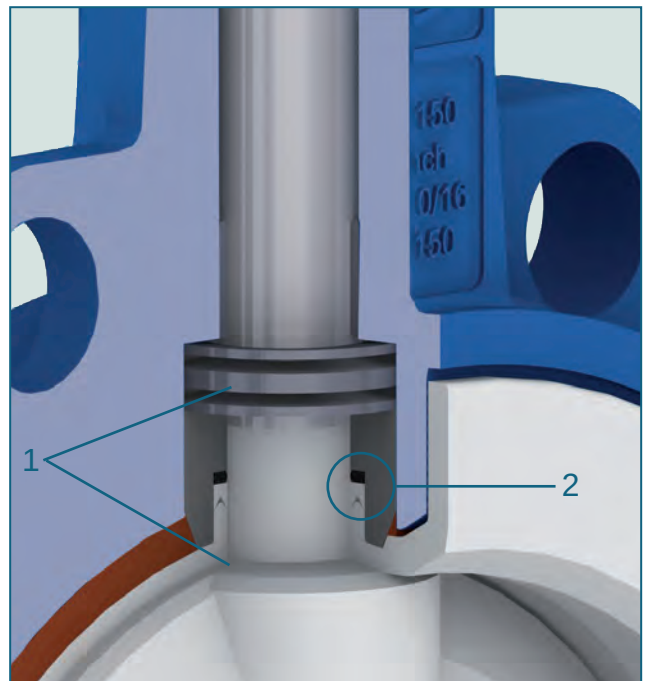
Valve Design
acc. to PAS 1085

FEATURES

- Environmental protection via EBRO-Safety seal
- TA-Luft/ VDI 2440, RWTÜV certified
- Isolation height according to plant prescription
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- Material conform to FDA to EG 1935/2004

DESIGN FEATURES

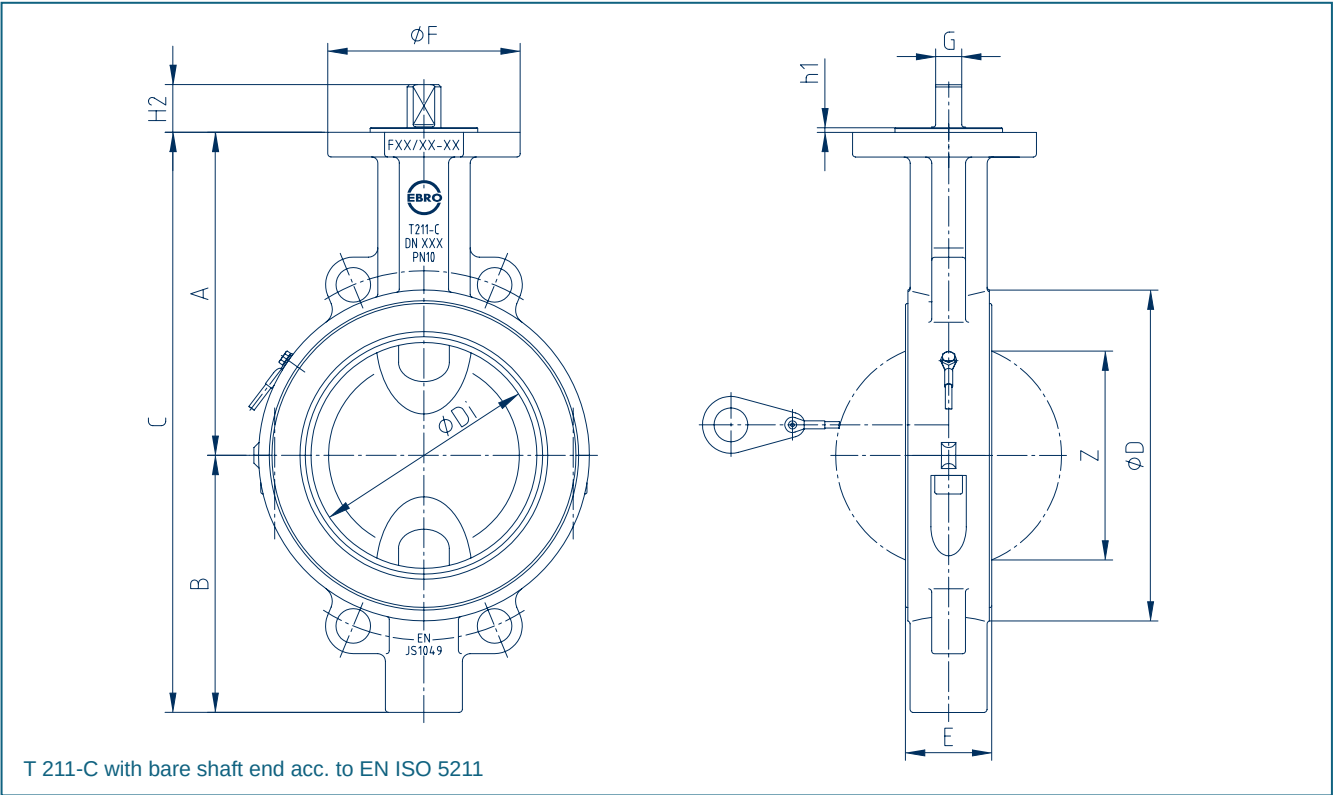
- Optimized low torques
- FEM dimensioned components
- Double flat shaft acc. to EN standards
- Shaft/ disc: duplex (one-piece lost-wax casting)
- Triple shaft bearing



Safety seal at both shaft ends:

1. Primary sealing by means of a bellows spring washer, transmitting prestress on the spherical segment area.
2. Secondary sealing of the shaft by means of PTFE-Chevron and o-ring.

WAFER TYPE PROCESS VALVE T 211-C

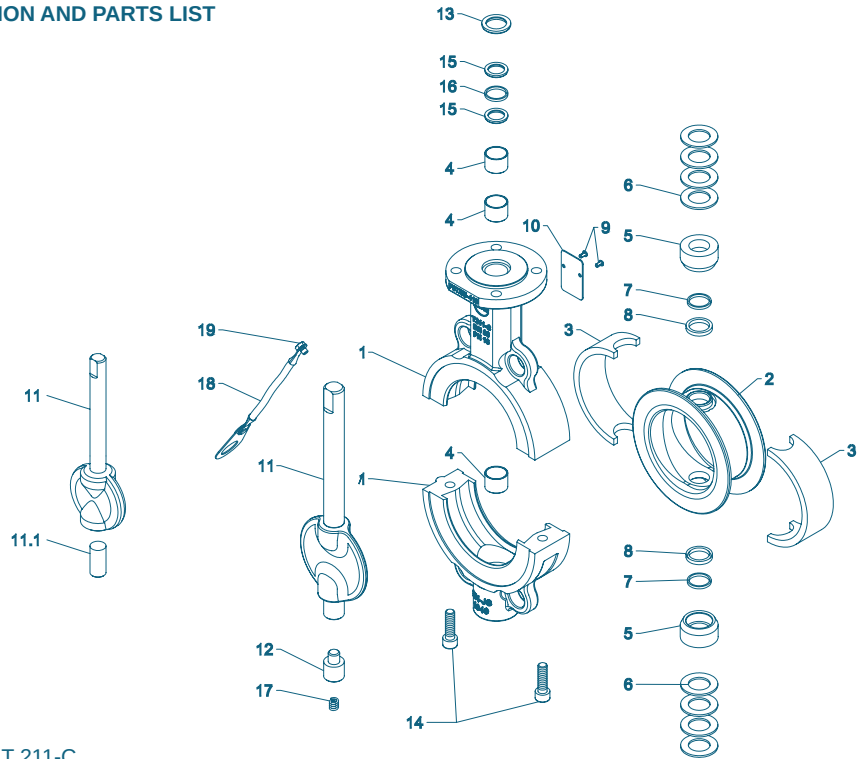


DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	$\varnothing D$	$\varnothing Di$	E	Flange	$\varnothing F$	G	h1	H2	Z	
40/50	1½ 2	126	95	221	112	49	43	F07	90	11	3	22	25	3,5
65	2½	150	103	253	120	61	46	F07	90	11	3	22	41	4
80	3	157	124	281	138	80	46	F07	90	14	3	26	66	6
100	4	180	135	315	160	100	52	F07	90	14	3	26	85	8
150	6	210	167	377	215	151	56	F10	125	17	3	31	141	11
200	8	240	190	430	269	196	60	F12	150	17	3	31	187	18
250	10	275	232	507	324	248	68	F12	150	22	3	40,5	239	32
300	12	298	260	558	374	293	78	F14	175	22	4	41,5	283	46

Subject to change without notice

WAFER TYPE PROCESS VALVE T 211-C

MATERIAL SPECIFICATION AND PARTS LIST



Wafer type process valve T 211-C

Pos.	Description	Material	Material-No.	ASTM	Pos.	Description	Material	Material-No.	ASTM
1	Body				11**	Shaft/Disc	one-piece		
	Nodular Cast Iron	EN-JS 1049	EN 1563	A395		St. Steel /St. Steel	GX2CrNiMoN26-7-4	1.4469	EN 10213
2**	Seat					St. Steel /St. Steel PFA	GX2CrNiMoN26-7-4	1.4469	
	PTFE	Polytetrafluorethylene	PTFE	PTFE *			Perfluoroalkoxy	PFA	PFA
3**	Elastomer insert				11.1	Lower shaft (DN 40/50 only)			
	Silicon	Silicon - rubber	MVQ	VMQ		Stainless Steel	X2CrNiMoN22-5-3	1.4462	Duplex
4	DU-bearing				12	Lower shaft stup (DN 65 - DN 200 only)			
	PTFE coated					Stainless Steel	X39CrMo 17-1	1.4122	
5**	Trust collar				13	Wiper ring			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		PTFE	Polytetrafluorethylene	PTFE	PTFE
6	Belleville spring washer				14	Screw			
	Stainless Steel	X12CrNi177	1.4568	631		Stainless Steel	A4-70	1.4401	A193-B8
7**	O-Ring				15**	Thrust ring			
	FPM	Fluorocarbon caoutchouc	FPM	FKM		PTFE	Polytetrafluorethylene	PTFE	PTFE
8**	Chevron seal				16**	O-Ring			
	PTFE	Polytetrafluorethylene	PTFE	PTFE		FPM	Fluorocarbon caoutchouc		FKM
9	Groove pin				17	Spiral spring			
	Stainless Steel	A2				Spring steel	X10CrNi 18-8	1.4310	301
10	Type plate				18	Buttstrap			
	Stainless Steel								
					19	Screw			
						Stainless Steel	A2-70		A193-B8

* optional: electrically conductive

** recommended spare parts

Subject to change without notice

WAFER TYPE PROCESS VALVE T 211-C

TORQUE

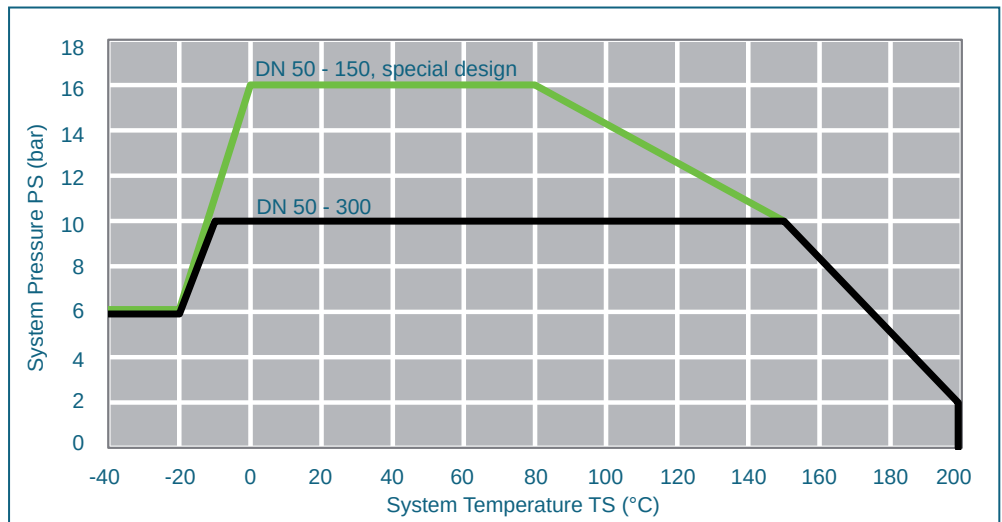
- The torque values specified (Md) are based on dry media and are measured with air at a temperature of 20 °C
- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

PRESSURE/TEMPERATURE DIAGRAM

DN (mm)	40/50	65	80	100	150	200	250	300
Size (in)	1½ 2	2½	3	4	6	8	10	12
MD (Nm)	35	35	55	70	135	170	320	380
MAST (Nm)*	105	105	250	250	480	480	1020	1020

*Maximum torques (Nm)



Pressure-Temperature-Diagram for valves with silicone elastomer inserts

Service limitation with Fluor carbon inserts (FPM) from -10°C up to +120°C

Service limitation with EPDM elastomer inserts from -10°C up to +180°C

Vacuum service to 1mbar absolute, from -10°C up to +160°C. Valve installation between flanges

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
1) K _V -values metal disc									
40/50	1½ 2	1	8	18	32	53	81	107	111
65	2½	1	8	24	50	70	100	140	210
80	3	1,2	15	44	95	124	180	300	520
100	4	8	25	60	170	210	280	540	980
150	6	35	95	190	350	460	850	1300	2300
200	8	69	253	457	729	1110	1783	2570	3020
250	10	120	380	690	1200	1680	2650	4500	6600
300	12	165	504	937	1512	2275	3795	6810	12800
2) K _V -values PFA-disc									
40/50	1½ 2	0,8	6	13	24	40	54	63	66
65	2½	1,5	12	28	52	70	96	110	150
80	3	2,5	20	48	88	118	160	200	250
100	4	12	32	68	170	2210	260	500	780
150	6	45	105	205	370	490	720	1250	2200
200	8	88	297	520	695	1130	1700	2500	2700
250	10	148	430	695	1250	1800	2520	4350	5400
300	12	263	557	960	1560	2450	4300	6700	9400

Subject to change without notice

LUG TYPE PROCESS VALVE T 214-C



PTFE-lined lug type valve for chemically toxic and highly corrosive media.

TECHNICAL DATA

Nominal diameter:	DN (40)50 - DN 300
Face-to-face:	EN 558 Table 20
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19 PAS 1085
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	-40°C to +200°C (depending on working pressure)
Operating pressure:	max. 10 bar (16 bar special version)
Vacuum:	up to 1 mbar absolute, (with silicon elastomer inserts) from -10°C to +160°C

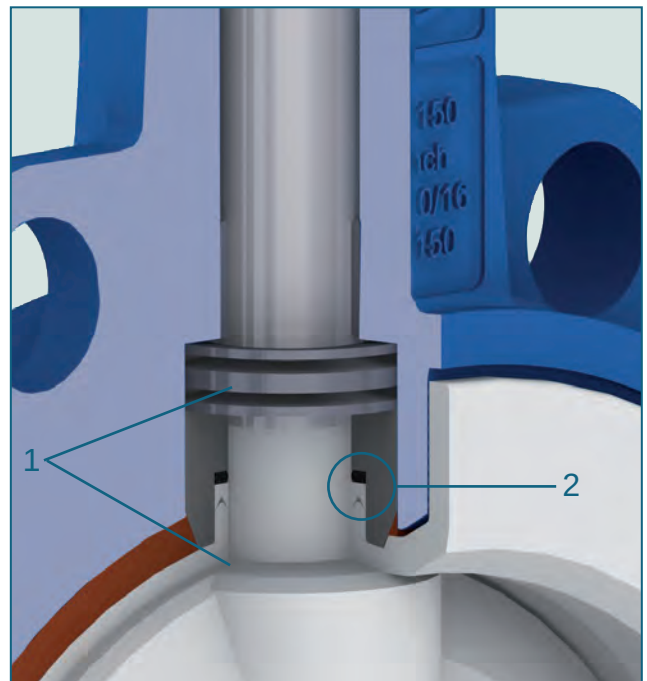
Valve Design
acc. to PAS 1085

FEATURES

- Environmental protection via EBRO-Safety seal
- TA-Luft/ VDI 2440, RWTÜV certified
- Isolation height according to plant prescription
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- Material conform to FDA to EG 1935/2004

DESIGN FEATURES

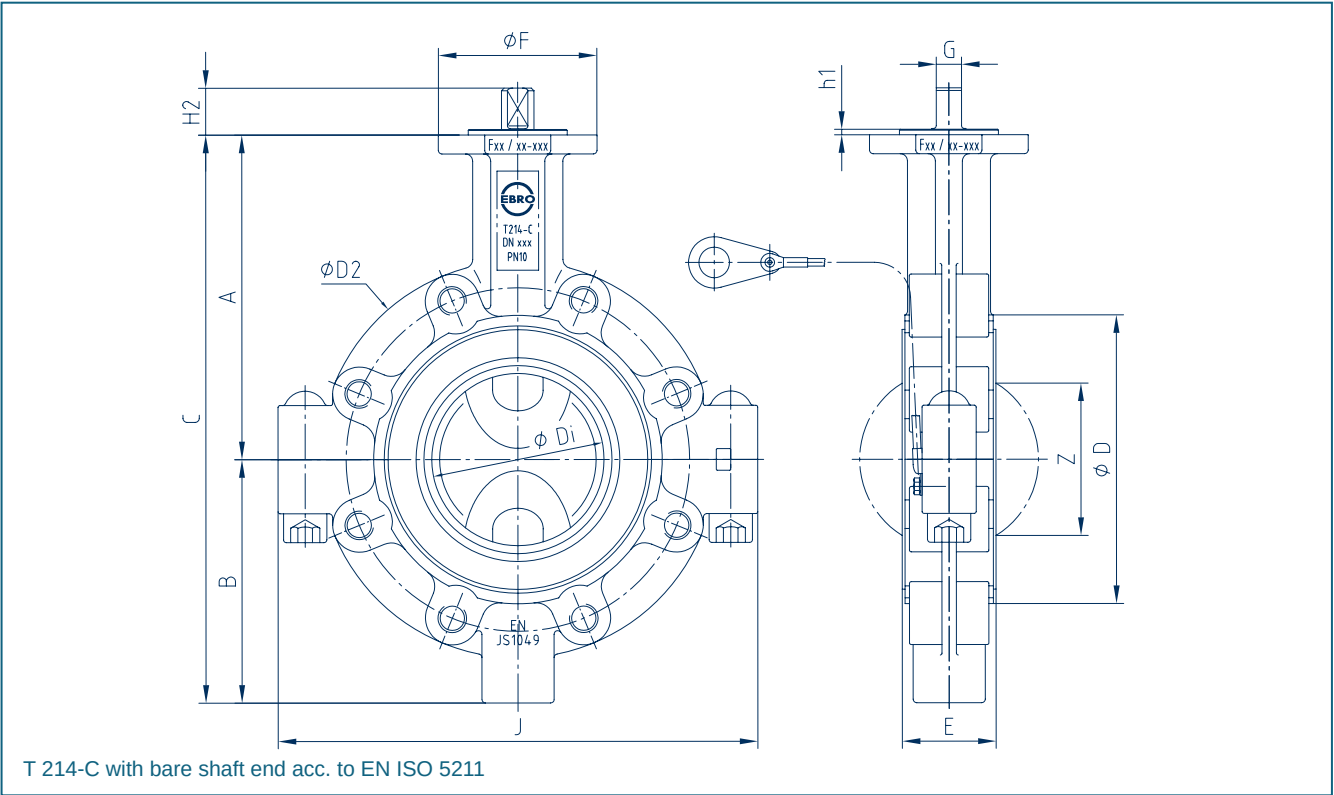
- Optimized low torques
- FEM dimensioned components
- Double flat shaft acc. to EN standards
- Shaft/ disc: duplex (one-piece lost-wax casting)
- Triple shaft bearing



Safety seal at both shaft ends:

1. Primary sealing by means of a Belleville spring washer, transmitting prestress on the spherical segment area.
2. Secondary sealing of the shaft by means of PTFE-Chevron and O-ring.

LUG TYPE PROCESS VALVE T 214-C

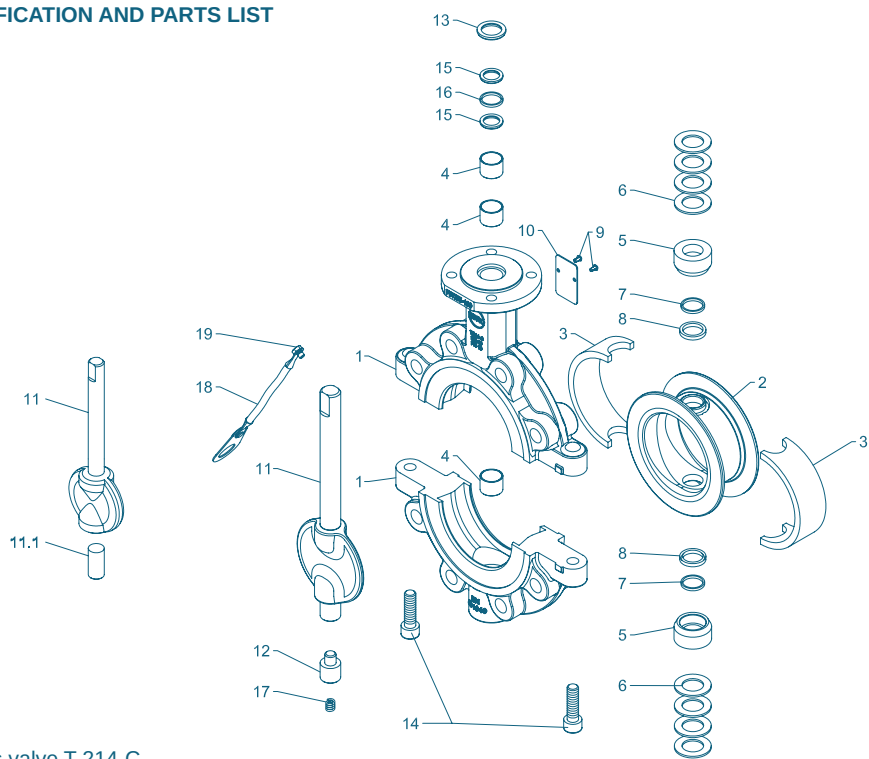


DN [mm]	Size [in]	Dimensions [mm]														Weight [kg]
		A	B	C	ØD	ØD2	ØDi	E	Flange	ØF	G	h1	H2	J	Z	
40/50	1½ 2	126	95	221	104	155	49	43	F07	90	11	3	22	167	25	4,5
65	2½	150	103	253	120	175	61	46	F07	90	11	3	22	181	41	5,5
80	3	157	124	281	138	190	80	46	F07	90	14	3	26	227	66	8,0
100	4	180	135	315	160	210	100	52	F07	90	14	3	26	266	85	10,0
150	6	210	167	377	212	280	151	56	F10	125	17	3	31	322	141	15,0
200	8	240	190	430	268	336	196	60	F12	150	17	3	31	390	187	27,0
250	10	275	232	507	324	412	248	68	F12	150	22	3	40,5	481	239	45,0
300	12	298	260	558	374	460	293	78	F14	175	22	4	41,5	558	283	69,0

Subject to change without notice

LUG TYPE PROCESS VALVE T 214-C

MATERIAL SPECIFICATION AND PARTS LIST



PTFE-lined process valve T 214-C

Pos.	Description	Material	Material-No.	ASTM	Pos.	Description	Material	Material-No.	ASTM
1	Body				11**	Shaft/Disc	one-piece		
	Nodular Cast Iron	EN-JS 1049	EN 1563	A395		St. Steel /St. Steel	GX2CrNiMoN26-7-4	1.4469	EN 10213
2**	Seat					St. Steel /St. Steel PFA	GX2CrNiMoN26-7-4	1.4469	
	PTFE	Polytetrafluorethylene	PTFE	PTFE *			Perfluoroalkoxy	PFA	PFA
3**	Elastomer insert				11.1	Lower shaft (DN 40/50 only)			
	Silicon	Silicon - rubber	MVQ	VMQ		Stainless Steel	X2CrNiMoN22-5-3	1.4462	Duplex
4	DU-bearing				12	Lower shaft stup (DN 65 - DN 200 only)			
	PTFE coated					Stainless Steel	X39CrMo 17-1	1.4122	
5**	Trust collar				13	Wiper ring			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		PTFE	Polytetrafluorethylene	PTFE	PTFE
6	Belleville spring washer				14	Screw			
	Stainless Steel	X12CrNi177	1.4568	631		Stainless Steel	A4-70	1.4401	A193-B8
7**	O-Ring				15**	Thrust ring			
	FPM	Fluorocarbon caoutchouc FPM		FKM		PTFE	Polytetrafluorethylene	PTFE	PTFE
8**	Chevron seal				16**	O-Ring			
	PTFE	Polytetrafluorethylene	PTFE	PTFE		FPM	Fluorocarbon caoutchouc		FKM
9	Groove pin				17	Spiral spring			
	Stainless Steel	A2				Spring steel	X10CrNi 18-8	1.4310	301
10	Type plate				18	Buttstrap			
	Stainless Steel								
					19	Screw			
						Stainless Steel	A2-70		A193-B8

Above-mentioned materials of the basic version, other materials upon request

* optional: electrically conductive

** recommended spare parts

Subject to change without notice

LUG TYPE PROCESS VALVE T 214-C

TORQUE

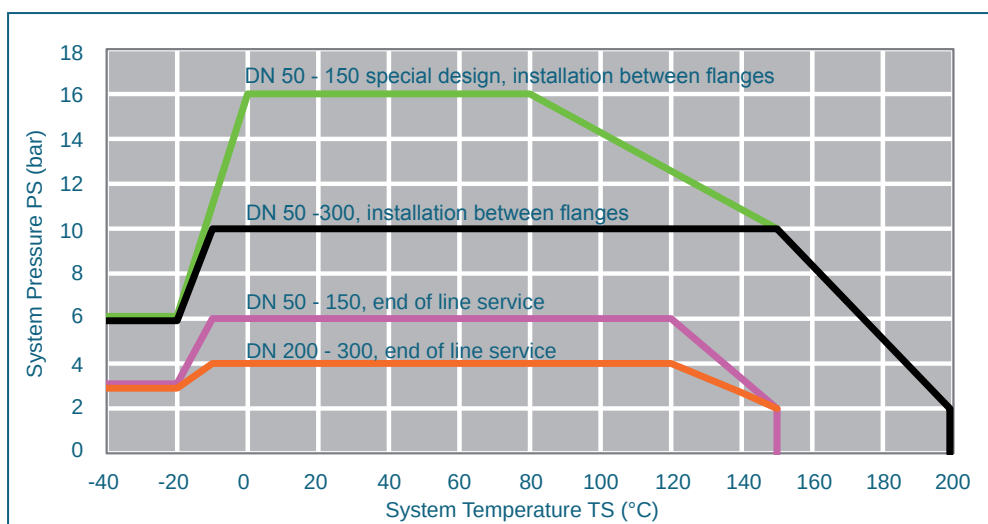
- The torque values specified (Md) are based on dry media and are measured with air at a temperature of 20 °C
- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

PRESSURE/TEMPERATURE DIAGRAM

DN (mm)	40/50	65	80	100	150	200	250	300
Size (in)	1½ 2	2½	3	4	6	8	10	12
MD (Nm)	35	35	55	70	135	170	320	380
MAST (Nm)*	105	105	250	250	480	480	1020	1020

*Maximum torques (Nm)



Pressure-Temperature-Diagram for valves with Silicone elastomer inserts

Service limitation with Fluor carbon inserts (FPM) from -10°C up to +120°C

Service limitation with EPDM elastomer inserts from -10°C up to +180°C

Vacuum service to 1mbar absolute, from -10°C up to +160°C. Valve installation between flanges

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
1) K _V -values metal disc									
40/50	1½ 2	1	8	18	32	53	81	107	111
65	2½	1	8	24	50	70	100	140	210
80	3	1,2	15	44	95	124	180	300	520
100	4	8	25	60	170	210	280	540	980
150	6	35	95	190	350	460	850	1300	2300
200	8	69	253	457	729	1110	1783	2570	3020
250	10	120	380	690	1200	1680	2650	4500	6600
300	12	165	504	937	1512	2275	3795	6810	12800
2) K _V -values PFA-disc									
40/50	1½ 2	0,8	6	13	24	40	54	63	66
65	2½	1,5	12	28	52	70	96	110	150
80	3	2,5	20	48	88	118	160	200	250
100	4	12	32	68	170	2210	260	500	780
150	6	45	105	205	370	490	720	1250	2200
200	8	88	297	520	695	1130	1700	2500	2700
250	10	148	430	695	1250	1800	2520	4350	5400
300	12	263	557	960	1560	2450	4300	6700	9400

Subject to change without notice

QUALITY FEATURES

HIGH PERFORMANCE VALVE HP 111

STRAIGHT THROUGH SHAFT

ensures maximum bending strength.

MAINTENANCE-FREE BEARING

For all nominal diameters maintenance-free, overlong corrosion and temperature-resistant bearings are used for exact centring of the valve discs.

FORCE-LOCKED CONNECTION

between disc and shaft. Low shear stresses thanks to tangentially arranged tapered pins.

R-PTFE SEAT RING

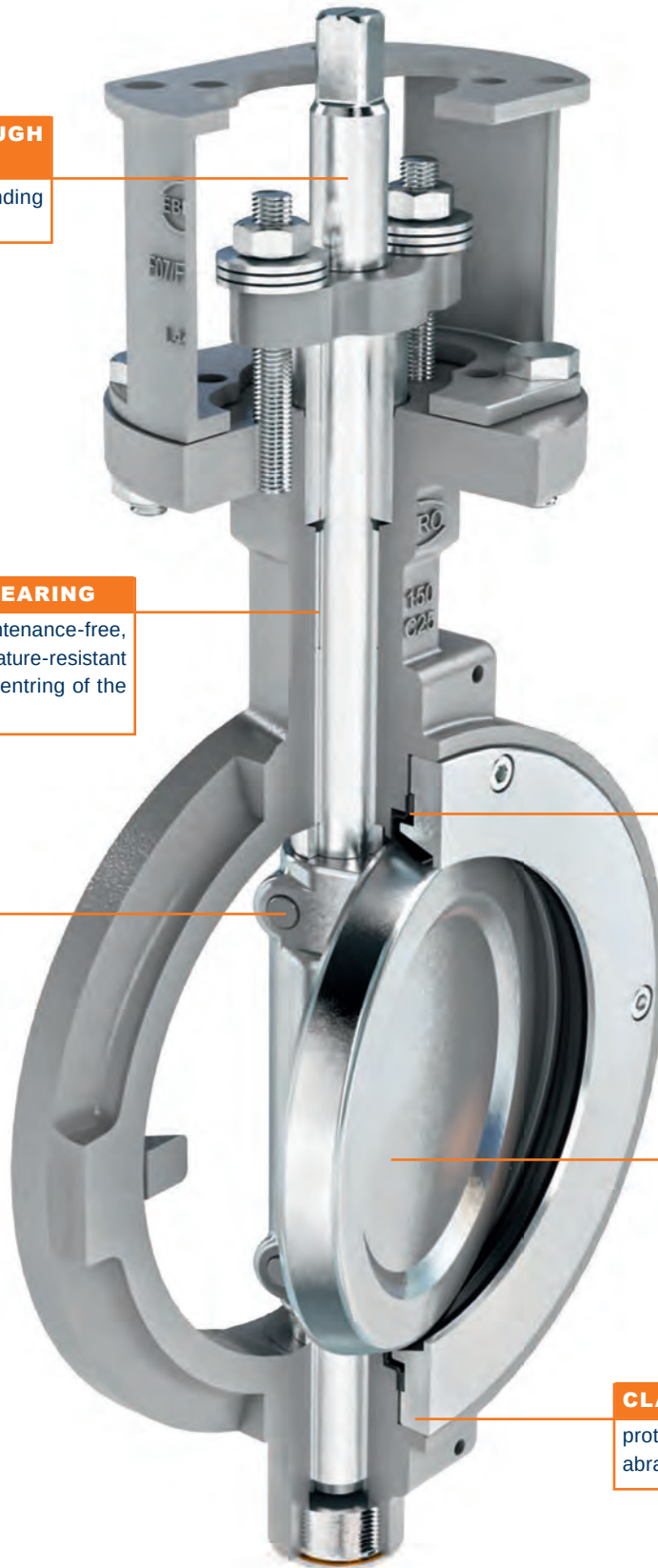
The R-PTFE seat ring guarantees absolute tightness and compensates for wear. The seat ring can be replaced without disassembling the shaft and valve disc.
Alternative: Inconel or Fire-safe

VALVE DISC

The valve disc has a double eccentric bearing design, resulting in low torques and low wear. All sealing surfaces are machined.

CLAMPING RING

protects the seat ring from abrasion and erosion.



HIGH PERFORMANCE BUTTERFLY VALVE HP 111



Wafer type butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

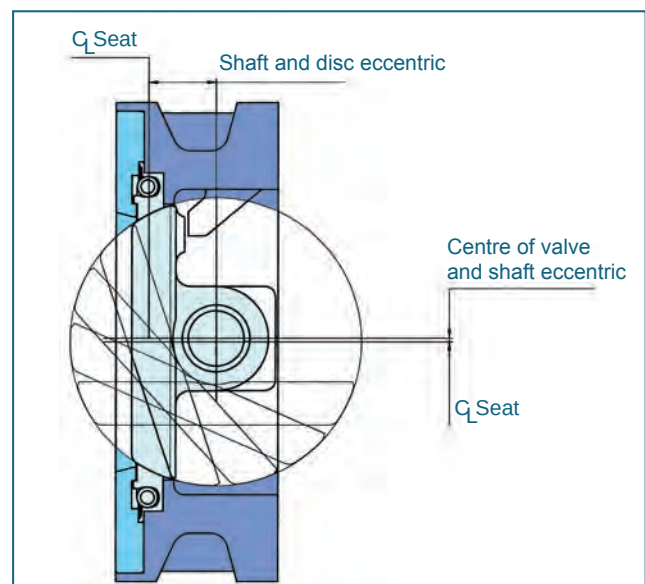
Nominal diameter:	DN 50 - DN 600 (larger nominal diameter on request)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16/25/40 (to DN 150) EN 1092 PN 10/16/25 (DN 200-DN 600) ASME Class 150/300 AS 4087 PN16/21
Flange Surface Design:	EN 1092, Form A/B, ASME RF,FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C to +600°C
Differential pressure:	≤ DN150 max. 40 bar > DN150 max. 25 bar
Vacuum:	up to 1mbar absolute

FEATURES

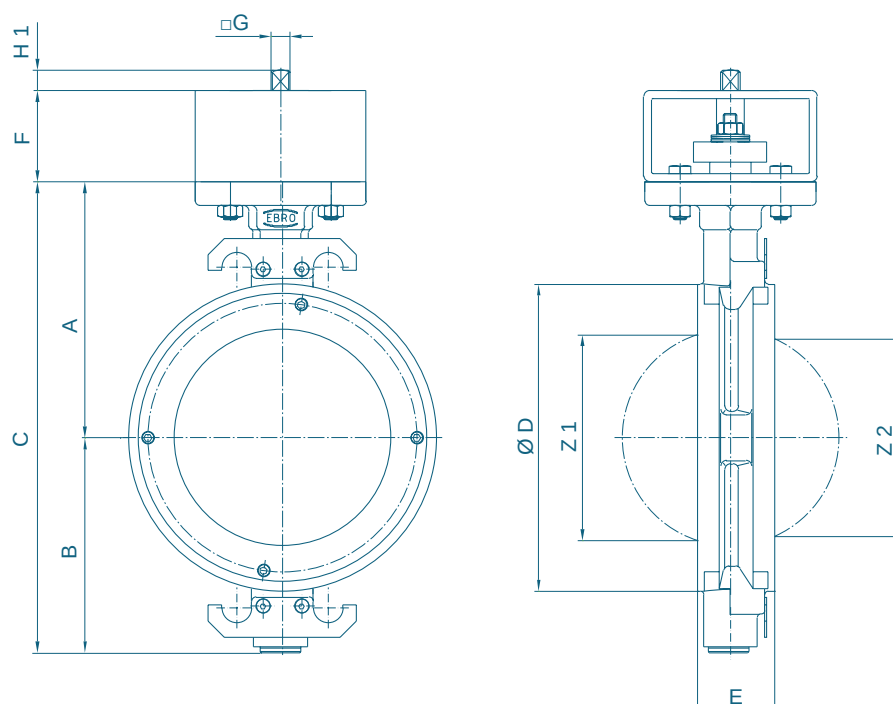
- Shut-off and control of gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Centering pieces can be used as installation aid
- Two seat ring systems available: R-PTFE and Inconel
- Seal variants:
soft-sealing (R-PTFE) max. 230°C
metallic sealing (Inconel) max. 600°C
- Maintenance-free
- Long service life, even at high switching frequencies

GENERAL APPLICATIONS

- Chemical and petrochemical industry
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Heavy duty services



HIGH PERFORMANCE BUTTERFLY VALVE HP 111



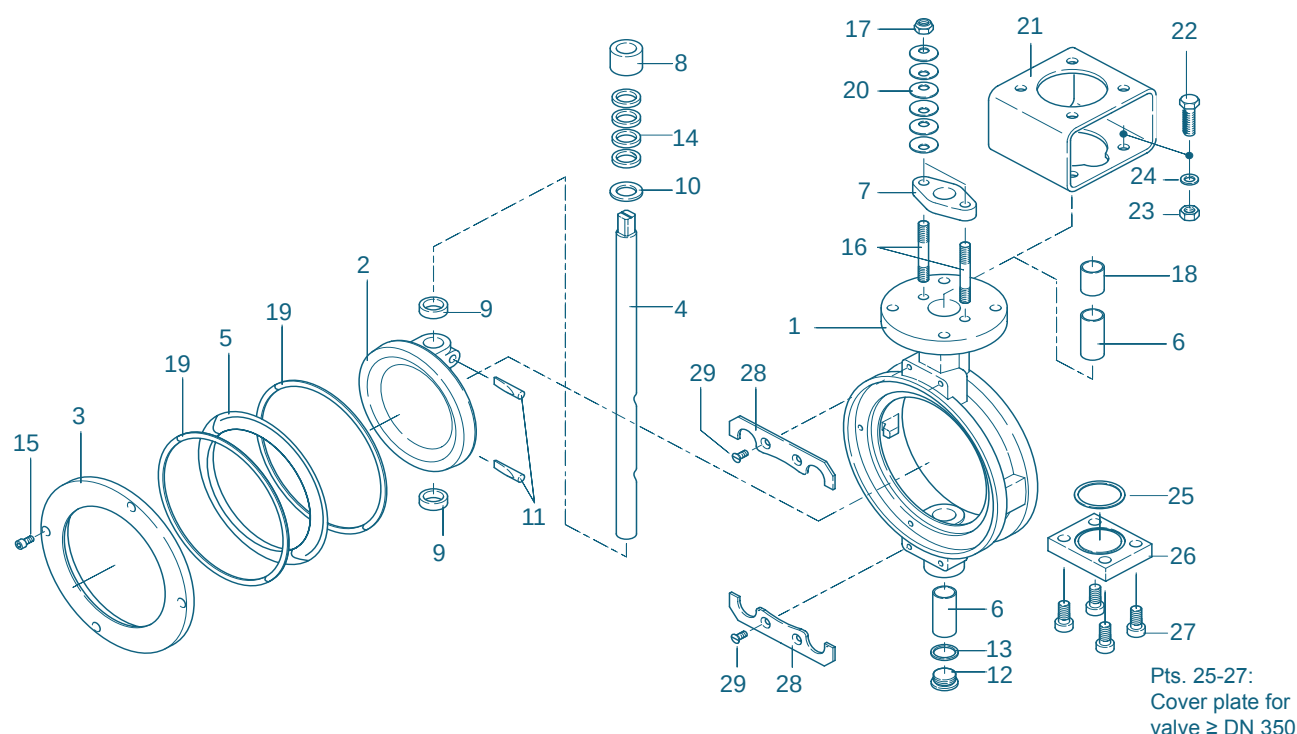
HP 111 with bare shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]											min. pipe-Ø	Weight [kg]
		A	B	C	D	E	F	Flange	G	H1	Z1	Z2		
50	2	133	99	232	112	43	80	F05	12	15	40,9	-	51	7,4
65	2½	133	99	232	112	43	80	F05	12	15	40,9	-	51	7,4
80	3	142	113	255	138	46	80	F05	12	15	70,7	54,4	80	8,0
100	4	158	124	282	160	52	80	F05	12	15	94,2	81,6	103	8,6
125	5	181	140	321	192	56	80	F07	14	18	114,5	105,3	124	12,6
150	6	195	154	349	216	56	80	F07	14	18	143,5	135,4	151	14,8
200	8	225	191	416	270	60	80	F10	17	18	187,4	181,2	196	22,9
250	10	268	222	490	326	68	80	F12	22	23	235,2	228,8	245	33,5
300	12	300	255	555	378	78	90	F12	27	28	280,7	275,8	296	48,0
350	14	345	304	649	438	92	100	F14	27	28	322,8	315,9	334	94,7
400	16	375	339	714	488	102	100	F14	36	36	371,6	363,9	385	115,0
450	18	412	340	752	530	114	120	F16	36	36	426,8	426,8	438	141,0
500	20	425	399	824	593	127	120	F16	46	46	468,7	466	484	186,0
550	22	456	405	861	635	154	200	F25	46	46	525,7	525,7	540	236,0
600	24	490	468	958	692	154	200	F25	55	55	544,2	542,2	560	310,0

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 111

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				14	Shaft seal			
	Carbon Steel	GS-C25N	1.0619	WCB		PTFE			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Graphite			
2	Disc				15	Hex.-socket screw			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Stainless Steel	A4-70	1.4401	B8M
3	Clamping ring				16	Threaded pin			
	Steel	St37-2	1.0037	283-C		Stainless Steel	A2-70	1.4301	B 8
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316	17	Hex. nut			
4	Shaft					Stainless Steel	A 2	1.4301	8
	Stainless Steel	X4CrNiMo16-5-1	1.4418		18	Spacer sleeve			
5	Seat ring					Stainless Steel	X6CrNiMoTi17-12-2	1.4971	316 Ti
	R-PTFE	PTFE-Compound			19	Graphite seal (for metal seat)			
	Inconel	Inconel 625				Graphite			
6	Shaft bearing				20	Belleville spr. washer			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316		Spring Steel	50CrV4	1.8159	6150
		X6CrNiMoTi17-12-2	1.4571 nitrite	316 Ti		Stainless Steel	X10CrNi18-8	1.4310	301 Ti
7	Gland flange				21	Bracket			
	Steel	St37-2	1.0037	283-C		Steel	St37-2 galvanized	1.0037	283-C
	Stainless Steel	X5CrNi18-10	1.4301	304	22	Hex. bolt			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Steel	St galvanized		CS
8	Thrust collar				23	Hex. nut			
	Stainless Steel	X5CrNi18-10	1.4301	304		Steel	St galvanized		CS
9	Bearing ring				24	Washer			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 chr-pld	316 Ti		Steel	St galvanized		CS
10	Suppor. washer				25	Seal			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti		Graphite			
11	Taper pin				26	Cover plate			
	Stainless Steel	X4CrNiMo16-5-1	1.4418			Steel	St37-2 galvanized	1.0037	283-C
12	Plug screw DIN 908				27	Hex.-socket screw			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Stainless Steel	A2-70	1.4301	B 8
13	Seal				28	Centering piece			
	PTFE					Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
	Graphite				29	Countersunk screw			
						Stainless Steel	A 2	1.4301	SS
	Other materials upon request								

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 111

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure							
		10 [bar]		16 [bar]		25 [bar]		40 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel
50-65	2-2½	27	35	28	42	30	58	31	66
80	3	28	55	30	65	34	90	38	100
100	4	51	90	61	100	80	120	93	140
125	5	63	150	83	172	95	220	125	285
150	6	125	170	136	220	168	300	220	360
200	8	205	350	260	430	280	505	*	*
250	10	485	505	550	620	600	860	-	-
300	12	584	740	700	970	855	1280	-	-
350	14	740	815	930	1050	1200	1370	-	-
400	16	1050	1530	1640	2240	2460	2900	-	-
450	18	1150	1700	1750	2500	2700	3500	-	-
500	20	1210	2010	1800	2760	2800	4260	-	-
550	22	3500	3750	4430	4550	6010	6800	-	-
600	24	4000	4500	4600	5740	6200	8080	-	-

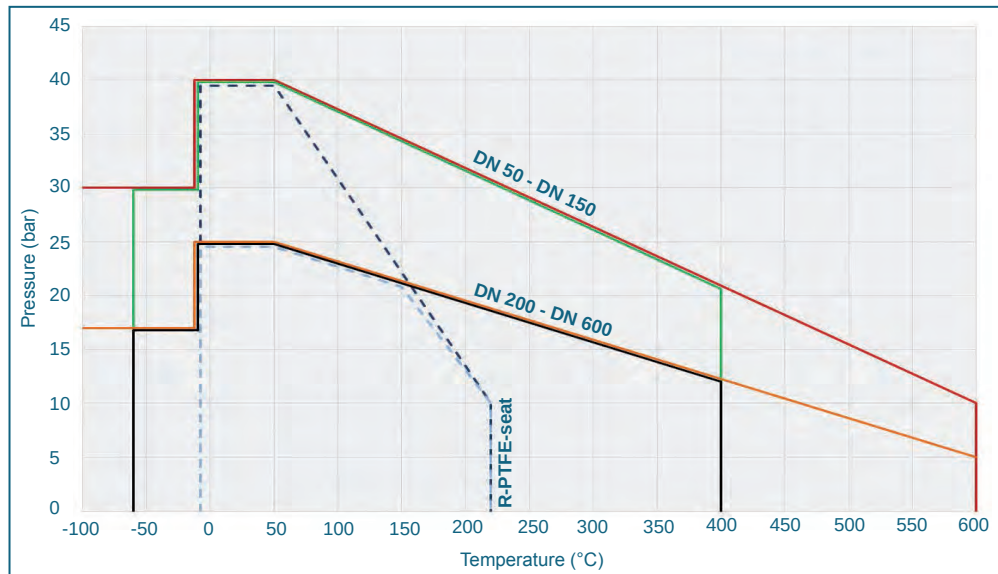
* DN 200 PN 16 max. 25 bar

All values in Nm

PRESSURE/TEMPERATURE DIAGRAM

- Pressure control line for GS-C25 body material and metal seat
- Pressure control line for 1.4408 body material and metal seat
- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation!

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,3	6	15	18	19	21	22	23
65	2½	1,5	7	18	22	23	24	25	25
80	3	7	30	50	68	82	97	113	115
100	4	22	60	97	119	164	199	223	251
125	5	45	100	152	195	256	346	452	493
150	6	63	109	162	250	391	588	814	845
200	8	96	168	301	509	742	1107	1581	1747
250	10	264	458	682	980	1421	2083	2882	2889
300	12	397	625	956	1368	1938	2778	3794	3940
350	14	460	720	1100	1650	2500	3400	4800	5400
400	16	550	870	1250	2000	3200	4800	6800	8080
450	18	730	1200	1800	3100	4600	6400	8400	10500
500	20	920	1600	2600	4100	6000	8500	12100	12800
550	22	1090	1950	3100	4600	7500	10200	14700	15300
600	24	1370	2250	3780	4950	9000	12500	17100	18500

Subject to change without notice



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04.2012

HIGH PERFORMANCE BUTTERFLY VALVE HP 114



Lug type butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

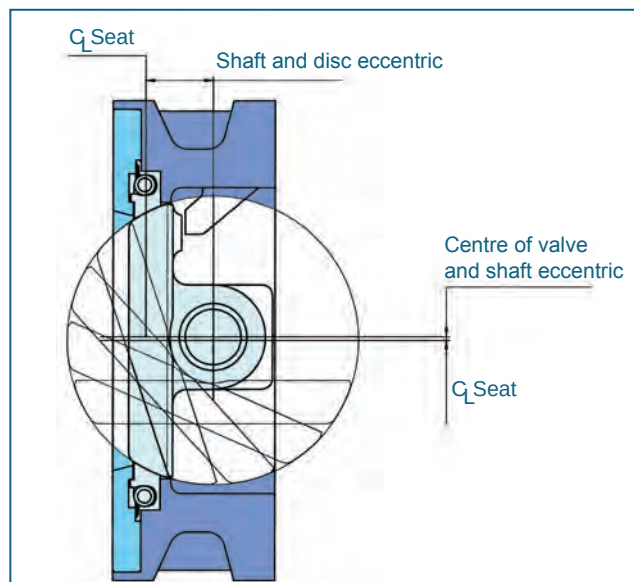
Nominal diameter:	DN 50 - DN 600 (larger nominal diameter on request)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16/25/40 (to DN 150) EN 1092 PN 10/16/25 (DN 200-DN 600) ASME Class 150/300 AS 4087 PN16/21
Flange Surface Design:	EN 1092, Form A/B, ASME RF,FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C to +600°C
Differential pressure:	≤ DN150 max. 40 bar > DN150 max. 25 bar
Vacuum:	up to 1mbar absolute

FEATURES

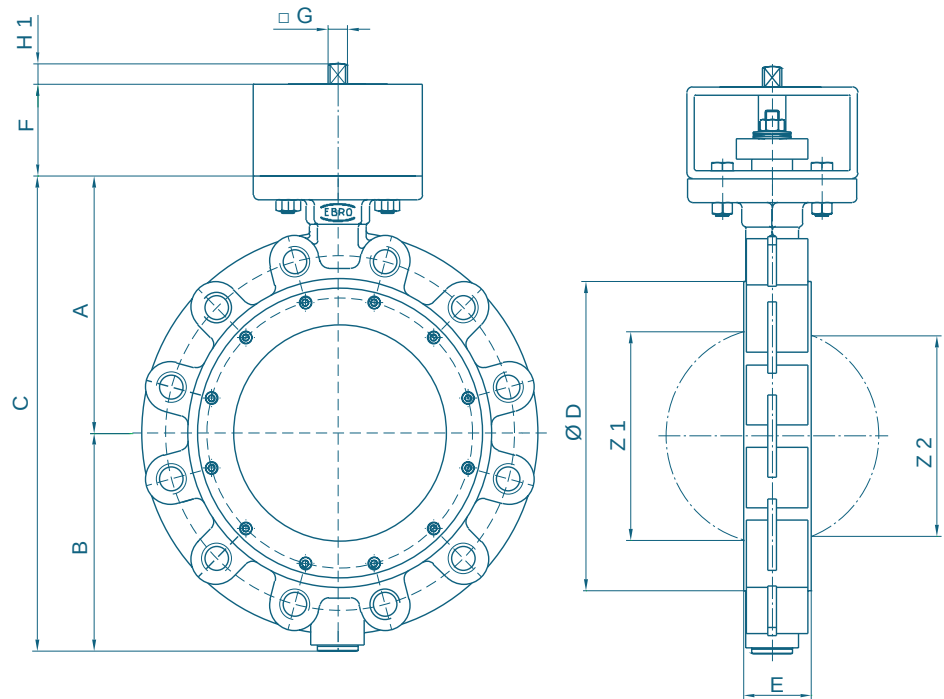
- Shut-off and control of gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Centering pieces can be used as installation aid
- Two seat ring systems available: R-PTFE and Inconel
- Seal variants:
soft-sealing (R-PTFE) max. 230°C
metallic sealing (Inconel) max. 600°C
- Maintenance-free
- Long service life, even at high switching frequencies

GENERAL APPLICATIONS

- Chemical and petrochemical industries
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Food industry
- Heavy duty services



HIGH PERFORMANCE BUTTERFLY VALVE HP 114



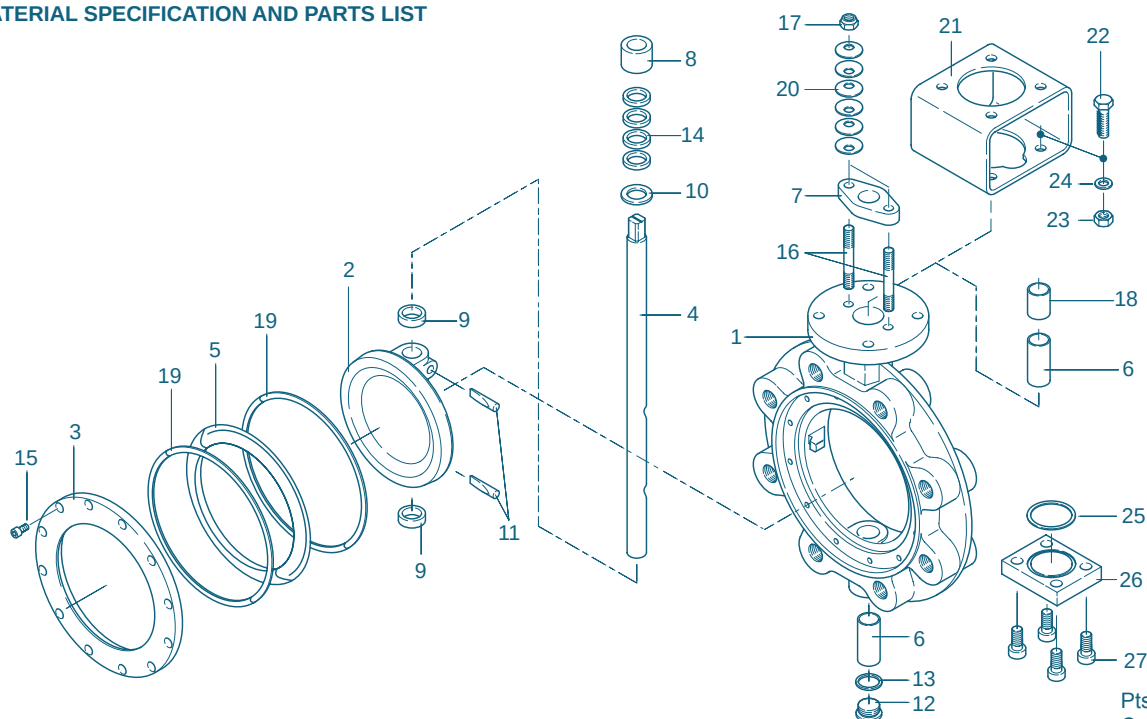
HP 114 with bare shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	E	F	Flange	G	H1	Z1	Z2	min. pipe-Ø	
50	2	133	99	232	112	43	80	F05	12	15	40,9	-	51	7,4
65	2½	133	99	232	112	43	80	F05	12	15	40,9	-	51	7,4
80	3	142	113	255	138	46	80	F05	12	15	70,7	54,4	80	10,2
100	4	158	124	282	160	52	80	F05	12	15	94,2	81,6	103	13,5
125	5	181	140	321	192	56	80	F07	14	18	114,5	105,3	124	17,6
150	6	195	154	349	216	56	80	F07	14	18	143,5	135,4	151	21,0
200	8	225	191	416	270	60	80	F10	17	18	187,4	181,2	196	32,9
250	10	268	222	490	326	68	80	F12	22	23	235,2	228,8	245	49,0
300	12	300	255	555	378	78	90	F12	27	28	280,7	275,8	296	68,5
350	14	345	304	649	438	92	100	F14	27	28	322,8	315,9	334	104,0
400	16	375	339	714	488	102	100	F14	36	36	371,6	363,9	385	135,0
450	18	412	340	752	530	114	120	F16	36	36	426,8	426,8	438	174,0
500	20	425	399	824	593	127	120	F16	46	46	468,7	466	484	240,0
550	22	456	405	861	635	154	200	F25	46	46	525,7	525,7	540	268,0
600	24	490	468	958	692	154	200	F25	55	55	544,2	542,2	560	390,0

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114

MATERIAL SPECIFICATION AND PARTS LIST



Pts. 25-27:
Cover plate for
valve $\geq$ DN 350

Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				14	Shaft seal			
	Carbon Steel	GS-C25N	1.0619	WCB		PTFE			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Graphite			
2	Disc				15	Hex.-socket screw			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Stainless Steel	A4-70	1.4401	B8M
3	Clamping ring				16	Threaded pin			
	Steel	St37-2	1.0037	283-C		Stainless Steel	A2-70	1.4301	B 8
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316	17	Hex. nut			
4	Shaft					Stainless Steel	A 2	1.4301	8
	Stainless Steel	X4CrNiMo16-5	1.4418		18	Spacer sleeve			
5	Seat ring					Stainless Steel	X10CrNi18-8	1.4310	301 Ti
	R-PTFE	PTFE-Compound			19	Graphite seal (for metal seat)			
	Inconel	Inconel 625				Graphite			
6	Shaft bearing				20	Belleville spring washer			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316 PTFE		Spring Steel	50CrV4	1.8159	6150
		X6CrNiMoTi17-12-2	1.4571 nitrite	316 Ti		Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
7	Gland flange				21	Bracket			
	Steel	St37-2	1.0037	283-C		Steel	St37-2 galvanized	1.0037	283-C
	Stainless steel	X5CrNi18-10	1.4301	304	22	Hex. bolt			
8	Thrust collar					Steel	St galvanized		CS
	Stainless Steel	X5CrNi18-10	1.4301	304	23	Hex. nut			
9	Bearing ring					Steel	St galvanized		CS
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 chr-pld	316 Ti	24	Washer			
10	Suppor. washer					Steel	St galvanized		CS
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	25	Seal			
11	Taper pin					Graphite			
	Stainless Steel	X4CrNiMo16-5	1.4418		26	Cover plate			
12	Plug screw DIN 908					Steel	St37-2 galvanized	1.0037	283-C
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	27	Hex.-socket screw			
13	Seal					Stainless Steel	A2-70	1.4301	B 8
	PTFE								
	Graphite								
						Other materials upon request			

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure							
		10 [bar]		16 [bar]		25 [bar]		40 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel
50-65	2-2½	27	35	28	42	30	58	31	66
80	3	28	55	30	65	34	90	38	100
100	4	51	90	61	100	80	120	93	140
125	5	63	150	83	172	95	220	125	285
150	6	125	170	136	220	168	300	220	360
200	8	205	350	260	430	280	505	*	*
250	10	485	505	550	620	600	860	-	-
300	12	584	740	700	970	855	1280	-	-
350	14	740	815	930	1050	1200	1370	-	-
400	16	1050	1530	1640	2240	2460	2900	-	-
450	18	1150	1700	1750	2500	2700	3500	-	-
500	20	1210	2010	1800	2760	2800	4260	-	-
550	22	3500	3750	4430	4550	6010	6800	-	-
600	24	4000	4500	4600	5740	6200	8080	-	-

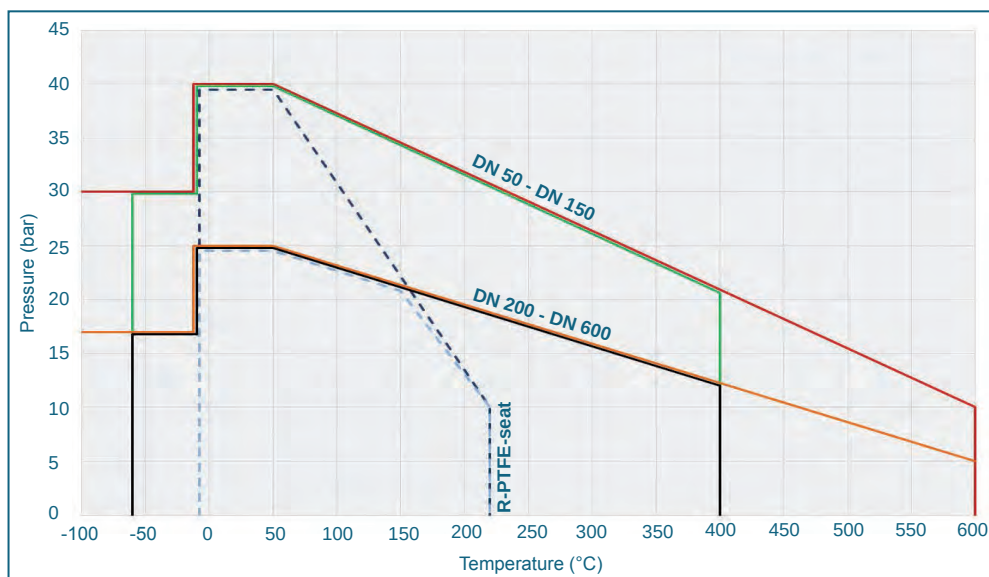
* DN 200 PN 16 max. 25 bar

All values in Nm

PRESSURE/TEMPERATURE DIAGRAM

- Pressure control line for GS-C25 body material and metal seat
- Pressure control line for 1.4408 body material and metal seat
- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation!

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,3	6	15	18	19	21	22	23
65	2½	1,5	7	18	22	23	24	25	25
80	3	7	30	50	68	82	97	113	115
100	4	22	60	97	119	164	199	223	251
125	5	45	100	152	195	256	346	452	493
150	6	63	109	162	250	391	588	814	845
200	8	96	168	301	509	742	1107	1581	1747
250	10	264	458	682	980	1421	2083	2882	2889
300	12	397	625	956	1368	1938	2778	3794	3940
350	14	460	720	1100	1650	2500	3400	4800	5400
400	16	550	870	1250	2000	3200	4800	6800	8080
450	18	730	1200	1800	3100	4600	6400	8400	10500
500	20	920	1600	2600	4100	6000	8500	12100	12800
550	22	1090	1950	3100	4600	7500	10200	14700	15300
600	24	1370	2250	3780	4950	9000	12500	17100	18500

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 111-E



Wafer type butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 200 (larger nominal diameter on request)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150 AS 4087 PN16/21
Flange Surface Design:	EN 1092, Form A/B, ASME RF,FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C to +600°C
Differential pressure:	see pressure/ temperature diagram
Vacuum:	up to 1mbar absolute

FEATURES

- Shut-off and control of gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Centering pieces can be used as installation aid
- Two seat ring systems available: R-PTFE and Inconel
- Seal variants
soft-sealing (R-PTFE) max. 230°C
metallic sealing (Inconel-seat) max. 600°C
- Maintenance-free
- Long service life, even at high switching frequencies
- FIRE SAFE BS 6755 PART 2

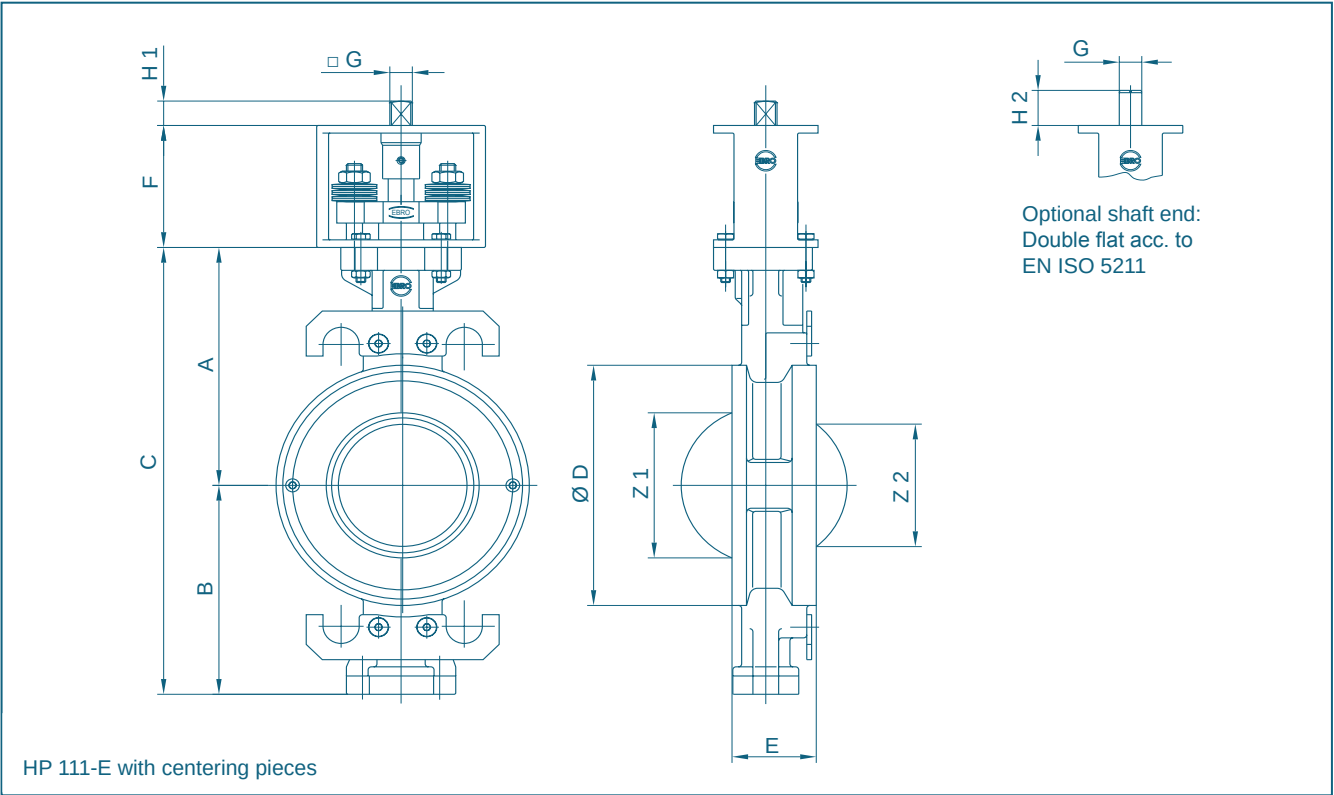
GENERAL APPLICATIONS

- Chemical and petrochemical industries
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Food industries
- Heavy duty services



The splitted shaft design allows better flow characteristics up to a nominal pressure of 19 bar.

HIGH PERFORMANCE BUTTERFLY VALVE HP 111-E

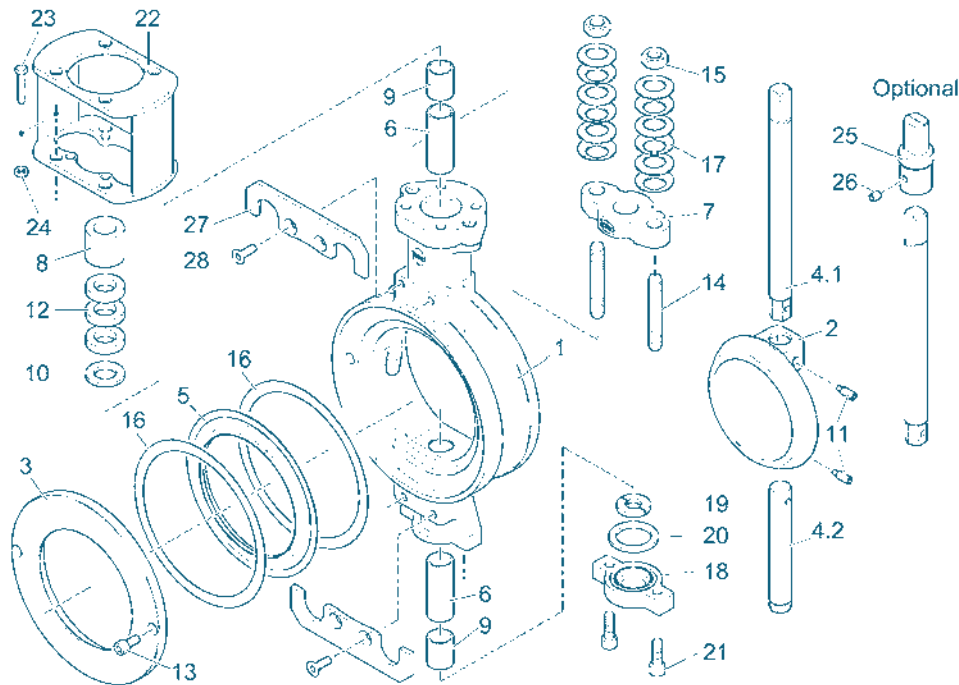


DN [mm]	Size [in]	Dimensions [mm]														Weight [kg]
		A	B	C	D	E	F	Flange	□G	H1	G	H2	Z1	Z2	min. pipe-Ø	
50	2	131	112	243	112	43	80	F05	12	15	14	23	41	-	51	5,8
65	2½	131	112	243	112	43	80	F05	12	15	14	23	41	-	51	5,8
80	3	141	122	263	138	46	80	F05	12	15	14	23	71	55	80	5,9
100	4	156	137	293	158	52	80	F05	12	15	14	23	95	82	103	7,4
125	5	180	172	352	186	56	80	F07	14	18	17	28	115	106	124	11,3
150	6	194	186	380	216	56	80	F07	14	18	17	28	144	136	151	13,8
200	8	219	212	431	270	60	80	F10	17	18	22	37	188	182	196	24,6

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 111-E

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				14	Threaded pin			
	Carbon Steel	GP240GH (GS-C25N)	1.0619	WCB		Stainless Steel	A2-70	1.4301	B 8
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	15	Hex. nut			
2	Disc					Stainless Steel	A 2	1.4301	8
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	16	Graphite seal (for metal seat)			
3	Clamping ring					Graphite			
	Steel	S23JR (RSi37-2)	1.0038	283-C	17	Belleville spring washer			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		Spring Steel	50CrV4	1.8159	6150
4.1	Upper shaft					Stainless Steel	X10CrNi18-8	1.4310	301 Ti
	Stainless Steel	X4CrNiMo16-5-1	1.4418		18	Cover plate			
	Stainless Steel	X5CrNiCuNb16-4	1.4542			Stainless Steel	GX5CrNiMo19-11	1.4408	
4.2	Lower shaft				19	Segment			
	Stainless Steel	X4CrNiMo16-5-1	1.4418			Stainless Steel	X6CrNiMoTi17-12-2	1.4571	nitrite
5	Seat ring				20	Seal			
	R-PTFE	PTFE-Compound				Graphite			
	Inconel	Inconel 625				PTFE			
6	Shaft bearing					NBR			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	nitriert 316 Ti		FPM			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316	21	Hex.-socket screw			
7	Gland flange					Stainless Steel	A4-70		
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	22	Bracket			
8	Thrust collar					Stainless Steel	GX5CrNiMo19-11	1.4408	
	Stainless Steel	X5CrNi18-10	1.4301	304	23	Hex. bolt			
9	Spacer sleeve					Stainless Steel	A2-70		
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	24	Hex. nut			
10	Suppor. washer					Stainless Steel	A 2		
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	25	Shaft adapter			
11	Set screw					Stainless Steel	GX5CrNiMoN26-7-4	1.4469	
	Stainless Steel	A4-70			26	Set screw			
12	Shaft seal					Stainless Steel	A2-70		
	Graphite				27	Centering piece			
	PTFE					Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
13	Hex.-socket screw				28	Countersunk screw			
	Stainless Steel	A4-70	1.4401	B8M		Stainless Steel	A 2	1.4301	SS
	Other materials upon request								

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 111-E

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure			
		10 [bar]		16 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel
50-65	2-2½	27	35	28	42
80	3	28	55	30	65
100	4	51	90	61	100
125	5	63	150	83	172
150	6	125	170	136	220
200	8	205	350	260	430

All values in Nm

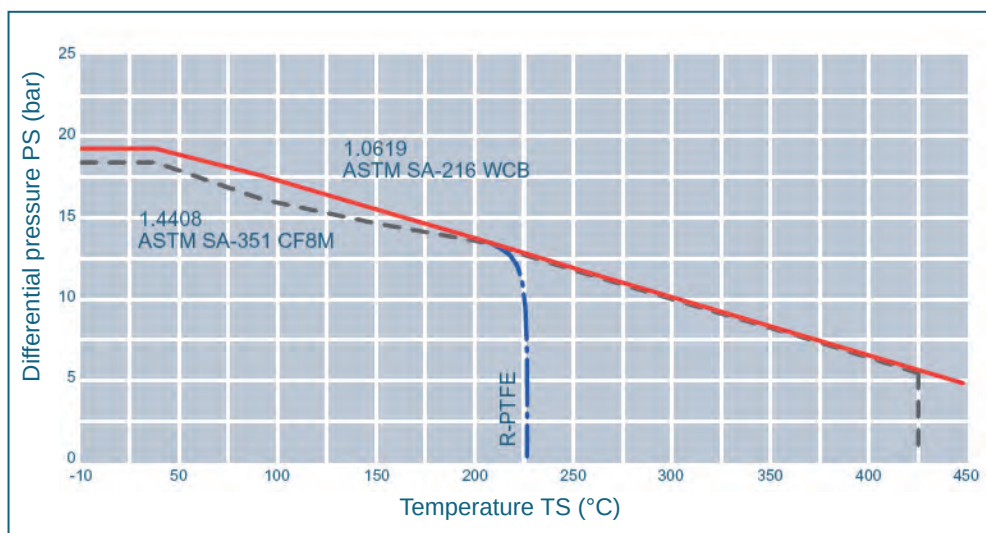
PRESSURE/TEMPERATURE DIAGRAM

----- Pressure control line for GS-C25 body material and metal seat

— Pressure control line for 1.4408 body material and metal seat

----- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	3	13	28	39	49	58	69	81
65	2½	3	13	29	41	52	61	72	84
80	3	19	40	63	96	135	189	242	287
100	4	33	65	89	125	180	259	365	450
125	5	53	105	169	245	342	509	645	728
150	6	82	161	252	385	575	817	1010	1123
200	8	105	184	331	559	816	1217	1795	1921

Subject to change without notice

For further values, please contact our engineers.

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-E



Lug type butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

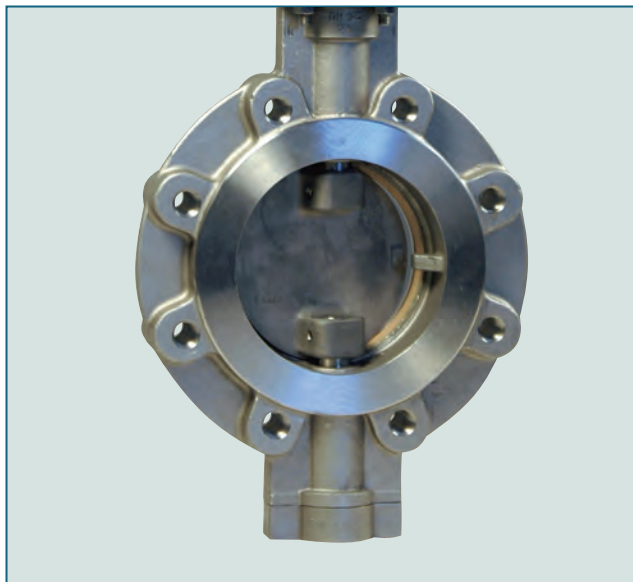
Nominal diameter:	DN 50 - DN 200 (larger nominal diameter on request)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150 AS 4087 PN16/21
Flange Surface Design:	EN 1092, Form A/B, ASME RF,FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C to +600°C
Differential pressure:	see pressure/ temperature diagram
Vacuum:	up to 1mbar absolute

FEATURES

- Shut-off and control of gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Centering pieces can be used as installation aid
- Two seat ring systems available: R-PTFE and Inconel
- Seal variants
soft-sealing (R-PTFE) max. 230°C
metallic sealing (Inconel) max. 600°C
- Maintenance-free
- Long service life, even at high switching frequencies
- FIRE SAFE BS 6755 PART 2

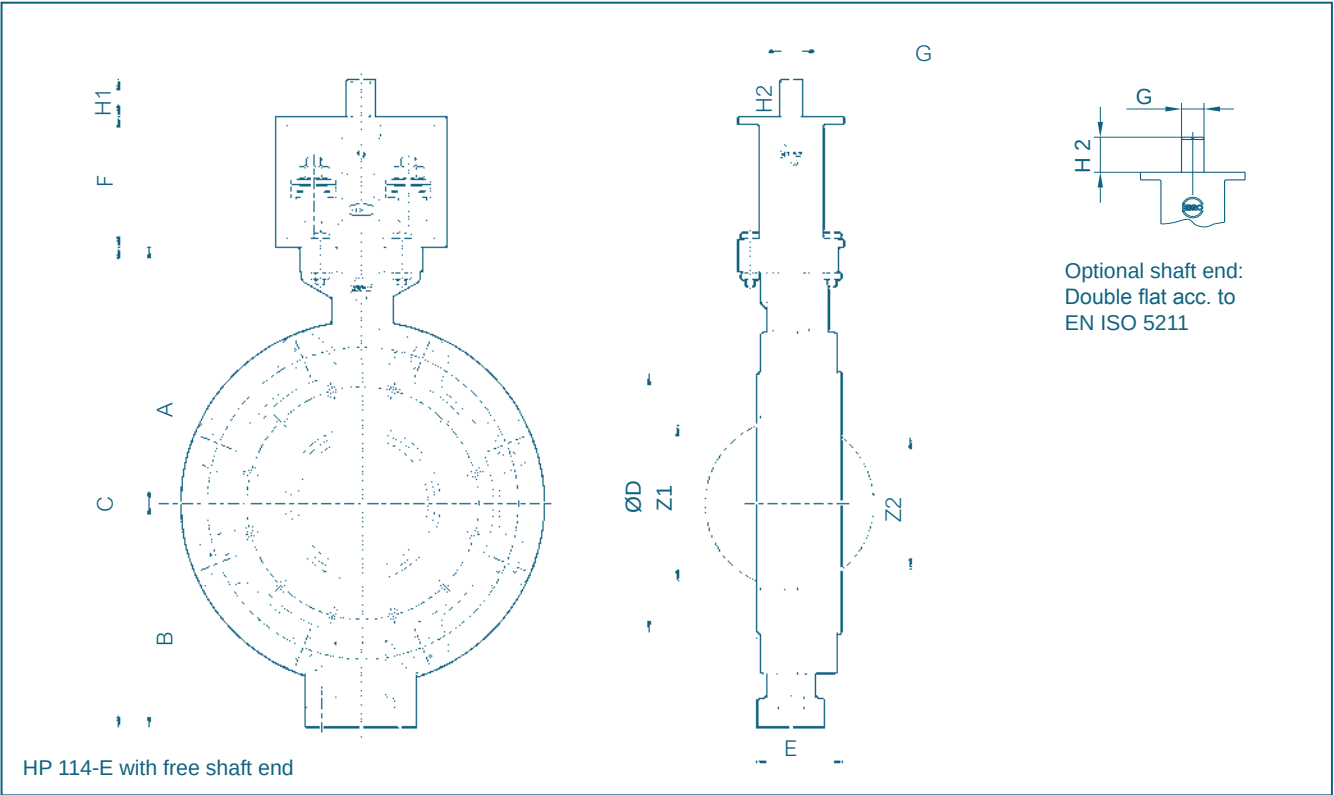
GENERAL APPLICATIONS

- Chemical and petrochemical industries
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Food industries
- Heavy duty services



The splitted shaft design allows better flow characteristics up to a nominal pressure of 19 bar.

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-E

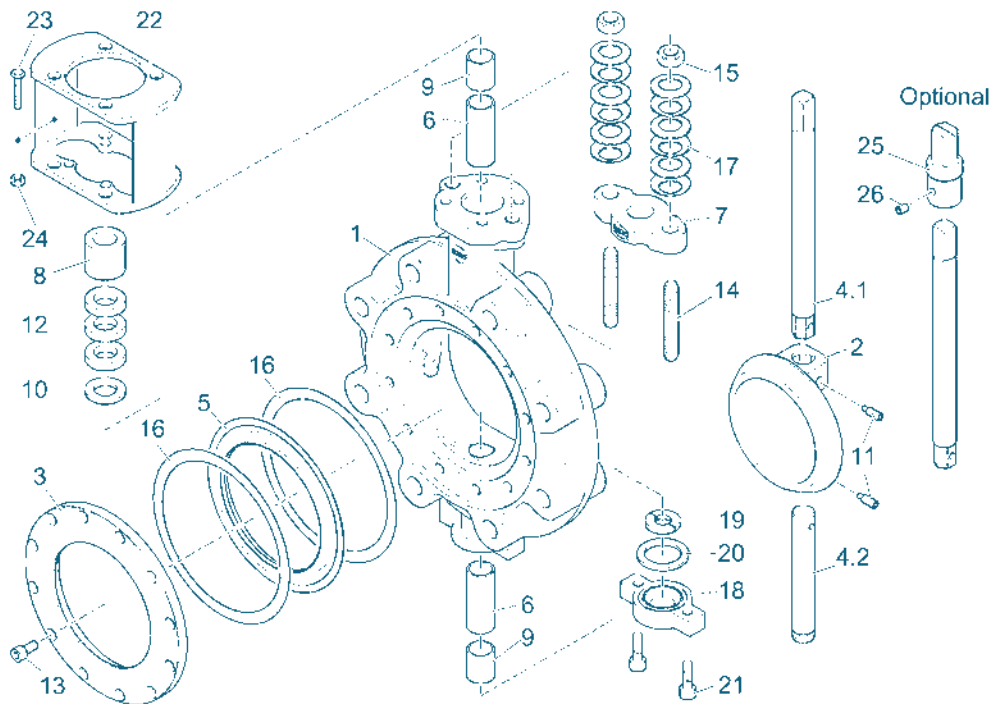


DN [mm]	Size [in]	Dimensions [mm]														Weight [kg]
		A	B	C	D	E	F	Flange	□G	H1	G	H2	Z1	Z2	min. pipe-Ø	
50	2	131	112	243	122	43	80	F05	12	15	14	23	41	-	51	8,4
65	2½	131	112	243	122	43	80	F05	12	15	14	23	41	-	51	8,4
80	3	141	122	263	138	46	80	F05	12	15	14	23	71	55	80	9,7
100	4	156	137	293	158	52	80	F05	12	15	14	23	95	82	103	11,8
125	5	180	172	352	186	56	80	F07	14	18	17	28	115	106	124	16,8
150	6	194	186	380	216	56	80	F07	14	18	17	28	144	136	151	21,8
200	8	219	212	431	270	60	80	F10	17	18	22	37	188	182	196	33,6

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-E

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				14	Threaded pin			
	Carbon Steel	GP240GH (GS-C25N)	1.0619	WCB		Stainless Steel	A2-70	1.4301	B 8
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	15	Hex. nut			
2	Disc					Stainless Steel	A 2	1.4301	8
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	16	Graphite seal (for metal seat)			
3	Clamping ring					Graphite			
	Steel	S23JR (RSi37-2)	1.0038	283-C	17	Belleville spring washer			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		Spring Steel	50CrV4	1.8159	6150
4.1	Upper shaft					Stainless Steel	X10CrNi18-8	1.4310	301 Ti
	Stainless Steel	X4CrNiMo16-5-1	1.4418		18	Cover plate			
	Stainless Steel	X5CrNiCuNb16-4	1.4542			Stainless Steel	GX5CrNiMo19-11	1.4408	
4.2	Lower shaft				19	Segment			
	Stainless Steel	X4CrNiMo16-5-1	1.4418			Stainless Steel	X6CrNiMoTi17-12-2	1.4571	nitrite
5	Seat ring				20	Seal			
	R-PTFE	PTFE-Compound				Graphite			
	Inconel	Inconel 625				PTFE			
6	Shaft bearing					NBR			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	nitriert 316 Ti		FPM			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316	21	Hex.-socket screw			
7	Gland flange					Stainless Steel	A4-70		
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	22	Bracket			
8	Thrust collar					Stainless Steel	GX5CrNiMo19-11	1.4408	
	Stainless Steel	X5CrNi18-10	1.4301	304	23	Hex. bolt			
9	Spacer sleeve					Stainless Steel	A2-70		
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	24	Hex. nut			
10	Suppor. washer					Stainless Steel	A 2		
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	25	Shaft adapter			
11	Set screw					Stainless Steel	GX5CrNiMoN26-7-4	1.4469	
	Stainless Steel	A4-70			26	Set screw			
12	Shaft seal					Stainless Steel	A2-70		
	Graphite				27	Centering piece			
	PTFE					Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
13	Hex.-socket screw				28	Countersunk screw			
	Stainless Steel	A4-70	1.4401	B8M		Stainless Steel	A 2	1.4301	SS
	Other materials upon request								

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-E

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure			
		10 [bar]		16 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel
50-65	2-2½	27	35	28	42
80	3	28	55	30	65
100	4	51	90	61	100
125	5	63	150	83	172
150	6	125	170	136	220
200	8	205	350	260	430

All values in Nm

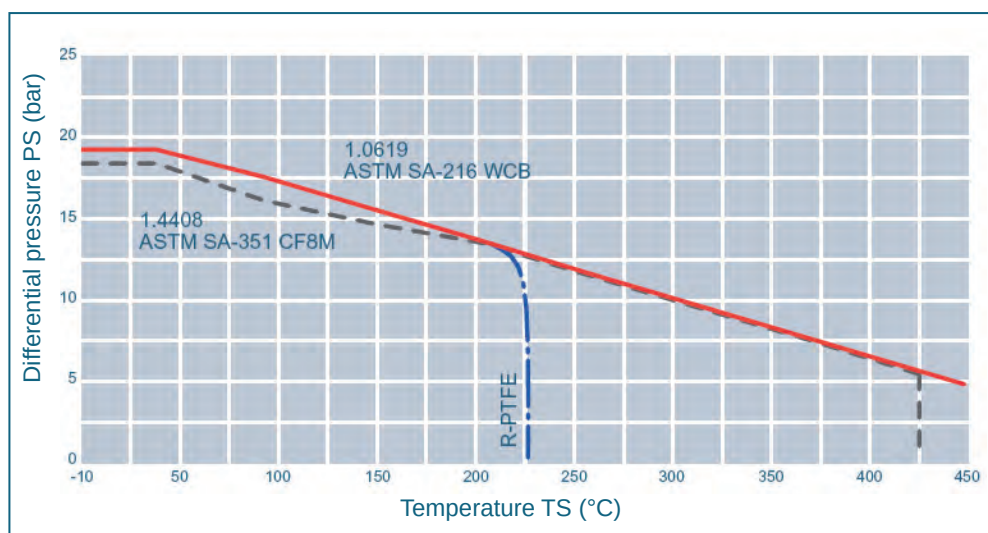
PRESSURE/TEMPERATURE DIAGRAM

----- Pressure control line for GS-C25 body material and metal seat

— Pressure control line for 1.4408 body material and metal seat

----- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	3	13	28	39	49	58	69	81
65	2½	3	13	29	41	52	61	72	84
80	3	19	40	63	96	135	189	242	287
100	4	33	65	89	125	180	259	365	450
125	5	53	105	169	245	342	509	645	728
150	6	82	161	252	385	575	817	1010	1123
200	8	105	184	331	559	816	1217	1795	1921

Subject to change without notice

For further values, please contact our engineers.

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-C



High Performance valve for the chemical industry.

TECHNICAL DATA

Nominal diameter:	DN 80 - DN 400
Face-to-face:	EN 558 Table 25
Design:	Lug type (optional: through holes)
Body:	1.0619 (WCB); 1.4408 (CF8M)
Temperature range:	-60°C to +230°C (R-PTFE-Seat) -60°C to +600°C (Inconel-Seat)
Nominal pressure:	max. 40 bar
Leakage rate:	R-PTFE, EN 12266, Leakage rate A Inconel, EN 12266, Leakage rate B
Flange drilling:	EN 1092 PN 10/16/25/40
Marking:	EN 19 PAS 1085 TA-Luft

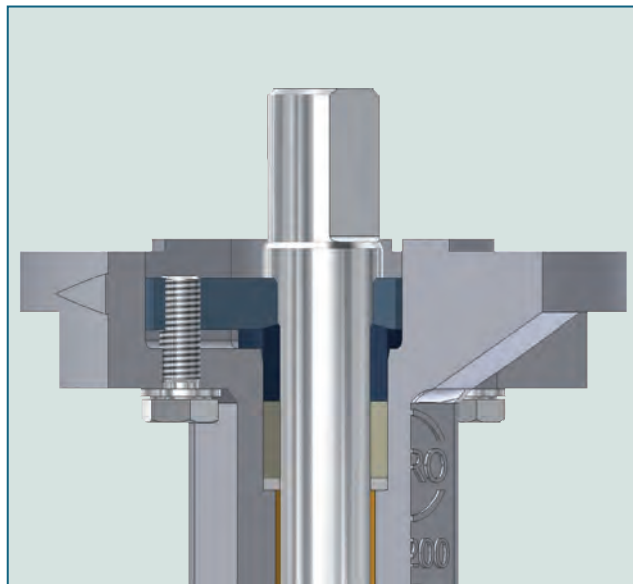
Valve Design
acc. to PAS 1085

FEATURES

- Plane sealing surface without interference (groove acc. to EN 1092 optional)
- Clamping ring without bore holes
- Long valve neck (for complete isolation)
- Distortion stop outside of media flow
- Integrated gland flange
- Quick and easy mounting
- Can be installed in any desired position
- Maintenance-free
- Integrated primary shaft seal

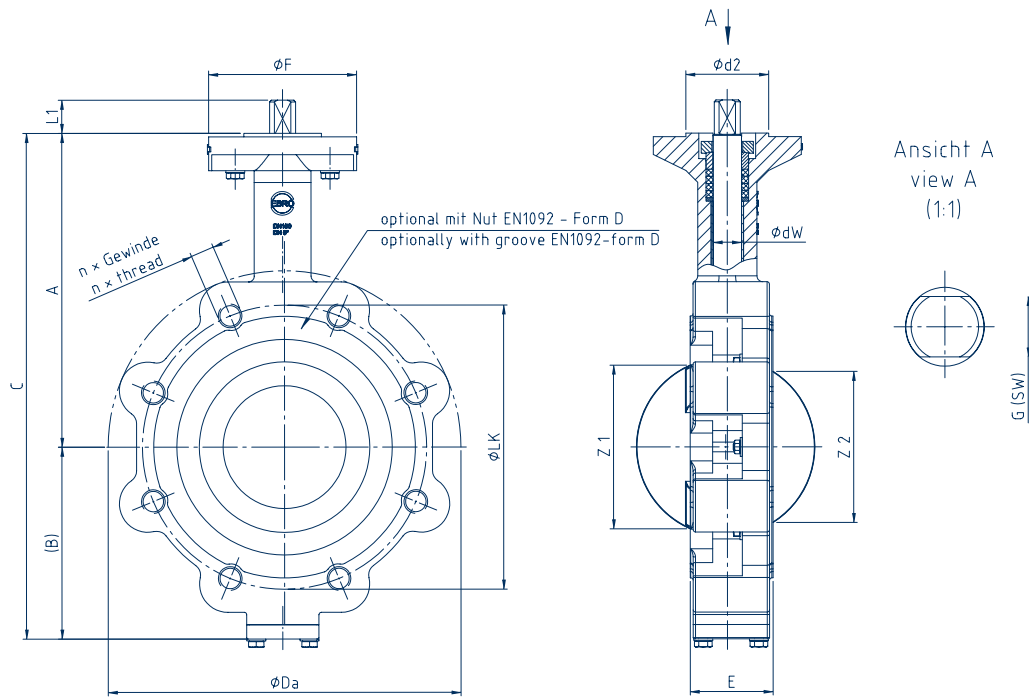
GENERAL APPLICATIONS

- Chemical and petrochemical Industry
- Heavy-Duty applications



Gland flange integrated in top flange.

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-C



HP 114-C with bare shaft end acc. to EN ISO 5211

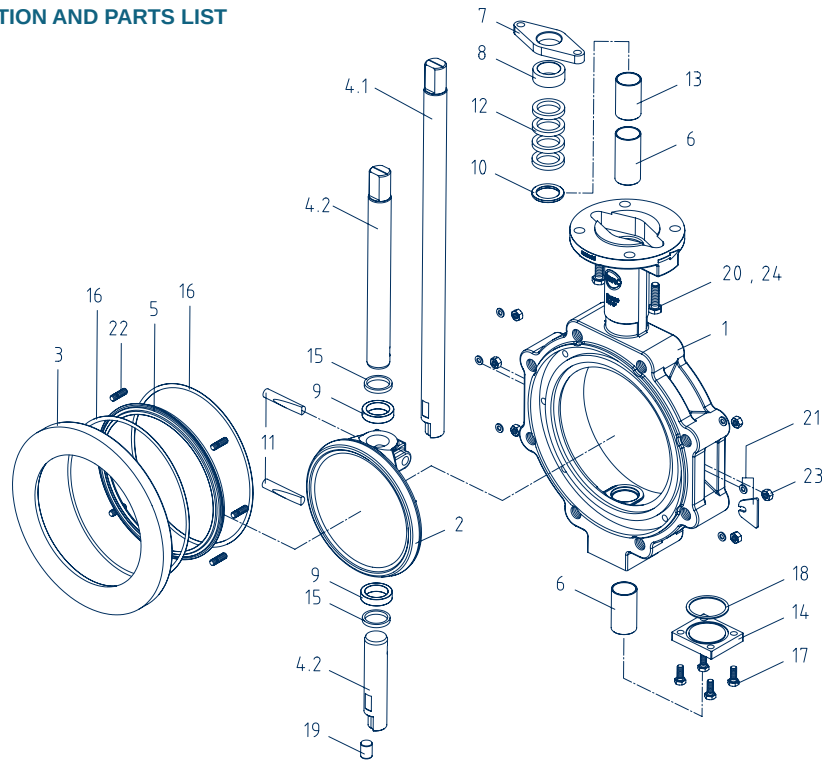
DN [mm]	Size [in]	Dimensions [mm]																Weight [kg]
		ØdW	A	(B)	C	ØDa	ØLK	n	Thread	Z1	Z2	E	Flange	ØF	Ød2	G	L1	
80	3	20	210	110	320	190	160	8	M16	72	46	49	F 07	90	55	14	23,5	8,5
100	4	20	225	131	356	236	180	8	M16	95	77	56	F 07	90	55	14	23,5	11,5
150	6	24	265	162	427	298	240	8	M20	139	128	70	F 10	125	70	17	28,0	23,0
200	8	30	310	200	510	375	295	12	M20	185	176	71	F 12	150	85	22	37,0	39,5
250	10	36	360	240	600	410	355	12	M24	235	225	76	F 14	175	100	27	46,0	53,0
300	12	42	401	275	676	480	410	12	M24	281	273	83	F 14/16*	175	100	27	46,0	69,0
350	14	42	435	310	745	520	470	16	M24	324	315	92	F 16	210	130	27	46,0	92,0
400	16	50	476	350	826	575	525	16	M27	373	363	102	F 16/25*	210	130	36	61,5	132,0

* für PN 25/40 DN 300 = F16
DN 400 = F25

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-C

MATERIAL SPECIFICATION AND PARTS LIST



Pos.	Description	Material	Material-No.	ASTM	Pos.	Description	Material	Material-No.	ASTM
1	Body				12	Seal			
	Carbon Steel	GP240GH	1.0619	WCB		Graphite			
	Stainless Steel	GX5CrNiMo 19-11-2	1.4408	CF8M		PTFE			
2	Disc				13	Spacer sleeve			
	Stainless Steel	GX5CrNiMo 19-11-2	1.4408	CF8M		Stainless Steel	X6CrNiMoTi 17-12-2		316 Ti
3	Clamping ring				14	Cover plate			
	Steel	S235JR	1.0038	283-C		Stainless Steel	X8CrNiS 18-9	1.4305	304
	Stainless Steel	X5CrNiMo 17-12-2	1.4401	316		Stainless Steel	X5CrNiS 18-10	1.4301	304
	Stainless Steel	X2CrNiMo 17-12-2	1.4404	316 L	15	Turcon-Variseal-M2			
4.1	Through shaft (TS-version)					PTFE / Metal spring			
	Stainless Steel	X5CrNiCuNb 16-4	1.4542		16	Graphite seal			
4.2	Splitted shaft					Graphite			
	Stainless Steel	X4CrNiMo 16-5-1	1.4418		17	Hex. bolt			
5	Seat ring					Stainless Steel	A4-70		B 8 M
	R-PTFE	PTFE-Compound			18	Seal			
	Inconel	Inconel 625				Graphite			
6	Shaft bearing					PTFE			
	Stainless Steel	X5CrNiMo 17-12-2	1.4401 / PTFE	316 PTFE	19	Taper pin / distortion stop			
	Stainless Steel	X6CrNiMoTi 17-12-2	1.4571 nitrite	316 Ti		Stainless Steel	X5CrNiCuNb 16-4	1.4542	
7	Gland flange					Stainless Steel	X4CrNiMo 16-5-1	1.4418	
	Stainless Steel	GX2CrNiMoN 26-7-4	1.4469	A995	20	Hex. bolt			
	Stainless Steel	X2CrNiMoN 22-5-3	1.4462	F51		Stainless Steel	A4-70		B 8 M
8	Thrust collar				21	Washer			
	Stainless Steel	X8CrNiS 18-9	1.4305	304		Stainless Steel	A4		8
	Stainless Steel	X5CrNiS 18-10	1.4301	304		Stainless Steel	X6CrNiMoTi 17-12-2	1.4571	316 Ti
9	Bearing ring				22	Threaded pin			
	Stainless Steel	X6CrNiMoTi 17-12-2	1.4571 chr-pld	316 Ti		Stainless Steel	A4-70		B 8 M
10	Suppor. washer				23	Hex. nut			
	Stainless Steel	X6CrNiMoTi 17-12-2	1.4571	316 Ti		Stainless Steel	A4-70		B 8 M
11	Taper pin								
	Stainless Steel	X5CrNiCuNb 16-4	1.4542						
	Stainless Steel	X4CrNiMo 16-5-1	1.4418						

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-C

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure							
		10 [bar]		16 [bar]		25 [bar]		40 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel
80	3	28	55	30	65	34	90	38	100
100	4	51	90	61	100	80	120	95	140
150	6	125	170	136	220	168	300	220*	360*
200	8	205	350	260	430	280	505	315*	630*
250	10	485	505	550	620	600	860	685*	1260*
300	12	584	740	700	970	855	1280	1115*	1800*
350	14	740	815	930	1050	1200	1370	1650*	1900*
400	16	1150	1530	1640	2240	2460	2900	3830*	4000*

* with through shaft only (TS-version)

All values in Nm

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation!

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α° HP-C splitted shaft (PN 10 - PN 25)							
		20°	30°	40°	50°	60°	70°	80°	90°
80	3	20	41	65	91	110	132	150	156
100	4	24	41	78	118	183	241	287	323
150	6	88	150	215	320	475	638	815	845
200	8	194	286	434	662	955	1335	1666	1712
250	10	255	430	620	924	1369	1852	2344	2430
300	12	429	632	930	1413	2052	2870	3622	3788
350	14	565	942	1410	2076	2916	3876	4751	4989
400	16	708	1185	1772	2683	3888	5279	6812	6977

DN [mm]	Size [in]	Opening angle α° HP-C through shaft (PN 40)							
		20°	30°	40°	50°	60°	70°	80°	90°
80*	3	20	41	65	91	110	132	150	156
100*	4	24	41	78	118	183	241	287	323
150	6	80	170	257	345	463	587	722	757
200	8	179	307	444	643	907	1210	1440	1460
250	10	233	390	570	850	1260	1700	2150	2230
300	12	370	620	890	1330	1970	2670	3380	3500
350	14	534	890	1349	1968	2769	3735	4550	4750
400	16	690	1160	1670	2500	3700	5012	6340	6580

* splitted shaft only

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 112



Double-flanged butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

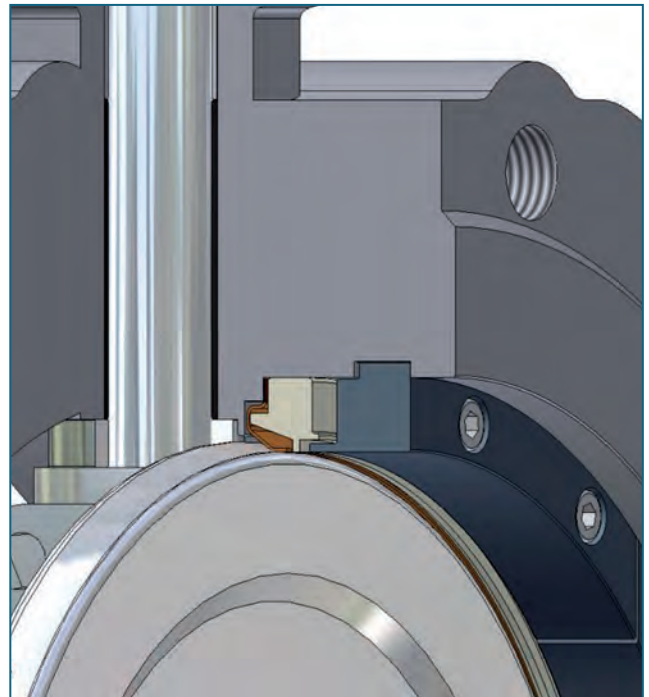
Nominal diameter:	DN 80 - DN 600
Face-to-face::	EN 558 Series 13 others upon request
Flange accomodation:	ASME Class 150 ASME Class 300 AS 4087 PN 16/21
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C bis +600°C
Operating pressure:	≤ DN 150, 40 bar > DN 150, 25 bar
Vacuum:	up to 1mbar absolute

FEATURES

- Shut-off and control valve for gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Seat ring systems available: R-PTFE, Inconel and Fire Safe
- Maintenance-free
- Long service life, even at high switching frequencies
- Seal variants:
 - soft-sealing (R-PTFE) max. 230°C
 - metallic sealing (Inconel) max. 400°C
 - special material for temperatures > 400°C

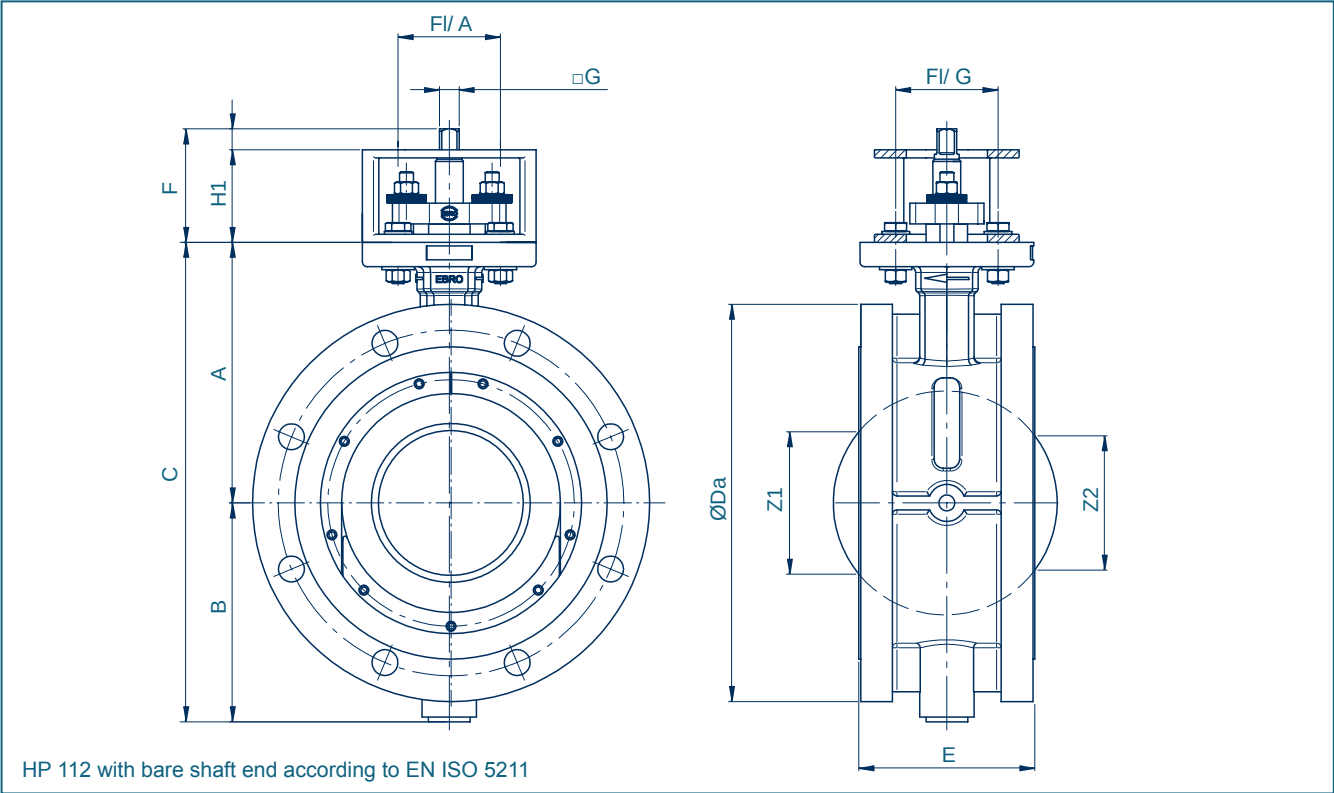
GENERAL APPLICATIONS:

- Chemical and petrochemical industry
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Heavy duty services



Sealing system with inside metallic thrust collar.

HIGH PERFORMANCE BUTTERFLY VALVE HP 112



DN [mm]	Size [in]	Dimensions [mm]														Weight [kg]	
		A	B	C	ØDa	ØDa	E	F	FL/A	FL/G	G	H1	Z1	Z2	CL 150	CL 300	
					CL 150*	CL 300**											
80	3	142	109	251	191	210	114	95	F05	F07	12	15	-	-	15	19	
100	4	158	122	280	229	254	127	95	F05	F07	12	15	-	-	20	24	
150	6	195	152	347	280	318	140	98	F07	F10	14	18	62	47	32	50	
200	8	225	190	415	343	381	152	98	F10	F12	17	18	123	116	50	70	
250	10	268	220	488	407	444	165	103	F12	F12	22	23	180	174	70	90	
300	12	300	255	555	483	521	178	118	F12	F14	27	28	230	226	105	150	
350	14	345	304	649	534	585	190	128	F14	F14	27	28	276	270	155	210	
400	16	375	340	715	597	648	216	136	F14	F16	36	36	317	311	205	255	
450	18	412	366	778	635	711	222	156	F16	F16	36	36	384	380	245	315	
500	20	441	399	840	699	775	229	166	F16	F16	46	46	428	423	295	385	
600	24	524	468	992	813	914	267	255	F25	F25	55	55	501	494	470	615	

* Acc. to ASME Class 150 max. 19,2 bar

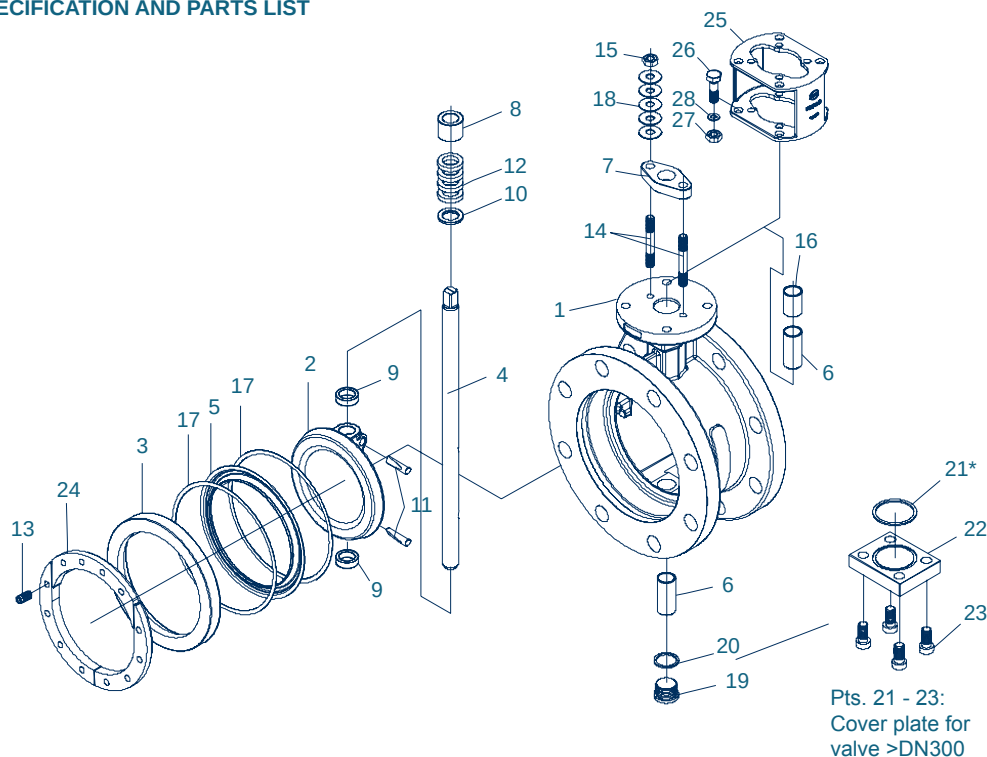
**Acc. to ASME Class 300 DN 200 - DN 600 max. 25 bar

Acc. to ASME Class 300 DN 80 - DN150 max. 40 bar

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 112

MATERIAL SPECIFICATION AND PARTS LIST



Pos.	Description	Material	Material No.	ASTM	Pos.	Description	Material	Material No.	ASTM
1	Body				14	Threaded pin			
	Carbon Steel	GP240GH	1.0619	WCB		Stainless steel	A4-70		B 8 M
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	15	Hex.-nut			
2	Disc					Stainless steel	A4-70		B 8 M
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	16	Spacer sleeve			
3	Clamping ring					Stainless steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
	Steel	S235JR	1.0038	283-C	17	Graphite seal (for metal seat)			
	Stainless Steel	X2CrNiMo17-12-2	1.4404	316 L		Graphite			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	18	Belleville spr. washer			
4	Shaft						50CrV4	1.4310	
	Stainless Steel	X4CrNiMo16-5-1	1.4418		19	Plug screw			
5	Seat ring					Stainless steel	A2-50		B 8 M
	R-PTFE	PTFE-Compound				Machining steel	11SNPb30	1.0718 ni-pld.	A29
	Inconel	Inconel 625			20/21*	Seal			
6	Shaft bearing					Graphite / Copper*			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316 PTFE		PTFE / Steel*			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 ni-pld	316 Ti	22	Cover plate			
7	Gland flange					Stainless steel	X5CrNiMo17-12-2	1.4401	304
	Stainless steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Stainless steel	G-X5CrNiMo19-11-2	1.4408	CF8M
8	Thrust collar				23	Hex.-socket screw			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	304		Stainless steel	A4-70		B 8 M
	Stainless Steel	X2CrNiMo17-12-2	1.4404	304	24	Bearing ring			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti		Stainless steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
9	Bearing ring				25	Bracket			
	Stainless steel	X6CrNiMoTi17-12-2	1.4571 chr-pld.	316 Ti		Steel	S235JR+AR	1.0038	
	Stainless steel	X2CrNiMoN22-5-3	1.4462 chr-pld		26	Hex. bolt			
10	Support washer					Steel	St galvanized		
	Stainless steel	X6CrNiMoTi17-12-2	1.4571	316 Ti		Stainless steel	A2-70		B 8
11	Taper pin				27	Washer			
	Stainless steel	X4CrNiMo16-5-1	1.4418			Steel	St galvanized		
12	Shaft seal					Stainless steel	A4		8
	Graphite				28	Hex. nut			
	PTFE					Steel	St galvanized		
13	Hex. socket screw					Stainless steel	A2-70		8
	Stainless steel	A4-70		B 8 M					
		X1NiCrMoCuN25-20-7	1.4529			Other materials upon request.			

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 112

TORQUE

- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)

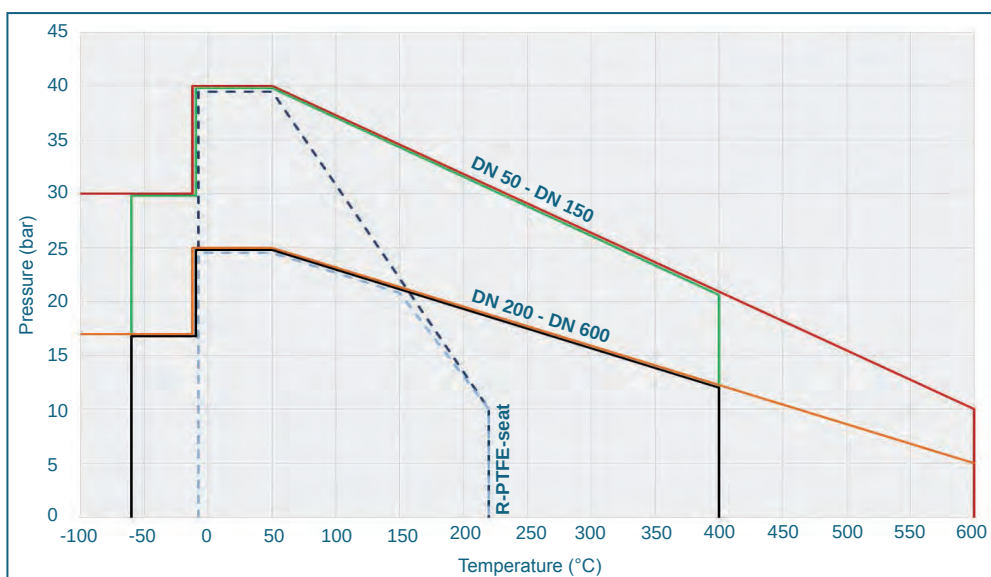
DN [mm]	Size [in]	Operating pressure							
		10 [bar]		16 [bar]		25 [bar]		40 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel
80	3	28	55	30	65	34	90	38	100
100	4	51	90	61	100	80	120	93	140
150	6	125	170	136	220	168	300	220	360
200	8	205	350	260	430	280	505	-	-
250	10	485	505	550	620	600	860	-	-
300	12	584	740	700	970	855	1280	-	-
350	14	740	815	930	1050	1200	1370	-	-
400	16	1150	1530	1640	2240	2460	2900	-	-
450	18	1150	1700	1750	2500	2700	3500	-	-
500	20	1210	2010	1800	2760	2800	4260	-	-
600	24	4000	4500	4600	5740	6200	8080	-	-

All values in Nm

PRESSURE/TEMPERATURE DIAGRAM

- Pressure control line for GS-C25 body material and metal seat
- Pressure control line for 1.4408 body material and metal seat
- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-values [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
80	3	7	30	50	68	82	97	113	115
100	4	22	60	97	119	164	199	223	251
150	6	63	109	162	250	391	588	814	845
200	8	96	168	301	509	742	1107	1581	1747
250	10	264	458	682	980	1421	2083	2882	2889
300	12	397	625	956	1368	1938	2778	3794	3940
350	14	460	720	1100	1650	2500	3400	4800	5400
400	16	550	870	1250	2000	3200	4800	6800	8080
450	18	730	1200	1800	3100	4600	6400	8400	10500
500	20	920	1600	2600	4100	6000	8500	12100	12800
600	24	1370	2250	3780	4950	9000	12500	17100	18500

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-K3



Lug type butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

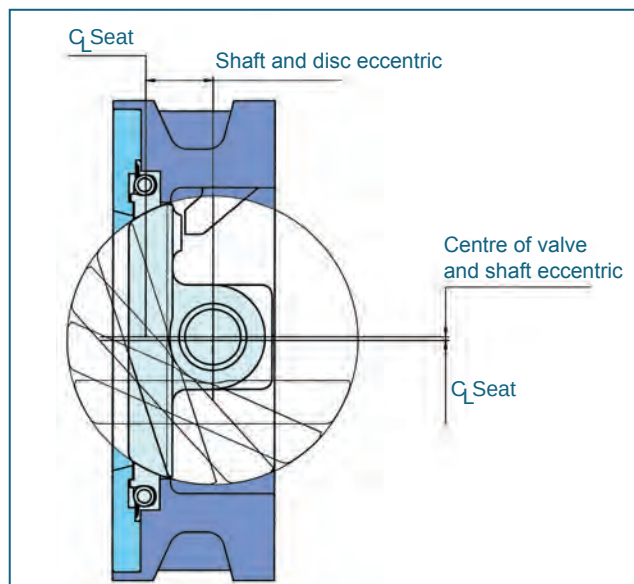
Nominal diameter:	DN 50 - DN 600 (larger nominal diameter on request)
Face-to-face:	EN 558 Series 16 ISO 5752 Series 16
Flange accommodation:	EN 1092 PN 10/16/25/40 (to DN 150) EN 1092 PN 10/16/25 (DN 200-DN 600) ASME Class 150/300 AS 4087 PN16/21
Flange Surface Design:	EN 1092, Form A/B, ASME RF,FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C to +600°C
Differential pressure:	≤ DN150 max. 40 bar > DN150 max. 25 bar
Vacuum:	up to 1mbar absolute

FEATURES

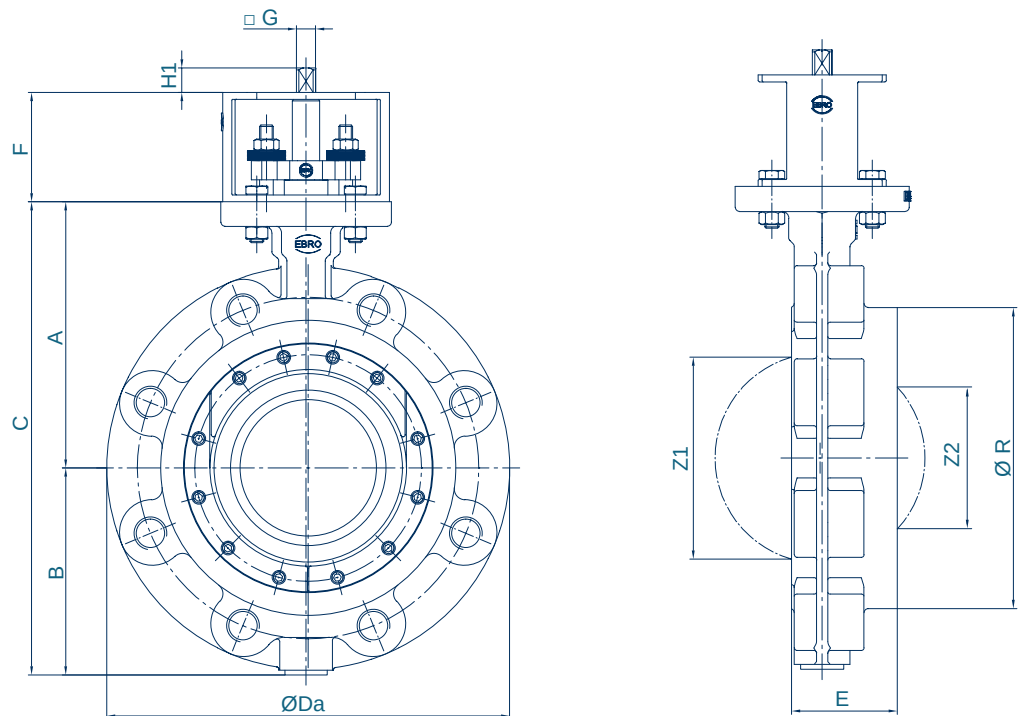
- Shut-off and control of gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Centering pieces can be used as installation aid
- Two seat ring systems available: R-PTFE and Inconel
- Seal variants:
soft-sealing (R-PTFE) max. 230°C
metallic sealing (Inconel) max. 600°C
- Maintenance-free
- Long service life, even at high switching frequencies

GENERAL APPLICATIONS

- Chemical and petrochemical industries
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Food industry
- Heavy duty services



HIGH PERFORMANCE BUTTERFLY VALVE HP 114-K3



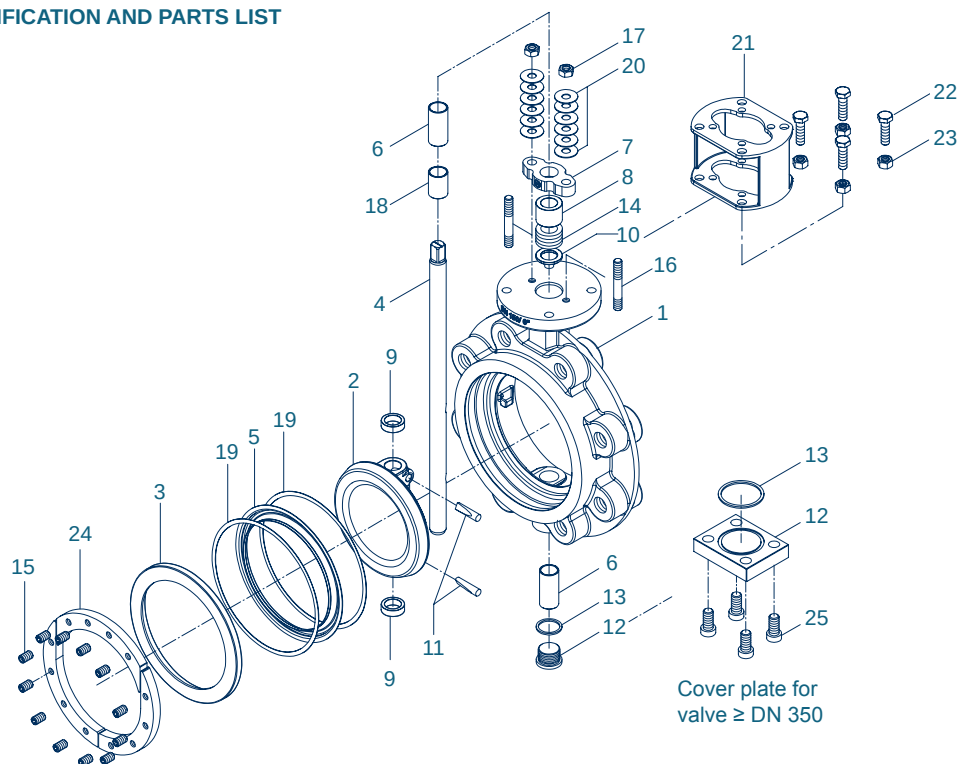
HP 114-K3 with bare shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	Ø Da	E	F	Flange	□ G	H1	Ø R	Z1	Z2	
50	2	133	96	229	180	64	80	F07	12	15	112	41	-	8
65	2½	133	96	229	180	64	80	F07	12	15	112	41	-	9
80	3	142	110	252	200	65	80	F07	12	15	138	71	-	12
100	4	158	122	280	235	65	80	F07	12	15	160	95	49	14
125	5	181	138	319	260	70	80	F10	14	15	190	115	76	19
150	6	195	152	347	295	76	80	F10	14	15	216	144	102	24
200	8	225	189	414	352	89	80	F12	17	18	270	188	143	39
250	10	268	220	488	425	114	80	F12	22	23	326	236	171	61
300	12	300	253	553	485	114	90	F14	27	28	395	281	242	92
350	14	346	305	651	542	127	100	F14	27	28	438	323	281	125
400	16	375	340	715	606	140	100	F16	36	36	500	372	328	164
450	18	412	350	762	656	152	120	F16	36	36	530	427	397	189
500	20	425	400	825	716	152	120	F16	46	46	598	469	445	243
600	24	490	469	959	834	178	200	F25	55	55	708	545	516	270

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-K3

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pos.	Description	Material	Material No.	ASTM
1	Body				12	Plug screw (≤ 300)			
	Carbon Steel	GS-C25N	1.0619	WCB		Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	12	Cover plate (≥ 350)			
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469			Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
2	Disc					Duplex Steel	GX2CrNiMoN26-7-4	1.4469	
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	13	Seal			
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469			PTFE			
3	Clamping ring					Graphite			
	Steel	St37-2	1.0037	283-C	14	Shaft seal			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		PTFE			
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469			Graphite			
4	Shaft				15	Hexagon socket set screw with flat point			
	Stainless Steel	X4CrNiMo16-5	1.4418			Stainless Steel	A4-70		B8M
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469		16	Threaded pin			
5	Seat ring					Stainless Steel	A4-70		B8M
	R-PTFE	PTFE-Compound			17	Hexagon Nut			
	Inconel	Inconel 625				Stainless Steel	A4-70		B8M
6	Shaft bearing				18	Distance bush			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316 PTFE		Stainless Steel	X10CrNi18-8	1.4310	301 Ti
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 nitrite	316 Ti		Duplex Steel	GX2CrNiMoN26-7-4	1.4469	
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469 chr-plt		20	Belleville spring washer			
7	Gland flange						50CrV4	1.4310	
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	21	Bracket			
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469			≤ DN 250 St. Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
8	Thrust collar					≥ DN 300	St37-2	1.0037 zinc plated	C
	Stainless Steel	X5CrNiMo17-12-2	1.4401	304	22	Hexagon bolt			
	Stainless Steel	X2CrNiMo17-12-2	1.4404	304		Stainless Steel	A4-70		B8M
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	23	Hexagon Nut			
9	Bearing ring					Stainless Steel	A4-70		B8M
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 chr-pld.	316 Ti	24	Thrust ring			
10	Suppor. washer					Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti		Duplex Steel	GX2CrNiMoN26-7-4	1.4469	
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469		25	Hexagon-socket screw			
11	Taper pin					Stainless Steel	A4-70		B8M
	Stainless Steel	X4CrNiMo16-5	1.4418						
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469						Other materials upon request

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-K3

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure							
		10 [bar]		16 [bar]		25 [bar]		40 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel
50-65	2-2½	27	35	28	42	30	58	31	66
80	3	28	55	30	65	34	90	38	100
100	4	51	90	61	100	80	120	93	140
125	5	63	150	83	172	95	220	125	285
150	6	125	170	136	220	168	300	220	360
200	8	205	350	260	430	280	505	*	*
250	10	485	505	550	620	600	860	-	-
300	12	584	740	700	970	855	1280	-	-
350	14	740	815	930	1050	1200	1370	-	-
400	16	1050	1530	1640	2240	2460	2900	-	-
450	18	1150	1700	1750	2500	2700	3500	-	-
500	20	1210	2010	1800	2760	2800	4260	-	-
600	24	4000	4500	4600	5740	6200	8080	-	-

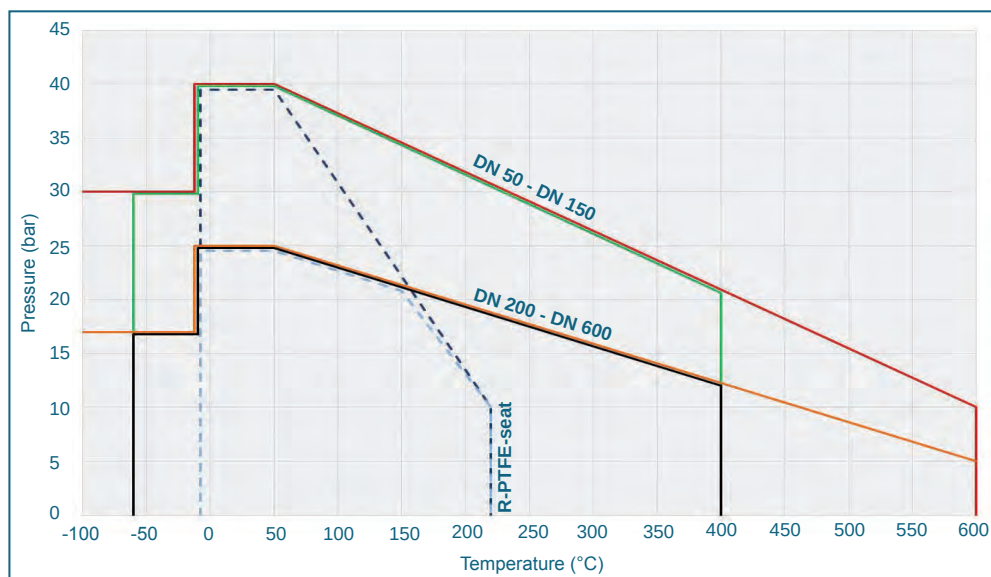
* DN 200 PN 16 max. 25 bar

All values in Nm

PRESSURE/TEMPERATURE DIAGRAM

- Pressure control line for GS-C25 body material and metal seat
- Pressure control line for 1.4408 body material and metal seat
- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation!

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,3	6	15	18	19	21	22	23
65	2½	1,5	7	18	22	23	24	25	25
80	3	7	30	50	68	82	97	113	115
100	4	22	60	97	119	164	199	223	251
125	5	45	100	152	195	256	346	452	493
150	6	63	109	162	250	391	588	814	845
200	8	96	168	301	509	742	1107	1581	1747
250	10	264	458	682	980	1421	2083	2882	2889
300	12	397	625	956	1368	1938	2778	3794	3940
350	14	460	720	1100	1650	2500	3400	4800	5400
400	16	550	870	1250	2000	3200	4800	6800	8080
450	18	730	1200	1800	3100	4600	6400	8400	10500
500	20	920	1600	2600	4100	6000	8500	12100	12800
600	24	1370	2250	3780	4950	9000	12500	17100	18500

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 300



Lug type butterfly valve in triple-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions up to 63 bar.

TECHNICAL DATA

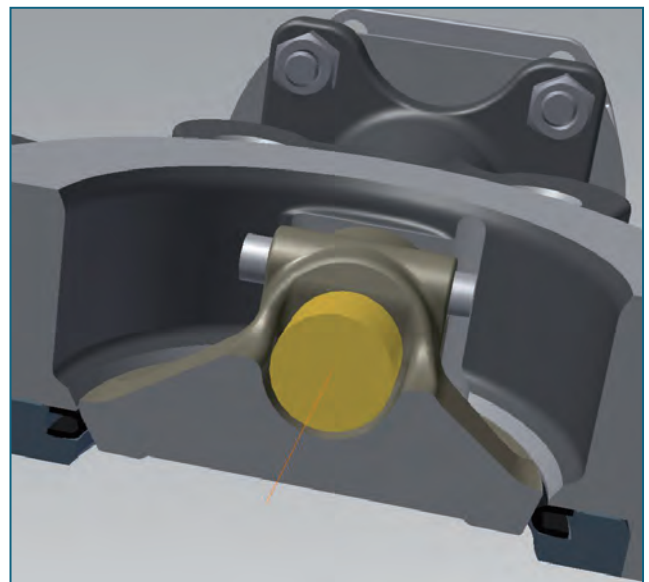
Nominal diameter:	DN 80 - DN 600 (larger nominal diameter on request)
Face-to-face:	EN558 R25 $\leq$ DN 250 EN558 R16 $\geq$ DN 300 API 609 Class 300
Flange accommodation:	EN1092 PN40, PN63 ANSI B16.5 class 300, class 600
Tightness check:	EN12266 (Leakage rate A) API 598 FCI 70/2
Temperature range:	-60°C to +600°C
Differential pressure:	63 bar $\leq$ DN 400 50 bar $\geq$ DN 450

FEATURES

- Shut-off and control of gaseous and liquid media
- Control performance nearly linear
- Tricentric design
- Floating design of the seat ring
- Two versions of the seat ring available:
full-metall and stainless steel / Graphite lamella seat
- Robust design suitable for heavy duty applications and media with solids content
- Shaft gasket adjustable
- End of line service at full pressure
- Flange sealing surface of the clamping ring not interrupted by screw counter bores

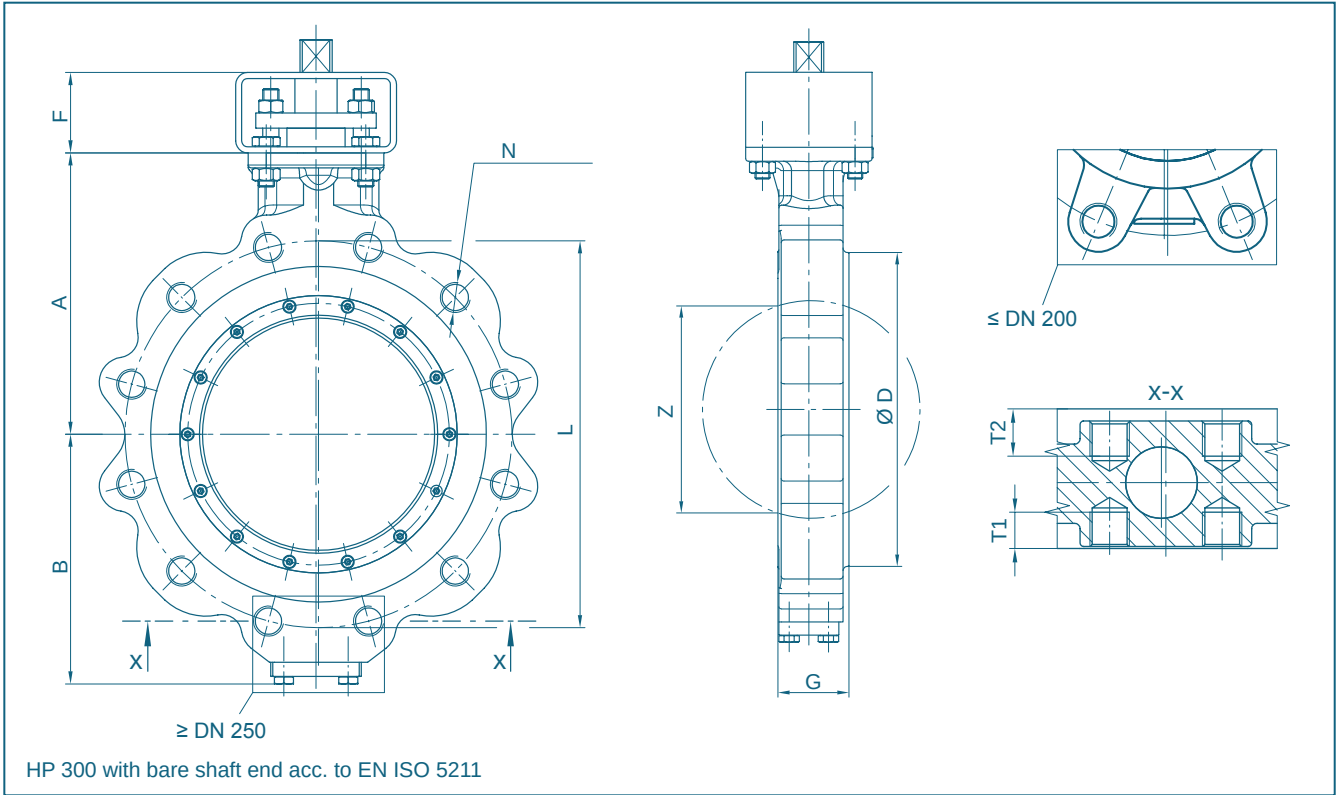
GENERAL APPLICATIONS

- Heat power plants
- Refineries
- Paper industry
- Chemical and petrochemical industry
- Hot water and steam systems
- Geothermal energy



The sealing system of the HP 300.

HIGH PERFORMANCE BUTTERFLY VALVE HP 300

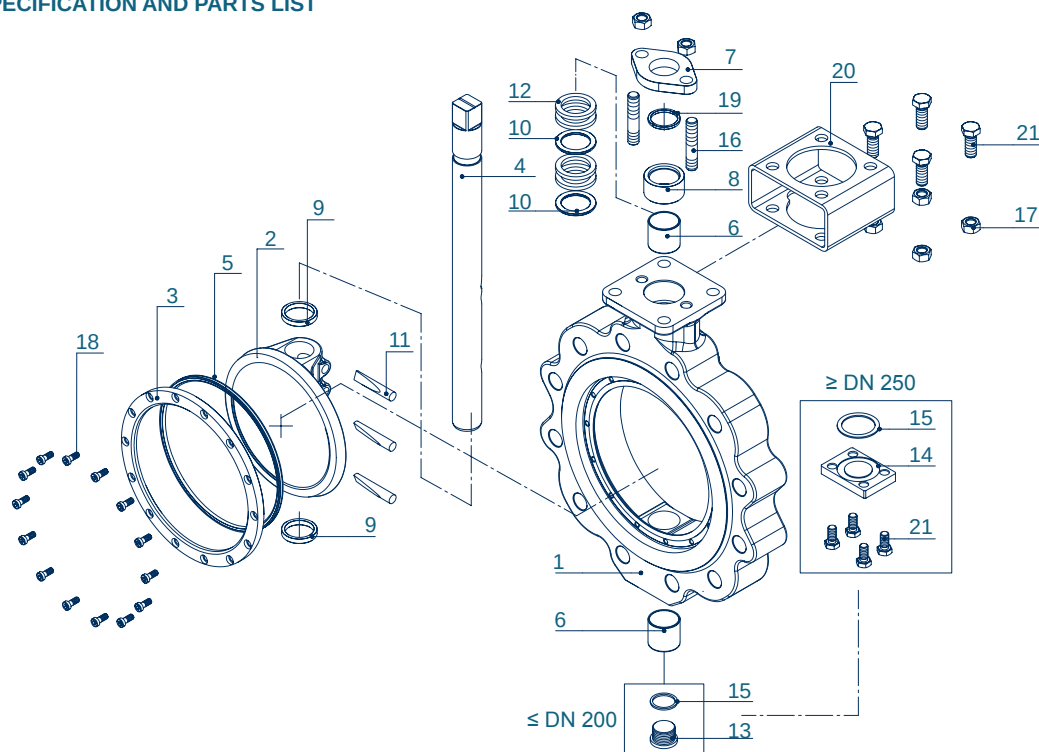


DN [mm]	Size [in]	Dimensions [mm]											Weight [kg]
		Flange Connection	A	B	D	F	G	L	N	T1	T2	Z	
80	3	PN 40	120	95	138	80	49	160	8	-	-	68	11
		PN 63	120	95	138	80	49	170	8	-	-	68	
		class 300/600	120	95	138	80	49	168	8	-	-	68	
100	4	PN 40	154	126	160	80	56	190	8	-	-	78	14
		PN 63	154	126	160	80	56	200	8	-	-	78	
		class 300	154	126	160	80	54	200	8	-	-	81	
		class 600	154	126	160	80	54	216	8	-	-	81	
150	6	PN 40	199	162	216	80	70	250	8	-	-	119	33
		PN 63	199	162	216	80	70	280	8	-	-	119	
		class 300	199	162	216	80	60	270	12	-	-	127	
		class 600	199	162	216	80	60	292	12	-	-	127	
200	8	PN 40	231	198	280	80	72	320	12	-	-	185	46
		PN 63	231	198	280	80	72	345	12	-	-	185	
		class 300	231	198	280	80	73	330	12	-	-	182	
		class 600	231	198	280	80	73	349	12	-	-	182	
250	10	PN 40	280	249	335	100	76	385	12	-	-	226	90
		PN 63	280	249	335	100	76	400	12	-	-	226	
		class 300	280	249	335	100	83	387	16	24	25	222	
300	12	PN 40	295	293	410	100	114	450	16	32	43	268	110
		PN 63	295	293	410	100	114	460	16	30	50	268	
		class 300	295	293	410	100	92	451	16	29	28	285	
350	14	PN 40	331	340	460	100	127	510	16	31	41	301	175
		PN 63	331	340	460	100	127	525	16	33	43	301	
		class 300	331	340	460	100	118	514	20	23	24	308	
400	16	PN 40	363	372	512	200	140	585	16	43	43		265
		class 300	363	372	512	200	133	572	20				
450	18	PN 40	386	388	560	200	152	610	20	35	35		330
		class 300	386	388	560	200	149	629	24	35	32		
500	20	PN 40	442	434	610	200	152	670	20				400
		class 300	442	434	610	200	159	686	24	30	30		
600	24	PN 40	500	492	725	200	178	795	20	42	42	588	600
		class 300	500	492	725	200	181	813	24			587	

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 300

MATERIAL SPECIFICATION AND PARTS LIST



Pos.	Description	Material	Material No.	ASTM	Pos.	Description	Material	Material No.	ASTM
1	Body				11	Taper pin			
	Carbon Steel	GP240GH	1.0619	A216 WCB		Stainless Steel	X4CrNiMo16-5	1.4418	
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	A351 CF8M	12	Shaft sealing			
2	Disc					Graphite	Graphite	316	316
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	A351 CF8M	13	Cap screw			
3	Clamping ring					Steel	A4-70		A193-B8
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	14	Cover plate			
4	Shaft					Steel	H II	1.0425	A516-60
	Stainless Steel	X4CrNiMo16-5-1	1.4418	431		Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
	Stainless Steel	X5CrNiCuNb 16-4	1.4542	630	15	Seal			
5	Seat ring					Grahpite - Stainless Steel			
	Stainless Steel	X5CrNiCuNb 16-4	1.4542	630	16	Stud bolt			
	Graphite	Graphite	316	316		Steel	A2-70		A193-B8
6	Bearing bush				17	Hexagon nut			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 nitriert	316 Ti		Steel	A2-70		A193-B8
7	Packing gland				18	Socket head cap screw			
	Steel	H II	1.0425			Steel	A4-70		A193-B8M
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	19	Blow-out prevention key			
8	Thrust collar					Stainless Steel	X8CrNiS18-9	1.4305	303
	Stainless Steel	X8CrNiS18-9	1.4305	303	20	Bracket			
9	Bearing ring					=< DN 250	X5CrNi18-10	1.4301	304
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 h.verchr.	316 Ti		>DN 250	St galvanized		
10	Support washer				21	Hexagon bolt			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti		Steel	A2-70		A193-B8
						Other materials upon request.			

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 300

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

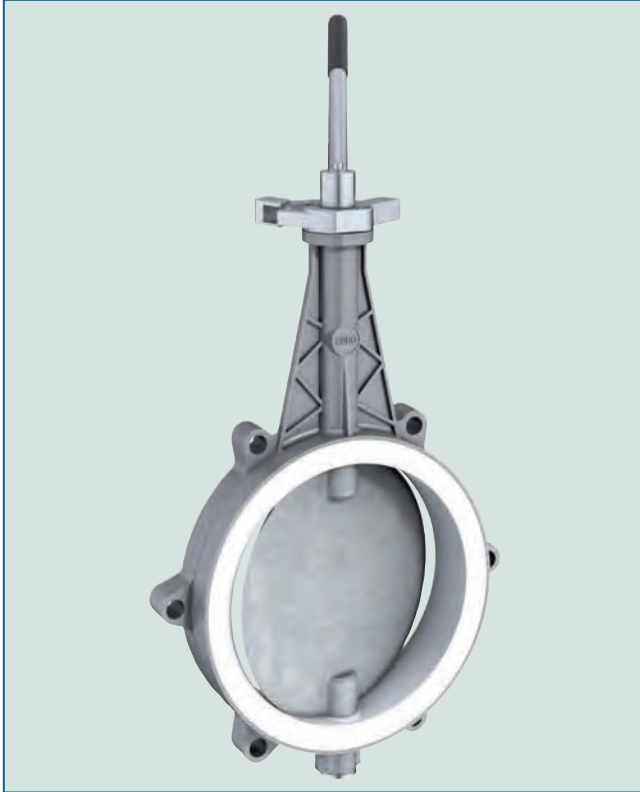
- Avoid cavitation!

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,3	6	15	18	19	21	22	23
65	2½	1,5	7	18	22	23	24	25	25
80	3	7	30	50	68	82	97	113	115
100	4	22	60	97	119	164	199	223	251
125	5	45	100	152	195	256	346	452	493
150	6	63	109	162	250	391	588	814	845
200	8	96	168	301	509	742	1107	1581	1747
250	10	264	458	682	980	1421	2083	2882	2889
300	12	397	625	956	1368	1938	2778	3794	3940
350	14	460	720	1100	1650	2500	3400	4800	5400
400	16	550	870	1250	2000	3200	4800	6800	8080
450	18	730	1200	1800	3100	4600	6400	8400	10500
500	20	920	1600	2600	4100	6000	8500	12100	12800
550	22	1090	1950	3100	4600	7500	10200	14700	15300
600	24	1370	2250	3780	4950	9000	12500	17100	18500

Subject to change without notice

CONTAINER VALVE BE 250/BE 300



Container valve BE 250 with drain lock bolt.

TECHNICAL DATA

Nominal diameter:	DN 250 / DN 300
Face-to-face:	EBRO works standard
Flange accommodation:	according to the connections in container building
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-20°C to +160°C (depending on pressure and medium)
Operating pressure:	max. 1 bar
Body:	Aluminium alloy GD-AlSi9Cu3 (3.2163)
Seat:	EPDM (Ethylene propylene caoutchouc) NBR (Acrylnitrile butadiene rubber) FPM (Fluorocarbon caoutchouc) AU (Polyurethane)
Disc:	Stainless Steel X5CrNi18-10 (1.4301) X6CrNiMoTi17-12-2 (1.4571)

FEATURES

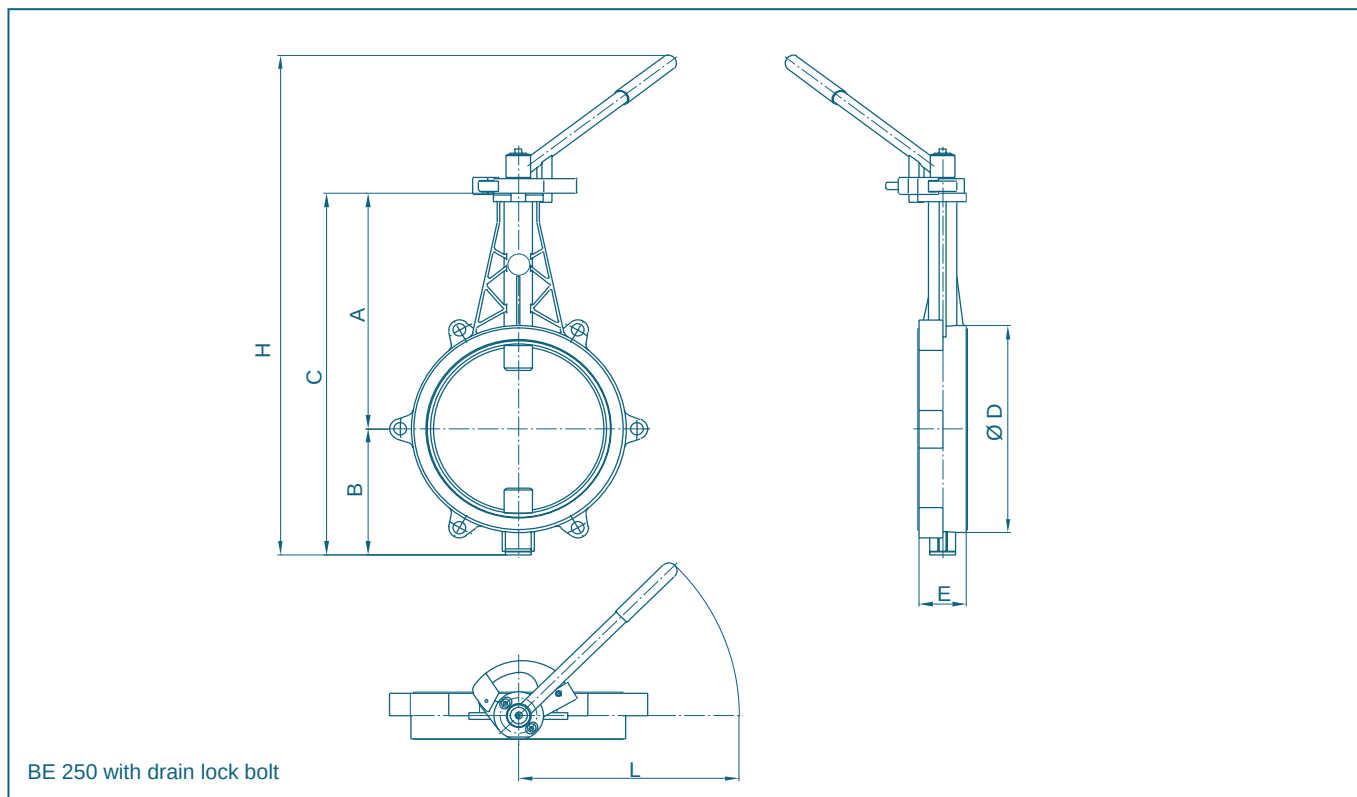
- Shut-off valve for lugging under containers
- Aluminium body
- Suitable for conical containers
- Possibilities for hand operation:
 - drain lock bolt
 - tilting lever
 - engage lever OPEN/CLOSE
- Multiple shaft bearing
- Maintenance-free
- Can be disassembled, material-specific recycling possible

GENERAL APPLICATIONS

- Container building
- Silos



CONTAINER VALVE BE 250/BE 300



DN [mm]	Size [in]	Dimensions [mm]							Weight [kg]
		A	B	C	D	E	H	L	
250	10	346	185	531	304	67	778	384	6,2
300	12	274	226	500	355	78	742	384	8,9

Subject to change without notice

CONTAINER VALVE BE 50/BE 80



Container valve BE 50 with drain bolt lock.

TECHNICAL DATA

Nominal diameter:	DN 50/ DN 80
Face-to-face:	EBRO works standard
Flange accommodation:	according to the connections container building
Flange Surface Design:	EN 1092, Form A/B, ASME RF, FF
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-20°C to +160°C (depending on pressure and medium)
Operating pressure:	max. 4 bar
Body:	Aluminium alloy GD-AlSi9Cu3 (3.2163) Nodular cast iron EN JS 1030 (BE 80)
Seat:	PTFE
Disc:	Stainless Steel G-X6CrNiMo18-10 (1.4408)

FEATURES

- Shut-off valve for lugging under containers
- Aluminium body and EN JS 1030
- Multiple shaft bearing
- Maintenance-free
- Can be disassembled, material-specific recycling possible

GENERAL APPLICATIONS

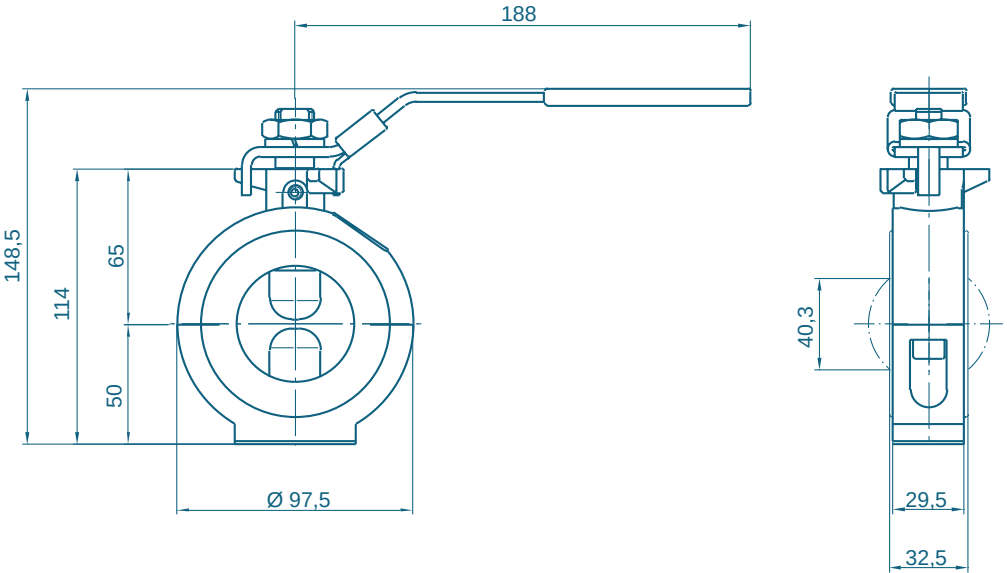
- Container building
- Silos
- Hardous freight container for varnishes, colours, solvents, resins



Container valve BE 80 with OPEN/ CLOSE lever.

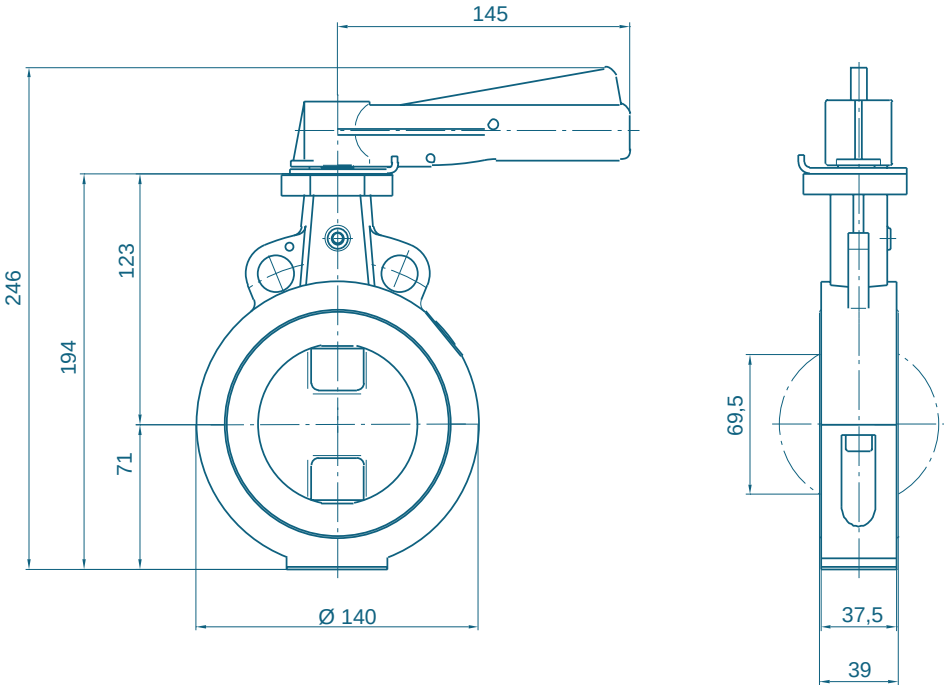
CONTAINER VALVE BE 50/BE 80

BE 50 WITH DRAIN BOLT LOCK



Weight: 0,95 kg

BE 80 WITH HAND LEVER



Weight: 2,05 kg

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE TW 150/TW 200



Wafer type butterfly valve TW 150 with NBR-seat.

TECHNICAL DATA

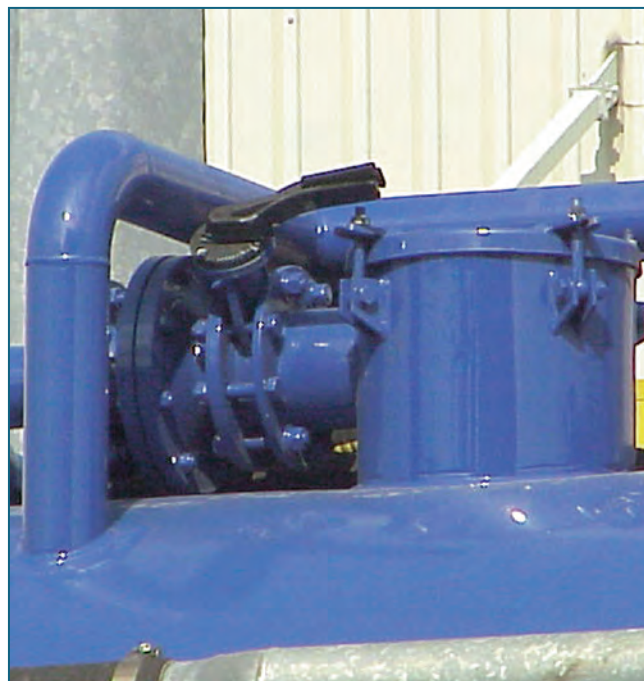
Nominal diameter:	DN 150 / DN 200
Face-to-face:	EBRO works standard
Flange accomodation:	EN 1092 flanges for lorries
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-20°C to +160°C (depending on pressure an medium)
Operating pressure:	max. 6 bar
Body:	Aluminiumalloy GD-AlSi9Cu3 (3.2163)
Seat:	EPDM (Ethylene propylene caoutchouc) NBR (Acrylnitrile butadiene rubber) FPM (Fluorocarbon caoutchouc) AU (Polyurethane)
Disc:	Stainless Steel X5CrNi18-10 (1.4301) G-X6CrNiMo18-10 (1.4408)

FEATURES

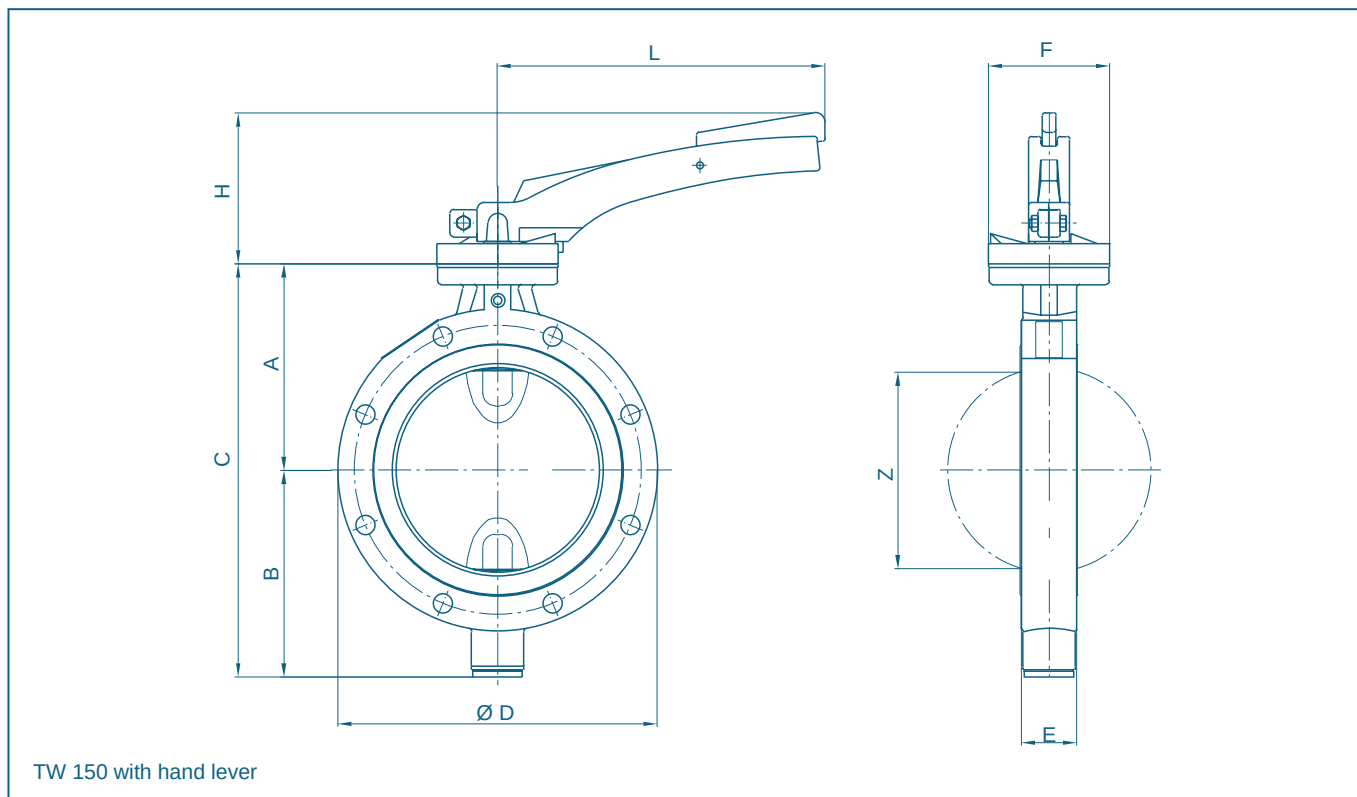
- Maintenance-free
- Triple shaft bearing
- Can be disassemble, material-specific recycling possible

GENERAL APPLICATIONS

- Silo vehicles
- Disposal vehicles



WAFER TYPE BUTTERFLY VALVE TW 150/TW 200



DN [mm]	Size [in]	Dimensions [mm]									Weight [kg]
		A	B	C	D	E	H	L	F	Z	
150	6	203	150	353	234	40	110	240	90	144	4,3
200	9	228	176	404	275	50	110	240	90	193	6,1

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE TW 80/TW 100



Wafer type butterfly valve TW 100 with NBR-seat.

TECHNICAL DATA

Nominal diameter:	DN 80 / DN 100
Face-to-face:	EBRO works standard
Flange accommodation:	EN 1092 flanges for tank lorries
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-20°C to +80°C (depending on pressure and medium)
Operating pressure:	max. 6 bar
Body:	Aluminiumalloy
- one piece	GD-ALSi9Cu3 (3.2163)
- splitted	
PTFE seal	GK-ALSi12(Cu) (3.2583.02)
Seat:	EPDM (Ethylene propylene caoutchouc) NBR (Acrylnitrile butadiene rubber) FPM (Fluorocarbon caoutchouc) AU (Polyurethane) PTFE (Polytetrafluorethylene)
Disc:	Stainless Steel G-X6CrNiMo18-10 (1.4408)

FEATURES

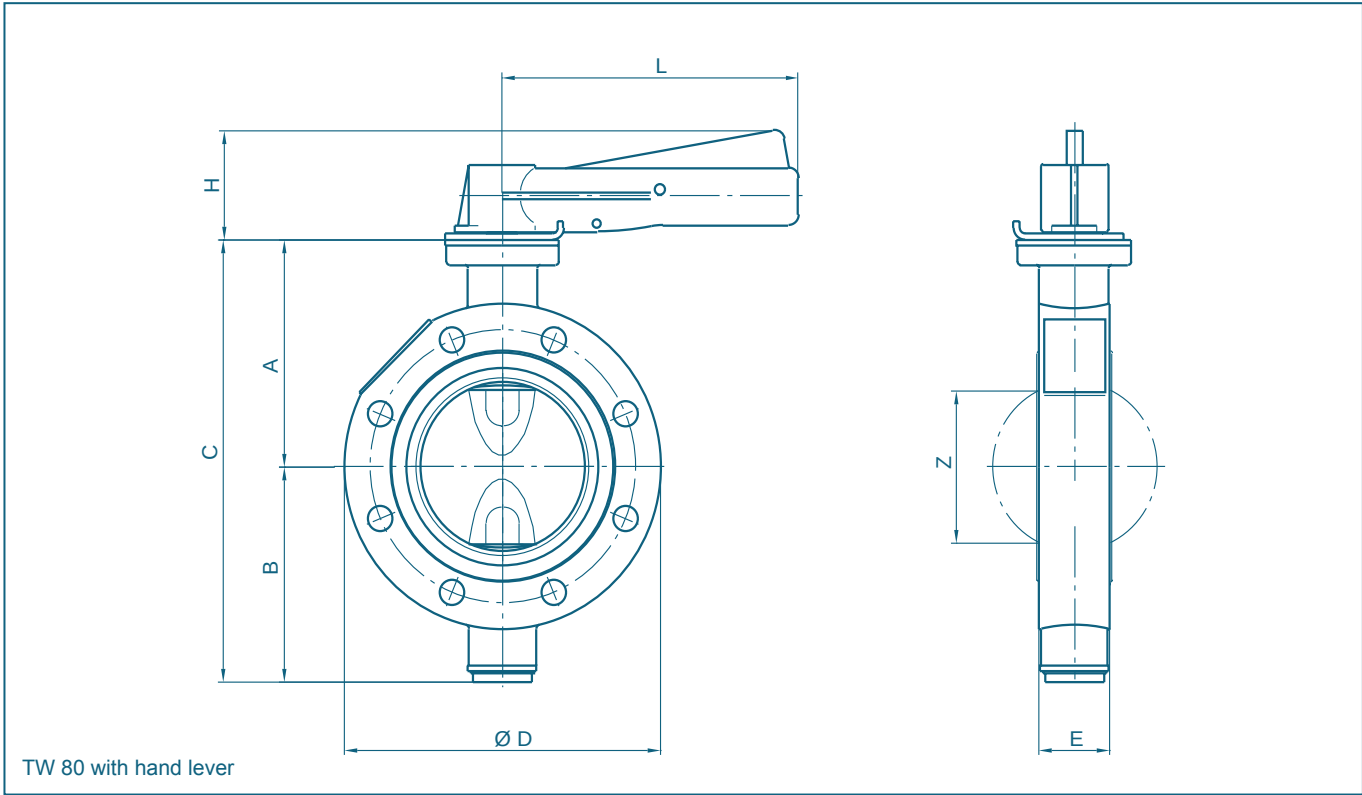
- Maintenance-free
- Triple shaft bearing
- Can be disassembled, material-specific recycling possible

GENERAL APPLICATIONS

- Tank lorries



WAFER TYPE BUTTERFLY VALVE TW 80/TW 100



DN [mm]	Size [in]	Dimensions [mm]								Weight [kg]
		A	B	C	D	E	H	L	Z	
80	3	108	103	211	155	35	52	145	71	2,3
100	4	118	113	231	174	35	52	145	93	2,6

TW DN 125: upon request

Subject to change without notice

PLASTIC BUTTERFLY K 016



Plastic butterfly valve type K 016 with OPEN/CLOSE lever.

TECHNICAL DATA

Nominal diameter:	DN 32 - DN 100 with notch lever DN 32 - DN 50 with OPEN/CLOSE lever
Face-to-face:	EBRO works standard
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +60°C (depending on pressure and medium)
Operating pressure:	max. 6 bar
Body:	Hard-PVC
Disc:	Aluminium alloy G-AlSi10Mg (3.2381) CSM (Chlorsulphonated polyethylene) rubber coated FPM (Fluorocarbon caoutchouc)
Shafts:	Stainless Steel (A2/A4)

FEATURES

- Shut-off valve with adhesive sockets for mounting in PVC pipe systems
- The center part can be removed during maintenance work
- Can be installed in any desired position
- Can be disassembled, material-specific recycling possible

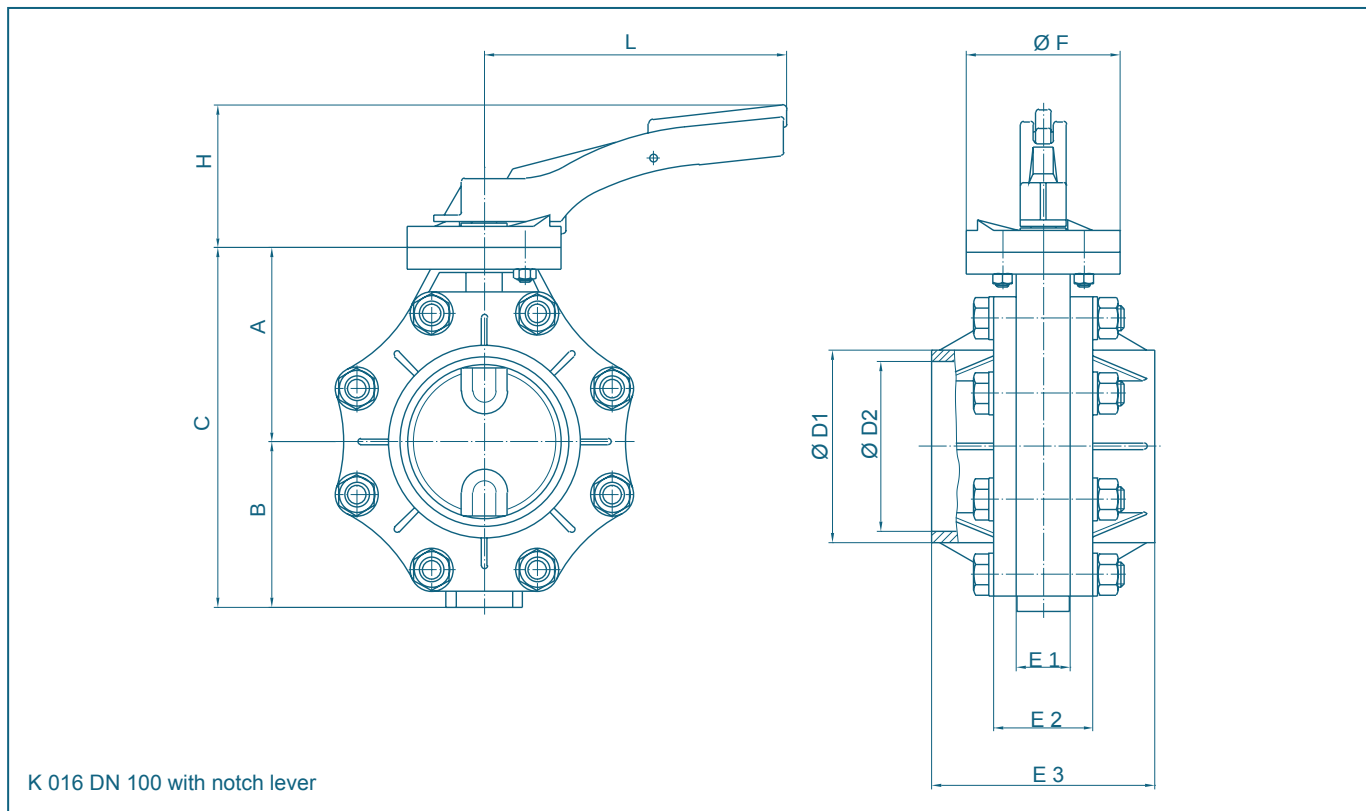
GENERAL APPLICATIONS

- Swimming pool technology
- PVC piping



Plastic butterfly valve type K 016 DN 100 with notch lever.

PLASTIC BUTTERFLY VALVE K 016



DN [mm]	Size [in]	Dimensions [mm]											Weight [kg]
		A	B	C	D1	D2	E1	E2	E3	F	L	H	
32	1¼	65	49	114	54	40	30	60	140	100	195	95	1,0
40	1½	65	49	114	64	50	30	60	140	100	195	95	1,0
50	2	65	49	114	77	63	30	60	140	100	195	95	1,0
65	2½	77,5	61,5	139	90	75	35	65	145	100	195	95	1,9
80	3	77,5	61,5	139	105	90	35	65	145	100	195	95	1,9
100	4	126	97	233	125	110	35	65	145	100	195	95	3,7

Subject to change without notice

BUTTERFLY VALVE CK



Butterfly valve CK with pneumatic actuator.

TECHNICAL DATA

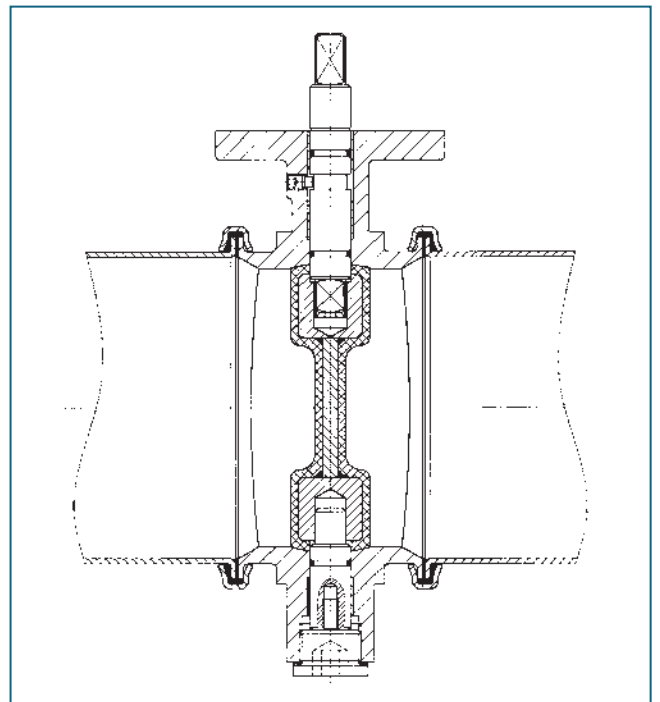
Nominal diameter:	DN 80 - DN 250
Face to face:	EBRO works standard
Top flange:	EN ISO 5211
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +60°C (depending on pressure and media)
Operating pressure:	max. 3 bar
Body:	Aluminium
Disc:	ball contour 3 mm NBR-white coated 90° Shore A (FDA harmless) overdimension to body seat 0,3 mm DN 100 0,35 mm DN 250
Shaft:	AISI 316 (1.4401) alternative upon request

FEATURES

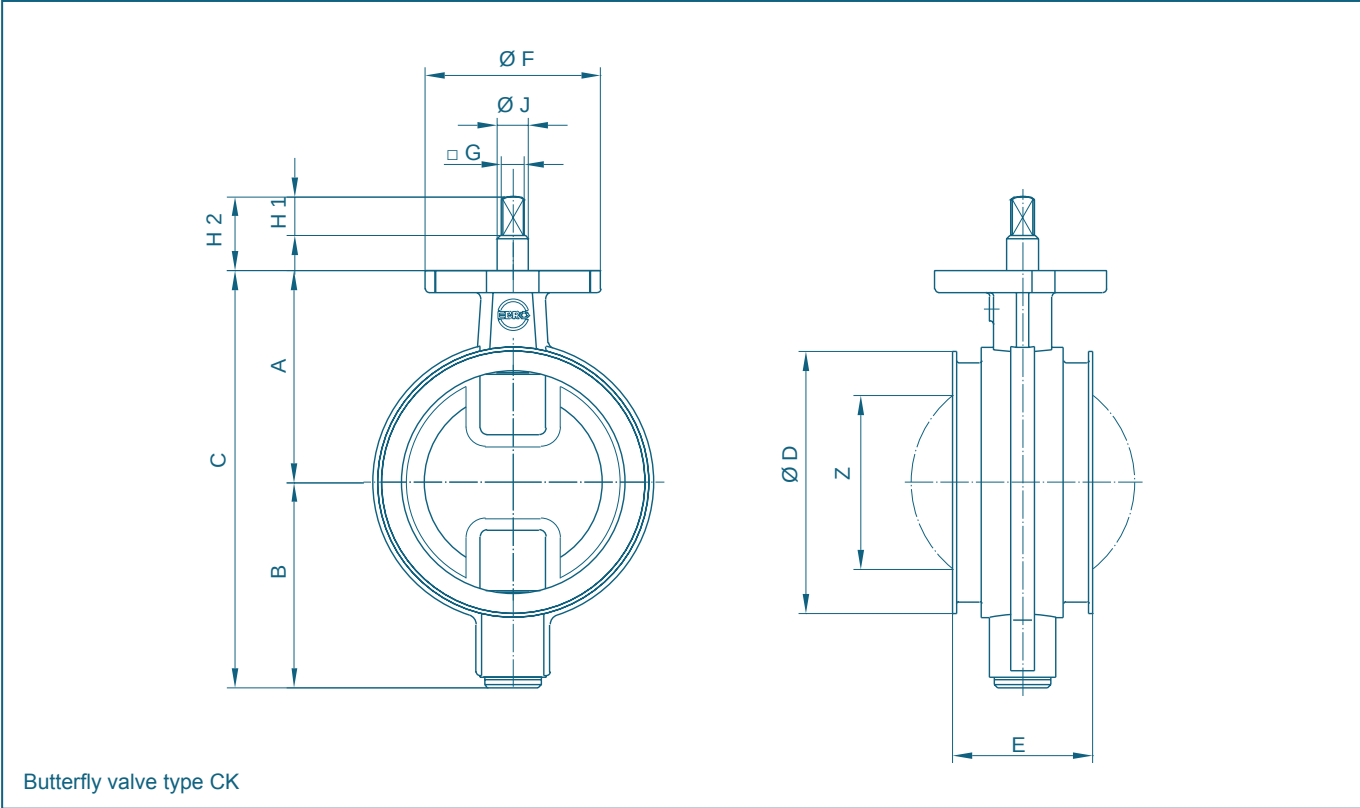
- Wafer pattern butterfly valve with centrally mounted disc
- Body with mutual bond for clamp ring connection
- The inside contour is spherically machined
- Through-going seat without any edges
- Low consumption
- Fast and easy dismantling
- Maintenance-free

GENERAL APPLICATIONS

- Food industry
- Bulk goods



BUTTERFLY VALVE CK



DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	E	F	Flange	G	H1	H2	J	Z	
80	3	86	87	173	92	66	65	F05	10	16	30	12	33	0,9
100	4	96	97	193	115	68	65	F05	10	16	30	12	66	1,3
120	5	109	105	214	135	72	90	F07	12	20	38	16	89	1,9
200	8	179	166	345	215	85	90	F07	16	20	38	20	175	5,8
250	10	206	189	395	265	85	90	F07	16	20	38	20	230	7,7

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-A therm



Wafer type valve Z 011-A with integrated thermometer.
This construction is also deliverable for the series Z 014-A.

TECHNICAL DATA

Nominal diameter:	DN 20 - DN 200 (available only with hand lever)
Deliverable for the series:	Z 011-A and Z 014-A
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150
Lap-joint flange:	EN 1092
Weld-on flange:	EN 1092
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-20°C to +130°C (depending on pressure, medium and material)
Operating pressure:	max. 16 bar
Vacuum:	1 mbar absolute

FEATURES

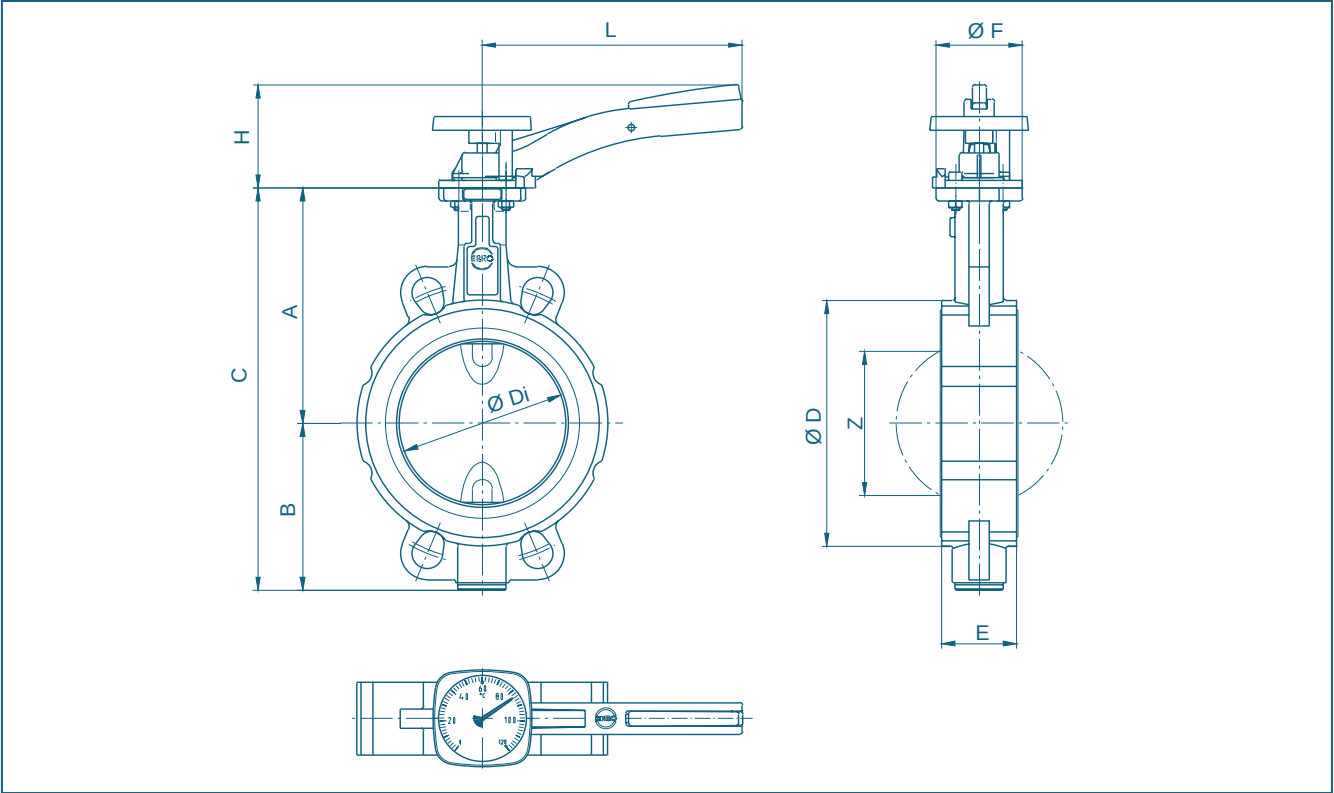
- EBRO therm butterfly valves are ready to accept thermometers, electronic thermo sensors (PT 100) or a system identification plate
- The valves are supplied with the mounting hole sealed and the thermometer is enclosed separately -marked to prevent-confusion
- The patented be-metallic helix guarantees a quick reaction time during temperature changes and - due to its position in the valve disc -prevents the formation of a mixed temperature between the medium and the valve body

GENERAL APPLICATIONS

- Civil engineering



WAFER TYPE BUTTERFLY VALVE Z 011-A therm



DN [mm]	Size [in]	Dimensions [mm]										Weight [kg]
		A	B	C	D	Di	E	F	H	L	Z	
20	¾	104	45	149	59	31,5	33	54	70	155	-	1,5
25	1	104	45	149	63	31,5	33	54	70	155	-	1,5
32	1¼	104	50	154	68	31,5	33	54	70	155	-	1,6
40	1½	113	66	179	80	38	33	54	70	155	22	2,0
50	2	126	84	210	95	48,5	43	54	70	155	25	2,4
65	2½	134	93	227	115	63,5	46	54	70	155	45	3,1
80	3	157	104	261	138	78,5	46	65	80	195	65	4,2
100	4	167	115	282	158	98,5	52	65	80	195	85	5,4
125	5	180	127	307	188	123,5	56	65	80	195	111	7,1
150	6	203	150	353	212	148	56	90	100	276	139	10,1
200	8	228	176	404	268	199	60	90	100	276	190	13,8

Subject to change without notice

ACCESSORIES



Screw sleeves

- In order to maintain a uniform design for the whole system, brass screw sleeves with different shaft lengths are available for mechanical thermometers where no valve is fitted

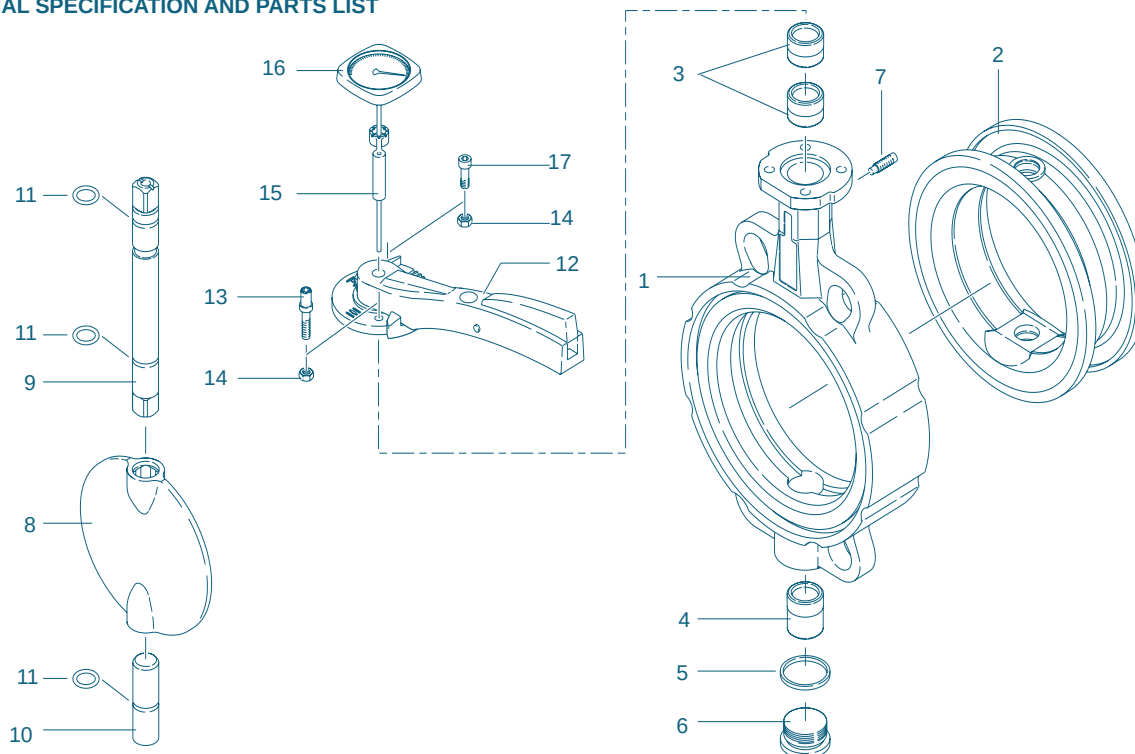


Identification plates

- EBRO therm butterfly valves are predesigned to accept an identification plate. Appropriate base plates with mounting adapters and transparent covers are available as accessories

WAFER TYPE BUTTERFLY VALVE Z 011-A therm

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				9/10	Shaft			
	Grey Cast Iron	GG 25	0.6025	40 B		Stainless Steel	X14CrMoS17	1.4104	430 F
2	Seat						X5CrNiMo17-12-2	1.4401	316
	EPDM	Ethylene propylene caoutchouc					Hastelloy	2.4883	Hastelloy
3/4	Bearing bush				11	O-ring			
	Brass	MS 58	2.0401	B 45		NBR	Acrylonitrile butadiene rubber		
	Polyamide	PA 66				FPM	Fluorocarbon caoutchouc		
	PTFE	Polyterafluoroethylene			12	Hand lever complete			
5	Seal DIN 7603				13	Screw			
	Copper	Cu		Copper		Steel	St. galvanized		CS
6	Plug screw DIN 908				14	Hex. nut			
	Stainless Steel	G-X6CrNiMo18-10	1.4408	CF8M		Steel	St. galvanized		CS
7	Set screw DIN 915				15	Thermometer holder			
	Steel	45 H galvanized				PP	Polypropylene		
	Stainless Steel	X5CrNiMo17-12-2	1.4401	B8M	16	Thermometer			
8	Disc				17	Socket screw			
	Stainless Steel	G-X6CrNiMo18-10	1.4408	A 351CF8M		Steel	St. galvanized		
						Other materials upon request			

Subject to change without notice

PINCH VALVE QV



Pinch valve with full passage for solid mattered waste water, mud and similar media.

TECHNICAL FEATURES

Nominal diameter:	DN 40 - DN 200
Face-to-face:	EBRO works standard
Flange accommodation:	EN 1092 (PN 10)
Flange Surface Design:	EN 1092 Form C/E
Temperature range:	-20°C to +140°C (depending on pressure and medium)
Operating pressure:	max. 5 bar
Body:	Aluminiumalloy
Seat:	Natural rubber EPDM (Ethylene propylene caoutchouc) FPM (Fluorocarbon caoutchouc)
Flanges:	Aluminiumalloy - Rilsan coated - Rubber coated

FEATURES

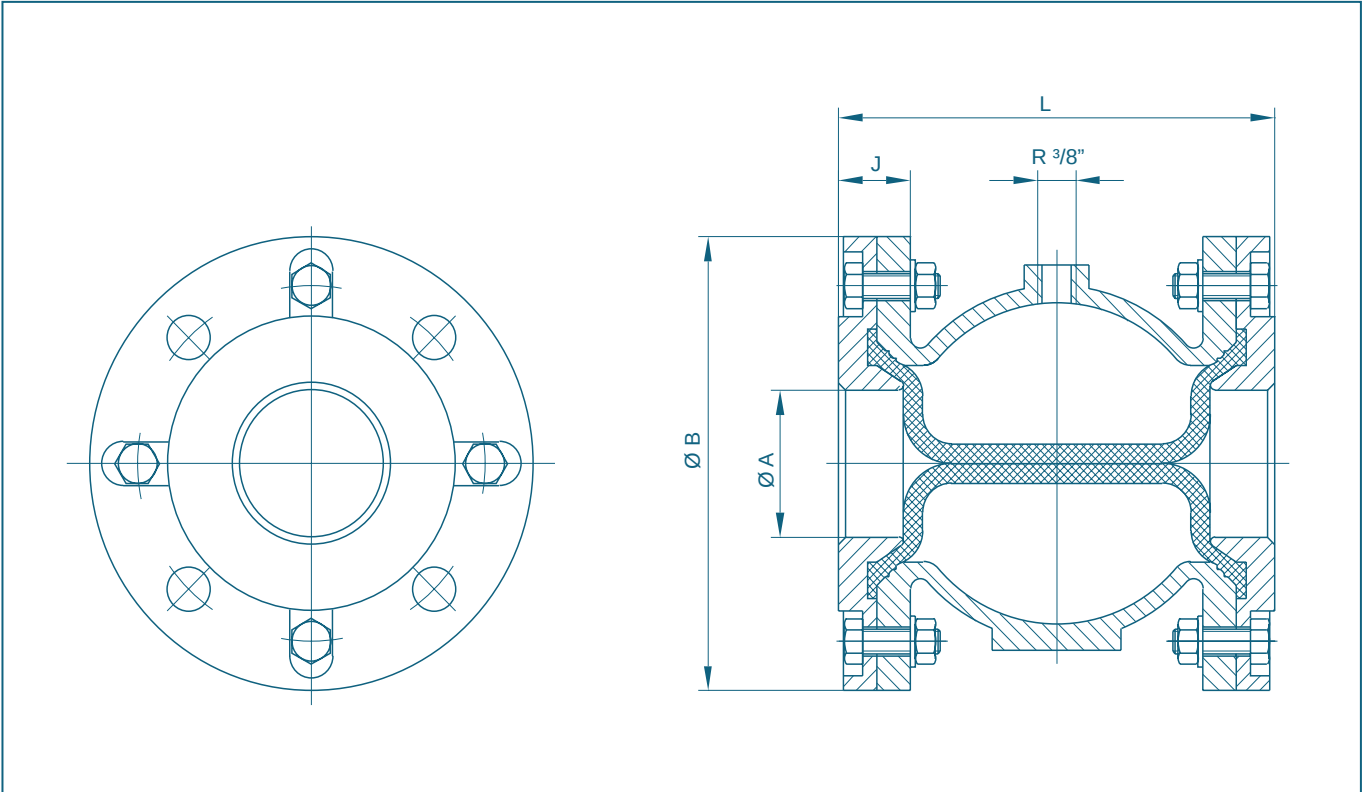
- Full passage, special suitability for mud, powder, granulates
- Mounting of a solenoid valve enables electro-pneumatic operation
- Can be installed in any desired position

GENERAL APPLICATIONS

- Pneumatic conveying systems
- Solid mattered media



PINCH VALVE QV



DN [mm]	Size [in]	Dimensions [mm]				Weight [kg]
		A	B	J	L	
40	1½	35	150	30	156	7,5
50	2	45	165	30	167	9
65	2½	60	185	30	182	11,5
80	3	75	200	34	226	16
100	4	95	220	39	282	22
125	5	120	250	43	350	35
150	6	145	285	50	420	48
200	8	195	340	57	559	94

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE TW-M



Bonded, metall seated wafer type butterfly valve TW-M for tank lorries.

TECHNICAL DATA

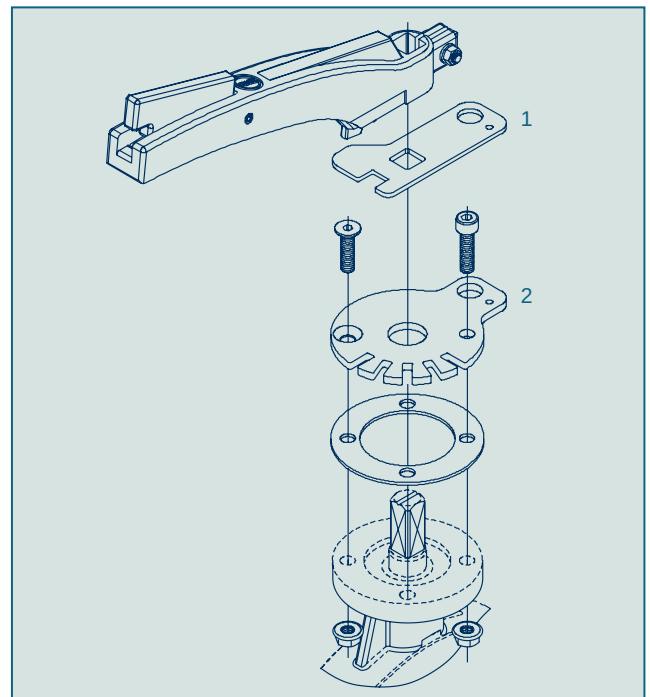
Nominal diameter:	DN 80 - DN 300
Face-to-face:	EBRO works standard
Flange accommodation:	EN 1092 flanges for tank lorries Customer-specific PN 6/10/16
Flange Surface Design:	EN 1092 Form A/B ASME RF
Top flange:	EN ISO 5211
Marking:	EN 19

FEATURES

- Maintenance-free
- Triple shaft bearing
- One-piece precise slotted shaft
- All parts being in contact with the media. Corrosion resistant and FDA-approved
- Bonded plate (optional)
- Can be installed in any desired position
- Sealing of the flange surfaces by means of integrated o-rings
- Cavity-free

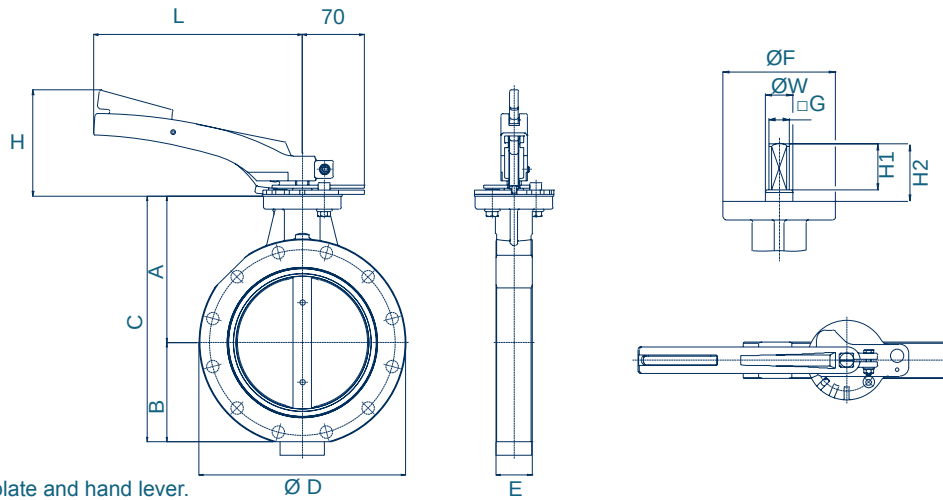
GENERAL APPLICATIONS

- Tank lorries
- Silo constructions
- Granulate handling
- Food industry
- Control of product streams



1 - Sealing ear
2 - Bonded notch lever

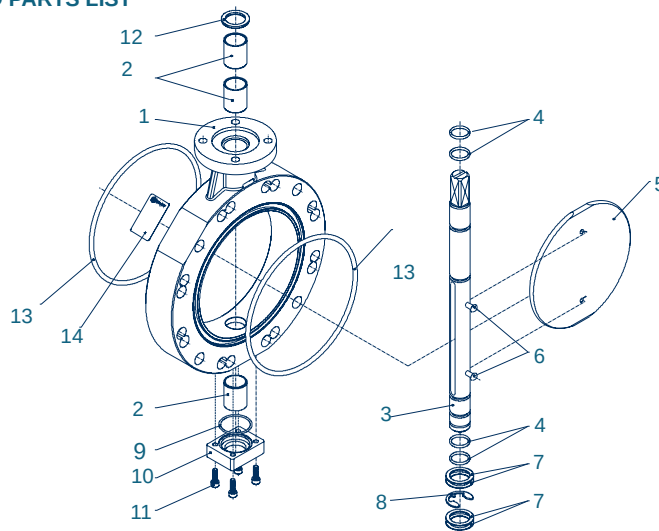
WAFER TYPE BUTTERFLY VALVE TW-M



TW-M with bonded plate and hand lever.

DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	ØD	E	ØF	□G	H	H1	H2	L	ØW	
80	3	125	97	222	154	36	88	14	98	30	39	195	18	2,8
100	4	135	97	232	176	36	88	14	98	30	39	195	18	3,2
150	6	166	127	333	234	41	88	16	120	36	45	236	22	5,1
200	8	195	152	347	274	51	88	16	120	36	45	236	22	8,5
250	10	266	179	445	328	66	102	22	-	-	24	-	30	16,3
300	12	291	204	495	378	66	102	22	-	-	24	-	30	20,0

MATERIAL SPECIFICATION AND PARTS LIST



Pos.	Description	Material	Material-No	ASTM	Pos.	Description	Material	Material-No	ASTM
1	Body	Aluminium	1.4541		8	Seeger- retaining ring	Stainless steel	A2	
2	Bearing sleeve	iglidur G			9	O-ring	Viton		
3	Shaft	Stainless steel	1.4418		10	Cover plate	Aluminium		
4	O-ring	Viton			11	Screw	Stainless steel	A4	
5	Disc	Stainless steel	1.4541		12	Wiper ring	PTFE		
6	Half - round - rivet	Stainless steel	A4		13	O-ring	NBR		
7	Adjusting washer	Stainless steel	A2		14	Rating plate	PVC silver		

Subject to change without notice

THROTTLE VALVE CK-M



Throttle valve for clamp ring systems with pneumatic actuator type EB-SYD

TECHNICAL DATA

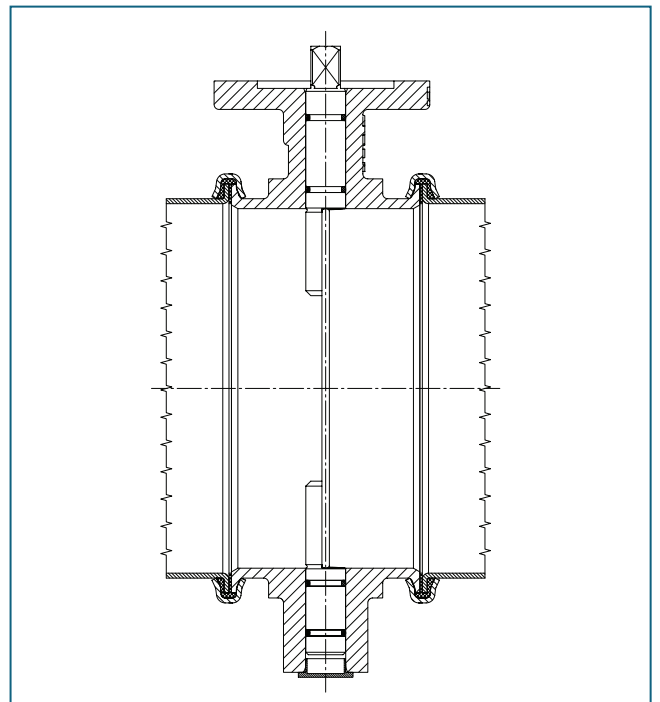
Nominal diameter:	DN 65 - DN 250
Face to face:	EBRO works standard
Top flange:	EN ISO 5211
Flange accommodation:	Pipe system - clamp ring groove
Temperature range:	-10°C to +130°C, (optional 220°C) (depending on pressure, media and actuator)
Operating pressure:	max. 3 bars
Body:	Aluminium
Disc:	1.4301
Annular gap body/ disc:	0,1 mm to 0,5 mm, according to application
Shaft:	1.4401; 1.4571 other materials upon request

FEATURES

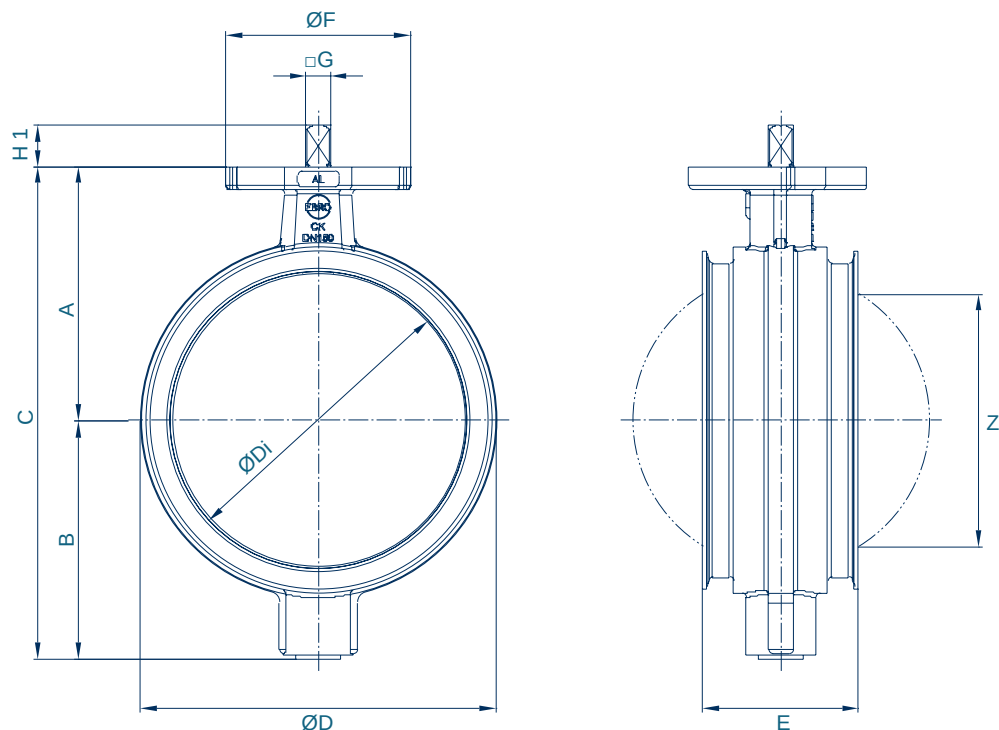
- Throttle valve for clamp ring systems with centrally mounted disc
- Body with mutual bond for clamp ring connection
- Low consumption
- Fast and easy dismantling
- Maintenance-free
- Actuators: Hand lever, electric and pneumatic actuators

GENERAL APPLICATIONS

- Food industry
- Bulk goods
- Aspiration lines
- Dust separation
- Control of air/-gas flows (throttle valve)
- Exhaust pipes



THROTTLE VALVE CK-M



Throttle valve type CK-M

DN [mm]	Size [in]	Dimensions [mm]											Weight [kg]
		A	B	C	$\varnothing D$	$\varnothing Di$	E	$\varnothing F$	Flange	G	H1	Z	
65	2½	80	60	140	80	60	60	65	F04	11	11	0	0,7
80	3	86	60	146	92	72	66	65	F04	11	11	28	0,7
100	4	97	92	188	115	95	68	65	F05	14	14	66	1,2
120	4¾	109	100	209	135	115	72	90	F05	14	14	90	1,7
150	6	124	115	239	165	145	76	90	F05	14	14	123	2,1
200	8	180	159	339	215	195	85	90	F05	17	17	176	4,3
250	10	206	184	390	265	245	85	90	F07	17	17	230	5,7

Subject to change without notice

DN [mm]	Size [in]	Actuators		
		Hand lever	Pneumatic Double acting EB-SYD	Pneumatic Spring return EB-SYS
65 - 80	2½ - 3	Size I	EB 4.1	EB 5.1
100 - 200	4 - 8	Size II	EB 4.1	EB 5.1
250	10	Size III	EB 6.1	EB 6.1

IMPELLER VALVE FS-M



Impeller valve for shut-off and control of product streams in the bulk industry.

TECHNICAL DATA

Nominal diameter:	DN 150 - DN 400
Face-to-face:	EBRO works standard
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150
Marking:	EN 19
Operating pressure:	max. 3 bars
Temperature range:	-20 °C to +100°C, optional up to +250°C
Body:	Light metal full flange with inserted ring (stainless steel)
Impeller:	Stainless steel, optional mirror polished
Actuator:	Electric actuator 230V/400V 50Hz/60Hz, 30 min-1 to 100 min-1

FEATURES

- Maintenance-free
- Triple shaft bearing
- Can be installed in any desired position
- Safe and consistent discharge of rapid flowing products
- Noticeable reduction of demixing during discharge
- No compaction or levigation of products during charge and discharge
- Control and dosing of product streams
- Optional: Stop in zero position (sealing)
 - Right-/left rotation
 - Rotation speed control
 - Hardened rotary valve

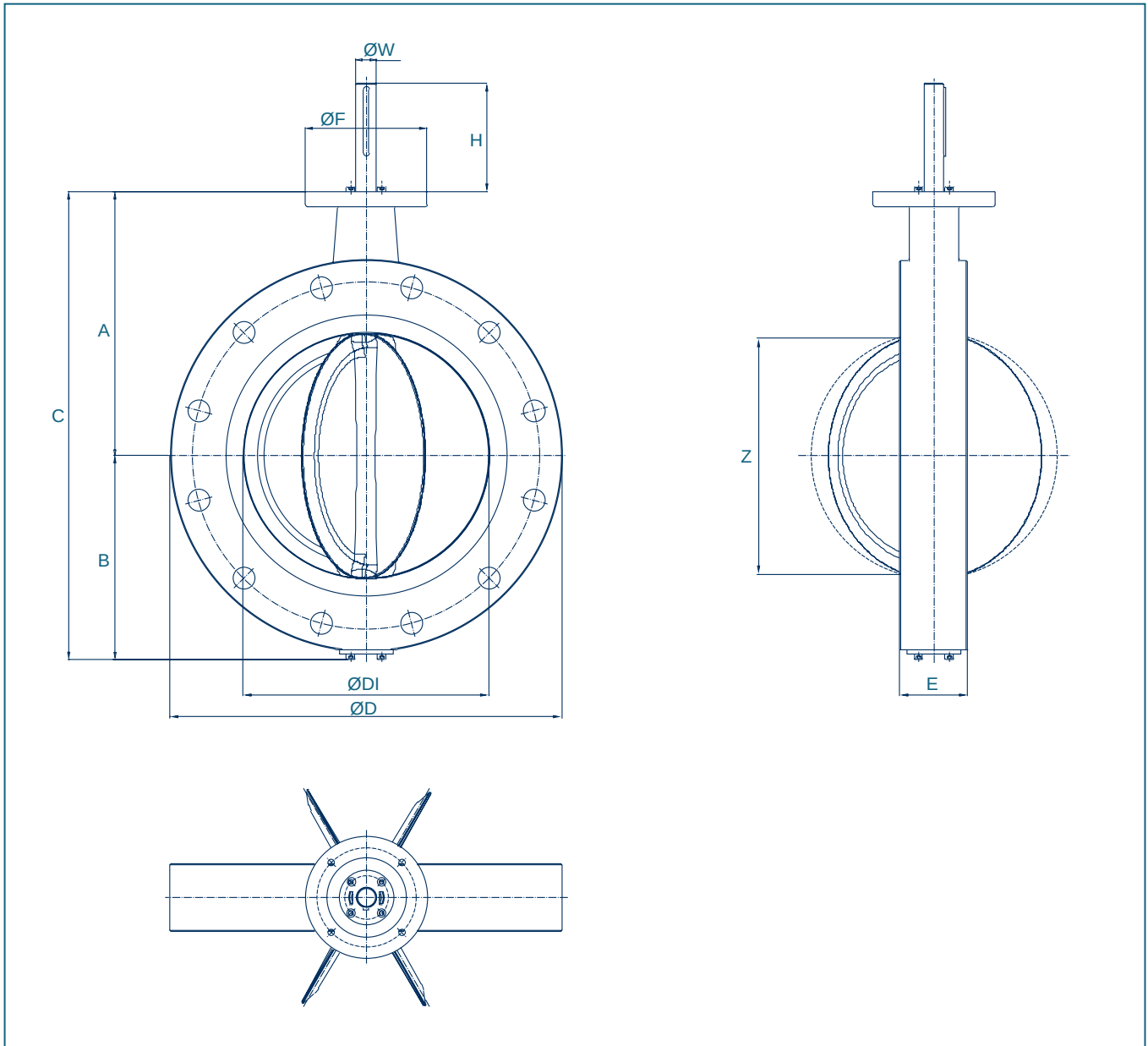
GENERAL APPLICATIONS

- Blending plants
- Silo constructions
- Granulates handling
- Weighing technology



Impeller valve in preferred position

IMPELLER VALVE FS-M



DN [mm]	Size [in]	Dimensions [mm]									
		A	B	C	ØD	ØDI	E	ØF	H	ØW	Z
150	6	203	150	353	285	148	40	88	110	20	143
200	8	228	176	404	340	198	50	88	110	20	192
250	10	266	206	472	395	248	66	123	110	20	240
300	12	293	237	530	445	298	65	123	110	20	292
400	16	363	314	677	565	398	75	148	110	20	392

Subject to change without notice

BUTTERFLY VALVE Q 011



Butterfly valves Q 011 are ideally suited for applications in HVAC plants where gastight shut-off is necessary.

TECHNICAL DATA

Nominal diameter:	DN 80 - DN 400
Face-to-face:	EBRO works standard
Flange accommodation:	EN 12220 EN 24154
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	0°C to +50°C
Operating pressure:	max. 1 bar

FEATURES

- Can be installed in any desired position
- Multiple shaft bearings
- Maintenance-free
- Can be disassembled, material-specific recycling possible

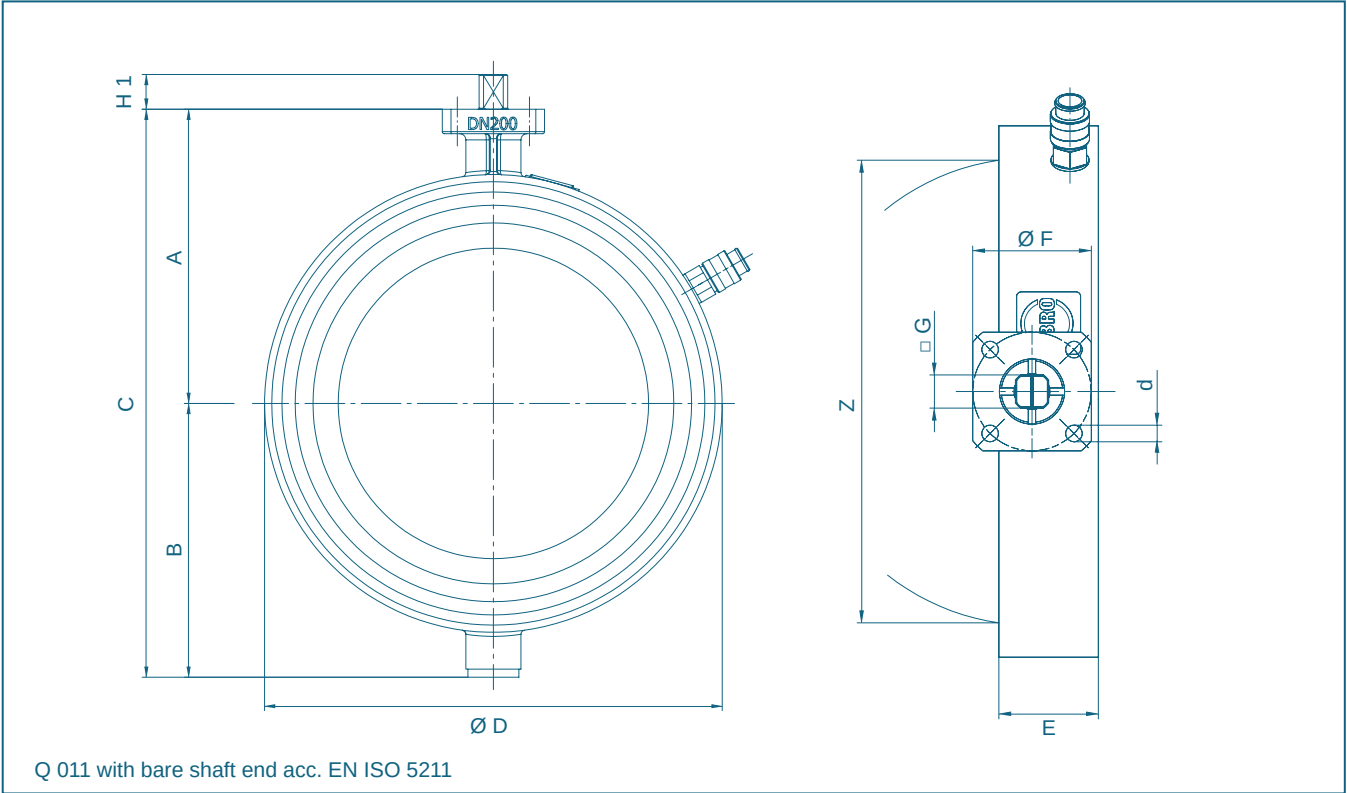
GENERAL APPLICATIONS IN HVAC PLANTS:

- Hospitals
- Nuclear power plants
- Research laboratories
- Chemical and petrochemical industries



Test connection with snap closing.

BUTTERFLY VALVE Q 011

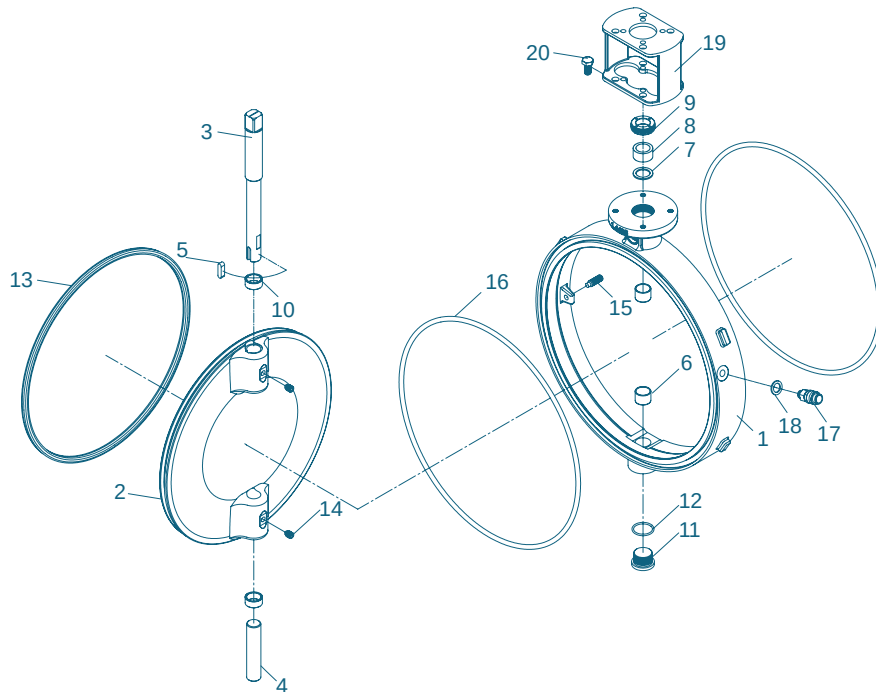


DN [mm]	Size [in]	Dimensions [mm]										Weight [kg]
		A	B	C	D	d	E	F	G	H1	Z	
80	3	81	70	167	102	6	36	42	11	12	76	1,8
100	4	90	77	167	122	6	36	42	11	12	96	2,2
125	5	105	92	197	145	6	36	42	11	12	121	3,0
150	6	118	104	222	172	6	36	42	11	12	147	4,0
200	8	144	134	278	224	7	42	50	14	17	199	6,0
250	10	167	159	326	274	7	42	50	14	17	247	8,0
280	11	198	182	380	310	9	47	70	17	21	278	14,0
300	12	208	192	400	330	9	47	70	17	21	298	15,0
350	14	244	226	470	380	12	60	102	22	23	343	20,0
400	16	275	260	535	434	12	60	102	22	23	397	26,0

Subject to change without notice

BUTTERFLY VALVE Q 011

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	Pt.	Description	Material	Material No.
1	Body			11	Plug Screw		
	Stainless Steel	G-X5CrNiMo 19-11-2	1.4408		Stainless Steel	A2-70	
2	Disc			12	O-Ring		
	Stainless Steel	G-X5CrNiMo 19-11-2	1.4408		EPDM	Ethylene-Propylene-caoutchouc	
3	Shaft			13	Seal		
	Edelstahl	X8CrNiS 18-9	1.4305		EPDM	Ethylene-Propylene-caoutchouc	
4	Shaft			14	Set screw		
	Stainless Steel	X8CrNiS 18-9	1.4305		Stainless Steel	A2-70	
5	Feather key			15	Set screw		
	Stainless Steel	X5CrNi 18-8	1.4301		Stainless Steel	A2-70	
6	DU-bush			16	Round cord ring		
	Steel/PTFE	St./ Polytetrafluorethylene			EPDM	Ethylene-Propylene-caoutchouc	
7	Disc			17	Snap closing coupling		
	Stainless Steel	A2			Brass, nickel plated		
8	Sealing Set			18	Seal		
	PTFE	Polytetrafluorethylene			Polyamide		
9	Gland flange screw			19	Bracket		
	Stainless Steel	X5CrNi 18-8	1.4301		Steel, zinc coated		
10	Bearing ring			20	Hex-socket screw		
	Stainless Steel	X8CrNiS 18-9	1.4305		Stainless Steel	A2-70	
					Other materials upon request		

Subject to change without notice

BUTTERFLY VALVE Q 011

TORQUE

- Torque values specified (Md)

- Silicone lubrication

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Md
80	3	15
100	4	20
125	5	25
150	6	30
200	8	35
250	10	40
280	11	45
300	12	50
350	14	55
400	16	60

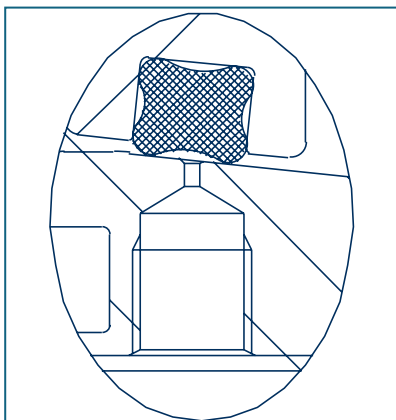
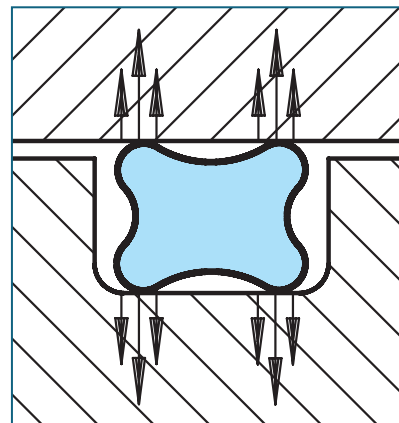
All values in Nm

DOUBLE FUNCTION

Wafer type butterfly valve in eccentric construction with a „Double Block and Bleed“ sealing design.

A cavity space between the sealing lips is pressurized or depressurized by a ventilation connection. An appropriate apparatus is connected to the ventilation and displays even little leakages by a pressure surge or drop. The volume of the hollow space is very small. Therefore it is possible to make visible lowest leakages under pressure.

The exact position of the closed valve is controlled by a mechanical stop. Even after many Open/Close cycles, exact repeatability of the closed position will be observed.



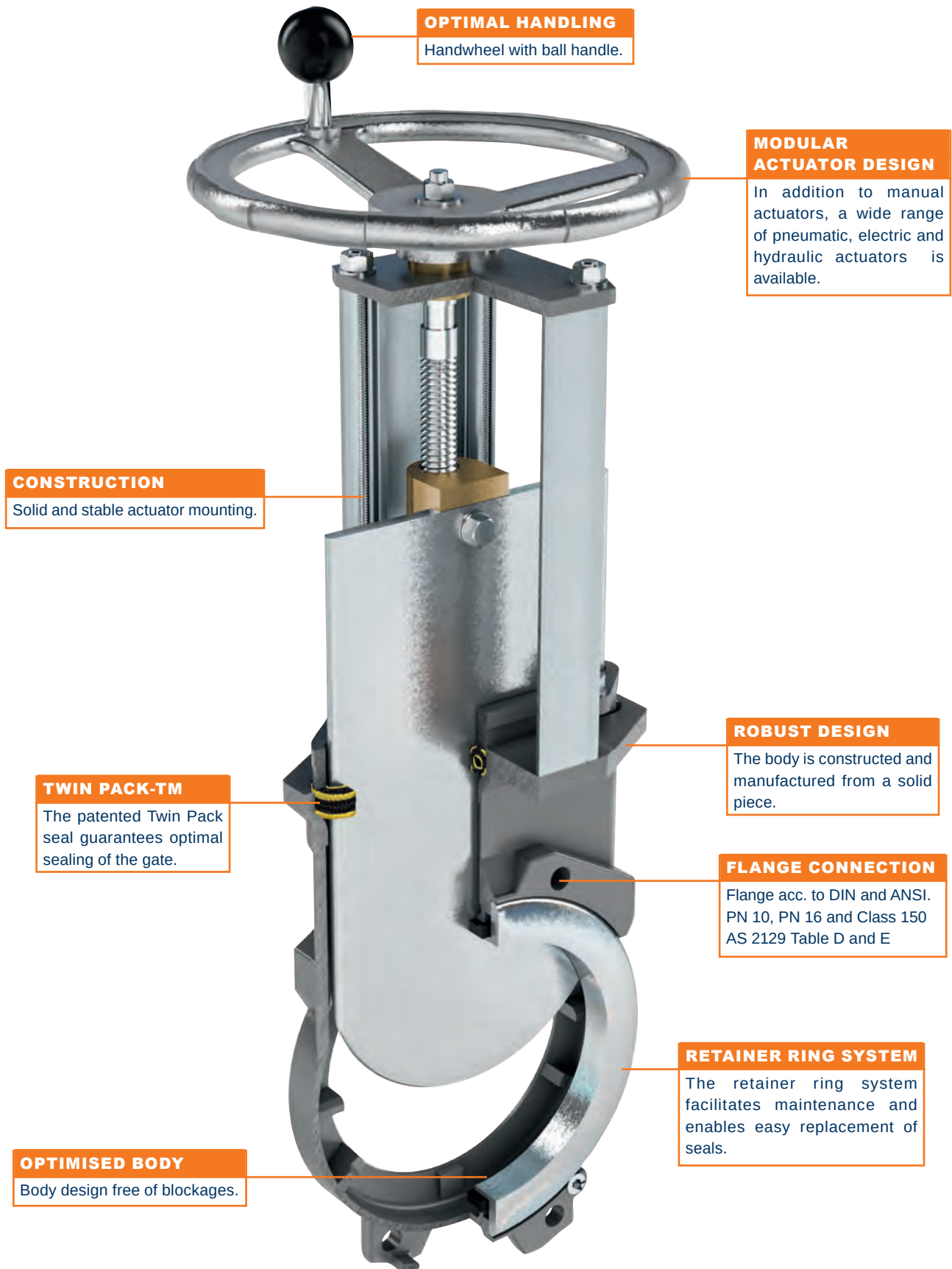
The sealing is similar to a quadratic ring. A large range of rubber compounds are available, which ensures the use in various applications of ventilation technology.

The low torque of the Q 011 requires minor actuator power and therefore guarantees an energy-efficient automation of the valve.

The legal protection of registered design of the Q 011 is incorporated at the German Patent and Trademark Office.

QUALITY FEATURES

KNIFE GATE VALVE MV



KNIFE GATE VALVE WB 11



The knife gate valve type WB is designed, manufactured, inspected and tested according to the European Pressure Equipment Directive (PED 97/23/EC), category II module A1 and therefore CE marked.

FEATURES

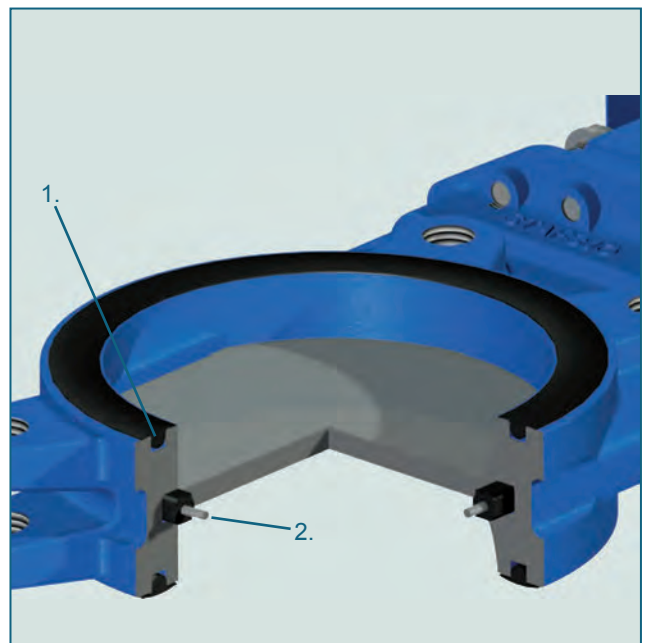
- Box packing Twin Pack™ gives high operation reliability
- Bi-directional sealing
- Casted one piece body
- Integrated flangesealing
- Piggable design

GENERAL APPLICATIONS

- Water and waste water
- Biogas plant
- Sugar industry
- Power plants and steel works
- Chemical industry
- Food and beverage industry

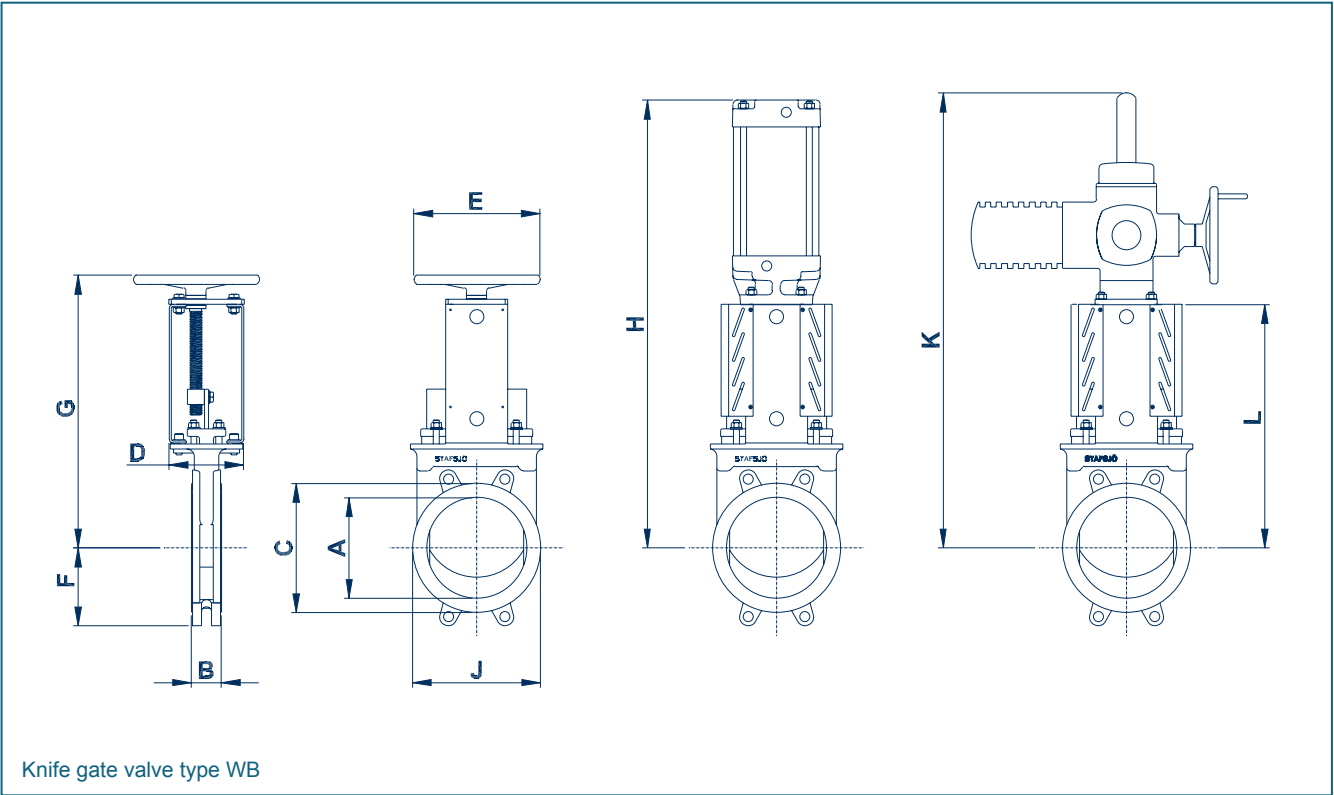
TECHNICAL DATA

Nominal diameter:	DN 50 - DN 600
Face-to-face:	EN 558-1 Reihe 20 (≥ DN 350 company standard)
Flange drilling:	EN 1092 PN 10 ASME Class 150
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208 Class A
Temperature range:	max. 120°C
Actuators:	Hand wheel, ratchet wrench, chain wheel, bevel gear, pneumatic cylinder, electric motor, hydraulic cylinder
Operating pressure:	DN 50 - DN 300: 10 bar DN 350 - DN 400: 6 bar DN 500 - DN 600: 4 bar



1. The integrated body seal ensures tightness when mounted between flanges.
2. The pressure stressed sealing principle ensures permanent tightness.

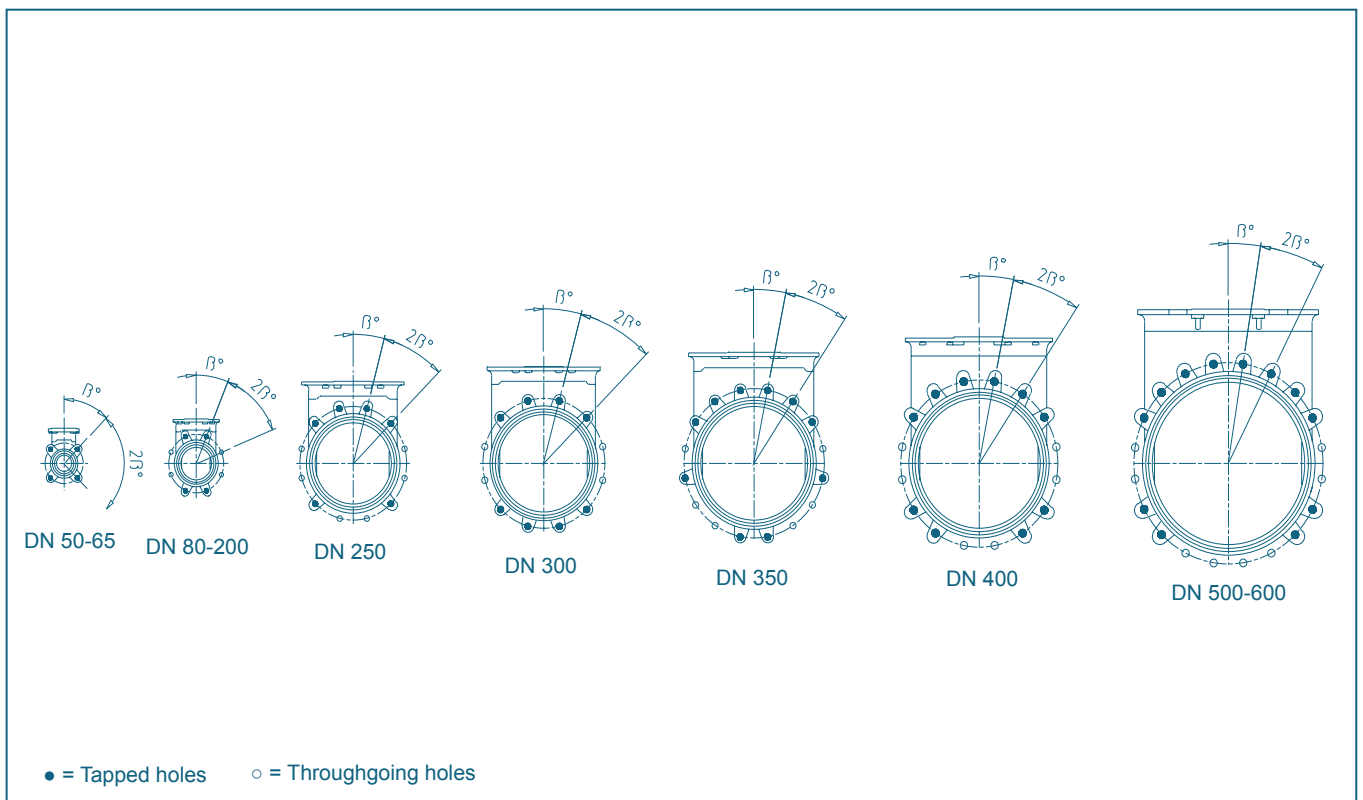
KNIFE GATE VALVE TYPE 11



DN [mm]	Size [in]	Dimensions [mm]											Air supply	Weight with hand wheel [kg]
		A	B	C	D	E	F	G	H	J	K	L		
50	2	50	43	90	86	202	59	299	441	90	575	227	¼"	5,5
65	2 ½	65	46	105	86	202	66	324	481	105	600	252	¼"	6,5
80	3	80	46	120	86	202	88	346	519	120	623	275	¼"	7,5
100	4	100	52	144	86	202	101	381	574	144	658	310	¼"	9,5
125	5	125	56	169	86	250	112	421	709	169	698	350	¼"	12
150	6	150	56	192	86	250	130	464	776	192	740	392	¼"	14
200	8	200	60	256	151	317	154	561	888	256	818	483	½"	27
250	10	250	68	307	151	317	153	657	1034	307	914	579	½"	38
300	12	300	78	354	151	317	213	753	1180	354	1059	675	½"	53
350	14	350	80	407	187	400	245	880	1367	407	1228	783	½"	81
400	16	400	80	460	187	400	246	977	1514	460	1375	880	½"	106
500	20	500	90	566	262	520	284	1214	1835	266	1706	1100	½"	185
600	24	600	100	682	262	520	341	1419	2311	682	2011	1305	1"	275

Subject to change without notice

FLANGE DRILLINGS WB 11



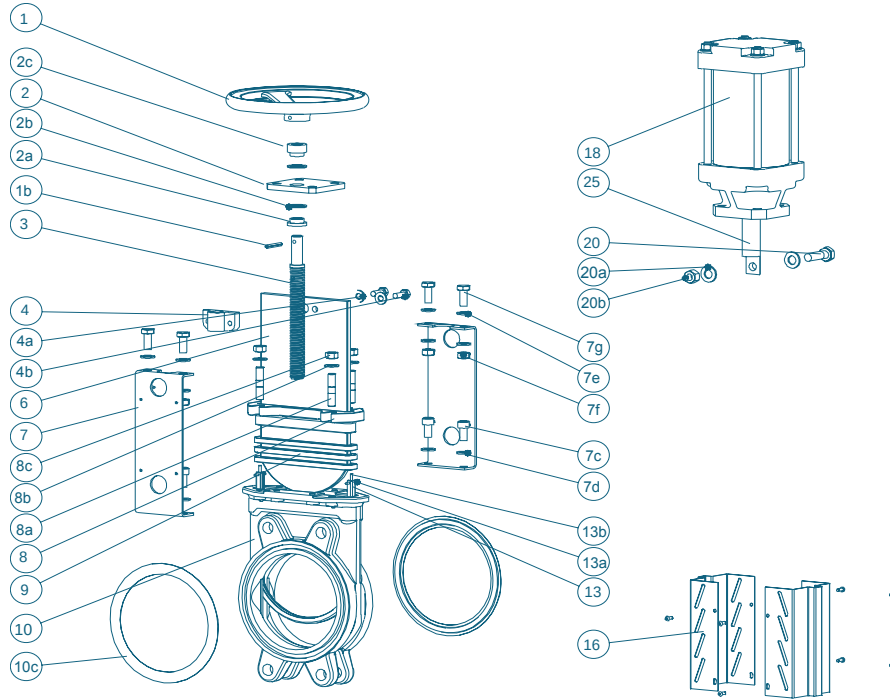
Nominal diameter DN [mm]	50	65	80	100	125	150	200	250	300	350	400	500	600
Outside flange diameter [mm]	165	185	200	220	250	285	340	395	445	505	565	670	780
Bolt circle diameter [mm]	125	145	160	180	210	240	295	350	400	460	515	620	725
Face-to-face length [mm]	43	46	46	52	56	56	60	68	78	80	80	90	100
Number of throughgoing holes [○]	-	-	4	4	4	4	4	6	4	6	6	8	8
Number of tapped holes [●]	4	4	4	4	4	4	4	6	8	10	10	12	12
Bolt size	M16	M16	M16	M16	M16	M20	M20	M20	M20	M20	M24	M24	M27
β°	45	45	22,5	22,5	22,5	22,5	22,5	15	15	11,25	11,25	9	9
Screw lengths *	14	16	10	12	12	14	16	18	18	18	20	24	24

* Add the values in the table with the thickness of the pipe flanges, the washers and the estimated thickness of the gasket.

Subject to change without notice

KNIFE GATE VALVE TYPE 11

MATERIAL SPEZIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	Pt.	Description	Material	Material-No.
1	Hand wheel			8	Gland		
	Cast Iron	EN-JL-1040, epoxy coated			Nodular Cast Iron	EN-JS-1050, epoxy coated	
1b	Yoke			8a	Stud bolt		
	Stainless Steel	DIN 1481			Stainless Steel	A2	
2	Traverse			8b	Washer		
	Stainless Steel	X5CrNi18 M 10	1.4301		Stainless Steel	A2	
2a	Bearing			8c	Nut		
	Brass	CuZn39Pb3			Stainless Steel	A2	
2b	Slide washer			9	Gland packing *		
	POM				Twin Pack™	Kavelar/PTFE	
2c	Bearing			10	Body		
	Brass	CuZn39Pb3			Nodular iron	EN-JS 1082	
3	Stem				Grey cast Iron (< DN300)	EN-JL-1040	
	Stainless Steel	X6Cr17	1.4016	10c	Flange sealing *		
4	Stem nut				NBR	Acrylonitrile-butadiene-rubber	
	Brass	CuZn39Pb3		13	Sealing profile *		
4a	Washer				NBR	Acrylonitrile-butadiene-rubber	
	Stainless Steel	A2			EPDM	Ethylen-propylen-rubber	
4b	Screw			13a	Steel wire, short		
	Stainless Steel	A2			Stainless Steel		
6	Gate			13b	Steel wire, long		
	Stainless Steel	X2CrNiMo17-12-2	1.4404 (DN 50 - DN 300)		Stainless Steel		
	Stainless Steel	X5CrNi10 M 10	1.4301 (DN 350 - DN 600)	16	Gate guard (not for HW)		
7	Beam				Steel, epoxy coated		
	Steel, epoxy coated			18	Cylinder		
7c	Screw				Aluminium	s. datasheet	
	Stainless Steel	A2		20	Screw		
7d/e	Washer				Stainless Steel	A2	
	Stainless Steel	A2		20a	Washer		
7f	Nut				Stainless Steel	A2	
	Stainless Steel	A2		20b	Nut		
7g	Screw				Stainless Steel	A2	
	Stainless Steel	A2		25	Piston rod		
					Stainless Steel	A2	

* Recommended spare parts

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE TW 80/TW 100



Wafer type butterfly valve TW 100 with NBR-seat.

TECHNICAL DATA

Nominal diameter:	DN 80 / DN 100
Face-to-face:	EBRO works standard
Flange accommodation:	DIN 28459 flanges for tank lorries
Flange Surface Design:	DIN 2526, Form A-E, ANSI RF
Tightness check:	EN 12266 (Leakage Rate 1) DIN 5208, Category 3 API 598 Table 5 ANSI B 16-104, Class VI
Temperature range:	-20°C to +80°C (depending on pressure and medium)
Operating pressure:	max. 6 bar
Differential pressure:	max. Δp 6 bar
Body:	Aluminium alloy
- one piece	GD-AlSi9Cu3 (3.2163)
- splitted	PTFE seal
Seat:	GK-AlSi12(Cu) (3.2583.02) EPDM (Ethylene propylene caoutchouc) NBR (Acrylnitrile butadiene rubber) FPM (Fluorocarbon caoutchouc) AU (Polyurethane) PTFE (Polytetrafluorethylene)
Disc:	Stainless Steel G-X6CrNiMo18-10 (1.4408)

FEATURES

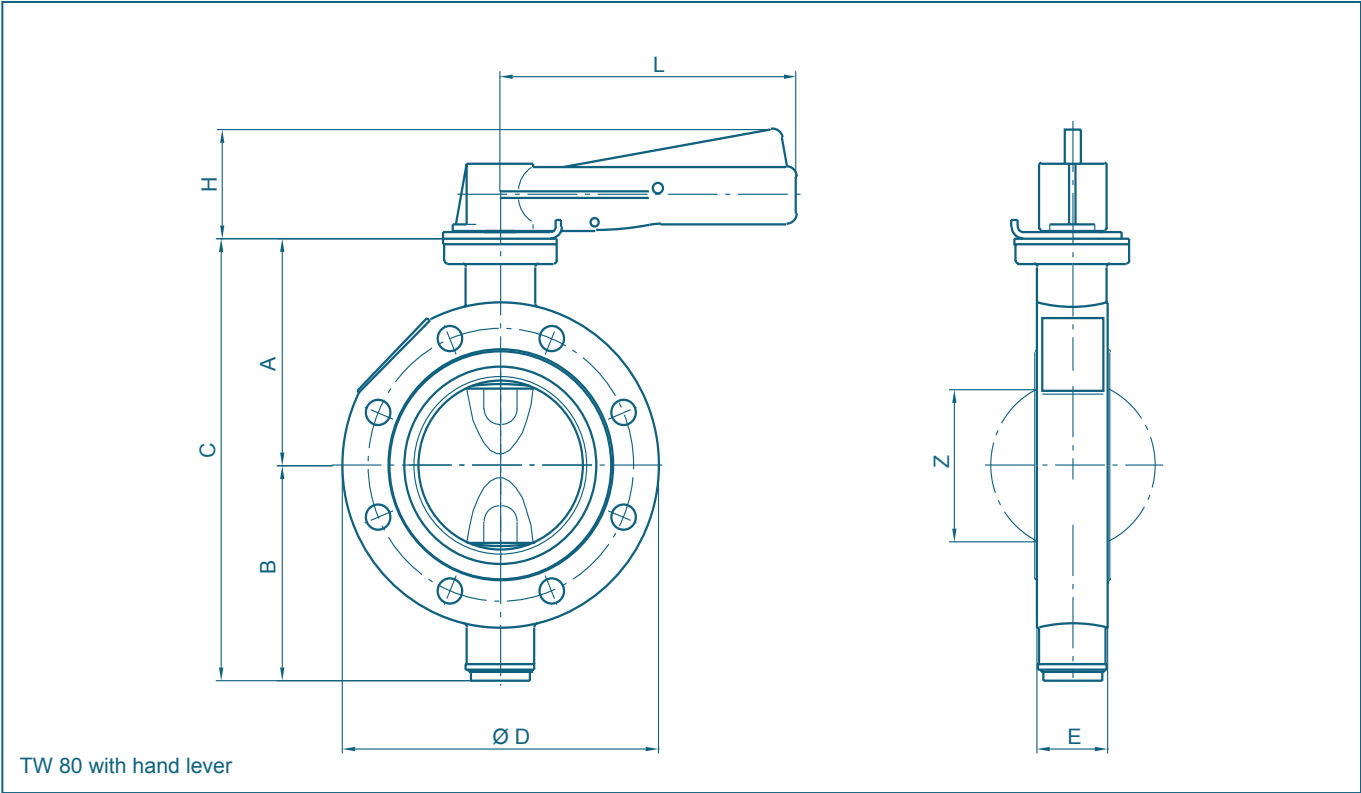
- Maintenance-free
- Triple shaft bearing
- Can be disassembled, material-specific recycling possible

GENERAL APPLICATIONS

- Tank lorries



WAFER TYPE BUTTERFLY VALVE TW 80/TW 100



DN [mm]	Size [in]	Dimensions [mm]								Weight [kg]
		A	B	C	D	E	H	L	Z	
80	3	108	103	211	155	35	52	145	71	2,3
100	4	118	113	231	174	35	52	145	93	2,6

TW DN 125: upon request

Subject to change without notice

KNIFE GATE VALVE WB 14



Knife Gate Valve with fully lugged body, which allows end of pipe installation.

TECHNICAL DATA

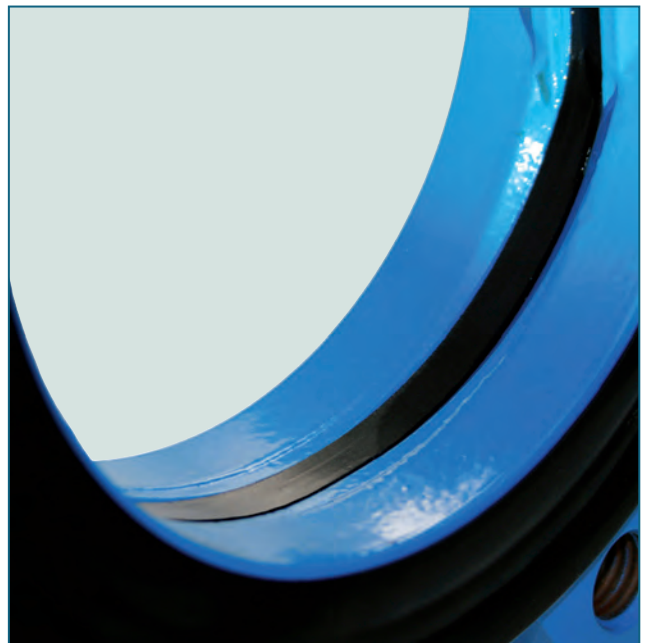
Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558-1 Series 20
Flange drilling:	EN 1092 PN 10/16 ASME Class 150
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208 Class A
Temperature range:	max. 120°C
Actuators:	Hand wheel, ratchet wrench, chain wheel, bevel gear, pneumatic cylinder, electric motor, hydraulic cylinder
Operating pressure:	10 bar

FEATURES

- Box packing Twin Pack™ gives high operation reliability
- Bi-directional sealing
- Casted one piece body
- Integrated flangesealing
- Piggable design

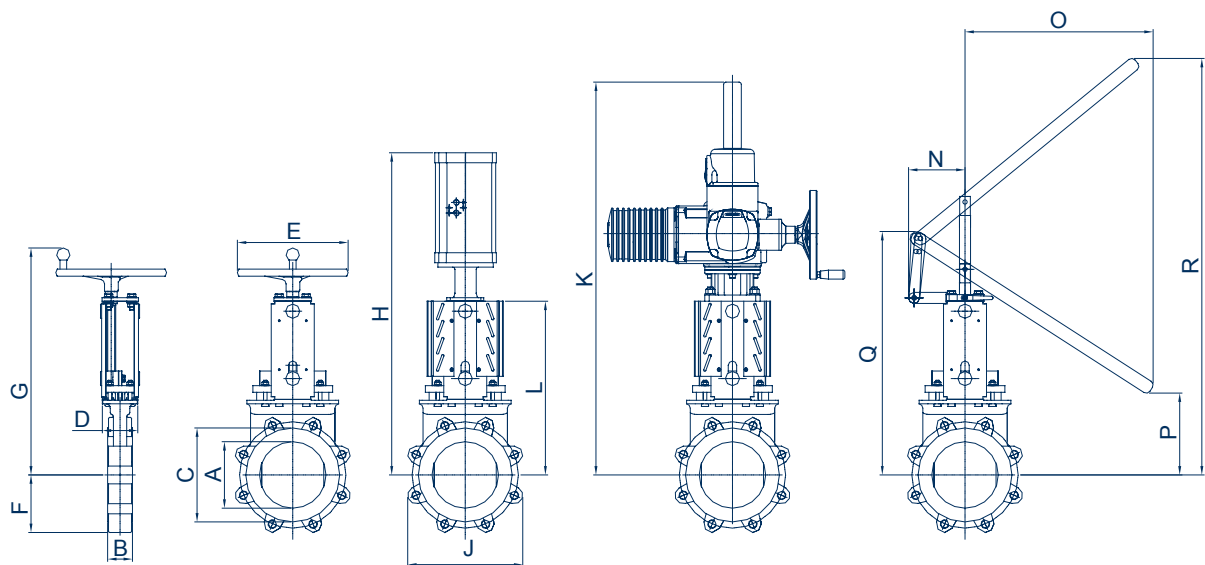
GENERAL APPLICATIONS

- Water and waste water
- Biogas plant
- Sugar industry
- Power plants and steel works
- Chemical industry
- Food and beverage industry



A straight bore and the integrated sealing allow excellent flow characteristics.

KNIFE GATE VALVE WB 14

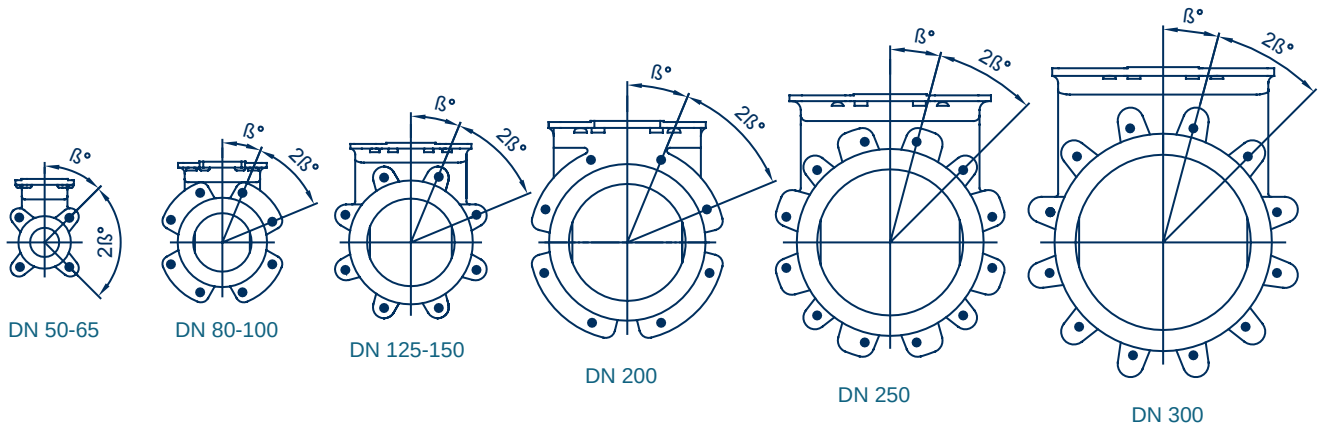


Knife gate valve type WB

DN [mm]	Size [in]	Dimensions [mm]																Weight with hand wheel [kg]
		A	B	C	D	E	F	G	H	J	K	L	N	O	P	Q	R	
50	2	50	43	90	86	200	59	299	465	117	629	227	149	499	128	381	419	6,5
65	2 ½	65	46	105	86	200	66	324	490	131	654	252	147	492	153	407	511	8,0
80	3	80	46	120	86	200	88	346	512	176	677	275	144	479	176	429	598	11,5
100	4	100	52	144	86	200	101	381	547	206	712	310	146	635	17	472	653	14,5
125	5	125	56	169	86	250	112	421	685	236	752	350	137	591	57	512	846	17,5
150	6	150	56	192	86	250	130	464	730	260	794	392	129	554	99	554	1039	22,0
200	8	200	60	256	151	315	154	561	855	327	818	489	217	633	247	716	1117	37,0
250	10	250	68	307	151	315	153	657	1050	392	914	579	-	-	-	-	-	55,0
300	24	300	78	354	151	315	212	753	1146	462	1059	675	-	-	-	-	-	71,0

Subject to change without notice

FLANGE DRILLINGS WB 14



● = Tapped holes ○ = Throughgoing holes

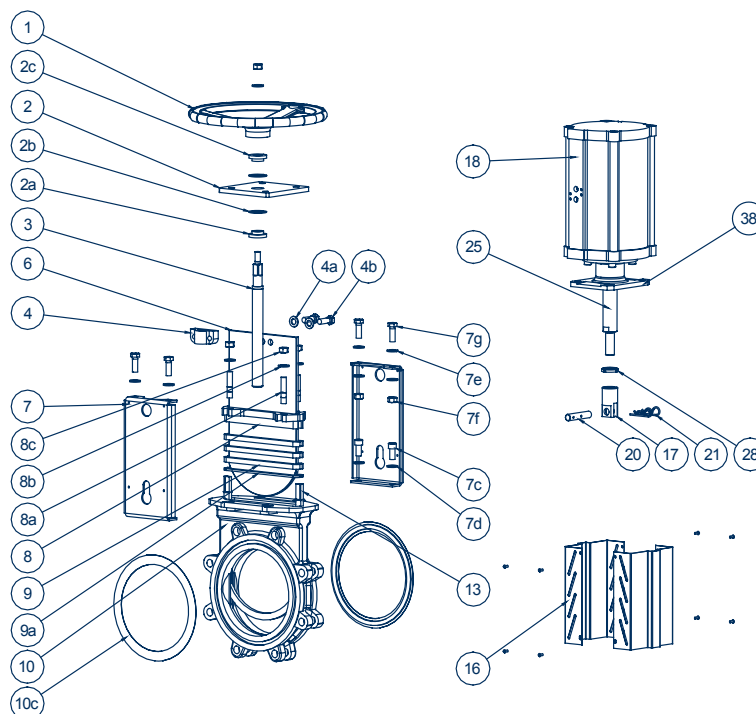
Nominal diameter DN [mm]	50	65	80	100	125	150	200	250	300
Outside flange diameter [mm]	165	185	200	220	250	285	340	395	445
Bolt circle diameter [mm]	125	145	160	180	210	240	295	350	400
Face-to-face length [mm]	43	46	46	52	56	56	60	68	78
Number of throughgoing holes [○]	-	-	-	-	-	-	-	-	-
Number of tapped holes [●]	4	4	8	8	8	8	8	12	12
Bolt size	M16	M16	M16	M16	M16	M20	M20	M20	M20
B°	45	45	22,5	22,5	22,5	22,5	22,5	15	15
Screw lengths *	12	12	11	15	15	15	18	20	2

* Add the values in the table with the thickness of the pipe flanges, the washers and the estimated thickness of the gasket.

Subject to change without notice

KNIFE GATE VALVE WB 14

MATERIAL SPEZIFICATION AND PARTS LIST



Pos.	Part	Material	Material-No.	Pos.	Part	Material	Material-No.
1	Hand Wheel	Cast Iron	GG25	8a	Pin Bolt	Stainless Steel	A2
2	Yoke	Steel	1.0038	8b	Washer	Stainless Steel	A2
2a	Bearing	Brass	CuZn39Pb3	8c	Nut	Stainless Steel	A2
2b	Slide Washer	POM		9*	Box Packing	Twin Pack™	Kavelar/PTFE
2c	Bearing	Brass	CuZn39Pb3	9a*	Box Bottom Scraper	≥DN200 UHMW-PE	
3	Stem	Stainless Steel	1.4016	10	Valve Body	Nodular iron	EN-JS 1082
4	Stem Nut	Brass	CuZn39Pb3	10c*	Flange Sealing	NBR	
4a	Washer	Stainless Steel	A2	13*	Sealing Profile	NBR	
4b	Bolt	Stainless Steel	A2	16	Gate Guard	Steel	1.0038
6	Gate	Stainless Steel	1.4301	17	Gate Clevis	Stainless Steel	1.4305
7	Beam	Steel	1.0038	18	Cylinder	see datasheet 06.04	
7c	Bolt	Stainless Steel	A2	20	Clevis Pin	Stainless Steel	1.4305
7d	Washer	Stainless Steel	A2	21	Locking Pins	Stainless Steel	1.4305
7e	Washer	Stainless Steel	A2	25	Piston Rod	Stainless Steel	1.4301
7f	Nut	Stainless Steel	A2	28	Locking Nut	Stainless Steel	1.4305
7g	Screw	Stainless Steel	A2	38	Valve Adapter	Stainless Steel	1.4308
8	Gland	Carbon Steel	EN-JS-1050				

* Recommended spare parts

Subject to change without notice

DOUBLE FLANGED KNIFE GATE VALVE WB12



Double flanged knife gate valve type WB12 with handlever for fast and easy opening/closing.

TECHNICAL DATA

Nominal diameters:	DN 150 - DN 200
Flange drilling:	Standard for agricultural applications
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208 Class A
Temperature:	max. 90°C
Actuators:	handlever, handwheel, ratchet wrench, chain wheel, pneumatic cylinder, electric motor, hydraulic cylinder
Working pressure:	max. 4 bar

MATERIALS

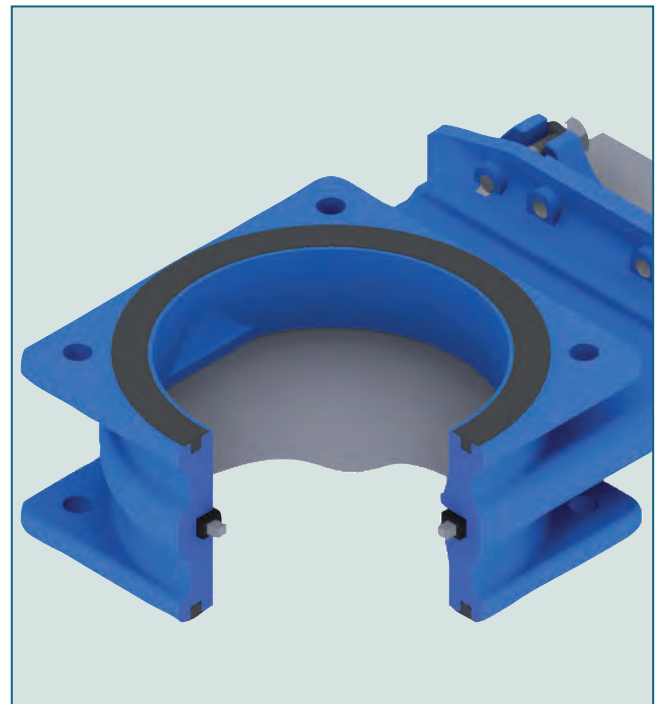
Body:	EN-JL 40
Gate:	Stainless steel, 1.4301
Sealing:	NBR
Stem:	Stainless steel
Box packing:	Twin Pack™

FEATURES

- One piece casted valve body
- The grinded gate ensures low torque and minimum wear
- Flange sealings
- Flange designed for agricultural applications
- Box packing TwinPack™ ensures high operation reliability
- Bi-directional sealing

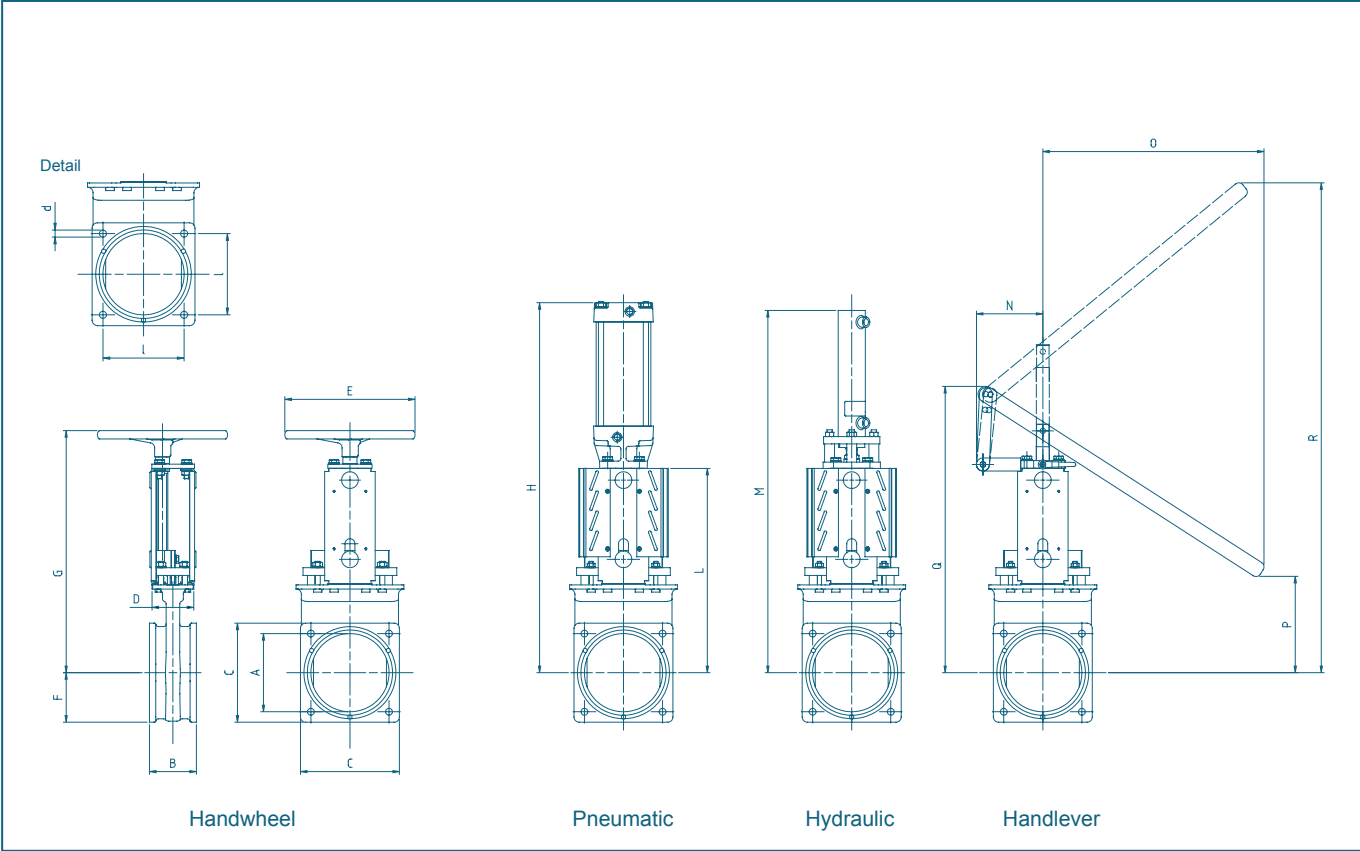
GENERAL APPLICATIONS

- Biogas plants
- Agricultural applications



NBR-seal with metal core for durable sealing.

DOUBLE FLANGED KNIFE GATE VALVE WB12



DN [mm]	Size [in]	Dimensions [mm]																
		ØA	B	C	D	Ød	ØE	F	G	H	L	I	M	N	O	P	Q	R
150	6	150	90	190	80	13	250	95	464	710	392	150	695	127	425	185	549	940
200	8	200	94	235	145	13	317	123	562	888	483	180	852	216	623	249	715	1123

Subject to change without notice

KNIFE GATE VALVE MV



Unidirectional knife gate valve for fluids, bulk solids capable to flow an suspensions up to 5%.

TECHNICAL DATA

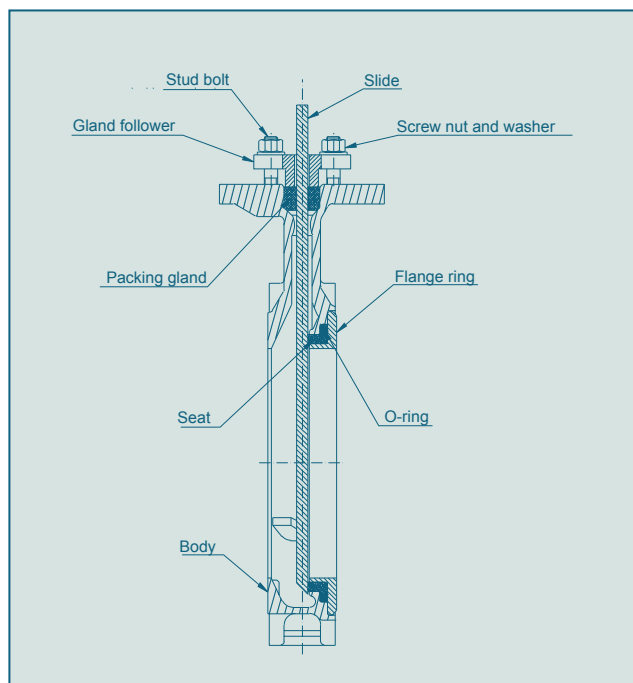
Nominal diameter:	DN 50 - DN 1200
Face-to-face:	Works standard
Flange drilling:	EN 1092 PN 10/16 ASME Class 150
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208 Class A
Temperature range:	max. 300°C (depending on pressure, medium and material)
Actuators:	Hand wheel, ratchet wrench, chain wheel, bevel gear, pneumatic cylinder, electric motor, hydraulic cylinder
Operating pressure:	DN 50 - DN 125: 16 bar DN 150 - DN 300: 10 bar DN 350 - DN 600: 6 bar DN 700 - DN 1000: 4 bar

FEATURES

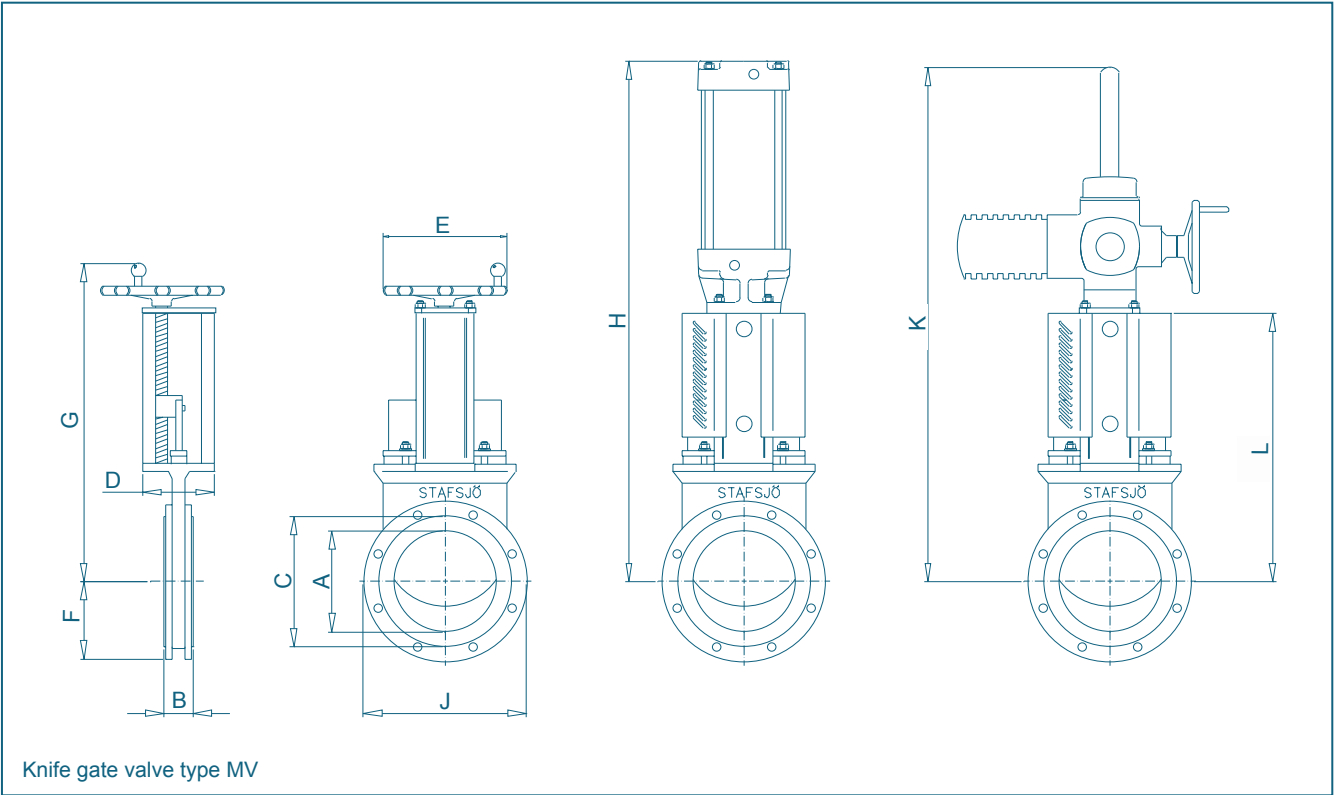
- Box packing TwinPack™ gives high operational reliability
- Easy replacement of seat by mechanically locked retainer ring
- Low maintenance
- Can be disassembled, material specific recycling possible

GENERAL APPLICATIONS

- Sludge, powder, granulates and other solid media
- Pulp, recycled pulp
- Waste water
- Food industry
- Beverage industry



KNIFE GATE VALVE MV

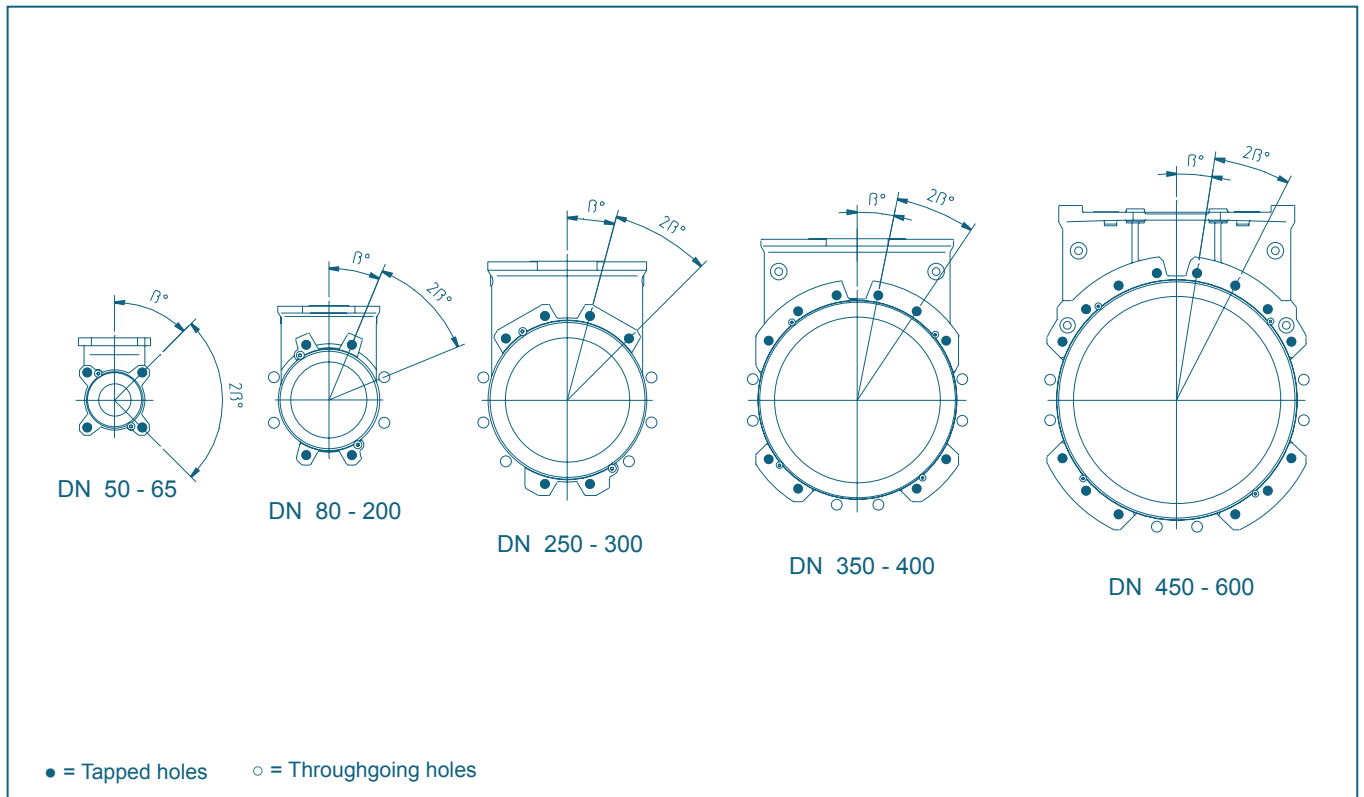


DN [mm]	Size [in]	Dimensions [mm]											Air supply	Weight with hand wheel [kg]
		A	B	C	D	E	F	G	H	J	K	L		
50	2	52	41	91	80	200	56	360	475	116	620	230	¼"	7
65	2½	64	41	107	80	200	65	380	495	130	650	250	¼"	7
80	3	79	51	124	80	200	88	405	545	135	690	275	¼"	8
100	4	103	51	154	80	200	102	453	593	155	765	323	¼"	10
125	5	128	56	179	80	250	116	495	685	178	830	365	¼"	13
150	6	153	60	204	80	250	130	550	740	205	910	420	¼"	15
200	8	202	60	267	145	315	160	694	1017	268	1115	555	½"	31
250	10	250	69	320	145	315	192	779	1102	320	1250	640	½"	40
300	12	302	78	374	145	315	230	879	1252	375	1400	740	½"	55
350	14	332	78	419	175	400	210	993	1415	420	1550	820	½"	90
400	16	380	89	479	175	400	245	1083	1555	490	1690	910	½"	120
450	18	428	89	535	200	520	280	1180	1680	560	1820	990	½"	180
500	20	470	114	580	250	520	313	1315	1865	625	2010	1127	½"	245
600	24	560	114	680	260	635	370	1540	2355	740	2340	1352	1"	340
700	28	665	118	800	310	635	390	1750	2513	865	2650	1565	1"	460
750	30	710	118	860	305	635	490	1880	2900	930	2830	1635	1"	700
800	32	760	118	900	310	635	490	1970	3030	985	2970	1780	-	540
900	36	855	118	1010	320	635	580	2220	3380	1160	3340	1985	-	900
1000	40	950	150	1110	320	635	640	2400	3670	1280	3630	2215	-	1500

Actuator EM is rotated 45° for DN 50 - DN 150

Subject to change without notice

FLANGE DRILLINGS MV



Nominal diameter DN [mm]	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Outside flange diameter [mm]	165	185	200	220	250	285	340	395	445	505	565	615	670	780
Bolt circle diameter [mm]	125	145	160	180	210	240	295	350	400	460	515	565	620	725
Face-to-face length [mm]	41	41	51	51	54	60	60	69	78	78	89	89	114	114
Number of throughgoing holes [○]	-	-	4	4	4	4	4	6	6	6	6	6	6	6
Number of tapped holes [●]	4	4	4	4	4	4	4	6	6	10	10	14	14	14
Bolt size	M16	M16	M16	M16	M16	M20	M20	M20	M20	M20	M24	M24	M24	M27
β°	45	45	22,5	22,5	22,5	22,5	22,5	15	15	11,25	11,25	9	9	9
Screw lengths *	8**	8**	12	12	12	14	13	17	20	19	22	22	27	27

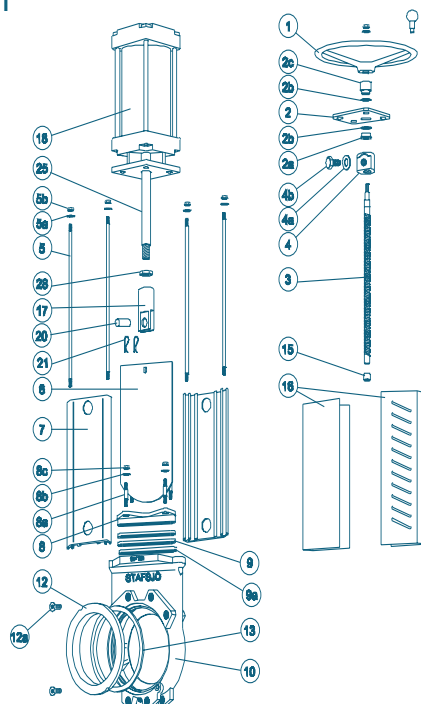
* Add the values in the table with the thickness of the pipe flanges, the washers and the estimated thickness of the gasket.

** The screws on the seatside have to be 3 mm longer

Subject to change without notice

KNIFE GATE VALVE MV

MATERIAL SPEZIFICATION AND PARTS LIST



Parts list of DN 50 - DN 800 (monobloc valve body)

Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Hand wheel				8b	Washer			
	Aluminium	AlSi9Cu3(Fe)				Stainless Steel	X5CrNi18 M 10	1.4301	
	DN > 300 Cast Iron	GG 20	0.6020	A48N30B	8c	Nut			
2	Yoke					A2, verzinkt	X5CrNi18 M 10	1.4301	
	Stainless Steel	X5CrNi18 M 10	1.4301		9	Box packing *			
2a	Bearing					Twin Pack™			
	Brass	CuZn39Pb3		C 36000	9a	Box bottom			
2b	Slide washer					HD-polyethylene, DN 500 - DN 800			
	POM				10	Valve body			
2c	Bearing					Stainless Steel			
	Brass	CuZn39Pb3		C 36000	12	Retainer ring			
3	Stem					Stainless Steel			
	Stainless Steel	X6Cr17	1.4016		12a	Locking screw			
	DN > 250	X12CrMoS17	1.4104			Stainless Steel	X5CrNi18 M 10	1.4301	
4	Stem nut				13	Seat *			
	Brass	CuZn39Pb3		C 36000		EPDM			
4a	Washer				15	Bushing			
	Stainless Steel	X5CrNi18 M 10	1.4301			Oil-bronze			
4b	Screw				16	Gate guard, not for HW			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X5CrNi18 M 10	1.4301	
5	Tie rod				17	Gate clevis			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X10CrNiS18-9	1.4305	
5a	Washer				18	Cylinder			
	Stainless Steel	X5CrNi18 M 10	1.4301			See data sheet			
5b	Nut				20	Clevis pin			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X10CrNiS18-9	1.4305	
6	Gate				21	Split pin			
	Stainless Steel	X5CrNi18 M 10	1.4401			Stainless Steel			
7	Beam				25	Piston rod			
	Aluminium	AlMgSi0,5		AA 6063		Stainless Steel	X12CrMoS17	1.4104	
8	Gland				28	Locking nut			
	Stainless Steel					Stainless Steel	X10CrNiS18-9	1.4305	
8a	Stud bolt								
	A2, zinc	X5CrNi18 M 10	1.4301						

* Recommended spare parts

Subject to change without notice

KNIFE GATE VALVE XV



Knife gate valve for liquids with high solids content up to 8%.

TECHNICAL DATA

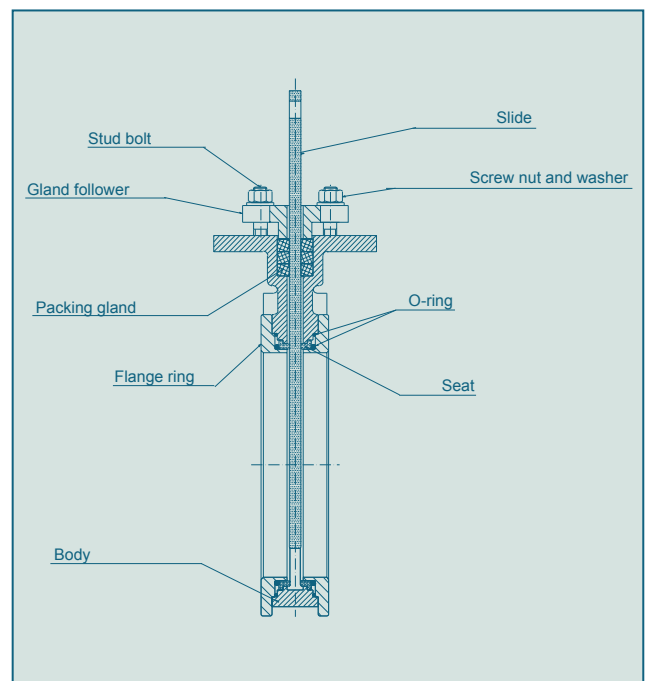
Nominal diameter:	DN 80 - DN 800
Face-to-face:	DN 80 - DN 300 EN 558 Series 20 DN 350 - DN 800 works standard
Flange Surface Design:	EN 1092 PN 10 ASME Class 150
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208 Class A
Temperature range:	max. 180°C
Actuators:	Hand wheel, chain wheel, ratched wrench, pneumatic cylinder, electric motor, hydraulic cylinder
Operating pressure:	DN 80 - DN 350: 10 bar DN 400 - DN 600: 6 bar DN 700 - DN 800: 4 bar

FEATURES

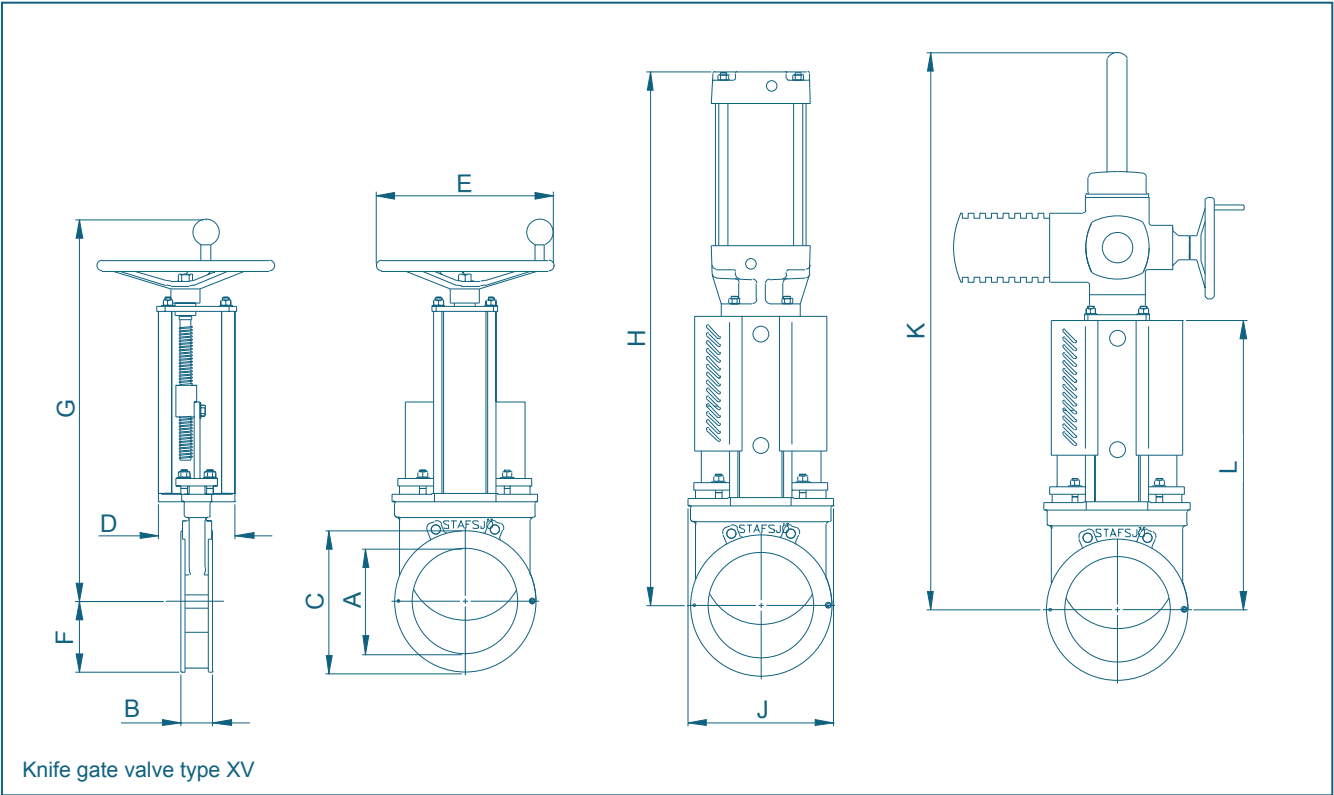
- Box packing TwinPack™ gives high operation reliability
- One side lugging, bi-directional sealing
- Easy replacement of seat by mechanically locked retainer ring
- Low-maintenance
- High resistance against water hammer
- Great differential pressure possible

GENERAL APPLICATIONS

- Process technology
- Pulp and paper
- Granulates, bulk solids and powder



KNIFE GATE VALVE XV

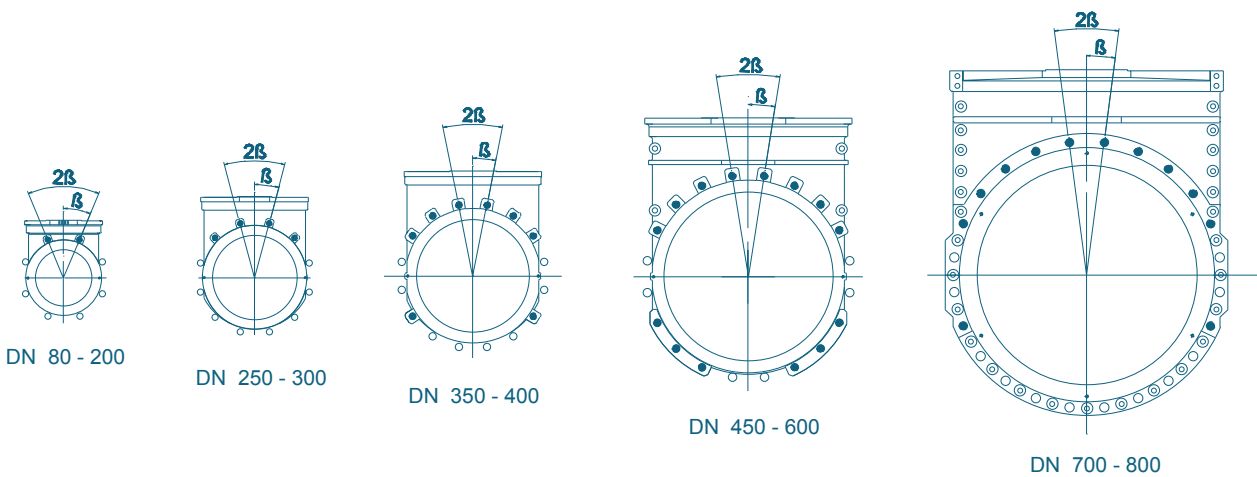


DN [mm]	Size [in]	Dimensions [mm]											Air supply
		A	B	C	D	E	F	G	H	J	K	L	
80	3	80	46	138	80	200	69	444	582	140	636	314	1/4"
100	4	100	52	158	80	200	79	482	620	158	674	352	1/4"
125	5	125	56	188	80	200	94	523	711	188	715	393	1/4"
150	6	150	56	212	80	200	106	567	755	212	759	437	1/4"
200	8	200	60	269	145	315	134,5	691	1006	277	868	546	1/2"
250	10	250	68	322	145	315	161	785	1100	331	994	640	1/2"
300	12	300	78	372	145	315	186	879	1244	382	1149	734	1/2"
350	14	350	78	432	175	400	216	1021	1477	437	1308	841	1/2"
400	16	400	89	481	175	400	241	1116	1622	488	1453	936	1/2"
500	20	500	114	586	250	520	302	1342	1988	603	1770	1152	1/2"
600	24	600	114	686	260	635	343	1546	2329	735	2076	1356	1"
700	28	680	128	800	320	635	450	1650	2465	902	2382	1527	1"
800	32	780	128	901	320	635	500	1866	2952	1002	2697	1742	-

Actuator EM is rotated 45° for DN 80 - DN 150

Subject to change without notice

FLANGE DRILLINGS XV



● = Tapped holes ○ = Throughgoing holes

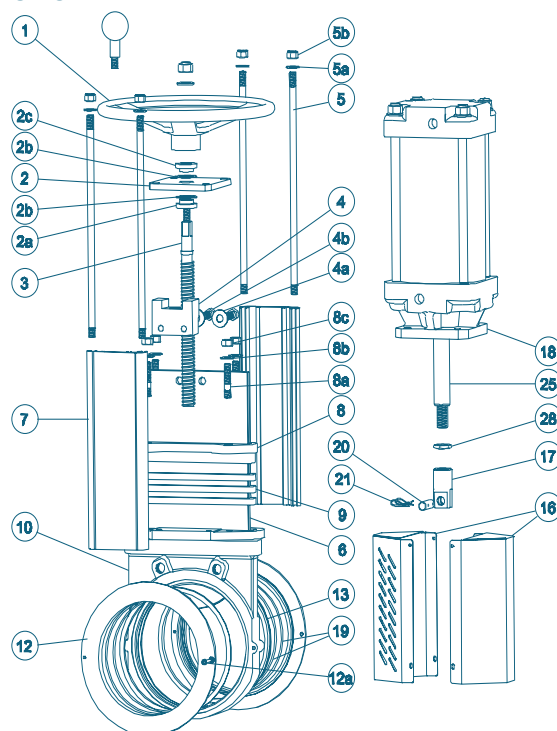
Nominal diameter DN [mm]	80	100	125	150	200	250	300	350	400	500	600	700	800
Outside flange diameter [mm]	200	220	250	285	340	395	445	505	565	670	780	895	1015
Bolt circle diameter [mm]	160	180	210	240	295	350	400	460	515	620	725	840	950
Face-to-face length [mm]	46	52	56	56	60	68	78	78	89	114	114	128	128
Number of throughgoing holes [○]	6	6	6	6	6	8	8	8	8	6	6	12	12
Number of tapped holes [●]	2	2	2	2	2	4	4	8	8	14	14	12	12
Bolt size	M16	M16	M16	M20	M20	M20	M20	M20	M24	M24	M27	M27	M30
β°	22,5	22,5	22,5	22,5	22,5	15	15	11,25	11,25	9	9	7,5	7,5
Screw lengths *	10	12	14	12	3	15	19	19	21	27	27	31	31

* Add the values in the table with the thickness of the pipe flanges, the washers and the estimated thickness of the gasket.

Subject to change without notice

KNIFE GATE VALVE XV

MATERIAL SPEZIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Hand wheel				8a	Stud bolt			
	Aluminium	AlSi9Cu3(Fe)				A2, zinc	X5CrNi18 M 10	1.4301	
	DN > 300 Cast Iron	GG 20	0.6020	A48No30B	8b	Washer			
2	Yoke					Stainless Steel	X5CrNi18 M 10	1.4301	
	Stainless Steel	X5CrNi18 M 10	1.4301		8c	Nut			
2a	Bearing					A2, zinc	X5CrNi18 M 10	1.4301	
	Brass	CuZn39Pb3		C 36000	9	Box packing *			
2b	Slide washer					Twin Pack™			
	POM				10	Valve body			
2c	Bearing					Stainless Steel		1.4408	
	Brass	CuZn39Pb3		C 36000	12	Retainer ring			
3	Stem					Stainless Steel		1.4408	
	Stainless Steel	X6Cr17	1.4016		12a	Locking screw			
	DN > 250	X12CrMoS17	1.4104			Stainless Steel	X5CrNi18 M 10	1.4301	
4	Stem nut				13	Seat *			
	Brass	CuZn39Pb3		C 36000		PTFE			
4a	Washer				16	Gate guard, not for HW			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X5CrNi18 M 10	1.4301	
4b	Screw				17	Gate clevis			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X10CrNi18 M 10	1.4305	
5	Tie rod				18	Cylinder			
	Stainless Steel	X5CrNi18 M 10	1.4301			See data sheet			
5a	Washer				19	O-ring			
	Stainless Steel	X5CrNi18 M 10	1.4301			FPM			
5b	Nut				20	Clevis pin			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X10CrNi18-9	1.4305	
6	Gate				21	Split pin			
	Stainless Steel		1.4401			Stainless Steel			
7	Beam				25	Piston rod			
	Aluminium	AlMgSi0,5		AA 6063		Stainless Steel	X12CrMoS17	1.4104	
8	Gland				28	Locking nut			
	Stainless Steel					Stainless Steel	X10CrNi18-9	1.4305	

* Recommended spare parts

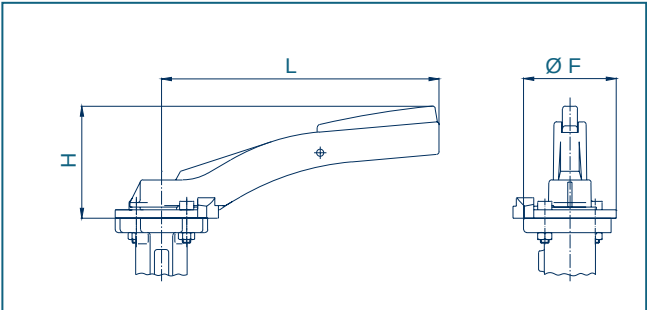
Subject to change without notice

MANUAL OPERATION



Handlever (Aluminium Version). Adjustable in 15° steps.

HAND LEVER (ALUMINIUM)

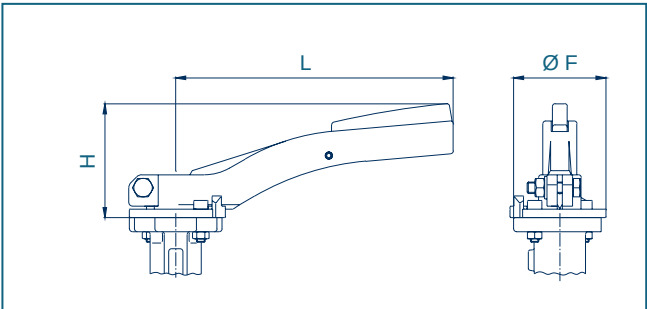


Lever	F	H	L	Weight [kgs]
Size I	54	74	165	0,3
Size II	65	80	195	0,4
Size III	90	100	276	0,6



Stainless Steel handlever with open/close stops.

HAND LEVER (STAINLESS STEEL)



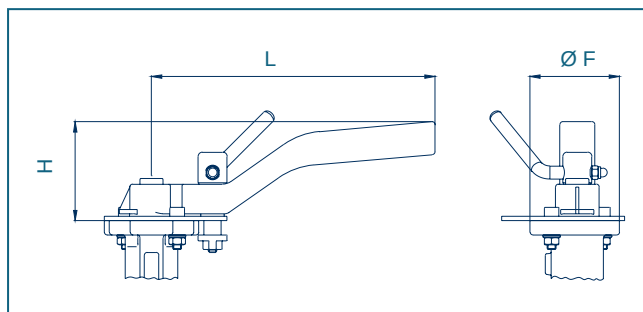
Lever	F	H	L	Weight [kgs]
Size I	54	69	155	0,6
Size II	65	80	195	0,8
Size III	90	100	276	1,4

MANUAL OPERATION



Lever for stepless adjustment (Aluminium).

STEPLESS ADJUSTING LEVER

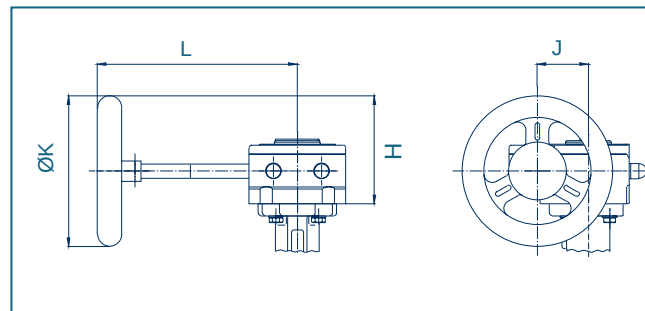


Lever	F	H	L	Weight [kgs]
Size I	54	58	155	0,5
Size II	65	70	195	0,6
Size III	90	90	276	1,1
Size IV	125	74	350	2,3
Size V	150	87	350	2,9



Gear box with self locking mechanism

GEAR BOX



Gear	H	J	K	L	Weight [kgs]
Size I	90	43	125	166	1,1
Size II	107	43	160	190	1,3
Size III	153	50	250	267	3,1
Size IV	240	80	400	376	8,9
Size V	290	80	500	396	9,5
Size VI	225	90	350	318	16,2
Size VII	279	123	457	405	30,7
Size VIII	355	154	610	466	45,2
Size IX	305	211	500	447	49,0
Size X	309	263	500	500	74,0

PNEUMATIC ACTUATOR EB-SYD, DOUBLE ACTING



The double acting version of this series is available in 9 sizes, constructed to the scotch-yoke principle.

TECHNICAL DATA

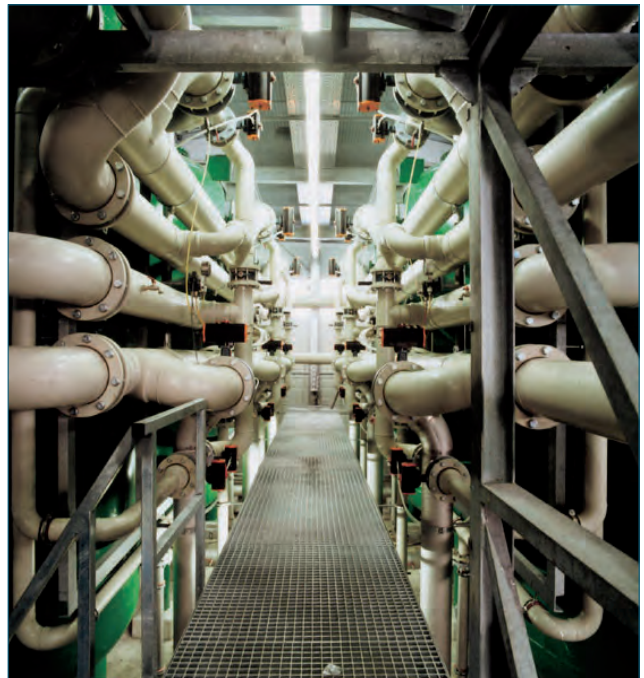
Torque:	27 - 4001 Nm (based on supply pressure of 6 bar)
Limit of travel:	exactly adjustable between $\pm 3^\circ$.
Limit switches and solenoid valve mounting:	VDI / VDE 3845
Supply pressure:	min. 2,5 bar, max. 10 bar
Supply quality:	clean and dry in accordance with ANSI/ ISA S7.0.01. for cycles ≥ 4 /min please lubricate.
Temperature range:	-20°C to +80°C (standard) -40°C to +80°C (low temperature) -15°C to +140°C (high temperature)
Valve interface:	EN ISO 5211
Actuator cylinder:	high quality marine grade Aluminium alloy, hard anodized. Other coatings upon request.

FEATURES

- Maintenance-free
- Suitable for all $\frac{1}{4}$ turn valves
- Blow-out proof shaft
- Torques in agreement with EN ISO 5211
- High visibility position indicator
- All fasteners made of stainless steel

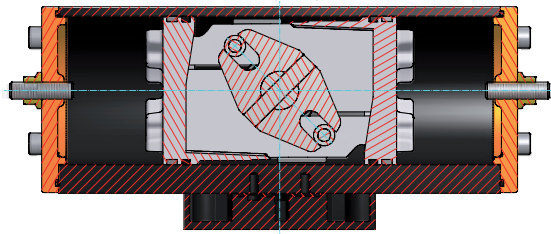
KEY BENEFITS

- High opening- and closing- torques produced by scotch-yoke mechanism
- Ideal sliding properties provided by low friction multiple piston guides
- Operational safety and long service life assured by precise machining of parts

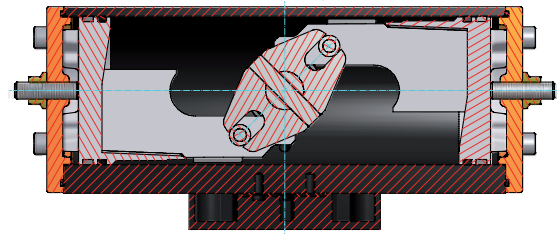


PNEUMATIC ACTUATOR EB-SYD, DOUBLE ACTING

FUNCTION



Open



Close

When the left control connection is pressurized, the pistons are pushed together with the yoke turning counter-clockwise to open the valve. When the right control connection is pressurized,

the yoke turns clockwise to close the valve.

The stroke of the piston can be limited by adjusting the screws located in the end covers.

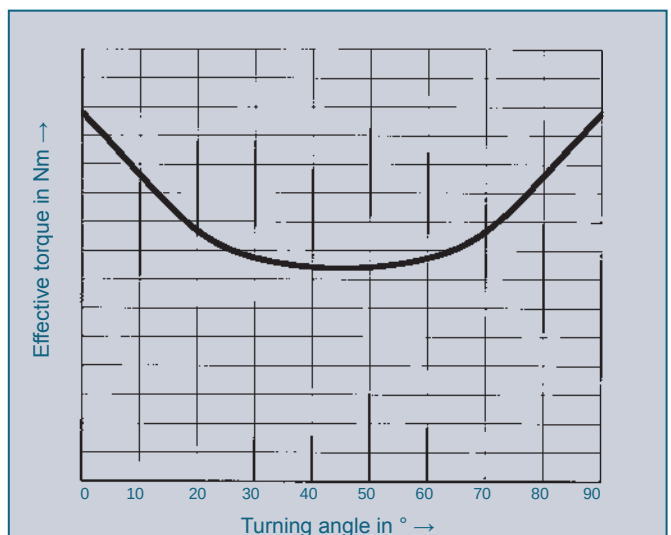
TORQUE (Nm)

Type	Control air pressure									
	2,5 bar	3 bar	3,5 bar	4 bar	4,5 bar	5 bar	5,5 bar	6 bar	7 bar	8 bar
EB 4.1	11	13	16	18	20	22	25	27	31	36
EB 5.1	36	38	44	51	57	63	70	76	89	101
EB 6.1	65	78	91	104	117	130	143	156	182	208
EB 8.1	104	125	146	166	187	208	229	250	292	333
EB 10.1	220	265	309	353	397	441	485	530	618	706
EB 12.1	381	457	534	610	686	762	839	915	1067	1220
EB 265	-	647	755	863	971	1079	1187	1295	1510	1726
EB 270	-	991	1157	1322	1487	1652	1817	1983	2313	2643
EB 280	-	2001	2334	2667	3001	3334	3668	4001	4668	5335

Subject to change without notice

The torques shown in the diagram are measured values. The required size of the actuator can be established by comparing the values of the actuator with the required torque of the valve.

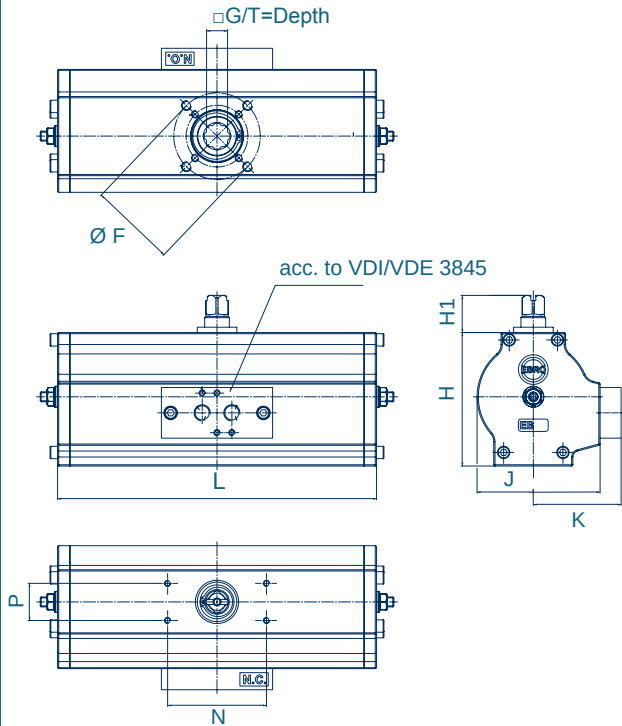
Especially non-lubricant media (e.g. bulk goods and dry gases) may cause an increase of the actuator torque. This is why we recommend to consider a safety of 12%. Choosing an actuator in critical limits, please contact our engineers.



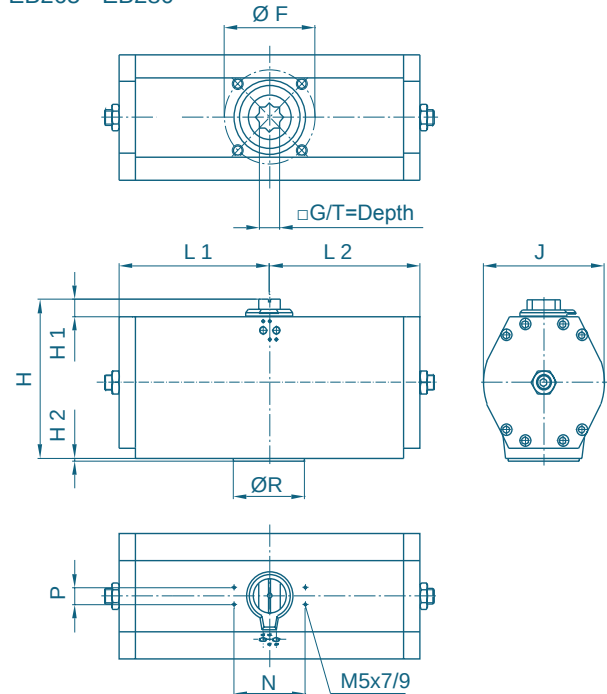
Typical torque curve of a scotch-yoke actuator.

PNEUMATIC ACTUATOR EB-SYD, DOUBLE-ACTING

EB4.1-SYD - EB12.1-SYD



EB265 - EB280



Type	ØF	G***	H	H1	H2	J	K	L	L1	L2	N	P	ØR	T	Weight [kg]
EB 4.1	F04/05*	10/11/12	66	30	-	57	48	148	-	-	80	30	-	13/16	1,1
EB 5.1	F04/05*	10/11/12/14	77	30	-	72	57	174	-	-	80	30	-	13/16	1,7
EB 6.1	F04/05/07*	11/12/14/16/17	91	30	-	88	65	224	-	-	80	30	-	19	3,0
EB 8.1	F05/07/10	12/14/16/17/22	108	30	-	100	71	258	-	-	80	30	-	19	4,1
EB 10.1	F07/10	14/16/17/22	128	30	-	122	82	334	-	-	80	30	-	24	7,5
EB 12.1	F10/12	17/22/24/27	156	30	-	145	93	392	-	-	80	30	-	29	12,7
EB 265	F12/16	32/36	232	30	3	152	-	-	195	195	80	30	85	60	21,0
EB 270	F12/16/25**	32/36/46	278	30	4	220	-	-	145	270	130	30	100	60	32,0
EB 280	F12/16/25	32/36/46	278	30	5	220	-	-	275	275	130	30	130	60	42,0

* F04/F05 no combined flange available

** Topflange F25 via adaption

*** Options (Standard = **BOLD**)

Subject to change without notice

CLOSING TIME* AND AIR CONSUMPTION

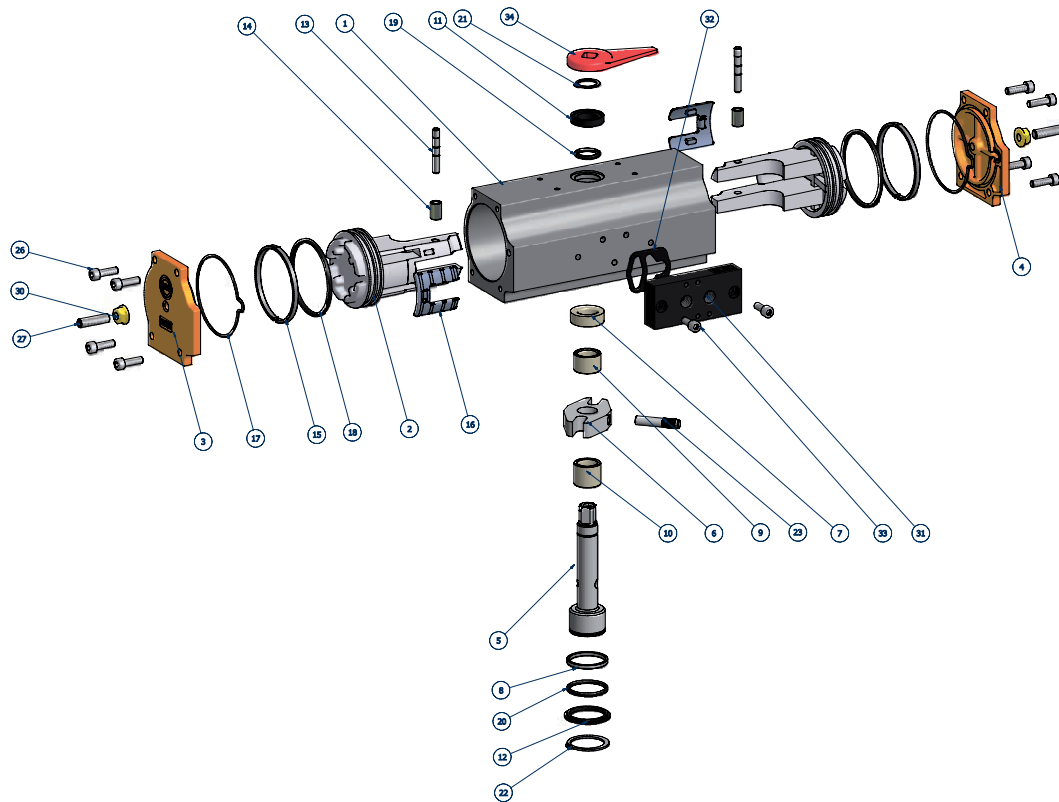
Type	EB4.1	EB 5.1	EB 6.1	EB 8.1	EB 10.1	EB 12.1	EB 265	EB 270	EB 280
Closing time EB-SYD in sec.	0,25	0,25	0,35	0,45	0,70	1,00	<2,5	<6,0	<5,0
Filling volume NL/Hub at 1 atm:	0,18	0,46	0,91	1,49	3,25	5,63	5,00	14,50	22,20

* = closing times with unthrottled air exhaust and air supply, 6 bar control pressure and 75% loadair consumption = filling volume x control pressure

Closing times can be adjusted from 30 sec. up to 300 sec. by using the EBRO speed control block (depending on type of actuator).

PNEUMATIC ACTUATOR EB-SYD, DOUBLE ACTING

MATERIAL SPECIFICATION AND PARTS LIST



Only for EB-SYD (4.1 - 12.1)

Pt.	Description	Qty.	Material	Pt.	Description	Qty.	Material
1	Actuator cylinder	1	EN AW 6063-T6	17D	End cover sealing	2	70 NBR
2	Piston	2	EN AC 46000	18D	Piston O-Ring	2	70 NBR
3	End cover L	1	EN AC 46000	19D	O-Ring, upper shaft	1	70 NBR
4	End cover R	1	EN AC 46000	20D	O-Ring, lower shaft	1	70 NBR
5	Drive shaft	1	16 Mn Cr 5	21D	Upper safety ring	1	C 75
6	Yoke	1	16 Mn Cr 5 / Sint D30	22D	Lower safety ring	1	C 75
7	Upper shaft bearing	1	Polymer blend	23	Bolt	1	42 Cr Mo 4 V
8	Lower shaft bearing	1	Polymer blend	26	Hex. socket screw	8	A2-70
9	Upper piston bearing	1	Polymer blend	27	Stroke adjusting screw	2	A2-70
10	Lower piston bearing	1	Polymer blend	30	Seal nut	2	St
11	Upper washer bearing	1	Polymer blend	31	Valve connection plate	1	EN AC 46000
12	Lower washer bearing	1	Polymer blend	32D	Shaped gasket	1	70 NBR
13	Piston bolt	2	16 Mn Cr S 5	33	Hex. socket screw	2	A2-70
14	Roller	2	100 Cr 6	34	Position indicator	1	EPDM
15	Guide band	2	Polymer blend				
16	Slidepad	2	Polymer blend				

The spare parts marked with D are integrated in the standard seal set.

Subject to change without notice

PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING



EB-SYS single-acting pneumatic actuators are available in either "spring opens" and "spring closes" versions.

TECHNICAL DATA

Torque:	35 - 1368 Nm (based on supply pressure of 6 bar)
Limit of travel:	exactly adjustable between $\pm 3^\circ$.
Limit switches and solenoid valve mounting:	VDI / VDE 3845
Supply pressure:	min. 2,5 bar, max. 10 bar
Supply quality:	clean and dry in accordance with ANSI/ ISA S7.0.01. for cycles ≥ 4 /min please lubricate.
Temperature range:	-20°C to +80°C (standard) -40°C to +80°C (low temperature) -15°C to +140°C (high temperature)
Valve interface:	EN ISO 5211
Actuator cylinder:	high quality marine grade Aluminium alloy, hard anodized. Other coatings upon request.

FEATURES

- Maintenance-free
- Suitable for all $\frac{1}{4}$ turn valves
- Blow-out proof shaft
- Torques in agreement with EN ISO 5211
- High visibility position indicator
- All fasteners made of stainless steel

KEY BENEFITS

- High opening- and closing- torques produced by scotch-yoke mechanism
- Ideal sliding properties provided by low friction multiple piston guides
- Operational safety and long service life assured by precise machining of parts
- Spring cartridges ensure safe and easy maintenance without special tools



EB-SYS fitted to a valve for fail safe operations in gas applications.

PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING

ACTUATOR TORQUE (SINGLE-ACTING) EFF. AIR TORQUE IN NM AT CONTROL PRESSURE

Type	Spring -package	Spring Md in Nm		2,5 bar		3 bar		4 bar		5 bar		5,5 bar		6 bar		7 bar		8 bar	
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
EB 5.1 SYS25	VI	12	20	20	12	26	18	39	31	51	43	58	50	64	56	77	69	89	81
EB 5.1 SYS30	V	17	27			21	11	34	24	46	36	53	43	59	49	72	62	84	74
EB 5.1 SYS40	IV	22	35					29	16	41	28	48	35	54	41	67	54	79	66
EB 5.1 SYS50	III	27	44							36	19	43	26	49	32	62	45	74	57
EB 5.1 SYS55	II	30	49									40	21	46	27	59	40	71	52
EB 5.1 SYS60	I	35	58											41	18	54	31	66	43
EB 6.1 SYS25	VI	27	45	38	20	51	33	77	59	103	85	116	98	129	111	155	137	181	163
EB 6.1 SYS30	V	35	57			43	21	69	47	95	73	108	86	121	99	147	125	173	151
EB 6.1 SYS40	IV	45	74					59	30	85	56	98	69	111	82	137	108	163	134
EB 6.1 SYS50	III	55	90							75	40	88	53	101	66	127	92	153	118
EB 6.1 SYS55	II	63	102									80	41	93	54	119	80	145	106
EB 6.1 SYS60	I	73	119											83	37	109	63	135	89
EB 8.1 SYS25	VI	40	67	64	37	85	58	127	100	168	141	189	162	210	183	252	225	293	266
EB 8.1 SYS30	V	48	82			77	43	119	85	160	126	181	147	202	168	244	210	285	251
EB 8.1 SYS40	IV	65	111					102	56	143	97	164	118	185	139	227	181	268	222
EB 8.1 SYS50	III	82	140							126	68	147	89	168	110	210	152	251	193
EB 8.1 SYS55	II	90	152									139	77	160	98	202	140	243	181
EB 8.1 SYS60	I	107	181											143	69	188	111	226	152
EB 10.1 SYS25	VI	89	151	132	70	176	114	264	202	353	291	397	335	441	379	529	467	618	556
EB 10.1 SYS30	V	107	182			158	83	246	171	335	260	379	304	423	348	511	436	600	525
EB 10.1 SYS40	IV	145	231					208	122	297	211	341	255	385	299	473	387	562	476
EB 10.1 SYS50	III	182	279							260	163	304	207	348	251	436	339	525	428
EB 10.1 SYS55	II	198	322									258	164	332	208	420	296	509	385
EB 10.1 SYS60	I	236	370											294	160	382	248	471	337
EB 12.1 SYS25	VI	155	224	208	139	280	211	425	356	570	501	643	574	715	646	860	791	1005	936
EB 12.1 SYS30	V	185	309			250	126	395	271	540	416	613	489	685	561	830	706	975	851
EB 12.1 SYS40	IV	241	392					339	188	484	333	557	406	629	478	774	623	919	768
EB 12.1 SYS50	III	296	475							429	250	502	323	574	395	719	540	864	685
EB 12.1 SYS55	II	333	546									465	252	537	324	682	469	827	614
EB 12.1 SYS60	I	389	630											481	240	626	385	771	530
EB 265	-	211	302	-	-	436	345	652	561	868	777	-	-	1084	993	1299	1208	-	-
	-	316	453					459	236	763	626	-	-	979	842	1194	1057	-	-
	-	422	603							538	263	-	-	836	639	1088	907	-	-
	-	459	656									-	-	709	373	1051	854	-	-
	-	527	754													838	445	-	-
EB 270	-	385	564	-	-	498	233	937	626	1267	1088	-	-	1598	1419	1928	1749	-	-
	-	461	676					733	376	1191	976	-	-	1522	1307	1852	1637	-	-
	-	541	790							964	517	-	-	1442	1193	1772	1523	-	-
	-	678	1003									-	-	1119	573	1635	1310	-	-
	-	772	1128													1331	705	-	-
EB 280	-	777	1138	-	-	1006	470	1890	1529	2557	2196	-	-	3224	2863	3891	3530	-	-
	-	931	1364					1480	759	2403	1970	-	-	3070	2637	3737	3304	-	-
	-	1087	1592							1952	1046	-	-	2914	2409	3581	3076	-	-
	-	1368	2025									-	-	2258	1156	3300	2643	-	-
	-	1558	2277													2686	1423	-	-

CLOSING TIME* AND AIR CONSUMPTION

Type	EB 5	EB 6	EB 8	EB 10	EB 12	EB 265	EB 270	EB 280
Closing time EB-SYS in sec.	0,15	0,20	0,45	0,50	0,70	<2,0	<5,0	<4,0
Filling volume NL/Hub at 1 atm:	0,19	0,36	0,60	1,30	2,26	2,70	9,00	11,20

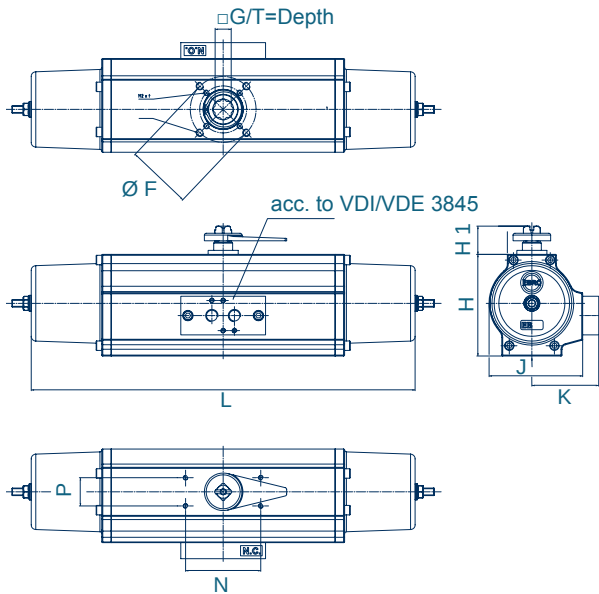
* = closing times with unthrottled air exhaust and air supply, 6 bar control pressure and 75% load air consumption = filling volume x control pressure

Subject to change without notice

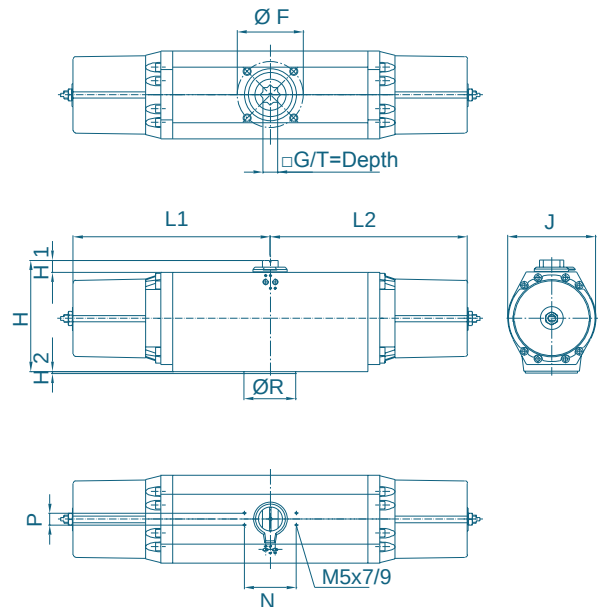
Closing times can be adjusted from 30 sec. up to 300 sec. by using the EBRO speed control block (depending on type of actuator).

PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING

EB5.1-SYS - EB12.1-SYS



EB265 - EB280 SR



Type	Dimensions [mm]														Weight [kg]
	ØF	G***	H	H1	H2	J	K	L	L1	L2	N	P	ØR	T	
EB 5.1	F04/05*	10/11/12	77	30	-	72	57	280	-	-	80	30	-	13/16	2,4
EB 6.1	F04/05/07*	11/12/14/16/17	91	30	-	88	65	351	-	-	80	30	-	19	4,3
EB 8.1	F05/07/10	12/14/16/17/22	108	30	-	99	71	408	-	-	80	30	-	19	6,3
EB 10.1	F07/10	14/16/17/22	128	30	-	122	82	557	-	-	80	30	-	24	12,5
EB 12.1	F10/12	17/22/24/27	156	30	-	145	93	661	-	-	80	30	-	29	21,1
EB 265	F12/16	32/36	232	30	3	152	-	-	317	317	80	30	85	60	26,0
EB 270	F12/16/25**	32/36/46	278	30	4	220	-	-	145	510	130	30	100	60	45,0
EB 280	F12/16/25	32/36/46	278	30	5	220	-	-	510	510	130	30	130	60	68,0

* F04/F05 no combined flange available

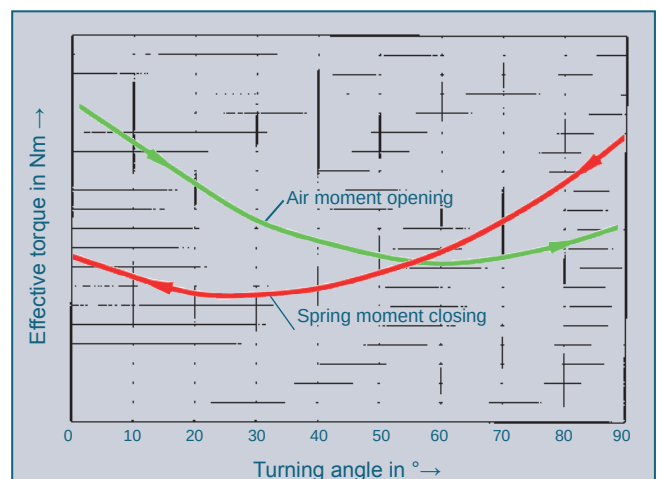
** Topflange F25 via adaption

*** Options (Standard = **BOLD**)

Subject to change without notice

The torques shown in the diagram are measured values. The required size of the actuator can be established by comparing the values of the actuator with the required torque of the valve.

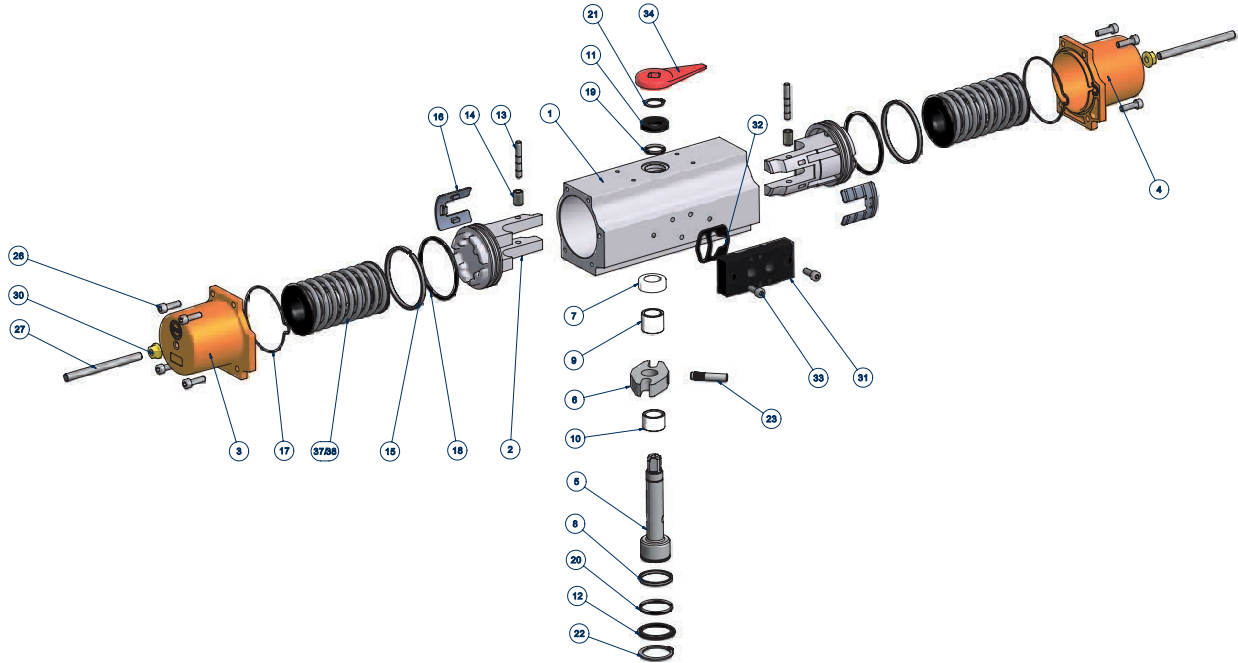
Especially non-lubricant media (e.g. bulk goods and dry gases) may cause an increasement of the actuator torque. This is why we recommend to consider a safety of 12%. Choosing an actuator in critical limits, please contact our engineers.



Typical torque curve of a scotch-yoke actuator.

PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING

MATERIAL SPECIFICATION AND PARTS LIST



Only for EB-SYS (5.1 - 12.1)

COMPONENT PARTS

Pt.	Description	Qty.	Material	Pt.	Description	Qty.	Material
1	Actuator cylinder	1	EN AW 6063-T6	17D	End cover sealing	2	70 NBR
2	Piston	2	EN AC 46000	18D	Piston O-Ring	2	70 NBR
3	End cover L	1	EN AC 46000	19D	O-Ring, upper shaft	1	70 NBR
4	End cover R	1	EN AC 46000	20D	O-Ring, lower shaft	1	70 NBR
5	Drive shaft	1	16 Mn Cr 5	21D	Upper safety ring	1	C 75
6	Yoke	1	16 Mn Cr 5 / Sint D30	22D	Lower safety ring	1	C 75
7	Upper shaft bearing	1	Polymer blend	23	Bolt	1	42 Cr Mo 4 V
8	Lower shaft bearing	1	Polymer blend	26	Hex. socket screw	8	A2-70
9	Upper piston bearing	1	Polymer blend	27	Stroke adjusting screw	2	A2-70
10	Lower piston bearing	1	Polymer blend	30	Seal nut	2	St
11	Upper washer bearing	1	Polymer blend	31	Valve connection plate	1	EN AC 46000
12	Lower washer bearing	1	Polymer blend	32D	Shaped gasket	1	70 NBR
13	Piston bolt	2	16 Mn Cr S 5	33	Hex. socket screw	2	A2-70
14	Roller	2	100 Cr 6	34	Position indicator	1	EPDM
15	Guide band	2	Polymer blend	37	Spring package	1	FD Si Cr
16	Slidepad	2	Polymer blend	38	Spring package	1	FD Si Cr

The spare parts marked with D are integrated in the standard seal set.

Subject to change without notice

PNEUMATIC ACTUATOR EC



This series of linear pneumatic actuators is designed to automate knife gate valves. Available in 6 sizes and different stroke lengths.

TECHNICAL DATA

Design:	Double-acting pneumatic linear cylinder
Diameter of cylinder barrel:	Ø 100 mm Ø 125 mm Ø 160 mm Ø 200 mm Ø 250 mm Ø 320 mm
Stroke:	90 mm up to 1030 mm
Supply pressure:	max. 10 bar
Temperature range:	Standard: -20 to +80 °C High and low temperature design on request
Power range: (at 6 bar):	4524 N - 46322 N
Namur Interface:	NAMUR, VDI / VDE 3845
Air supply:	clean and dry compressed air acc. to ISO 8573-1: 2010 min. class 3 Other supply media on request
Valve interface:	based on ISO 5211
Surface:	Body anodized Cover: powder-coated
Approval:	Fulfills the requirements of DIN EN 15714-3

FEATURES:

- Body groove for integration of limit switches acc. to ISO 15552 for contact-free position indication with magnetic pistons (optional)
- Both Namur interface for direct mounting of solenoid valves and air ducts integrated in the body reduce mounting and piping efforts to a minimum
- Robust stainless steel pull rod design
- Optimal sliding properties by precise guided piston and exact bearing of piston rod
- Low maintenance by lifetime lubrication
- Low weight by aluminium lightweight construction
- Body: In- and exterior made of anodized aluminium for optimal abrasion and sliding properties
- Cover and extruded body made of aluminium form a compact and stable cylinder for multifunctional application

OPTIONS:

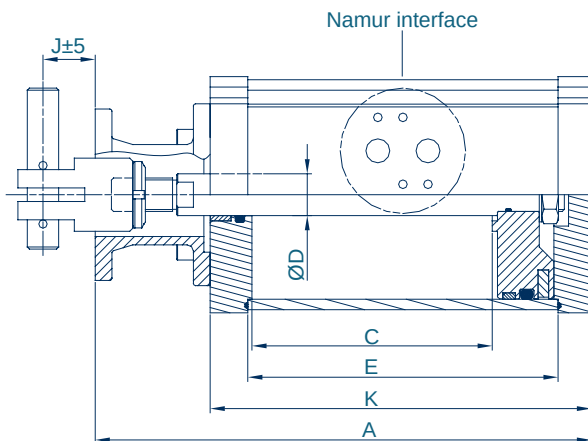
- Spring return version
- End of stroke damping
- Adjustable stroke
- Emergency manual override
- Special surface coating
- Trip function



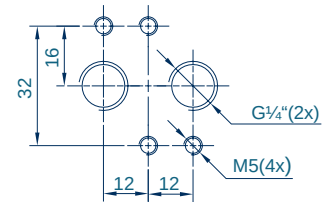
The body groove to integrate limit switches and the Namur interface

PNEUMATIC ACTUATOR EC

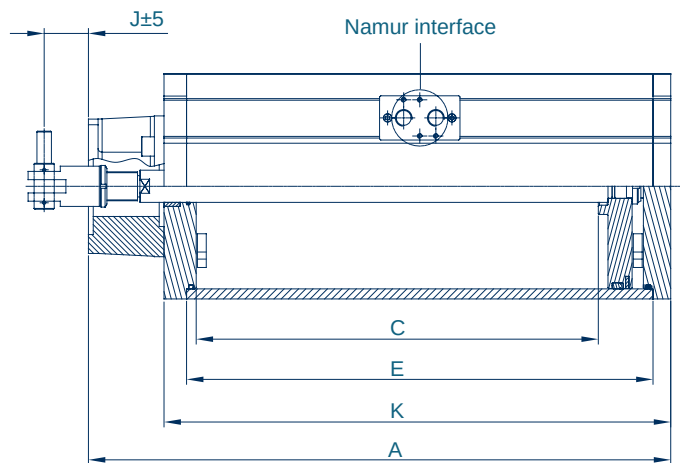
EC 100 - EC 160



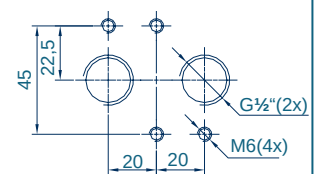
Namur interface
VDI/VDE 3845



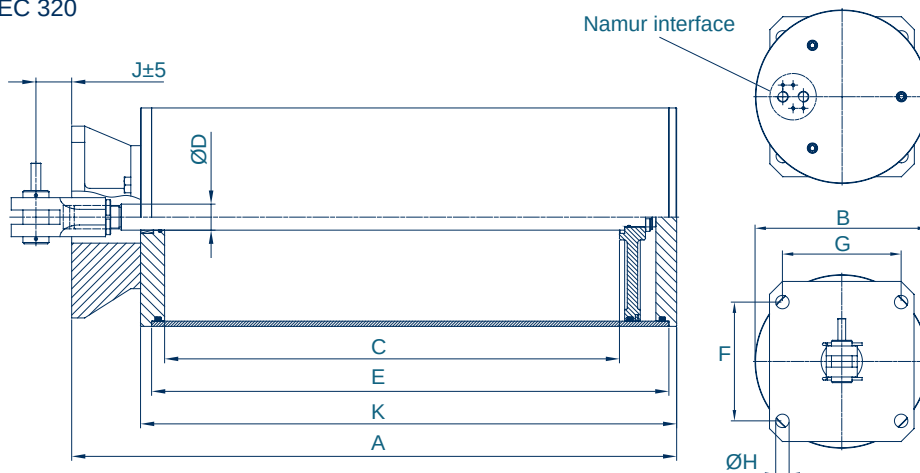
EC 200 - EC 250



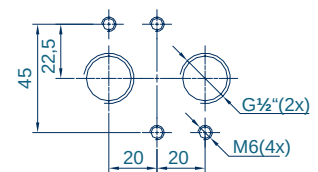
Namur Interface
VDI/VDE 3845



EC 320



Namur interface
VDI/VDE 3845



Subject to change without notice

PNEUMATIC ACTUATOR EC

Type EC	Stroke length [mm]	Dimensions [mm]										Weight [kg]	*Filling volume / Stroke
		A	B	C	D	E	F	G	H	J	K		
100	90	213	118	90	20	124	52	61	11	25	158	4,1	0,7
100	115	238	118	115	20	149	52	61	11	25	183	4,5	0,9
100	140	263	118	140	20	173	52	61	11	25	208	4,6	1,1
100	165	288	118	165	20	199	52	61	11	25	233	4,9	1,3
125	115	285	147	115	32	153	52	61	11	25	198	7,6	1,4
125	165	335	147	165	32	203	52	61	11	25	248	8,0	2,0
160	115	285	188	115	32	153	52	61	11	25	198	10,0	2,3
160	140	310	188	140	32	178	52	61	11	25	223	10,5	2,8
160	165	335	188	165	32	203	52	61	11	25	248	11,0	3,3
160	215	366	188	215	32	253	100	110	13	40	298	13,0	4,3
160	270	421	188	270	32	308	100	110	13	40	353	14,0	5,4
160	320	471	188	320	32	358	100	110	13	40	403	15,0	6,4

200	215	432	245	215	40	290	100	110	13	40	338	30	7,4
200	270	487	245	270	40	345	100	110	13	40	393	32,5	9,4
200	320	537	245	320	40	395	100	110	13	40	443	34,5	11,1
200	350	567	245	350	40	425	135	135	17	55	473	36	12,1
200	400	637	245	400	40	475	160	160	21	55	523	46	13,9
200	450	667	245	450	40	525	160	160	21	55	573	50	15,6
200	550	787	245	550	40	625	160	160	21	55	673	54,5	19,1

250	350	574	296	350	40	430	135	135	17	55	480	48,0	17,9
250	400	644	296	400	40	480	135	135	17	55	530	58,0	20,4
250	450	694	296	450	40	530	160	160	21	55	580	63,5	23,0
250	500	744	296	500	40	580	160	160	21	55	630	71,0	25,5
250	575	819	296	575	40	655	230	230	26	55	705	75,0	29,4
250	630	874	296	630	40	710	200	200	21	55	760	78,5	32,2
250	800	1044	296	800	40	880	230	230	26	55	930	90,0	40,9

320	500	731	336	500	40	596	230	230	26	55	625	67,0	39,2
320	575	806	336	575	40	671	230	230	26	55	700	70,5	45,1
320	700	931	336	700	40	796	230	230	26	55	825	76,0	54,9
320	715	954	336	715	40	811	230	230	26	55	840	78,0	56,1
320	800	1031	336	800	40	896	230	230	26	80	925	84,0	62,8
320	915	1146	336	915	40	1011	230	230	26	80	1040	89,0	71,8
320	1030	1261	336	1030	40	1126	230	230	26	80	1155	95,0	80,8

*Filling volume / Stroke at 1 atm

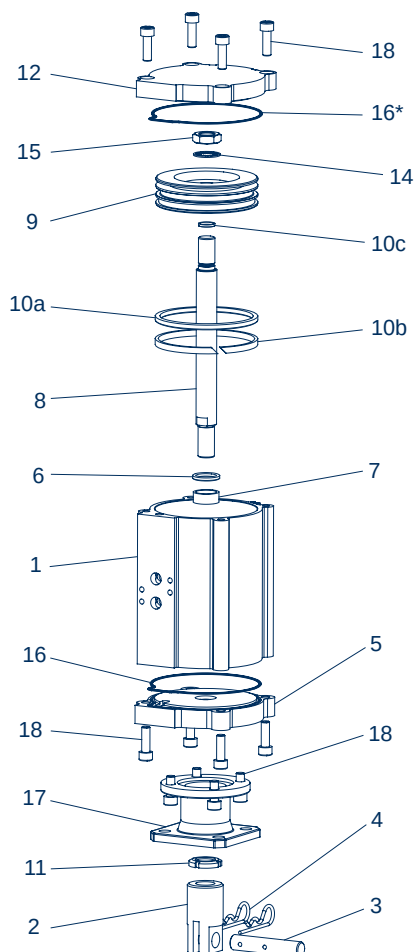
EC	Force / Stroke in Newton (N)									
	4 bar		4,5 bar		5 bar		5,5 bar		6 bar	
	Close	Open	Close	Open	Close	Open	Close	Open	Close	Open
100	3142	3016	3534	3393	3927	3770	4320	4147	4712	4524
125	4909	4587	5522	5160	6136	5734	6750	6307	7363	6881
160	8042	7721	9048	8686	10053	9651	11058	10616	12064	11581
200	13854	13352	15586	15021	17318	16690	19050	18359	20782	20028
250	20428	19926	22982	22416	25535	24907	28089	27398	30642	29888
320	31385	30882	35308	34742	39231	38602	43154	42463	47077	46323

Subject to change without notice

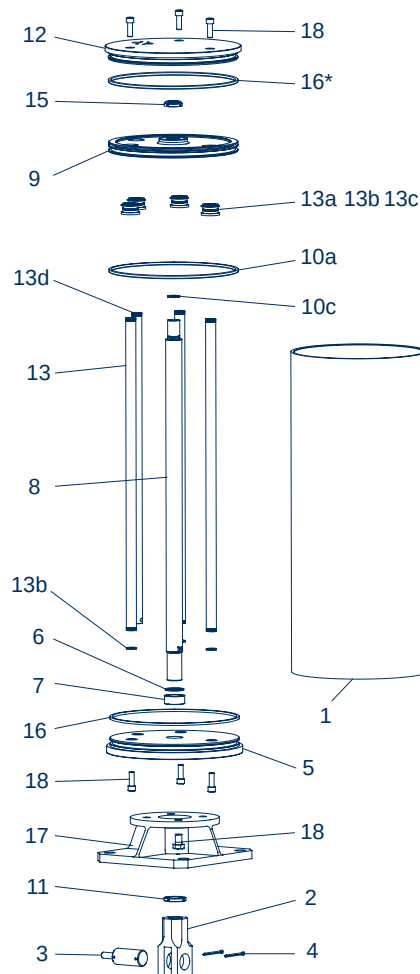
PNEUMATIC ACTUATOR EC

MATERIAL SPECIFICATION AND PARTS LIST

EC 100 - EC 250



EC 320



Pt.	Description	Material	Pt.	Description	Material
1	Cylinder barrel	Aluminium	11	Locking nut	Stainless steel
2	Gate clevis	Stainless steel	12	Top cover	Aluminium
3	Clevis pin	Stainless steel	13	Guide bar	Stainless steel
4	Locking pin	Stainless steel	13a*	Guide bar bushing	Bronze
5	Lower cover	Aluminium	13b*	Guide bar O-ring	Nitrile
6*	Lower cover internal O-ring	Nitrile	13c*	Clips	Steel
7	Lower cover internal bushing	Bronze	13d	Air supply bar	Steel
8	Piston rod	Stainless steel	14	Piston washer	Stainless steel
9	Piston	Aluminium	15	Self locking nut	Stainless steel
10a*	Piston O-Ring	Nitrile	16*	Covers O-Ring	Nitrile
10b*	Piston bearing	POM	17	Mounting bracket	Stainless steel
10c*	Piston rod O-Ring	Nitrile	18	Hex socket screws	Stainless steel

* Component of the sealing set

ELECTRIC ACTUATORS E 50 - E 210



E 65 and E 110.

TECHNICAL DATA

Types:	E 50 - E 210
Duty class:	Class C acc. to prEN WI69000095
Valve interface:	EN ISO 5211
Actuation time:	30 s - 180 s
Corrosion protection:	C4 acc. to prEN WI 6900095 tested acc. to EN 600068-2-52
Protection class:	IP 67 acc. to EN IEC 60529
Insulation class:	F
Limit switches:	max. 250 V AC, 3A for DS-Actuators max. 250 V AC, 3A for WS-Actuators max. 24 V DC, 10 A for GS-Actuators
Operation temperature:	-20°C to +70°C
Cable glands:	2 x M20 x 1,5; Ø min = 6 mm, Ø max = 13 mm
Hand wheel:	15 revolutions for 90°
Hand wheel torque:	8 Nm for E 50 4 Nm for E 65 20 Nm for E 110 35 Nm for E 160 50 Nm for E 210

FEATURES

- Robust aluminum body
- Completely ball beared wormgear
- Safe arresting by self-inhibition
- Changeable clutch nuts for mounting on different shaft ends
- Mechanical position indicator disc for an optical control of the valve's position
- Motor with thermic winding protection switch
- Hand wheel enables immediate hand emergency operation if necessary
- Maintenance-free, long life service by continuous lubrication

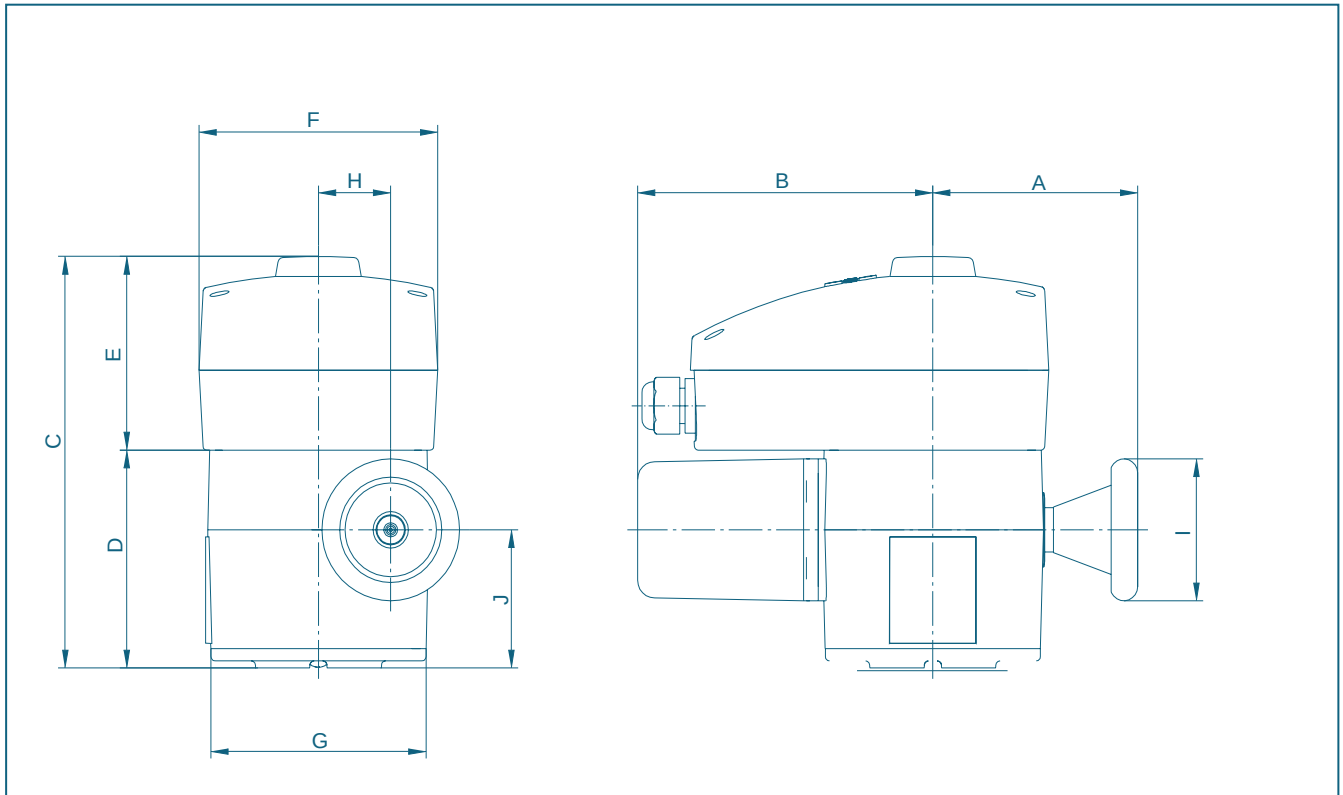
GENERAL APPLICATIONS:

- Water and waste water technology
- Chemical industry
- Car industry
- Civil engineering
- Everywhere applicable, where butterfly valves are installed



E 160 and E 210.

DIMENSIONS E 50 - E 210



Type	Dimensions [mm]										Weight [kg]
	A	B	C	D	E	F	G	H	I	J	
E 50	110	149	210	123	87	124	126	42	80	73	5
E 65	119	172	235	123	112	139	125	42	80	78	7
E 110	136	247	257	145	112	139	150	58	125	88	14
E 160	157	280	282	170	112	139	175	89	200	112	25
E 210	212	352	274	162	112	139	240	125	315	84	40

Subject to change without notice

FEATURES

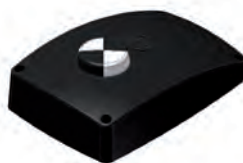
Valve interface: EN ISO 5211

Type	E 50 WS	E 65 WS	E 65 DS	E 65 GS	E 110 WS	E 110 DS	E 110 GS	E 160 WS	E 160 DS	E 160 GS	E 210 DS
Actuation time from 0° - to 90°	25 s	6 s	6 s	6 s	12 s	12 s	6 s	24 s	24 s	12 s	24 s
Rated torque	40 Nm	100 Nm	100 Nm	100 Nm	400 Nm	400 Nm	360 Nm	1000 Nm	1000 Nm	800 Nm	3500 Nm
Rated current	0,15 A	0,7 A	0,3 A	5 A	1,3 A	1,0 A	8,8 A	1,3 A	1,0 A	8,8 A	1 A
Starting current	0,18 A	1,0 A	0,3 A	8,0 A	2 A	1,8 A	12,5 A	2 A	1,8 A	12,5 A	3,2 A
Power consumption	0,04 kW	0,16 kW	0,09 kW	0,08 kW	0,26 kW	0,22 kW	0,4 kW	0,26 kW	0,22 kW	0,4 kW	0,54 kW
Rated voltage	230 V	230 V	400 V	24 V	230 V	400 V	24 V	230 V	400 V	24 V	400 V
Frequency	50 Hz	50 Hz	50 Hz	-	50 Hz	50 Hz	-	50 Hz	50 Hz	-	50 Hz
Duty cycle	30 %	30 %	30%	30%	30%	30%	30 %	30%	30%	30%	30%
Protection class	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67	IP 76	IP 67	IP 67	IP 67	IP 67

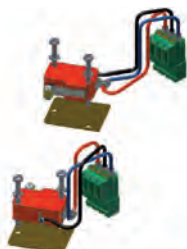
OPTIONS



Cover plate with position indicator (E 50)



Cover plate with position indicator (E 65 - E 210)



Additional volt-free limit switches



Current feedback 4-20 mA



Potentiometer 1000 Ω



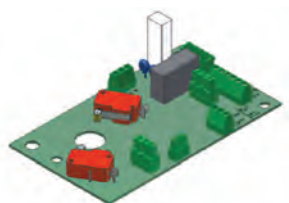
Torque control



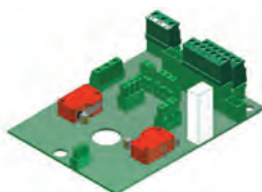
Timer



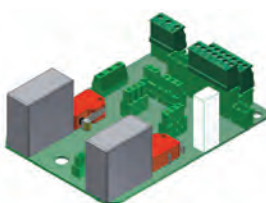
Conector terminals



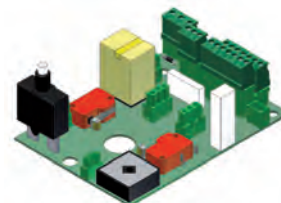
E 50 - 230 V AC



400 V AC



230 V AC



24 V DC



Switch box with cable glands



E 50



E 65



E 110



E 160



E 210

CERTIFICATE



Declaration of conformity

CE

We, **EBRO ARMATUREN**
Gebr. Bröer GmbH, Karlstraße 8, 58135 Hagen, Germany

declare in our sole responsibility, that the electric quarter-turn actuators of the E-series,

E 50 WS	E 65 WS	E 110 WS	E 160 WS	
	E 65 DS	E 110 DS	E 160 DS	E 210 DS
	E 65 GS	E 110 GS	E 160 GS	

and the enhanced unit box system

M71-WS-XXX-40 and **M71-DS-XXX-40** and **M71-GS-XXX-40**

this declaration is valid for, fulfil the requirements of the guideline rights of the european member states about EMC directive (89/336/EWG) and the low voltage directive 73/23/EWG (NSR).

For assessment of these products related to electromagnetic compatibility and low voltage directive following standards have been consulted:

EN 50178 : 1997
EN 61010 -1 : 1993 for low voltage directive

EN 55011 : 1998
EN 61000 for EMC directive

As manufacturer of these products, we declare additionally, that following standards according to machinery directive 89/392/EWG have been consulted:

EN ISO 5211
EN 60068-2-52
EN IEC 60529 acc. to machinery directive 89/392/EWG

The starting is not permitted till it is ensured, that the complete machine, where EBRO quarter-turn actuators are installed, fulfil the guidelines of directive 89/392/EWG.

Hagen, dated 22.07.2008


Dipl.-Ing. H. Konopatzki, Technical director

SWITCH BOX SBU



Double-acting pneumatic actuator with SBU-switch box directly mounted.

TECHNICAL DATA

Body:	Aluminium (powder coated)
Sealing:	NBR (Silicone on request)
Connection:	Colour coded spring type terminals 2,5mm ²
Protection class:	IP 65, IP 67 and IP 68 to EN 60529
Temperature range:	-20°C to +85°C
Screws:	Stainless steel
Sensors:	2 or 3 microswitches 2 or 3 V3 proximity switches 2 proximity switches M12 or M8
Adjustment range:	max. three control switches, adjustable within 240°
Solenoid valve:	max. 2 inductors

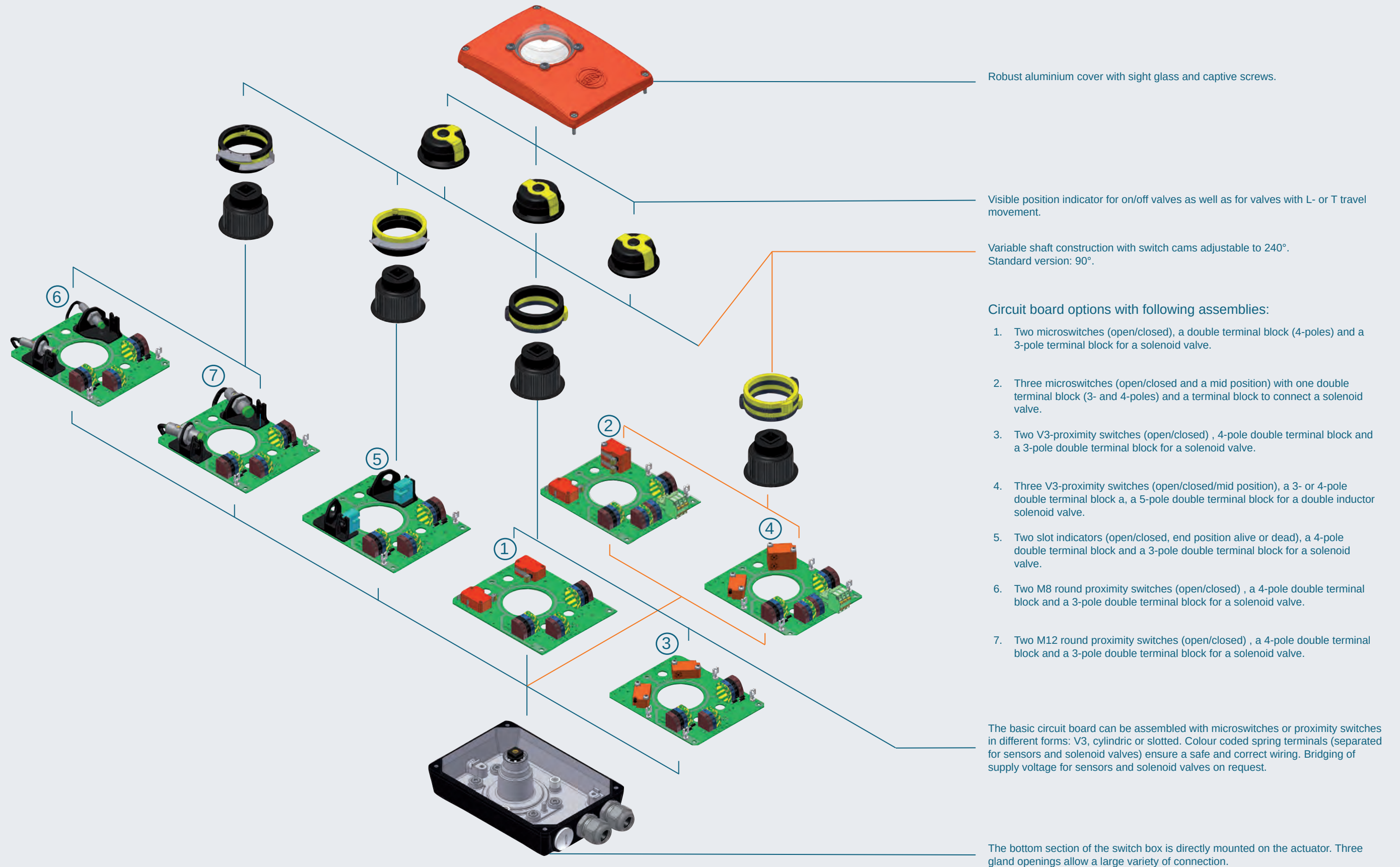
FEATURES

- Direct mounting acc. to VDI/VDE 3845 (EB4.1 - EB12.1)
- Bracket mounting possible
- Compact dimensions
- The operating voltage for microswitches is selectable with isolated changeover contacts
- The aluminium body protects against mechanical damages
- Cover attachment with captive screws
- Separate terminal boards for sensors and solenoid valves
- Colour coded 2-pole spring-type terminals
- Labelling of clamping units of the circuit board
- Terminal diagram within the cover
- Connection of a third switch and of a solenoid valve with two inductors (optional)
- 360° position indicator
- Switches are contacted directly on the circuit board
- Sensors are connected via spring-type terminals and can be replaced separately

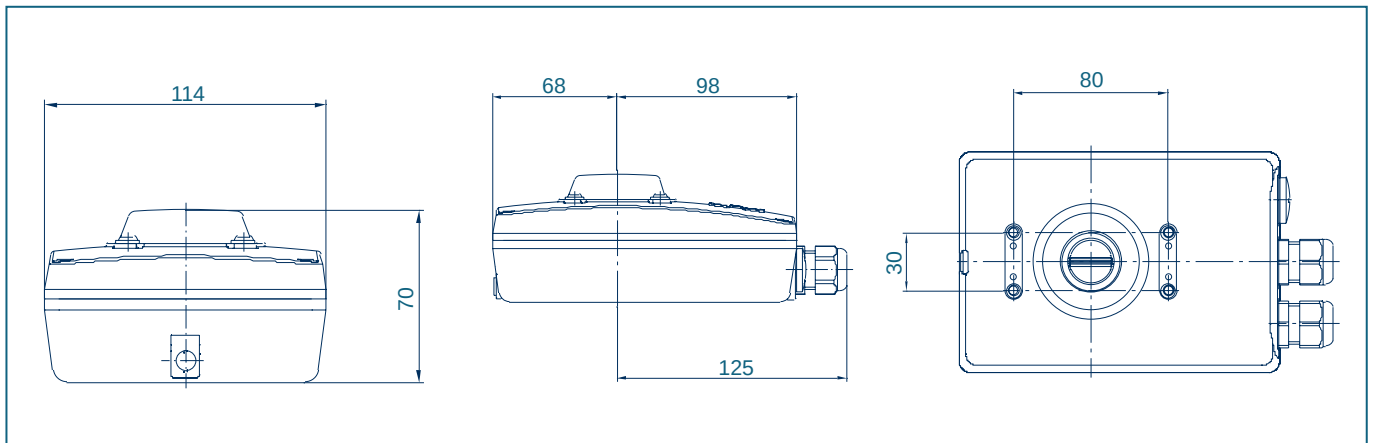


Optional:
Switch box with diaphragm for ventilation and plug-in connection (pic. below).

MODULAR DESIGN SBU



SWITCH BOX SBU



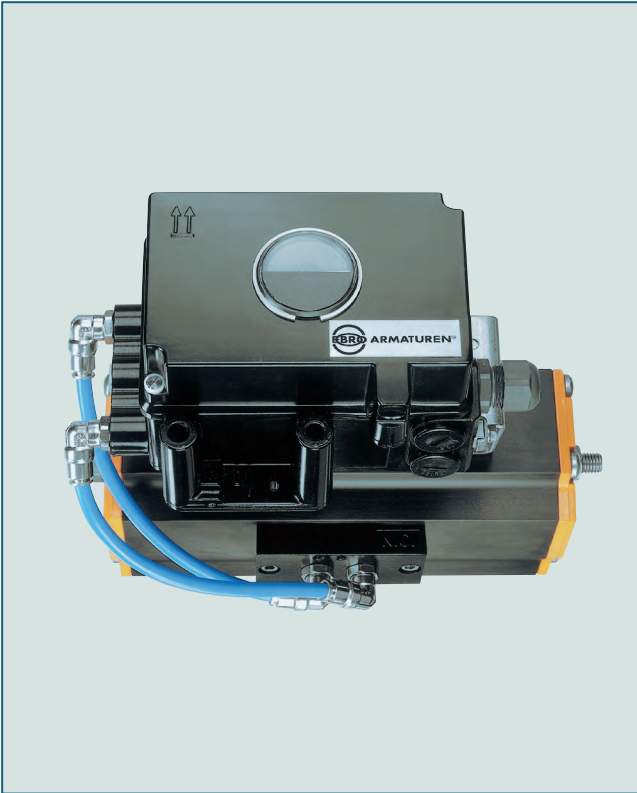
TYPE CODE

Switch box unit	SBU -	X	N	N	X-	X	N	N	N	-X	NN
Type of sensor											
Microswitch		M									
Proximity switch / voltage de-energized (Standard)		P									
Proximity switch / voltage energized*		V									
Quantity of sensors											
without			0								
1			1								
2			2								
3 (possible only with 5 terminals for solenoid valves)			3								
Ex-version											
without				0							
Terminal blocks for solenoid valves											
3 terminals (one inductor)					3						
5 terminals (two inductors, prepared for third sensor)					5						
Screw connection											
Plastic						K					
Metal						M					
Plug in / Electrical connections											
Sealing plug							1	1	1		
M20x1,5 for wiring 8-13mm							2	2	2		
M20x1,5 for wiring 5-9mm							3	3	3		
*Valve connector configuration A (acc. to DIN EN 175301-803)								4	4		
*Valve connector configuration A (acc. to DIN EN 175301-803) with LED and protection circuit (24 V)								5	5		
Plug connector M12								S			
Plug connector M 18							M				
Diaphragm								B	B		
Sensors											
Marquard										M	
Pepperl+Fuchs										P	
Type of sensor											
Marquard / 1006.0701											01
NBB2-V3-E2											01
NCB2-V3-N0											02
SJ3,5-N											03
NJ4-12GK40-E2											05
Further on request.											

* For sensors type V an additional variant number is added to the type code, e.g. -V123

Subject to changes without notice.

ELECTRO-PNEUMATIC POSITIONER EP 100 / EP 200



EP 100 (analog)

The analog positioner EP 100 with input signal 4...20 mA serves to activate single or double acting pneumatic quarter turn actuators. The settings are carried out in a simple way via switches and potentiometers.

In the version EP100-Option R it achieves the option travel indication. Position of the actuator is shown by an analog 4...20 mA signal.

Options:

- Integrated inductive or mechanical value transmitter, independent from actuator technology
- Gauge attachment for air supply and outputs
- Power amplifier

EP 200 (digital)

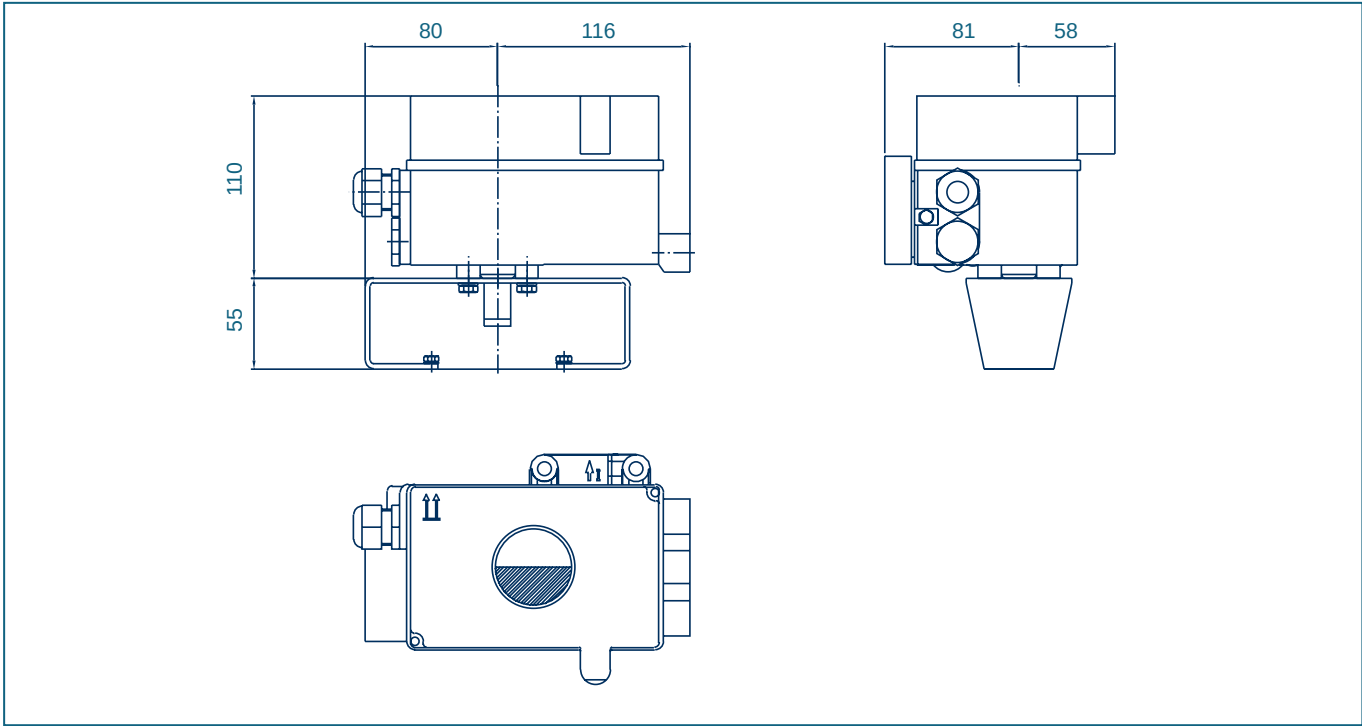
The positioner EP 200 is controlled by micro processor and is designed to operate and control single or double acting pneumatic actuators by means of an analog signal of 4...20 mA. It provides the advanced functionality of latest positioners, e.g. Autostart for the determination of control parameters and easy operation on site.

Further options (kompatible to EP 100)

- Integrated inductive or mechanical value transmitter, independent from actuator technology
- Gauge attachment for air supply and outputs
- Power amplifier



ELECTRO-PNEUMATIC POSITIONER EP 100 / EP 200



TYPE CODE

Electro-pneumatic Positioner		
Analog (EP100)	EP100-	
Digital (EP200)	EP200-	
Version		
single-acting	E	
double-acting	D	
Analog Signal		
without (only EP100)	0	
Output-Signal 4..20 mA	R	
Limit Switch		
without		S-
inductive limit switch Two-Wire-Version (NAMUR)		T-
inductive limit switch Two-Wire-Version (NAMUR Safety-Version)		U-
inductive limit switch in Three-Wire-Version		R-
mechanical switch (potential-free)		V-
Explosion Protection		
without		ZZZ

Subject to change without notice

DIGITAL ELECTROPNEUMATIC POSITIONER EP 501



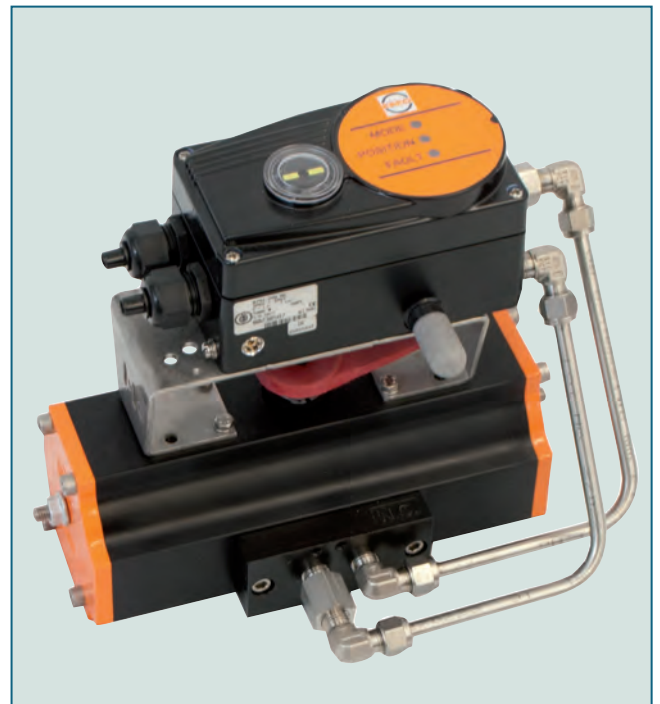
Digital Electropneumatic Positioner Type EP 501

TECHNICAL DATA

Operating voltages:	24 VDC +/- 10%
Setpoint setting:	0/4 to 20 mA and 0 to 5/10 V
Analogue feedback:	4-20 mA, 0-20 mA 0-10 V, 0-5 (optional)
Binary input:	1x galvanically isolated
Binary output:	2 Outputs (optional) galvanically separated 100 mA
Operation:	Graphic display with backlight (EP 501)
Control medium:	Neutral gases, air DIN ISO 8573-1
Installation:	As required, display above or sideways
Pilot air ports:	Threaded ports G 1/4
Supply pressure:	1,4 to 7 bar
Temperature:	0 to 60°C
Actuator system:	Single- or double acting
Air capacity	$Q_{Nn} = 100 \text{ l}_N/\text{min}$ at 7 bar; $\Delta T=1\text{bar}$
Type of protection:	IP 65/67 acc. to EN 60529
Protection class:	3 acc. to VDE 0580
Conformity:	EMV2004/ 108/ EG
Position detection module:	Potentiometer, max. angle 180°
Bus communication:	Profibus DP V1 (optional)

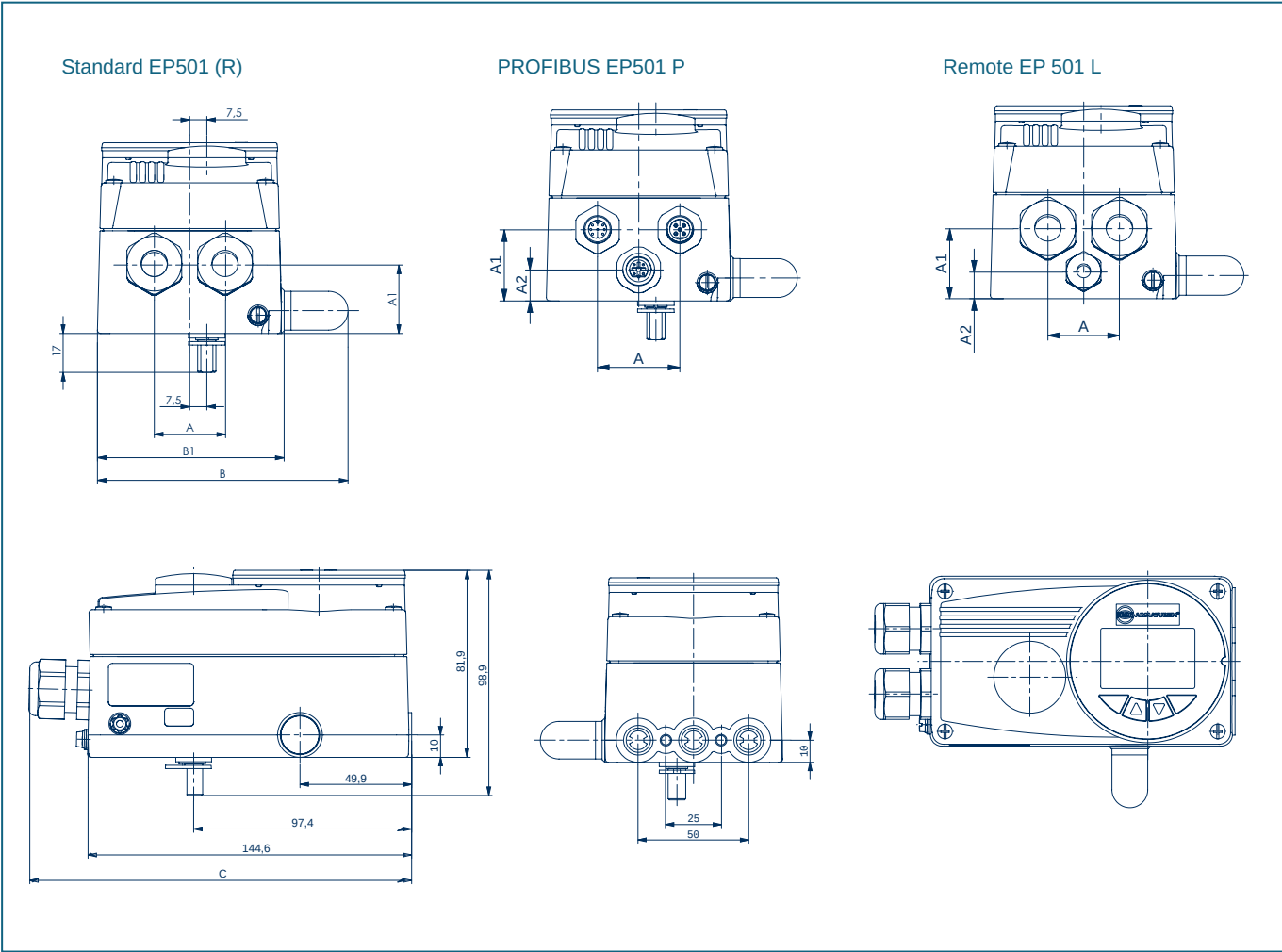
FEATURES

- Compact positioner for assembly with rotary and linear actuators
- Robust aluminium body (plastic coated)
- Cover sealings EPDM, NBR or FKM
- Position indication via digital display (EP 501) and mechanical indication
- Fits to double- and single acting actuators
- Supply pressure: max. 7 bar
- Simple and clear operation via external graphic display
- PROFIBUS DP V1 interface (optional)
- Works with all current signals
- In case of failure of electr. or pneumatic power supply, a defined safety position will be piloted



Basic version (EP 501-B) without a digital display. Stainless steel piping on request.

DIGITAL ELECTROPNEUMATIC POSITIONER EP 501



	Dimensions [mm]					
	A	A1	A2	B	B1	C
Standard	31	30	-	109,8	81,8	171,1
PROFIBUS	36	31	13,5	109,8	81,8	157,8
Remote	31	30	11,5	109,8	81,8	171,1

Type	EP 501	EP 501 R	EP 501 P	EP 501 L
Communication	no	no	Profibus DP V1	no
Electrical connection	Cable gland	Cable gland	Multipole	Cable gland
Analogue feedback	no	yes	via Bus	yes
2 Binary outputs	no	yes	yes	yes
Binary input	yes	yes	yes	yes
Control function single- and double acting	yes	yes	yes	yes
Assembly variations	NAMUR IEC 534-6 VDI/VDE 3845			Remote

Subject to change without notice

MODULAR SYSTEM FOR ELECTRIC ACTUATORS



Electric quarter turn actuators series E 65 - E 210 with modular system are designed to automate control valves.

TECHNICAL DATA

Nominal torque:	100 Nm to 4000 Nm
Protection class:	IP67
Duty cycle:	up to Class C (max.1200 c/n) acc. to prEN 15714-2
Limit switches:	max. 250V AC, 3A
Torque control:	directional contact, max. 250V AC 5A
Switch box heater:	supply 230V AC permanently, 5W
Potentiometer:	1000 Ω
Current feedback:	4-20mA, supply max. 30V DC
Thermal motor switch:	integrated
Insulation class:	F
Corrosion protection Class:	C4 acc. to prEN 15714-2, tested acc. to EN 60068-2-52
Cable entries:	4 x M20 x 1,5 $\varnothing$ -min = 6 mm $\varnothing$ -max = 13 mm
Operation temperature:	-20°C to +70°C
Hand wheel:	15 revolutions 90°
Hand wheel Torque:	4 Nm for E65 20 Nm for E110 35 Nm for E160 50 Nm for E210
Supply voltage:	from 110V AC/1~ to 480V AC/3~

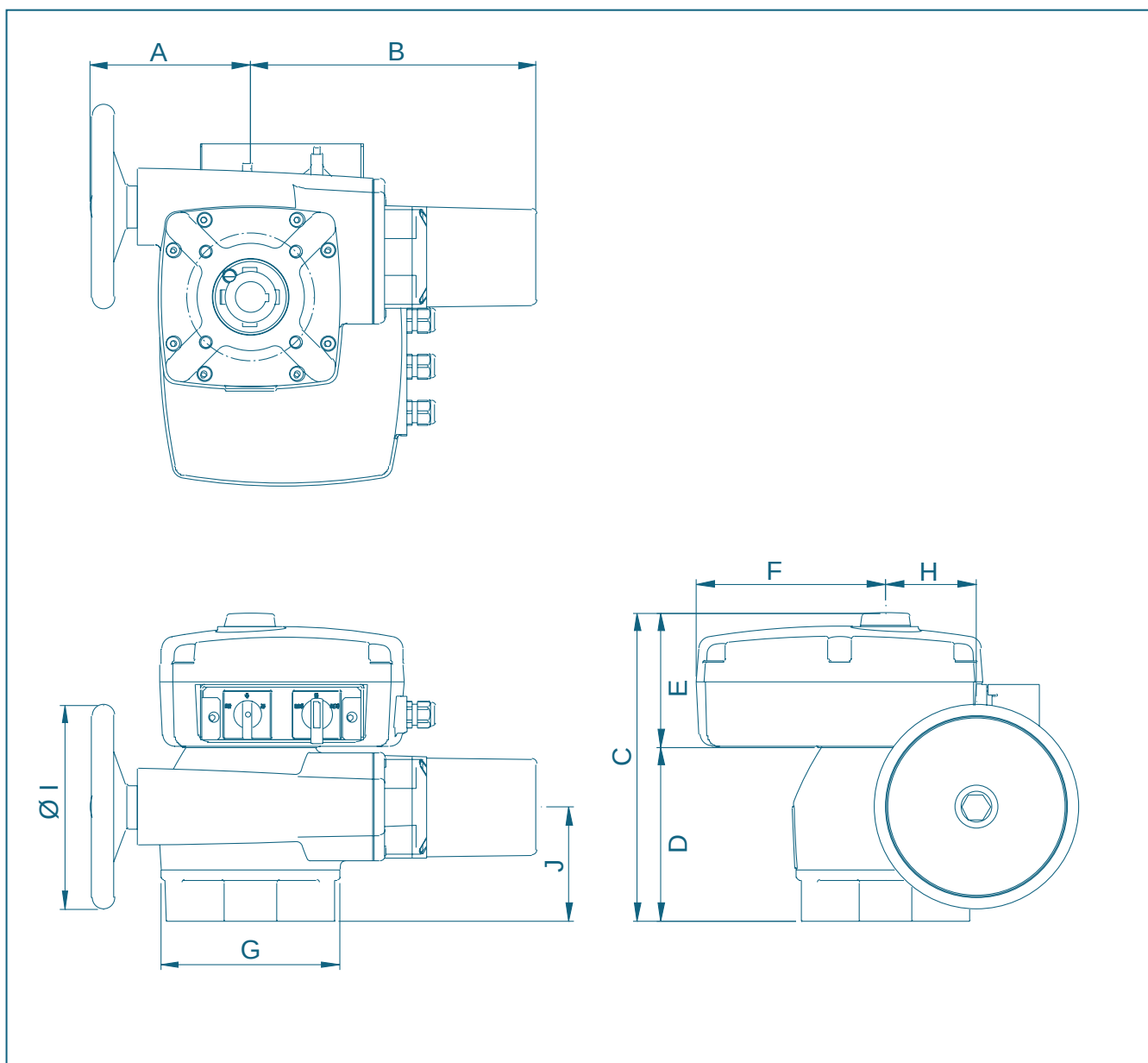
GENERAL APPLICATIONS

- Integrated torque control
- Digital control input
- Integrated 24V DC control voltage supply
- 5 digital feedback signals
- Switch box heater
- Prepared for further options
- Actuator mounting and optional modules as modular system
- Self-locking, separately capsuled worm gear ensures a safe positioning of the actuating element
- Top flange acc. to EN ISO 5211
- Replaceable shaft notch enables the adaption of different valves
- The optical position indicator shows the exact position of the actuating element



Complete equipment with additional board for positioner.

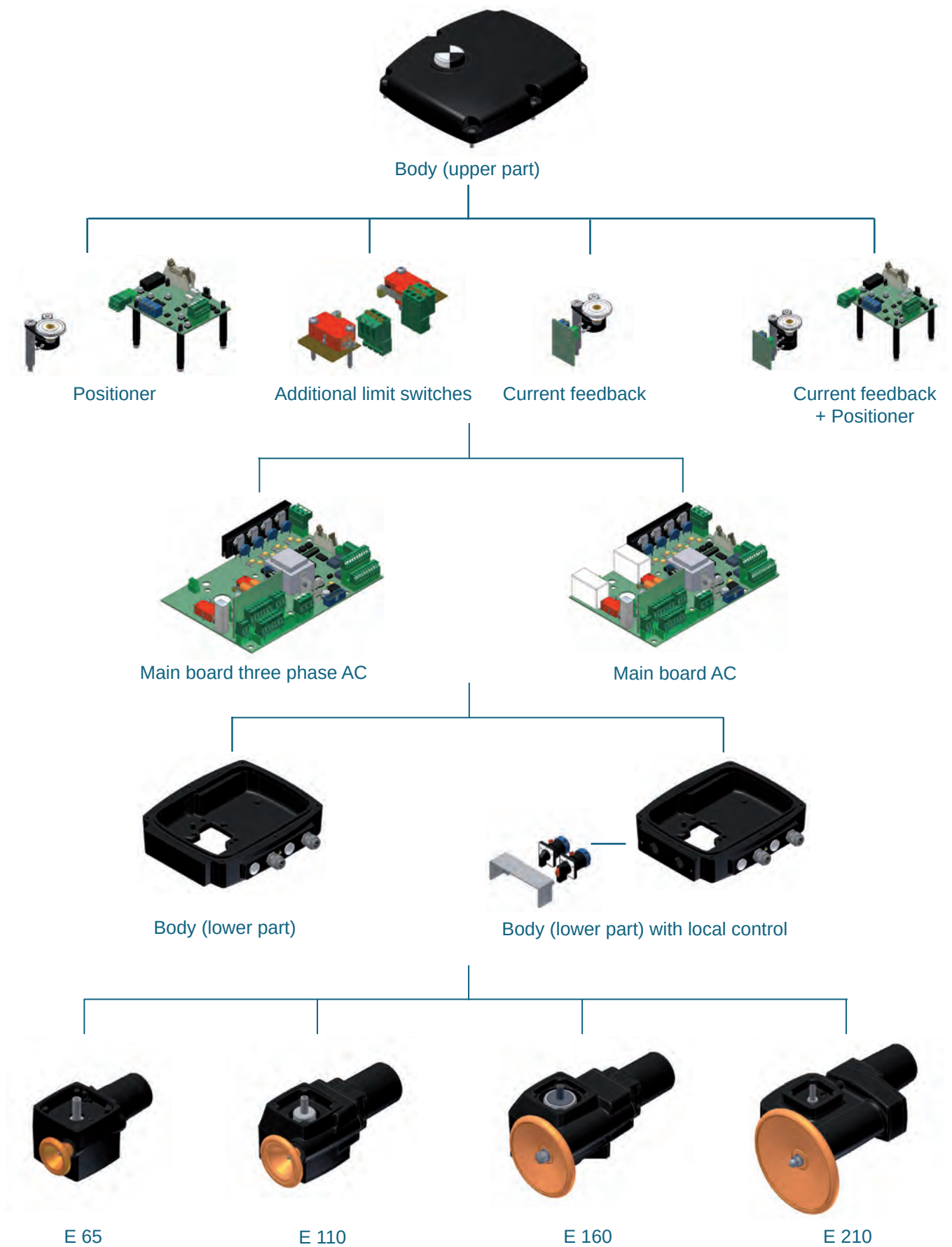
DIMENSIONS MODULAR SYSTEM



Type	Dimensions [mm]									Top flange
	A	B	C	D	E	G	H	ØI	J	
E 65	119	171	255	123	132	125	42	80	78	F04, F05, F07
E 110	136	247	277	145	132	150	58	125	88	F07, F10
E 160	157	280	302	170	132	175	89	200	112	F10, F12, F16
E 210	212	352	294	162	132	240	125	315	84	F12, F14, F16

Subject to change without notice

MODULAR MOUNTING



ORDER CODES

Order Code		Standard			Options			
		Main Board PI.E71-Local	Digital remote control inputs	Digital feedback	Additional Limit Switches	Current Feedback 4-20mA	Local control	Positioner PI.E71-POS
Alternating Current	Three-Phase Current							
M71-WS-001-40	M71-DS-001-40	X	X	X				
M71-WS-002-40	M71-DS-002-40	X	X	X	X			
M71-WS-003-40	M71-DS-003-40	X	X	X		X		
M71-WS-004-40	M71-DS-004-40	X	X	X			X	
M71-WS-005-40	M71-DS-005-40	X	X	X	X	X		
M71-WS-006-40	M71-DS-006-40	X	X	X		X	X	
M71-WS-007-40	M71-DS-007-40	X	X	X	X		X	
M71-WS-008-40	M71-DS-008-40	X	X	X	X	X	X	
M71-WS-009-40	M71-DS-009-40	X		X				X*
M71-WS-010-40	M71-DS-010-40	X		X	X			X*
M71-WS-011-40	M71-DS-011-40	X		X		X		X*
M71-WS-012-40	M71-DS-012-40	X		X			X	X*
M71-WS-013-40	M71-DS-013-40	X		X	X	X		X*
M71-WS-014-40	M71-DS-014-40	X		X		X	X	X*
M71-WS-015-40	M71-DS-015-40	X		X	X		X	X*
M71-WS-016-40	M71-DS-016-40	X		X	X	X	X	X*

* If a positioner is installed, remote control information is disconnected

Actuators with fail-safe positon OPEN/CLOSE

Direct Current				
M71-GS-100-40	PI.E71-GS		X	without additional power charge unit for battery pack
M71-GS-200-40	PI.E71-GS		X	with additional power charge unit for battery pack



This version provides a safety position in case of power loss.

WAFER TYPE CHECK VALVE RSK

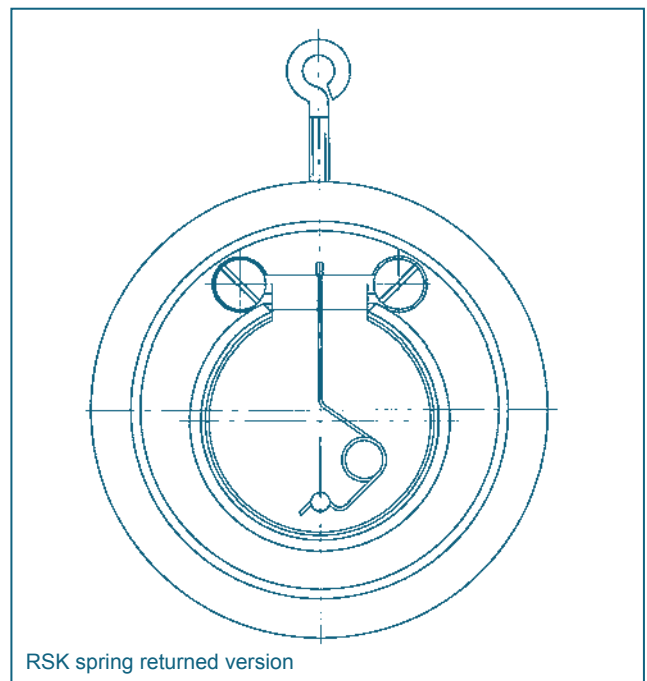


TECHNICAL DATA

Nominal diameter:	DN 32 - DN 600
Face-to-face:	EBRO works standard
Flange accommodation:	EN 485 PN 10/16
Marking:	DIN EN 19
Tightness check:	EN 12266 (Leakage Rate A) ISO 5208, Category 3 API 598 Table 5
Temperature range:	0°C to +200°C (depending on temperature, sealing and body material) NBR 90°C EPDM 120°C FPM 150°C PTFE 200°C
Body:	Aluminium, 1.4305, 1.4571, Brass, Rg 7, PVC, PP
Disc:	1.4305, 1.4571, 1.4581
Attaching pins:	1.4305, 1.4571, Rg 7
Seals:	NBR, FPM, EPDM, PTFE Other materials upon request
Pressure range:	Δp 10 bar

FEATURES

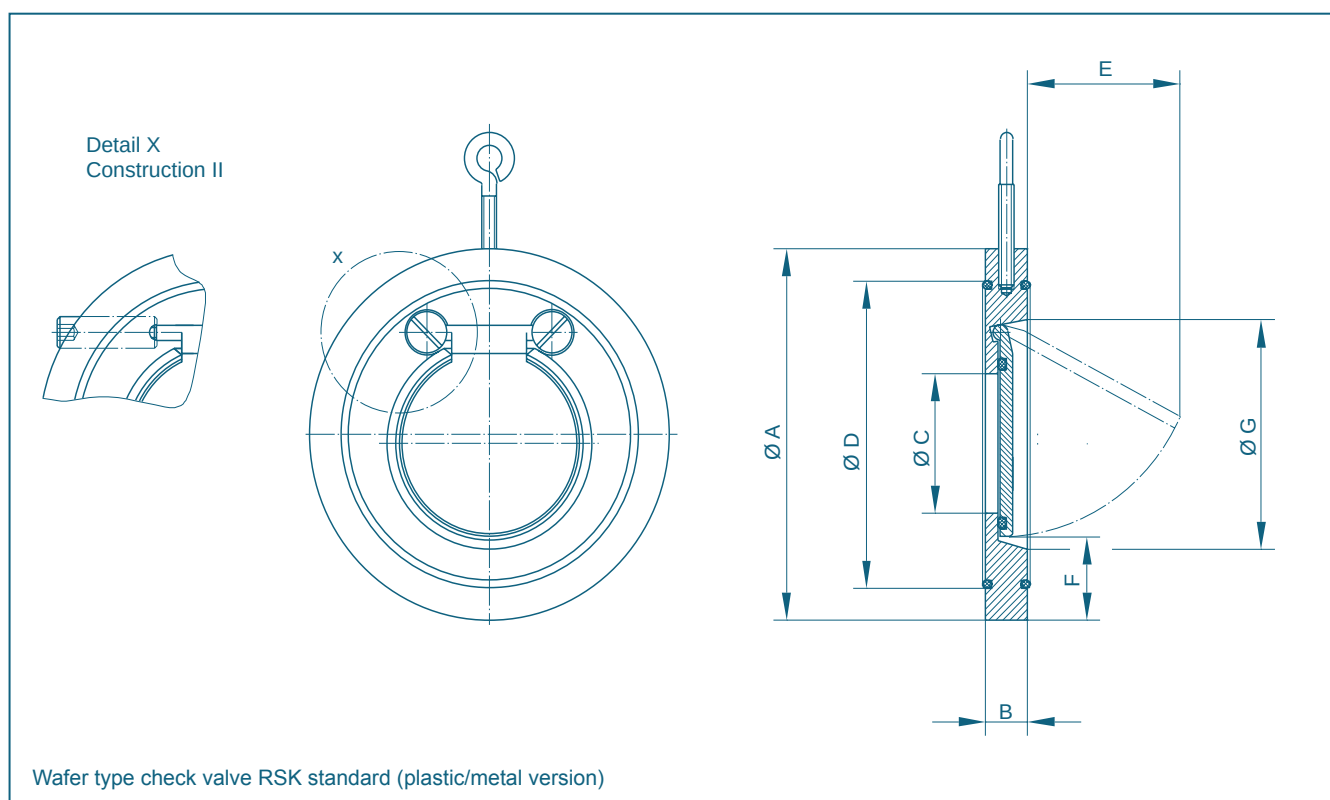
- Universal all-purpose
- Can be installed in any desired position
- Centering over the outside diameter of the body
- Sealing through O-rings
- Holder-eye for easy centering
- Extremely short face-to-face length
- Materials can be changed among each other
- All constructions are available in spring returned version
- For resonant flow conditions:
RSK with spring reset
- Maintenance-free - simple mounting



RSK spring returned version

Subject to change without notice

WAFER TYPE CHECK VALVE RSK



DN [mm]	Size [in]	Dimensions [mm]										Weight [kg]	
		A	B	Plastic with spring	B	Metal with spring	C	D	E	F	G*	Plastic	Metal
32	1¼	85	15	15	15	15	18	59	22	25	37	0,1	0,6
40	1½	95	16	16	16	16	22	72	25	28	43	0,1	0,9
50	2	109	18	18	17	17	31	86	37	29	54	0,17	1,1
65	2½	129	20	20	17	17	40	105	50	31	70	0,22	1,5
80	3	144	20	20	17	17	54	119	61	32	82	0,26	1,8
100	4	164	23	33	21	21	70	146	77	31	106	0,37	3,0
125	5	195	23	23	18	22	92	173	94	35	131	0,5	3,4
150	6	220	26	26	20	26	105	197	100	40	159	0,74	5,4
200	8	275	35	35	22	29	154	255	152	38	207	1,4	7,7
250	10	330	40	40	26	36	192	312	180	41	260	2,4	13,2
300	12	380	45	45	32	43	227	363	215	41	309	3,52	23,3
350	14	440	49	49	38	47	266	416	245	54	341	5,1	38,0
400	16	491	65	65	44	53	310	467	285	55	392	7,3	52,5

The detail X shows the hand emergency actuation (can be delivered for an extra charge).

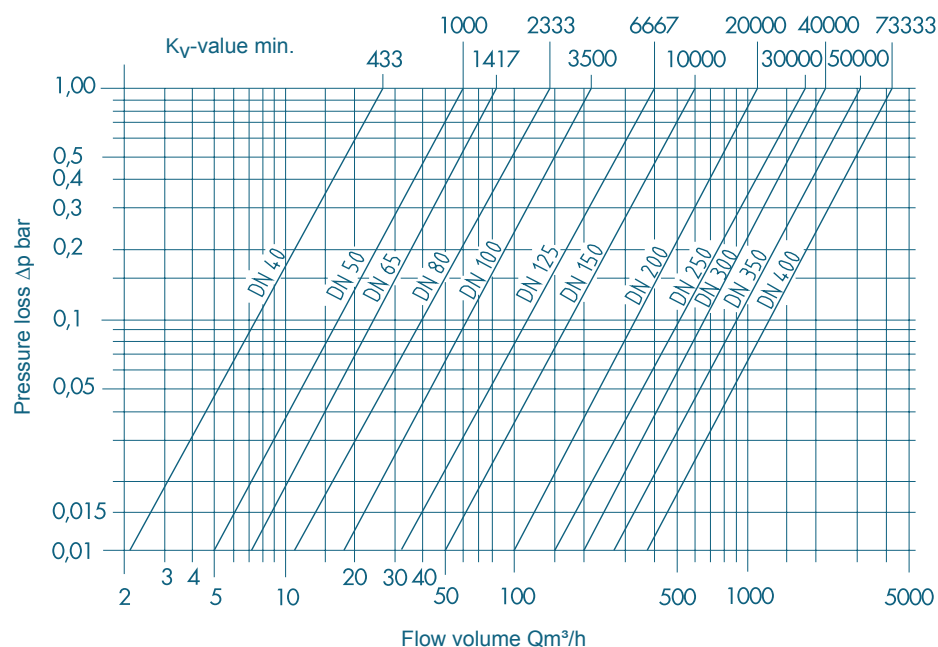
Subject to change without notice

G = min. mounting-, pipe- inside diameter

* For reduced inside diameters, a bend sleeve is available.

PRESSURE LOSS DIAGRAM

The diagram shows the pressure loss Δp bar over the flow volume Q m³/h. Der K_V -value (=Ql/min. p = 1,0 bar) is declared. For a conversion please note:
 $Ql/min. = 16,67 \times Q \text{ m}^3/h$
 $kv = 14,28 \times Cv = 17,09 \times fv$



OPENING PRESSURE [mbar]

DN [mm]	Size [in]	Direction of flow							
		PVC version		PVC spring returned		Metal version		Metal spring returned	
		vert.	hor.	vert.	hor.	fert.	hor.	vert.	hot.
32	1¼	4	1	12	7	-	-	-	-
40	1½	4	1	12	7	5	1	-	-
50	2	4	1	12	7	5	1	12	7
65	2½	4	1	12	7	5	1	12	7
80	3	7	1	20	7	12	1	12	7
100	4	7	1	20	7	12	1	20	8
125	5	7	1	20	7	12	1	20	8
150	6	7	1	20	7	20	1	20	8
200	8	12	1	27	8	20	1	27	8
250	10	12	1	27	8	20	1	27	8
300	12	12	1	27	8	25	1	27	8
350	14	16	1	35	9	25	1	35	9
400	16	16	1	35	9	25	1	35	9
500	20	16	1	35	9	-	-	-	-

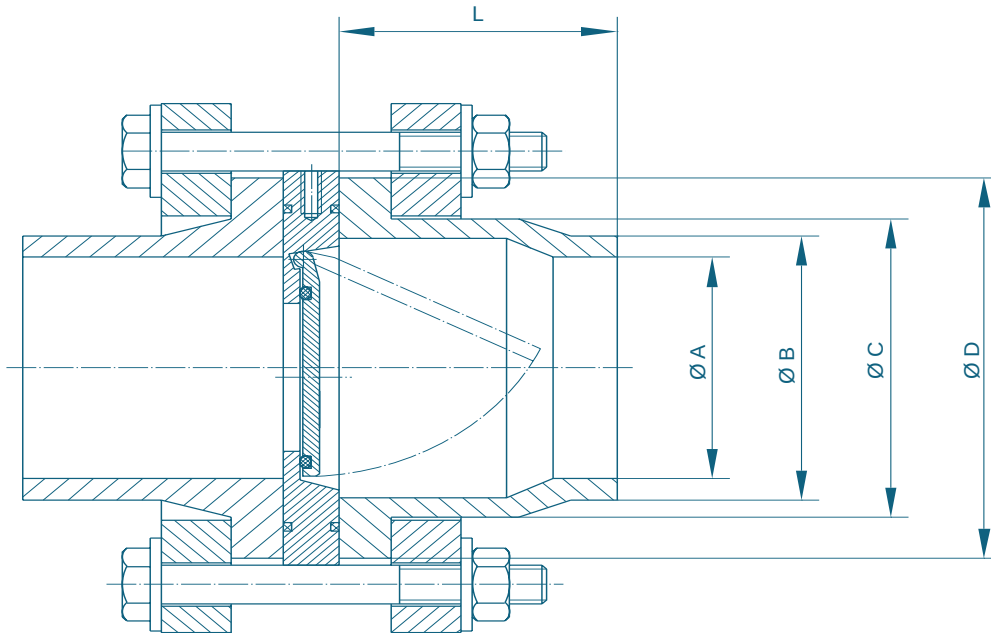
Approximate values

Subject to change without notice

Installing the check valve on top of a pump please ensure that neither the valve is mounted directly on the pump flange or the following bend a smoothing section of less than 5xDN is observed. For tight sealing of the RSK a back pressure of not less than 0,3 bar is required.

WAFER TYPE CHECK VALVE RSK

MATERIAL SPEZIFICATION AND PARTS LIST

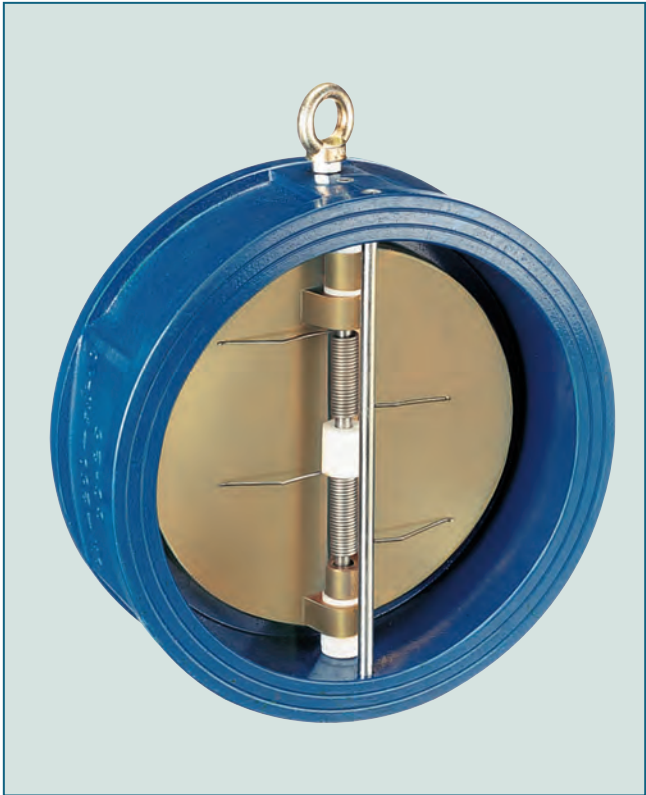


Bend sleeve for RSK (PN 10)

DN [mm]	Size [in]	Dimensions [mm]				
		A	B	C	D	L
32	1¼	35	40	50	80	45
40	1½	44	50	61	90	48
50	2	55	63	77	105	54
65	2½	66	75	91	125	58
80	3	79	90	109	140	72
100	4	97	110	132	160	92
125	5	124	140	166	190	100
150	6	141	160	189	215	120
200	8	199	225	249	270	165
250	10	248	280	293	325	195
300	12	280	315	337	385	250

Subject to change without notice

DOUBLE CHECK VALVE DC



TECHNICAL DATA

Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558-1
	ISO 5752
Flange accommodation:	EN 485 PN 10/16
	ASME Class 150
Flange Surface Design:	EN 1092 Form A/B
	ASME RF, FF
Marking:	EN 19
Tightness check:	EN 12266 (Leakage Rate A)
	ISO 5208, Category 3
Temperature range:	0°C to +130°C (depending on pressure, medium and temperature)

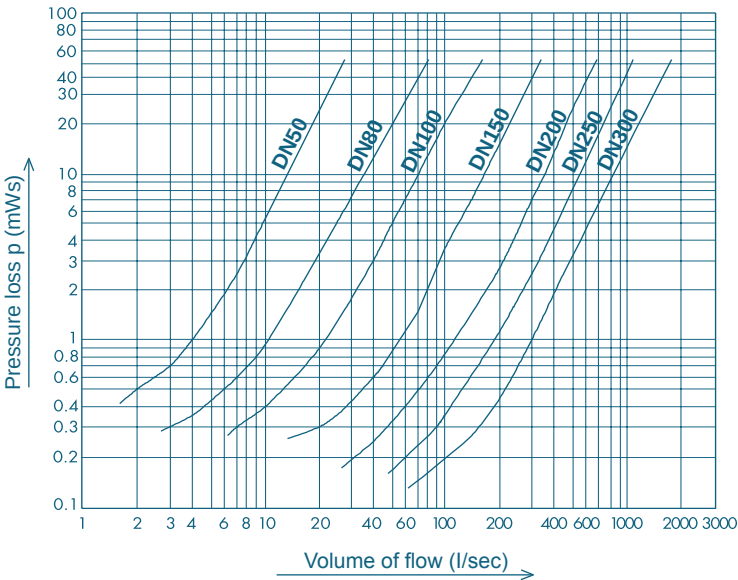
Standard construction:

	DC 1	DC 2
Body	EN-JS 1030	EN-JS 1030
Disc	Bronze	Stainless Steel
Shafts	Stainless Steel	Stainless Steel
Springs	Stainless Steel	Stainless Steel
Seal	NBR	EPDM
Bearing operating	PTFE	PTFE
Pressure	16 bar	16 bar

FEATURES

- Maintenance-free wafer double check valve
- Can be disassembled, material-specific recycling possible

PRESSURE LOSS DIAGRAM



The values given in the diagram are valid for water at 20°C. They result of measurements at valves which are mounted in a horizontal conduction. For the ascertainment of pressure losses for other media, the water flow amount has to be calculated with the following formular:

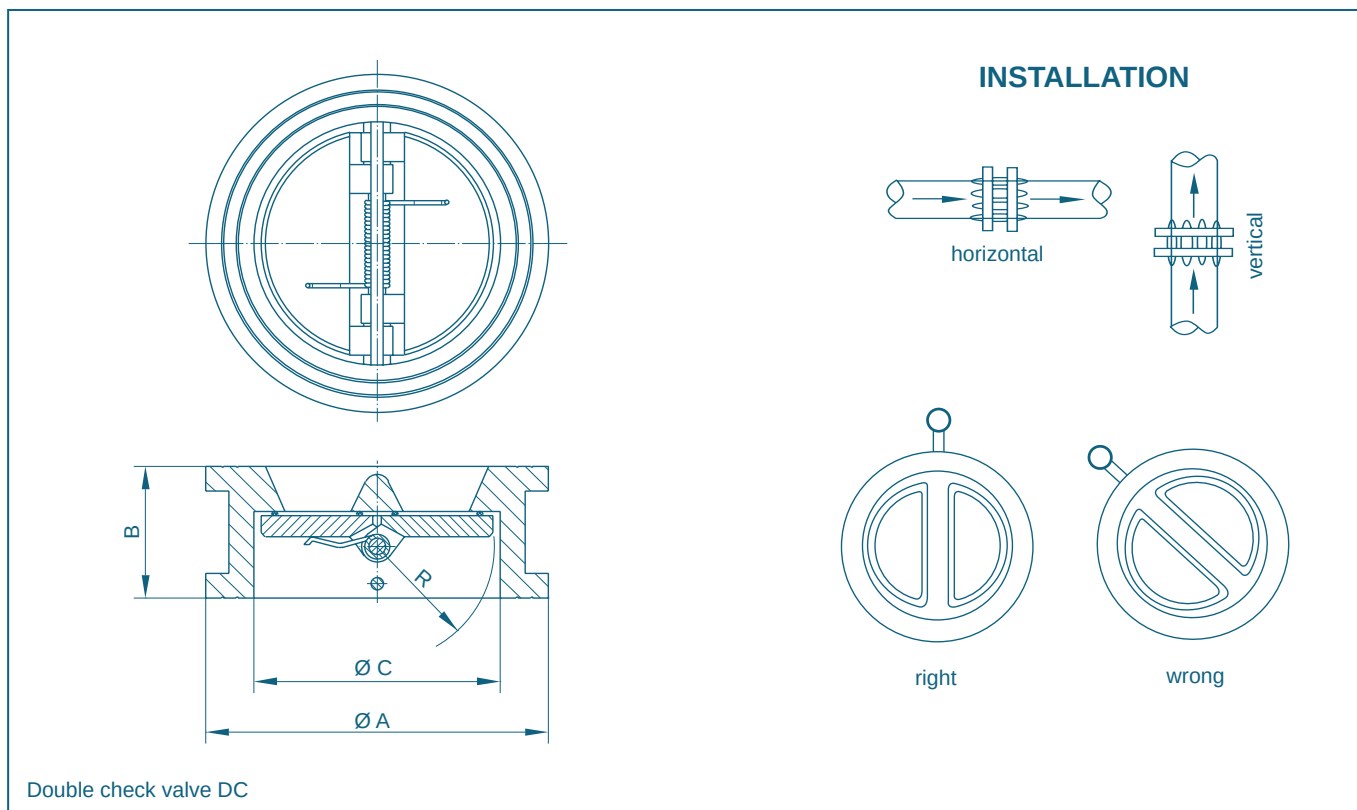
$$W_{ap} = \sqrt{\frac{\gamma_B}{1000}} \times Q_B$$

W_{ap} = equivalent water flow in m³/h

γ_B = flow amount of the media in its operating conditions kg/m³

Q_B = volume of flow in operating condition (m³/h)

DOUBLE CHECK VALVE DC



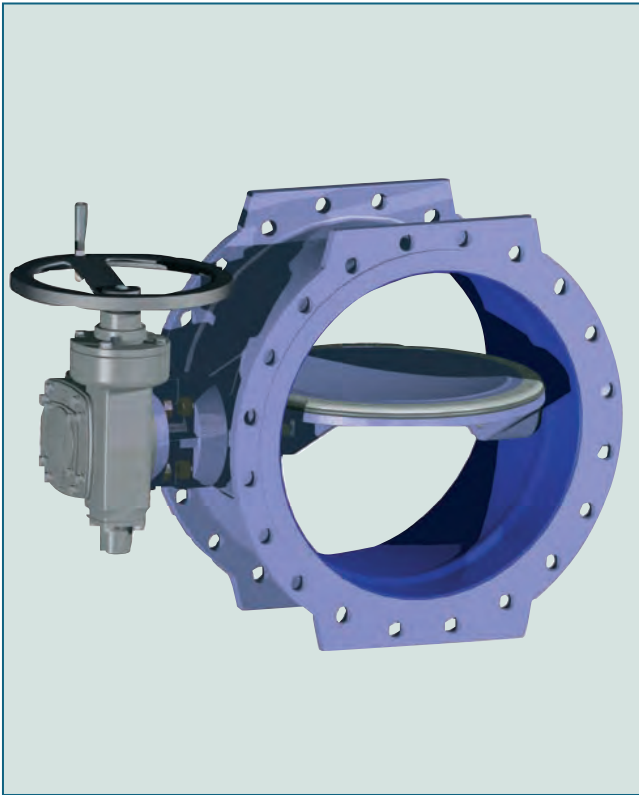
DN [mm]	Size [in]	Dimensions [mm]				min. opening pressure [mbar]	K _V [m³/h]	Weight [kg]
		A	B	C	R			
50	2	109	43	72	31	42	45	1,7
65	2½	129	46	75	35	42	70	2,4
80	3	144	64	90	42	38	120	3,6
100	4	164	64	118	56	30	240	4,5
125	5	194	70	142	66	25	350	7,0
150	6	220	76	170	79	25	650	9,8
200	8	275	89	222	102	20	1300	25,0
250	10	330	114	274	128	18	2100	30,0
300	12	380	114	328	155	16	3500	36,5

Installing the check valve on top of a pump please ensure that neither the valve is mounted directly on the pump flange or the following bend or a smoothing section of less than 5 x DN is observed.

For tight sealing of the DC a back pressure of not less than 1 bar is required.

Subject to change without notice

BUTTERFLY VALVE TYPE F 012-DE



Butterfly valve type F 012-DE with worm gear and handwheel.

TECHNICAL DATA

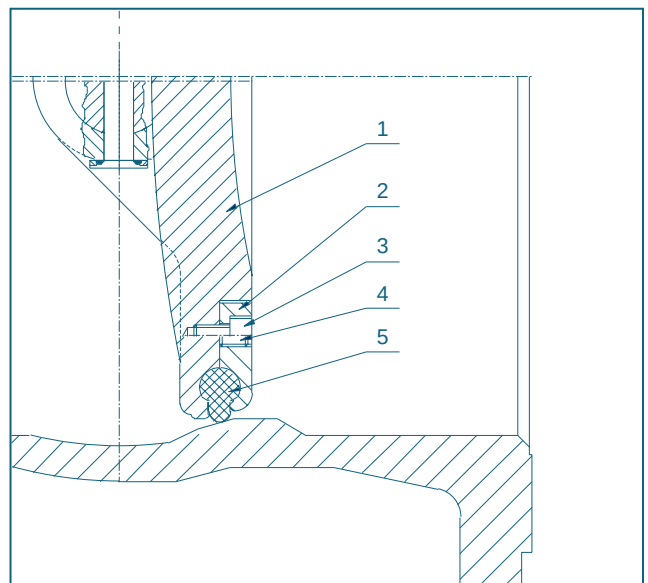
Nominal diameter:	DN 200 - DN 1400
Face-to-face:	EN 558-1-GR14
Flange accommodation:	EN 1092-2 PN 10/16
Top flange:	EN ISO 5211
Marking:	EN 19
Design standard:	EN 593
Temperature range:	Up to + 50°C
Corrosion protection:	EKB >250/300 µm, RAL 5015, sky blue Option: inside enameled, cobalt blue

FEATURES

- Soft seated, double eccentric butterfly valve
- Tight sealing in both flow directions. One side flanging is possible
- Suitable for subsurface installation
- The sealing can be adjusted or replaced without dismantling the disc
- Shafts are capsuled. No media contact
- DIN DVGW certified

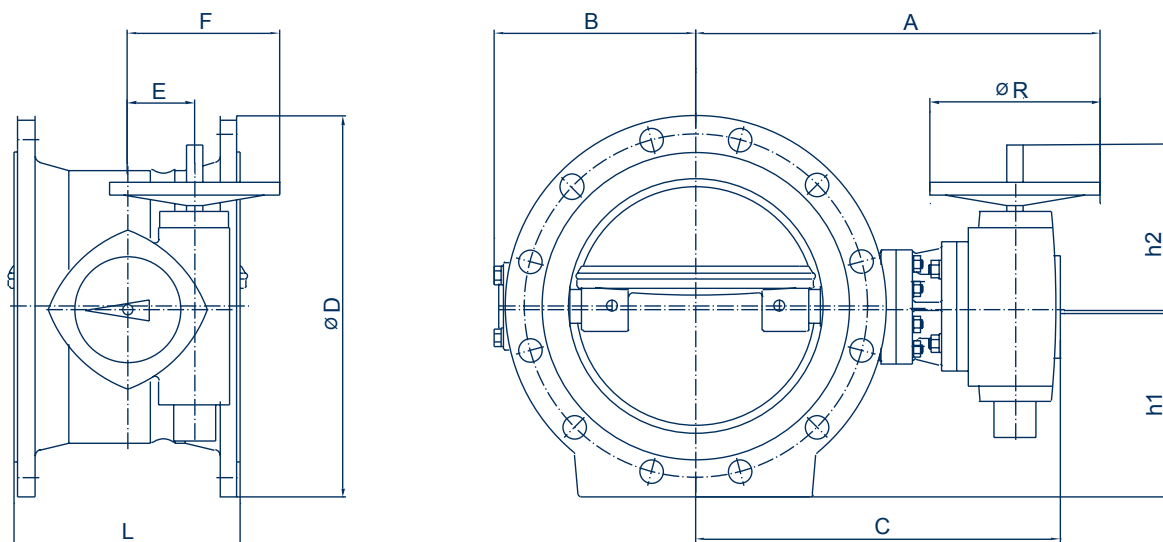
GENERAL APPLICATIONS

- Water and wastewater technology
- Potable water
- Wastewater, TS max. 3%
- Not applicable with long-fibred media



- 1 = Disc
2 = Pressure ring
3 = Fastening screw
4 = Counter set screw
5 = Elastomer seat

BUTTERFLY VALVE TYPE F 012-DE



F 012-DE with worm gear and handwheel

PN 10

DN [mm]	Size [in]	Dimensions [mm]										Weight [kg]
		A	B	C	$\varnothing D$	E	F	h1	h2	L	$\varnothing R$	
200	8	380	180	320	340	50	150	170	145	230	200	55
250	10	445	210	378	400	63	190	200	183	250	250	95
300	12	520	235	425	455	80	240	230	186	270	315	125
350	14	545	270	453	505	80	240	255	186	290	315	145
400	16	655	295	538	565	100	300	285	319	310	400	195
500	20	715	365	599	670	100	300	335	319	350	400	265
600	24	780	425	668	780	125	325	390	327	390	400	360
700	28	787	510	687	895	160	360	450	400	430	400	585
800	32	840	560	737	1015	160	360	510	400	470	400	738
900	36	904	628	804	1115	160	360	560	400	510	400	995
1000	40	1090	680	990	1230	160	360	620	400	550	400	1285
1200	48	1305	825	1225	1455	200	450	730	505	630	400	2120
1400	56	1355	965	1225	1675	250	500	840	600	710	500	2850

PN 16

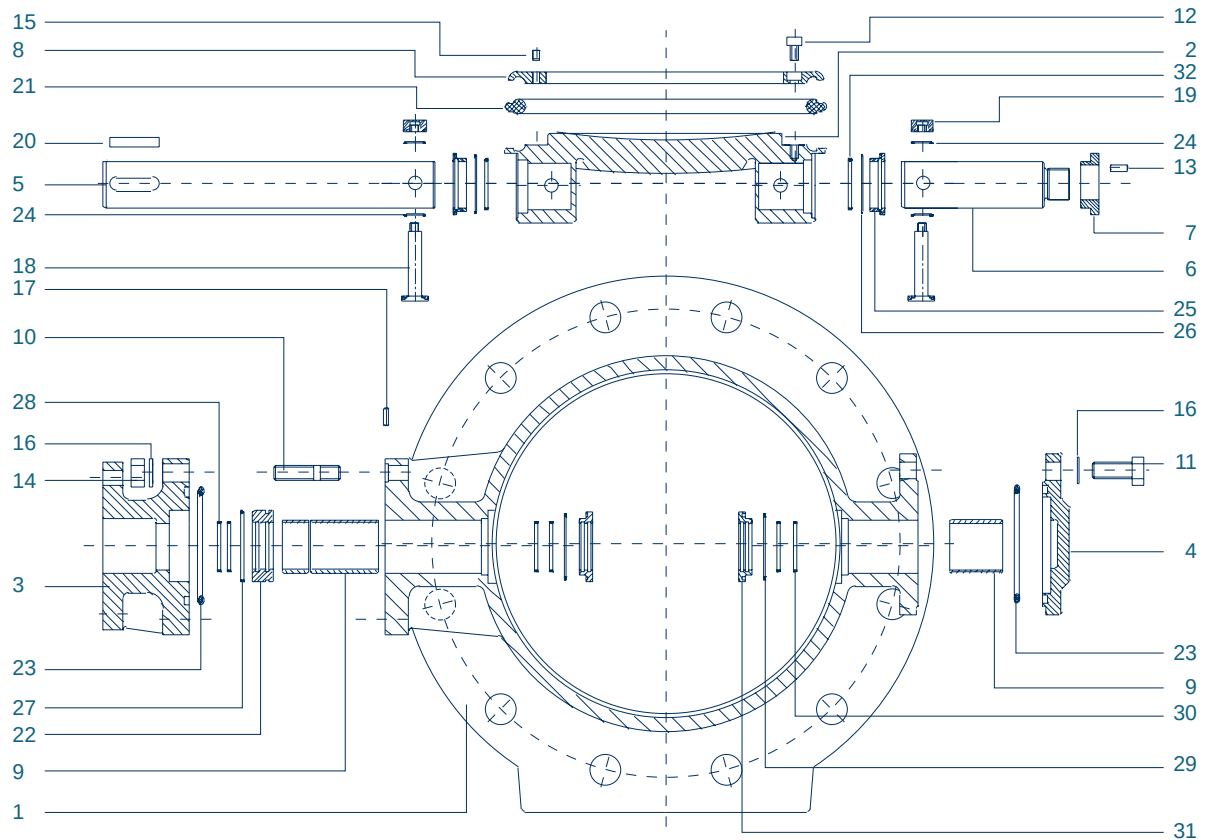
DN [mm]	Size [in]	Dimensions [mm]										Weight [kg]
		A	B	C	$\varnothing D$	E	F	h1	h2	L	$\varnothing R$	
200	8	380	180	320	340	50	150	170	145	230	200	55
250	10	445	210	378	400	63	190	200	183	250	250	95
300	12	520	235	425	455	80	240	230	186	270	315	125
350	14	545	270	453	520	80	240	260	186	290	315	150
400	16	655	295	538	580	100	300	290	319	310	400	200
450	18	690	340	568	640	100	300	318	319	330	400	235
500	20	735	380	623	715	125	325	360	327	350	400	310
600	24	768	474	667	840	160	360	420	400	390	400	480

Bigger sizes and higher operating pressure upon request.

Subject to change without notice

BUTTERFLY VALVE TYPE F 012-DE

MATERIAL SPECIFICATION AND PARTS LIST



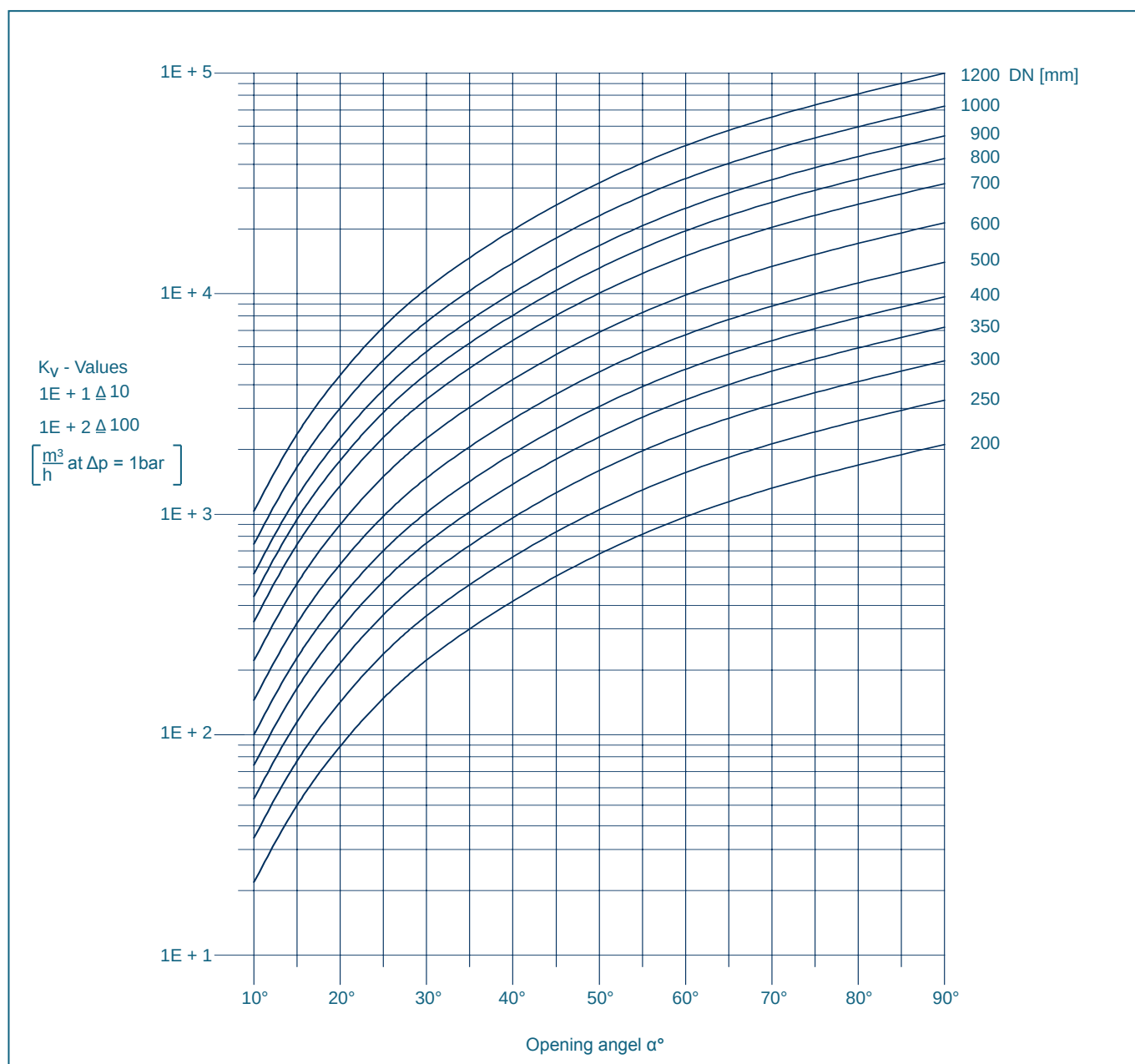
Butterfly valve F 012-DE

Pos.	Description	Material	Material-No.	Pos.	Description	Material	Material-No.
1	Body	GGG	EN-JS 1030	15	Set screw	St. Steel	A2-70
2	Flap	GGG	EN-JS 1030	16	Disc	St. Steel	1.4301
3	Connection flange	GGG	EN-JS 1030	17	Grooved stud	St. Steel	A2-70
4	Cover plate	GGG	EN-JS 1030	18	Threaded pin	St. Steel	A2-70
5	Driveshaft	St. Steel	1.4021	19	Threaded pin - screw nut	St. Steel	A2-70
		St. Steel	1.4122	20	Fitting key	Steel	1.0037
		Duplex	1.4462	21	Seal ring		EPDM/ NBR
6	Shaft	St. Steel	1.4021	22	Holding ring	Brass	2.0402
		St. Steel	1.4122	23	O-ring		EPDM/ NBR
		Duplex	1.4462	24	O-ring		EPDM/ NBR
7	Checking nut	St. Steel	1.4021	25*	Sealing bush	Brass	2.0402
8	Clamping ring	St. Steel	1.4301	26*	O-ring		EPDM/ NBR
		St. Steel	1.4571	27	O-ring		EPDM/ NBR
9	Bearing sleeve	Du	PTFE/ Bronze	28	O-ring		EPDM/ NBR
10	Stud bolt	St. Steel	A2-70	29*	O-ring		EPDM/ NBR
11	Hex bolt	St. Steel	A2-70	30*	O-ring		EPDM/ NBR
12	Pan screw	St. Steel	A2-70	31*	Sealing bush	Brass	2.0402
13	Pan screw	St. Steel	A2-70	32*	O-ring		EPDM/ NBR
14	Pan screw	St. Steel	A2-70				

* These parts are replaced by a profile ring at DN 200 and DN 250.
Other materials upon request.

Subject to change without notice

BUTTERFLY VALVE TYPE F 012-DE



The valve series F 012-DE are mainly used for on/ off operations. They can be used as a control valve conditionally. The differential pressure to be regulated is between 1 to 3 bar (depending on size).

INSPECTION AND ACCEPTANCE

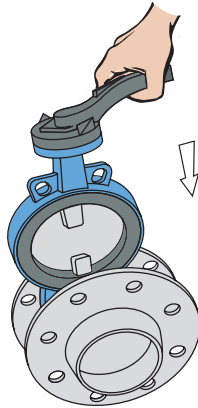
DN [mm]	Flange [DIN EN 1092-2]	Body	Testpressure [bar] Closing-off	Operating pressure [bar]
200-1400	PN 10	16	11,0	10
200-1400	PN 16	24	17,6	16

The inspection is conducted according to DIN EN 12266-1; DIN EN 1074-1/2 with water or air allowing leakage rate A. Valves used with gas be tested according to DIN 3230/5 and on customer request in testing groups PG1, PG2 or PG3.

MONTAGEHINWEISE

INSTALLATION INSTRUCTIONS - NOTICE D'INSTALLATION - INSTRUCCIONES DE INSTALACIÓN

1



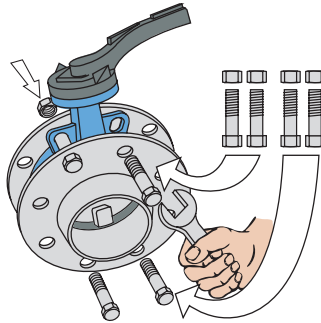
Absperrklappe zwischen die Flansche bringen

Place valve between the flanges.

Insérer la vanne entre les brides.

Situar la válvula entre las bridas.

2



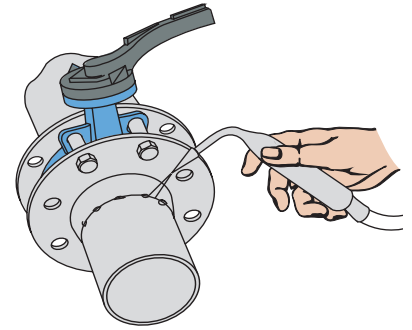
und mit 4 Flanschschrauben leicht anziehen und ausrichten.

Align and fix loosely by means of four flange bolts and nuts.

Serrer légèrement la boulonnerie et centrer la vanne.

Alinear la válvula con la ayuda de los tornillos.

3



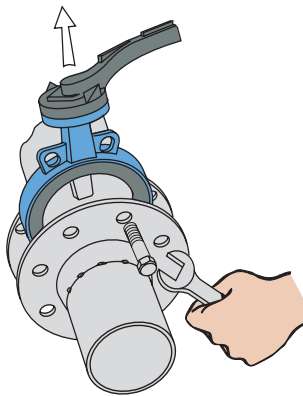
Die Rohrleitungsflansche mit elektr. Punktschweißung an die Rohrleitung anheften.

Spot weld pipe flanges to the pipe.

Pointer les soudures des brides sur la tuyauterie.

Soldar la brida a la tubería con un pequeño punto.

4



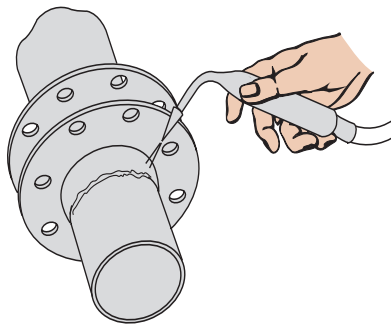
Absperrklappe wieder ausbauen.

Remove the valve.

Démonter la vanne.

Quitar la válvula.

5



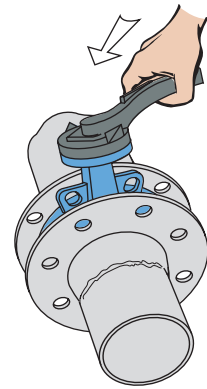
Flansche an die Rohrleitung anschweißen.

Weld flanges to the pipe.

Souder les brides à la tuyauterie.

Soldar por completo la brida a la válvula.

6



Nach dem Abkühlen der Flansche Absperrklappe einbauen. Die Armatur muss sich leicht zwischen die Flansche schieben lassen, damit die Manschette nicht beschädigt wird. Klappenscheibe leicht geöffnet lassen.

Let flanges cool down and re-install the valve. The valve must move easily between the flanges to prevent damage to the collar. Leave valve disc slightly open.

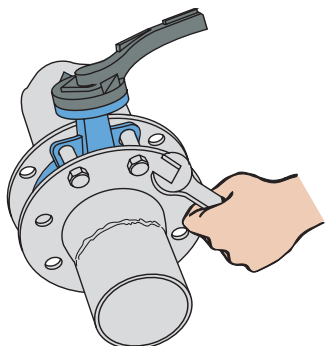
Laisser refroidir les soudures et remonter la vanne. La vanne doit se glisser facilement entre les brides afin que la manchette ne soit pas détériorée. Ouvrir légèrement le papillon.

Dejar que la brida y la tubería se enfíe. Situar nuevamente la válvula entre las bridas. Abrir ligeramente la válvula.

EINBAUANLEITUNG

INSTALLATION INSTRUCTIONS - NOTICE D'INSTALLATION - INSTRUCCIONES DE INSTALACIÓN

7



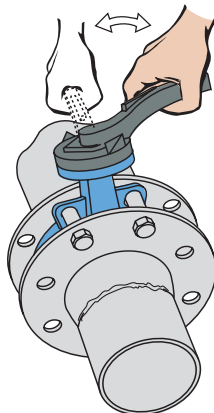
Absperrklappe ausrichten und 4 Flanschschrauben leicht anziehen.

Align valve and fasten 4 flange bolts loosely.

Positionner la vanne et visser la boulonnerie.

Alinear la válvula con ayuda de los tornillos y apretar los ligeramente.

8



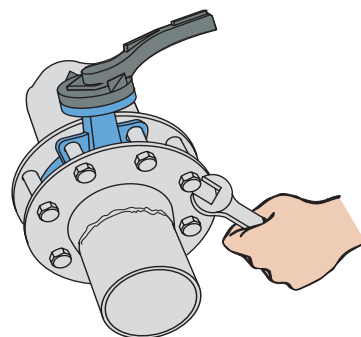
Klappenscheibe öffnen und prüfen, ob diese frei beweglich ist. Klappenscheibe leicht geöffnet lassen.

Open valve disc and check free movement. Leave valve disc slightly open.

Tester la vanne, vérifier que le papillon se manoeuvre facilement. Laisser le papillon ouvert.

Abrir y cerrar la válvula un par de veces y dejarla ligeramente cerrada.

9



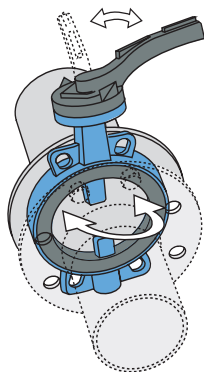
Sämtliche Flanschschrauben über kreuz fest anziehen.

Fasten all flange bolts tightly and crosswise.

Serrer la boulonnerie en étoile.

Apretar finalmente los tornillos diagonalmente.

10

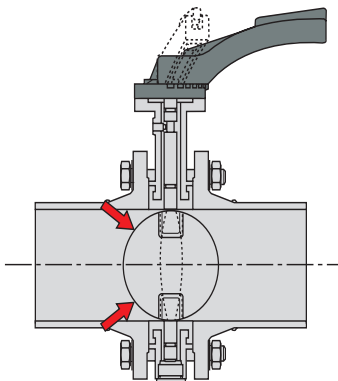


Ordnungsgemäße Funktion überprüfen. Achtung! Scheibe darf nicht an die Rohrleitung anschlagen.

Check proper operation. Attention: make sure disc does not hit the pipe.

Vérifier le fonctionnement de la vanne. Attention: vérifier que le papillon ne cogne pas la tuyauterie.

Accionar la válvula para verificar su funcionamiento y comprobar que el disco no roce con la tubería.



1 RESILIENT SEATED BUTTERFLY VALVES



1.1
Wafer Type
Version
Z011-A



1.2
Lug Type
Version
Z014-A



1.3
Wafer Type
Version
Z011-AS



1.4
Double Flan-
ged Version
F012-A



1.5
Double Flan-
ged Version
F012-K1



1.6
Wafer Type
Version
Z411-A



1.7
Lug Type
Version
Z414-A



1.8
Wafer Type
Version
Z011-GMX



1.9
Wafer Type
Version
Z611-A



1.10
Lug Type
Version
Z614-A



1.11
Wafer Type
Version
Z611-C



1.12
Lug Type
Version
Z614-C



1.13
Wafer Type
Version
Z611-K



1.14
Wafer Type
Version
Z011-B



1.15
INFLAS

2 PTFE-LINED BUTTERFLY VALVES



2.1
Wafer Type
Version
T211-A



2.2
Double Flan-
ged Version
T212-A



2.3
Lug Type
Version
T214-A



2.4
Wafer Type
Version
T211-C



2.5
Lug Type
Version
T214-C

3 HIGH PERFORMANCE BUTTERFLY VALVES



3.1 Wafer Type
Version
HP111



3.2 Lug Type
Version
HP114



3.3 Wafer Type
Version
HP111-E



3.4 Lug Type
Version
HP114-E



3.5 Lug Type
Version
HP114-C



3.6 Double Flan-
ged Version
HP112



3.7 Lug Type
Version
HP114-K3



3.8 Lug Type
Version
HP300

4 SPECIAL APPLICATIONS



4.1 Container
Valve
BE



4.2 Wafer Type
Version
TW



4.3 Plastic
Butterfly Valve
K016



4.4 Butterfly
Valve
CK



4.5 Wafer Type
Version
Z011-A therm



4.6 Pinch Valve
QV



4.7 Wafer Type
Version
TW-M



4.8 Butterfly
Valve
CK-M



4.9 Impeller valve
FS-M



4.10 Q011

5 KNIFE GATE VALVES



5.1 Wafer Type
Version
WB



5.2 Lug Type
Version
WB14



5.3 Double Flanged
Version
WB12



5.4 Wafer Type
Version
MV



5.5 Wafer Type
Version
XV

6 ACTUATION



6.1 Manual



6.2 Pneumatic
doubleacting
EB-SYD



6.3 Pneumatic
singleacting
EB-SYS



6.4 Pneumatic
linear cylinder
EC



6.5 Electric
Actuators
E50-E210

7 AUTOMATION TECHNOLOGY



7.1 Switch box
SBU



7.2 Electronic
Positioner
EP100/200



7.3 Electronic
Positioner
EP501



7.4 Modular sys-
tem for electric
actuators

8 ADDITIONAL PRODUCT PROGRAM

9 INSTALLATION INSTRUCTIONS

QUALITY FEATURES

RESILIENT SEATED VALVE Z 011-A

NARROW TOLERANCES

Precision-machined bodies form the basis for perfect seating of the liner and precise positioning of the shaft.

SHAFT RETAINER

The shaft retainer guarantees blow-out resistance of the shaft.

MULTIPLE BEARINGS

The shafts have multiple bearings. Optimal guidance even after many years of use. No contact corrosion.

CONTINUOUS FORMING LOBE

The continuous forming lobe fits perfectly in the relevant groove of the body, stabilising the liner.

POLISHED SEALING SURFACES

The sealing surfaces are mirror polished and guarantee low torque combined with tightness.

DOUBLE-SIDED PROFILES

Double-sided profiles ensure the sleeve-body engagement in the outer body recess.

MADE BY  EBRO

WAFER PATTERN BUTTERFLY VALVE TYPE Z 011-A



A universally applicable wafer type valve acc. to EN 593.
The large variety of basic materials allows applications in different industries.

TECHNICAL DATA

Nominal diameter:	DN 20 - DN 1200 (DN 20 only PN 10/16)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150 AS 4087 PN 16
Flange Surface Design:	EN 1092 Form A / B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-40°C to +200°C (depending on pressure, medium and material)
Operating pressure:	max. 16 bar

FEATURES

- Absolutely tight sealing with flow in either direction
- The valve body and disc are accurately machined which results in low operating torque and long service life and reliability
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operational service
- Four flange mounting holes ensure correct valve location when installing
- Single flange mounting is possible (please request details from our Technical Department)
- Can be installed in any desired position
- Maintenance-free
- Can be disassemble, material-specific recycling possible

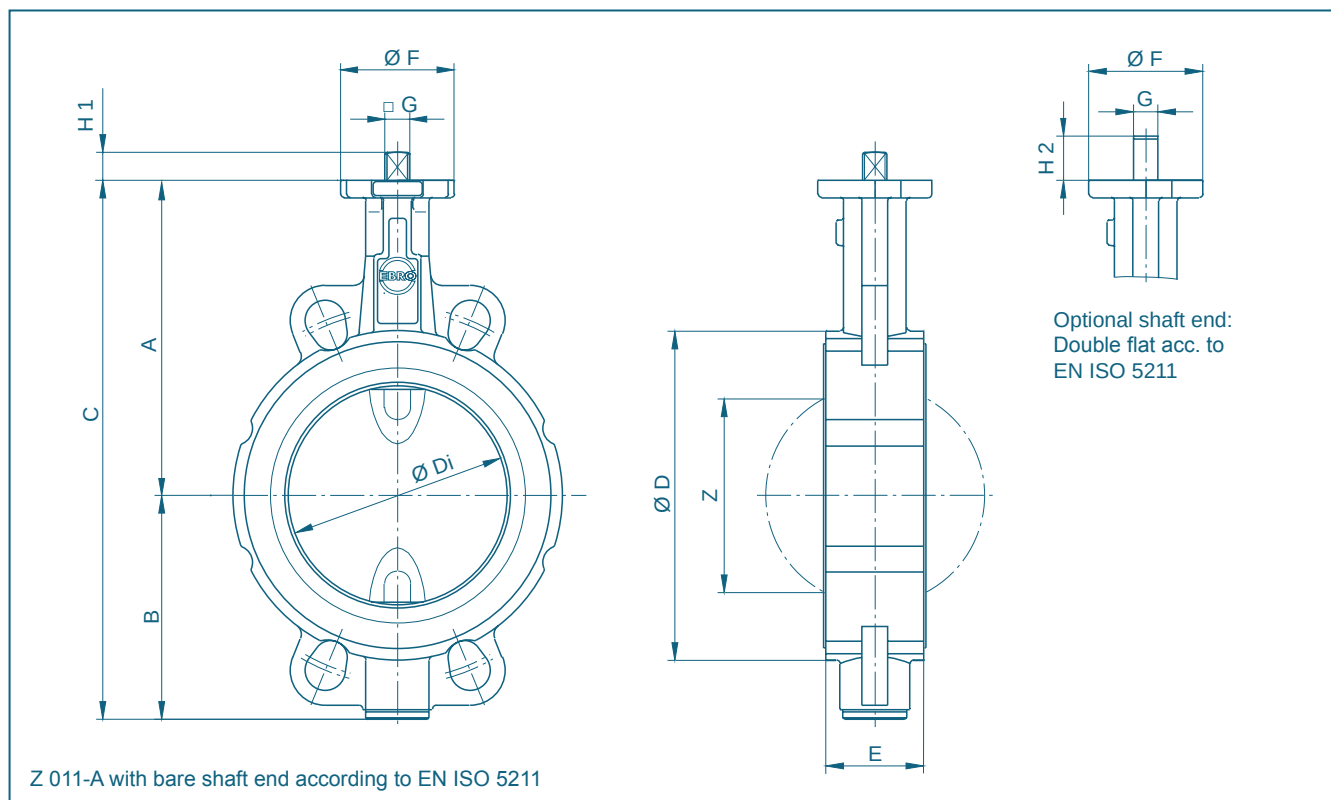
GENERAL APPLICATIONS:

- Chemical and petrochemical industries
- Water and waste water technology
- Pneumatic materials handling technology
- Shipbuilding
- Power generation industry
- Food industry
- For paint and lacquers, a silicon-free version is available
- Transport of hazardous materials (EN 14432)



Aluminium version. Available Sizes: DN 50 - DN 400

WAFER PATTERN BUTTERFLY VALVE TYPE Z 011-A



DN [mm]	Size [in]	Dimensions [mm]												Weight [kg] (GG-25)	
		A	B	C	D	Di	E	F	Flange	G	H1	H2	Z	2 Piece shaft	TS- shaft
20	¾	104	45	149	59	31,5	33	54	F04	11	12	19	-	1,3	-
25	1	104	45	149	63	31,5	33	54	F04	11	12	19	-	1,3	-
32	1¼	104	50	154	68	31,5	33	54	F04	11	12	19	-	1,4	-
40	1½	113	66	179	80	38	33	54	F04	11	12	19	22	1,8	-
50	2	126	84	210	95	48,5	43	54	F04	11	12	19	25	2,2	-
65	2½	134	93	227	115	63,5	46	54	F04	11	12	19	45	2,9	-
80	3	157	104	261	138	78,5	46	65	F05	14	16	25	65	4,0	4,5
100	4	167	115	282	158	98,5	52	65	F05	14	16	25	85	5,2	5,8
125	5	180	127	307	188	123,5	56	65	F05	14	16	25	111	6,9	7,5
150	6	203	150	353	212	148	56	90	F07	17	19	30	139	9,5	11,0
200	8	228	176	404	268	199	60	90	F07	17	19	30	190	13,2	15,0
250	10	266	212	478	320	248	68	125	F10	22	24	39	240	22,5	25,5
300	12	291	237	528	370	296	78	125	F10	22	24	39	287	31,5	35,0
350	14	332	269	601	408	338	78(92)**	150	F12	*	*	-	330	39,4	45,0
400	16	363	314	677	470	388	102	150	F12	*	*	-	378	58,7	64,5
450	18	397	335	732	530	430,5	114	210	F16	*	*	-	417	91,0	95,5
500	20	437	405	842	574	494,5	127	210	F14/F16	*	*	-	474	107,0	113,5
600	24	498	469	967	675	590	154	300	F16/F25	*	*	-	563	171,0	198,0
700	28	581	507	1088	772	680	165	300	F16/F25	*	*	-	660	251,0	304,0
800	32	630	556	1186	874	780	190	300	F25	*	*	-	757	355,0	375,0
900	36	696	617	1313	973	880	203	300	F25	*	*	-	860	456,0	498,0
1000	40	771	675	1446	1070	980	216	350	F30	*	*	-	956	570,0	718,0
1200	48	880	810	1690	1510	1170	254	350	F30	*	*	-	1154	-	1156,0

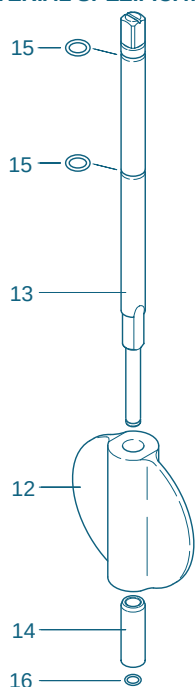
* according to mounted actuator

** face to face dim. acc. to EN 558 Tab. 20 (92 mm)

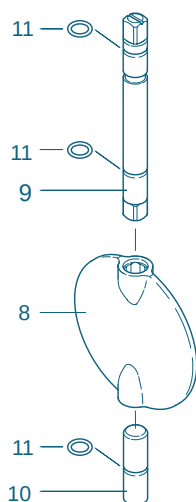
Subject to change without notice

WAFER PATTERN BUTTERFLY VALVE TYPE Z 011-A

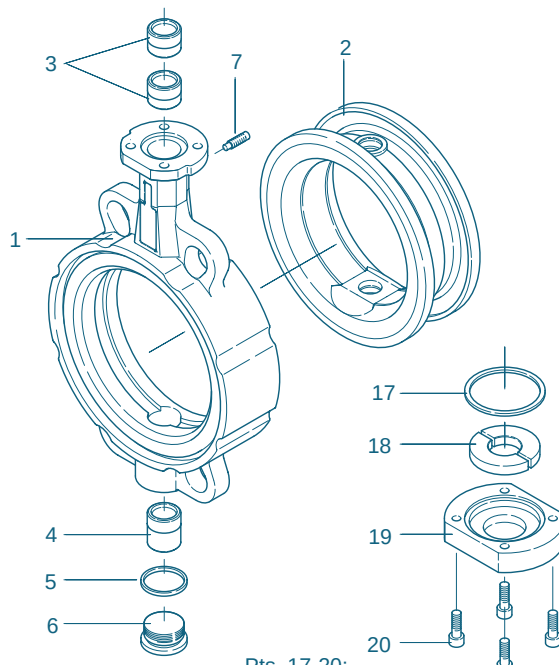
MATERIAL SPEZIFICATION AND PARTS LIST



TS-Version



Version with splitted shaft



Pts. 17-20:
Cover plate for
valve ≥ DN 350

Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				9/10	Shafts			
	Aluminiumalloy	G-AISI9Cu3	3.2163	B 380.1		Stainless Steel	X39CrMo17-1	1.4122	
		G-AISI10Mg	3.2381	361.1			X14CrMoS17	1.4104	430 F
	Grey Cast Iron	GG-25	0.6025	40 B			X5CrNiMo 17-12-2	1.4401	316
	Nodular Cast Iron	GGG-40	0.7040	60-40-18			Hastelloy	2.4883	Hastelloy
		GGG-40.3	0.7043			Aluminum Bronze	CuAl10Ni	2.0975	
	Carbon Steel	GS-C25	1.0619	WCB	11	O-ring			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		NBR	Acrylonitrile butadiene rubber		
	Aluminium Bronze	G-CuAl10Ni	2.0975	C 95800		FPM	Fluorocarbon caoutchouc		
2	Seat				12	TS-disc			
	NBR	Acrylonitrile butadiene rubber				Nodular Cast Iron	GGG-40	0.7040	60-40-18
	EPDM	Ethylene propylene caoutchouc				Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
	CSM	Chlorsulphonated polyethylene				Aluminium Bronze	G-CuAl10Ni	2.0975	C 95800
	FPM	Fluorocarbon caoutchouc				Coating	Halar, Rilsan		
	VSI	Silicon rubber				Surface quality	electropolished, mirror finished		
	AU	Polyurethane elastomer			13	TS-shaft			
3/4	Bearing bush					Stainless Steel	X14CrMoS17	1.4104	430 F
	Brass	MS 58	2.0401	B 45			X39CrMo17-1	1.4122	
	Polyamide	PA 66					X5CrNiMo17-12-2	1.4401	316
	PTFE	Polytetrafluorethylene				Aluminum Bronze	CuAl10Ni	2.0975	
5	Seal DIN 7603				14	Sleeve			
	Copper	Cu		Copper		Stainless Steel	X5CrNi18-10	1.4301	304
6	Plug screw DIN 908				15	O-ring			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		NBR	Acrylonitrile butadiene rubber		
7	Set screw DIN 915					FPM	Fluorocarbon caoutchouc		
	Steel	45 H galvanized			16	Retaining ring			
	Stainless Steel	A4-70		B8M		Stainless Steel	X39CrMo17-1	1.4122	
8	Disc				17	O-ring			
	Steel	St 52.3	1.0570	572-50		NBR	Acrylonitrile butadiene caoutchouc		
	Stainless Steel	G-X5CrNiMo19-11-2	1.4301	304	18	Shaft retainer			
		G-X6CrNiMo18-10	1.4408	CF8M		Brass	MS 58	2.0401	B 45
		X2CrNiMo17-12-2	1.4404	316 L	19	Cover plate			
		X6CrNiMoTi17-12-2	1.4571	316 Ti		Grey Cast Iron	GG-25	0.6025	40 B
		G-X2CrNiMoN26-7-4	1.4469	F 51	20	Screw			
		Hastelloy	2.4883	Hastelloy		Steel	45 H galvanized		
	Aluminium Bronze	G-CuAl10Ni	2.0975	C 95800		Stainless Steel	A2-70		B 8
	Coating	Halar, Rilsan					A4-70		B8M
	Surface quality	electropolished, mirror finished				Other materials upon request			

Subject to change without notice

WAFER PATTERN BUTTERFLY VALVE TYPE Z 011-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure			
		3 [bar]	6 [bar]	10 [bar]	16 [bar]
20	¾	5	5	5	-
25	1	5	5	5	-
32	1¼	5	5	5	-
40	1½	8	8	8	8
50	2	9	9	9	9
65	2½	18	18	18	18
80	3	8	10	18	24
100	4	9	18	28	37
125	5	15	22	45	59
150	6	36	45	110	125
200	8	59	76	140	200
250	10	150	180	200	240
300	12	200	240	280	360
350	14	350	540	610	700
400	16	420	620	750	850
450	18	720	746	860	1500
500	20	900	1100	2255	3690
600	24	1050	2100	3000	5830
700	28	1560	2240	3450	8100
800	32	2070	3800	6600	11200
900	36	2700	4900	7100	14500
1000	40	4600	6780	11500	24400
1200	48	7800	12000	21000	44000

All values in Nm

K_V-VALUES

- The K_V-values [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

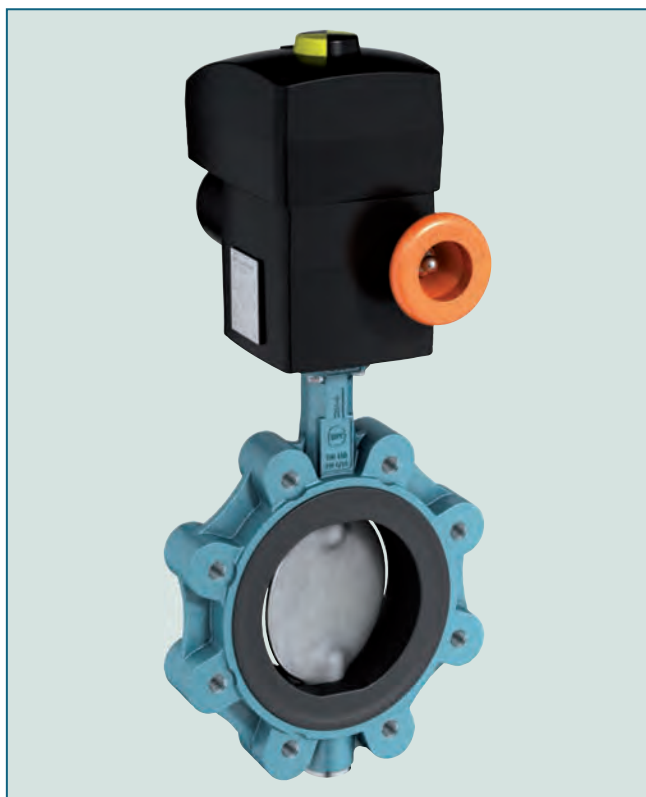
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
20	¾	-	1	4	8	11	19	27	32
25	1	-	1,5	5	10	15	24	32	36
32	1¼	-	1,5	5	11	16	27	35	40
40	1½	-	2,2	8	15	21	33	43	50
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500
350	14	350	780	1400	2400	4000	8000	10800	11500
400	16	490	1050	1800	3100	5500	11000	12000	14500
450	18	510	1080	2040	3350	6100	11500	14600	20500
500	20	520	1100	2200	3500	6200	12000	15100	21000
600	24	750	1400	2800	5100	8800	14000	22000	29300
700	28	770	1755	3260	5980	10600	17100	25300	36000
800	32	1200	2260	4550	8230	12900	20300	29300	44600
900	36	1540	2280	6030	10500	17600	29200	42150	59000
1000	40	2200	3970	8300	14480	24000	37100	60300	81500
1200	48	5050	7900	13800	19700	33500	53300	73050	102650

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 014-A



Lug type butterfly valve with threaded holes. This type enables the one-sided lugging of pipes.

TECHNICAL DATA

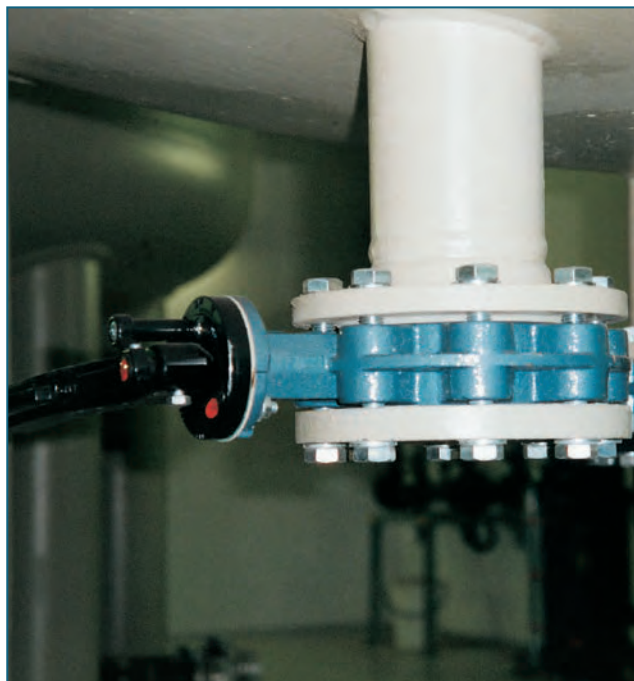
Nominal diameter:	DN 20 - DN 600 (DN 20 only PN10/16)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150 AS 4087 PN 16
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-40°C to +200°C (depending on pressure, medium and material)
Operating pressure:	max. 16 bar

FEATURES

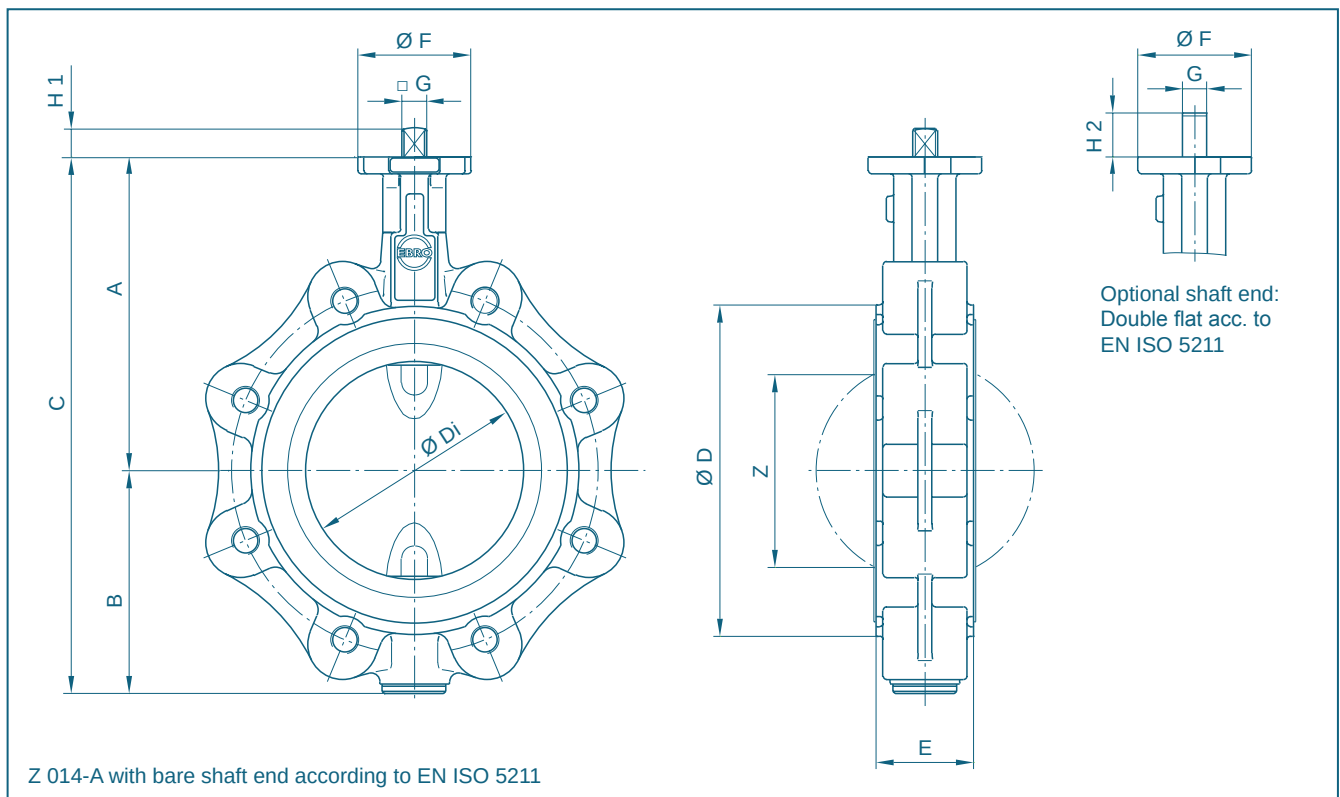
- Absolutely tight sealing with flow in either direction
- The valve body and disc are accurately machined which results in low operating torque and long service life and reliability
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operating service
- Can be disassembled, material-specific recycling possible
- Single flange mounting is possible
- Can be installed in any desired position
- Maintenance-free

GENERAL APPLICATIONS

- Chemical and petrochemical industries
- Water and waste water technology
- Pneumatic materials handling technology
- Shipbuilding
- Power generation industry
- Food industry
- Civil engineering
- For paint and laquers, a silicone-free version is available



LUG TYPE BUTTERFLY VALVE Z 014-A



DN [mm]	Size [in]	Dimensions [mm]												Weight[kg] (GG-25)	
		A	B	C	D	Di	E	F	Flange	G	H1	H2	Z	Splitted shaft	TS- shaft
20	¾	104	45	149	63	31,5	33	54	F04	11	12	19	-	2,1	-
25	1	104	45	149	63	31,5	33	54	F04	11	12	19	-	2,1	-
32	1¼	104	50	154	68	31,5	33	54	F04	11	12	19	-	2,1	-
40	1½	113	66	179	80	38	33	54	F04	11	12	19	22	4,0	-
50	2	126	84	210	95	48,5	43	54	F04	11	12	19	25	4,8	-
65	2½	134	93	227	115	63,5	46	54	F04	11	12	19	45	5,5	-
80	3	157	104	261	138	78,5	46	65	F05	14	16	25	65	8,6	9,1
100	4	167	115	282	158	98,5	52	65	F05	14	16	25	85	9,8	10,4
125	5	180	127	307	188	123,5	56	65	F05	14	16	25	111	10,1	10,7
150	6	203	150	353	210	148	56	90	F07	17	19	30	139	13,1	14,6
200	8	228	176	404	268	199	60	90	F07	17	19	30	190	18,8	20,6
250	10	266	212	478	320	248	68	125	F10	22	24	39	240	29,5	32,5
300	12	291	237	528	370	296	78	125	F10	22	24	39	287	37,0	40,5
350	14	332	269	601	408	338	78(92)**	150	F12	*	*	-	330	54,8	60,4
400	16	363	314	677	470	388	102	150	F12	*	*	-	378	81,5	87,3
450	18	397	335	732	530	430,5	114	210	F16	*	*	-	417	101,4	105,9
500	20	437	405	842	574	494,5	127	210	F14/F16	*	*	-	474	136,3	142,8
600	24	498	469	967	675	590	154	300	F16/F25	*	*	-	563	240,5	267,5

* according to mounted actuator

** face to face dim. acc. to EN 558 Tab. 20 (92 mm)

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 014-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
 - Powdery (non-lubricant) media Md x 1,3
 - Dry gases/ high viscous media Md x 1,2
 - The values specified are based on the initial breakaway torque
 - Dynamic torque specification available upon request
- Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure			
		3 [bar]	6 [bar]	10 [bar]	16 [bar]
20	¾	5	5	5	-
25	1	5	5	5	-
32	1¼	5	5	5	-
40	1½	8	8	8	8
50	2	9	9	9	9
65	2½	18	18	18	18
80	3	8	10	18	24
100	4	9	18	28	37
125	5	15	22	45	59
150	6	36	45	110	125
200	8	59	76	140	200
250	10	150	180	200	240
300	12	200	240	280	360
350	14	350	540	610	700
400	16	420	620	750	850
450	18	720	746	860	1500
500	20	900	1100	2255	3690
600	24	1050	2100	3000	5830

All values in Nm

K_V-VALUES

- The K_V-values [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases
- The throttle function is linear at an angle 30° to 70°
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
20	¾	-	1	4	8	11	19	27	32
25	1	-	1,5	5	10	15	24	32	36
32	1¼	-	1,5	5	11	16	27	35	40
40	1½	-	2,2	8	15	21	33	43	50
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500
350	14	350	780	1400	2400	4000	8000	10800	11500
400	16	490	1050	1800	3100	5500	11000	12000	14500
450	18	510	1080	2040	3350	6100	11500	14600	20500
500	20	520	1100	2200	3500	6200	12000	15100	21000
600	24	750	1400	2800	5100	8800	14000	22000	29300

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 014-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/ high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure			
		3 [bar]	6 [bar]	10 [bar]	16 [bar]
20	¾	5	5	5	-
25	1	5	5	5	-
32	1¼	5	5	5	-
40	1½	8	8	8	8
50	2	9	9	9	9
65	2½	18	18	18	18
80	3	8	10	18	24
100	4	9	18	28	37
125	5	15	22	45	59
150	6	36	45	110	125
200	8	59	76	140	200
250	10	150	180	200	240
300	12	200	240	280	360
350	14	350	540	610	700
400	16	420	620	750	850
450	18	720	746	860	1500
500	20	900	1100	2255	3690
600	24	1050	2100	3000	5830

All values in Nm

K_V-VALUES

- The K_V-values [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
20	¾	-	1	4	8	11	19	27	32
25	1	-	1,5	5	10	15	24	32	36
32	1¼	-	1,5	5	11	16	27	35	40
40	1½	-	2,2	8	15	21	33	43	50
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500
350	14	350	780	1400	2400	4000	8000	10800	11500
400	16	490	1050	1800	3100	5500	11000	12000	14500
450	18	510	1080	2040	3350	6100	11500	14600	20500
500	20	520	1100	2200	3500	6200	12000	15100	21000
600	24	750	1400	2800	5100	8800	14000	22000	29300

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-AS



A low weight wafer type valve (body aluminium) which is optimally suited for applications in public swimming pools.

TECHNICAL DATA

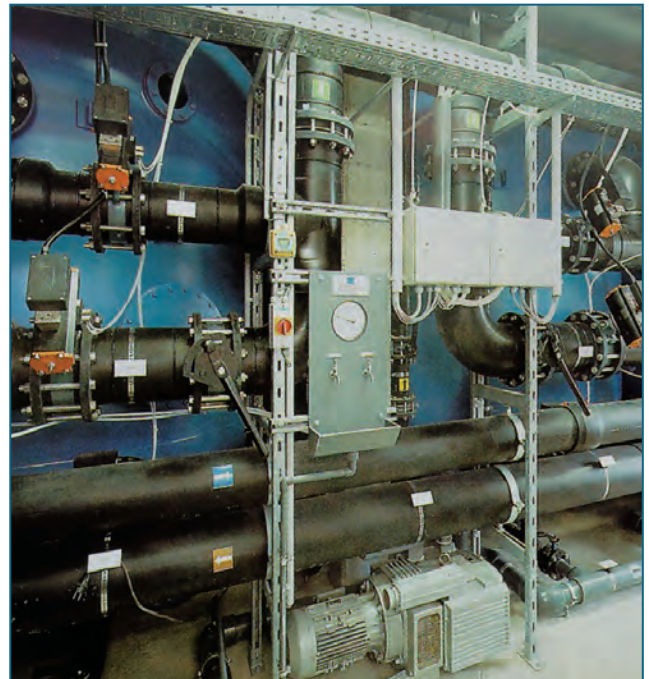
Nominal diameter:	DN 50 - DN 300 Larger diameters: See Z 011-A with aluminium body
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150 AS 4087 PN 16
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +100°C (depending on pressure, medium and material)
Operating pressure:	max. 3 bar

FEATURES

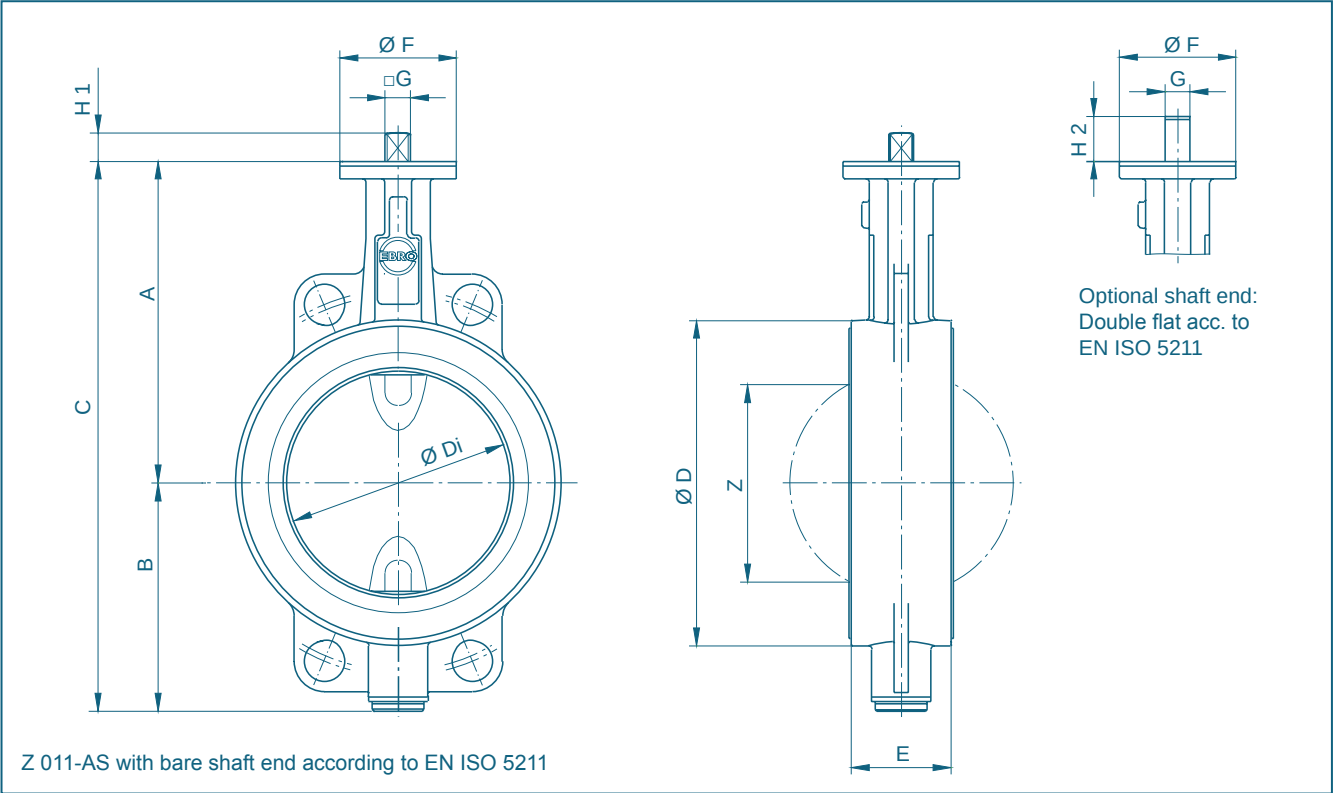
- Low weight aluminium body
- Can be used as control valve or shut-off valve
- Triple shaft bearing
- Interchangeable seat
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material specific recycling possible

GENERAL APPLICATIONS

- Public swimming pools



WAFER TYPE BUTTERFLY VALVE Z 011-AS



DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	H2	Z	
50	2	126	84	210	95	48,5	43	54	F04	11	12	19	25	0,8
65	2½	134	93	227	115	63,5	46	54	F04	11	12	19	45	1,0
80	3	157	104	261	131	78,5	46	65	F05	14	16	25	65	1,3
100	4	167	115	282	151	98,5	52	65	F05	14	16	25	85	1,6
125	5	180	127	307	182	123,5	56	65	F05	14	16	25	111	2,1
150	6	203	150	353	200	141,6	56	90	F07	17	19	30	130	3,3
200	8	228	176	404	260	199	60	90	F07	17	19	30	190	4,6
250	10	266	212	478	316	248	68	125	F10	22	24	39	240	9,6
300	12	291	237	528	360	281,1	78	125	F10	22	24	39	270	16,3

For larger diameters:, see Z 011-A (Aluminium version)

Subject to change without notice

This exploded view diagram illustrates the assembly of a mechanical component, likely a pump or valve. The main body (1) is a cast housing with two mounting lugs. A circular cover (2) is shown to the right, featuring a central flange and a small latch. A central shaft assembly is shown to the left, consisting of a long shaft (9) with two O-rings (11) and a cap nut (10) at the bottom. The shaft (9) is shown inserted into the main body (1). A central nut (3) and a washer (4) are shown above the main body. A small screw (7) is shown near the cover (2). A central nut (4) and a washer (5) are shown below the main body. A central nut (6) is shown at the bottom. The diagram uses blue lines on a white background.

Subject to change without notice

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-AS

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
65	2 ½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	30	90	190	320	510	650	970	1200
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

For further values, please contact our engineers.

DOUBLE FLANGED BUTTERFLY VALVE F012-A



The double flanged design is suitable for high pressure loading and is excellently suited for use in heavy industry, shipbuilding and waterworks.

TECHNICAL DATA

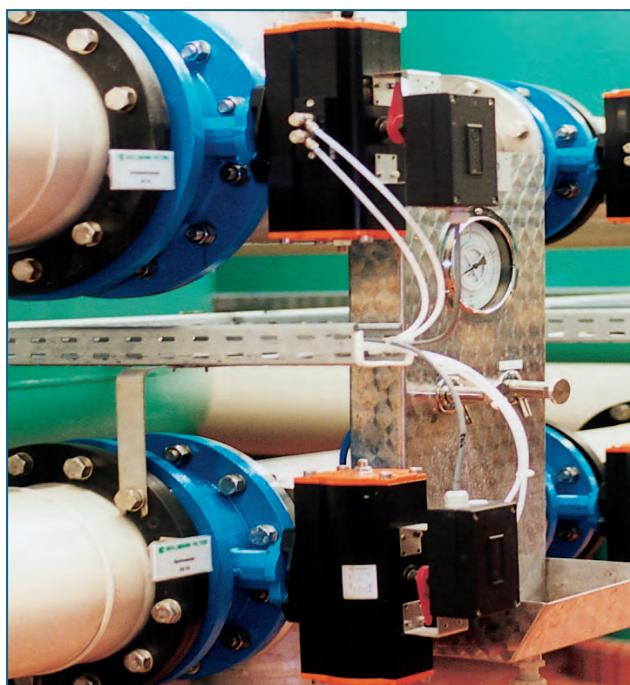
Nominal diameter:	DN 50 - DN 1200
Face-to-face:	EN 558 Series 13 ISO 5752 Series 13 API 609 Table 2C
Flange accommodation:	EN 1092 PN 6/10/16/25 ASME Class 150/300 AS 4087 PN 16/21
Flange Surface Design:	EN 1092 Form A/B, ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-40°C to +200°C (depending on pressure, medium and material)
Operating pressure:	max. 25 bar
Vacuum:	up to 1 mbar absolute

FEATURES

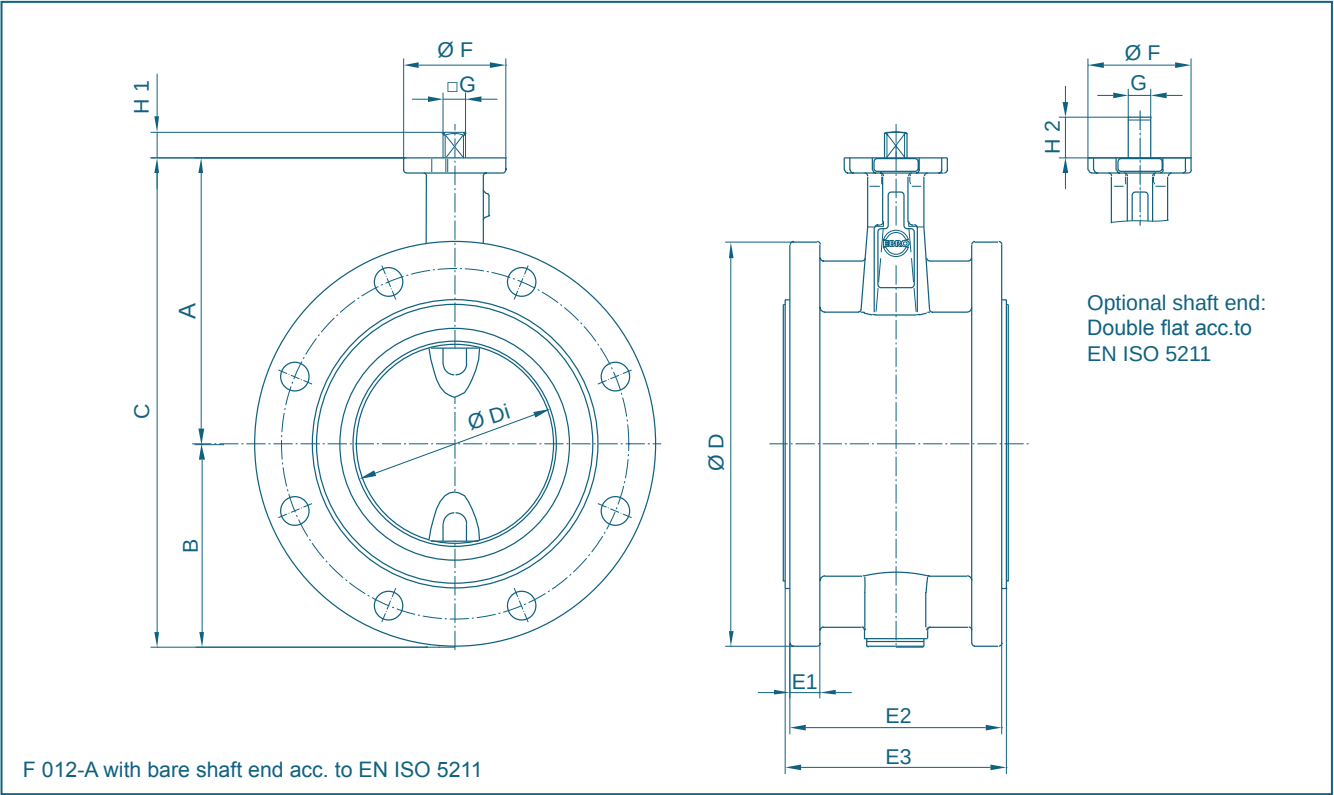
- Absolutely tight sealing with flow in either direction
- The valve body and disc are accurately machined which results in low operating torque and long service life and reliability
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operating service
- Can be disassembled, material-specific recycling possible
- Single flange mounting possible
- Can be installed in any desired position
- Maintenance-free
- Fully repairable valve

GENERAL APPLICATIONS

- Offshore
- Water and waste water technology
- Shipbuilding
- Seawater desalination



DOUBLE FLANGED BUTTERFLY VALVE F012-A



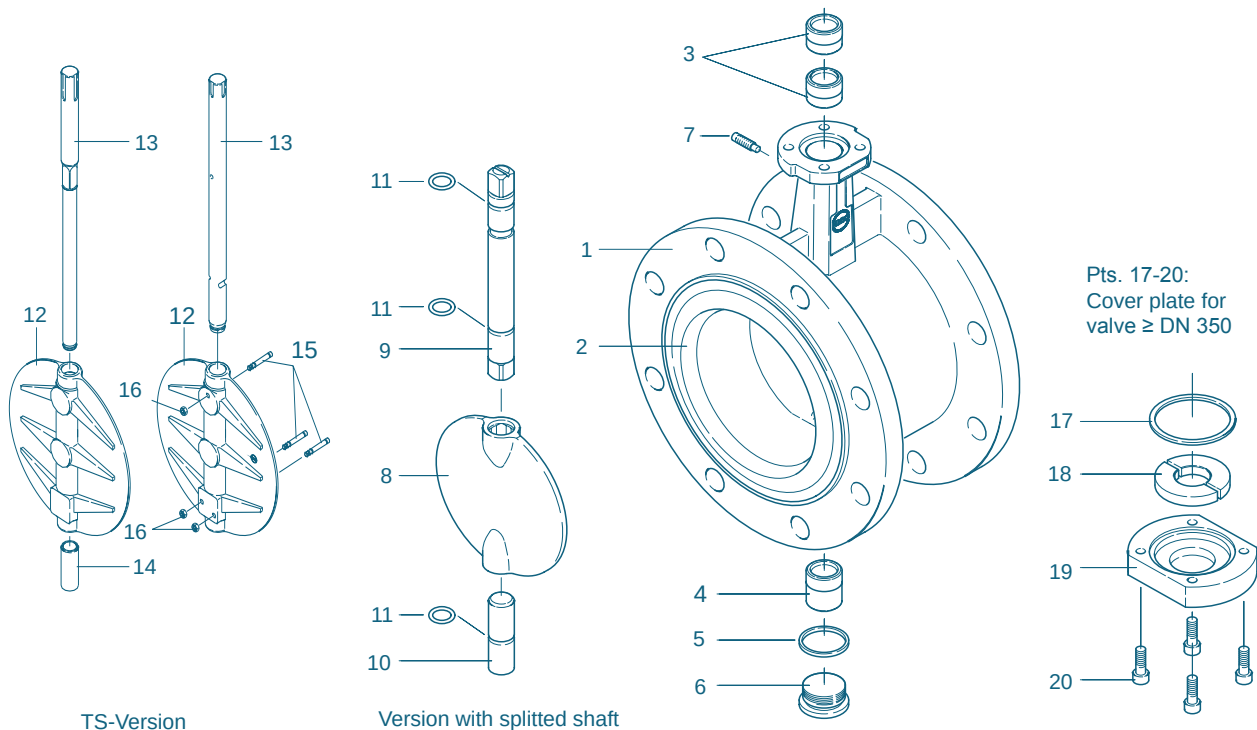
DN [mm]	Size [in]	Dimensions [mm]													Weight [kg] (GGG-40)	
		A	B	C	Di	D	E1	E2	E3	F	Flange	G	H1	H2	Splitted shaft	TS- shaft
50	2	126	84	210	48,5	165	15	102	108	54	F04	11	12	19	9,3	-
65	2½	134	93	227	63,5	185	15	106	112	54	F04	11	12	19	10,1	-
80	3	157	104	261	78,5	200	17	108	114	65	F05	14	16	25	12,2	12,7
100	4	167	115	282	98,5	229	17	121	127	65	F05	14	16	25	16,1	16,7
125	5	180	127	307	123,5	254	19	134	140	65	F05	14	16	25	24,0	24,6
150	6	203	150	353	148	285	19	134	140	90	F07	17	19	30	29,0	30,5
200	8	228	176	404	199	343	21	146	152	90	F07	17	19	30	39,1	40,9
250	10	266	212	478	248	406	23	159	165	125	F10	22	24	39	61,2	64,2
300	12	291	237	528	296	483	24	170	178	125	F10	22	24	39	81,4	84,2
350	14	332	269	601	338	533	24	182	190	150	F12	*	*	-	107,0	112,6
400	16	363	314	677	388	597	28	208	216	150	F12	*	*	-	142,0	147,8
450	18	397	335	732	430,5	640	33	214	222	175	F14	*	*	-	183,0	188,0
500	20	437	405	842	494,5	710	40	223	229	210	F14/16	*	*	-	233,0	240,0
550	22	456	435	891	540	750	40	219	229	210	F16	*	*	-	268,0	285,0
600	24	502	465	967	590	840	40	257	267	300	F16/25	*	*	-	303,0	330,0
700	28	581	507	1088	680	920	41	286	292	300	F16/25	*	*	-	407,0	460,0
800	32	630	556	1186	780	1050	47	312	318	300	F25	*	*	-	604,0	624,0
900	36	696	617	1313	880	1178	47	320	330	300	F25	*	*	-	745,0	787,0
1000	40	771	675	1446	980	1280	47	404	410	350	F30	*	*	-	942,0	1090,0
1200	48	905	810	1715	1170	1510	55	460	470	350	F30	*	*	-	--	1400,0

* according to the mounted actuator

Subject to change without notice

DOUBLE FLANGED BUTTERFLY VALVE F012-A

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				9/10	Shafts			
	Nodular Cast Iron	GGG-40	0.7040	60-40-18		Stainless Steel	X14CrMoS17	1.4104	430 F
	Carbon Steel	GS-C25	1.0619	WCB			X5CrNiMo17-12-2	1.4401	316
2	Seat						Hastelloy	2.4883	Hastelloy
	NBR	Acrylonitrile butadiene rubber				Bronze	CuAlNiBZ	2.0975	
	EPDM	Ethylene propylene caoutchouc			11	O-ring			
	CSM	Chlorsulphonated polyethylene				NBR	Acrylonitrile butadiene rubber		
	FPM	Flouorcarbon caoutchouc				FPM	Fluorocarbon caoutchouc		
	VSI	Silicon rubber			12	TS-disc			
3/4	Bearing bush					Nodular Cast Iron	GGG-40	0.7040	60-40-18
	Bronze	RG 5				Stainless Steel	G-X6CrNiMo10-20	1.4408	CF8M
	Polyamide					Aluminium Bronze	CuAl10Ni	2.0975	C 95800
	PTFE					Coating	Halar, Rilsan		
5	Seal DIN 7603					Surface quality	electropolished, mirror finished		
	Copper	Cu		Copper	13	TS-shaft			
6	Plug screw DIN 908					Stainless Steel	X14CrMoS17	1.4104	430 F
	Stainless Steel	11SMnPb30	1.0718 galv.	SAE12L14			X39CrMo17-1	1.4122	
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M			X5CrNiMo17-12-2	1.4401	316
7	Threaded pin DIN 915					Bronze	CuAlNiBZ	2.0975	
	Steel	45 H galvanized			14	Sleeve			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	B8M		Stainless Steel	X5CrNi18-10	1.4301	304
8	Disc				15	Taper pin			
	Steel	St52.3	1.0570	572-50		Stainless Steel	X6CrNiMoTi17-12-2	1.4571	
	Stainless Steel	X5CrNi18-10	1.4301	304	16	Hex. nut			
		G-X5CrNiMo19-11-2	1.4408	CF8M		Stainless Steel	A2		
		X2CrNiMo17-12-2	1.4404	316 L	17	O-ring			
		X6CrNiMoTi17-12-2	1.4571	316 Ti		NBR	Acrylonitrile butadiene rubber		
		X2CrNiMo22-5-3	1.4462	F 51	18	Shaft retention			
		Hastelloy	2.4883	Hastelloy		Bronze	RG 5		
	Aluminium Bronze	CuAl10Ni	2.0975	C 95800	19	Cover plate			
	Coating	Halar, Rilsan				Grey Cast Iron	GG-25	0.6025	40 B
	Surface quality	electropolished, mirror finished			20	Screw			
						Steel	45 H galvanized		
						Stainless Steel	X5CrNiMo17-12-2		B8M
	Other materials upon request								

Subject to change without notice

DOUBLE FLANGED BUTTERFLY VALVE F012-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure				
		3 [bar]	6 [bar]	10 [bar]	16 [bar]	25 [bar]
20	¾	5	5	5	-	-
25	1	5	5	5	-	-
32	1¼	5	5	5	-	-
40	1½	8	8	8	8	-
50	2	5	7	7	9	30
65	2½	7	9	15	18	40
80	3	8	10	18	24	58
100	4	9	18	28	37	90
125	5	15	22	45	59	150
150	6	36	45	110	125	230
200	8	59	76	140	200	350
250	10	150	180	200	240	600
300	12	200	240	280	360	950
350	14	350	540	610	700	1400
400	16	420	620	750	850	2050
450	18	720	746	860	1500	3200
500	20	900	1100	2255	3690	5500
600	24	1050	1200	3000	5830	8000
700	28	1560	2240	3450	8100	13000
800	32	2070	3800	6600	11200	20000
900	36	2700	4900	7100	14500	30000
1000	40	4600	6780	11500	24400	44000
1200	48	7800	12000	21000	44000	60000

All values in Nm

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
20	¾	-	1	4	8	11	19	27	32
25	1	-	1,5	5	10	15	24	32	36
32	1¼	-	1,5	5	11	16	27	35	40
40	1½	-	2,2	8	15	21	33	43	50
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500
350	14	350	780	1400	2400	4000	8000	10800	11500
400	16	490	1050	1800	3100	5500	11000	12000	14500
450	18	510	1080	2040	3350	6100	11500	14600	20500
500	20	520	1100	2200	3500	6200	12000	15100	21000
600	24	750	1400	2800	5100	8800	14000	22000	29300
700	28	770	1755	3260	5980	10600	17100	25300	36000
800	32	1200	2260	4550	8230	12900	20300	29300	44600
900	36	1540	2280	6030	10500	17600	29200	42150	59000
1000	40	2200	3970	8300	14480	24000	37100	60300	81500
1200	48	5050	7900	13800	19700	33500	53300	73050	102650

Subject to change without notice

DOUBLE FLANGED BUTTERFLY VALVE F 012-K1



Double flanged butterfly valve with short construction length to be used in heavy duty applications.

TECHNICAL DATA

Nominal diameter:	DN 150 - DN 2200 bigger sizes upon request
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16/25 ASME Class 150/300 AS 4087 PN16/21
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-40°C to +200°C (depending on pressure, medium and material)
Operating pressure:	max. 16 bar

FEATURES

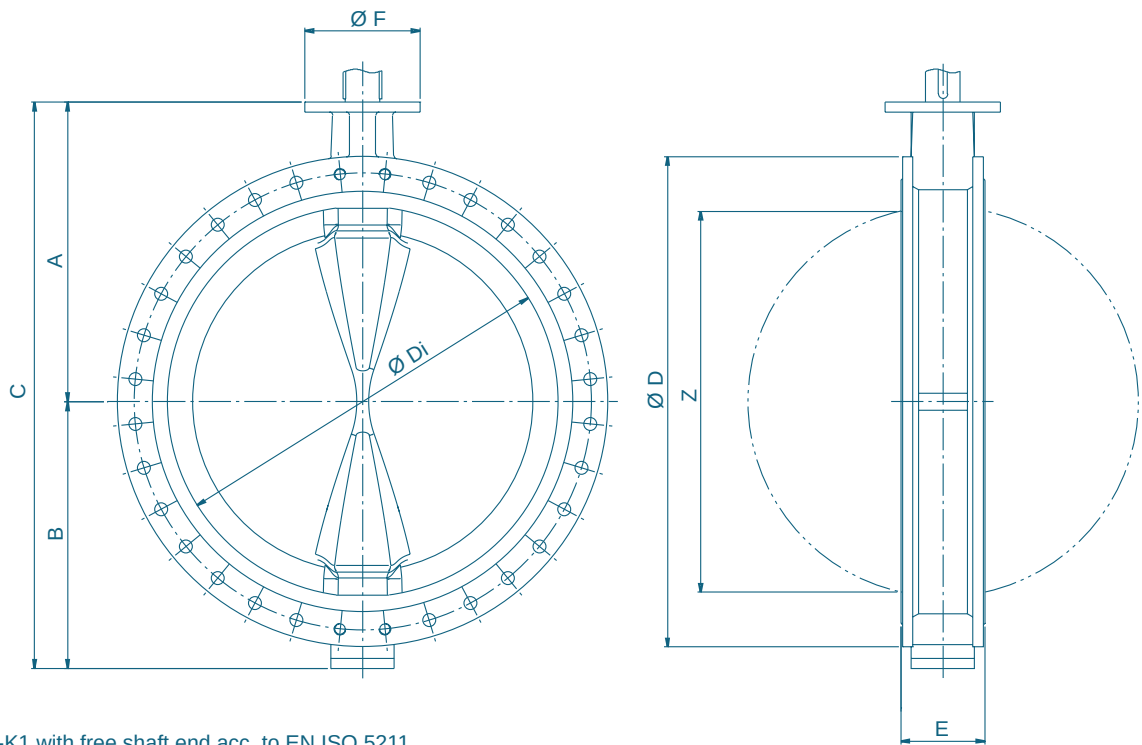
- Absolutely tight sealing with flow in either direction
- The valve body and disc are accurately machined which results in low operating torque and long service life and reliability
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operating service
- Can be disassembled, material-specific recycling possible
- Single flange mounting is possible
- Can be installed in any desired position
- Maintenance-free
- Fully repairable valve

GENERAL APPLICATIONS

- Offshore
- Water and waste water technology
- Shipbuilding
- Power plants



DOUBLE FLANGED BUTTERFLY VALVE F 012-K1



F012-K1 with free shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]									Weight [kg] GGG 40	
		A	B	C	D	Di	E	F	Flange	Z	Splitted shaft	TS- shaft
150	6	203	150	353	305	148	56	90	F07	139	22	23
200	8	228	176	404	350	199	60	90	F07	190	32	34
250	10	266	212	478	430	248	68	125	F10	240	47	50
300	12	291	237	528	480	296	78	125	F10	287	69	72
350	14	332	269	601	540	338	92	150	F12	330	80	86
400	16	363	314	677	605	388	102	150	F12	378	120	128
450	18	397	335	732	675	430	114	210	F16	417	144	150
500	20	437	405	842	710	494,5	127	210	F14/F16	474	163	170
600	24	498	469	967	830	590	154	300	F16/F25	563	233	260
700	28	581	507	1088	905	680	165	300	F16/F25	660	292	345
750	30	590	550	1140	1000	728	190	298	F25	703	-	470
800	32	630	556	1186	1250	780	190	300	F25	757	446	466
850	34	641	590	1201	1005	1031	254	298	F25	807	-	600
900	36	696	617	1313	1120	880	203	300	F25	860	568	610
1000	40	771	675	1446	1020	980	216	350	F30	956	624	722
1050	42	817	725	1542	1346	1031	254	350	F30	998	-	1020
1100	44	840	755	1595	1405	1078	254	350	F30	1046	-	1180
1200	48	905	810	1715	1480	1170	254	350	F35	1154	-	980
1300	52	970	910	1880	1630	1275	280	415	F35	1244	-	1607
1350	54	1000	905	1905	1685	1340	280	415	F35	1310	-	1760
1400	56	1025	965	1990	1685	1375	280	415	F35	1346	-	1806
1500	60	1115	1060	2175	1855	1472	280	475	F40	1444	-	2210
1600	64	1115	1090	2205	1830	1570	280	475	F40	1545	-	2310
1650	66	1225	1150	2375	2035	1646	280	475	F40	1622	-	2560
1800	72	1320	1195	2515	2130	1769	280	475	F40	1747	-	3140
2000	78	1400	1310	2710	2265	1962	525	525	F48	1890	-	4126
2200	86	1550	1430	2980	2555	2170	646	1030	F48	-	-	-

Subject to change without notice



Subject to change without notice

Subject to change without notice

DOUBLE FLANGED BUTTERFLY VALVE F 012-K1

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure			
		3 [bar]	6 [bar]	10 [bar]	16 [bar]
150	6	36	45	110	125
200	8	59	76	140	200
250	10	150	180	200	240
300	12	200	240	280	360
350	14	350	540	610	700
400	16	420	620	750	850
450	18	720	746	860	1500
500	20	900	1100	2255	3690
600	24	1050	2100	3000	5830
700	28	1560	2240	3450	8100
800	32	2070	3800	6600	11200
900	36	2700	4900	7100	14500
1000	40	4600	6780	11500	24400
1200	48	7800	12000	21000	44000

Bigger sizes upon request

All values in Nm

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

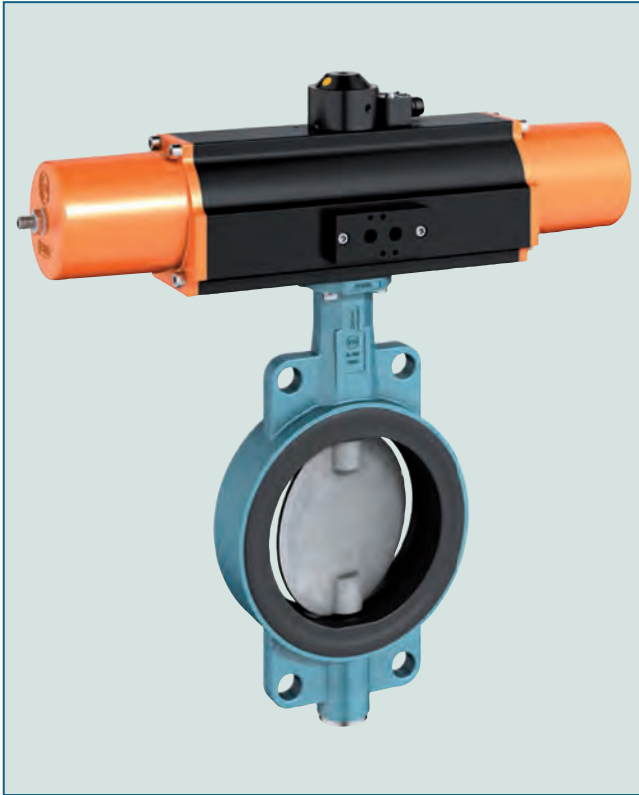
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500
350	14	350	780	1400	2400	4000	8000	10800	11500
400	16	490	1050	1800	3100	5500	11000	12000	14500
450	18	510	1080	2040	3350	6100	11500	14600	20500
500	20	520	1100	2200	3500	6200	12000	15100	21000
600	24	750	1400	2800	5100	8800	14000	22000	29300
700	28	770	1755	3260	5980	10600	17100	25300	36000
800	32	1200	2260	4550	8230	12900	20300	29300	44600
900	36	1540	2280	6030	10500	17600	29200	42150	59000
1000	40	2200	3970	8300	14480	24000	37100	60300	81500
1200	48	5050	7900	13800	19700	33500	53300	73050	102650

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 411-A



Resilient seated, centrally mounted wafer type valve with reduced inside diameter for PE/PP piping systems.

TECHNICAL DATA

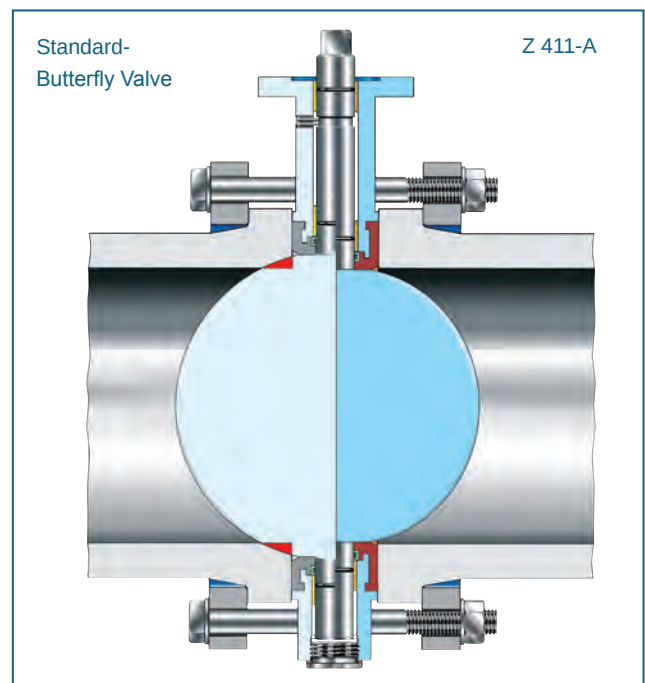
Nominal diameter:	da 50 (DN 40) - da 630 (DN 600) (SDR11) da 50 (DN 40) - da 500 (DN 500) (SDR17 / SDR17,6 / SDR33)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +160°C (depending on pressure, medium and material)
Operating pressure:	max. 10 bar SDR 11,0 (PE-80) max. 10 bar SDR 17,0 (PE-100) max. 6 bar SDR 17,6 (PE-80) max. 5 bar SDR 33,0 (PE-100)

FEATURES

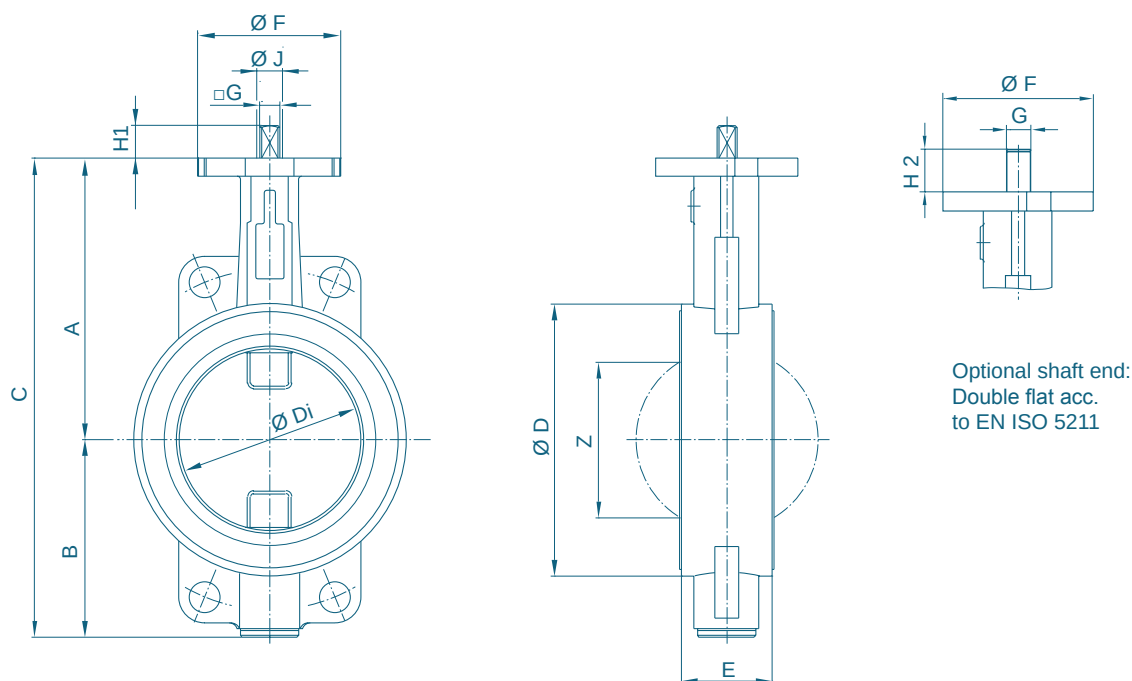
- Adapted butterfly valve for PE/PP piping systems
- The disc diameter corresponds to the inside diameter of PE HD and PP pressure pipes (SDR11 / SDR17 / SDR17,6 / SDR33)
- Short stubs must not be removed by boring. The plant reliability will not be reduced
- There is no need to manufacture and install complicated spacers
- Can be mounted in any desired position
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operational service
- Interchangeable seat
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- For max. pressure, a through-going shaft (TS) is mounted for sizes $\geq$ da 400

GENERAL APPLICATIONS

- Where PE/PP pipes are used



WAFER TYPE BUTTERFLY VALVE Z 411-A



Z 411-A with bare shaft end

		Dimensions [mm]																			Weight [kg]			
DN [mm]	Ø = da [mm]				SDR 11			SDR 17/ 17,6			SDR 33													
		A	B	C	ØD	ØDi	Z	ØD	ØDi	Z	ØD	ØDi	Z	E	ØF	Flange	G	H1	H2	ØJ				
40	50	113	66	179	80	37	22	80	37	22	80	37	22	33	54	F04	11	12	19	14	1,8			
50	63	126	84	210	95	48,5	25	95	48,5	25	95	48,5	25	43	54	F04	11	12	19	14	2,2			
65	75	134	93	227	115	63,5	45	115	63,5	45	115	63,5	45	46	54	F04	11	12	19	14	2,9			
80	90	157	104	261	138	78,5	65	138	78,5	65	138	78,5	65	46	65	F05	14	16	25	18	4,0			
100	110	167	115	282	158	98,5	85	158	98,5	85	158	98,5	85	52	65	F05	14	16	25	18	5,2			
100	125	167	115	282	158	98,5	85	158	98,5	85	158	98,5	85	52	65	F05	14	16	25	18	7,5			
125	140	180	127	307	166	111,2	98	188	123,5	111	188	123,5	111	56	65	F05	14	16	25	18	8,5			
150	160	203	150	353	186	123,2	111	186	123,2	111	212	148	139	56	90	F07	17	19	30	22	10,0			
150	180	203	150	353	212	148	139	212	148	139	212	148	139	56	90	F07	17	19	30	22	10,8			
200	200	228	176	404	226	161,5	151	226	161,5	151	250	182	173	60	90	F07	17	19	30	22	11,2			
200	225	228	176	404	250	182	173	268	198,2	190	268	198,2	190	60	90	F07	17	19	30	22	12,5			
250	250	266	212	478	268	198,2	188	268	198,2	188	308	224,3	215	68	90	F07	17	19	30	22	19,0			
250	280	266	212	478	315	224,3	215	320	248	240	320	248	240	68	125	F10	22	24	39	30	20,5			
300	315	293	237	528	358	255	244	358	255	244	358	279,6	270	78	125	F10	22	24	39	30	28,0			
350	355	332	269	601	365	285,7	272	392	311,4	299	392	311,4	299	92	125	F10	22	24	39	30	36,0			
400	400	363	314	677	428	327	312	437	349,6	336	437	349,6	336	102	150	F12	**	**	-	40	75,0*			
500	450	437	405	842	454	365,8	345	454	365,8	345	508	409	390	127	150	F12	**	**	-	40	105,0*			
500	500	437	405	842	508	409	390	546	439,6	422	546	439,6	422	127	150	F12	**	**	-	40	112,0*			
600	560	475	418	893	530	426	412	-	-	-	-	-	-	127	210	F16	**	**	-	50	120,0*			
600	630	475	418	893	574	488	473	-	-	-	-	-	-	127	211	F17	**	**	-	50	135,0*			

* through going shaft only (TS-version)

** according to the mounted actuator

Subject to change without notice

The image contains two exploded view diagrams of a valve assembly.

TS-version (Left): This diagram shows the assembly of the TS-version valve. It includes a long shaft (13) with two O-rings (15) and a handle (12) at the bottom. The handle is connected to a lever arm (14) which is attached to the shaft via a pin (16). A separate exploded view shows a split shaft (9) with two O-rings (11) and a handle (8) attached to it.

Version with splitted shaft (Middle): This diagram shows the assembly of the version with a split shaft. It includes a main body (1) with a handle (12) and a lever arm (14). The handle is connected to a lever arm (14) which is attached to the shaft via a pin (16). A separate exploded view shows a split shaft (9) with two O-rings (11) and a handle (8) attached to it.

Right Side: This diagram shows the assembly of the valve body. It includes a main body (1) with a handle (12) and a lever arm (14). The handle is connected to a lever arm (14) which is attached to the shaft via a pin (16). A separate exploded view shows a split shaft (9) with two O-rings (11) and a handle (8) attached to it.

Bottom Right: This diagram shows the assembly of the cover plate. It includes a cover plate (17) with a handle (12) and a lever arm (14). The handle is connected to a lever arm (14) which is attached to the shaft via a pin (16). A separate exploded view shows a split shaft (9) with two O-rings (11) and a handle (8) attached to it.

Labels:

- 15: O-ring
- 13: Shaft
- 12: Handle
- 14: Lever arm
- 16: Pin
- 11: O-ring
- 9: Split shaft
- 8: Handle
- 10: Pin
- 3: O-ring
- 4: O-ring
- 5: O-ring
- 6: O-ring
- 7: Pin
- 1: Main body
- 2: Cover plate
- 17: Cover plate
- 18: O-ring
- 19: Main body
- 20: Pin

Text:

TS-version

Version with splitted shaft

Pts. 17-20:
Cover plate for
valve $\geq$ da 350

*da 63 - da 355 only Subject to change without notice

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 411-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
 - Powdery (non-lubricant) media Md x 1,3
 - Dry gases/high viscous media Md x 1,2
 - The values specified are based on the initial breakaway torque
 - Dynamic torque specification available upon request
- Regarding the dimensioning of actuators, please contact our engineers.

da [mm]	Size [in]	Operating pressure		
		SDR 11 10 bar	SDR 17 / 17,6 10 bar	SDR 33 6 bar
50	1½	6	6	6
63	2	7	7	7
75	2½	15	15	9
90	3	18	18	10
110	4	28	28	18
125	4	28	28	18
140	5	45	45	22
160	6	110	110	45
180	6	110	110	45
200	8	140	140	76
225	8	140	140	76
250	10	200	200	180
280	10	200	200	180
315	12	220	220	200
355	14	360	360	310
400	16	620	620	540
450	20	730	730	650
500	20	960	960	890
560	24	1580	-	-
630	24	2000	-	-

All values in Nm

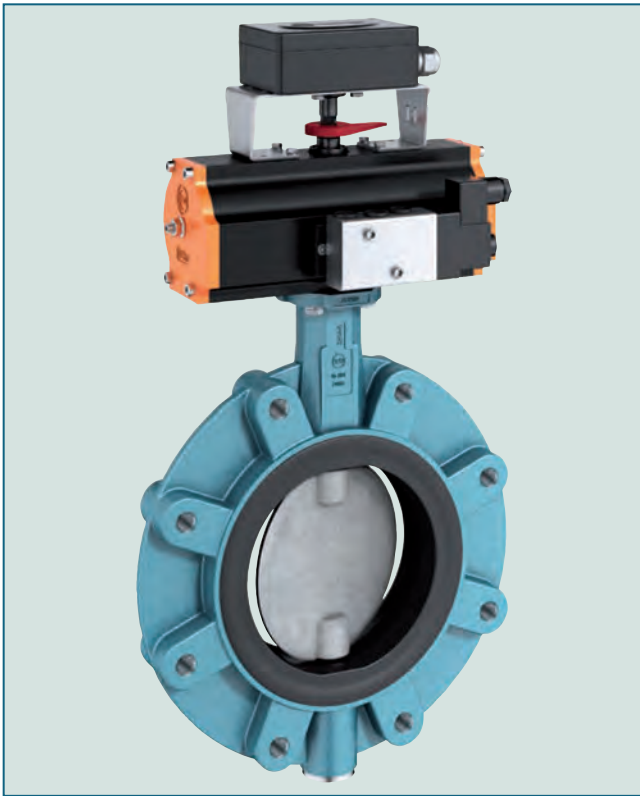
K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
 - The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
 - Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases
 - The throttle function is linear at an angle 30° to 70°
 - Avoid cavitation
- For further values, please contact our engineers.

da [mm]	DN [mm]	Size [in]	SDR	Opening angle α°							
				20°	30°	40°	50°	60°	70°	80°	90°
50	40	1½	11	-	2,2	8	15	21	33	43	50
			17	-	2,2	8	15	21	33	43	50
			33	-	2,2	8	15	21	33	43	50
63	50	2	11	1,2	8	13	22	38	50	65	85
			17	1,2	8	13	22	38	50	65	85
			33	1,2	8	13	22	38	50	65	85
75	65	2½	11	2	9	22	42	77	115	170	215
			17	2	9	22	42	77	115	170	215
			33	2	9	22	42	77	115	170	215
90	80	3	11	8	24	50	95	150	240	330	420
			17	8	24	50	95	150	240	330	420
			33	8	24	50	95	150	240	330	420
110	100	4	11	13	28	65	130	180	340	550	800
			17	13	28	65	130	180	340	550	800
			33	13	28	65	130	180	340	550	800
125	100	4	11	13	28	65	130	180	340	550	800
			17	13	28	65	130	180	340	550	800
			33	13	28	65	130	180	340	550	800
140	125	5	11	19	46	98	183	272	445	720	950
			17	26	65	130	230	350	530	870	1010
			33	26	65	130	230	350	530	870	1010
160	150	6	11	26	65	130	230	350	530	870	1010
			17	26	65	130	230	350	530	870	1010
			33	35	90	200	360	640	900	1350	2100
180	150	6	11	35	90	200	360	640	900	1350	2100
			17	35	90	200	360	640	900	1350	2100
			33	35	90	200	360	640	900	1350	2100
200	200	8	11	37	120	240	429	740	1100	1870	2650
			17	37	120	240	429	740	1100	1870	2650
			33	41	160	310	520	900	1420	2480	3390
225	200	8	11	41	160	310	520	900	1420	2480	3390
			17	43	180	350	580	1000	1600	3000	4000
			33	43	180	350	580	1000	1600	3000	4000
250	250	10	11	43	180	350	580	1000	1600	3000	4000
			17	43	180	350	580	1000	1600	3000	4000
			33	85	270	510	840	1410	2400	4150	5200
280	250	10	11	85	270	510	840	1410	2400	4150	5200
			17	125	360	660	1100	1800	3100	5300	6400
			33	125	360	660	1100	1800	3100	5300	6400
315	300	12	11	133	390	710	1160	1900	3400	5500	6600
			17	133	390	710	1160	1900	3400	5500	6600
			33	170	480	870	1410	2300	4250	6650	7690
355	350	14	11	185	500	920	1480	2420	4500	7000	8000
			17	240	610	1110	1820	3000	5750	8400	9320
			33	240	610	1110	1820	3000	5750	8400	9320
400	400	16	11	285	680	1230	2050	3400	6680	9300	10200
			17	350	780	1400	2400	4000	8000	10800	11500
			33	350	780	1400	2400	4000	8000	10800	11500
450	500	20	11	395	870	1530	2630	4500	8900	11100	12500
			17	395	870	1530	2630	4500	8900	11100	12500
			33	480	1030	1800	3120	5500	10700	12700	16000
500	500	20	11	480	1030	1800	3120	5500	10700	12700	16000
			17	500	1070	2000	3300	5900	11300	14000	18800
			33	500	1070	2000	3300	5900	11300	14000	18800
560	600	24	11	540	1120	2100	3500	6300	11600	15000	21000
630	600	24	11	610	1300	2400	4100	7200	12500	17600	24000

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 414-A



Resilient seated, centrally mounted lug type butterfly valve with reduced inside diameter for PE/PP piping systems.

TECHNICAL DATA

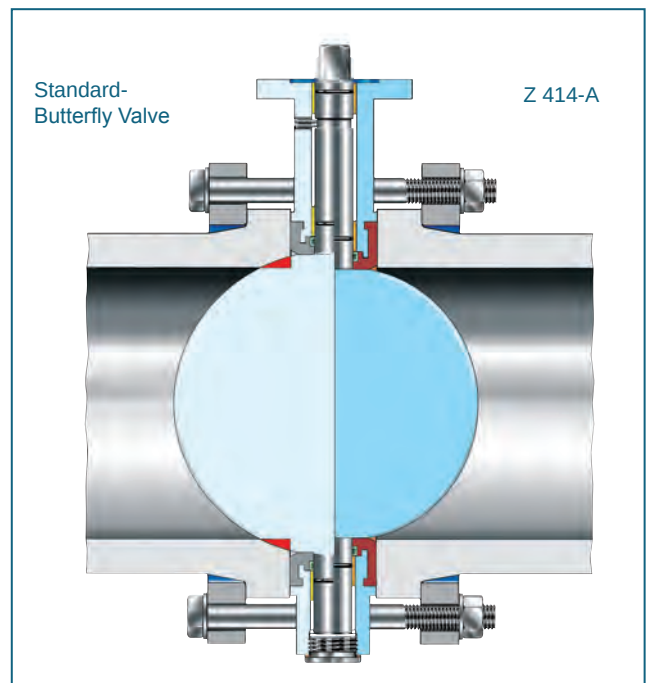
Nominal diameter:	da 50 (DN 40) - da 630 (DN 600) SDR 11 da 50 (DN 40) - da 500 (DN 500) (SDR 17 / SDR 17,6 / SDR 33)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +160°C (depending on pressure, medium and material)
Operating pressure:	max. 10 bar SDR 11,0 (PE-80) max. 10 bar SDR 17,0 (PE-100) max. 6 bar SDR 17,6 (PE-80) max. 5 bar SDR 33,0 (PE-100)

FEATURES

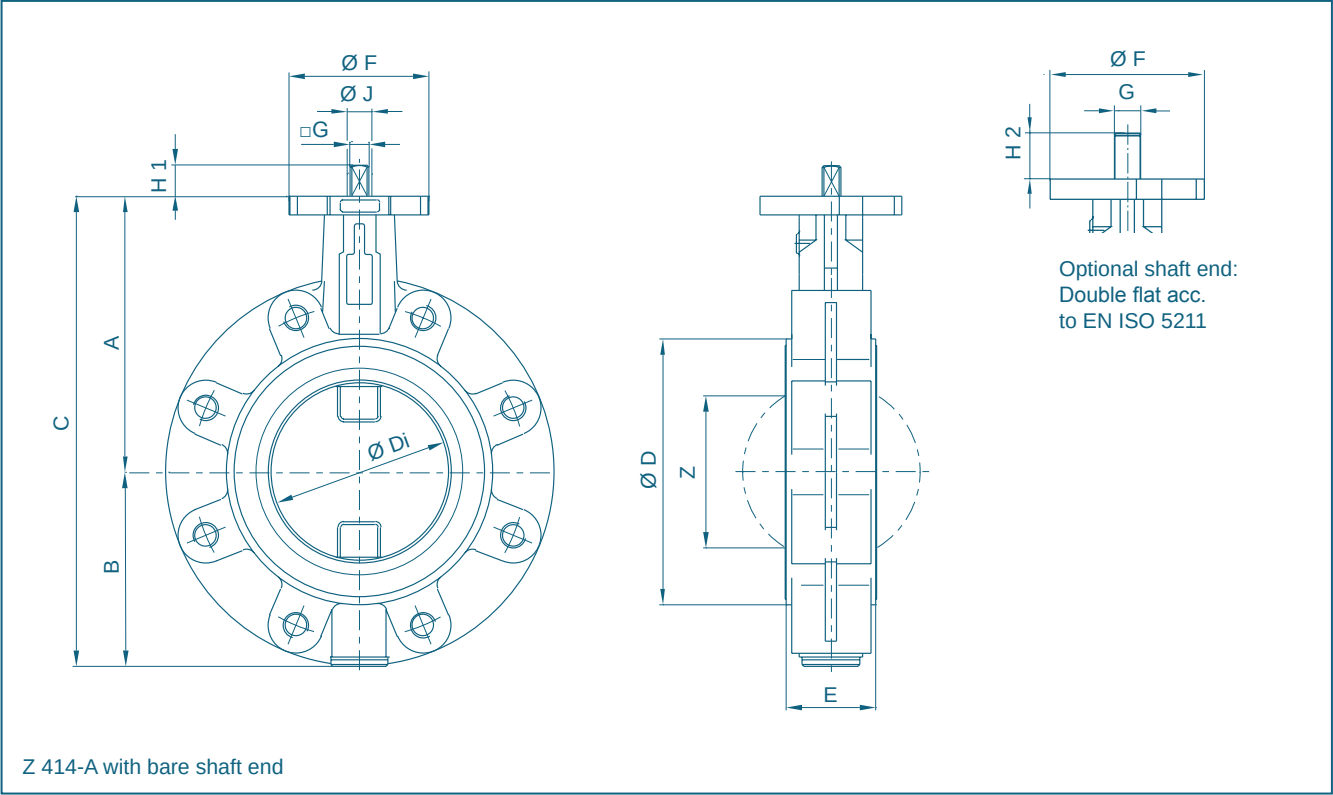
- Adapted butterfly valve for PE/PP piping systems
- The disc diameter corresponds to the inside diameter of PE HD and PP pressure pipes (SDR 11 / SDR 17 / SDR 17,6 / SDR 33)
- Short stubs must not be removed by boring. The plant reliability will not be reduced
- There is no need to manufacture and install complicated spacers
- Can be mounted in any desired position
- Triple shaft bearing prevent shaft deflection and guarantee optimum guidance even after many years of operational service
- Interchangeable seat
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- For max. pressure, a through-going shaft (TS) is mounted for sizes $\geq$ da 400.

GENERAL APPLICATIONS

- Where PE/PP pipes are used



LUG TYPE BUTTERFLY VALVE Z 414-A



		Dimensions [mm]																			Weight [kg]
DN [mm]	Ø = da [mm]	A	B	C	SDR 11			SDR 17/ 17,6			SDR 33			E	ØF	Flange	G	H1	H2	ØJ	
40	50	113	66	179	80	37	22	80	37	22	80	37	22	33	54	F04	11	12	19	14	4,0
50	63	126	84	210	95	48,5	25	95	48,5	25	95	48,5	25	43	54	F04	11	12	19	14	4,8
65	75	134	93	227	115	63,5	45	115	63,5	45	115	63,5	45	46	54	F04	11	12	19	14	5,5
80	90	157	104	261	138	78,5	65	138	78,5	65	138	78,5	65	46	65	F05	14	16	25	18	8,6
100	110	167	115	282	158	98,5	85	158	98,5	85	158	98,5	85	52	65	F05	14	16	25	18	9,8
100	125	167	115	282	158	98,5	85	158	98,5	85	158	98,5	85	52	65	F05	14	16	25	18	11,0
125	140	180	127	307	166	111,2	98	188	123,5	111	188	123,5	111	56	65	F05	14	16	25	18	13,5
150	160	203	150	353	186	123,2	111	186	123,2	111	212	148	139	56	90	F07	17	19	30	22	16,0
150	180	203	150	353	212	148	139	212	148	139	212	148	139	56	90	F07	17	19	30	22	15,5
200	200	228	176	404	226	161,5	151	226	161,5	151	250	182	173	60	90	F07	17	19	30	22	22,0
200	225	228	176	404	250	182	173	268	198,2	190	268	198,2	190	60	90	F07	17	19	30	22	23,5
250	250	266	212	478	268	198,2	188	268	198,2	188	308	224,3	215	68	90	F07	17	19	30	22	34,0
250	280	266	212	478	315	224,3	215	320	248	240	320	248	240	68	125	F10	22	24	39	30	37,0
300	315	293	237	528	358	255	244	358	255	244	358	279,6	270	78	125	F10	22	24	39	30	48,0
350	355	332	269	601	365	285,7	272	392	311,4	299	392	311,4	299	92	125	F10	22	24	39	30	62,0
400	400	363	314	677	428	327	312	437	349,6	336	437	349,6	336	102	150	F12	**	**	-	40	96,0*
500	450	437	405	842	454	365,8	345	454	365,8	345	508	409	390	127	150	F12	**	**	-	40	145,0*
500	500	437	405	842	508	409	390	546	439,6	422	546	439,6	422	127	150	F12	**	**	-	40	154,0*
600	560	475	418	893	530	426	412	-	-	-	-	-	-	127	210	F16	**	**	-	50	165,0*
600	630	475	418	893	574	488	473	-	-	-	-	-	-	127	211	F17	**	**	-	50	178,0*

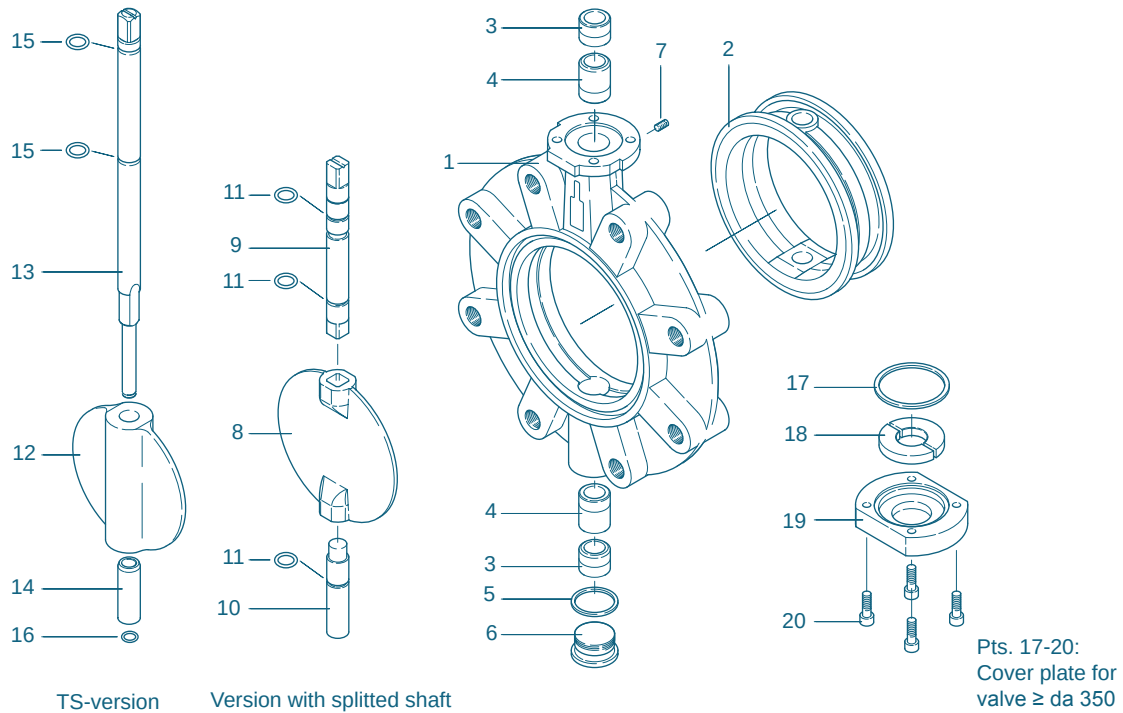
* through going shaft only (TS-version)

** according to the mounted actuator

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 414-A

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				12	TS-disc da 250 - da 630			
	Nodular Cast Iron	GGG-40	0.7040	A 395		Nodular Cast Iron	GGG-40	0.7040	60-40-18
2	Seat					Stainless Steel	X6CrNiMo10-20	1.4408	CF8M
	NBR	Acrylonitrile butadiene rubber				Aluminium Bronze	CuAl10Ni	2.0975	C 95800
	EPDM	Ethylene propylene caoutchouc				Coating	Halar, Rilsan		
	FPM	Fluorocarbon caoutchouc				Surface quality	electropolished, mirror finished		
3/4	Bearing bush				13	TS-shaft da 250 - da 630			
	Brass	MS 58	2.0401	B 45		Stainless Steel	X14CrMoS17	1.4104	430 F
	Polyamide						X39CrMo17-1	1.4122	
5	Seal DIN 7603						X5CrNiMo17-12-2	1.4401	316
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316	14	Sleeve			
	PTFE					Stainless Steel	X5CrNi18-10	1.4301	304
	Copper	Cu		Copper	15	O-ring			
6	Plug screw DIN 908					NBR	Acrylonitrile butadiene rubber		
	Stainless Steel	G-X6CrNiMo18-10	1.4408	CF8M		FPM	Fluorocarbon caoutchouc		
7	Set screw DIN 915				16	Retaining ring			
	Steel	45 H galvanized				Stainless Steel	X39CrMo17-1	1.4122	
	Stainless Steel	A4-70		B8M	17	O-ring da 400 - da 630			
8	Disc					NBR	Acrylonitrile butadiene rubber		
	Stainless Steel	X5CrNi18-10	1.4301	304	18	Shaft retainer da 400 - da 630			
		X5CrNiMo18-10	1.4401	316		Brass	MS 58	2.0401	B 45
		G-X6CrNiMo18-10	1.4408	CF8M	19	Cover plate da 400 - da 630			
	Coating	Halar, Rilsan				Grey Cast Iron	GG-25	0.6025	40 B
	Surface quality	electropolished, mirror finished			20	Screw da 400 - da 630			
9/10	Shaft					Steel	45 H galvanized		
	Stainless Steel	X14CrMoS17	1.4104	430 F		Stainless Steel	A2-70		B 8
		X5CrNiMo17-12-2	1.4401	316			A4-70		B8M
11	O-ring								
	NBR	Acrylonitrile butadiene rubber							
	FPM	Fluorocarbon caoutchouc				Other materials upon request			

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 414-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
 - Powdery (non-lubricant) media Md x 1,3
 - Dry gases/high viscous media Md x 1,2
 - The values specified are based on the initial breakaway torque
 - Dynamic torque specification available upon request
- Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure		
		SDR 11 10 bar	SDR 17/17,6 10 bar	SDR 33 6 bar
50	1½	6	6	6
63	2	7	7	7
75	2½	15	15	9
90	3	18	18	10
110	4	28	28	18
125	4	28	28	18
140	5	45	45	22
160	6	110	110	45
180	6	110	110	45
200	8	140	140	76
225	8	140	140	76
250	10	200	200	180
280	10	200	200	180
315	12	220	220	200
355	14	360	360	310
400	16	620	620	540
450	20	730	730	650
500	20	960	960	890
560	24	1580	-	-
630	24	2000	-	-

All values in Nm

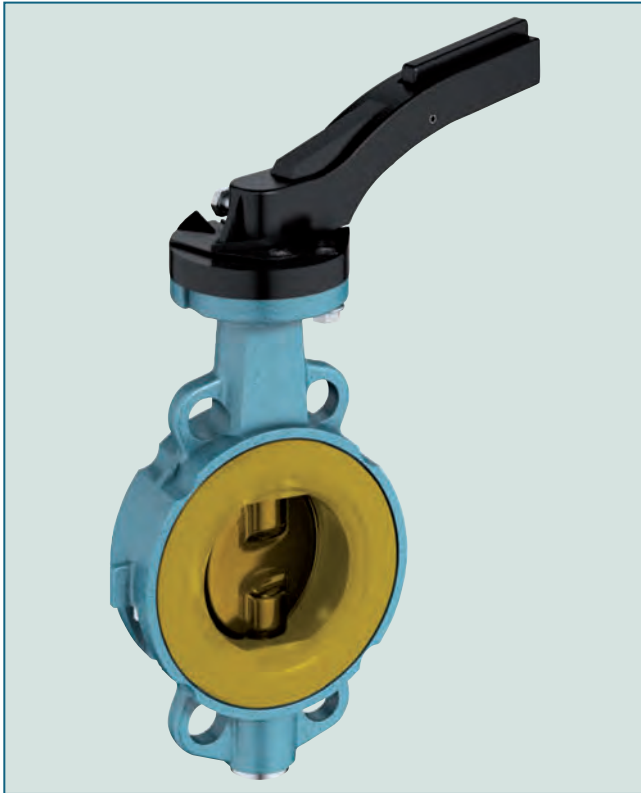
K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
 - The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
 - Permissible velocity of flow
Vmax 4,5 m/s for liquids,
Vmax 70 m/s for gases
 - The throttle function is linear at an angle 30° to 70°
 - Avoid cavitation
- For further values, please contact our engineers.

da [mm]	DN [mm]	Size [in]	SDR	Opening angle α°							
				20°	30°	40°	50°	60°	70°	80°	90°
50	40	1½	11	-	2,2	8	15	21	33	43	50
			17	-	2,2	8	15	21	33	43	50
			33	-	2,2	8	15	21	33	43	50
63	50	2	11	1,2	8	13	22	38	50	65	85
			17	1,2	8	13	22	38	50	65	85
			33	1,2	8	13	22	38	50	65	85
75	65	2½	11	2	9	22	42	77	115	170	215
			17	2	9	22	42	77	115	170	215
			33	2	9	22	42	77	115	170	215
90	80	3	11	8	24	50	95	150	240	330	420
			17	8	24	50	95	150	240	330	420
			33	8	24	50	95	150	240	330	420
110	100	4	11	13	28	65	130	180	340	550	800
			17	13	28	65	130	180	340	550	800
			33	13	28	65	130	180	340	550	800
125	100	4	11	13	28	65	130	180	340	550	800
			17	13	28	65	130	180	340	550	800
			33	13	28	65	130	180	340	550	800
140	125	5	11	19	46	98	182	272	445	720	950
			17	26	65	130	230	350	530	870	1010
			33	26	65	130	230	350	530	870	1010
160	150	6	11	26	65	130	230	350	530	870	1010
			17	26	65	130	230	350	530	870	1010
			33	35	90	200	360	640	900	1350	2100
180	150	6	11	35	90	200	360	640	900	1350	2100
			17	35	90	200	360	640	900	1350	2100
			33	35	90	200	360	640	900	1350	2100
200	200	8	11	37	120	240	429	740	1100	1870	2650
			17	37	120	240	429	740	1100	1870	2650
			33	41	160	210	520	900	1420	2480	3390
225	200	8	11	41	160	310	520	900	1420	2480	3390
			17	43	180	350	580	1000	1600	3000	4000
			33	43	180	350	580	1000	1600	3000	4000
250	250	10	11	43	180	350	580	1000	1600	3000	4000
			17	43	180	350	580	1000	1600	3000	4000
			33	85	270	510	840	1410	2400	4150	5200
280	250	10	11	85	270	510	840	1410	2400	4150	5200
			17	125	360	660	1100	1800	3100	5300	6400
			33	125	360	660	1100	1800	3100	5300	6400
315	300	12	11	133	390	710	1160	1900	3400	5500	6600
			17	133	390	710	1160	1900	3400	5500	6600
			33	170	480	870	1410	2300	4250	6650	7690
355	350	14	11	185	500	920	1480	2420	4500	7000	8000
			17	240	610	1110	1820	3000	5750	8400	9320
			33	240	610	1110	1820	3000	5750	8400	9320
400	400	16	11	285	680	1230	2050	3400	6680	9300	10200
			17	350	780	1400	2400	4000	8000	10800	11500
			33	350	780	1400	2400	4000	8000	10800	11500
450	500	20	11	395	870	1530	2630	4500	8900	11100	12500
			17	395	870	1530	2630	4500	8900	11100	12500
			33	480	1030	1800	3120	5500	10700	12700	16000
500	500	20	11	480	1030	1800	3120	5500	10700	12700	16000
			17	500	1070	2000	3300	5900	11300	14000	18800
			33	500	1070	2000	3300	5900	11300	14000	18800
560	600	24	11	540	1120	2100	3500	6300	11600	15000	21000
630	600	24	11	610	1300	2400	4100	7200	12500	17600	24000

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-GMX



Wafer type butterfly valve with special lining and disc for abrasive media.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Marking:	EN 19
Tightness check:	EN 12266 (Leckrate A) ISO 5208, Category 3
Temperature range:	-10°C to +90°C (depending on pressure, medium and material)
Operating pressure:	max. 6 bar

FEATURES

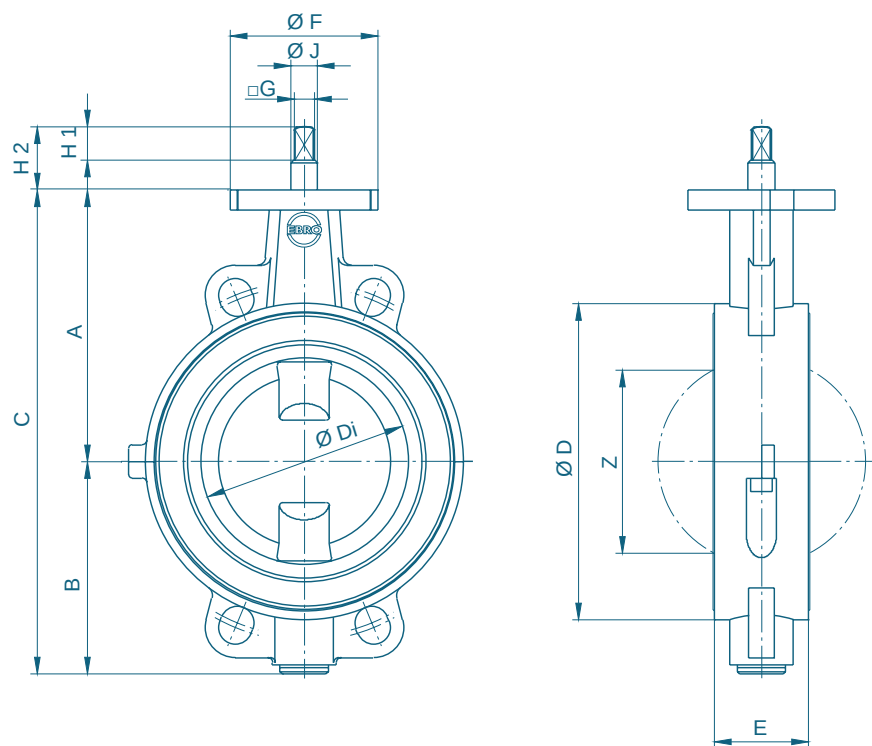
- Shut-off and controlling of strong abrasive media, e.g. sand, cement, flue ash
- High abrasion strength of valve disc and seal
- Two-part body
- Triple shaft bearings prevent shaft deflection and guarantee optimum guidance even after many years of operational service
- Absolutely tight sealing with flow in either direction
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material specific recycling possible

GENERAL APPLICATIONS

- Bulk handling technology
- Weighting technology
- Pneumatic conveying systems



WAFER TYPE BUTTERFLY VALVE Z 011-GMX



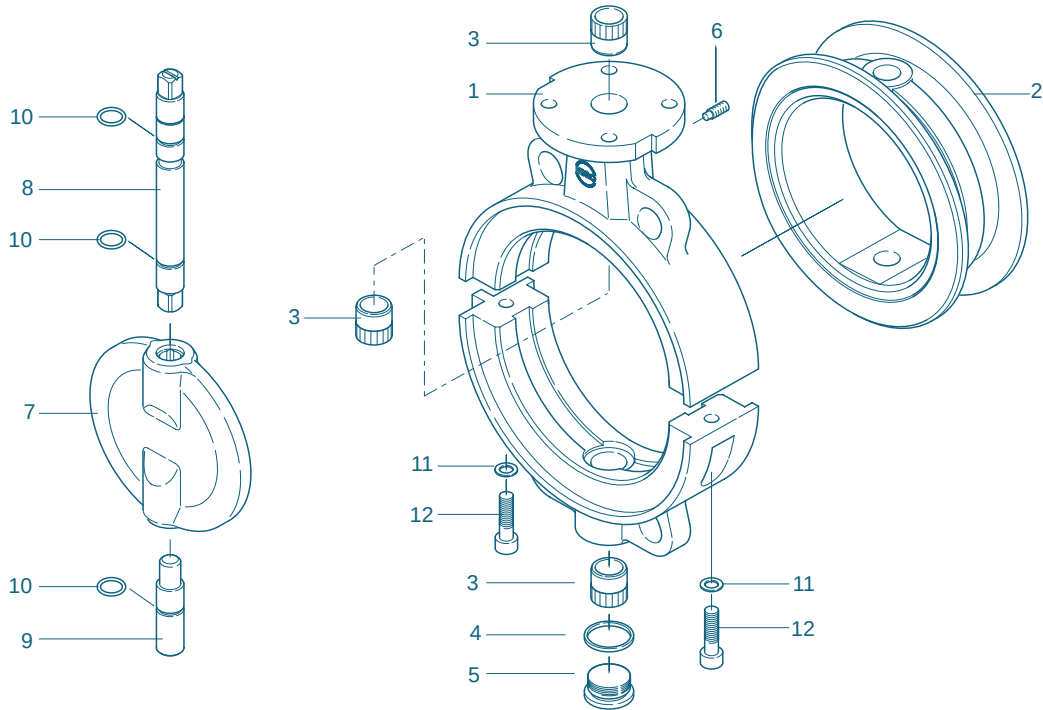
Z 011-GMX with bare shaft end

DN [mm]	Size [in]	Dimensions [mm]													Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	H2	J	Z	
50	2	126	84	210	105	49	43	90	F07	12	20	38	16	24	1,6
65	2½	134	93	227	125	64,3	46	90	F07	12	20	38	16	45	1,9
80	3	140	104	244	140	78,2	46	90	F07	12	20	38	16	64	2,2
100	4	150	115	265	160	98,6	52	90	F07	12	20	38	16	84	2,8
125	5	163	127	290	190	123,6	56	90	F07	12	20	38	16	111	3,5
150	6	193	150	343	217	148,5	56	90	F07	16	20	38	20	138	4,6
200	8	218	176	394	272	198,2	60	90	F07	16	20	38	20	190	6,8
250	10	266	212	478	327	250	68	125	F10	24	20	38	30	240	12,3
300	12	293	237	530	377	297	78	125	F10	24	20	38	30	289	17,0

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-GMX

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				7	Disc			
	Aluminiumalloy	G-AlSi10Mg	3.2381	361.1		Stainless Steel	G-X6CrNiMo18-10	1.4401	CF8M
2	Seat					Coating	GMX Polyurethane		
	GMX	Polyurethane			8/9	Shaft			
3	Bearing sleeve					Stainless Steel	X14CrMoS17	1.4104	430 F
	Brass	MS 58	2.0401	B 45			X5CrNiMo17-12-2	1.4401	316
4	Seal DIN 7603				10	O-ring			
	Copper	Cu		Copper		NBR	Acrylnitrile butadiene rubber		
5	Plug screw DIN 908				11	Washer			
	Stainless Steel	G-X6CrNiMo18-10		CF8M		Stainless Steel	X5CrNiM17-12-2	1.4401	316
6	Set screw DIN 915				12	Screw			
	Steel	45 H galvanized	1.4408			Stainless Steel	A2-70		B 8
	Stainless Steel	A4-70		B8M			A4-70		B8M
						Other materials upon request			

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-A



Resilient seated wafer type butterfly valve for semi-corrosive media.

TECHNICAL DATA

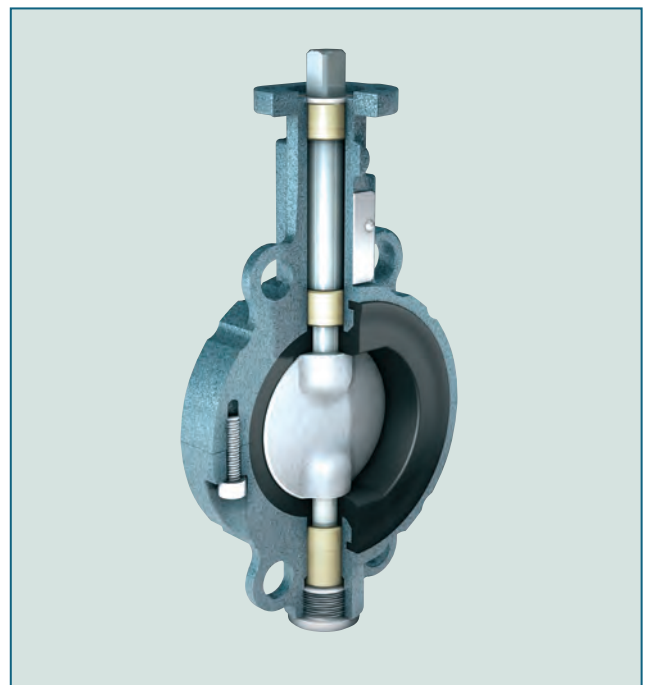
Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange surface design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	DIN EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +160°C (depending on pressure, medium and material)
Operating pressure:	max. 10 bar

FEATURES

- One piece disc/shaft
- Split body with stainless steel screws
- Insulation height as per plant regulations
- Optional: Special design RWTÜV certified to TA-Air/ VDI 2440
- Triple shaft bearing
- Disc's sealing surface mirror polished
- Materials complying with FDA standards available
- Can be disassembled, material-specific recycling possible

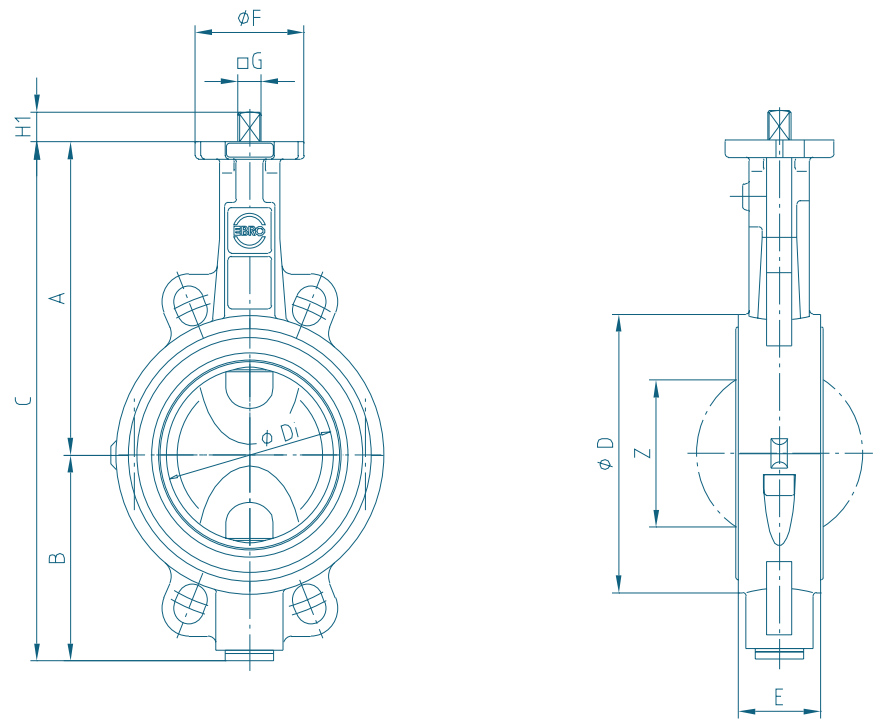
GENERAL APPLICATIONS

- Food and beverage industry
- Purification plants
- Pharmaceutical industry
- Chemical and petrochemical industry
- Water and waste water industry
- Pneumatic materials handling technology
- Shipbuilding
- Power plants
- Civil engineering
- For paint and lacquers a silicone-free version is available



The split body design allows quick and easy maintenance.

WAFER TYPE BUTTERFLY VALVE Z 611-A



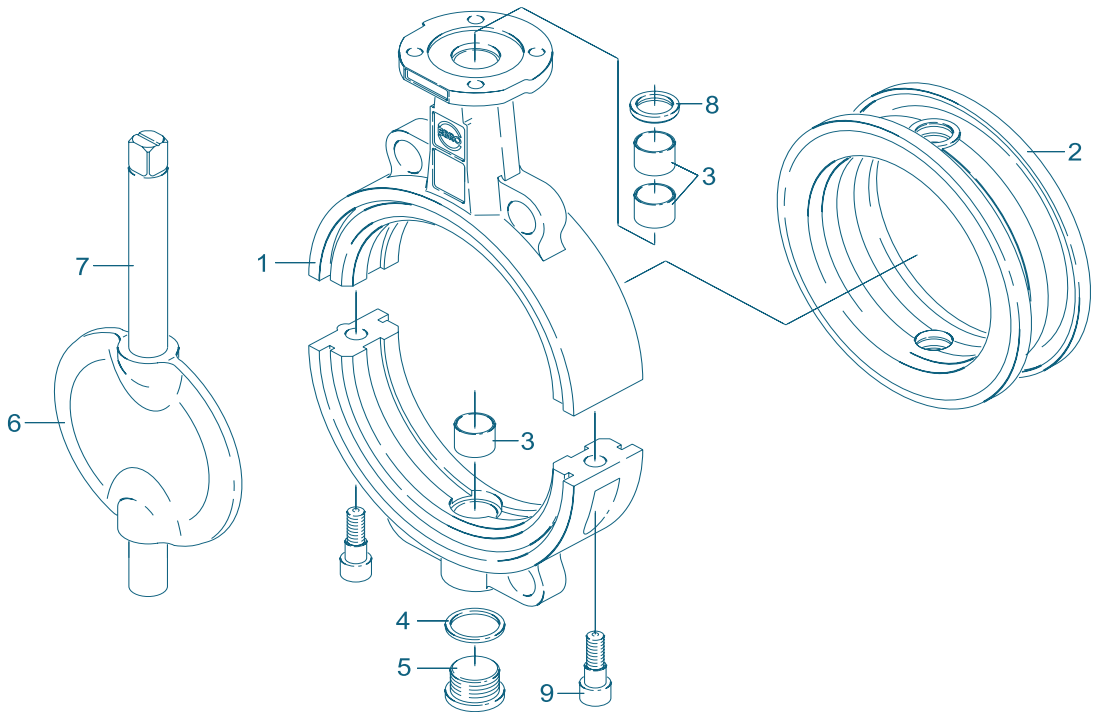
Z 611-A with bare shafts end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	H2	Z	
50	2	126	84	210	112	49	43	54	F04	11	13,5	19	25	2,2
65	2½	134	93	227	120	64	46	54	F04	11	13,5	19	45	2,9
80	3	157	104	261	138	79	46	65	F05	14	17	25	64	4,0
100	4	167	115	282	160	99	52	65	F05	14	17	25	84	5,2
125	5	180	127	307	190	124	56	65	F05	14	17	25	110	6,9
150	6	203	150	353	215	149	56	88	F07	17	20	30	138	9,5
200	8	228	176	404	269	199	60	88	F07	17	20	30	189	13,2
250	10	266	212	478	324	249	68	125	F10	22	23,5	39	239	22,5
300	12	291	237	528	374	297	78	125	F10	22	23,5	39	286	31,5

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-A

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				5	Plug screw DIN 908			
	Nodular cast iron	EN-JS 1030	GGG 40	60-40-18		Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
2	Seat				6/7	Shaft/Disc one piece			
	NBR	Acrylonitrile butadiene rubber				Stainless Steel	G-X2CrNiMoN26-7-4	1.4469	A 995
	EPDM	Ethylene propylene caoutchouc			8	Wiper ring			
	CSM	Chlorsulphonated polyethylene				PTFE	Polytetrafluorethylene	PTFE	PTFE
	FPM	Fluorocarbon caoutchouc			9	Screw			
	VSI	Silicone rubber				Stainless Steel	A4-70	1.4401	B8M
	AU	Polyurethane elastomer							
3	Bearing bush								
	Brass	MS 58	2.0401	B 45					
4	Seal DIN 7603								
	Copper	Cu		Copper					
						Above-mentioned materials of the basic version, other materials upon request			

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	50	65	80	100	125	150	200	250	300
Size [in]	2	2½	3	4	5	6	8	10	12
MD [Nm]	7	15	18	28	45	110	140	200	280

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 614-A



Resilient seated lug type butterfly valve for semi-corrosive media.

TECHNICAL DATA

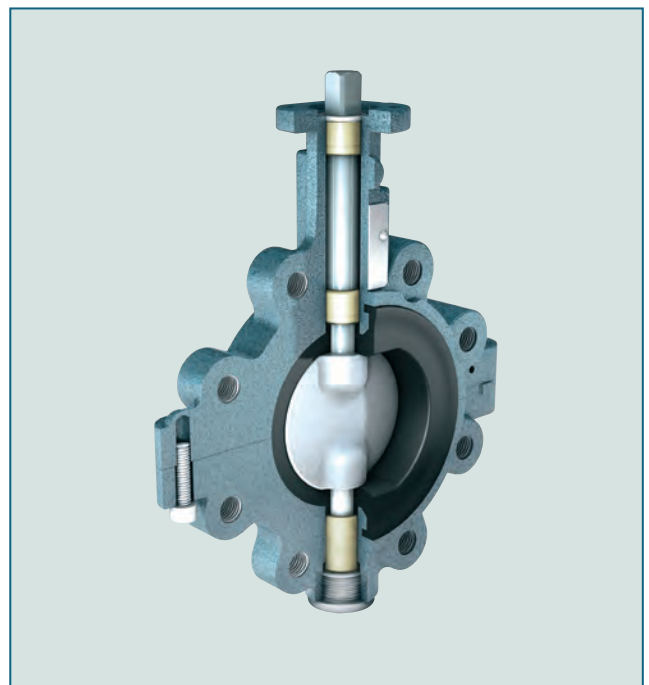
Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +160°C (depending on pressure, medium and material)
Operating pressure:	max. 10 bar

FEATURES

- One piece disc/shaft
- Split body with stainless steel screws
- Insulation height as per plant regulations
- Optional: Special design RWTÜV certified to TA-Air/ VDI 2440
- Triple shaft bearing
- Disc's sealing surface mirror polished
- Materials complying with FDA standards available
- Can be disassembled, material-specific recycling possible

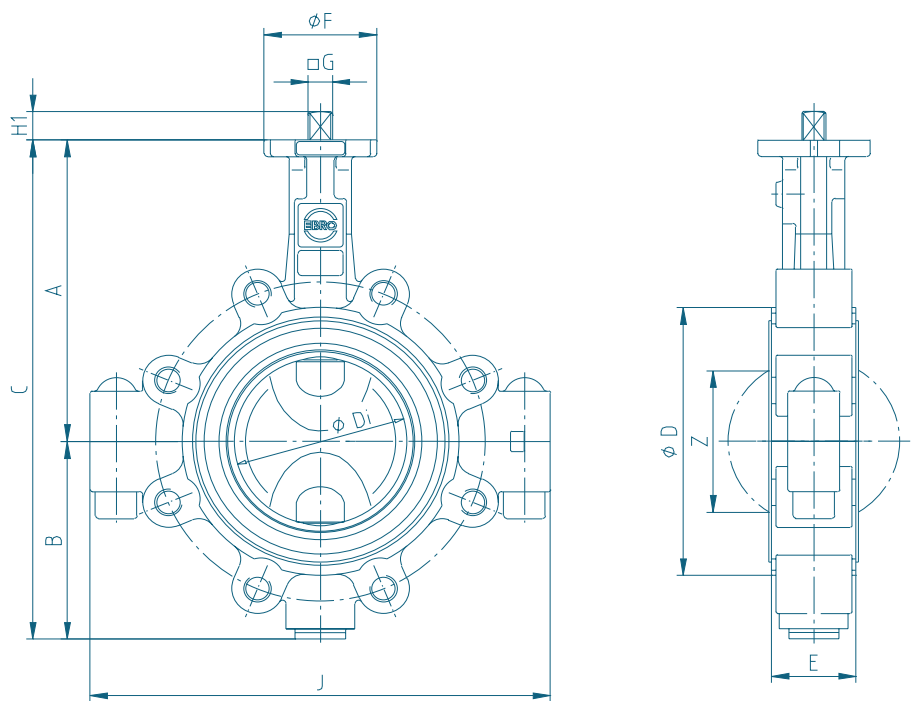
GENERAL APPLICATIONS

- Food and beverage industry
- Purifications plants
- Pharmaceutical industry
- Chemical and petrochemical industry
- Water and waste water industry
- Pneumatic materials handling technology
- Shipbuilding
- Power plants
- Civil engineering
- For paint and laquers, a silicone-free version is available



The split body design allows quick and easy maintenance.

LUG TYPE BUTTERFLY VALVE Z 614-A



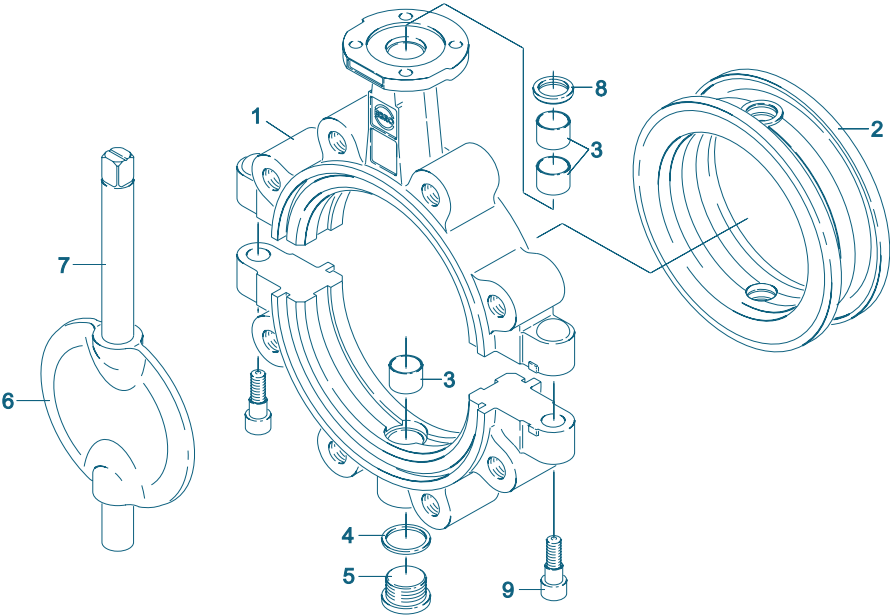
Z 614-A with bare shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	J	Z	
50	2	126	84	210	112	49	43	54	F04	11	13,5	167	25	4,9
65	2½	134	93	227	120	64	46	54	F04	11	13,5	181	45	5,6
80	3	157	104	261	138	79	46	65	F05	14	17	227	64	8,7
100	4	167	115	282	160	99	52	65	F05	14	17	266	84	10,0
125	5	180	127	307	190	124	56	65	F05	14	17	300	110	10,2
150	6	203	150	353	215	149	56	88	F07	17	20	322	138	13,2
200	8	228	176	404	269	199	60	88	F07	17	20	390	189	19,0
250	10	266	212	478	324	249	68	125	F10	22	23,5	481	239	29,7
300	12	291	237	528	374	297	78	125	F10	22	23,5	558	286	37,2

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 614-A

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				5	Plug screw DIN 908			
	Nodular cast iron	EN-JS 1030	GGG 40	60-40-18		Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
2	Seat				6/7	Shaft/Disc one piece			
	NBR	Acrylonitrile butadiene rubber				Stainless Steel	G-X2CrNiMoN26-7-4	1.4469	A 995
	EPDM	Ethylene propylene caoutchouc			8	Wiper ring			
	CSM	Chlorsulphonated polyethylene				PTFE	Polytetrafluorethylene	PTFE	PTFE
	FPM	Fluorocarbon caoutchouc			9	Screw			
	VSI	Silicone rubber				Stainless Steel	A4-70	1.4401	B8M
	AU	Polyurethane elastomer							
3	Bearing bush								
	Brass	MS 58	2.0401	B 45					
4	Seal DIN 7603								
	Copper	Cu		Copper					

Above-mentioned materials of the basic version, other materials upon request

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 614-A

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
- Powdery (non-lubricant) media Md x 1,3
- Dry gases/high viscous media Md x 1,2
- The values specified are based on the initial breakaway torque
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN (mm)	50	65	80	100	125	150	200	250	300
Size (in)	2	2½	3	4	5	6	8	10	12
MD (Nm)	7	15	18	28	45	110	140	200	280

All values in Nm

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
- Permissible velocity of flow
Vmax 4,5 m/s for liquids,
Vmax 70 m/s for gases
- The throttle function is linear at an angle 30° to 70°
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-C



Wafer type butterfly valve for shut-off and control services in the chemical industry.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 SO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19 PAS 1085
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +120°C (depending on working pressure)
Operating pressure:	max. 16 bar

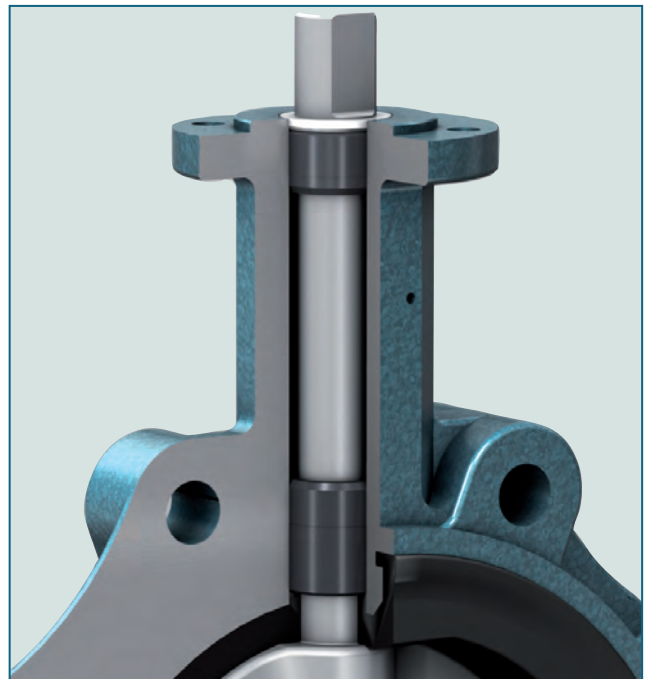
Valve Design
acc. to PAS 1085

FEATURES

- Environmental protection via EBRO-Safety seal
- Split body with stainless steel screws
- Isolation height according to plant prescription
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- TA-Luft/ VDI 2440, RWTÜV certified

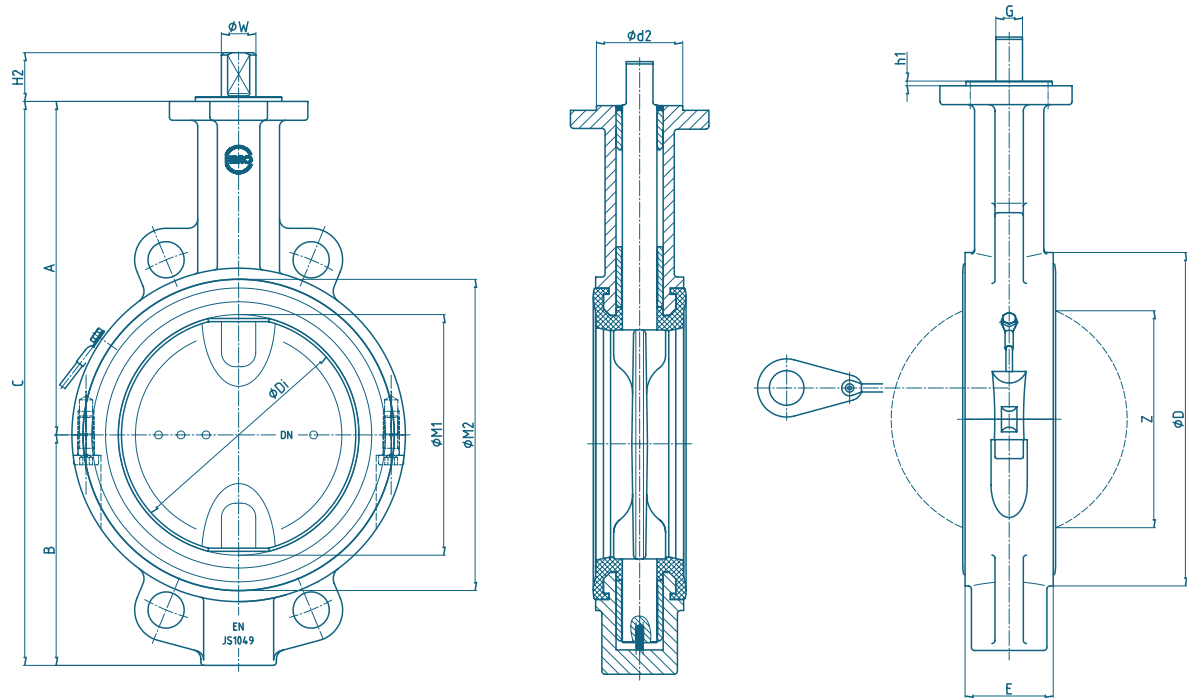
DESIGN FEATURES

- Optimized low torques
- FEM dimensioned components
- Valve neck for 100mm isolation
- Centering holes for easy installation
- Triple shaft bearing
- One-piece shaft and disc
- Double flat shaft acc. to EN standards



Safety seal acc. to TA-Luft/ VDI 2440, RWTÜV

WAFER TYPE BUTTERFLY VALVE Z 611-C



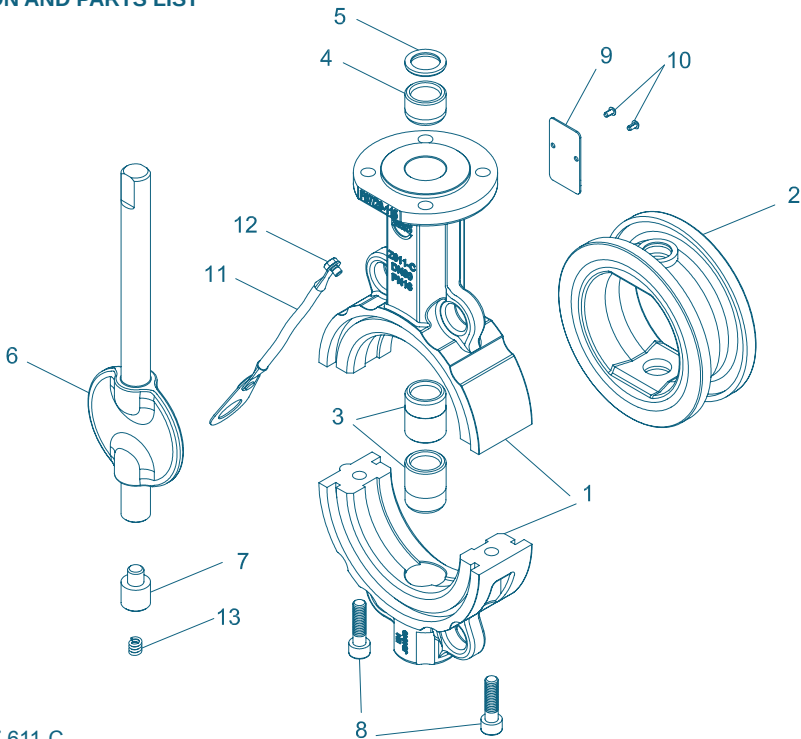
Z 611-C with bare shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]																Weight [kg]
		A	B	C	ØD	ØDi	Ød2	E	ØF	Flange	G	h1	H2	ØM1	ØM2	ØW	Z	
50	2	135	80,5	215,5	95	49	55	43	90	F07	11	3	22	53	86	14	25	3,2
65	2½	143,5	89	232,5	120	65	55	46	90	F07	11	3	22	68	106	14	42	4,0
80	3	165	100	265	138	79	55	46	90	F07	14	3	26	82,5	123	18	65	4,5
100	4	174	111	285	158	99	55	52	90	F07	14	3	26	102	145	18	85	6,0
125	5	195	124	319	190	124	55	56	90	F07	14	3	26	127	174	18	111	7,7
150	6	212	147	359	212	149	55	56	90	F07	17	3	31	153	198	22	139	10,0
200	8	238	172	410	268	199	70	60	125	F10	17	3	31	203	253	22	190	16,0
250	10	275	209	484	320	249	70	68	125	F10	22	3	40,5	253	305	28	240	24,5
300	12	303	234	537	370	299	85	78	150	F12	22	3	40,5	301	356	28	287	33,5

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-C

MATERIAL SPECIFICATION AND PARTS LIST



Wafer type butterfly valve Z 611-C

Pos.	Description	Material	Material-No.	ASTM	Pos.	Description	Material	Material-No.	ASTM
1	Body				8	Screw			
	Nodular Cast Iron	GJS-400-18U-LT	EN-JS 1049	A395		Stainless Steel	A4-70	1.4401	
2	Seat				9	Type plate			
	EPDM-C *					Stainless Steel	A2		
3	Bearing bush				10	Groove pin			
	Steel	42Cr Mo 4 V (nitrided)	1.7225			Stainless Steel	A2		
4	Bearing bush				11	Buttstrap			
	Steel	42Cr Mo 4 V (nitrided)	1.7225						
5	Scraper				12	Screw			
	PTFE	Polytetrafluorethylen	PTFE			Stainless Steel	A4-70	1.4401	
6	Shaft/Disc	one-piece			13	Spiral spring			
	St. Steel /St. Steel *	GX2CrNiMoN26-7-4	1.4469	EN 10213		Spring steel	X10CrNi 18-8	1.4310	301
7	Lower shaft stub (DN 50 - DN 80 only)								
	Stainless Steel	1.4462		EN 10088					

* Other materials upon request

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-C

TORQUE

- The values specified are based on the initial breakaway torque (disc engages from seat, torque than drops)

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN (mm)	50	65	80	100	125	150	200	250	300
Size (in)	2	2½	3	4	5	6	8	10	12
Case of operation I									
MD (Nm) bei Δp=3 bar	7	8	14	18	22	45	70	115	175
MD (Nm) bei Δp=6 bar	8	9	16	22	28	53	95	190	220
MD (Nm) bei Δp=10 bar	9	10	18	26	34	60	125	245	290
MD (Nm) bei Δp=16 bar	10	14	23	30	48	80	165	330	380
Case of operation II									
MD (Nm) bei Δp=3 bar	14	15	21	23	30	90	160	295	335
MD (Nm) bei Δp=6 bar	15	16	23	27	35	96	170	345	360
MD (Nm) bei Δp=10 bar	16	17	25	30	41	100	180	330	380
MD (Nm) bei Δp=16 bar	16	19	31	37	51	105	210	400	430
MAST (Nm)*	105	105	250	250	250	484	484	1020	1020

Case of operation I: Fluid or lubricant media

*Maximum torques (Nm)

Case of operation II: Powder or gases (dry seat)

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at a Δp of 1 bar

- Permissible velocity of flow
- Vmax 4,5 m/s for liquids
- Vmax 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

Subject to change without notice

For further values, please contact our engineers.

LUG TYPE BUTTERFLY VALVE Z 614-C



Lug type butterfly valve for shut-off and control services in the chemical industry.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 SO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19 PAS 1085
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +120°C (depending on working pressure)
Operating pressure:	max. 16 bar

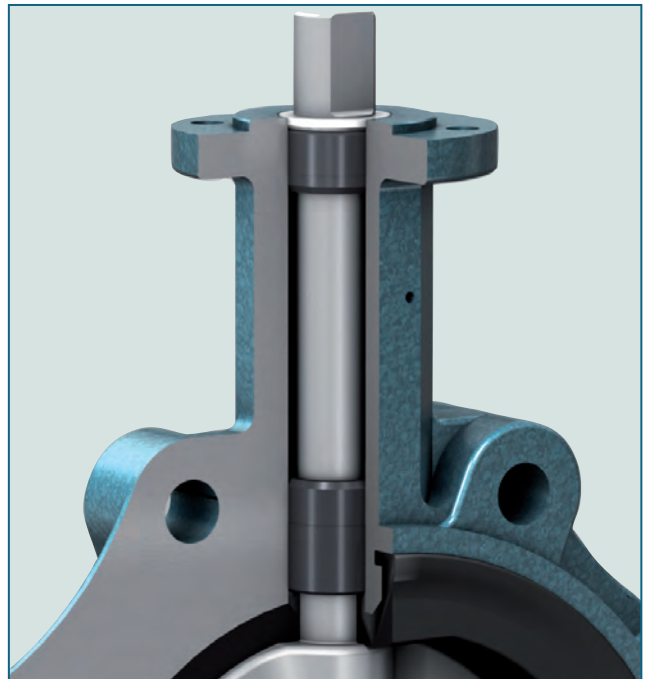
Valve Design
acc. to PAS 1085

FEATURES

- Environmental protection via EBRO-Safety seal
- Split body with stainless steel screws
- Isolation height according to plant prescription
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- TA-Luft/ VDI 2440, RWTÜV certified

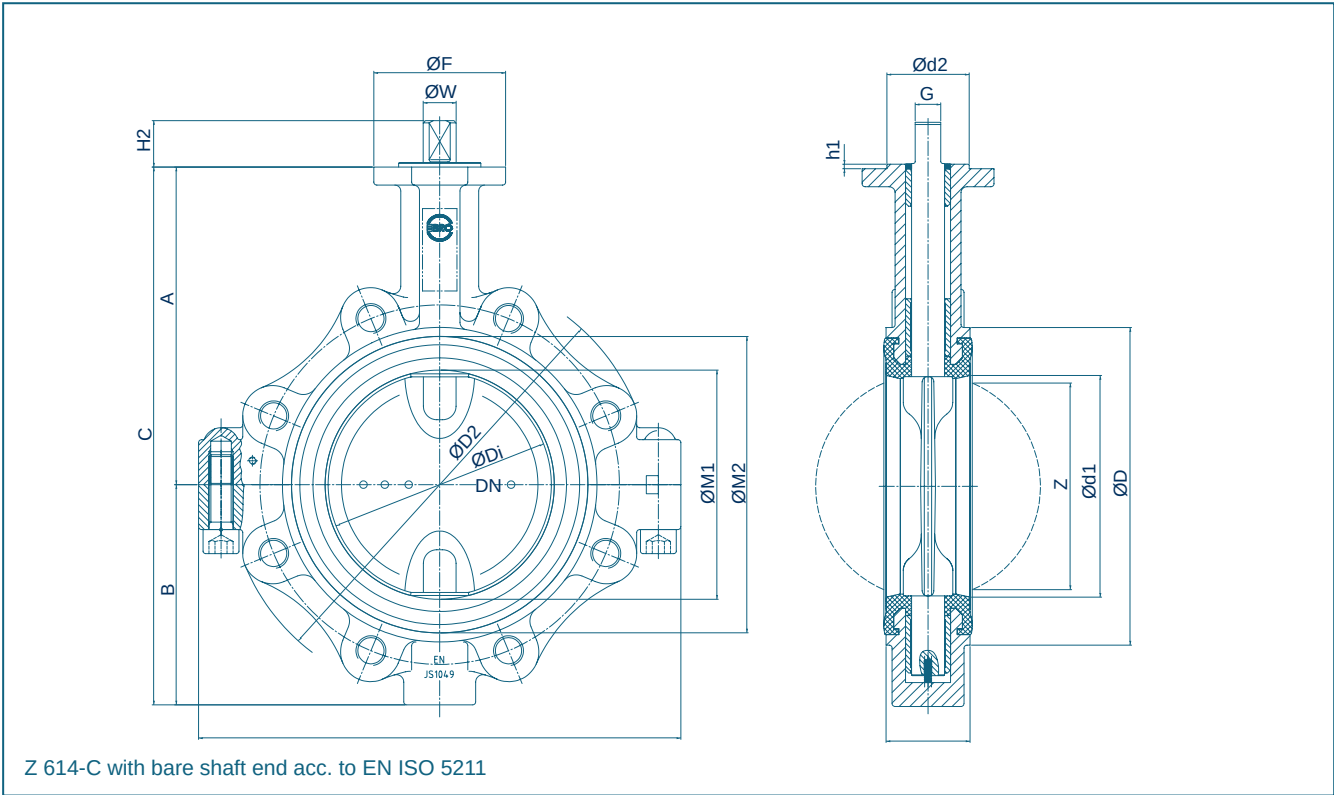
DESIGN FEATURES

- Optimized low torques
- FEM dimensioned components
- Valve neck for 100mm isolation
- Triple shaft bearing
- One-piece shaft and disc
- Double flat shaft acc. to EN standards



Safety seal acc. to TA-Luft/ VDI 2440, RWTÜV.

LUG TYPE BUTTERFLY VALVE Z 614-C

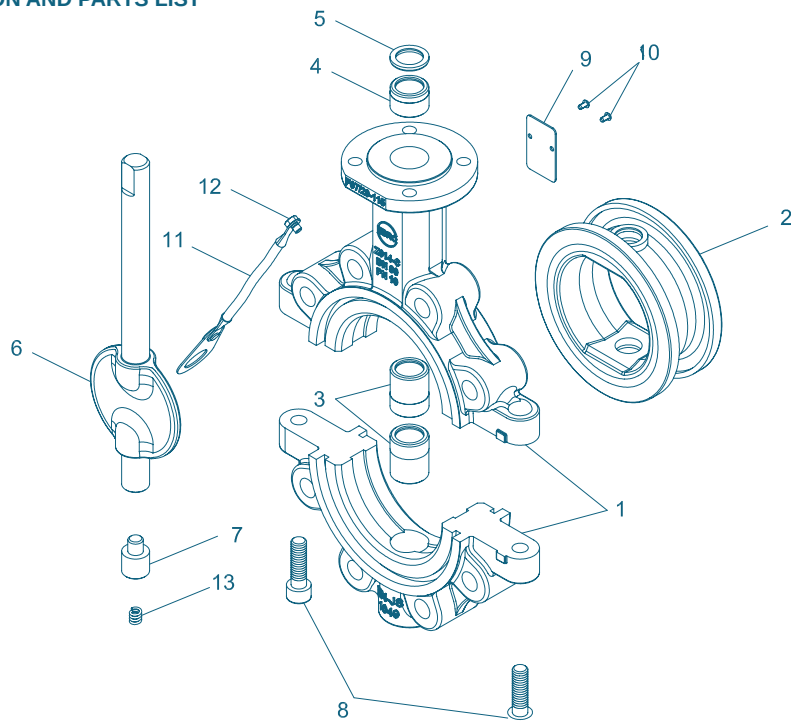


DN [mm]	Size [in]	Dimensions [mm]																		Weight [kg]
		A	B	C	$\varnothing D$	$\varnothing D_2$	$\varnothing D_i$	$\varnothing d_2$	E	Flange	$\varnothing F$	G	h1	H2	J	$\varnothing M_1$	$\varnothing M_2$	$\varnothing W$	Z	
50	2	135	80,5	215,5	95	155	49	55	43	F07	90	11	3	22	167	53	86	14	25	3,7
80	3	165	100	265	138	192	79	55	46	F07	90	14	3	26	227	82,5	123	18	65	6,3
100	4	174	111	285	158	212	99	55	52	F07	90	14	3	26	266	102	145	18	85	8,5
150	6	212	147	359	212	280	149	55	56	F07	90	17	3	31	322	153	198	22	139	13,5
200	8	238	172	410	268	335	199	70	60	F10	125	17	3	31	390	203	253	22	190	21,5
250	10	275	209	484	320	395	249	70	68	F10	125	22	3	40,5	481	253	305	28	240	32,5
300	12	303	234	537	370	460	299	85	78	F12	150	22	3	40,5	558	301	356	28	287	48,5

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 614-C

MATERIAL SPECIFICATION AND PARTS LIST



Lug type butterfly valve Z 614-C

Pos.	Description	Material	Material-No.	ASTM	Pos.	Description	Material	Material-No.	ASTM
1	Body				8	Screw			
	Nodular Cast Iron	GJS-400-18U-LT	EN-JS 1049	A395		Stainless Steel	A4-70	1.4401	
2	Seat				9	Type plate			
	EPDM-C *					Stainless Steel	A2		
3	Bearing bush				10	Groove pin			
	Steel	42Cr Mo 4 V (nitrided)	1.7225			Stainless Steel	A2		
4	Bearing bush				11	Buttstrap			
	Steel	42Cr Mo 4 V (nitrided)	1.7225						
5	Scraper				12	Screw			
	PTFE	Polytetrafluorethylen	PTFE			Stainless Steel	A4-70	1.4401	
6	Shaft/Disc	one-piece			13	Spiral spring			
	St. Steel /St. Steel *	GX2CrNiMoN26-7-4	1.4469	EN 10213		Spring steel	X10CrNi 18-8	1.4310	301
7	Lower shaft stub (DN 50 - DN 80 only)								
	Stainless Steel		1.4462	EN 10088					

* Other materials upon request

Subject to change without notice

LUG TYPE BUTTERFLY VALVE Z 614-C

TORQUE

- The values specified are based on the initial breakaway torque (disc engages from seat, torque than drops)

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN (mm)	50	80	100	150	200	250	300
Size (in)	2	3	4	6	8	10	12
Case of operation I							
MD (Nm) bei $\Delta p=3$ bar	7	14	18	45	70	115	175
MD (Nm) bei $\Delta p=6$ bar	8	16	22	53	95	190	220
MD (Nm) bei $\Delta p=10$ bar	9	18	26	60	125	245	290
MD (Nm) bei $\Delta p=16$ bar	10	23	30	80	165	330	380
Case of operation II							
MD (Nm) bei $\Delta p=3$ bar	14	21	23	90	160	295	335
MD (Nm) bei $\Delta p=6$ bar	15	23	27	96	170	345	360
MD (Nm) bei $\Delta p=10$ bar	16	25	30	100	180	330	380
MD (Nm) bei $\Delta p=16$ bar	16	31	37	105	210	400	430
MAST (Nm)*	105	250	250	484	484	1020	1020

Case of operation I: Fluid or lubricant media

Case of operation II: Powder or gases (dry seat)

*Maximum torques (Nm)

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at a Δp of 1 bar

- Permissible velocity of flow
 - V_{max} 4,5 m/s for liquids
 - V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-K



Resilient seated wafer type butterfly valve in split - body design for semi-corrosive media.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150 AS 4087 PN16/21
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C bis +120°C (depending on seat material)
Operating pressure:	max. 10 bar

FEATURES

- One piece disc/shaft, centric bearing
- Split body with stainless steel screws
- Insulation height as per plant regulations
- Can be installed in any desired position
- Triple shaft bearing
- Disc's sealing surface mirror polished
- Materials complying with FDA standards available
- Can be disassembled, material-specific recycling possible

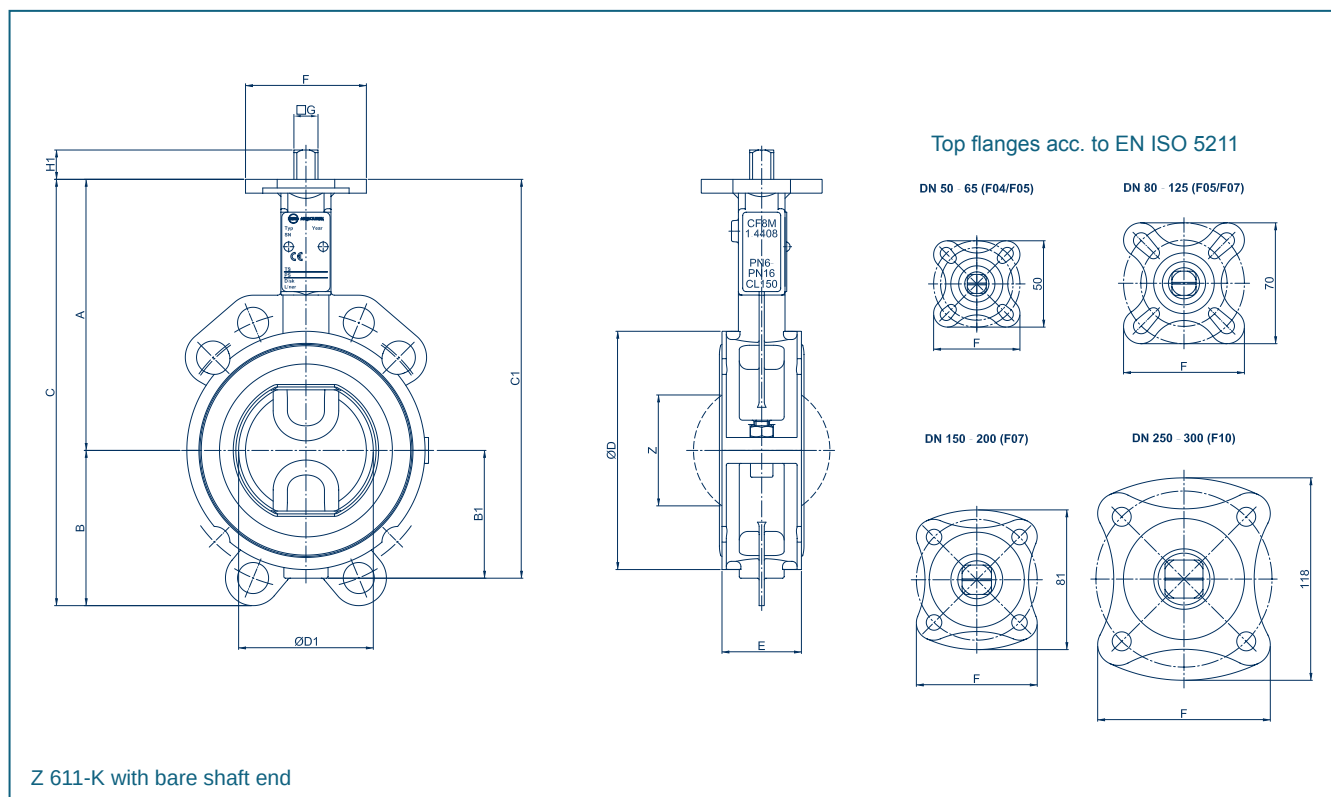
GENERAL APPLICATIONS

- Food and beverage industry



The split body design allows quick and easy maintenance. Illustration with EHEDG certified flanges.

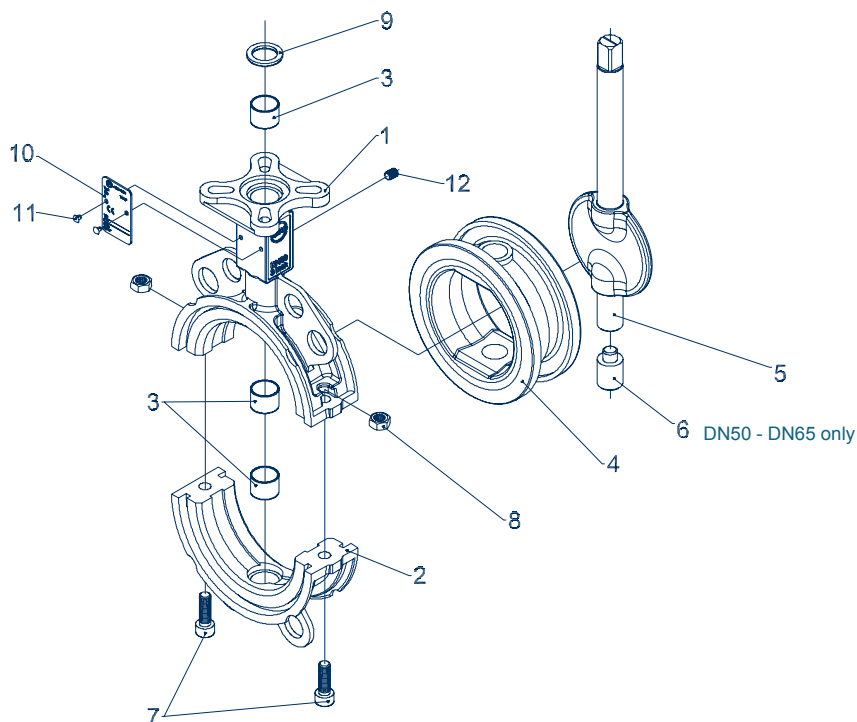
WAFER TYPE BUTTERFLY VALVE Z 611-K



DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	B1	C	C1	ØD	ØD1	E	F	□G	H1	Z	
50	2	126	-	68	-	194	106	49	43	50	11	13,5	25	1,8
65	2½	134	83	77	217	211	120	64	46	50	11	13,5	45	2,2
80	3	157	90	74	247	231	138	79	46	70	14	17,0	64	2,9
100	4	167	104	84	271	251	160	99	52	70	14	17,0	84	3,6
125	5	180	118	98	298	278	190	124	56	70	14	17,0	110	4,8
150	6	203	130	132	333	335	215	149	56	70	17	20,0	138	6,3
200	8	228	161	157	389	385	269	199	60	70	17	20,0	189	10,3
250	10	266	195	195	461	461	324	249	68	100	22	23,5	239	18,5
300	12	291	229	220	520	511	380	297	78	100	22	23,5	286	25,0

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-K



Pos.	Description	Material	Material-Nr.	ASTM	Pos.	Description	Material	Material-Nr.	ASTM
1	Upper body				7	Screw			
		Stainless Steel	1.4408	CF8M			Stainless Steel	A4-70	B8M
2	Lower body				8	Hex- nut			
		Stainless Steel	1.4408	CF8M			Stainless Steel	A4	
3	Bearing bush				9	Wiper ring			
		Steel / PTFE					PTFE		
4	Seat				10	Type plate			
		NBR					Stainless Steel	1.4301	
		EPDM			11	Round head grooved pin			
		PTFE					Stainless Steel	A2	
5	Disc/ Shaft				12	Screw			
		Stainless Steel	1.4469				Stainless Steel	A4	
6	Lower shaft stub								
		Stainless Steel	1.4469						

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 611-K

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media and EPDM liner

- Powdery (non-lubricant) media Md x 1,3

- Dry gases/high viscous media Md x 1,2

- The values specified are based on the initial breakaway torque

- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	50	65	80	100	125	150	200	250	300
Size [in]	2	2½	3	4	5	6	8	10	12
MD [Nm]	7	15	18	28	45	110	140	200	280

All values in Nm

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
Vmax 4,5 m/s for liquids,
Vmax 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,2	8	13	22	38	50	65	85
65	2½	2	9	22	42	77	115	170	215
80	3	8	24	50	95	150	240	330	420
100	4	13	28	65	130	180	340	550	800
125	5	26	65	130	230	350	530	870	1010
150	6	35	90	200	360	640	900	1350	2100
200	8	43	180	350	580	1000	1600	3000	4000
250	10	125	360	660	1100	1800	3100	5300	6400
300	12	200	550	1000	1600	2600	5000	7500	8500

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-B



A universally applicable wafer type valve with vulcanised liner according to EN 593.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 600
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +120°C (depending on pressure, medium and material)
Operating pressure:	max. 16 bar
Vacuum:	0,1 bar absolute

FEATURES

- Vulcanised liner
- Triple shaft bearing prevent shaft deflection
- The valve body and disc are accurately machined which results in low operating torque and long service life
- Four flange mounting holes ensure correct valve location when installing
- Can be installed in any desired position
- Maintenance-free
- Single flange mounting wafer type: DN 50 - 250: 3 bar
DN 300 - 600: 2 bar

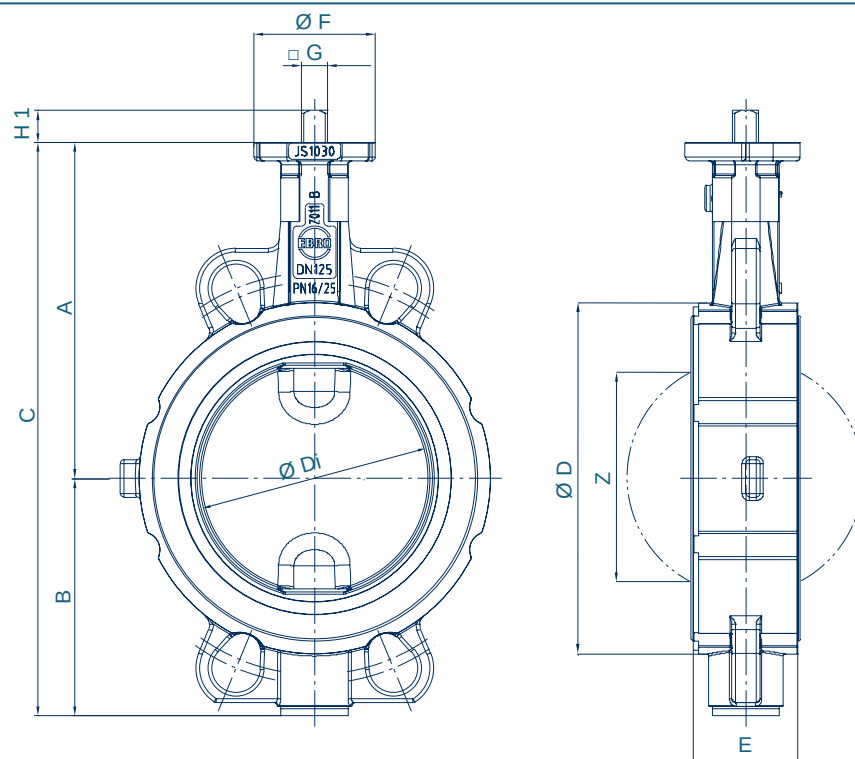
GENERAL APPLICATIONS:

- Chemical and petrochemical industries
- Water and waste water technology
- Pneumatic materials handling technology
- Shipbuilding
- Power generation industry
- Food industry
- Civil engineering



Lug type version Z014-B

WAFFER TYPE BUTTERFLY VALVE Z 011-B



Z 011-B with bare shaft end according to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]											Weight [kg] (EN-JS 1030)	
		A	B	C	D	Di	E	F	Flange	G	H1	Z	2 Piece shaft	TS- shaft
50	2	126	84	210	95	49	43	54	F04	11	14	25	2,5	-
65	2½	135	93	227	115	64	46	54	F04	11	14	45	3,0	-
80	3	157	104	261	138	79	46	65	F05	14	17	65	4,0	4,5
100	4	168	115	282	158	99	52	65	F05	14	17	85	5,0	5,6
125	5	180	127	307	188	124	56	65	F05	14	17	111	7,0	7,6
150	6	203	151	354	212	148	56	88	F07	17	20	139	9,5	11,0
200	8	229	177	405	268	199	60	88	F07	17	20	190	13,5	15,3
250	10	266	212	478	320	248	68	125	F10	22	24	240	22,5	25,5
300	12	291	240	531	370	296	78	125	F10	22	24	287	30,5	34,0
350	14	332	270	602	415	338	78	150	F12	27	29	330	43,5	49,1
400	16	363	314	677	473	390	102	150	F12	27	29	378	62	67,8
450	18	397	335	732	530	426	114	175	F16	36	38	417	98	102,5
500	20	437	371	808	574	489	127	175/210	F14/F16	36	38	474	110	116,5
600	24	498	435	933	675	582	154	210/300	F16/F25	46	48	563	185	212,0

Subject to change without notice

Exploded view diagram of a butterfly valve assembly. The main components are labeled with numbers 1 through 17. The diagram shows the valve body (1), cover plate (2), and various internal components like the shaft (10), disc (7), and bearings (3, 4, 5). Callouts 14-17 point to specific parts of the assembly.

TS-Version Version with splitted shaft

Pts. 14-17:
Cover plate for
valve $\geq$ DN 350

Subject to change without notice

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-B

TORQUE

- The torque values specified (Md) are based on liquid and lubricant media
 - Powdery (non-lubricant) media
Md x 1,3
 - Dry gases/high viscous media
Md x 1,2
 - The values specified are based on the initial breakaway torque
 - Dynamic torque specification available upon request
- Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Operating pressure			
		3 [bar]	6 [bar]	10 [bar]	16 [bar]
50	2	5	7	7	9
65	2½	7	9	15	18
80	3	14	18	24	28
100	4	9	18	25	30
125	5	15	22	45	59
150	6	36	45	80	100
200	8	59	76	140	200
250	10	150	180	200	300
300	12	200	240	280	360
350	14	350	540	640	1200
400	16	650	900	1300	1700
450	18	720	1000	1400	2000
500	20	1100	1400	2255	3000
600	24	1200	2100	3000	4000

All values in Nm

K_V-VALUES

- The K_V-values [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
- Permissible velocity of flow
Vmax 4,5 m/s for liquids,
Vmax 70 m/s for gases
- The throttle function is linear at an angle 30° to 70°
- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,3	5,5	13	23	35	48	62	76
65	2½	3,8	8,2	22	44	73	108	148	192
80	3	11	14	37	77	132	200	277	363
100	4	17	22	93	180	277	366	429	448
125	5	26	34	305	521	769	1027	1273	1484
150	6	38	49	187	385	640	918	1184	1406
200	8	67	87	315	640	1093	1645	2268	2934
250	10	105	136	501	947	1574	2366	3305	4374
300	12	152	197	670	1526	2655	3905	5124	6159
350	14	206	267	997	2076	3456	4965	6429	7676
400	16	269	349	1141	2567	4419	6439	8357	9920
450	18	341	442	1356	3140	5520	8187	10827	13130
500	20	421	546	1986	4312	7465	11123	14962	18659
600	24	606	786	2778	5822	9976	14889	20208	25583

Subject to change without notice

INFLATABLE SEAT “INFLAS”



Resilient seated butterfly valve type Z011-A with inflatable liner.

TECHNICAL DATA

The sealing system was developed for highly abrasive or very sensitive media.

Available for all resilient seated butterfly valves with interchangeable seat.

In closed position, the liner will be pressed against the disc using low air pressure. The media is sealed off securely.

Before opening the disc, the chamber is vented behind the liner. This creates an air gap between the liner and the disc, hence low torque is required to open the valve.

ADVANTAGES

Extremely low wear of parts even in contact with abrasive media

Low sized actuators due to reduced torques

Low grinding/-clamping of sensitive media between disc and liner

THE EBRO CONTROL

1. Signal “OPEN” appears as a digital signal
2. The air pressure is reduced behind the liner
3. The valve will open if there is no pressure on the liner
4. Position “OPEN” will be confirmed
5. When the signal disappears, the valve will close
6. Position „CLOSED“ will be confirmed
7. When the valve is closed, the liner will be pressurised
8. When pressure is on the liner „OK“ will be reported

GENERAL APPLICATIONS

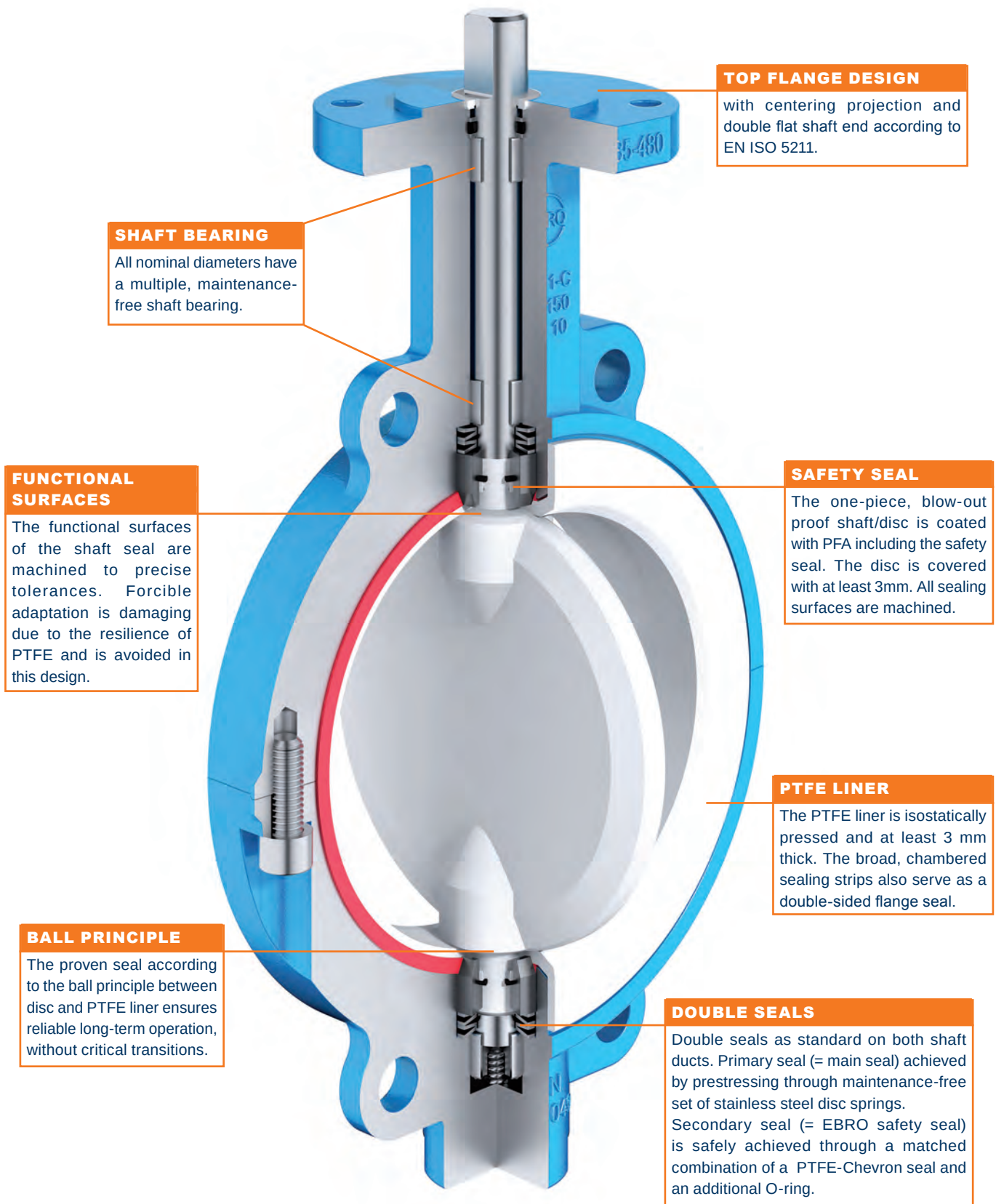
- Bulk goods
- Food industry
- Pneumatic conveying systems
- Weighing technology



EBRO pressure control/-monitoring

QUALITY FEATURES

PTFE-VALVE T 211-C



PTFE-LINED BUTTERFLY VALVE T 211-A



Fully PTFE-lined wafer type valve for corrosive and aggressive media. The patented shaft seal design ensures reliability even with high-corrosive applications.

TECHNICAL DATA

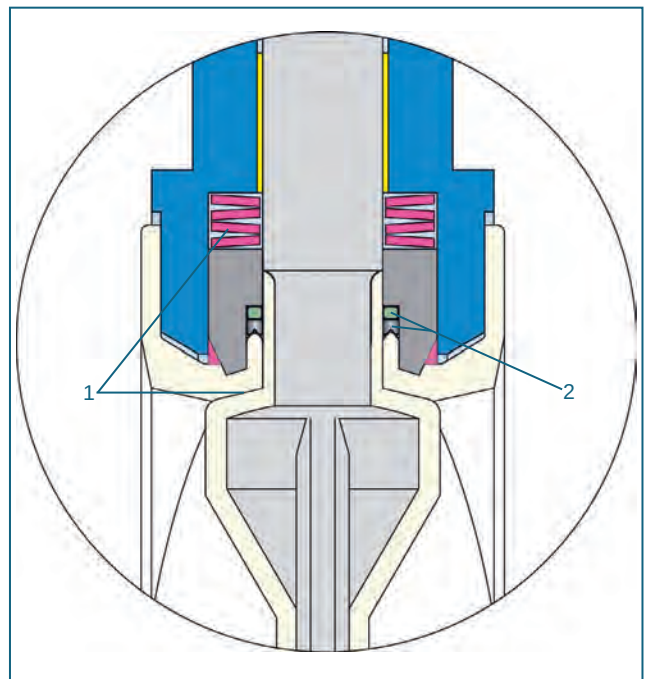
Nominal diameter:	DN(40) 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150 AS 4087
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	-40°C to +200°C (depending on operation pressure)
Operating pressure:	max. 10 bar (16 bar for special version)
Vacuum:	up to 1 mbar absolute (with silicon elastomer inserts) from -10°C bis +160°C

FEATURES

- PTFE-lined butterfly valve for chemically toxic and highly corrosive media
- Environmental protection via EBRO-Safety seal
- Splitted body design
- Isolation height according to plant prescription
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- Material conform to FDA EG 1935/2004
- Optional: Special design RWTÜV certified to TA-Air/ VDI 2440

GENERAL APPLICATIONS

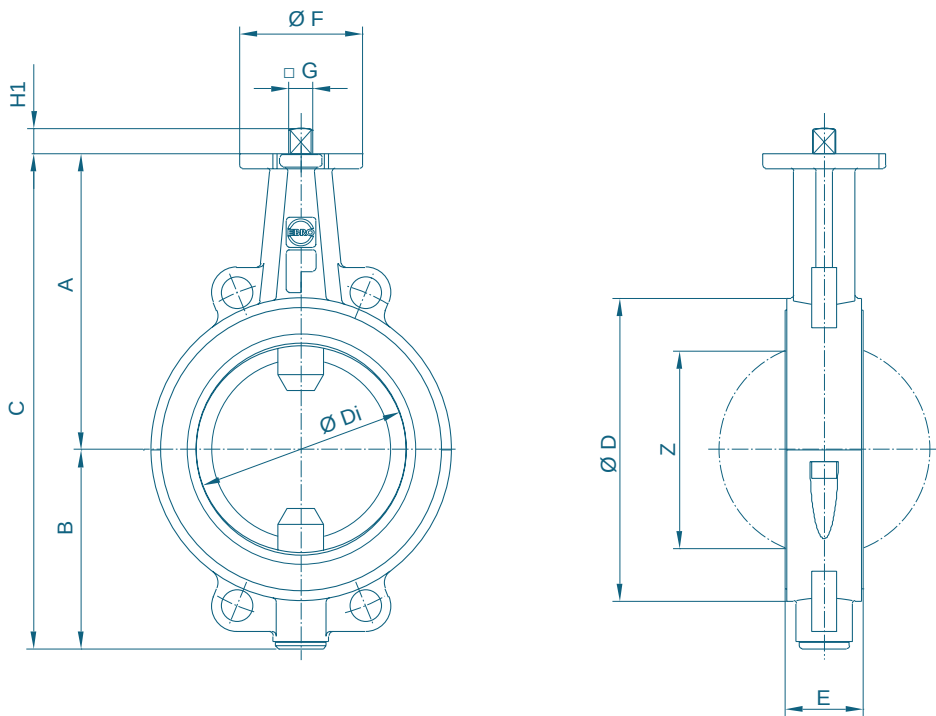
- Chemically highly corrosive and toxic media
- Purification plants
- Pharmaceutical industry
- Adhesives, paper industry, dissolver
- Paint manufacture and processing
- Food industry
- Transport of hazardous materials (EN 14432)
- Chlorine production
- Processing of ore



Safety seal at both shaft ends:

1. Primary sealing by means of a Belleville spring washer, transmitting prestress on the spherical segment area.
2. Secondary sealing of the shaft by means of PTFE-Chevron and o-ring.

PTFE-LINED BUTTERFLY VALVE T 211-A



T 211-A with bare shaft end acc. to EN ISO 5211

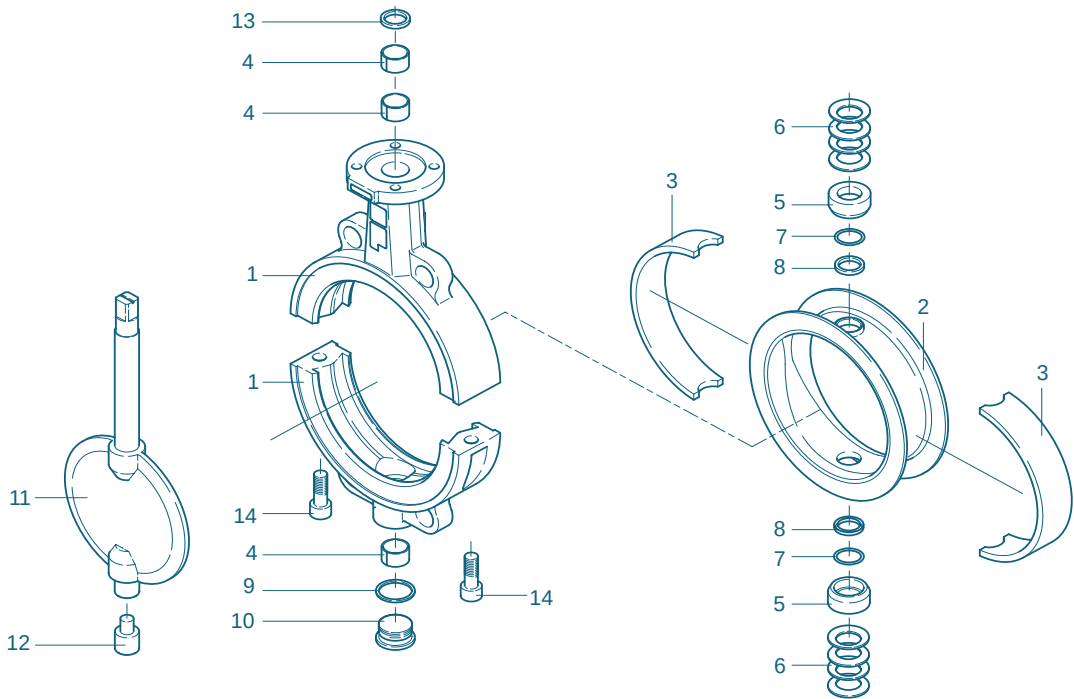
DN [mm]	Size [in]	Dimensions [mm]											Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	Z	
40*/50	2	135	80	215	112	60,8	46	54	F04	11	12	41	2,8
65	2½	150	82	232	120	60,8	46	54	F04	11	12	41	3,4
80	3	157	108	265	138	79,5	46	65	F05	14	16	66	4,5
100	4	180	118	298	160	99,0	52	65	F05	14	16	85	5,9
125	5	195	130	325	190	124,5	56	90	F07	17	19	112	8,1
150	6	210	142	352	215	150,5	56	90	F07	17	19	141	9,5
200	8	240	169	409	269	195,5	60	90	F07	17	19	187	15
250	10	275	217	492	324	247,5	68	125	F10	22	24	239	24
300	12	300	240	540	374	292,5	78	125	F10	22	24	283	34

*DN 50 drilled DN 40

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 211-A

MATERIAL SPECIFICATION AND PARTS LIST



PTFE-lined butterfly valve DN 80 - DN 200

Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				8**	Chevron seal			
	Nodular Cast Iron	GGG-40.3	EN-JS 1025	A 395		PTFE	Polytetrafluorethylene	PTFE	PTFE
	Stainless Steel	G-X6CrNiMo18-10	1.4408	CF8M	9	Seal			
		X2CrNiMo17-12-2	1.4404	316 L		Stainless Steel	X5CrNi18-10	1.4301	304
2**	Seat				10	Plug screw DIN 908			
	PTFE	Polytetrafluorethylene	PTFE	PTFE *		Stainless Steel	G-X6CrNiMo18-10	1.4408	CF8M
3**	Elastomer insert				11***	Disc/Shaft	one-piece		
	Silicon	Silicon rubber	MVQ	VMQ		St.Steel/ St.Steel	G-X2CoNiMoN26-7-4	1.4469	Duplex
4	DU-bearing					St.Steel/ PTFE	G-X2CoNiMoN26-7-4	1.4469/	Duplex
	PTFE coated						Polytetrafluorethylene	PTFE	PTFE *
5**	Trust collar				12	Lower shaft stub			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		Stainless Steel	X39CrMo17-1	1.4122	
6	Bellev. spr. washer				13	Wiper ring			
	Stainless Steel	X12CrNi177	1.4568	631		PTFE	Polytetrafluorethylene	PTFE	PTFE
7**	O-ring				14	Screw			
	FPM	Fluorocarbon caoutchouc	FPM	FKM		Stainless Steel	A4-70	1.4401	B8M
					Above-mentioned materials of the basic version, other materials upon request				

* optional: electrically conductive

** recommended spare parts

*** recommended for coated discs

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 211-A

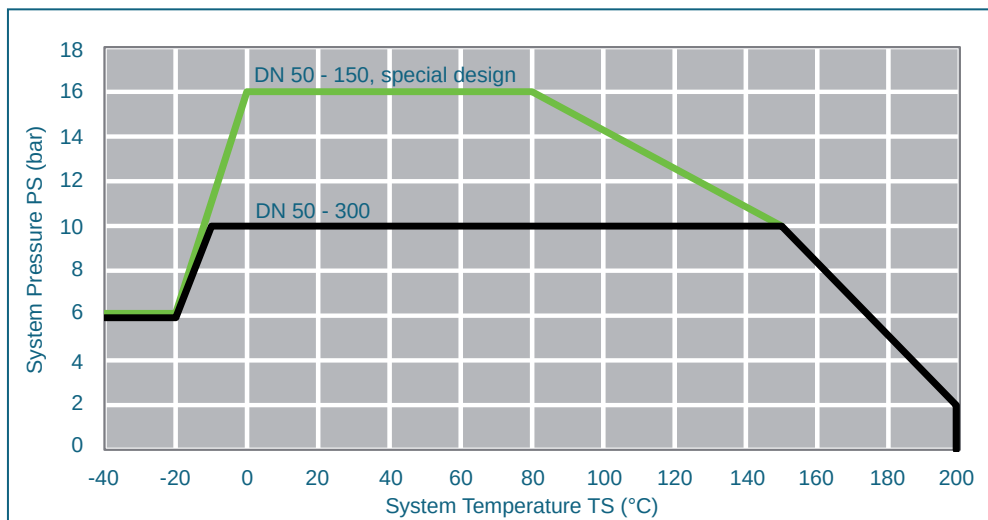
TORQUE

- The torque values specified (Md) are based on dry media and are measured with air at a temperature of 20 °C
- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

PRESSURE/TEMPERATURE DIAGRAM

DN [mm]	40/50	65	80	100	125	150	200	250	300
Size [in]	2	2½	3	4	5	6	8	10	12
MD [Nm]	40	40	70	95	130	170	230	350	480



Pressure-Temperature-Diagram for valves with Silicone elastomer inserts

Service limitation with EPDM elastomer inserts from -10°C up to +120°C

Service limitation with Fluor carbon inserts (FPM) from -10°C up to +180°C

Vacuum service to 1mbar absolute, from -10°C up to +160°C. Valve installation between flanges

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

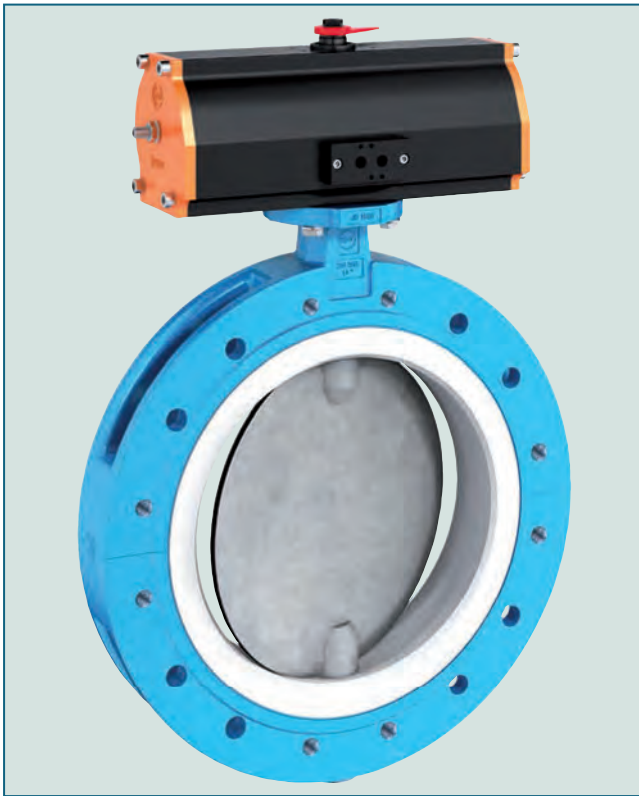
- Avoid cavitation

For further values, please contact our engineers.

		Opening angle α°							
DN [mm]	Size [in]	20°	30°	40°	50°	60°	70°	80°	90°
1) K _V -values metal disc									
40/50	2	1	8	24	50	70	100	140	210
65	2½	1	8	24	50	70	100	140	210
80	3	1,2	15	44	95	124	180	300	520
100	4	8	25	60	170	210	280	540	980
125	5	15	52	125	250	350	520	840	1400
150	6	35	95	190	350	460	850	1300	2300
200	8	69	253	457	729	1110	1783	2570	3020
250	10	120	380	690	1200	1680	2650	4500	6600
300	12	165	504	937	1512	2275	3795	6810	12800
2) K _V -values PTFE-disc									
40/50	2	1,5	12	28	52	70	96	110	150
65	2½	1,5	12	28	52	70	96	110	150
80	3	2,5	20	48	88	118	160	200	250
100	4	12	32	68	170	210	260	500	780
125	5	18	60	135	260	380	480	790	1250
150	6	45	105	205	370	490	720	1250	2200
200	8	88	297	520	695	1130	1700	2500	2700
250	10	148	430	695	1250	1800	2520	4350	5400
300	12	263	557	960	1560	2450	4300	6700	9400

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 212-A



Double flanged PTFE-lined butterfly valve for shut-off and control services in the chemical industry.

TECHNICAL DATA

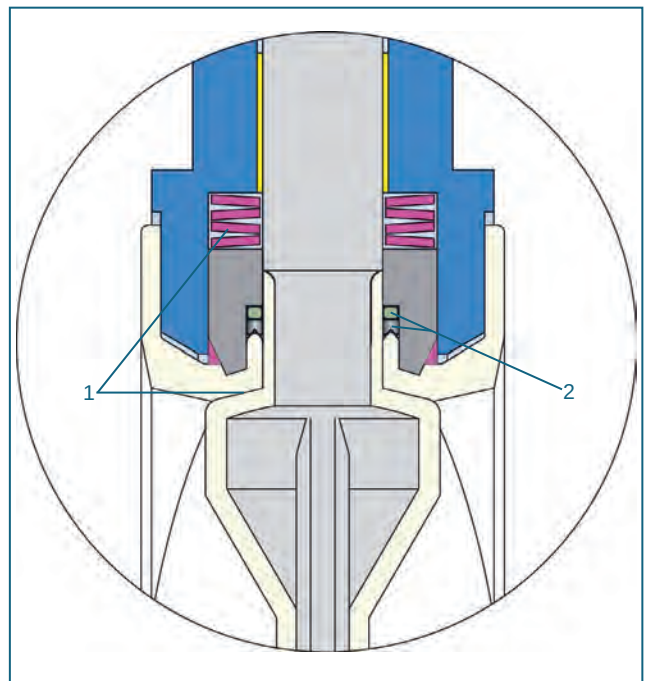
Nominal diameter:	DN 350 - DN 900
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150 ASME B16.47, Series A, Series B AS 4087
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	-40°C to +200°C (depending on nominal diameter and operation pressure)
Operating pressure:	max. 6 bar (10 bar for special version)
Vacuum:	DN 350 - 600 max. 200mbar absolut DN 700 - 900 max. 500mbar absolut (with silicon elastomer inserts)

FEATURES

- PTFE-lined butterfly valve for chemically toxic and highly corrosive media
- Environmental protection via EBRO-Safety seal
- Splitted body design
- Isolation height according to plant prescription
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- Material conform to FDA to EG 1935/2004
- Optional: Special design RWTÜV certified to TA-Air/ VDI 2440

GENERAL APPLICATIONS

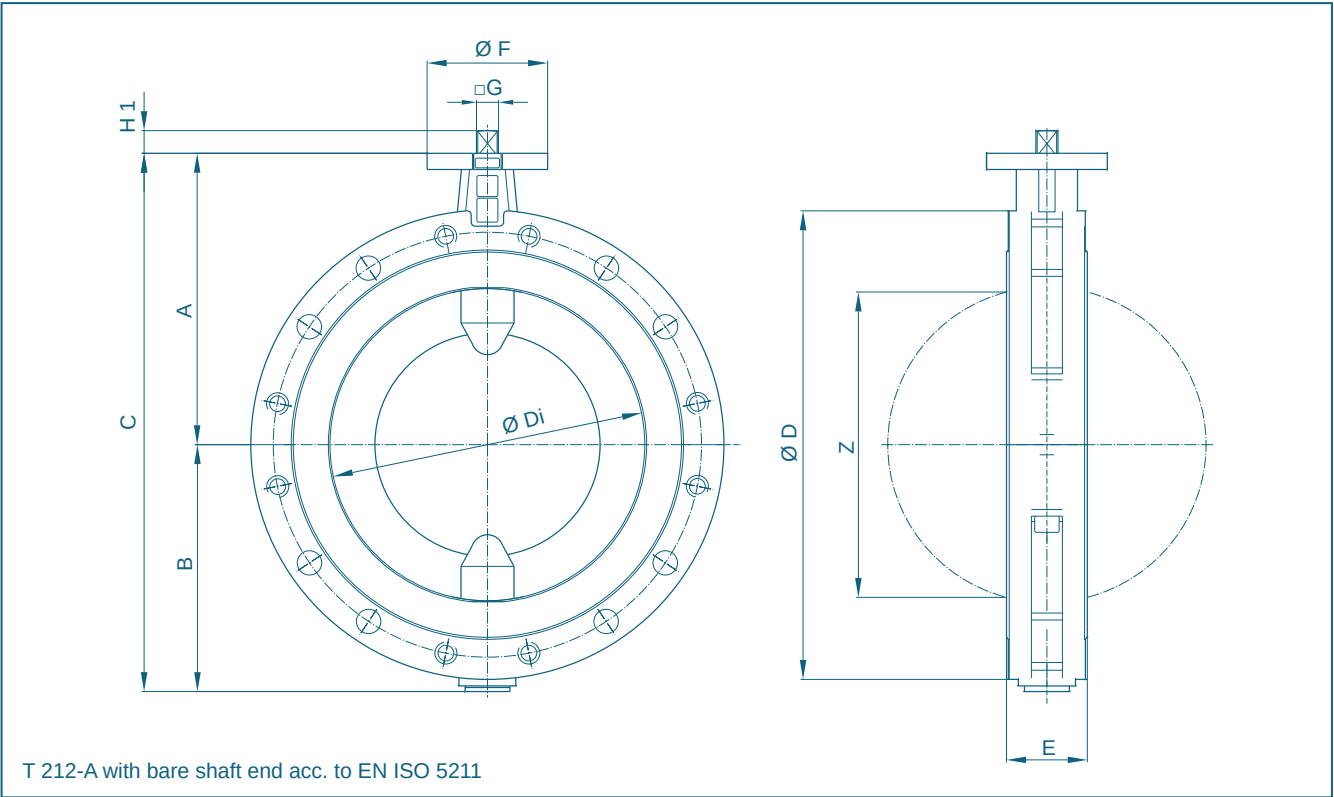
- Chemically highly corrosive and toxic media
- Purification plants
- Pharmaceutical industry
- Adhesives, paper industry, dissolver
- Paint manufacture and processing
- Food industry
- Chlorine production
- Processing of ore



Safety seal at both shaft ends:

- 1.Primary sealing by means of a belleville spring washer, transmitting prestress on the spherical segment area.
- 2.Secondary sealing of the shaft by means of PTFE-Chevron and o-ring.

PTFE-LINED BUTTERFLY VALVE T 212-A



DN [mm]	Size [in]	Dimensions [mm]											Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	Z	
350	14	330	277	607	535	338	78(92)*	150	F12	27	29	327	68
400	16	360	305	665	580	389	102	150	F12	27	29	377	95
450	18	397	363	760	639	437	114	175	F14	36	38	423	130
500	20	437	390	827	715	490	127	175	F14	36	38	475	170
600	24	498	462	960	830	579	154	210	F16	46	48	560	270
700	28	580	496	1076	927	676	165	210	F16	46	47	662	410
750	30	610	538	1148	985	724	165	298	F25	72	108	712	465
800	32	630	563	1193	1060	770	190	298	F25	72	108	759	570
900	36	696	640	1336	1170	881	203	298	F25	80	110	859	750

* Face to face dim. acc. to EN 558 Tab. 20 (92mm)

Subject to change without notice

DN 350/400

> DN 400

* optional: electrically conductive
** recommended spare parts
*** recommended for coated discs

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 212-A

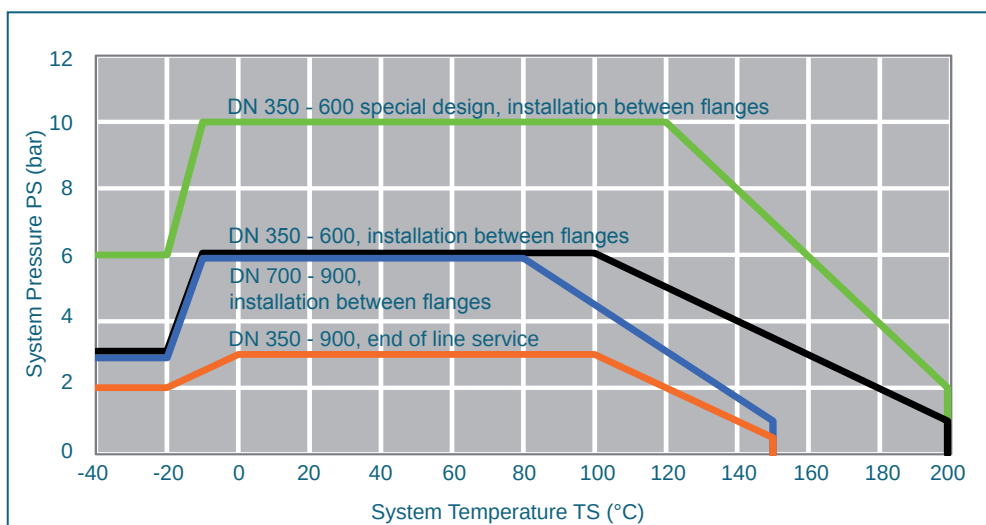
TORQUE

- The torque values specified (Md) are based on dry media and are measured with air at a temperature of 20 °C
- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	350	400	450	500	600	700	750	800	900
Size [in]	14	16	18	20	24	28	30	32	36
MD [Nm]	720	980	1200	1500	2500	3000	3500	4500	6000

PRESSURE/TEMPERATURE DIAGRAM



Pressure-Temperature-Diagram for valves with Silicone elastomer inserts.

Other elastomer inlays on request

Vacuumservice for Sizes DN 350 - 600 to 200mbar absolut, depending on medium and temperature.
Valve installation between flanges

Vacuumservice for Sizes DN 700 - 900 to 500mbar absolut, depending on medium and temperature.
Valve installation between flanges

K_V-VALUES

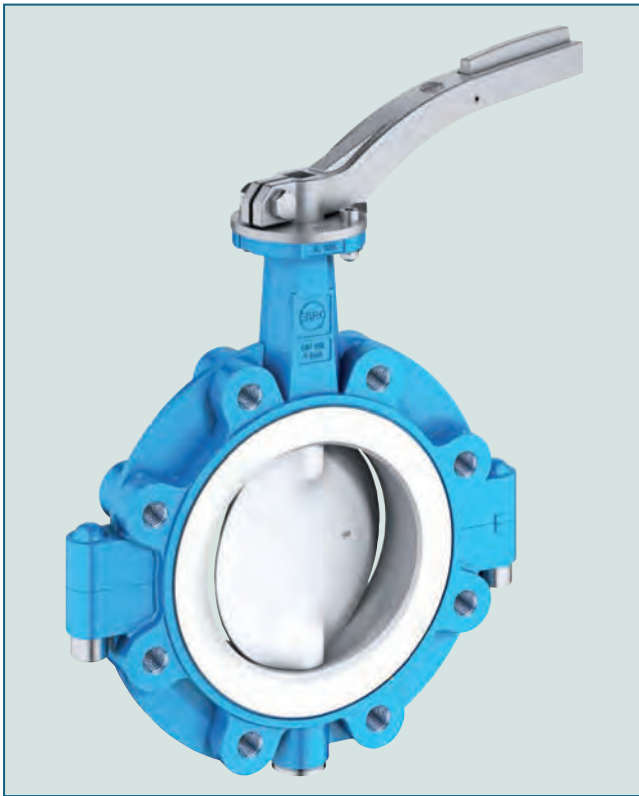
- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases
- The throttle function is linear at an angle 30° to 70°

DN [mm]	Size [in]	K _V -Values (Valve fully opened)
350	14	11500
400	16	12000
450	18	14000
500	20	16000
600	24	20000
700	28	28000
750	30	33000
800	32	37000
900	36	48000

Subject to change without notice

For further values, please contact our engineers.

PTFE-LINED BUTTERFLY VALVE T 214-A



Lug type valve for corrosive and aggressive media. The patented shaft seal design ensures reliability even with high- corrosive applications.

FEATURES

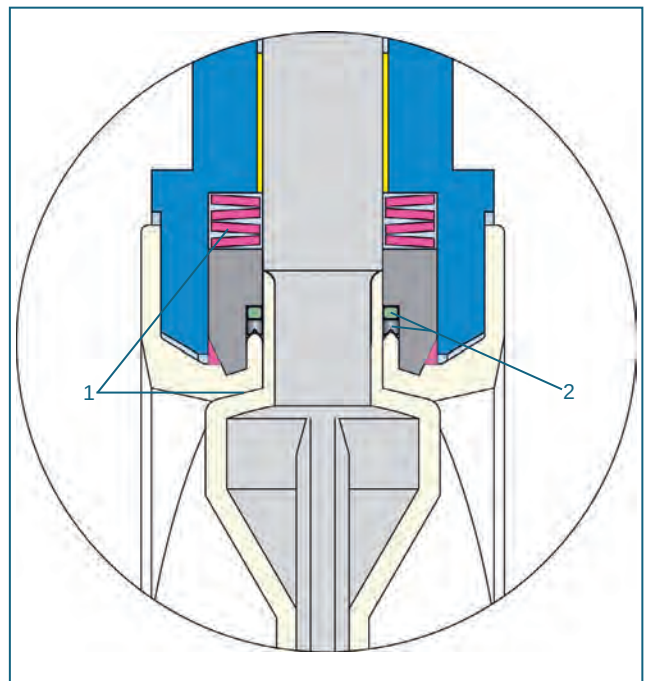
- PTFE-lined butterfly valve for chemically toxic and highly corrosive media
- Environmental protection via EBRO-Safety seal
- Splitted body design
- Isolation height according to plant prescription
- Can be installed in any desired position
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- Material conform to FDA to EG 1935/2004
- Optional: Special design RWTÜV certified to TA-Air/ VDI 2440

GENERAL APPLICATIONS

- Chemically highly corrosive and toxic media
- Purification plants
- Pharmaceutical industry
- Adhesives, paper industry, dissolver
- Paint manufacture and processing
- Food industry
- Chlorine production
- Processing of ore

TECHNICAL DATA

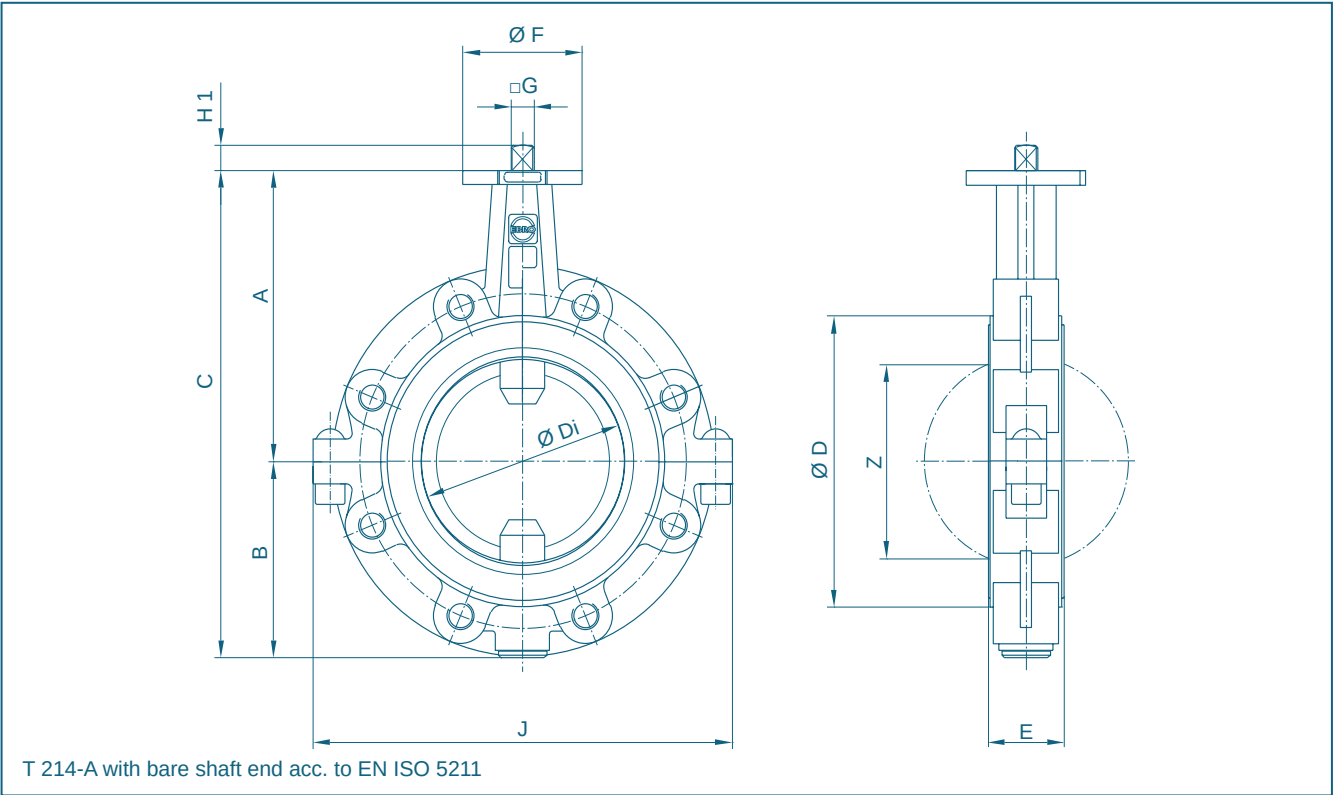
Nominal diameter:	DN(40) 50 - DN 300
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150 AS 4087
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	-40°C to +200°C (depending on operation pressure)
Operating pressure:	max. 10 bar (16 bar for special version)
Vacuum:	up to 1 mbar absolute (with silicon elastomer inserts) from -10°C bis +160°C



Safety seal at both shaft ends:

- 1.Primary sealing by means of a bellville spring washer, transmitting prestress on the spherical segment area.
- 2.Secondary sealing of the shaft by means of PTFE-Chevron and o-ring.

PTFE-LINED BUTTERFLY VALVE T 214-A



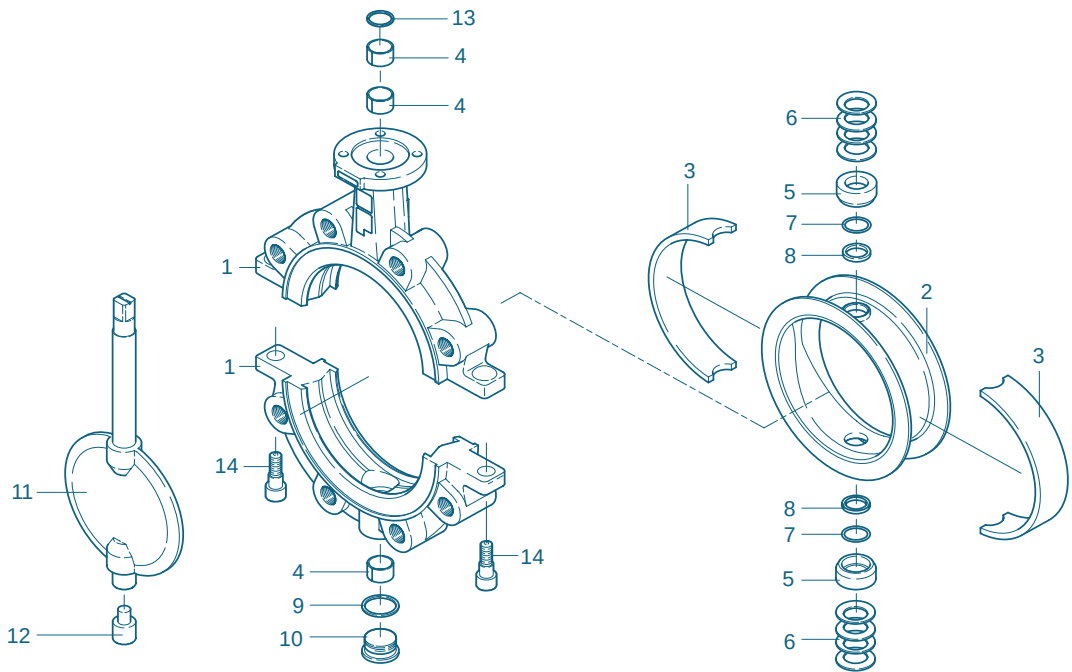
DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	Di	E	F	Flange	G	H1	J	Z	
40*50	2	135	80	215	104	60,8	46	54	F04	11	12	160	41	3,8
65	2½	150	82	232	104	60,8	46	54	F04	11	12	176	41	4,5
80	3	157	108	265	130	79,5	46	65	F05	14	16	230	66	6,2
100	4	180	118	298	160	99,0	52	65	F05	14	16	255	85	9,7
125	5	195	130	325	190	124,5	56	90	F07	17	19	290	112	12,0
150	6	210	142	352	210	150,5	56	90	F07	17	19	310	141	13,5
200	8	240	169	409	268	195,5	60	90	F07	17	19	390	187	22,0
250	10	275	217	492	324	247,5	68	125	F10	22	24	480	239	37,0
300	12	300	240	540	374	292,5	78	125	F10	22	24	550	283	55,0

*DN 50 drilled DN 40

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 214-A

MATERIAL SPECIFICATION AND PARTS LIST



PTFE-lined butterfly valve DN 80 - DN 200

Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body	Nodular cast iron	GGG-40.3	EN-JS 1025 A 395	9	Seal	Stainless Steel	X5CrNi18-10	1.4301 304
2**	Seat	PTFE	Polytetrafluorethylene	PTFE PTFE *	10	Plug screw DIN 908	Stainless steel	G-X6CrNiMo18-10	1.4408 CF8M
3**	Elastomer insert	Silicon	Silicon rubber	MVQ VMQ	11***	Disc/Shaft	St.Steel/ St.Steel	G-X2CoNiMoN26-7-4	1.4469 Duplex
4	DU-bearing	PTFE coated					St.Steel/ PTFE	G-X2CoNiMoN26-7-4	1.4469/ Duplex
5**	Thrust collar	Stainless Steel	X5CrNiMo17-12-2	1.4401 316	12	Lower shaft stub	Polytetrafluorethylene	PTFE PTFE *	
6	Belleville spring washer	Stainless Steel	X12CrNi177	1.4568 631	13	Wiper ring	Stainless Steel	X39CrMo17-1	1.4122
7**	O-ring	FPM	Fluorocarbon caoutchouc	FPM FKM	14	Screw	PTFE	Polytetrafluorethylene	PTFE PTFE
8**	Chevron seal	PTFE	Polytetrafluorethylene	PTFE PTFE			Stainless Steel	A4-70	1.4401 B8M
Above-mentioned materials of the basic version, other materials upon request									

* optional: electrically conductive

** recommended spare parts

*** recommended for coated discs

Subject to change without notice

PTFE-LINED BUTTERFLY VALVE T 214-A

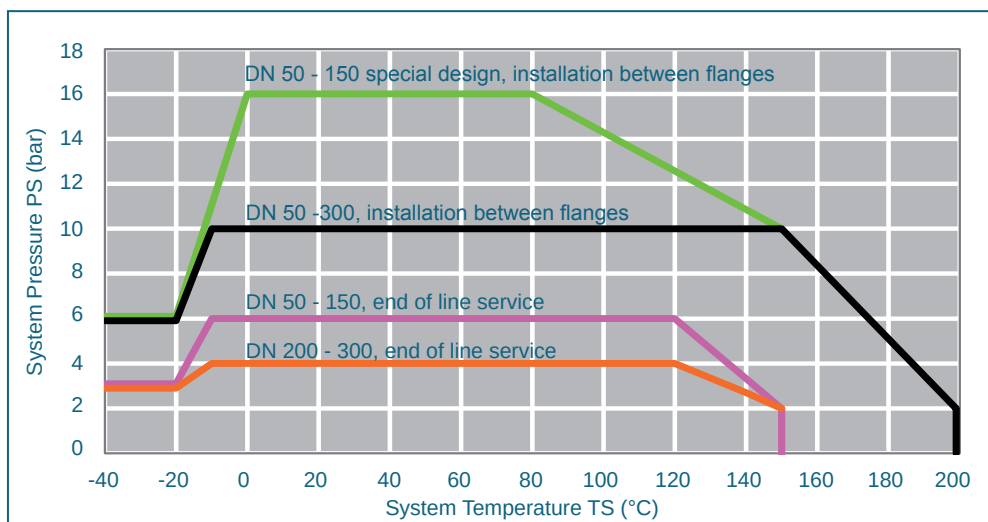
TORQUE

- The torque values specified (Md) are based on dry media and are measured with air at a temperature of 20 °C
- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

PRESSURE/TEMPERATURE DIAGRAM

DN [mm]	40/50	65	80	100	125	150	200	250	300
Size [in]	2	2½	3	4	5	6	8	10	12
MD [Nm]	40	40	70	95	130	170	230	350	480



Pressure-Temperature-Diagramm for valves with Silicone elastomer inserts

Service limitation with EPDM elastomer inserts from -10°C up to +120°C

Service limitation with Fluor carbon inserts (FPM) from -10°C up to +180°C

Vacuum service to 1mbar absolute, from -10°C up to +160°C. Valve installation between flanges

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar
 - The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands
 - Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases
 - The throttle function is linear at an angle 30° to 70°
 - Avoid cavitation
- For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
1) K _V -values metal-disc									
40/50	2	1	8	24	50	70	100	140	210
65	2½	1	8	24	50	70	100	140	210
80	3	1,2	15	44	95	124	180	300	520
100	4	8	25	60	170	210	280	540	980
125	5	15	52	125	250	350	520	840	1400
150	6	35	95	190	350	460	850	1300	2300
200	8	69	253	457	729	1110	1783	2570	3020
250	10	120	380	690	1200	1680	2650	4500	6600
300	12	165	504	937	1512	2275	3795	6810	12800
2) K _V -values PTFE-disc									
40/50	2	1,5	12	28	52	70	96	110	150
65	2½	1,5	12	28	52	70	96	110	150
80	3	2,5	20	48	88	118	160	200	250
100	4	12	32	68	170	210	260	500	780
125	5	18	60	135	260	380	480	790	1250
150	6	45	105	205	370	490	720	1250	2200
200	8	88	297	520	695	1130	1700	2500	2700
250	10	148	430	695	1250	1800	2520	4350	5400
300	12	263	557	960	1560	2450	4300	6700	9400

Subject to change without notice

WAFER TYPE PROCESS VALVE T 211-C



PTFE-lined wafer type valve for chemically toxic and highly corrosive media.

TECHNICAL DATA

Nominal diameter:	DN (40)50 - DN 300
Face-to-face:	EN 558 Table 20
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19 PAS 1085
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	-40°C to +200°C (depending on working pressure)
Operating pressure:	max. 10 bar (16 bar special version)
Vacuum:	up to 1 mbar absolute, (with silicon elastomer inserts) from -10°C to +160°C

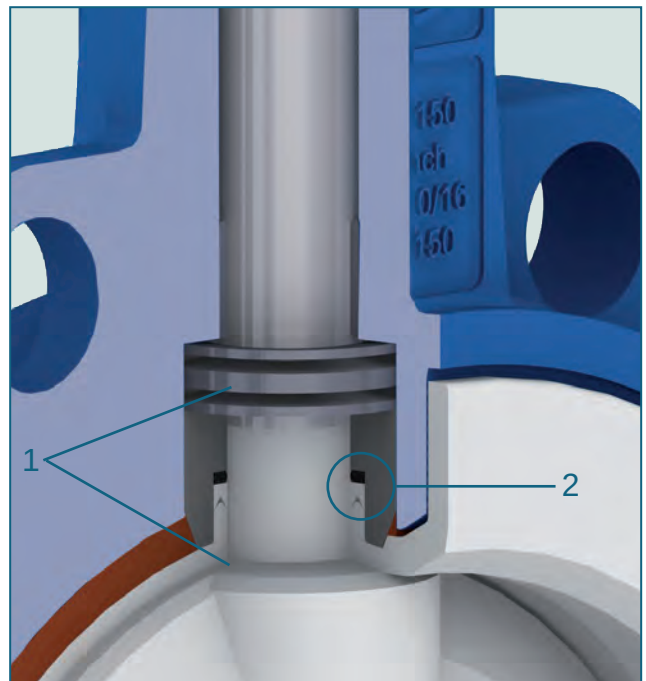
Valve Design
acc. to PAS 1085

FEATURES

- Environmental protection via EBRO-Safety seal
- TA-Luft/ VDI 2440, RWTÜV certified
- Isolation height according to plant prescription
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- Material conform to FDA to EG 1935/2004

DESIGN FEATURES

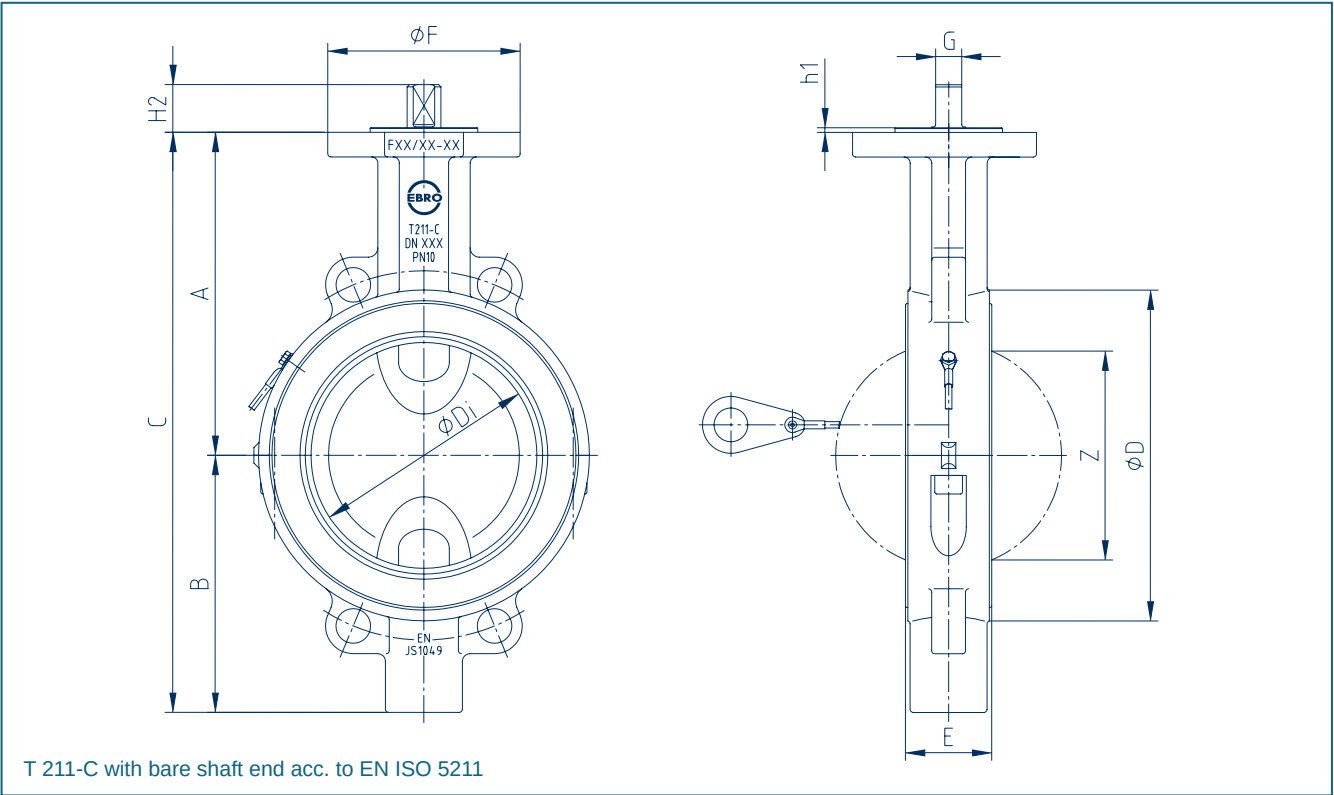
- Optimized low torques
- FEM dimensioned components
- Double flat shaft acc. to EN standards
- Shaft/ disc: duplex (one-piece lost-wax casting)
- Triple shaft bearing



Safety seal at both shaft ends:

1. Primary sealing by means of a bellville spring washer, transmitting prestress on the spherical segment area.
2. Secondary sealing of the shaft by means of PTFE-Chevron and o-ring.

WAFER TYPE PROCESS VALVE T 211-C

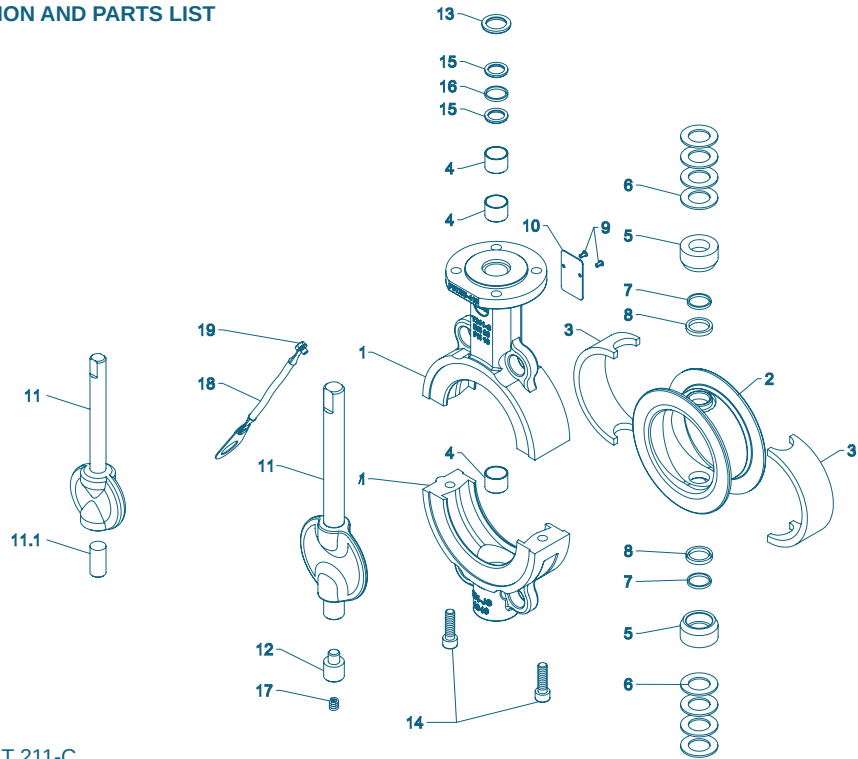


DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	$\varnothing D$	$\varnothing Di$	E	Flange	$\varnothing F$	G	h1	H2	Z	
40/50	1½ 2	126	95	221	112	49	43	F07	90	11	3	22	25	3,5
65	2½	150	103	253	120	61	46	F07	90	11	3	22	41	4
80	3	157	124	281	138	80	46	F07	90	14	3	26	66	6
100	4	180	135	315	160	100	52	F07	90	14	3	26	85	8
150	6	210	167	377	215	151	56	F10	125	17	3	31	141	11
200	8	240	190	430	269	196	60	F12	150	17	3	31	187	18
250	10	275	232	507	324	248	68	F12	150	22	3	40,5	239	32
300	12	298	260	558	374	293	78	F14	175	22	4	41,5	283	46

Subject to change without notice

WAFER TYPE PROCESS VALVE T 211-C

MATERIAL SPECIFICATION AND PARTS LIST



Wafer type process valve T 211-C

Pos.	Description	Material	Material-No.	ASTM	Pos.	Description	Material	Material-No.	ASTM
1	Body				11**	Shaft/Disc	one-piece		
	Nodular Cast Iron	EN-JS 1049	EN 1563	A395		St. Steel /St. Steel	GX2CrNiMoN26-7-4	1.4469	EN 10213
2**	Seat					St. Steel /St. Steel PFA	GX2CrNiMoN26-7-4	1.4469	
	PTFE	Polytetrafluorethylene	PTFE	PTFE *			Perfluoroalkoxy	PFA	PFA
3**	Elastomer insert				11.1	Lower shaft (DN 40/50 only)			
	Silicon	Silicon - rubber	MVQ	VMQ		Stainless Steel	X2CrNiMoN22-5-3	1.4462	Duplex
4	DU-bearing				12	Lower shaft stup (DN 65 - DN 200 only)			
	PTFE coated					Stainless Steel	X39CrMo 17-1	1.4122	
5**	Trust collar				13	Wiper ring			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		PTFE	Polytetrafluorethylene	PTFE	PTFE
6	Belleville spring washer				14	Screw			
	Stainless Steel	X12CrNi177	1.4568	631		Stainless Steel	A4-70	1.4401	A193-B8
7**	O-Ring				15**	Thrust ring			
	FPM	Fluorocarbon caoutchouc	FPM	FKM		PTFE	Polytetrafluorethylene	PTFE	PTFE
8**	Chevron seal				16**	O-Ring			
	PTFE	Polytetrafluorethylene	PTFE	PTFE		FPM	Fluorocarbon caoutchouc		FKM
9	Groove pin				17	Spiral spring			
	Stainless Steel	A2				Spring steel	X10CrNi 18-8	1.4310	301
10	Type plate				18	Buttstrap			
	Stainless Steel								
					19	Screw			
						Stainless Steel	A2-70		A193-B8

* optional: electrically conductive

** recommended spare parts

Subject to change without notice

WAFER TYPE PROCESS VALVE T 211-C

TORQUE

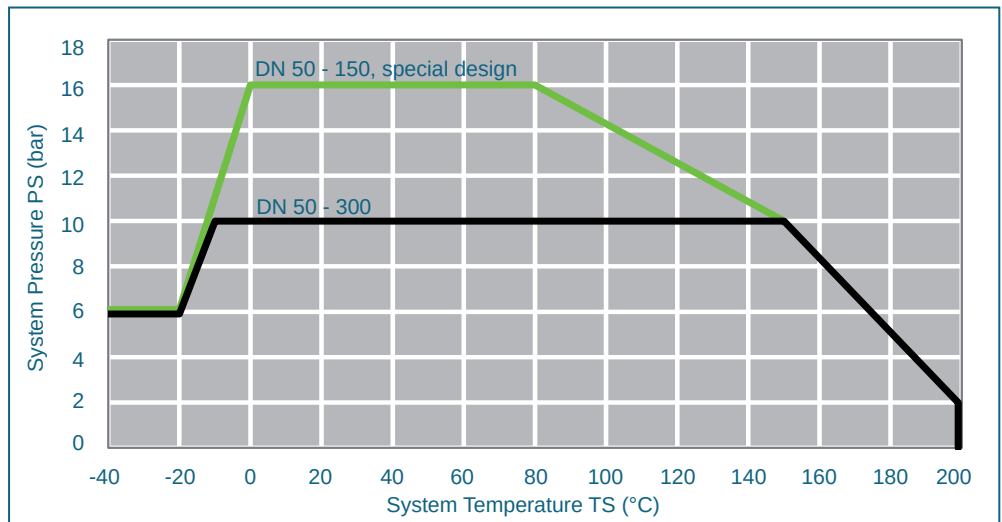
- The torque values specified (Md) are based on dry media and are measured with air at a temperature of 20 °C
- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

PRESSURE/TEMPERATURE DIAGRAM

DN (mm)	40/50	65	80	100	150	200	250	300
Size (in)	1½ 2	2½	3	4	6	8	10	12
MD (Nm)	35	35	55	70	135	170	320	380
MAST (Nm)*	105	105	250	250	480	480	1020	1020

*Maximum torques (Nm)



Pressure-Temperature-Diagram for valves with silicone elastomer inserts

Service limitation with Fluor carbon inserts (FPM) from -10°C up to +120°C

Service limitation with EPDM elastomer inserts from -10°C up to +180°C

Vacuum service to 1mbar absolute, from -10°C up to +160°C. Valve installation between flanges

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
1) K _V -values metal disc									
40/50	1½ 2	1	8	18	32	53	81	107	111
65	2½	1	8	24	50	70	100	140	210
80	3	1,2	15	44	95	124	180	300	520
100	4	8	25	60	170	210	280	540	980
150	6	35	95	190	350	460	850	1300	2300
200	8	69	253	457	729	1110	1783	2570	3020
250	10	120	380	690	1200	1680	2650	4500	6600
300	12	165	504	937	1512	2275	3795	6810	12800
2) K _V -values PFA-disc									
40/50	1½ 2	0,8	6	13	24	40	54	63	66
65	2½	1,5	12	28	52	70	96	110	150
80	3	2,5	20	48	88	118	160	200	250
100	4	12	32	68	170	2210	260	500	780
150	6	45	105	205	370	490	720	1250	2200
200	8	88	297	520	695	1130	1700	2500	2700
250	10	148	430	695	1250	1800	2520	4350	5400
300	12	263	557	960	1560	2450	4300	6700	9400

Subject to change without notice

LUG TYPE PROCESS VALVE T 214-C



PTFE-lined lug type valve for chemically toxic and highly corrosive media.

TECHNICAL DATA

Nominal diameter:	DN (40)50 - DN 300
Face-to-face:	EN 558 Table 20
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19 PAS 1085
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	-40°C to +200°C (depending on working pressure)
Operating pressure:	max. 10 bar (16 bar special version)
Vacuum:	up to 1 mbar absolute, (with silicon elastomer inserts) from -10°C to +160°C

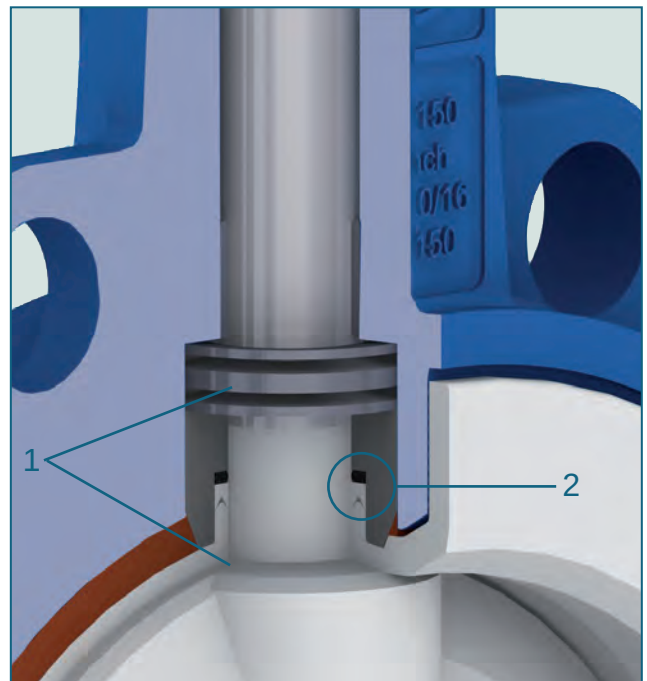
Valve Design
acc. to PAS 1085

FEATURES

- Environmental protection via EBRO-Safety seal
- TA-Luft/ VDI 2440, RWTÜV certified
- Isolation height according to plant prescription
- Maintenance-free
- Can be disassembled, material-specific recycling possible
- Material conform to FDA to EG 1935/2004

DESIGN FEATURES

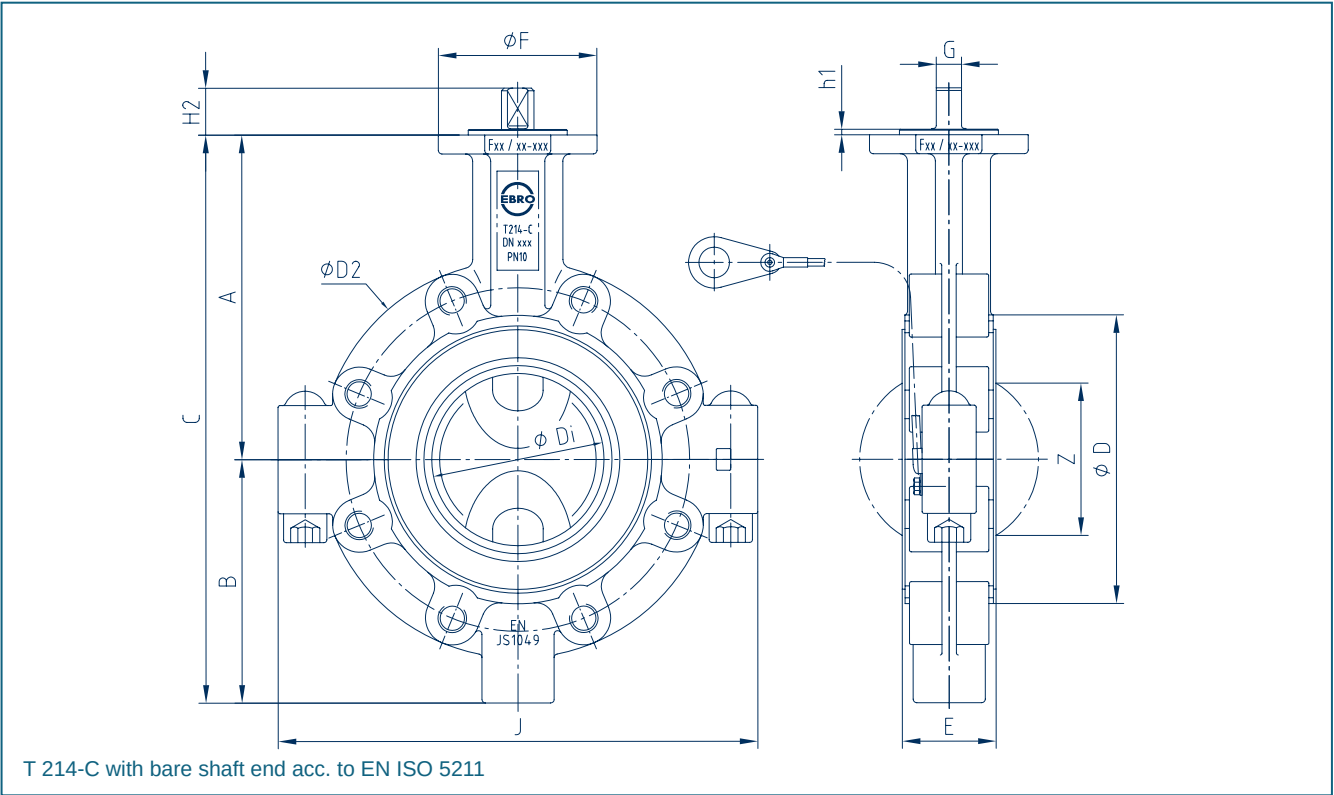
- Optimized low torques
- FEM dimensioned components
- Double flat shaft acc. to EN standards
- Shaft/ disc: duplex (one-piece lost-wax casting)
- Triple shaft bearing



Safety seal at both shaft ends:

1. Primary sealing by means of a bellville spring washer, transmitting prestress on the spherical segment area.
2. Secondary sealing of the shaft by means of PTFE-Chevron and O-ring.

LUG TYPE PROCESS VALVE T 214-C

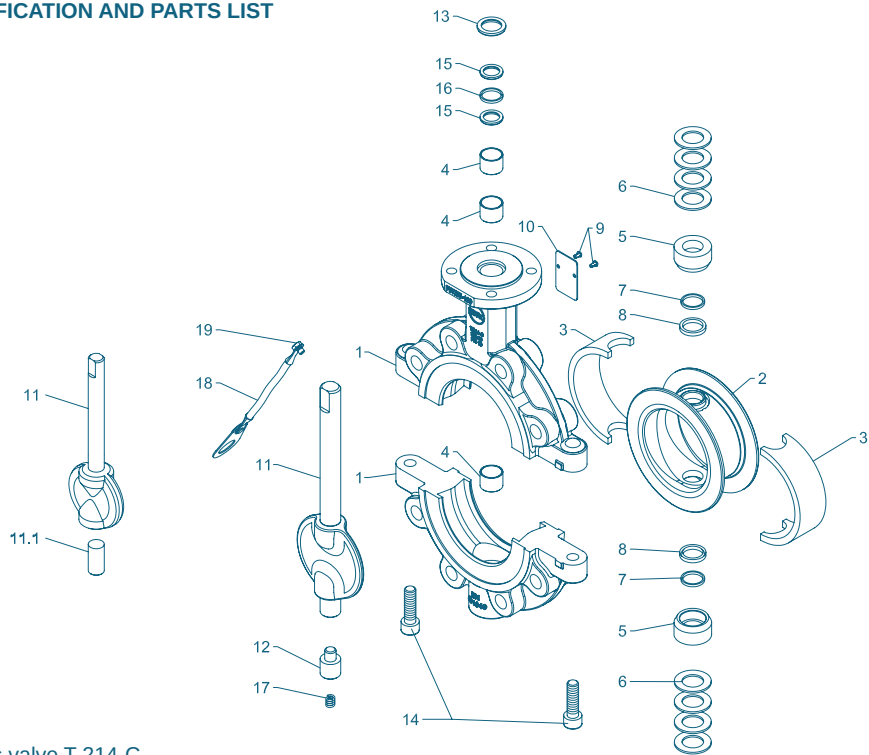


DN [mm]	Size [in]	Dimensions [mm]														Weight [kg]
		A	B	C	ϕD	$\phi D2$	ϕDi	E	Flange	ϕF	G	h1	H2	J	Z	
40/50	1½ 2	126	95	221	104	155	49	43	F07	90	11	3	22	167	25	4,5
65	2½	150	103	253	120	175	61	46	F07	90	11	3	22	181	41	5,5
80	3	157	124	281	138	190	80	46	F07	90	14	3	26	227	66	8,0
100	4	180	135	315	160	210	100	52	F07	90	14	3	26	266	85	10,0
150	6	210	167	377	212	280	151	56	F10	125	17	3	31	322	141	15,0
200	8	240	190	430	268	336	196	60	F12	150	17	3	31	390	187	27,0
250	10	275	232	507	324	412	248	68	F12	150	22	3	40,5	481	239	45,0
300	12	298	260	558	374	460	293	78	F14	175	22	4	41,5	558	283	69,0

Subject to change without notice

LUG TYPE PROCESS VALVE T 214-C

MATERIAL SPECIFICATION AND PARTS LIST



PTFE-lined process valve T 214-C

Pos.	Description	Material	Material-No.	ASTM	Pos.	Description	Material	Material-No.	ASTM
1	Body				11**	Shaft/Disc	one-piece		
	Nodular Cast Iron	EN-JS 1049	EN 1563	A395		St. Steel /St. Steel	GX2CrNiMoN26-7-4	1.4469	EN 10213
2**	Seat					St. Steel /St. Steel PFA	GX2CrNiMoN26-7-4	1.4469	
	PTFE	Polytetrafluorethylene	PTFE	PTFE *			Perfluoroalkoxy	PFA	PFA
3**	Elastomer insert				11.1	Lower shaft (DN 40/50 only)			
	Silicon	Silicon - rubber	MVQ	VMQ		Stainless Steel	X2CrNiMoN22-5-3	1.4462	Duplex
4	DU-bearing				12	Lower shaft stup (DN 65 - DN 200 only)			
	PTFE coated					Stainless Steel	X39CrMo 17-1	1.4122	
5**	Trust collar				13	Wiper ring			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		PTFE	Polytetrafluorethylene	PTFE	PTFE
6	Belleville spring washer				14	Screw			
	Stainless Steel	X12CrNi177	1.4568	631		Stainless Steel	A4-70	1.4401	A193-B8
7**	O-Ring				15**	Thrust ring			
	FPM	Fluorocarbon caoutchouc FPM		FKM		PTFE	Polytetrafluorethylene	PTFE	PTFE
8**	Chevron seal				16**	O-Ring			
	PTFE	Polytetrafluorethylene	PTFE	PTFE		FPM	Fluorocarbon caoutchouc		FKM
9	Groove pin				17	Spiral spring			
	Stainless Steel	A2				Spring steel	X10CrNi 18-8	1.4310	301
10	Type plate				18	Buttstrap			
	Stainless Steel								
					19	Screw			
						Stainless Steel	A2-70		A193-B8

Above-mentioned materials of the basic version, other materials upon request

* optional: electrically conductive

** recommended spare parts

Subject to change without notice

LUG TYPE PROCESS VALVE T 214-C

TORQUE

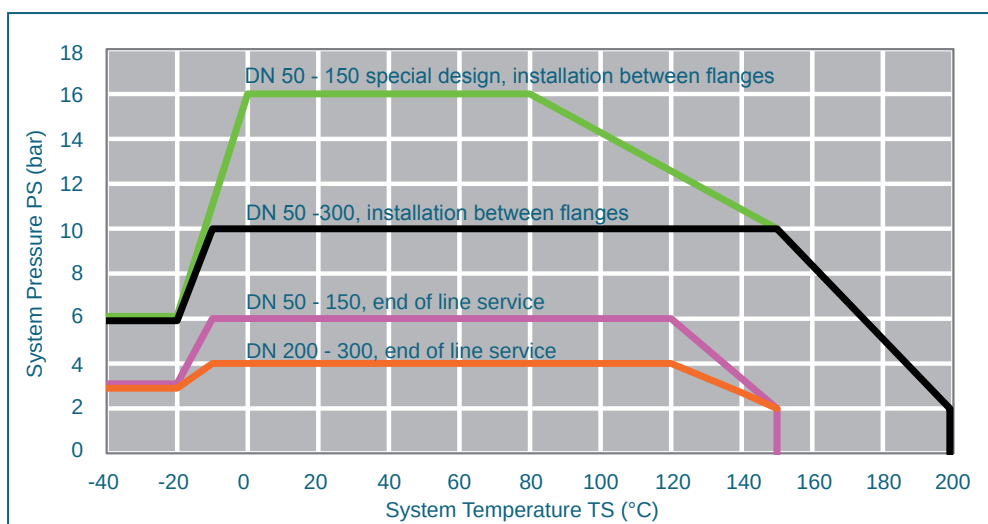
- The torque values specified (Md) are based on dry media and are measured with air at a temperature of 20 °C
- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)
- Dynamic torque specification available upon request

Regarding the dimensioning of actuators, please contact our engineers.

PRESSURE/TEMPERATURE DIAGRAM

DN (mm)	40/50	65	80	100	150	200	250	300
Size (in)	1½ 2	2½	3	4	6	8	10	12
MD (Nm)	35	35	55	70	135	170	320	380
MAST (Nm)*	105	105	250	250	480	480	1020	1020

*Maximum torques (Nm)



Pressure-Temperature-Diagram for valves with Silicone elastomer inserts

Service limitation with Fluor carbon inserts (FPM) from -10°C up to +120°C

Service limitation with EPDM elastomer inserts from -10°C up to +180°C

Vacuum service to 1mbar absolute, from -10°C up to +160°C. Valve installation between flanges

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
1) K _V -values metal disc									
40/50	1½ 2	1	8	18	32	53	81	107	111
65	2½	1	8	24	50	70	100	140	210
80	3	1,2	15	44	95	124	180	300	520
100	4	8	25	60	170	210	280	540	980
150	6	35	95	190	350	460	850	1300	2300
200	8	69	253	457	729	1110	1783	2570	3020
250	10	120	380	690	1200	1680	2650	4500	6600
300	12	165	504	937	1512	2275	3795	6810	12800
2) K _V -values PFA-disc									
40/50	1½ 2	0,8	6	13	24	40	54	63	66
65	2½	1,5	12	28	52	70	96	110	150
80	3	2,5	20	48	88	118	160	200	250
100	4	12	32	68	170	2210	260	500	780
150	6	45	105	205	370	490	720	1250	2200
200	8	88	297	520	695	1130	1700	2500	2700
250	10	148	430	695	1250	1800	2520	4350	5400
300	12	263	557	960	1560	2450	4300	6700	9400

Subject to change without notice

QUALITY FEATURES

HIGH PERFORMANCE VALVE HP 111

STRAIGHT THROUGH SHAFT

ensures maximum bending strength.

MAINTENANCE-FREE BEARING

For all nominal diameters maintenance-free, overlong corrosion and temperature-resistant bearings are used for exact centring of the valve discs.

FORCE-LOCKED CONNECTION

between disc and shaft. Low shear stresses thanks to tangentially arranged tapered pins.

R-PTFE SEAT RING

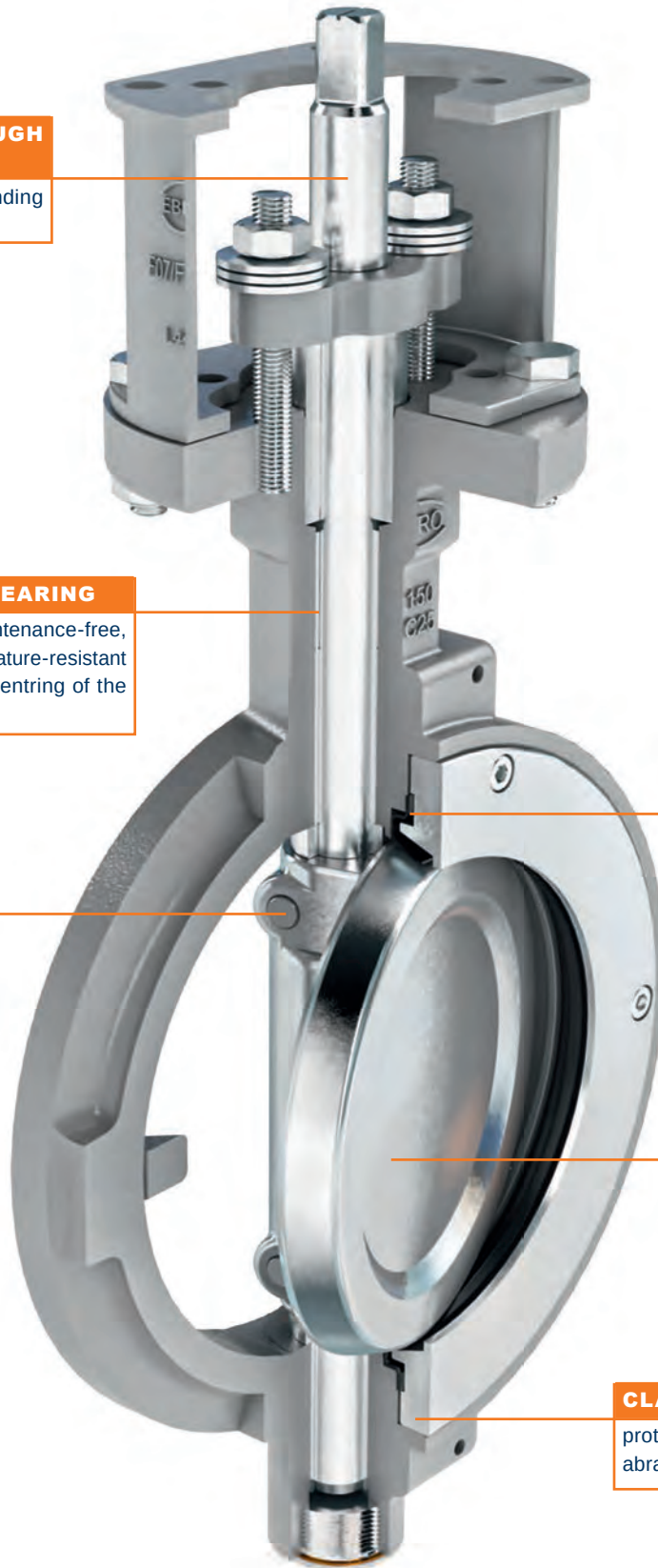
The R-PTFE seat ring guarantees absolute tightness and compensates for wear. The seat ring can be replaced without disassembling the shaft and valve disc.
Alternative: Inconel or Fire-safe

VALVE DISC

The valve disc has a double eccentric bearing design, resulting in low torques and low wear. All sealing surfaces are machined.

CLAMPING RING

protects the seat ring from abrasion and erosion.



HIGH PERFORMANCE BUTTERFLY VALVE HP 111



Wafer type butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

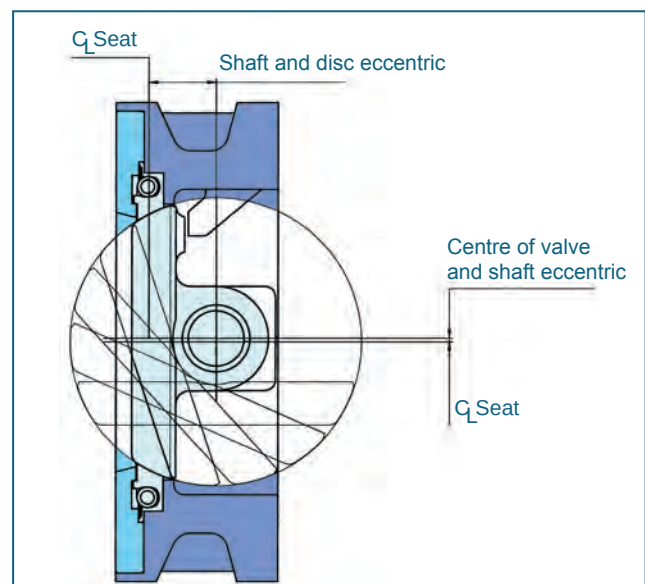
Nominal diameter:	DN 50 - DN 600 (larger nominal diameter on request)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16/25/40 (to DN 150) EN 1092 PN 10/16/25 (DN 200-DN 600) ASME Class 150/300 AS 4087 PN16/21
Flange Surface Design:	EN 1092, Form A/B, ASME RF,FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C to +600°C
Differential pressure:	≤ DN150 max. 40 bar > DN150 max. 25 bar
Vacuum:	up to 1mbar absolute

FEATURES

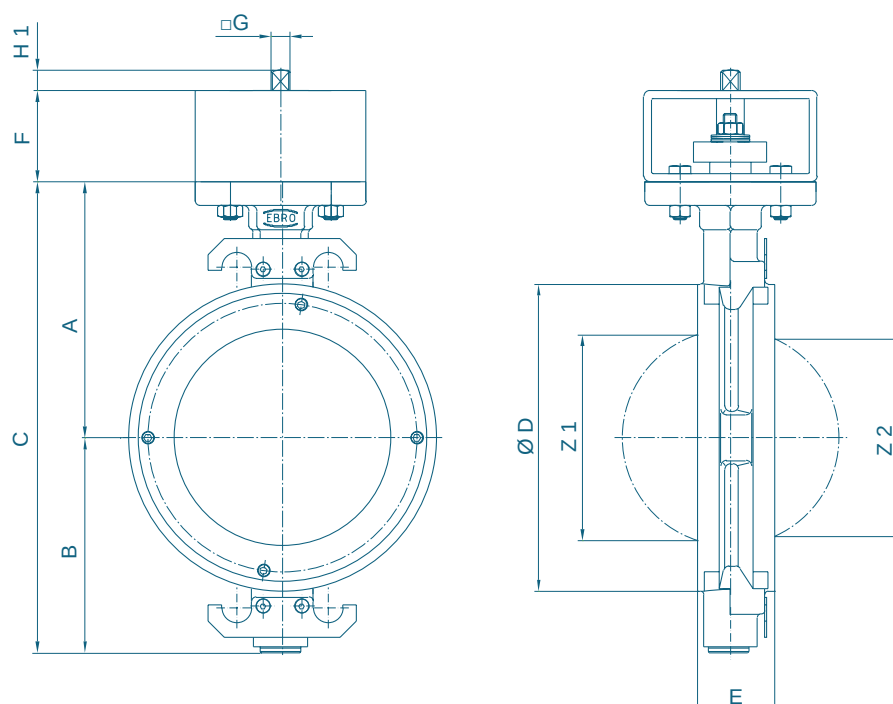
- Shut-off and control of gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Centering pieces can be used as installation aid
- Two seat ring systems available: R-PTFE and Inconel
- Seal variants:
 - soft-sealing (R-PTFE) max. 230°C
 - metallic sealing (Inconel) max. 600°C
- Maintenance-free
- Long service life, even at high switching frequencies

GENERAL APPLICATIONS

- Chemical and petrochemical industry
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Heavy duty services



HIGH PERFORMANCE BUTTERFLY VALVE HP 111



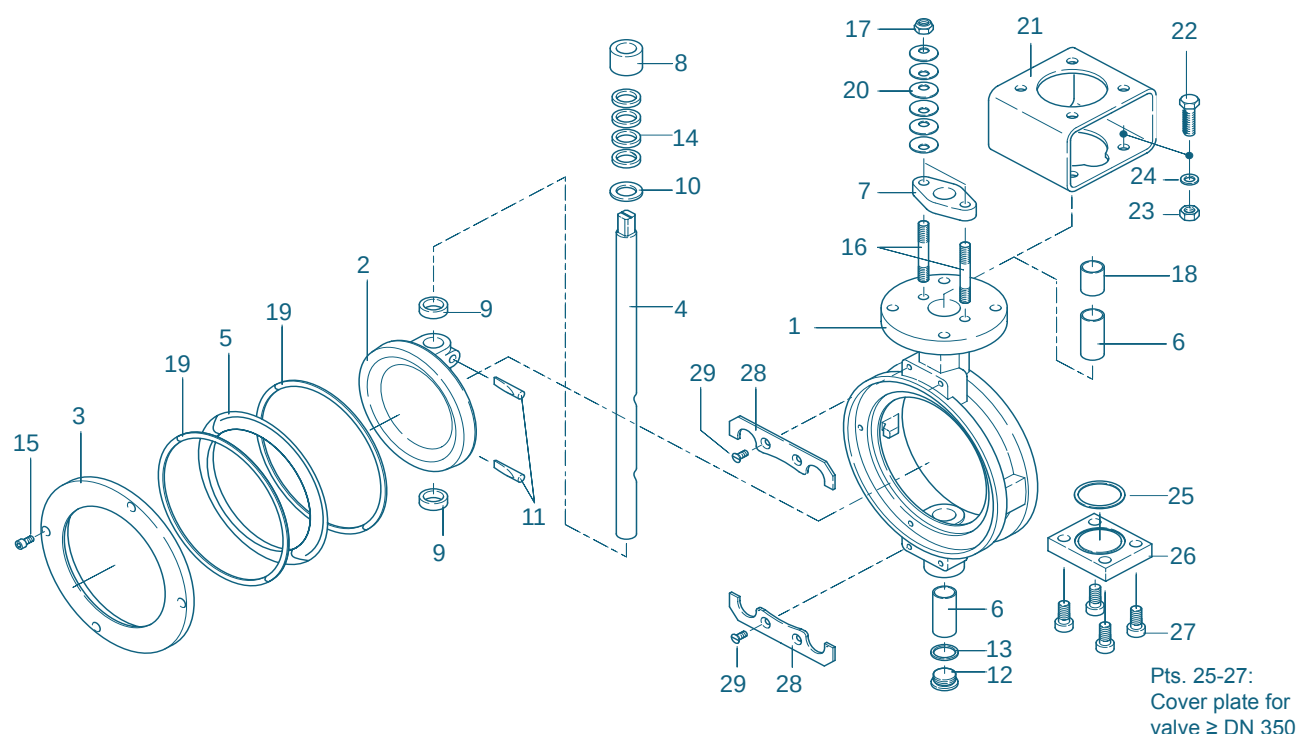
HP 111 with bare shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]											min. pipe-Ø	Weight [kg]
		A	B	C	D	E	F	Flange	G	H1	Z1	Z2		
50	2	133	99	232	112	43	80	F05	12	15	40,9	-	51	7,4
65	2½	133	99	232	112	43	80	F05	12	15	40,9	-	51	7,4
80	3	142	113	255	138	46	80	F05	12	15	70,7	54,4	80	8,0
100	4	158	124	282	160	52	80	F05	12	15	94,2	81,6	103	8,6
125	5	181	140	321	192	56	80	F07	14	18	114,5	105,3	124	12,6
150	6	195	154	349	216	56	80	F07	14	18	143,5	135,4	151	14,8
200	8	225	191	416	270	60	80	F10	17	18	187,4	181,2	196	22,9
250	10	268	222	490	326	68	80	F12	22	23	235,2	228,8	245	33,5
300	12	300	255	555	378	78	90	F12	27	28	280,7	275,8	296	48,0
350	14	345	304	649	438	92	100	F14	27	28	322,8	315,9	334	94,7
400	16	375	339	714	488	102	100	F14	36	36	371,6	363,9	385	115,0
450	18	412	340	752	530	114	120	F16	36	36	426,8	426,8	438	141,0
500	20	425	399	824	593	127	120	F16	46	46	468,7	466	484	186,0
550	22	456	405	861	635	154	200	F25	46	46	525,7	525,7	540	236,0
600	24	490	468	958	692	154	200	F25	55	55	544,2	542,2	560	310,0

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 111

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				14	Shaft seal			
	Carbon Steel	GS-C25N	1.0619	WCB		PTFE			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Graphite			
2	Disc				15	Hex.-socket screw			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Stainless Steel	A4-70	1.4401	B8M
3	Clamping ring				16	Threaded pin			
	Steel	St37-2	1.0037	283-C		Stainless Steel	A2-70	1.4301	B 8
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316	17	Hex. nut			
4	Shaft					Stainless Steel	A 2	1.4301	8
	Stainless Steel	X4CrNiMo16-5-1	1.4418		18	Spacer sleeve			
5	Seat ring					Stainless Steel	X6CrNiMoTi17-12-2	1.4971	316 Ti
	R-PTFE	PTFE-Compound			19	Graphite seal (for metal seat)			
	Inconel	Inconel 625				Graphite			
6	Shaft bearing				20	Belleville spr. washer			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316		Spring Steel	50CrV4	1.8159	6150
		X6CrNiMoTi17-12-2	1.4571 nitrite	316 Ti		Stainless Steel	X10CrNi18-8	1.4310	301 Ti
7	Gland flange				21	Bracket			
	Steel	St37-2	1.0037	283-C		Steel	St37-2 galvanized	1.0037	283-C
	Stainless Steel	X5CrNi18-10	1.4301	304	22	Hex. bolt			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Steel	St galvanized		CS
8	Thrust collar				23	Hex. nut			
	Stainless Steel	X5CrNi18-10	1.4301	304		Steel	St galvanized		CS
9	Bearing ring				24	Washer			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 chr-pld	316 Ti		Steel	St galvanized		CS
10	Suppor. washer				25	Seal			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti		Graphite			
11	Taper pin				26	Cover plate			
	Stainless Steel	X4CrNiMo16-5-1	1.4418			Steel	St37-2 galvanized	1.0037	283-C
12	Plug screw DIN 908				27	Hex.-socket screw			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Stainless Steel	A2-70	1.4301	B 8
13	Seal				28	Centering piece			
	PTFE					Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
	Graphite				29	Countersunk screw			
						Stainless Steel	A 2	1.4301	SS
	Other materials upon request								

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 111

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure							
		10 [bar]		16 [bar]		25 [bar]		40 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel
50-65	2-2½	27	35	28	42	30	58	31	66
80	3	28	55	30	65	34	90	38	100
100	4	51	90	61	100	80	120	93	140
125	5	63	150	83	172	95	220	125	285
150	6	125	170	136	220	168	300	220	360
200	8	205	350	260	430	280	505	*	*
250	10	485	505	550	620	600	860	-	-
300	12	584	740	700	970	855	1280	-	-
350	14	740	815	930	1050	1200	1370	-	-
400	16	1050	1530	1640	2240	2460	2900	-	-
450	18	1150	1700	1750	2500	2700	3500	-	-
500	20	1210	2010	1800	2760	2800	4260	-	-
550	22	3500	3750	4430	4550	6010	6800	-	-
600	24	4000	4500	4600	5740	6200	8080	-	-

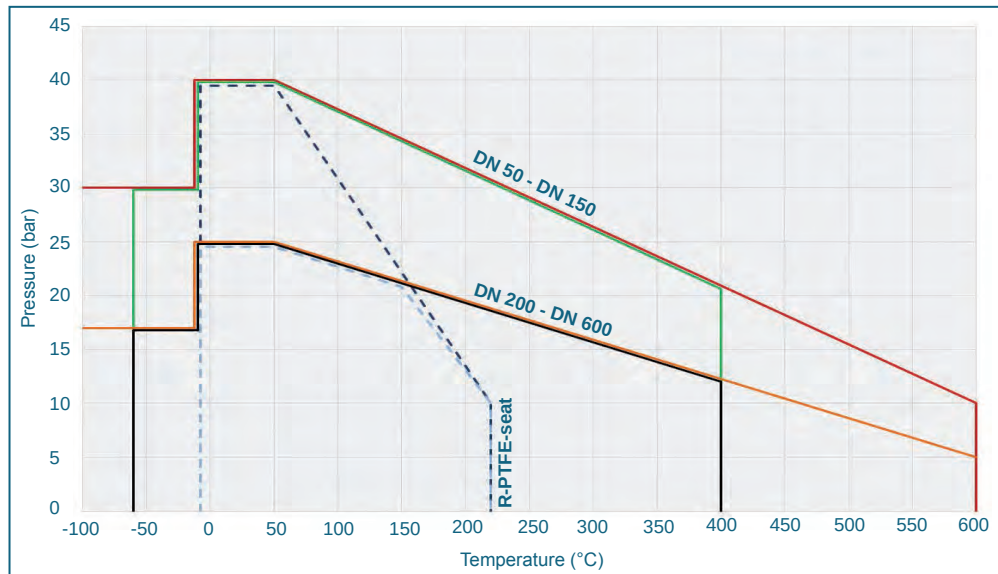
* DN 200 PN 16 max. 25 bar

All values in Nm

PRESSURE/TEMPERATURE DIAGRAM

- Pressure control line for GS-C25 body material and metal seat
- Pressure control line for 1.4408 body material and metal seat
- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation!

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,3	6	15	18	19	21	22	23
65	2½	1,5	7	18	22	23	24	25	25
80	3	7	30	50	68	82	97	113	115
100	4	22	60	97	119	164	199	223	251
125	5	45	100	152	195	256	346	452	493
150	6	63	109	162	250	391	588	814	845
200	8	96	168	301	509	742	1107	1581	1747
250	10	264	458	682	980	1421	2083	2882	2889
300	12	397	625	956	1368	1938	2778	3794	3940
350	14	460	720	1100	1650	2500	3400	4800	5400
400	16	550	870	1250	2000	3200	4800	6800	8080
450	18	730	1200	1800	3100	4600	6400	8400	10500
500	20	920	1600	2600	4100	6000	8500	12100	12800
550	22	1090	1950	3100	4600	7500	10200	14700	15300
600	24	1370	2250	3780	4950	9000	12500	17100	18500

Subject to change without notice



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HIGH PERFORMANCE BUTTERFLY VALVE HP 114



Lug type butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

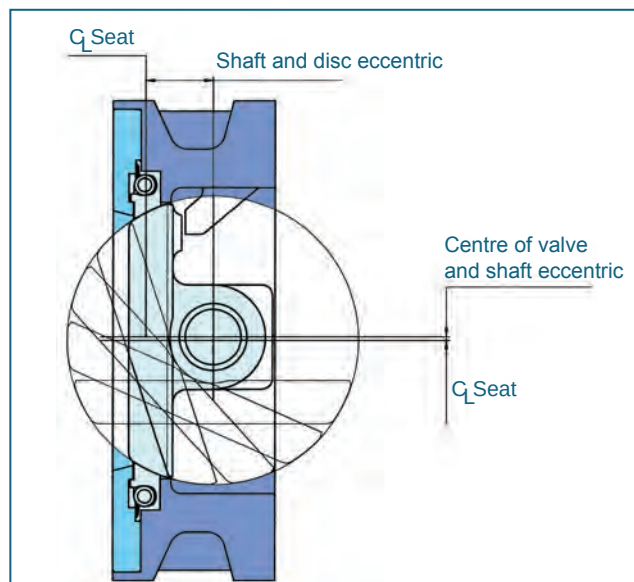
Nominal diameter:	DN 50 - DN 600 (larger nominal diameter on request)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16/25/40 (to DN 150) EN 1092 PN 10/16/25 (DN 200-DN 600) ASME Class 150/300 AS 4087 PN16/21
Flange Surface Design:	EN 1092, Form A/B, ASME RF,FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C to +600°C
Differential pressure:	≤ DN150 max. 40 bar > DN150 max. 25 bar
Vacuum:	up to 1mbar absolute

FEATURES

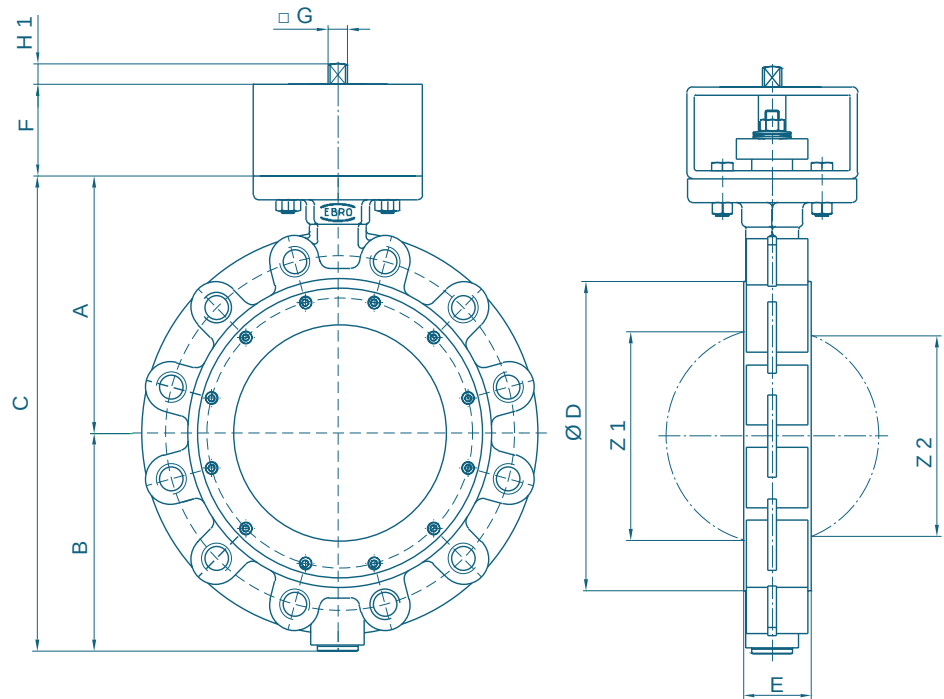
- Shut-off and control of gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Centering pieces can be used as installation aid
- Two seat ring systems available: R-PTFE and Inconel
- Seal variants:
soft-sealing (R-PTFE) max. 230°C
metallic sealing (Inconel) max. 600°C
- Maintenance-free
- Long service life, even at high switching frequencies

GENERAL APPLICATIONS

- Chemical and petrochemical industries
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Food industry
- Heavy duty services



HIGH PERFORMANCE BUTTERFLY VALVE HP 114



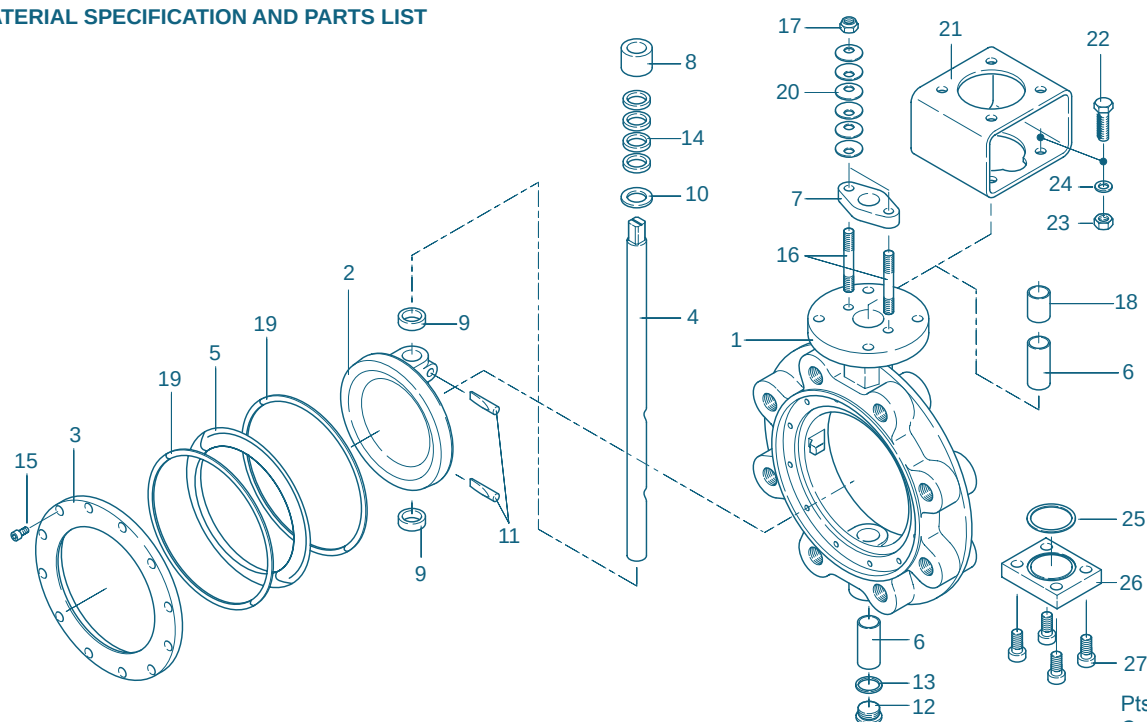
HP 114 with bare shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]											min. pipe-Ø	Weight [kg]
		A	B	C	D	E	F	Flange	G	H1	Z1	Z2		
50	2	133	99	232	112	43	80	F05	12	15	40,9	-	51	7,4
65	2½	133	99	232	112	43	80	F05	12	15	40,9	-	51	7,4
80	3	142	113	255	138	46	80	F05	12	15	70,7	54,4	80	10,2
100	4	158	124	282	160	52	80	F05	12	15	94,2	81,6	103	13,5
125	5	181	140	321	192	56	80	F07	14	18	114,5	105,3	124	17,6
150	6	195	154	349	216	56	80	F07	14	18	143,5	135,4	151	21,0
200	8	225	191	416	270	60	80	F10	17	18	187,4	181,2	196	32,9
250	10	268	222	490	326	68	80	F12	22	23	235,2	228,8	245	49,0
300	12	300	255	555	378	78	90	F12	27	28	280,7	275,8	296	68,5
350	14	345	304	649	438	92	100	F14	27	28	322,8	315,9	334	104,0
400	16	375	339	714	488	102	100	F14	36	36	371,6	363,9	385	135,0
450	18	412	340	752	530	114	120	F16	36	36	426,8	426,8	438	174,0
500	20	425	399	824	593	127	120	F16	46	46	468,7	466	484	240,0
550	22	456	405	861	635	154	200	F25	46	46	525,7	525,7	540	268,0
600	24	490	468	958	692	154	200	F25	55	55	544,2	542,2	560	390,0

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114

MATERIAL SPECIFICATION AND PARTS LIST



Pts. 25-27:
Cover plate for
valve $\geq$ DN 350

Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				14	Shaft seal			
	Carbon Steel	GS-C25N	1.0619	WCB		PTFE			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Graphite			
2	Disc				15	Hex.-socket screw			
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Stainless Steel	A4-70	1.4401	B8M
3	Clamping ring				16	Threaded pin			
	Steel	St37-2	1.0037	283-C		Stainless Steel	A2-70	1.4301	B 8
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316	17	Hex. nut			
4	Shaft					Stainless Steel	A 2	1.4301	8
	Stainless Steel	X4CrNiMo16-5	1.4418		18	Spacer sleeve			
5	Seat ring					Stainless Steel	X10CrNi18-8	1.4310	301 Ti
	R-PTFE	PTFE-Compound			19	Graphite seal (for metal seat)			
	Inconel	Inconel 625				Graphite			
6	Shaft bearing				20	Belleville spring washer			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316 PTFE		Spring Steel	50CrV4	1.8159	6150
		X6CrNiMoTi17-12-2	1.4571 nitrite	316 Ti		Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
7	Gland flange				21	Bracket			
	Steel	St37-2	1.0037	283-C		Steel	St37-2 galvanized	1.0037	283-C
	Stainless steel	X5CrNi18-10	1.4301	304	22	Hex. bolt			
8	Thrust collar					Steel	St galvanized		CS
	Stainless Steel	X5CrNi18-10	1.4301	304	23	Hex. nut			
9	Bearing ring					Steel	St galvanized		CS
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 chr-pld	316 Ti	24	Washer			
10	Suppor. washer					Steel	St galvanized		CS
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	25	Seal			
11	Taper pin					Graphite			
	Stainless Steel	X4CrNiMo16-5	1.4418		26	Cover plate			
12	Plug screw DIN 908					Steel	St37-2 galvanized	1.0037	283-C
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	27	Hex.-socket screw			
13	Seal					Stainless Steel	A2-70	1.4301	B 8
	PTFE								
	Graphite								
						Other materials upon request			

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure							
		10 [bar]		16 [bar]		25 [bar]		40 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel
50-65	2-2½	27	35	28	42	30	58	31	66
80	3	28	55	30	65	34	90	38	100
100	4	51	90	61	100	80	120	93	140
125	5	63	150	83	172	95	220	125	285
150	6	125	170	136	220	168	300	220	360
200	8	205	350	260	430	280	505	*	*
250	10	485	505	550	620	600	860	-	-
300	12	584	740	700	970	855	1280	-	-
350	14	740	815	930	1050	1200	1370	-	-
400	16	1050	1530	1640	2240	2460	2900	-	-
450	18	1150	1700	1750	2500	2700	3500	-	-
500	20	1210	2010	1800	2760	2800	4260	-	-
550	22	3500	3750	4430	4550	6010	6800	-	-
600	24	4000	4500	4600	5740	6200	8080	-	-

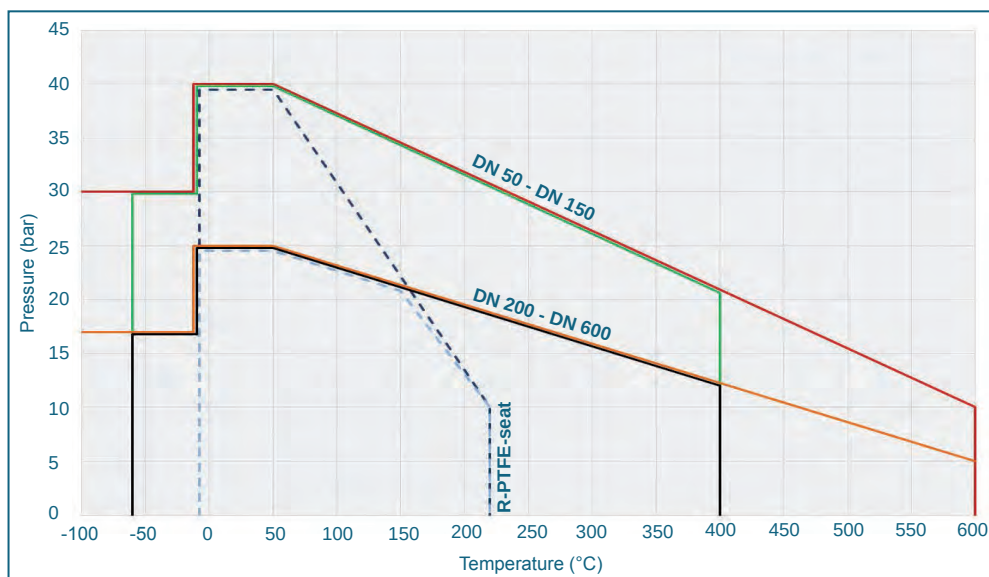
* DN 200 PN 16 max. 25 bar

All values in Nm

PRESSURE/TEMPERATURE DIAGRAM

- Pressure control line for GS-C25 body material and metal seat
- Pressure control line for 1.4408 body material and metal seat
- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation!

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,3	6	15	18	19	21	22	23
65	2½	1,5	7	18	22	23	24	25	25
80	3	7	30	50	68	82	97	113	115
100	4	22	60	97	119	164	199	223	251
125	5	45	100	152	195	256	346	452	493
150	6	63	109	162	250	391	588	814	845
200	8	96	168	301	509	742	1107	1581	1747
250	10	264	458	682	980	1421	2083	2882	2889
300	12	397	625	956	1368	1938	2778	3794	3940
350	14	460	720	1100	1650	2500	3400	4800	5400
400	16	550	870	1250	2000	3200	4800	6800	8080
450	18	730	1200	1800	3100	4600	6400	8400	10500
500	20	920	1600	2600	4100	6000	8500	12100	12800
550	22	1090	1950	3100	4600	7500	10200	14700	15300
600	24	1370	2250	3780	4950	9000	12500	17100	18500

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 111-E



Wafer type butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

Nominal diameter:	DN 50 - DN 200 (larger nominal diameter on request)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150 AS 4087 PN16/21
Flange Surface Design:	EN 1092, Form A/B, ASME RF,FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C to +600°C
Differential pressure:	see pressure/ temperature diagram
Vacuum:	up to 1mbar absolute

FEATURES

- Shut-off and control of gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Centering pieces can be used as installation aid
- Two seat ring systems available: R-PTFE and Inconel
- Seal variants
soft-sealing (R-PTFE) max. 230°C
metallic sealing (Inconel-seat) max. 600°C
- Maintenance-free
- Long service life, even at high switching frequencies
- FIRE SAFE BS 6755 PART 2

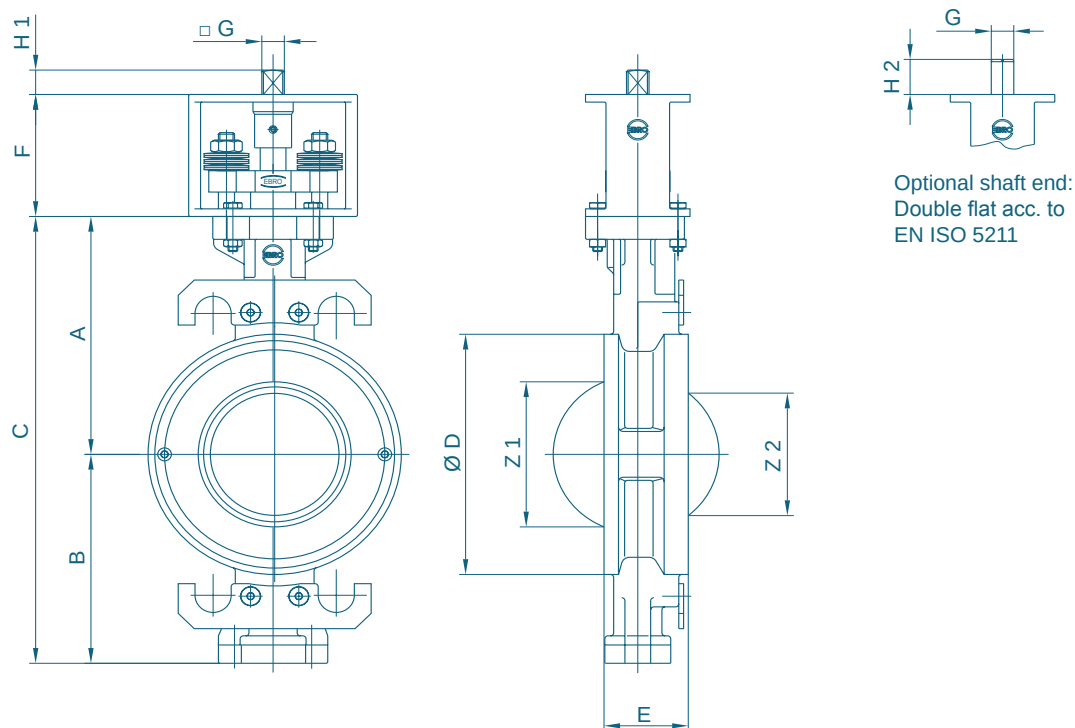
GENERAL APPLICATIONS

- Chemical and petrochemical industries
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Food industries
- Heavy duty services



The splitted shaft design allows better flow characteristics up to a nominal pressure of 19 bar.

HIGH PERFORMANCE BUTTERFLY VALVE HP 111-E



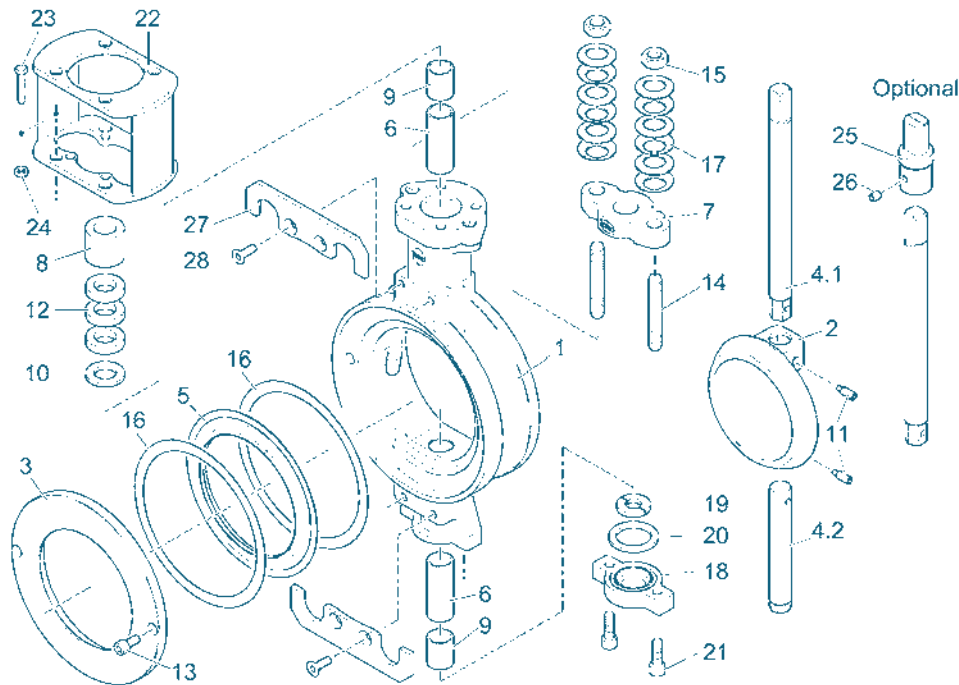
Optional shaft end:
Double flat acc. to
EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]														Weight [kg]
		A	B	C	D	E	F	Flange	□G	H1	G	H2	Z1	Z2	min. pipe-Ø	
50	2	131	112	243	112	43	80	F05	12	15	14	23	41	-	51	5,8
65	2½	131	112	243	112	43	80	F05	12	15	14	23	41	-	51	5,8
80	3	141	122	263	138	46	80	F05	12	15	14	23	71	55	80	5,9
100	4	156	137	293	158	52	80	F05	12	15	14	23	95	82	103	7,4
125	5	180	172	352	186	56	80	F07	14	18	17	28	115	106	124	11,3
150	6	194	186	380	216	56	80	F07	14	18	17	28	144	136	151	13,8
200	8	219	212	431	270	60	80	F10	17	18	22	37	188	182	196	24,6

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 111-E

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				14	Threaded pin			
	Carbon Steel	GP240GH (GS-C25N)	1.0619	WCB		Stainless Steel	A2-70	1.4301	B 8
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	15	Hex. nut			
2	Disc					Stainless Steel	A 2	1.4301	8
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	16	Graphite seal (for metal seat)			
3	Clamping ring					Graphite			
	Steel	S23JR (RSi37-2)	1.0038	283-C	17	Belleville spring washer			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		Spring Steel	50CrV4	1.8159	6150
4.1	Upper shaft					Stainless Steel	X10CrNi18-8	1.4310	301 Ti
	Stainless Steel	X4CrNiMo16-5-1	1.4418		18	Cover plate			
	Stainless Steel	X5CrNiCuNb16-4	1.4542			Stainless Steel	GX5CrNiMo19-11	1.4408	
4.2	Lower shaft				19	Segment			
	Stainless Steel	X4CrNiMo16-5-1	1.4418			Stainless Steel	X6CrNiMoTi17-12-2	1.4571	nitrite
5	Seat ring				20	Seal			
	R-PTFE	PTFE-Compound				Graphite			
	Inconel	Inconel 625				PTFE			
6	Shaft bearing					NBR			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	nitriert 316 Ti		FPM			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316	21	Hex.-socket screw			
7	Gland flange					Stainless Steel	A4-70		
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	22	Bracket			
8	Thrust collar					Stainless Steel	GX5CrNiMo19-11	1.4408	
	Stainless Steel	X5CrNi18-10	1.4301	304	23	Hex. bolt			
9	Spacer sleeve					Stainless Steel	A2-70		
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	24	Hex. nut			
10	Suppor. washer					Stainless Steel	A 2		
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	25	Shaft adapter			
11	Set screw					Stainless Steel	GX5CrNiMoN26-7-4	1.4469	
	Stainless Steel	A4-70			26	Set screw			
12	Shaft seal					Stainless Steel	A2-70		
	Graphite				27	Centering piece			
	PTFE					Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
13	Hex.-socket screw				28	Countersunk screw			
	Stainless Steel	A4-70	1.4401	B8M		Stainless Steel	A 2	1.4301	SS
	Other materials upon request								

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 111-E

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure			
		10 [bar]		16 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel
50-65	2-2½	27	35	28	42
80	3	28	55	30	65
100	4	51	90	61	100
125	5	63	150	83	172
150	6	125	170	136	220
200	8	205	350	260	430

All values in Nm

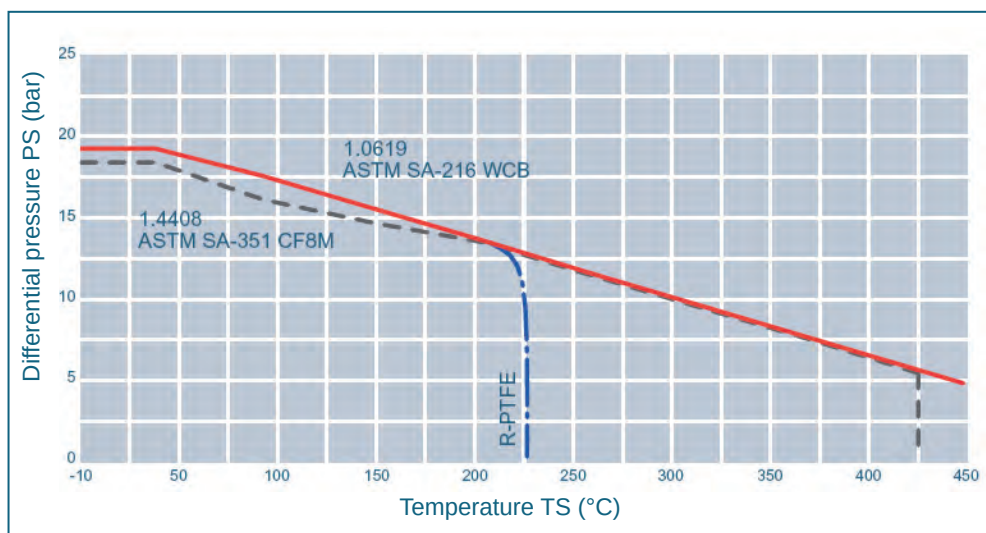
PRESSURE/TEMPERATURE DIAGRAM

----- Pressure control line for GS-C25 body material and metal seat

— Pressure control line for 1.4408 body material and metal seat

----- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	3	13	28	39	49	58	69	81
65	2½	3	13	29	41	52	61	72	84
80	3	19	40	63	96	135	189	242	287
100	4	33	65	89	125	180	259	365	450
125	5	53	105	169	245	342	509	645	728
150	6	82	161	252	385	575	817	1010	1123
200	8	105	184	331	559	816	1217	1795	1921

Subject to change without notice

For further values, please contact our engineers.

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-E



Lug type butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

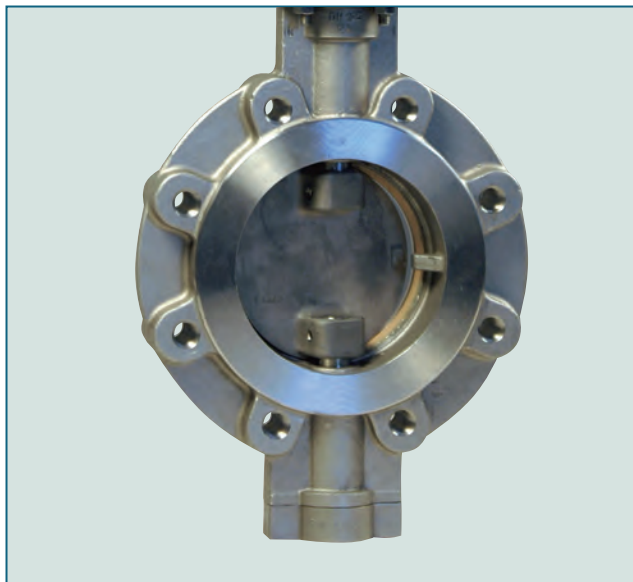
Nominal diameter:	DN 50 - DN 200 (larger nominal diameter on request)
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 10/16 ASME Class 150 AS 4087 PN16/21
Flange Surface Design:	EN 1092, Form A/B, ASME RF,FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C to +600°C
Differential pressure:	see pressure/ temperature diagram
Vacuum:	up to 1mbar absolute

FEATURES

- Shut-off and control of gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Centering pieces can be used as installation aid
- Two seat ring systems available: R-PTFE and Inconel
- Seal variants
soft-sealing (R-PTFE) max. 230°C
metallic sealing (Inconel) max. 600°C
- Maintenance-free
- Long service life, even at high switching frequencies
- FIRE SAFE BS 6755 PART 2

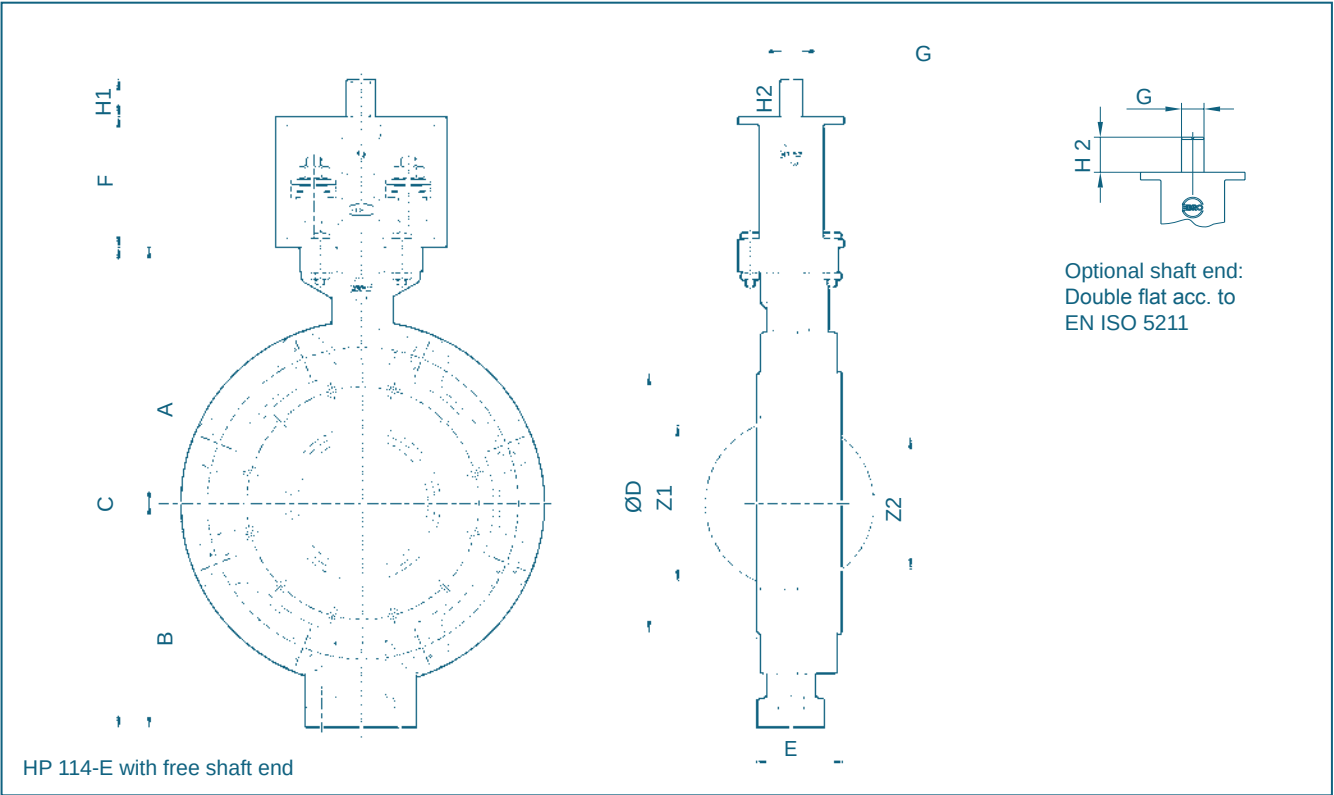
GENERAL APPLICATIONS

- Chemical and petrochemical industries
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Food industries
- Heavy duty services



The splitted shaft design allows better flow characteristics up to a nominal pressure of 19 bar.

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-E

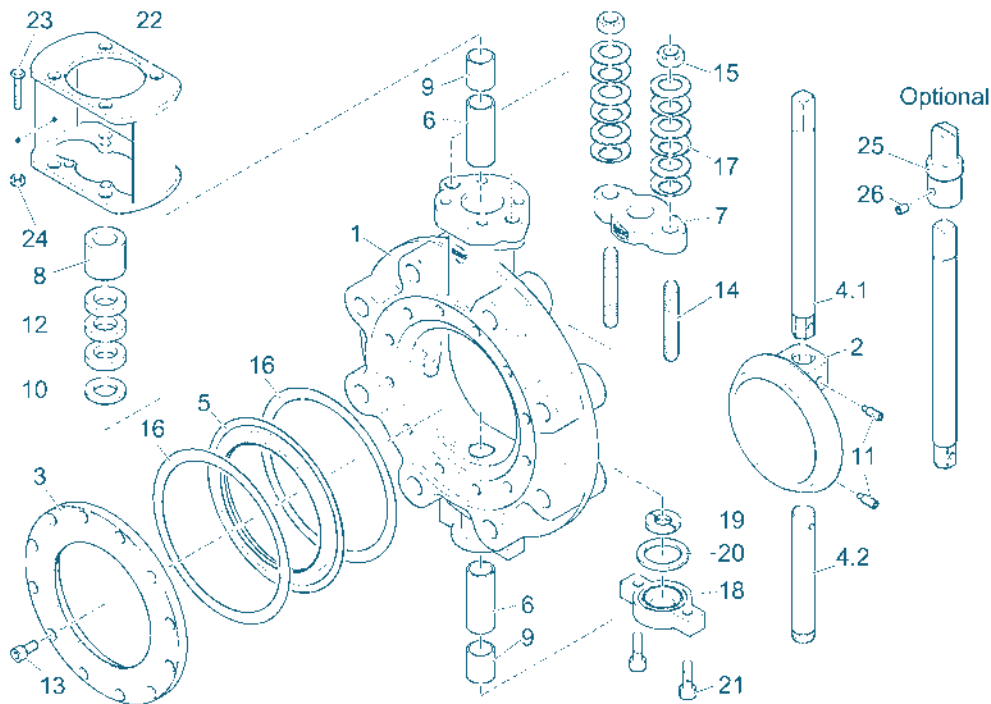


DN [mm]	Size [in]	Dimensions [mm]														Weight [kg]
		A	B	C	D	E	F	Flange	□G	H1	G	H2	Z1	Z2	min. pipe-Ø	
50	2	131	112	243	122	43	80	F05	12	15	14	23	41	-	51	8,4
65	2½	131	112	243	122	43	80	F05	12	15	14	23	41	-	51	8,4
80	3	141	122	263	138	46	80	F05	12	15	14	23	71	55	80	9,7
100	4	156	137	293	158	52	80	F05	12	15	14	23	95	82	103	11,8
125	5	180	172	352	186	56	80	F07	14	18	17	28	115	106	124	16,8
150	6	194	186	380	216	56	80	F07	14	18	17	28	144	136	151	21,8
200	8	219	212	431	270	60	80	F10	17	18	22	37	188	182	196	33,6

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-E

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Body				14	Threaded pin			
	Carbon Steel	GP240GH (GS-C25N)	1.0619	WCB		Stainless Steel	A2-70	1.4301	B 8
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	15	Hex. nut			
2	Disc					Stainless Steel	A 2	1.4301	8
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	16	Graphite seal (for metal seat)			
3	Clamping ring					Graphite			
	Steel	S23JR (RSi37-2)	1.0038	283-C	17	Belleville spring washer			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		Spring Steel	50CrV4	1.8159	6150
4.1	Upper shaft					Stainless Steel	X10CrNi18-8	1.4310	301 Ti
	Stainless Steel	X4CrNiMo16-5-1	1.4418		18	Cover plate			
	Stainless Steel	X5CrNiCuNb16-4	1.4542			Stainless Steel	GX5CrNiMo19-11	1.4408	
4.2	Lower shaft				19	Segment			
	Stainless Steel	X4CrNiMo16-5-1	1.4418			Stainless Steel	X6CrNiMoTi17-12-2	1.4571	nitrite
5	Seat ring				20	Seal			
	R-PTFE	PTFE-Compound				Graphite			
	Inconel	Inconel 625				PTFE			
6	Shaft bearing					NBR			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	nitriert 316 Ti		FPM			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316	21	Hex.-socket screw			
7	Gland flange					Stainless Steel	A4-70		
	Stainless Steel	G-X5CrNiMo19-11	1.4408	CF8M	22	Bracket			
8	Thrust collar					Stainless Steel	GX5CrNiMo19-11	1.4408	
	Stainless Steel	X5CrNi18-10	1.4301	304	23	Hex. bolt			
9	Spacer sleeve					Stainless Steel	A2-70		
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	24	Hex. nut			
10	Suppor. washer					Stainless Steel	A 2		
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	25	Shaft adapter			
11	Set screw					Stainless Steel	GX5CrNiMoN26-7-4	1.4469	
	Stainless Steel	A4-70			26	Set screw			
12	Shaft seal					Stainless Steel	A2-70		
	Graphite				27	Centering piece			
	PTFE					Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
13	Hex.-socket screw				28	Countersunk screw			
	Stainless Steel	A4-70	1.4401	B8M		Stainless Steel	A 2	1.4301	SS
	Other materials upon request								

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-E

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure			
		10 [bar]		16 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel
50-65	2-2½	27	35	28	42
80	3	28	55	30	65
100	4	51	90	61	100
125	5	63	150	83	172
150	6	125	170	136	220
200	8	205	350	260	430

All values in Nm

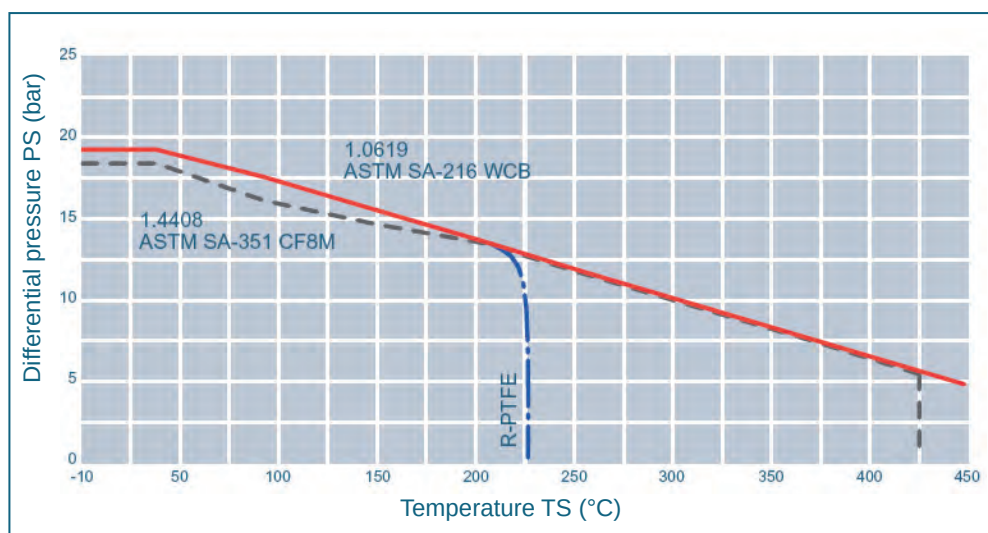
PRESSURE/TEMPERATURE DIAGRAM

----- Pressure control line for GS-C25 body material and metal seat

— Pressure control line for 1.4408 body material and metal seat

----- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	3	13	28	39	49	58	69	81
65	2½	3	13	29	41	52	61	72	84
80	3	19	40	63	96	135	189	242	287
100	4	33	65	89	125	180	259	365	450
125	5	53	105	169	245	342	509	645	728
150	6	82	161	252	385	575	817	1010	1123
200	8	105	184	331	559	816	1217	1795	1921

Subject to change without notice

For further values, please contact our engineers.

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-C



High Performance valve for the chemical industry.

TECHNICAL DATA

Nominal diameter:	DN 80 - DN 400
Face-to-face:	EN 558 Table 25
Design:	Lug type (optional: through holes)
Body:	1.0619 (WCB); 1.4408 (CF8M)
Temperature range:	-60°C to +230°C (R-PTFE-Seat) -60°C to +600°C (Inconel-Seat)
Nominal pressure:	max. 40 bar
Leakage rate:	R-PTFE, EN 12266, Leakage rate A Inconel, EN 12266, Leakage rate B
Flange drilling:	EN 1092 PN 10/16/25/40
Marking:	EN 19 PAS 1085 TA-Luft

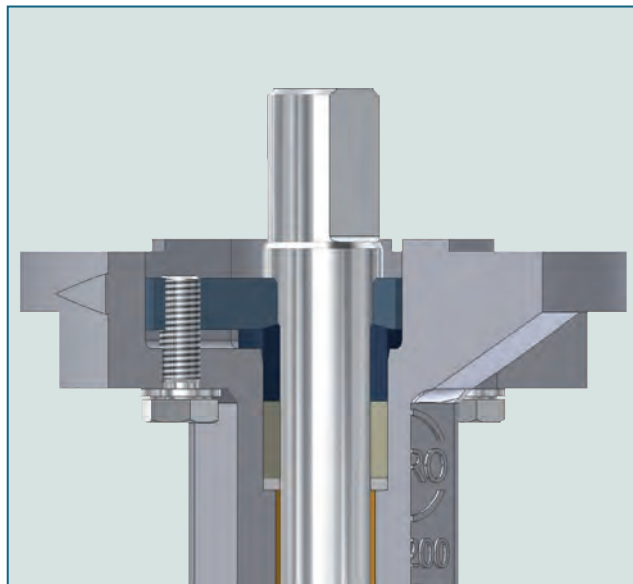
Valve Design
acc. to PAS 1085

FEATURES

- Plane sealing surface without interference (groove acc. to EN 1092 optional)
- Clamping ring without bore holes
- Long valve neck (for complete isolation)
- Distortion stop outside of media flow
- Integrated gland flange
- Quick and easy mounting
- Can be installed in any desired position
- Maintenance-free
- Integrated primary shaft seal

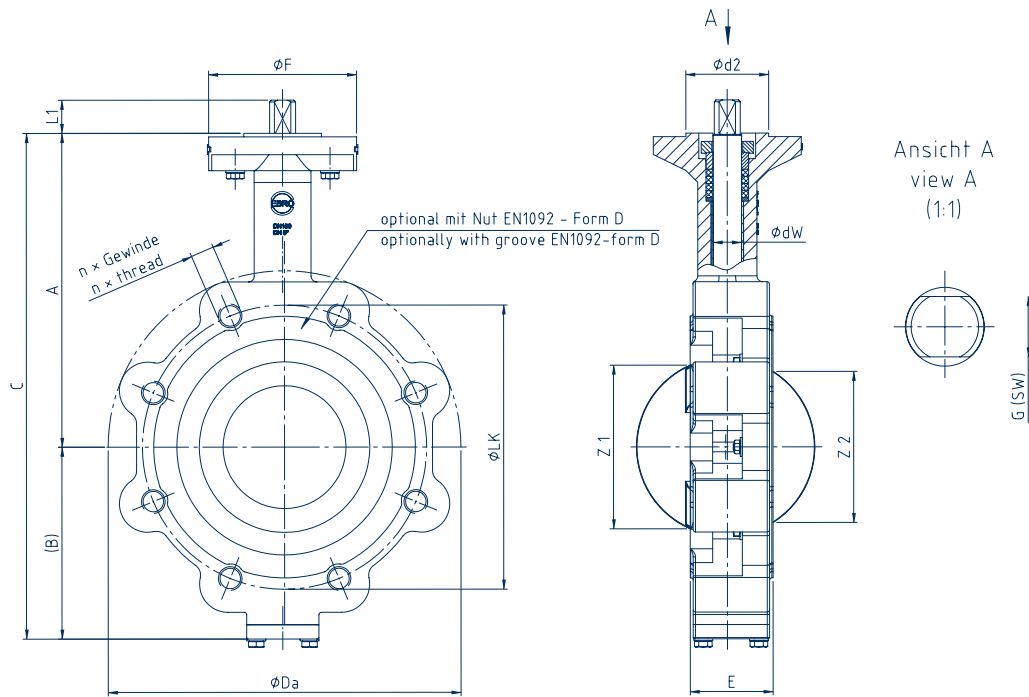
GENERAL APPLICATIONS

- Chemical and petrochemical Industry
- Heavy-Duty applications



Gland flange integrated in top flange.

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-C



HP 114-C with bare shaft end acc. to EN ISO 5211

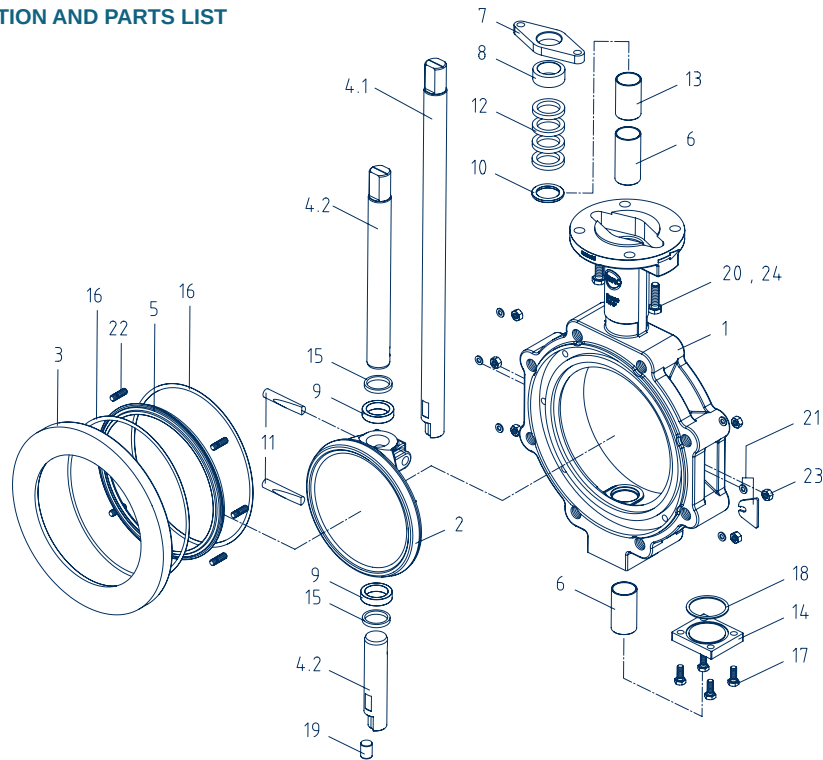
DN [mm]	Size [in]	Dimensions [mm]																Weight [kg]
		ØdW	A	(B)	C	ØDa	ØLK	n	Thread	Z1	Z2	E	Flange	ØF	Ød2	G	L1	
80	3	20	210	110	320	190	160	8	M16	72	46	49	F 07	90	55	14	23,5	8,5
100	4	20	225	131	356	236	180	8	M16	95	77	56	F 07	90	55	14	23,5	11,5
150	6	24	265	162	427	298	240	8	M20	139	128	70	F 10	125	70	17	28,0	23,0
200	8	30	310	200	510	375	295	12	M20	185	176	71	F 12	150	85	22	37,0	39,5
250	10	36	360	240	600	410	355	12	M24	235	225	76	F 14	175	100	27	46,0	53,0
300	12	42	401	275	676	480	410	12	M24	281	273	83	F 14/16*	175	100	27	46,0	69,0
350	14	42	435	310	745	520	470	16	M24	324	315	92	F 16	210	130	27	46,0	92,0
400	16	50	476	350	826	575	525	16	M27	373	363	102	F 16/25*	210	130	36	61,5	132,0

* für PN 25/40 DN 300 = F16
DN 400 = F25

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-C

MATERIAL SPECIFICATION AND PARTS LIST



Pos.	Description	Material	Material-No.	ASTM	Pos.	Description	Material	Material-No.	ASTM
1	Body				12	Seal			
	Carbon Steel	GP240GH	1.0619	WCB		Graphite			
	Stainless Steel	GX5CrNiMo 19-11-2	1.4408	CF8M		PTFE			
2	Disc				13	Spacer sleeve			
	Stainless Steel	GX5CrNiMo 19-11-2	1.4408	CF8M		Stainless Steel	X6CrNiMoTi 17-12-2		316 Ti
3	Clamping ring				14	Cover plate			
	Steel	S235JR	1.0038	283-C		Stainless Steel	X8CrNiS 18-9	1.4305	304
	Stainless Steel	X5CrNiMo 17-12-2	1.4401	316		Stainless Steel	X5CrNiS 18-10	1.4301	304
	Stainless Steel	X2CrNiMo 17-12-2	1.4404	316 L	15	Turcon-Variseal-M2			
4.1	Through shaft (TS-version)					PTFE / Metal spring			
	Stainless Steel	X5CrNiCuNb 16-4	1.4542		16	Graphite seal			
4.2	Splitted shaft					Graphite			
	Stainless Steel	X4CrNiMo 16-5-1	1.4418		17	Hex. bolt			
5	Seat ring					Stainless Steel	A4-70		B 8 M
	R-PTFE	PTFE-Compound			18	Seal			
	Inconel	Inconel 625				Graphite			
6	Shaft bearing					PTFE			
	Stainless Steel	X5CrNiMo 17-12-2	1.4401 / PTFE	316 PTFE	19	Taper pin / distortion stop			
	Stainless Steel	X6CrNiMoTi 17-12-2	1.4571 nitrite	316 Ti		Stainless Steel	X5CrNiCuNb 16-4	1.4542	
7	Gland flange					Stainless Steel	X4CrNiMo 16-5-1	1.4418	
	Stainless Steel	GX2CrNiMoN 26-7-4	1.4469	A995	20	Hex. bolt			
	Stainless Steel	X2CrNiMoN 22-5-3	1.4462	F51		Stainless Steel	A4-70		B 8 M
8	Thrust collar				21	Washer			
	Stainless Steel	X8CrNiS 18-9	1.4305	304		Stainless Steel	A4		8
	Stainless Steel	X5CrNiS 18-10	1.4301	304		Stainless Steel	X6CrNiMoTi 17-12-2	1.4571	316 Ti
9	Bearing ring				22	Threaded pin			
	Stainless Steel	X6CrNiMoTi 17-12-2	1.4571 chr-pld	316 Ti		Stainless Steel	A4-70		B 8 M
10	Suppor. washer				23	Hex. nut			
	Stainless Steel	X6CrNiMoTi 17-12-2	1.4571	316 Ti		Stainless Steel	A4-70		B 8 M
11	Taper pin								
	Stainless Steel	X5CrNiCuNb 16-4	1.4542						
	Stainless Steel	X4CrNiMo 16-5-1	1.4418						

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-C

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure							
		10 [bar]		16 [bar]		25 [bar]		40 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel
80	3	28	55	30	65	34	90	38	100
100	4	51	90	61	100	80	120	95	140
150	6	125	170	136	220	168	300	220*	360*
200	8	205	350	260	430	280	505	315*	630*
250	10	485	505	550	620	600	860	685*	1260*
300	12	584	740	700	970	855	1280	1115*	1800*
350	14	740	815	930	1050	1200	1370	1650*	1900*
400	16	1150	1530	1640	2240	2460	2900	3830*	4000*

* with through shaft only (TS-version)

All values in Nm

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation!

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α° HP-C splitted shaft (PN 10 - PN 25)							
		20°	30°	40°	50°	60°	70°	80°	90°
80	3	20	41	65	91	110	132	150	156
100	4	24	41	78	118	183	241	287	323
150	6	88	150	215	320	475	638	815	845
200	8	194	286	434	662	955	1335	1666	1712
250	10	255	430	620	924	1369	1852	2344	2430
300	12	429	632	930	1413	2052	2870	3622	3788
350	14	565	942	1410	2076	2916	3876	4751	4989
400	16	708	1185	1772	2683	3888	5279	6812	6977

DN [mm]	Size [in]	Opening angle α° HP-C through shaft (PN 40)							
		20°	30°	40°	50°	60°	70°	80°	90°
80*	3	20	41	65	91	110	132	150	156
100*	4	24	41	78	118	183	241	287	323
150	6	80	170	257	345	463	587	722	757
200	8	179	307	444	643	907	1210	1440	1460
250	10	233	390	570	850	1260	1700	2150	2230
300	12	370	620	890	1330	1970	2670	3380	3500
350	14	534	890	1349	1968	2769	3735	4550	4750
400	16	690	1160	1670	2500	3700	5012	6340	6580

* splitted shaft only

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 112



Double-flanged butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

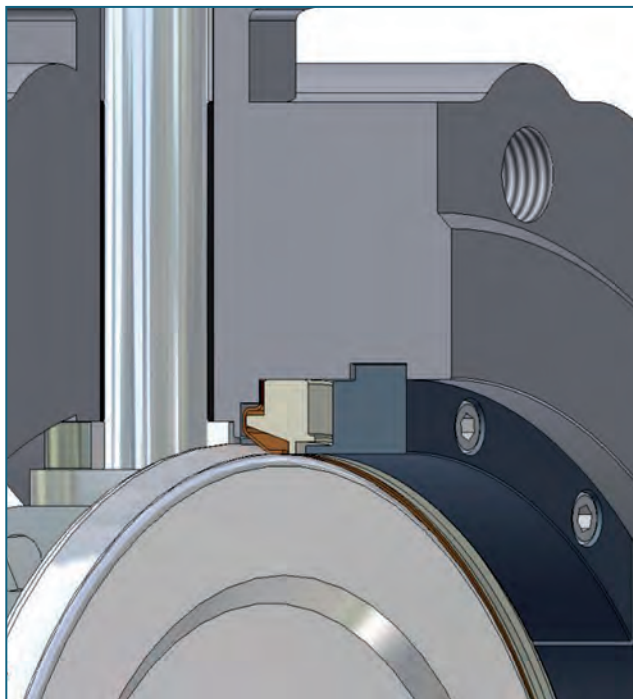
Nominal diameter:	DN 80 - DN 600
Face-to-face::	EN 558 Series 13 others upon request
Flange accomodation:	ASME Class 150 ASME Class 300 AS 4087 PN 16/21
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C bis +600°C
Operating pressure:	≤ DN 150, 40 bar > DN 150, 25 bar
Vacuum:	up to 1mbar absolute

FEATURES

- Shut-off and control valve for gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Seat ring systems available: R-PTFE, Inconel and Fire Safe
- Maintenance-free
- Long service life, even at high switching frequencies
- Seal variants:
 - soft-sealing (R-PTFE) max. 230°C
 - metallic sealing (Inconel) max. 400°C
 - special material for temperatures > 400°C

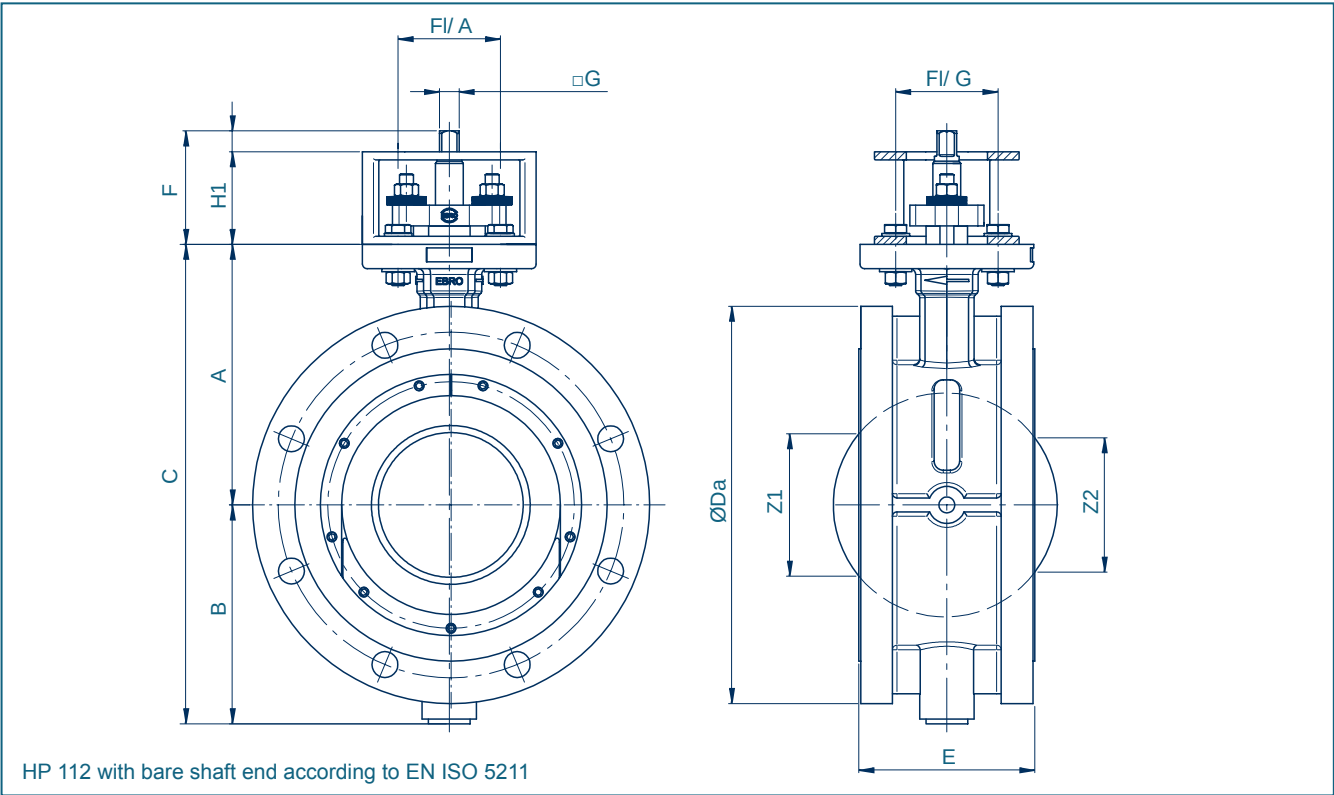
GENERAL APPLICATIONS:

- Chemical and petrochemical industry
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Heavy duty services



Sealing system with inside metallic thrust collar.

HIGH PERFORMANCE BUTTERFLY VALVE HP 112



DN [mm]	Size [in]	Dimensions [mm]													Weight [kg]	
		A	B	C	ØDa	ØDa	E	F	FL/A	FL/G	G	H1	Z1	Z2	CL 150	CL 300
		CL 150*				CL 300**										
80	3	142	109	251	191	210	114	95	F05	F07	12	15	-	-	15	19
100	4	158	122	280	229	254	127	95	F05	F07	12	15	-	-	20	24
150	6	195	152	347	280	318	140	98	F07	F10	14	18	62	47	32	50
200	8	225	190	415	343	381	152	98	F10	F12	17	18	123	116	50	70
250	10	268	220	488	407	444	165	103	F12	F12	22	23	180	174	70	90
300	12	300	255	555	483	521	178	118	F12	F14	27	28	230	226	105	150
350	14	345	304	649	534	585	190	128	F14	F14	27	28	276	270	155	210
400	16	375	340	715	597	648	216	136	F14	F16	36	36	317	311	205	255
450	18	412	366	778	635	711	222	156	F16	F16	36	36	384	380	245	315
500	20	441	399	840	699	775	229	166	F16	F16	46	46	428	423	295	385
600	24	524	468	992	813	914	267	255	F25	F25	55	55	501	494	470	615

* Acc. to ASME Class 150 max. 19,2 bar

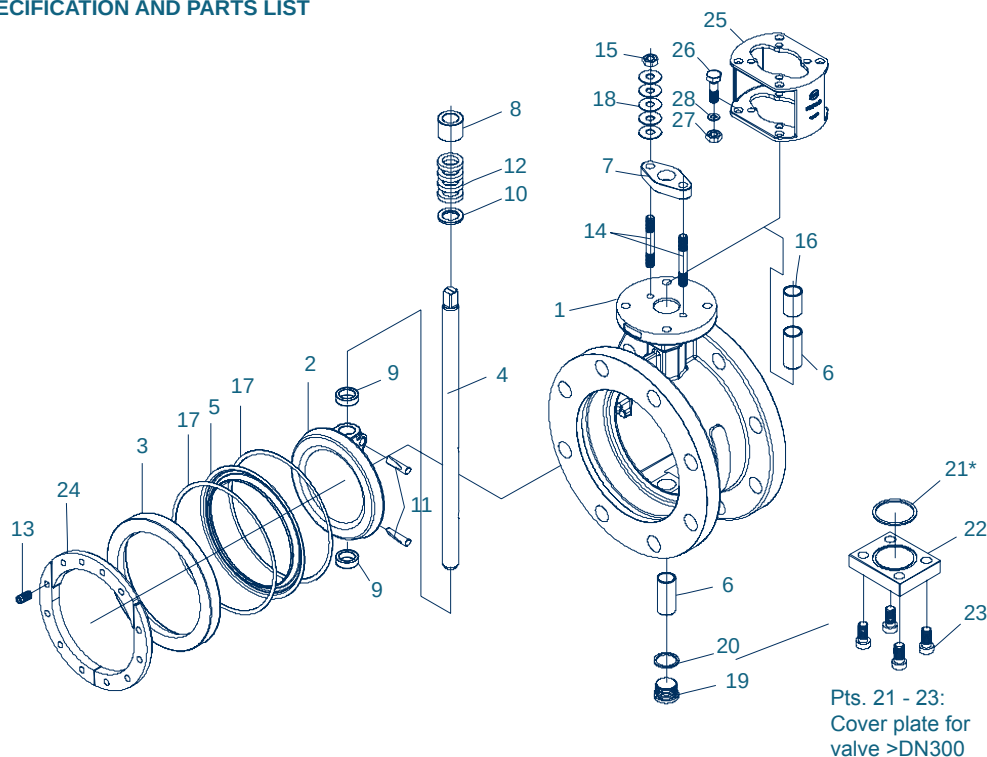
**Acc. to ASME Class 300 DN 200 - DN 600 max. 25 bar

Acc. to ASME Class 300 DN 80 - DN150 max. 40 bar

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 112

MATERIAL SPECIFICATION AND PARTS LIST



Pos.	Description	Material	Material No.	ASTM	Pos.	Description	Material	Material No.	ASTM
1	Body				14	Threaded pin			
	Carbon Steel	GP240GH	1.0619	WCB		Stainless steel	A4-70		B 8 M
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	15	Hex.-nut			
2	Disc					Stainless steel	A4-70		B 8 M
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	16	Spacer sleeve			
3	Clamping ring					Stainless steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
	Steel	S235JR	1.0038	283-C	17	Graphite seal (for metal seat)			
	Stainless Steel	X2CrNiMo17-12-2	1.4404	316 L		Graphite			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	18	Belleville spr. washer			
4	Shaft						50CrV4	1.4310	
	Stainless Steel	X4CrNiMo16-5-1	1.4418		19	Plug screw			
5	Seat ring					Stainless steel	A2-50		B 8 M
	R-PTFE	PTFE-Compound				Machining steel	11SNPb30	1.0718 ni-pld.	A29
	Inconel	Inconel 625			20/21*	Seal			
6	Shaft bearing					Graphite / Copper*			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316 PTFE		PTFE / Steel*			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 ni-pld	316 Ti	22	Cover plate			
7	Gland flange					Stainless steel	X5CrNiMo17-12-2	1.4401	304
	Stainless steel	G-X5CrNiMo19-11-2	1.4408	CF8M		Stainless steel	G-X5CrNiMo19-11-2	1.4408	CF8M
8	Thrust collar				23	Hex.-socket screw			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	304		Stainless steel	A4-70		B 8 M
	Stainless Steel	X2CrNiMo17-12-2	1.4404	304	24	Bearing ring			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti		Stainless steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
9	Bearing ring				25	Bracket			
	Stainless steel	X6CrNiMoTi17-12-2	1.4571 chr-pld.	316 Ti		Steel	S235JR+AR	1.0038	
	Stainless steel	X2CrNiMoN22-5-3	1.4462 chr-pld		26	Hex. bolt			
10	Support washer					Steel	St galvanized		
	Stainless steel	X6CrNiMoTi17-12-2	1.4571	316 Ti		Stainless steel	A2-70		B 8
11	Taper pin				27	Washer			
	Stainless steel	X4CrNiMo16-5-1	1.4418			Steel	St galvanized		
12	Shaft seal					Stainless steel	A4		8
	Graphite				28	Hex. nut			
	PTFE					Steel	St galvanized		
13	Hex. socket screw					Stainless steel	A2-70		8
	Stainless steel	A4-70		B 8 M					
		X1NiCrMoCuN25-20-7	1.4529			Other materials upon request.			

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 112

TORQUE

- The values specified are based on the initial breakaway torque (disc disengages from seat, torque then drops)

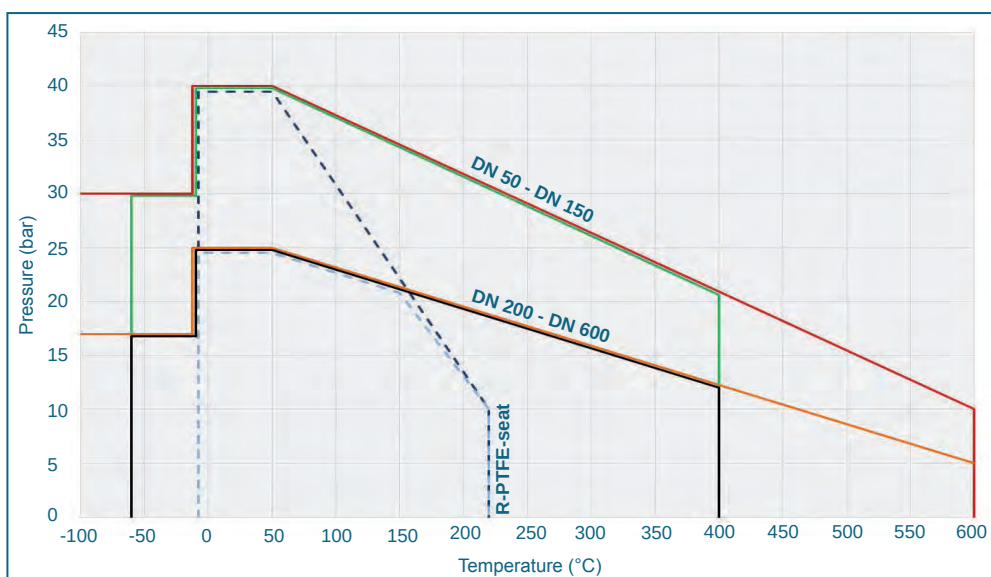
DN [mm]	Size [in]	Operating pressure							
		10 [bar]		16 [bar]		25 [bar]		40 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel
80	3	28	55	30	65	34	90	38	100
100	4	51	90	61	100	80	120	93	140
150	6	125	170	136	220	168	300	220	360
200	8	205	350	260	430	280	505	-	-
250	10	485	505	550	620	600	860	-	-
300	12	584	740	700	970	855	1280	-	-
350	14	740	815	930	1050	1200	1370	-	-
400	16	1150	1530	1640	2240	2460	2900	-	-
450	18	1150	1700	1750	2500	2700	3500	-	-
500	20	1210	2010	1800	2760	2800	4260	-	-
600	24	4000	4500	4600	5740	6200	8080	-	-

All values in Nm

PRESSURE/TEMPERATURE DIAGRAM

- Pressure control line for GS-C25 body material and metal seat
- Pressure control line for 1.4408 body material and metal seat
- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-values [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
80	3	7	30	50	68	82	97	113	115
100	4	22	60	97	119	164	199	223	251
150	6	63	109	162	250	391	588	814	845
200	8	96	168	301	509	742	1107	1581	1747
250	10	264	458	682	980	1421	2083	2882	2889
300	12	397	625	956	1368	1938	2778	3794	3940
350	14	460	720	1100	1650	2500	3400	4800	5400
400	16	550	870	1250	2000	3200	4800	6800	8080
450	18	730	1200	1800	3100	4600	6400	8400	10500
500	20	920	1600	2600	4100	6000	8500	12100	12800
600	24	1370	2250	3780	4950	9000	12500	17100	18500

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-K3



Lug type butterfly valve in double-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions.

TECHNICAL DATA

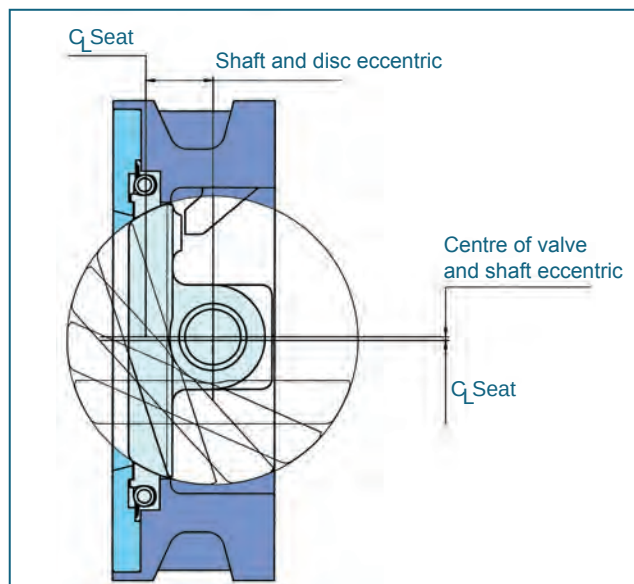
Nominal diameter:	DN 50 - DN 600 (larger nominal diameter on request)
Face-to-face:	EN 558 Series 16 ISO 5752 Series 16
Flange accommodation:	EN 1092 PN 10/16/25/40 (to DN 150) EN 1092 PN 10/16/25 (DN 200-DN 600) ASME Class 150/300 AS 4087 PN16/21
Flange Surface Design:	EN 1092, Form A/B, ASME RF,FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check	
- for R-PTFE seat:	EN 12266 (Leakage rate A)
- for Inconel seat:	EN 12266 (Leakage rate B) ISO 5208, Category 3
Temperature range:	-60°C to +600°C
Differential pressure:	≤ DN150 max. 40 bar > DN150 max. 25 bar
Vacuum:	up to 1mbar absolute

FEATURES

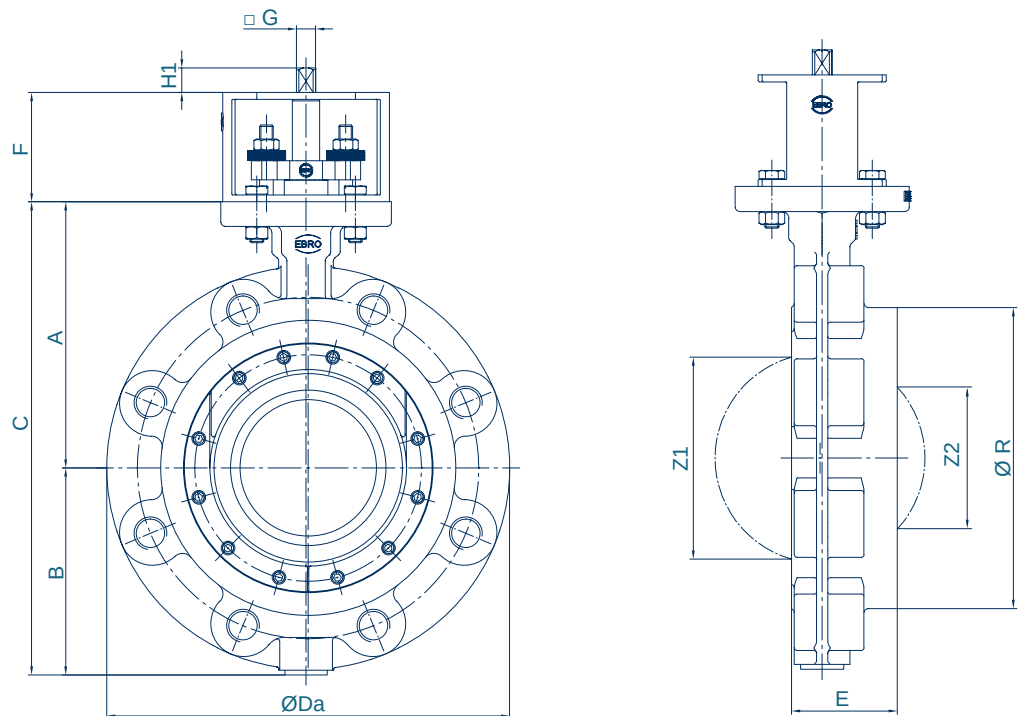
- Shut-off and control of gaseous and liquid media
- Disc and shaft have double-eccentric bearing
- Centering pieces can be used as installation aid
- Two seat ring systems available: R-PTFE and Inconel
- Seal variants:
soft-sealing (R-PTFE) max. 230°C
metallic sealing (Inconel) max. 600°C
- Maintenance-free
- Long service life, even at high switching frequencies

GENERAL APPLICATIONS

- Chemical and petrochemical industries
- Hot water and steam systems
- District heat supply
- Vacuum systems
- Shipbuilding
- Gas process technology
- Food industry
- Heavy duty services



HIGH PERFORMANCE BUTTERFLY VALVE HP 114-K3



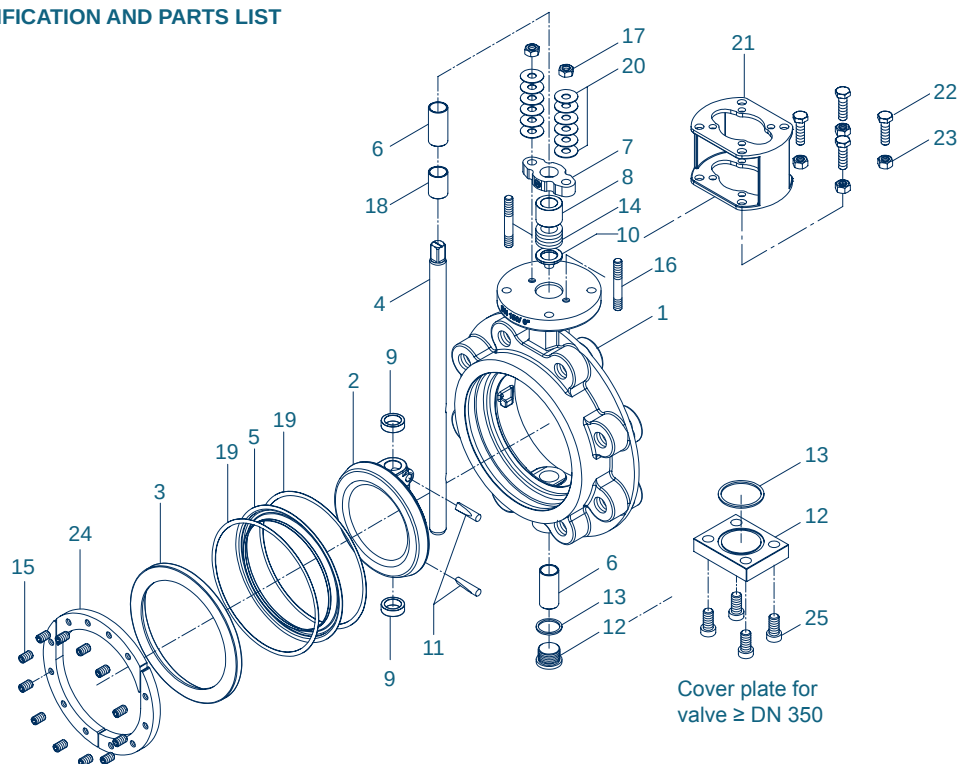
HP 114-K3 with bare shaft end acc. to EN ISO 5211

DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	Ø Da	E	F	Flange	□ G	H1	Ø R	Z1	Z2	
50	2	133	96	229	180	64	80	F07	12	15	112	41	-	8
65	2½	133	96	229	180	64	80	F07	12	15	112	41	-	9
80	3	142	110	252	200	65	80	F07	12	15	138	71	-	12
100	4	158	122	280	235	65	80	F07	12	15	160	95	49	14
125	5	181	138	319	260	70	80	F10	14	15	190	115	76	19
150	6	195	152	347	295	76	80	F10	14	15	216	144	102	24
200	8	225	189	414	352	89	80	F12	17	18	270	188	143	39
250	10	268	220	488	425	114	80	F12	22	23	326	236	171	61
300	12	300	253	553	485	114	90	F14	27	28	395	281	242	92
350	14	346	305	651	542	127	100	F14	27	28	438	323	281	125
400	16	375	340	715	606	140	100	F16	36	36	500	372	328	164
450	18	412	350	762	656	152	120	F16	36	36	530	427	397	189
500	20	425	400	825	716	152	120	F16	46	46	598	469	445	243
600	24	490	469	959	834	178	200	F25	55	55	708	545	516	270

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-K3

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pos.	Description	Material	Material No.	ASTM
1	Body				12	Plug screw ($\leq$ 300)			
	Carbon Steel	GS-C25N	1.0619	WCB		Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	12	Cover plate ($\geq$350)			
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469			Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
2	Disc					Duplex Steel	GX2CrNiMoN26-7-4	1.4469	
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	13	Seal			
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469			PTFE			
3	Clamping ring					Graphite			
	Steel	St37-2	1.0037	283-C	14	Shaft seal			
	Stainless Steel	X5CrNiMo17-12-2	1.4401	316		PTFE			
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469			Graphite			
4	Shaft				15	Hexagon socket set screw with flat point			
	Stainless Steel	X4CrNiMo16-5	1.4418			Stainless Steel	A4-70		B8M
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469		16	Threaded pin			
5	Seat ring					Stainless Steel	A4-70		B8M
	R-PTFE	PTFE-Compound			17	Hexagon Nut			
	Inconel	Inconel 625				Stainless Steel	A4-70		B8M
6	Shaft bearing				18	Distance bush			
	Stainless Steel	X5CrNiMo17-12-2	1.4401/PTFE	316 PTFE		Stainless Steel	X10CrNi18-8	1.4310	301 Ti
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 nitrite	316 Ti		Duplex Steel	GX2CrNiMoN26-7-4	1.4469	
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469 chr-plt		20	Belleville spring washer			
7	Gland flange						50CrV4	1.4310	
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	CF8M	21	Bracket			
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469			$\leq$ DN 250 St. Steel	G-X5CrNiMo19-11-2	1.4408	CF8M
8	Thrust collar					$\geq$ DN 300	St37-2	1.0037 zinc plated	C
	Stainless Steel	X5CrNiMo17-12-2	1.4401	304	22	Hexagon bolt			
	Stainless Steel	X2CrNiMo17-12-2	1.4404	304		Stainless Steel	A4-70		B8M
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	23	Hexagon Nut			
9	Bearing ring					Stainless Steel	A4-70		B8M
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 chr-pld.	316 Ti	24	Thrust ring			
10	Suppor. washer					Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti		Duplex Steel	GX2CrNiMoN26-7-4	1.4469	
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469		25	Hexagon-socket screw			
11	Taper pin					Stainless Steel	A4-70		B8M
	Stainless Steel	X4CrNiMo16-5	1.4418						
	Duplex Steel	GX2CrNiMoN26-7-4	1.4469						Other materials upon request

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 114-K3

TORQUE

- The values specified are based on the initial breakaway torque. (disc disengages from seat, torque then drops)

DN [mm]	Size [in]	Operating pressure							
		10 [bar]		16 [bar]		25 [bar]		40 [bar]	
		R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel	R-PTFE	Inconel
50-65	2-2½	27	35	28	42	30	58	31	66
80	3	28	55	30	65	34	90	38	100
100	4	51	90	61	100	80	120	93	140
125	5	63	150	83	172	95	220	125	285
150	6	125	170	136	220	168	300	220	360
200	8	205	350	260	430	280	505	*	*
250	10	485	505	550	620	600	860	-	-
300	12	584	740	700	970	855	1280	-	-
350	14	740	815	930	1050	1200	1370	-	-
400	16	1050	1530	1640	2240	2460	2900	-	-
450	18	1150	1700	1750	2500	2700	3500	-	-
500	20	1210	2010	1800	2760	2800	4260	-	-
600	24	4000	4500	4600	5740	6200	8080	-	-

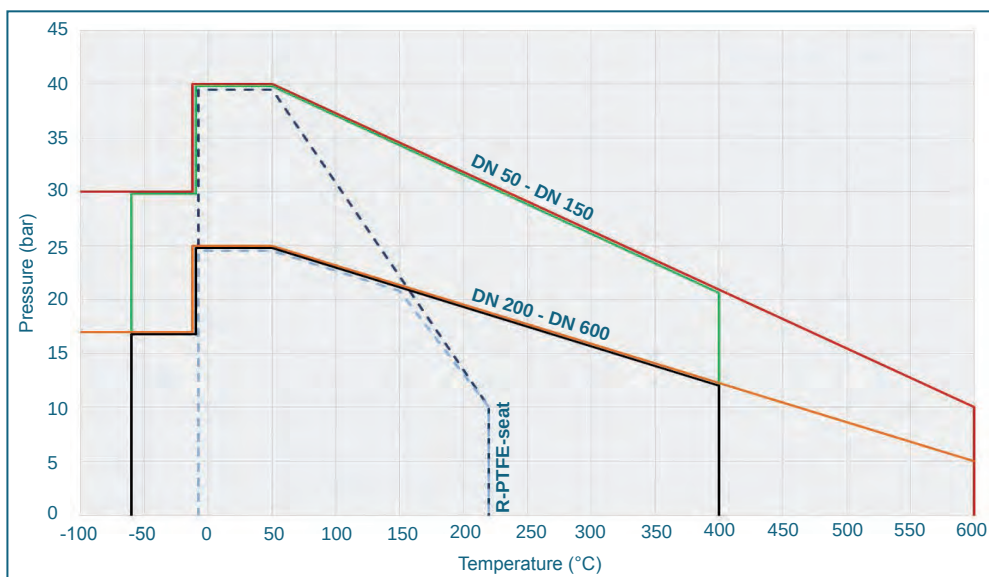
* DN 200 PN 16 max. 25 bar

All values in Nm

PRESSURE/TEMPERATURE DIAGRAM

- Pressure control line for GS-C25 body material and metal seat
- Pressure control line for 1.4408 body material and metal seat
- Pressure control line for R-PTFE

The diagram illustrates the performance of the standard version of our valve type HP. Valves for higher pressure or deviating temperature are available upon request.



K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

- Avoid cavitation!

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,3	6	15	18	19	21	22	23
65	2½	1,5	7	18	22	23	24	25	25
80	3	7	30	50	68	82	97	113	115
100	4	22	60	97	119	164	199	223	251
125	5	45	100	152	195	256	346	452	493
150	6	63	109	162	250	391	588	814	845
200	8	96	168	301	509	742	1107	1581	1747
250	10	264	458	682	980	1421	2083	2882	2889
300	12	397	625	956	1368	1938	2778	3794	3940
350	14	460	720	1100	1650	2500	3400	4800	5400
400	16	550	870	1250	2000	3200	4800	6800	8080
450	18	730	1200	1800	3100	4600	6400	8400	10500
500	20	920	1600	2600	4100	6000	8500	12100	12800
600	24	1370	2250	3780	4950	9000	12500	17100	18500

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 300



Lug type butterfly valve in triple-eccentric construction. Reliable sealing even with extreme temperature and pressure conditions up to 63 bar.

TECHNICAL DATA

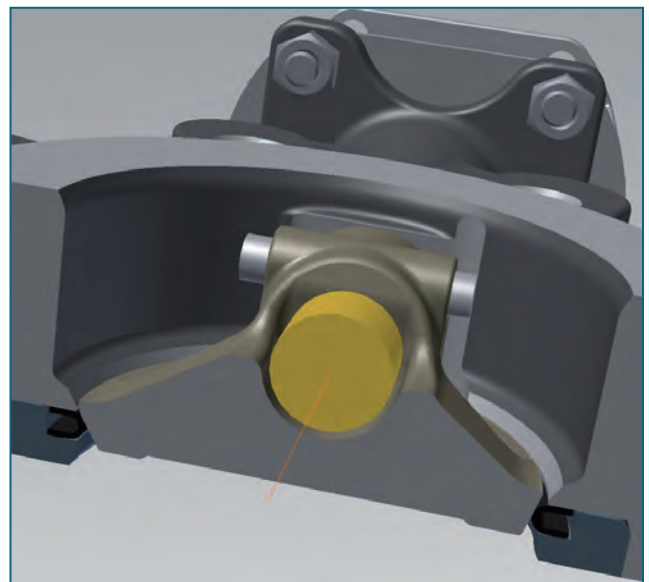
Nominal diameter:	DN 80 - DN 600 (larger nominal diameter on request)
Face-to-face:	EN558 R25 ≤ DN 250 EN558 R16 ≥ DN 300 API 609 Class 300
Flange accommodation:	EN1092 PN40, PN63 ANSI B16.5 class 300, class 600
Tightness check:	EN12266 (Leakage rate A) API 598 FCI 70/2
Temperature range:	-60°C to +600°C
Differential pressure:	63 bar ≤ DN 400 50 bar ≥ DN 450

FEATURES

- Shut-off and control of gaseous and liquid media
- Control performance nearly linear
- Tricentric design
- Floating design of the seat ring
- Two versions of the seat ring available:
full-metall and stainless steel / Graphite lamella seat
- Robust design suitable for heavy duty applications and media with solids content
- Shaft gasket adjustable
- End of line service at full pressure
- Flange sealing surface of the clamping ring not interrupted by screw counter bores

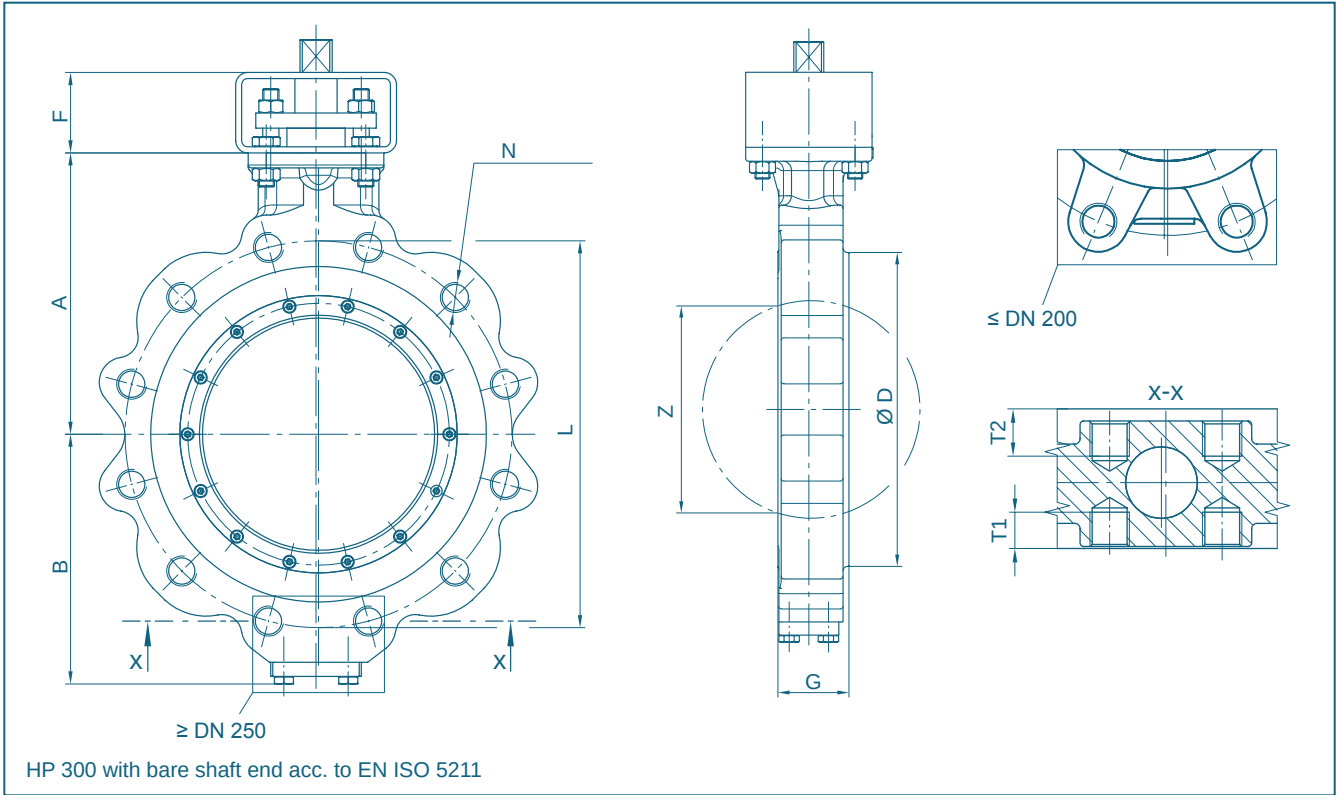
GENERAL APPLICATIONS

- Heat power plants
- Refineries
- Paper industry
- Chemical and petrochemical industry
- Hot water and steam systems
- Geothermal energy



The sealing system of the HP 300.

HIGH PERFORMANCE BUTTERFLY VALVE HP 300

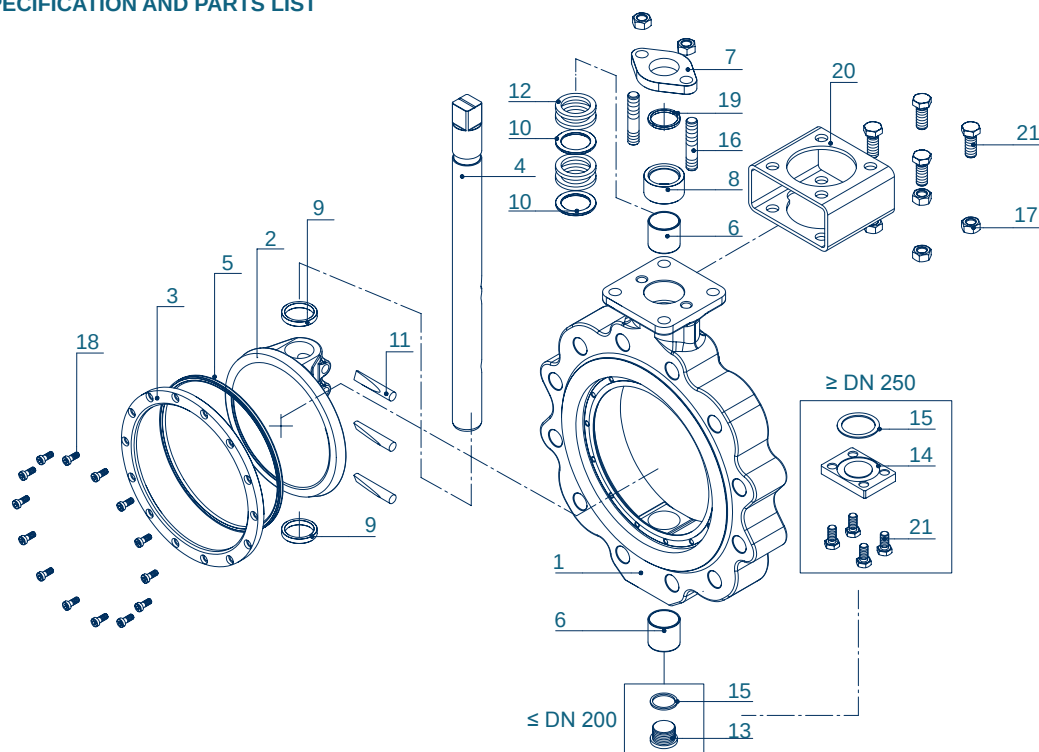


DN [mm]	Size [in]	Dimensions [mm]											Weight [kg]
		Flange Connection	A	B	D	F	G	L	N	T1	T2	Z	
80	3	PN 40	120	95	138	80	49	160	8	-	-	68	11
		PN 63	120	95	138	80	49	170	8	-	-	68	
		class 300/600	120	95	138	80	49	168	8	-	-	68	
100	4	PN 40	154	126	160	80	56	190	8	-	-	78	14
		PN 63	154	126	160	80	56	200	8	-	-	78	
		class 300	154	126	160	80	54	200	8	-	-	81	
		class 600	154	126	160	80	54	216	8	-	-	81	
150	6	PN 40	199	162	216	80	70	250	8	-	-	119	33
		PN 63	199	162	216	80	70	280	8	-	-	119	
		class 300	199	162	216	80	60	270	12	-	-	127	
		class 600	199	162	216	80	60	292	12	-	-	127	
200	8	PN 40	231	198	280	80	72	320	12	-	-	185	46
		PN 63	231	198	280	80	72	345	12	-	-	185	
		class 300	231	198	280	80	73	330	12	-	-	182	
		class 600	231	198	280	80	73	349	12	-	-	182	
250	10	PN 40	280	249	335	100	76	385	12	-	-	226	90
		PN 63	280	249	335	100	76	400	12	-	-	226	
		class 300	280	249	335	100	83	387	16	24	25	222	
300	12	PN 40	295	293	410	100	114	450	16	32	43	268	110
		PN 63	295	293	410	100	114	460	16	30	50	268	
		class 300	295	293	410	100	92	451	16	29	28	285	
350	14	PN 40	331	340	460	100	127	510	16	31	41	301	175
		PN 63	331	340	460	100	127	525	16	33	43	301	
		class 300	331	340	460	100	118	514	20	23	24	308	
400	16	PN 40	363	372	512	200	140	585	16	43	43		265
		class 300	363	372	512	200	133	572	20				
450	18	PN 40	386	388	560	200	152	610	20	35	35		330
		class 300	386	388	560	200	149	629	24	35	32		
500	20	PN 40	442	434	610	200	152	670	20				400
		class 300	442	434	610	200	159	686	24	30	30		
600	24	PN 40	500	492	725	200	178	795	20	42	42	588	600
		class 300	500	492	725	200	181	813	24			587	

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 300

MATERIAL SPECIFICATION AND PARTS LIST



Pos.	Description	Material	Material No.	ASTM	Pos.	Description	Material	Material No.	ASTM
1	Body				11	Taper pin			
	Carbon Steel	GP240GH	1.0619	A216 WCB		Stainless Steel	X4CrNiMo16-5	1.4418	
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	A351 CF8M	12	Shaft sealing			
2	Disc					Graphite	Graphite	316	316
	Stainless Steel	G-X5CrNiMo19-11-2	1.4408	A351 CF8M	13	Cap screw			
3	Clamping ring					Steel	A4-70		A193-B8
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	14	Cover plate			
4	Shaft					Steel	H II	1.0425	A516-60
	Stainless Steel	X4CrNiMo16-5-1	1.4418	431		Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti
	Stainless Steel	X5CrNiCuNb 16-4	1.4542	630	15	Seal			
5	Seat ring					Grahpite - Stainless Steel			
	Stainless Steel	X5CrNiCuNb 16-4	1.4542	630	16	Stud bolt			
	Graphite	Graphite	316	316		Steel	A2-70		A193-B8
6	Bearing bush				17	Hexagon nut			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 nitriert	316 Ti		Steel	A2-70		A193-B8
7	Packing gland				18	Socket head cap screw			
	Steel	H II	1.0425			Steel	A4-70		A193-B8M
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti	19	Blow-out prevention key			
8	Thrust collar					Stainless Steel	X8CrNiS18-9	1.4305	303
	Stainless Steel	X8CrNiS18-9	1.4305	303	20	Bracket			
9	Bearing ring					=< DN 250	X5CrNi18-10	1.4301	304
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571 h.verchr.	316 Ti		>DN 250	St galvanized		
10	Support washer				21	Hexagon bolt			
	Stainless Steel	X6CrNiMoTi17-12-2	1.4571	316 Ti		Steel	A2-70		A193-B8
						Other materials upon request.			

Subject to change without notice

HIGH PERFORMANCE BUTTERFLY VALVE HP 300

K_V-VALUES

- The K_V-value [m³ per hour] is the flow of water at a temperature of 5°C to 30°C (41°F to 86°F) at Δp of 1 bar

- The K_V-values specified are based on tests carried out by the Delfter Hydraulics Laboratories, the Netherlands

- Permissible velocity of flow
V_{max} 4,5 m/s for liquids,
V_{max} 70 m/s for gases

- The throttle function is linear at an angle 30° to 70°

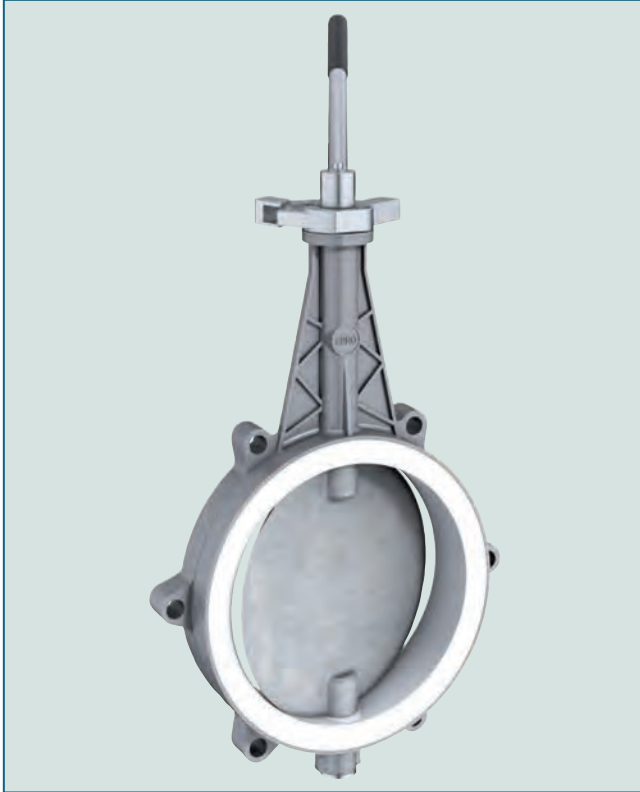
- Avoid cavitation!

For further values, please contact our engineers.

DN [mm]	Size [in]	Opening angle α°							
		20°	30°	40°	50°	60°	70°	80°	90°
50	2	1,3	6	15	18	19	21	22	23
65	2½	1,5	7	18	22	23	24	25	25
80	3	7	30	50	68	82	97	113	115
100	4	22	60	97	119	164	199	223	251
125	5	45	100	152	195	256	346	452	493
150	6	63	109	162	250	391	588	814	845
200	8	96	168	301	509	742	1107	1581	1747
250	10	264	458	682	980	1421	2083	2882	2889
300	12	397	625	956	1368	1938	2778	3794	3940
350	14	460	720	1100	1650	2500	3400	4800	5400
400	16	550	870	1250	2000	3200	4800	6800	8080
450	18	730	1200	1800	3100	4600	6400	8400	10500
500	20	920	1600	2600	4100	6000	8500	12100	12800
550	22	1090	1950	3100	4600	7500	10200	14700	15300
600	24	1370	2250	3780	4950	9000	12500	17100	18500

Subject to change without notice

CONTAINER VALVE BE 250/BE 300



Container valve BE 250 with drain lock bolt.

TECHNICAL DATA

Nominal diameter:	DN 250 / DN 300
Face-to-face:	EBRO works standard
Flange accommodation:	according to the connections in container building
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-20°C to +160°C (depending on pressure and medium)
Operating pressure:	max. 1 bar
Body:	Aluminium alloy GD-AlSi9Cu3 (3.2163)
Seat:	EPDM (Ethylene propylene caoutchouc) NBR (Acrylnitrile butadiene rubber) FPM (Fluorocarbon caoutchouc) AU (Polyurethane)
Disc:	Stainless Steel X5CrNi18-10 (1.4301) X6CrNiMoTi17-12-2 (1.4571)

FEATURES

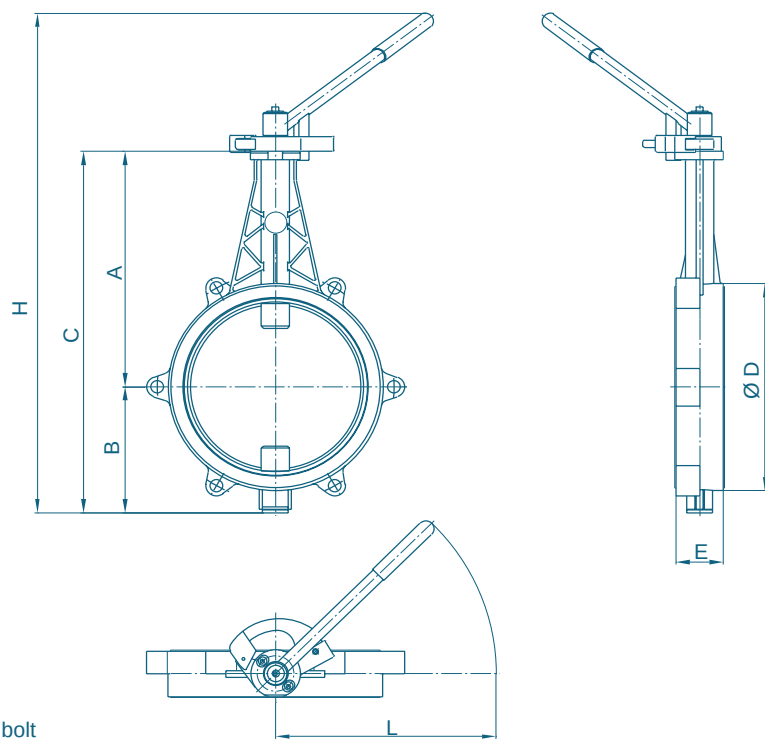
- Shut-off valve for lugging under containers
- Aluminium body
- Suitable for conical containers
- Possibilities for hand operation:
 - drain lock bolt
 - tilting lever
 - engage lever OPEN/CLOSE
- Multiple shaft bearing
- Maintenance-free
- Can be disassembled, material-specific recycling possible

GENERAL APPLICATIONS

- Container building
- Silos



CONTAINER VALVE BE 250/BE 300



BE 250 with drain lock bolt

DN [mm]	Size [in]	Dimensions [mm]							Weight [kg]
		A	B	C	D	E	H	L	
250	10	346	185	531	304	67	778	384	6,2
300	12	274	226	500	355	78	742	384	8,9

Subject to change without notice

CONTAINER VALVE BE 50/BE 80



Container valve BE 50 with drain bolt lock.

TECHNICAL DATA

Nominal diameter:	DN 50/ DN 80
Face-to-face:	EBRO works standard
Flange accommodation:	according to the connections container building
Flange Surface Design:	EN 1092, Form A/B, ASME RF, FF
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-20°C to +160°C (depending on pressure and medium)
Operating pressure:	max. 4 bar
Body:	Aluminium alloy GD-AlSi9Cu3 (3.2163) Nodular cast iron EN JS 1030 (BE 80)
Seat:	PTFE
Disc:	Stainless Steel G-X6CrNiMo18-10 (1.4408)

FEATURES

- Shut-off valve for lugging under containers
- Aluminium body and EN JS 1030
- Multiple shaft bearing
- Maintenance-free
- Can be disassembled, material-specific recycling possible

GENERAL APPLICATIONS

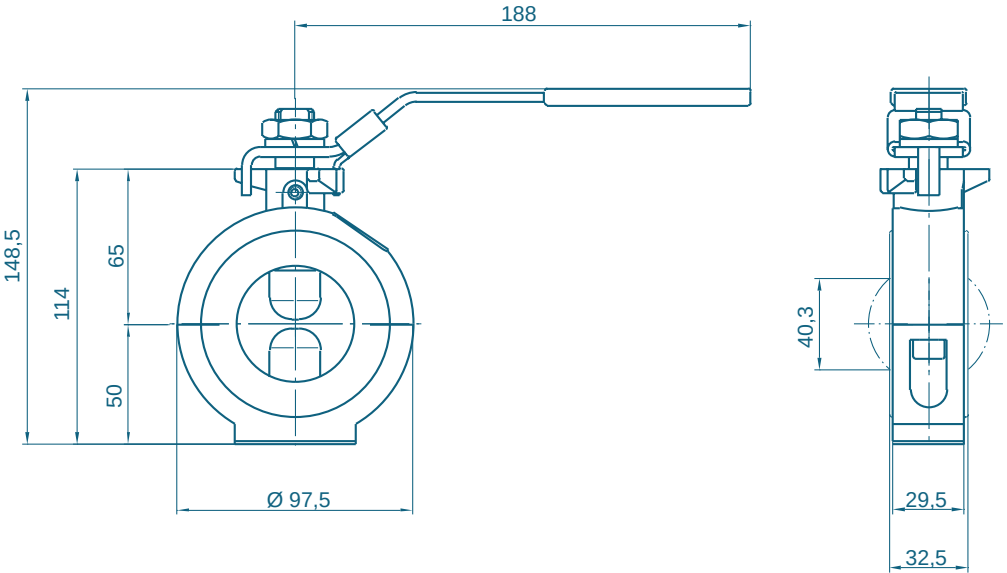
- Container building
- Silos
- Hardous freight container for varnishes, colours, solvents, resins



Container valve BE 80 with OPEN/ CLOSE lever.

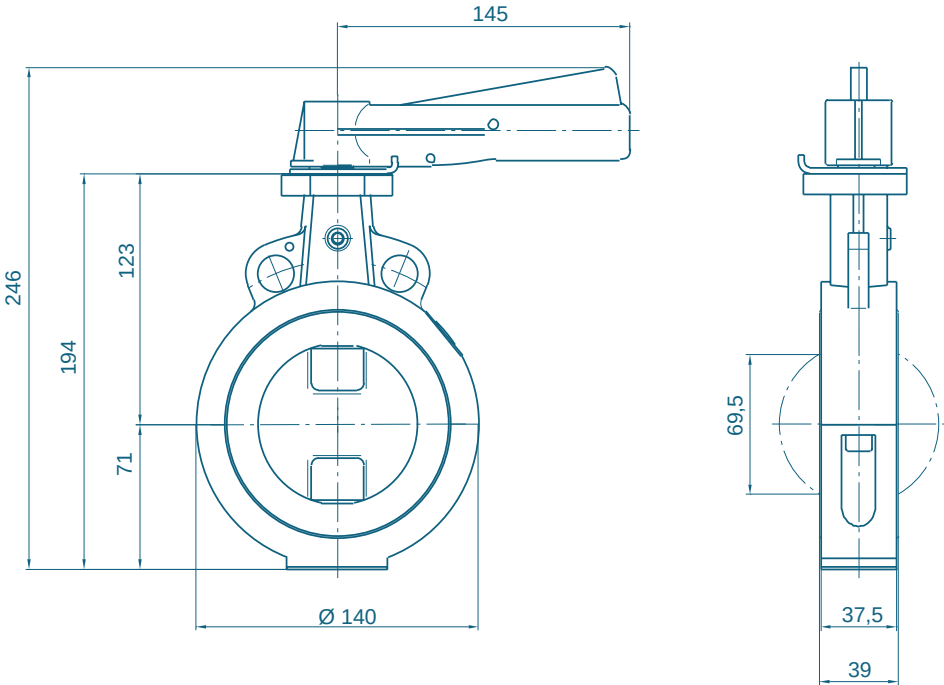
CONTAINER VALVE BE 50/BE 80

BE 50 WITH DRAIN BOLT LOCK



Weight: 0,95 kg

BE 80 WITH HAND LEVER



Weight: 2,05 kg

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE TW 150/TW 200



Wafer type butterfly valve TW 150 with NBR-seat.

TECHNICAL DATA

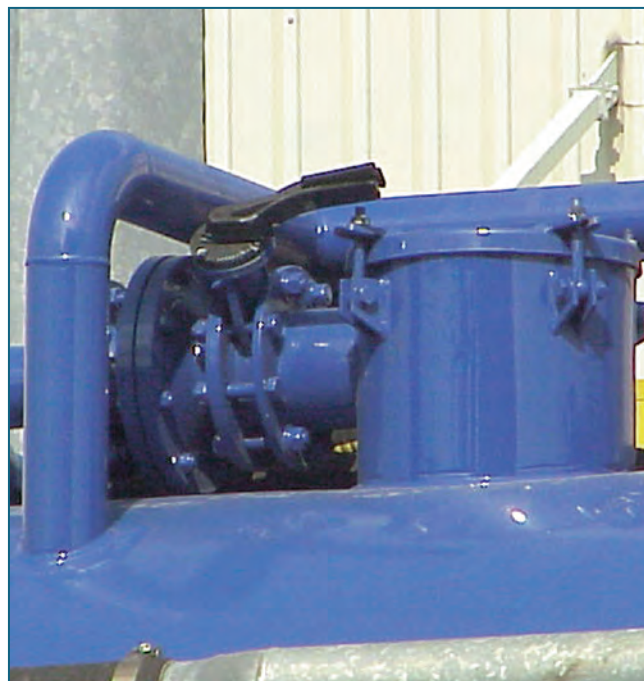
Nominal diameter:	DN 150 / DN 200
Face-to-face:	EBRO works standard
Flange accomodation:	EN 1092 flanges for lorries
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-20°C to +160°C (depending on pressure an medium)
Operating pressure:	max. 6 bar
Body:	Aluminiumalloy GD-AlSi9Cu3 (3.2163)
Seat:	EPDM (Ethylene propylene caoutchouc) NBR (Acrylnitrile butadiene rubber) FPM (Fluorocarbon caoutchouc) AU (Polyurethane)
Disc:	Stainless Steel X5CrNi18-10 (1.4301) G-X6CrNiMo18-10 (1.4408)

FEATURES

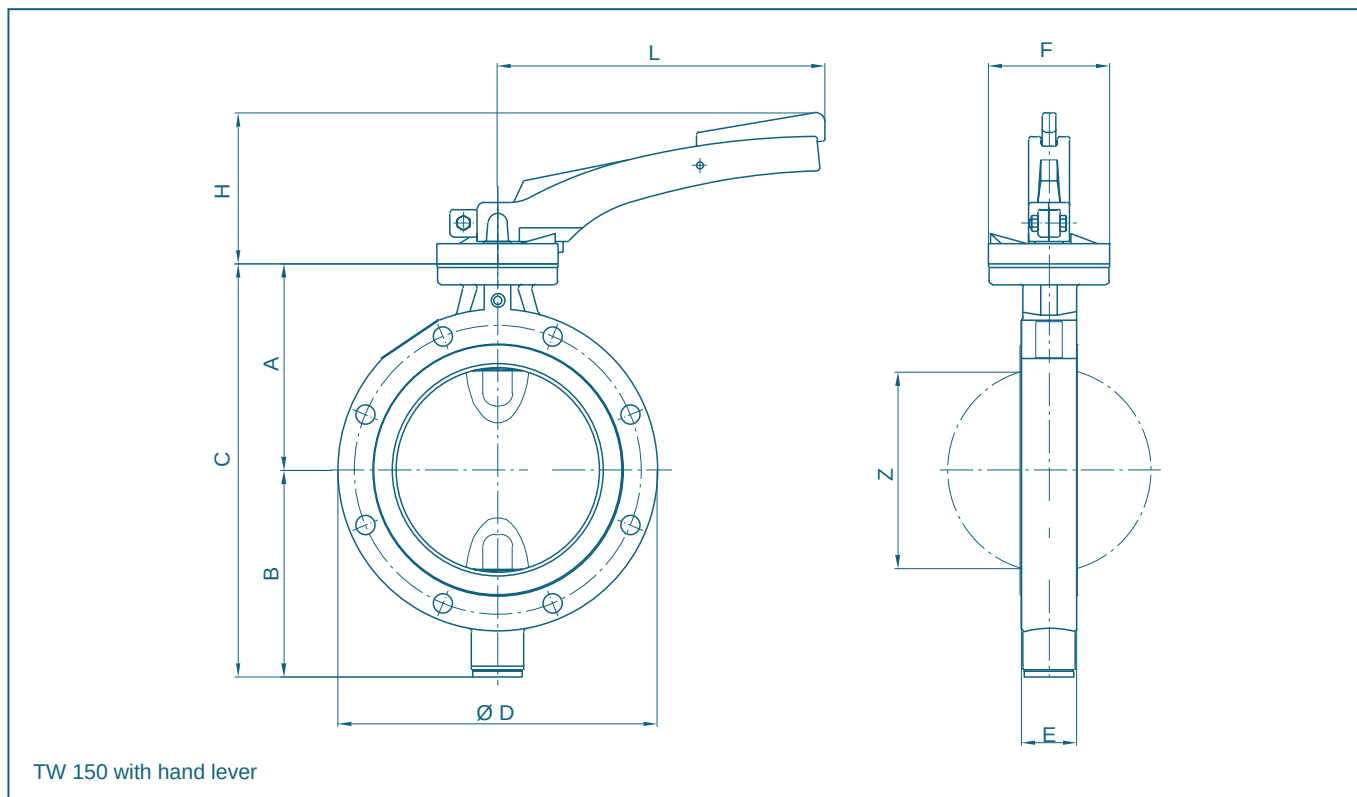
- Maintenance-free
- Triple shaft bearing
- Can be disassemble, material-specific recycling possible

GENERAL APPLICATIONS

- Silo vehicles
- Disposal vehicles



WAFER TYPE BUTTERFLY VALVE TW 150/TW 200



DN [mm]	Size [in]	Dimensions [mm]									Weight [kg]
		A	B	C	D	E	H	L	F	Z	
150	6	203	150	353	234	40	110	240	90	144	4,3
200	9	228	176	404	275	50	110	240	90	193	6,1

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE TW 80/TW 100



Wafer type butterfly valve TW 100 with NBR-seat.

TECHNICAL DATA

Nominal diameter:	DN 80 / DN 100
Face-to-face:	EBRO works standard
Flange accommodation:	EN 1092 flanges for tank lorries
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-20°C to +80°C (depending on pressure and medium)
Operating pressure:	max. 6 bar
Body:	Aluminiumalloy
- one piece	GD-ALSi9Cu3 (3.2163)
- splitted	
PTFE seal	GK-ALSi12(Cu) (3.2583.02)
Seat:	EPDM (Ethylene propylene caoutchouc) NBR (Acrylnitrile butadiene rubber) FPM (Fluorocarbon caoutchouc) AU (Polyurethane) PTFE (Polytetrafluorethylene)
Disc:	Stainless Steel G-X6CrNiMo18-10 (1.4408)

FEATURES

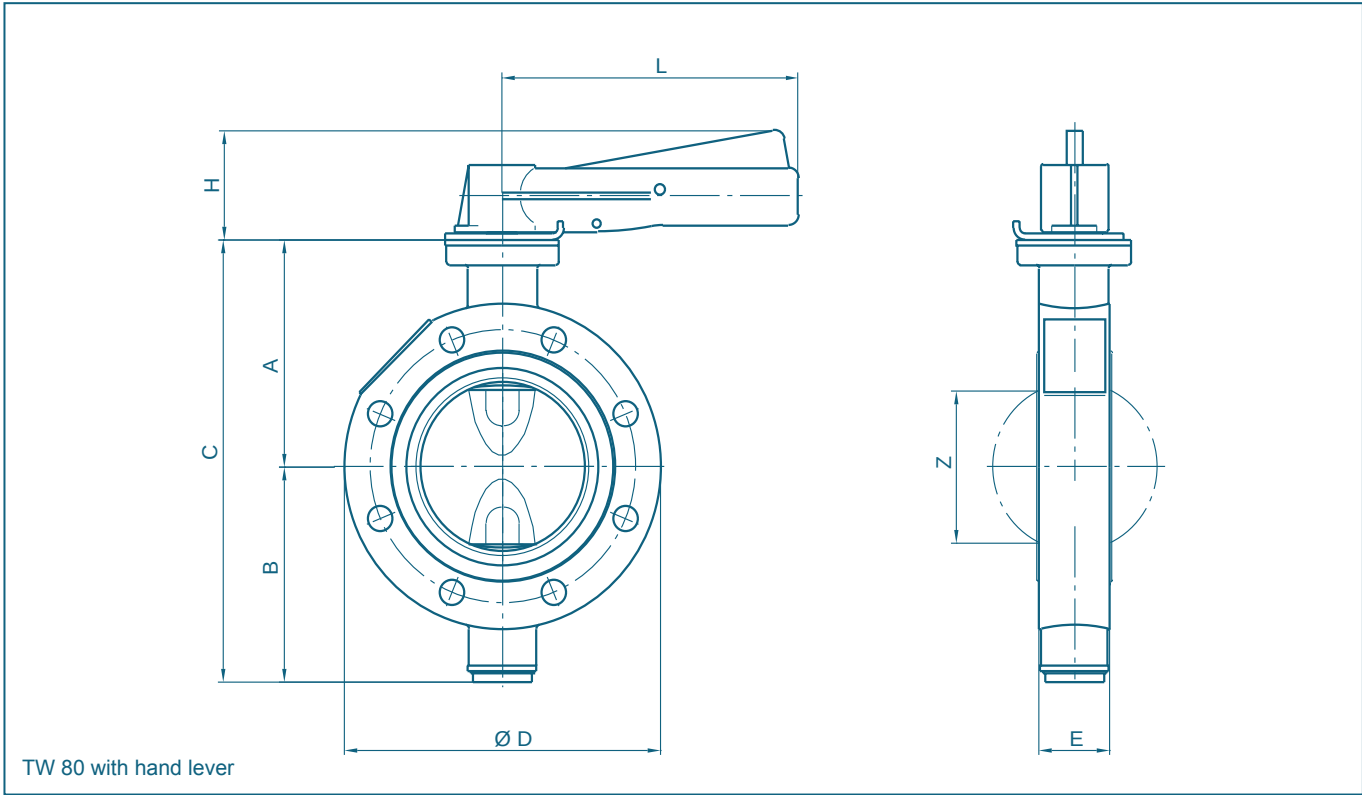
- Maintenance-free
- Triple shaft bearing
- Can be disassembled, material-specific recycling possible

GENERAL APPLICATIONS

- Tank lorries



WAFER TYPE BUTTERFLY VALVE TW 80/TW 100



DN [mm]	Size [in]	Dimensions [mm]								Weight [kg]
		A	B	C	D	E	H	L	Z	
80	3	108	103	211	155	35	52	145	71	2,3
100	4	118	113	231	174	35	52	145	93	2,6

TW DN 125: upon request

Subject to change without notice

PLASTIC BUTTERFLY K 016



Plastic butterfly valve type K 016 with OPEN/CLOSE lever.

TECHNICAL DATA

Nominal diameter:	DN 32 - DN 100 with notch lever DN 32 - DN 50 with OPEN/CLOSE lever
Face-to-face:	EBRO works standard
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +60°C (depending on pressure and medium)
Operating pressure:	max. 6 bar
Body:	Hard-PVC
Disc:	Aluminium alloy G-AlSi10Mg (3.2381) CSM (Chlorsulphonated polyethylene) rubber coated FPM (Fluorocarbon caoutchouc)
Shafts:	Stainless Steel (A2/A4)

FEATURES

- Shut-off valve with adhesive sockets for mounting in PVC pipe systems
- The center part can be removed during maintenance work
- Can be installed in any desired position
- Can be disassembled, material-specific recycling possible

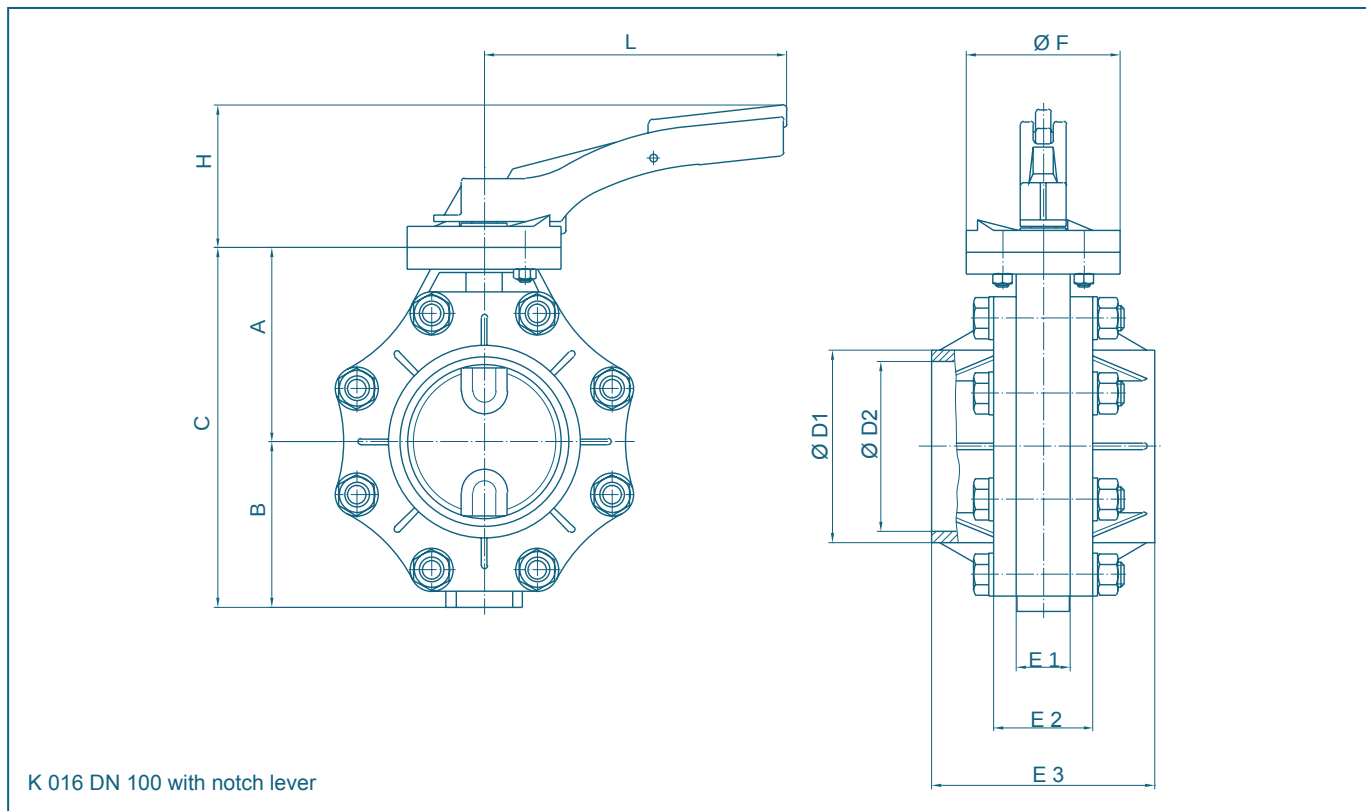
GENERAL APPLICATIONS

- Swimming pool technology
- PVC piping



Plastic butterfly valve type K 016 DN 100 with notch lever.

PLASTIC BUTTERFLY VALVE K 016



DN [mm]	Size [in]	Dimensions [mm]											Weight [kg]
		A	B	C	D1	D2	E1	E2	E3	F	L	H	
32	1¼	65	49	114	54	40	30	60	140	100	195	95	1,0
40	1½	65	49	114	64	50	30	60	140	100	195	95	1,0
50	2	65	49	114	77	63	30	60	140	100	195	95	1,0
65	2½	77,5	61,5	139	90	75	35	65	145	100	195	95	1,9
80	3	77,5	61,5	139	105	90	35	65	145	100	195	95	1,9
100	4	126	97	233	125	110	35	65	145	100	195	95	3,7

Subject to change without notice

BUTTERFLY VALVE CK



Butterfly valve CK with pneumatic actuator.

TECHNICAL DATA

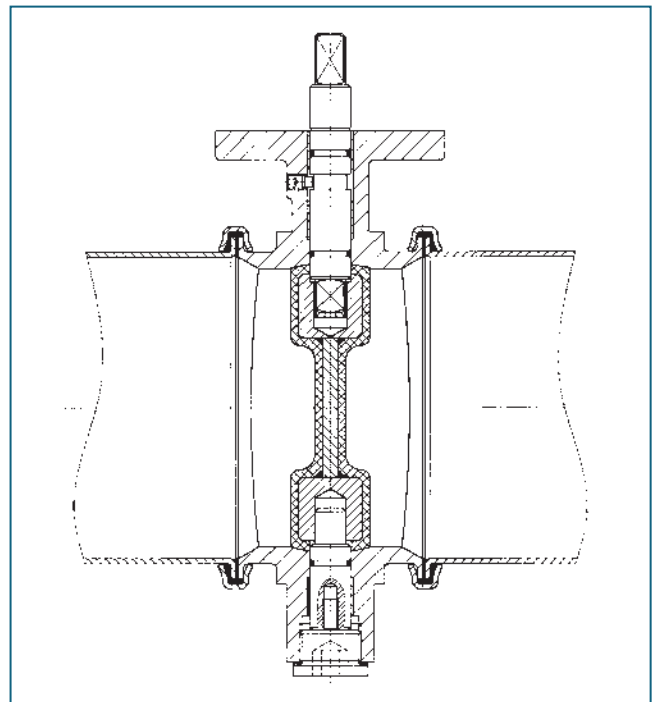
Nominal diameter:	DN 80 - DN 250
Face to face:	EBRO works standard
Top flange:	EN ISO 5211
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-10°C to +60°C (depending on pressure and media)
Operating pressure:	max. 3 bar
Body:	Aluminium
Disc:	ball contour 3 mm NBR-white coated 90° Shore A (FDA harmless) overdimension to body seat 0,3 mm DN 100 0,35 mm DN 250
Shaft:	AISI 316 (1.4401) alternative upon request

FEATURES

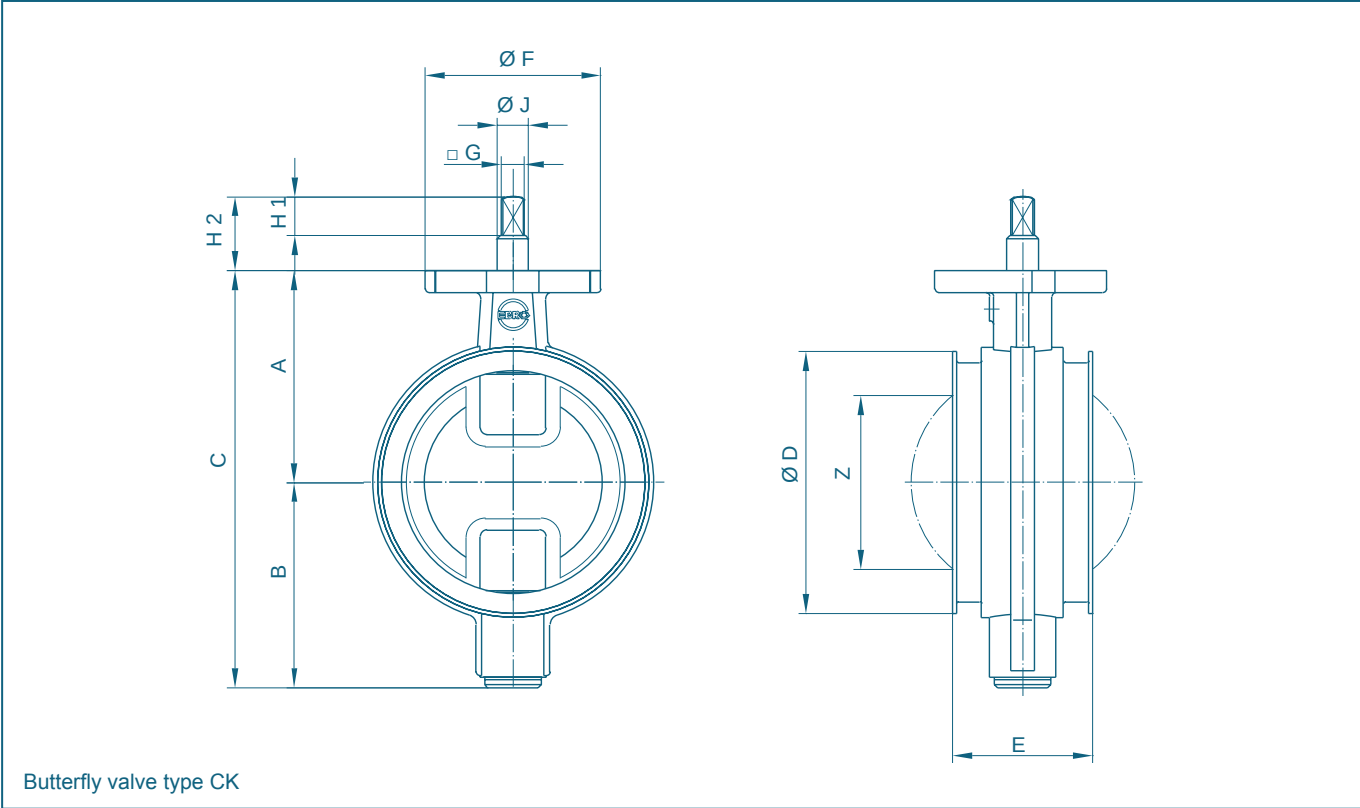
- Wafer pattern butterfly valve with centrally mounted disc
- Body with mutual bond for clamp ring connection
- The inside contour is spherically machined
- Through-going seat without any edges
- Low consumption
- Fast and easy dismantling
- Maintenance-free

GENERAL APPLICATIONS

- Food industry
- Bulk goods



BUTTERFLY VALVE CK



DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	D	E	F	Flange	G	H1	H2	J	Z	
80	3	86	87	173	92	66	65	F05	10	16	30	12	33	0,9
100	4	96	97	193	115	68	65	F05	10	16	30	12	66	1,3
120	5	109	105	214	135	72	90	F07	12	20	38	16	89	1,9
200	8	179	166	345	215	85	90	F07	16	20	38	20	175	5,8
250	10	206	189	395	265	85	90	F07	16	20	38	20	230	7,7

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE Z 011-A therm



Wafer type valve Z 011-A with integrated thermometer.
This construction is also deliverable for the series Z 014-A.

TECHNICAL DATA

Nominal diameter:	DN 20 - DN 200 (available only with hand lever)
Deliverable for the series:	Z 011-A and Z 014-A
Face-to-face:	EN 558 Series 20 ISO 5752 Series 20 API 609 Table 1
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150
Lap-joint flange:	EN 1092
Weld-on flange:	EN 1092
Flange Surface Design:	EN 1092 Form A/B ASME RF, FF
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208, Category 3
Temperature range:	-20°C to +130°C (depending on pressure, medium and material)
Operating pressure:	max. 16 bar
Vacuum:	1 mbar absolute

FEATURES

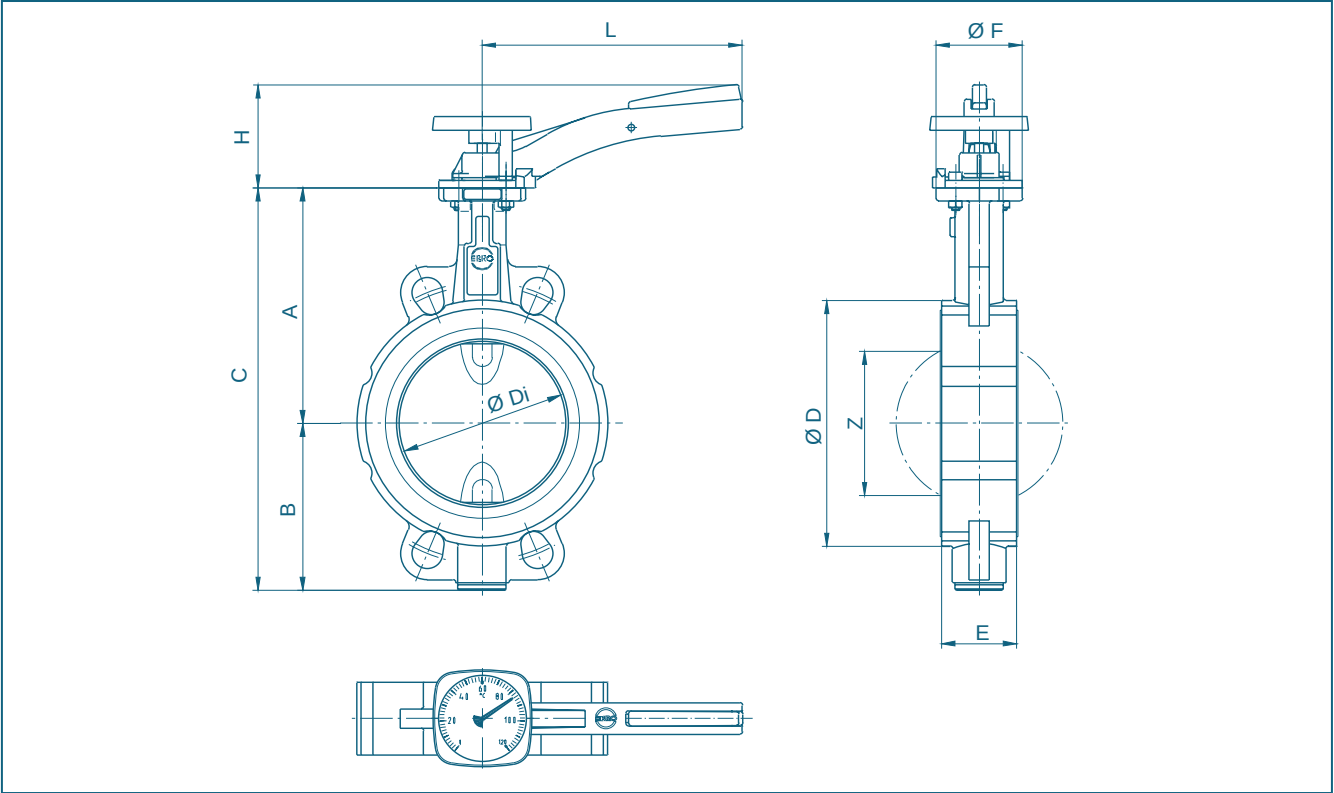
- EBRO therm butterfly valves are ready to accept thermometers, electronic thermo sensors (PT 100) or a system identification plate
- The valves are supplied with the mounting hole sealed and the thermometer is enclosed separately -marked to prevent-confusion
- The patented be-metallic helix guarantees a quick reaction time during temperature changes and - due to its position in the valve disc -prevents the formation of a mixed temperature between the medium and the valve body

GENERAL APPLICATIONS

- Civil engineering



WAFER TYPE BUTTERFLY VALVE Z 011-A therm



DN [mm]	Size [in]	Dimensions [mm]										Weight [kg]
		A	B	C	D	Di	E	F	H	L	Z	
20	¾	104	45	149	59	31,5	33	54	70	155	-	1,5
25	1	104	45	149	63	31,5	33	54	70	155	-	1,5
32	1¼	104	50	154	68	31,5	33	54	70	155	-	1,6
40	1½	113	66	179	80	38	33	54	70	155	22	2,0
50	2	126	84	210	95	48,5	43	54	70	155	25	2,4
65	2½	134	93	227	115	63,5	46	54	70	155	45	3,1
80	3	157	104	261	138	78,5	46	65	80	195	65	4,2
100	4	167	115	282	158	98,5	52	65	80	195	85	5,4
125	5	180	127	307	188	123,5	56	65	80	195	111	7,1
150	6	203	150	353	212	148	56	90	100	276	139	10,1
200	8	228	176	404	268	199	60	90	100	276	190	13,8

Subject to change without notice

ACCESSORIES



Screw sleeves

- In order to maintain a uniform design for the whole system, brass screw sleeves with different shaft lengths are available for mechanical thermometers where no valve is fitted

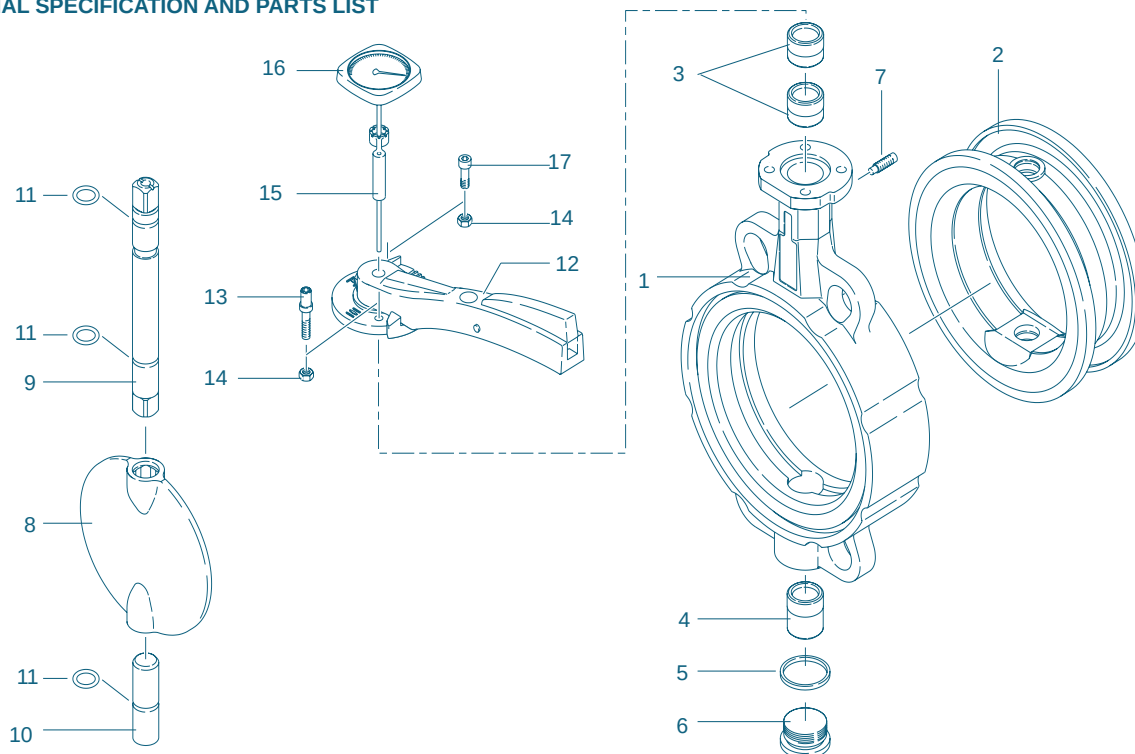


Identification plates

- EBRO therm butterfly valves are predesigned to accept an identification plate. Appropriate base plates with mounting adapters and transparent covers are available as accessories

WAFER TYPE BUTTERFLY VALVE Z 011-A therm

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material No.	ASTM	Pt.	Description	Material	Material No.	ASTM
1	Body				9/10	Shaft			
	Grey Cast Iron	GG 25	0.6025	40 B		Stainless Steel	X14CrMoS17	1.4104	430 F
2	Seat						X5CrNiMo17-12-2	1.4401	316
	EPDM	Ethylene propylene caoutchouc					Hastelloy	2.4883	Hastelloy
3/4	Bearing bush				11	O-ring			
	Brass	MS 58	2.0401	B 45		NBR	Acrylonitrile butadiene rubber		
	Polyamide	PA 66				FPM	Fluorocarbon caoutchouc		
	PTFE	Polyterafluoroethylene			12	Hand lever complete			
5	Seal DIN 7603				13	Screw			
	Copper	Cu		Copper		Steel	St. galvanized		CS
6	Plug screw DIN 908				14	Hex. nut			
	Stainless Steel	G-X6CrNiMo18-10	1.4408	CF8M		Steel	St. galvanized		CS
7	Set screw DIN 915				15	Thermometer holder			
	Steel	45 H galvanized				PP	Polypropylene		
	Stainless Steel	X5CrNiMo17-12-2	1.4401	B8M	16	Thermometer			
8	Disc				17	Socket screw			
	Stainless Steel	G-X6CrNiMo18-10	1.4408	A 351CF8M		Steel	St. galvanized		
						Other materials upon request			

Subject to change without notice

PINCH VALVE QV



Pinch valve with full passage for solid mattered waste water, mud and similar media.

TECHNICAL FEATURES

Nominal diameter:	DN 40 - DN 200
Face-to-face:	EBRO works standard
Flange accommodation:	EN 1092 (PN 10)
Flange Surface Design:	EN 1092 Form C/E
Temperature range:	-20°C to +140°C (depending on pressure and medium)
Operating pressure:	max. 5 bar
Body:	Aluminiumalloy
Seat:	Natural rubber EPDM (Ethylene propylene caoutchouc) FPM (Fluorocarbon caoutchouc)
Flanges:	Aluminiumalloy - Rilsan coated - Rubber coated

FEATURES

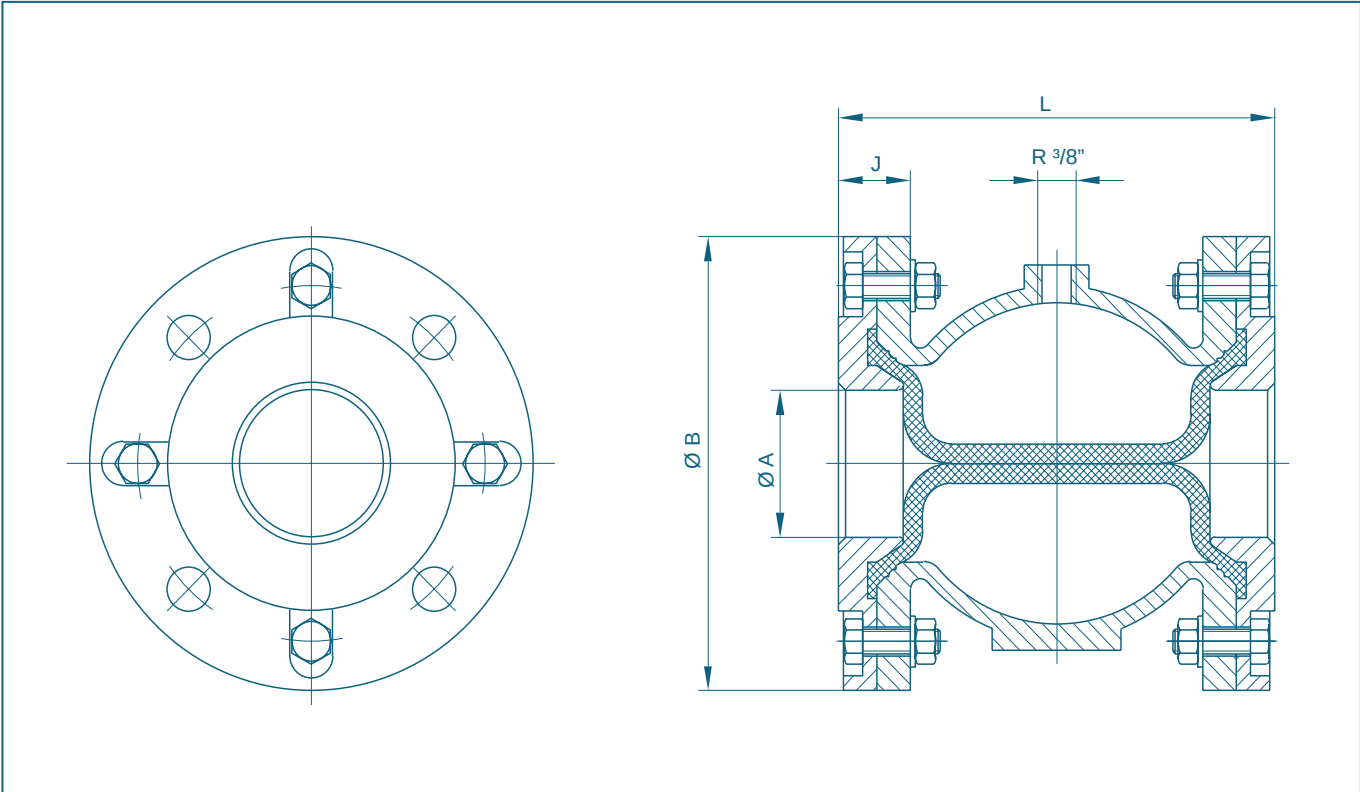
- Full passage, special suitability for mud, powder, granulates
- Mounting of a solenoid valve enables electro-pneumatic operation
- Can be installed in any desired position

GENERAL APPLICATIONS

- Pneumatic conveying systems
- Solid mattered media



PINCH VALVE QV



DN [mm]	Size [in]	Dimensions [mm]				Weight [kg]
		A	B	J	L	
40	1½	35	150	30	156	7,5
50	2	45	165	30	167	9
65	2½	60	185	30	182	11,5
80	3	75	200	34	226	16
100	4	95	220	39	282	22
125	5	120	250	43	350	35
150	6	145	285	50	420	48
200	8	195	340	57	559	94

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE TW-M



Bonded, metall seated wafer type butterfly valve TW-M for tank lorries.

TECHNICAL DATA

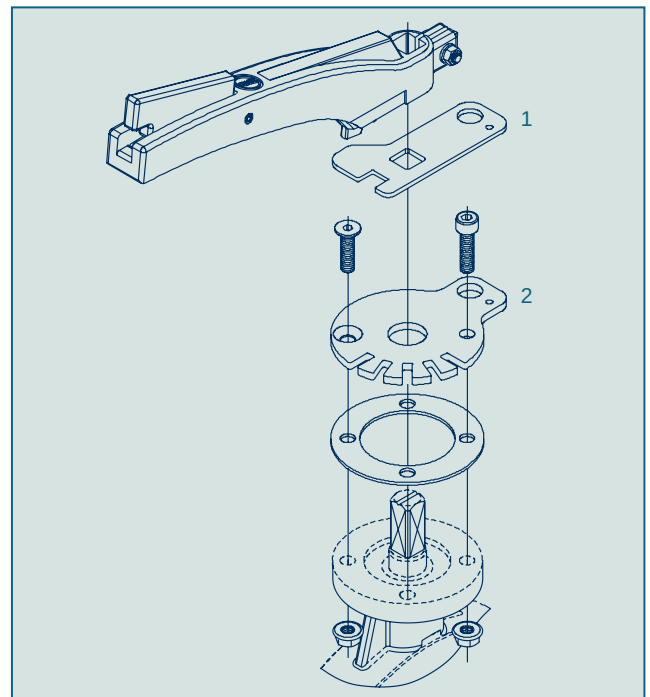
Nominal diameter:	DN 80 - DN 300
Face-to-face:	EBRO works standard
Flange accommodation:	EN 1092 flanges for tank lorries Customer-specific PN 6/10/16
Flange Surface Design:	EN 1092 Form A/B ASME RF
Top flange:	EN ISO 5211
Marking:	EN 19

FEATURES

- Maintenance-free
- Triple shaft bearing
- One-piece precise slotted shaft
- All parts being in contact with the media. Corrosion resistant and FDA-approved
- Bonded plate (optional)
- Can be installed in any desired position
- Sealing of the flange surfaces by means of integrated o-rings
- Cavity-free

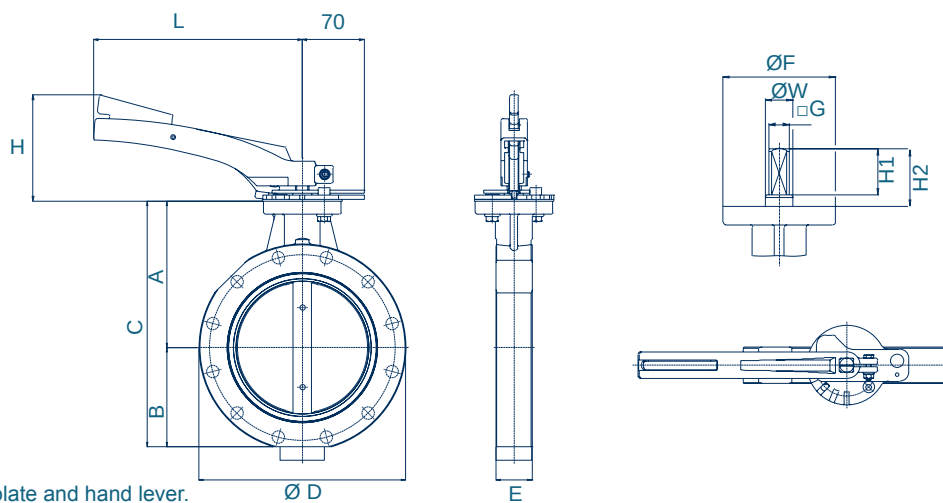
GENERAL APPLICATIONS

- Tank lorries
- Silo constructions
- Granulate handling
- Food industry
- Control of product streams



1 - Sealing ear
2 - Bonded notch lever

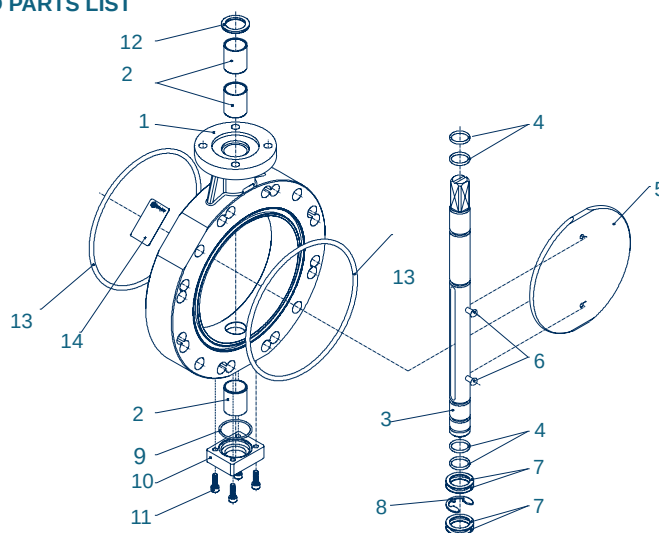
WAFER TYPE BUTTERFLY VALVE TW-M



TW-M with bonded plate and hand lever.

DN [mm]	Size [in]	Dimensions [mm]												Weight [kg]
		A	B	C	ØD	E	ØF	□G	H	H1	H2	L	ØW	
80	3	125	97	222	154	36	88	14	98	30	39	195	18	2,8
100	4	135	97	232	176	36	88	14	98	30	39	195	18	3,2
150	6	166	127	333	234	41	88	16	120	36	45	236	22	5,1
200	8	195	152	347	274	51	88	16	120	36	45	236	22	8,5
250	10	266	179	445	328	66	102	22	-	-	24	-	30	16,3
300	12	291	204	495	378	66	102	22	-	-	24	-	30	20,0

MATERIAL SPECIFICATION AND PARTS LIST



Pos.	Description	Material	Material-No	ASTM	Pos.	Description	Material	Material-No	ASTM
1	Body	Aluminium	1.4541		8	Seeger- retaining ring	Stainless steel	A2	
2	Bearing sleeve	iglidur G			9	O-ring	Viton		
3	Shaft	Stainless steel	1.4418		10	Cover plate	Aluminium		
4	O-ring	Viton			11	Screw	Stainless steel	A4	
5	Disc	Stainless steel	1.4541		12	Wiper ring	PTFE		
6	Half - round - rivet	Stainless steel	A4		13	O-ring	NBR		
7	Adjusting washer	Stainless steel	A2		14	Rating plate	PVC silver		

Subject to change without notice

THROTTLE VALVE CK-M



Throttle valve for clamp ring systems with pneumatic actuator type EB-SYD

TECHNICAL DATA

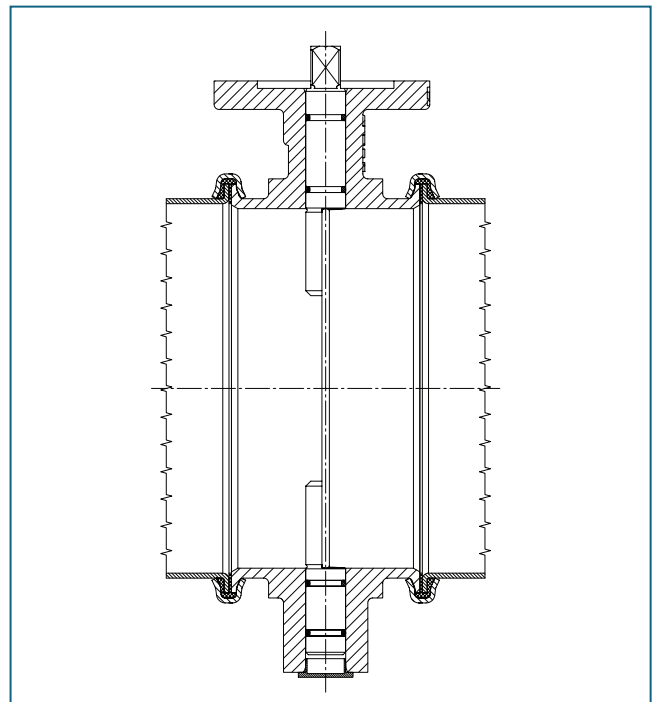
Nominal diameter:	DN 65 - DN 250
Face to face:	EBRO works standard
Top flange:	EN ISO 5211
Flange accommodation:	Pipe system - clamp ring groove
Temperature range:	-10°C to +130°C, (optional 220°C) (depending on pressure, media and actuator)
Operating pressure:	max. 3 bars
Body:	Aluminium
Disc:	1.4301
Annular gap body/ disc:	0,1 mm to 0,5 mm, according to application
Shaft:	1.4401; 1.4571 other materials upon request

FEATURES

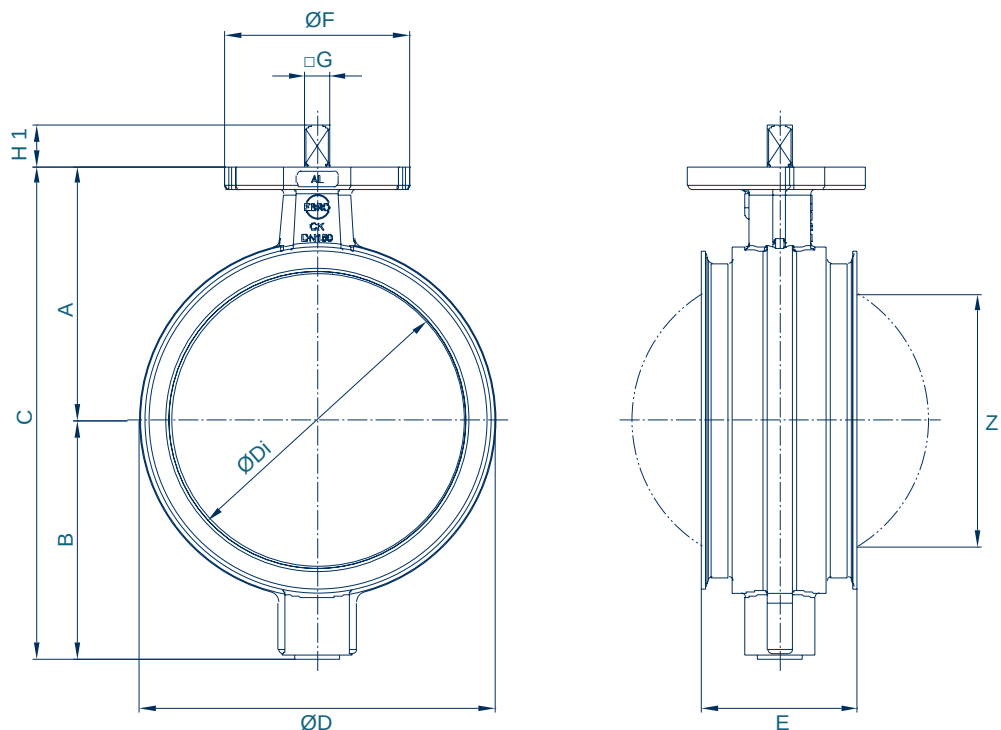
- Throttle valve for clamp ring systems with centrally mounted disc
- Body with mutual bond for clamp ring connection
- Low consumption
- Fast and easy dismantling
- Maintenance-free
- Actuators: Hand lever, electric and pneumatic actuators

GENERAL APPLICATIONS

- Food industry
- Bulk goods
- Aspiration lines
- Dust separation
- Control of air/-gas flows (throttle valve)
- Exhaust pipes



THROTTLE VALVE CK-M



Throttle valve type CK-M

DN [mm]	Size [in]	Dimensions [mm]											Weight [kg]
		A	B	C	$\varnothing D$	$\varnothing Di$	E	$\varnothing F$	Flange	G	H1	Z	
65	2½	80	60	140	80	60	60	65	F04	11	11	0	0,7
80	3	86	60	146	92	72	66	65	F04	11	11	28	0,7
100	4	97	92	188	115	95	68	65	F05	14	14	66	1,2
120	4¾	109	100	209	135	115	72	90	F05	14	14	90	1,7
150	6	124	115	239	165	145	76	90	F05	14	14	123	2,1
200	8	180	159	339	215	195	85	90	F05	17	17	176	4,3
250	10	206	184	390	265	245	85	90	F07	17	17	230	5,7

Subject to change without notice

DN [mm]	Size [in]	Actuators		
		Hand lever	Pneumatic Double acting EB-SYD	Pneumatic Spring return EB-SYS
65 - 80	2½ - 3	Size I	EB 4.1	EB 5.1
100 - 200	4 - 8	Size II	EB 4.1	EB 5.1
250	10	Size III	EB 6.1	EB 6.1

IMPELLER VALVE FS-M



Impeller valve for shut-off and control of product streams in the bulk industry.

TECHNICAL DATA

Nominal diameter:	DN 150 - DN 400
Face-to-face:	EBRO works standard
Flange accommodation:	EN 1092 PN 6/10/16 ASME Class 150
Marking:	EN 19
Operating pressure:	max. 3 bars
Temperature range:	-20 °C to +100°C, optional up to +250°C
Body:	Light metal full flange with inserted ring (stainless steel)
Impeller:	Stainless steel, optional mirror polished
Actuator:	Electric actuator 230V/400V 50Hz/60Hz, 30 min-1 to 100 min-1

FEATURES

- Maintenance-free
- Triple shaft bearing
- Can be installed in any desired position
- Safe and consistent discharge of rapid flowing products
- Noticeable reduction of demixing during discharge
- No compaction or levigation of products during charge and discharge
- Control and dosing of product streams
- Optional: Stop in zero position (sealing)
 - Right-/left rotation
 - Rotation speed control
 - Hardened rotary valve

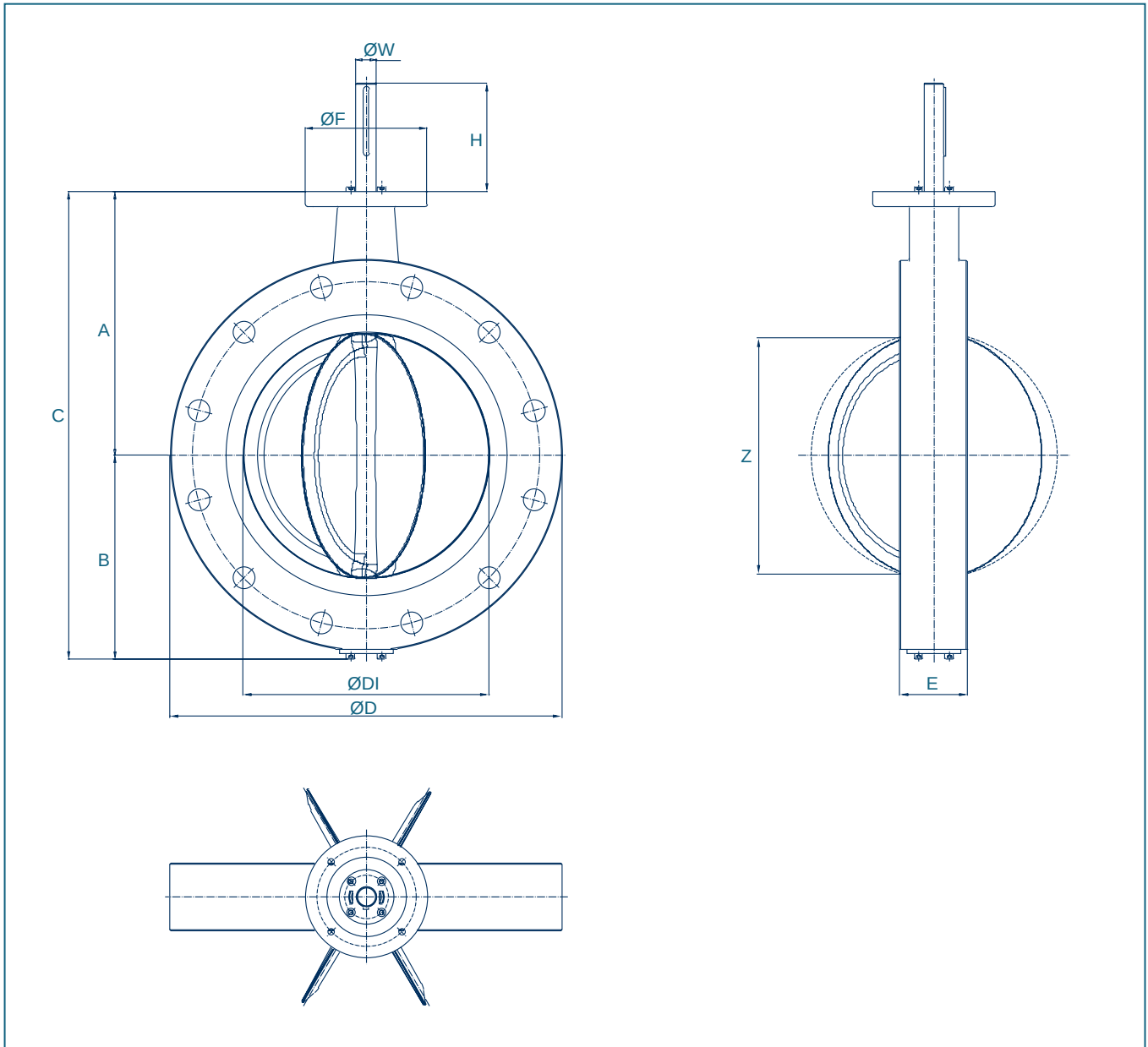
GENERAL APPLICATIONS

- Blending plants
- Silo constructions
- Granulates handling
- Weighing technology



Impeller valve in preferred position

IMPELLER VALVE FS-M



DN [mm]	Size [in]	Dimensions [mm]									
		A	B	C	ØD	ØDI	E	ØF	H	ØW	Z
150	6	203	150	353	285	148	40	88	110	20	143
200	8	228	176	404	340	198	50	88	110	20	192
250	10	266	206	472	395	248	66	123	110	20	240
300	12	293	237	530	445	298	65	123	110	20	292
400	16	363	314	677	565	398	75	148	110	20	392

Subject to change without notice

BUTTERFLY VALVE Q 011



Butterfly valves Q 011 are ideally suited for applications in HVAC plants where gastight shut-off is necessary.

TECHNICAL DATA

Nominal diameter:	DN 80 - DN 400
Face-to-face:	EBRO works standard
Flange accommodation:	EN 12220 EN 24154
Top flange:	EN ISO 5211
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A)
Temperature range:	0°C to +50°C
Operating pressure:	max. 1 bar

FEATURES

- Can be installed in any desired position
- Multiple shaft bearings
- Maintenance-free
- Can be disassembled, material-specific recycling possible

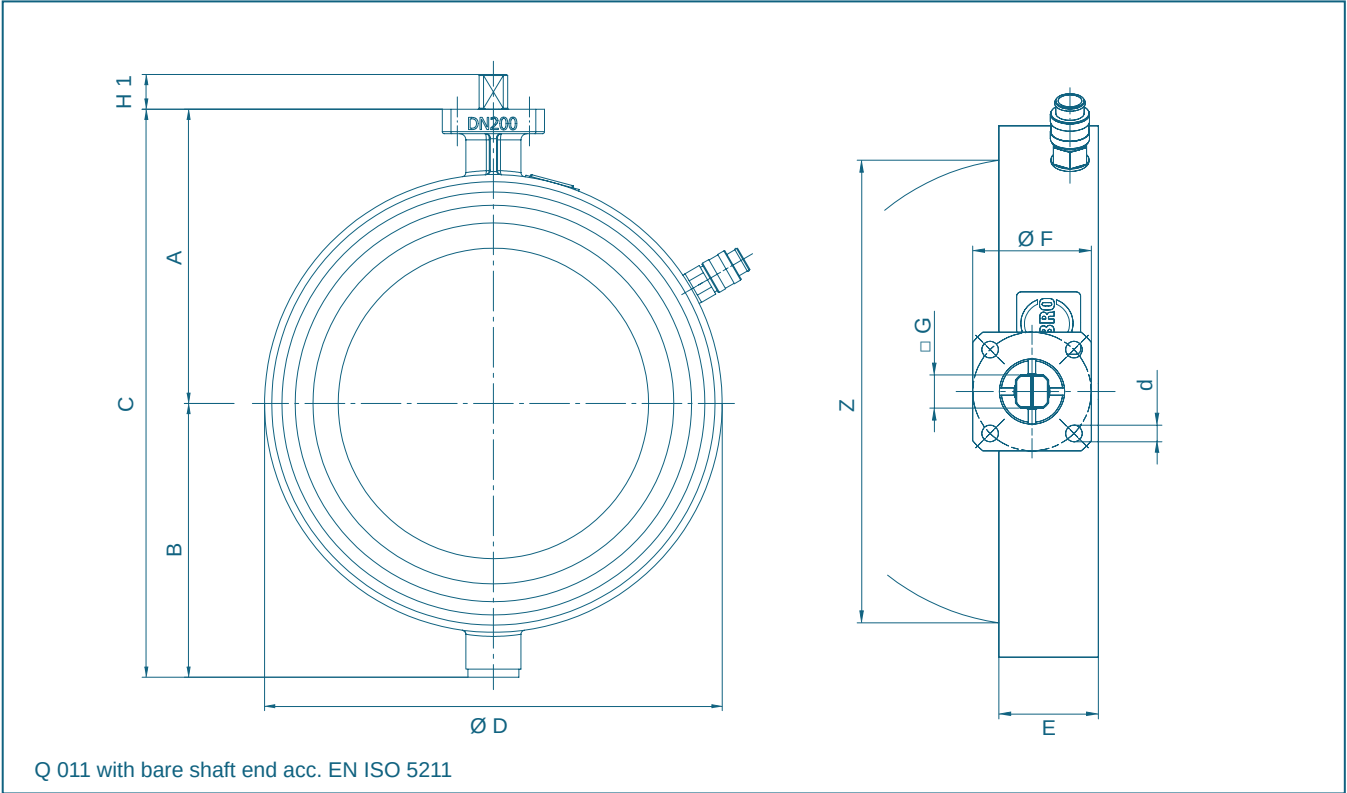
GENERAL APPLICATIONS IN HVAC PLANTS:

- Hospitals
- Nuclear power plants
- Research laboratories
- Chemical and petrochemical industries



Test connection with snap closing.

BUTTERFLY VALVE Q 011

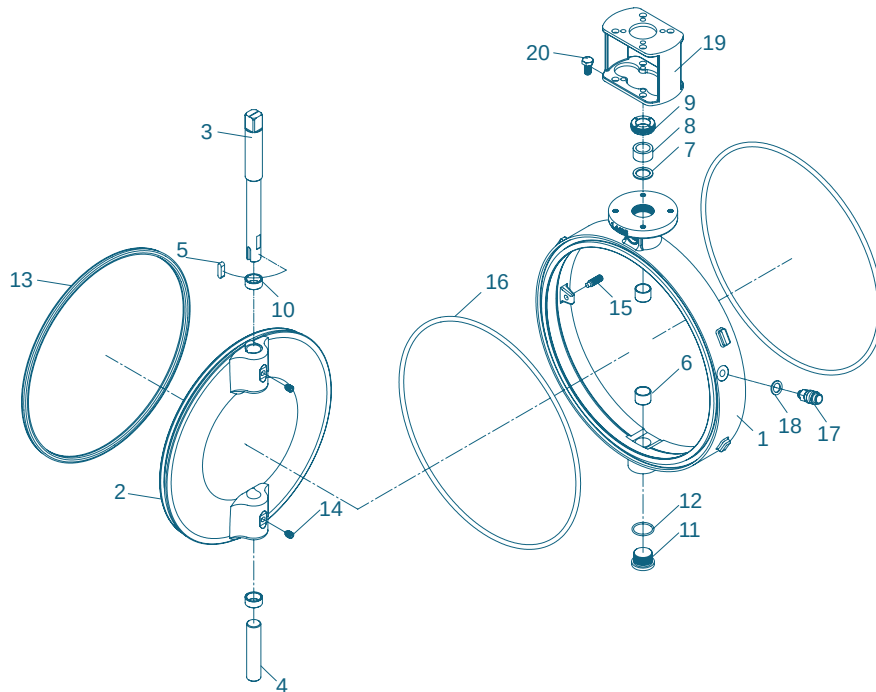


DN [mm]	Size [in]	Dimensions [mm]										Weight [kg]
		A	B	C	D	d	E	F	G	H1	Z	
80	3	81	70	167	102	6	36	42	11	12	76	1,8
100	4	90	77	167	122	6	36	42	11	12	96	2,2
125	5	105	92	197	145	6	36	42	11	12	121	3,0
150	6	118	104	222	172	6	36	42	11	12	147	4,0
200	8	144	134	278	224	7	42	50	14	17	199	6,0
250	10	167	159	326	274	7	42	50	14	17	247	8,0
280	11	198	182	380	310	9	47	70	17	21	278	14,0
300	12	208	192	400	330	9	47	70	17	21	298	15,0
350	14	244	226	470	380	12	60	102	22	23	343	20,0
400	16	275	260	535	434	12	60	102	22	23	397	26,0

Subject to change without notice

BUTTERFLY VALVE Q 011

MATERIAL SPECIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	Pt.	Description	Material	Material No.
1	Body			11	Plug Screw		
	Stainless Steel	G-X5CrNiMo 19-11-2	1.4408		Stainless Steel	A2-70	
2	Disc			12	O-Ring		
	Stainless Steel	G-X5CrNiMo 19-11-2	1.4408		EPDM	Ethylene-Propylene-caoutchouc	
3	Shaft			13	Seal		
	Edelstahl	X8CrNiS 18-9	1.4305		EPDM	Ethylene-Propylene-caoutchouc	
4	Shaft			14	Set screw		
	Stainless Steel	X8CrNiS 18-9	1.4305		Stainless Steel	A2-70	
5	Feather key			15	Set screw		
	Stainless Steel	X5CrNi 18-8	1.4301		Stainless Steel	A2-70	
6	DU-bush			16	Round cord ring		
	Steel/PTFE	St./ Polytetrafluorethylene			EPDM	Ethylene-Propylene-caoutchouc	
7	Disc			17	Snap closing coupling		
	Stainless Steel	A2			Brass, nickel plated		
8	Sealing Set			18	Seal		
	PTFE	Polytetrafluorethylene			Polyamide		
9	Gland flange screw			19	Bracket		
	Stainless Steel	X5CrNi 18-8	1.4301		Steel, zinc coated		
10	Bearing ring			20	Hex-socket screw		
	Stainless Steel	X8CrNiS 18-9	1.4305		Stainless Steel	A2-70	
					Other materials upon request		

Subject to change without notice

BUTTERFLY VALVE Q 011

TORQUE

- Torque values specified (Md)

- Silicone lubrication

Regarding the dimensioning of actuators, please contact our engineers.

DN [mm]	Size [in]	Md
80	3	15
100	4	20
125	5	25
150	6	30
200	8	35
250	10	40
280	11	45
300	12	50
350	14	55
400	16	60

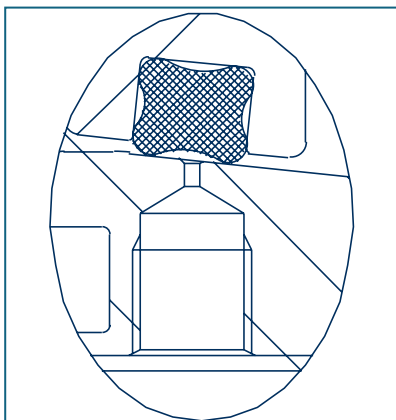
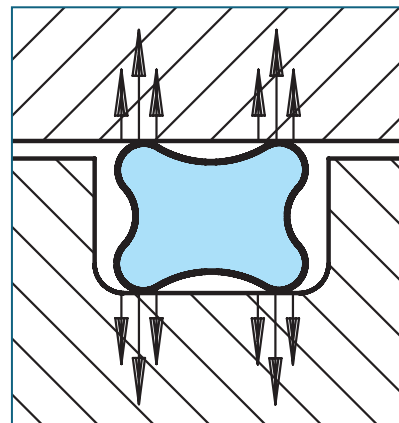
All values in Nm

DOUBLE FUNCTION

Wafer type butterfly valve in eccentric construction with a „Double Block and Bleed“ sealing design.

A cavity space between the sealing lips is pressurized or depressurized by a ventilation connection. An appropriate apparatus is connected to the ventilation and displays even little leakages by a pressure surge or drop. The volume of the hollow space is very small. Therefore it is possible to make visible lowest leakages under pressure.

The exact position of the closed valve is controlled by a mechanical stop. Even after many Open/Close cycles, exact repeatability of the closed position will be observed.



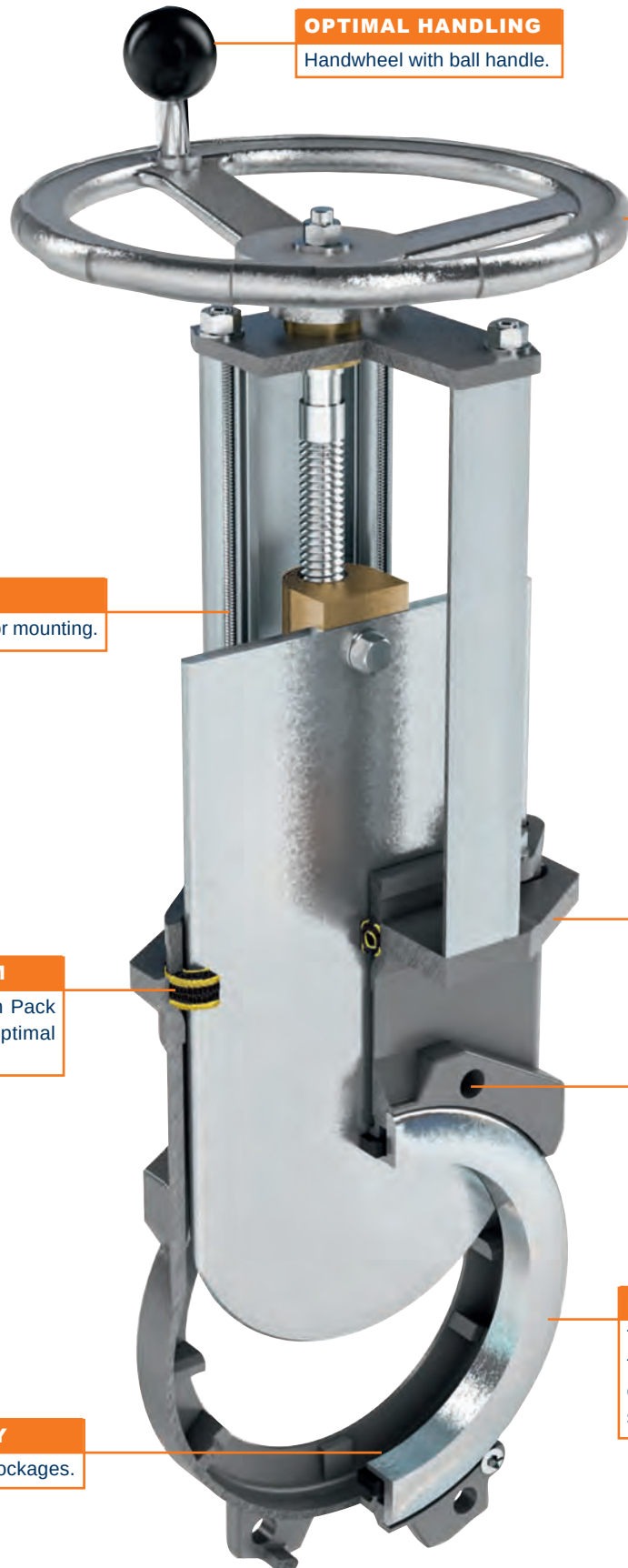
The sealing is similar to a quadratic ring. A large range of rubber compounds are available, which ensures the use in various applications of ventilation technology.

The low torque of the Q 011 requires minor actuator power and therefore guarantees an energy-efficient automation of the valve.

The legal protection of registered design of the Q 011 is incorporated at the German Patent and Trademark Office.

QUALITY FEATURES

KNIFE GATE VALVE MV



OPTIMAL HANDLING

Handwheel with ball handle.

MODULAR ACTUATOR DESIGN

In addition to manual actuators, a wide range of pneumatic, electric and hydraulic actuators is available.

CONSTRUCTION

Solid and stable actuator mounting.

TWIN PACK-TM

The patented Twin Pack seal guarantees optimal sealing of the gate.

ROBUST DESIGN

The body is constructed and manufactured from a solid piece.

FLANGE CONNECTION

Flange acc. to DIN and ANSI. PN 10, PN 16 and Class 150 AS 2129 Table D and E

RETAINER RING SYSTEM

The retainer ring system facilitates maintenance and enables easy replacement of seals.

OPTIMISED BODY

Body design free of blockages.

KNIFE GATE VALVE WB 11



The knife gate valve type WB is designed, manufactured, inspected and tested according to the European Pressure Equipment Directive (PED 97/23/EC), category II module A1 and therefore CE marked.

FEATURES

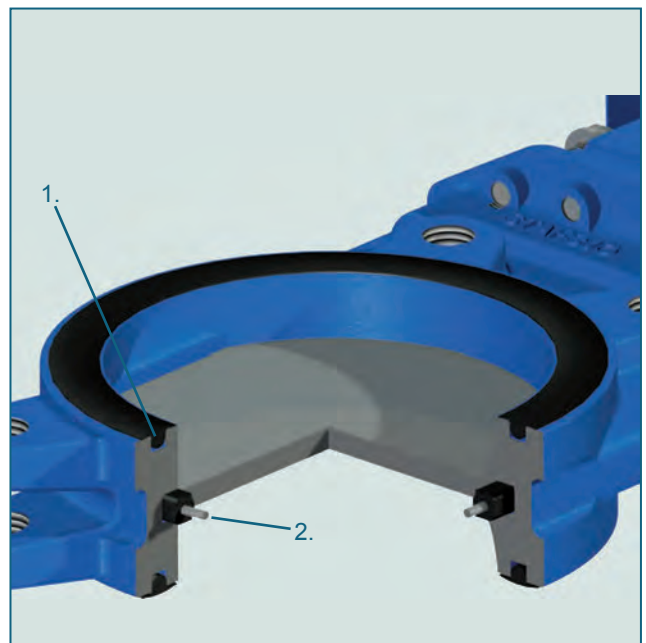
- Box packing Twin Pack™ gives high operation reliability
- Bi-directional sealing
- Casted one piece body
- Integrated flangesealing
- Piggable design

GENERAL APPLICATIONS

- Water and waste water
- Biogas plant
- Sugar industry
- Power plants and steel works
- Chemical industry
- Food and beverage industry

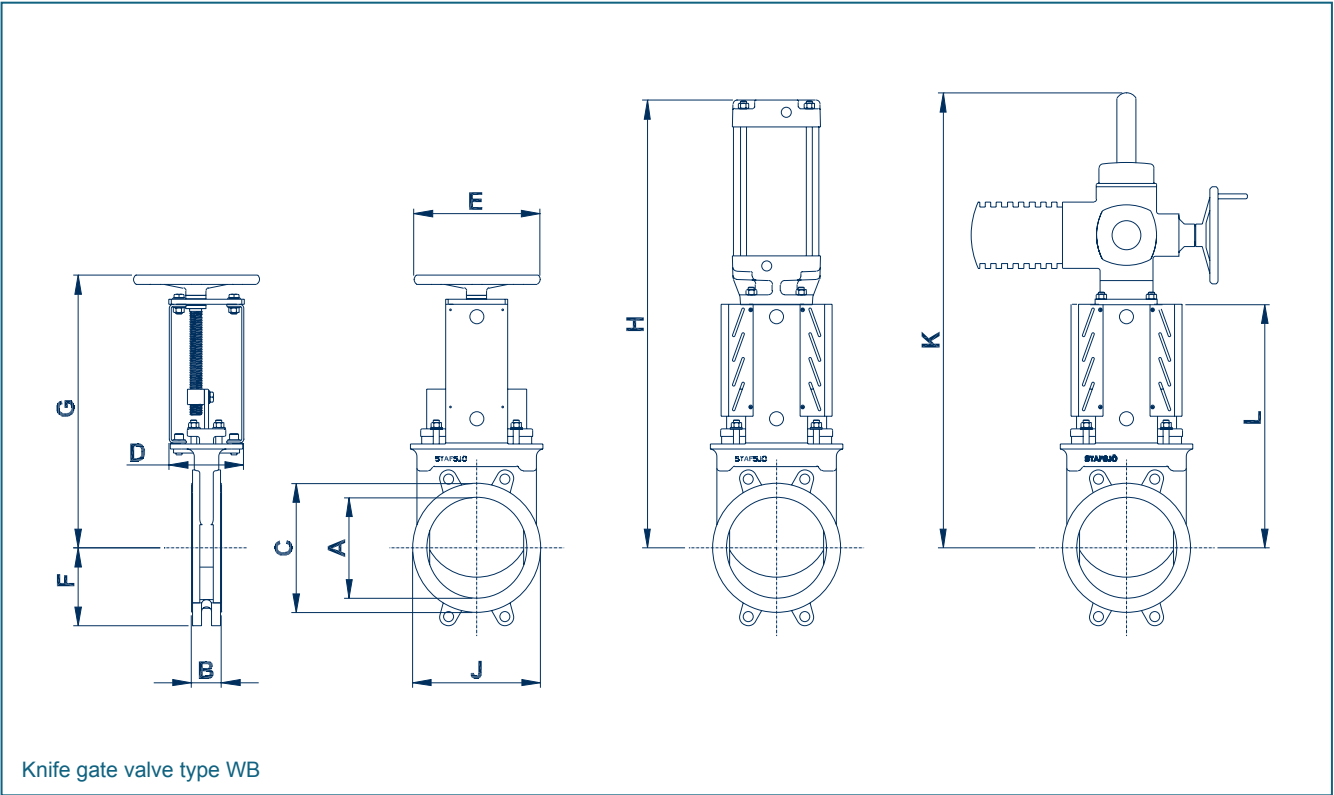
TECHNICAL DATA

Nominal diameter:	DN 50 - DN 600
Face-to-face:	EN 558-1 Reihe 20 (≥ DN 350 company standard)
Flange drilling:	EN 1092 PN 10 ASME Class 150
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208 Class A
Temperature range:	max. 120°C
Actuators:	Hand wheel, ratchet wrench, chain wheel, bevel gear, pneumatic cylinder, electric motor, hydraulic cylinder
Operating pressure:	DN 50 - DN 300: 10 bar DN 350 - DN 400: 6 bar DN 500 - DN 600: 4 bar



1. The integrated body seal ensures tightness when mounted between flanges.
2. The pressure stressed sealing principle ensures permanent tightness.

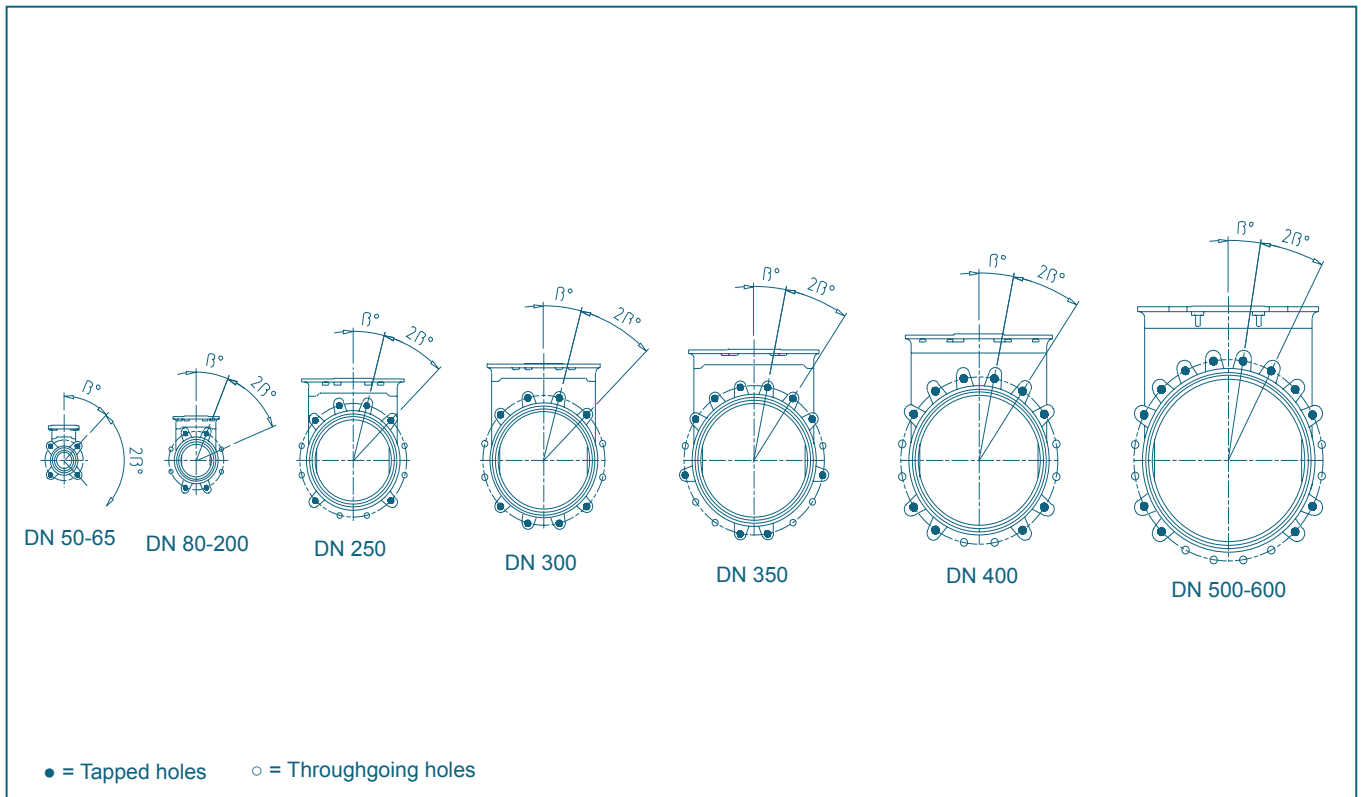
KNIFE GATE VALVE TYPE 11



DN [mm]	Size [in]	Dimensions [mm]											Air supply	Weight with hand wheel [kg]
		A	B	C	D	E	F	G	H	J	K	L		
50	2	50	43	90	86	202	59	299	441	90	575	227	¼"	5,5
65	2 ½	65	46	105	86	202	66	324	481	105	600	252	¼"	6,5
80	3	80	46	120	86	202	88	346	519	120	623	275	¼"	7,5
100	4	100	52	144	86	202	101	381	574	144	658	310	¼"	9,5
125	5	125	56	169	86	250	112	421	709	169	698	350	¼"	12
150	6	150	56	192	86	250	130	464	776	192	740	392	¼"	14
200	8	200	60	256	151	317	154	561	888	256	818	483	½"	27
250	10	250	68	307	151	317	153	657	1034	307	914	579	½"	38
300	12	300	78	354	151	317	213	753	1180	354	1059	675	½"	53
350	14	350	80	407	187	400	245	880	1367	407	1228	783	½"	81
400	16	400	80	460	187	400	246	977	1514	460	1375	880	½"	106
500	20	500	90	566	262	520	284	1214	1835	266	1706	1100	½"	185
600	24	600	100	682	262	520	341	1419	2311	682	2011	1305	1"	275

Subject to change without notice

FLANGE DRILLINGS WB 11



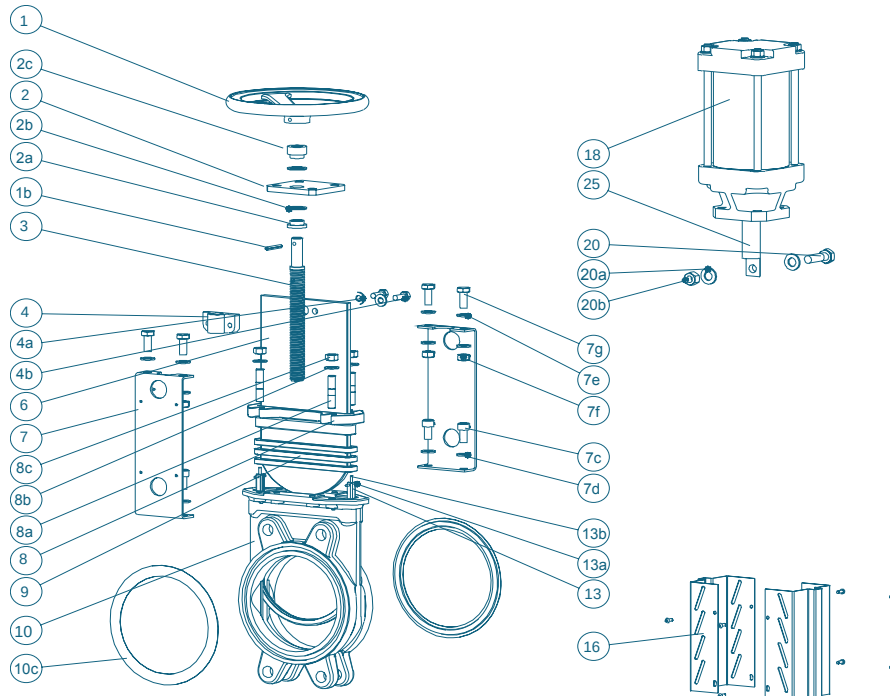
Nominal diameter DN [mm]	50	65	80	100	125	150	200	250	300	350	400	500	600
Outside flange diameter [mm]	165	185	200	220	250	285	340	395	445	505	565	670	780
Bolt circle diameter [mm]	125	145	160	180	210	240	295	350	400	460	515	620	725
Face-to-face length [mm]	43	46	46	52	56	56	60	68	78	80	80	90	100
Number of throughgoing holes [○]	-	-	4	4	4	4	4	6	4	6	6	8	8
Number of tapped holes [●]	4	4	4	4	4	4	4	6	8	10	10	12	12
Bolt size	M16	M16	M16	M16	M16	M20	M20	M20	M20	M20	M24	M24	M27
β°	45	45	22,5	22,5	22,5	22,5	22,5	15	15	11,25	11,25	9	9
Screw lengths *	14	16	10	12	12	14	16	18	18	18	20	24	24

* Add the values in the table with the thickness of the pipe flanges, the washers and the estimated thickness of the gasket.

Subject to change without notice

KNIFE GATE VALVE TYPE 11

MATERIAL SPEZIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	Pt.	Description	Material	Material-No.
1	Hand wheel			8	Gland		
	Cast Iron	EN-JL-1040, epoxy coated			Nodular Cast Iron	EN-JS-1050, epoxy coated	
1b	Yoke			8a	Stud bolt		
	Stainless Steel	DIN 1481			Stainless Steel	A2	
2	Traverse			8b	Washer		
	Stainless Steel	X5CrNi18 M 10	1.4301		Stainless Steel	A2	
2a	Bearing			8c	Nut		
	Brass	CuZn39Pb3			Stainless Steel	A2	
2b	Slide washer			9	Gland packing *		
	POM				Twin Pack™	Kavelar/PTFE	
2c	Bearing			10	Body		
	Brass	CuZn39Pb3			Nodular iron	EN-JS 1082	
3	Stem				Grey cast Iron (< DN300)	EN-JL-1040	
	Stainless Steel	X6Cr17	1.4016	10c	Flange sealing *		
4	Stem nut				NBR	Acrylonitrile-butadiene-rubber	
	Brass	CuZn39Pb3		13	Sealing profile *		
4a	Washer				NBR	Acrylonitrile-butadiene-rubber	
	Stainless Steel	A2			EPDM	Ethylen-propylen-rubber	
4b	Screw			13a	Steel wire, short		
	Stainless Steel	A2			Stainless Steel		
6	Gate			13b	Steel wire, long		
	Stainless Steel	X2CrNiMo17-12-2	1.4404 (DN 50 - DN 300)		Stainless Steel		
	Stainless Steel	X5CrNi10 M 10	1.4301 (DN 350 - DN 600)	16	Gate guard (not for HW)		
7	Beam				Steel, epoxy coated		
	Steel, epoxy coated			18	Cylinder		
7c	Screw				Aluminium	s. datasheet	
	Stainless Steel	A2		20	Screw		
7d/e	Washer				Stainless Steel	A2	
	Stainless Steel	A2		20a	Washer		
7f	Nut				Stainless Steel	A2	
	Stainless Steel	A2		20b	Nut		
7g	Screw				Stainless Steel	A2	
	Stainless Steel	A2		25	Piston rod		
					Stainless Steel	A2	

* Recommended spare parts

Subject to change without notice

WAFER TYPE BUTTERFLY VALVE TW 80/TW 100



Wafer type butterfly valve TW 100 with NBR-seat.

TECHNICAL DATA

Nominal diameter:	DN 80 / DN 100
Face-to-face:	EBRO works standard
Flange accommodation:	DIN 28459 flanges for tank lorries
Flange Surface Design:	DIN 2526, Form A-E, ANSI RF
Tightness check:	EN 12266 (Leakage Rate 1) DIN 5208, Category 3 API 598 Table 5 ANSI B 16-104, Class VI
Temperature range:	-20°C to +80°C (depending on pressure and medium)
Operating pressure:	max. 6 bar
Differential pressure:	max. Δp 6 bar
Body:	Aluminium alloy
- one piece	GD-AlSi9Cu3 (3.2163)
- splitted	PTFE seal
Seat:	GK-AlSi12(Cu) (3.2583.02) EPDM (Ethylene propylene caoutchouc) NBR (Acrylnitrile butadiene rubber) FPM (Fluorocarbon caoutchouc) AU (Polyurethane) PTFE (Polytetrafluorethylene)
Disc:	Stainless Steel G-X6CrNiMo18-10 (1.4408)

FEATURES

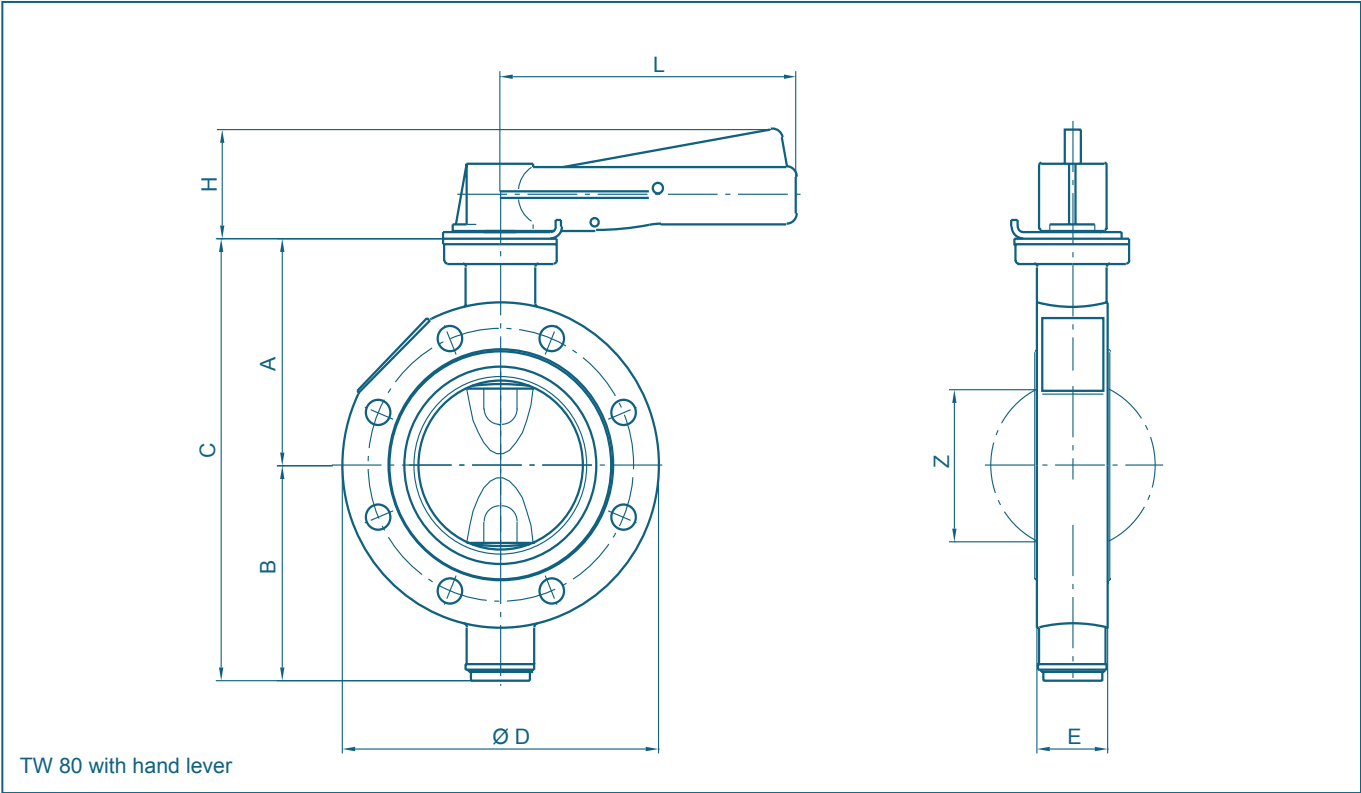
- Maintenance-free
- Triple shaft bearing
- Can be disassembled, material-specific recycling possible

GENERAL APPLICATIONS

- Tank lorries



WAFER TYPE BUTTERFLY VALVE TW 80/TW 100



DN [mm]	Size [in]	Dimensions [mm]								Weight [kg]
		A	B	C	D	E	H	L	Z	
80	3	108	103	211	155	35	52	145	71	2,3
100	4	118	113	231	174	35	52	145	93	2,6

TW DN 125: upon request

Subject to change without notice

KNIFE GATE VALVE WB 14



Knife Gate Valve with fully lugged body, which allows end of pipe installation.

TECHNICAL DATA

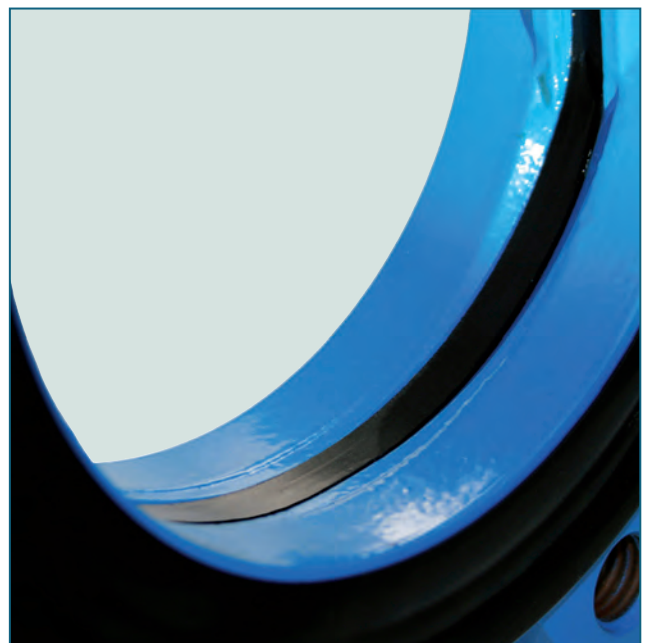
Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558-1 Series 20
Flange drilling:	EN 1092 PN 10/16 ASME Class 150
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208 Class A
Temperature range:	max. 120°C
Actuators:	Hand wheel, ratchet wrench, chain wheel, bevel gear, pneumatic cylinder, electric motor, hydraulic cylinder
Operating pressure:	10 bar

FEATURES

- Box packing Twin Pack™ gives high operation reliability
- Bi-directional sealing
- Casted one piece body
- Integrated flangesealing
- Piggable design

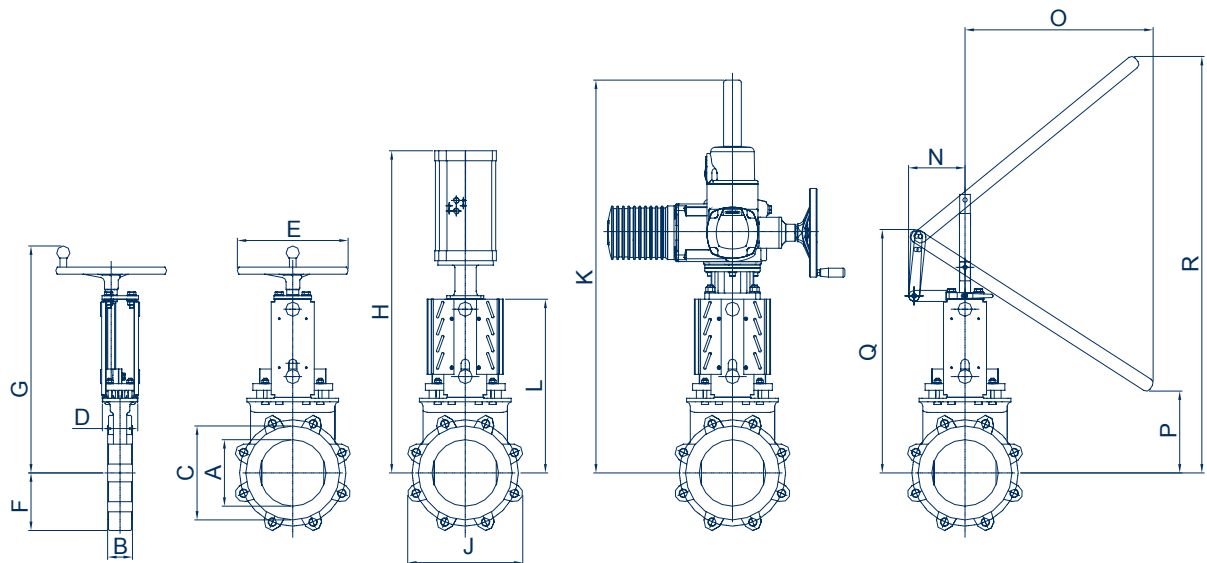
GENERAL APPLICATIONS

- Water and waste water
- Biogas plant
- Sugar industry
- Power plants and steel works
- Chemical industry
- Food and beverage industry



A straight bore and the integrated sealing allow excellent flow characteristics.

KNIFE GATE VALVE WB 14

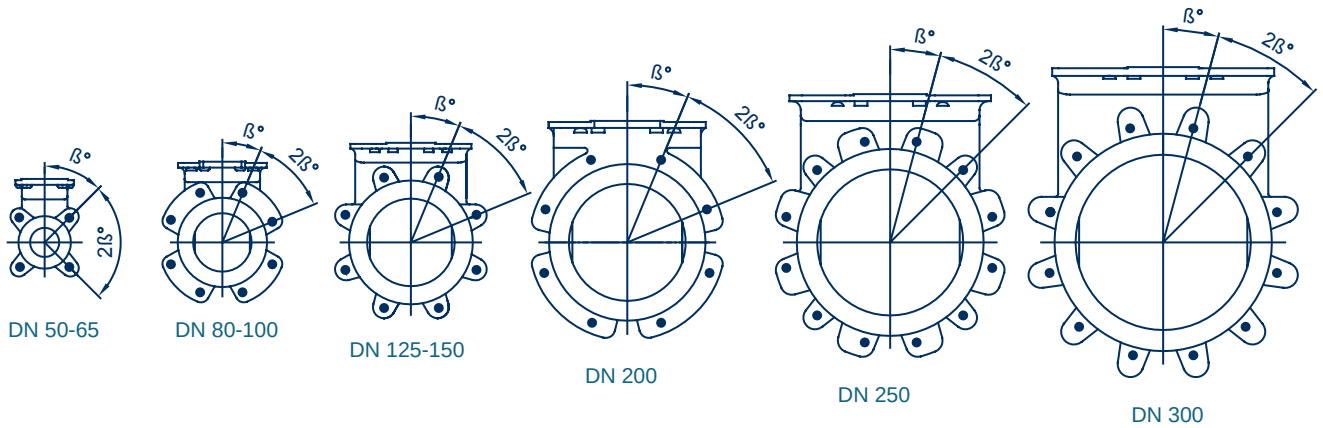


Knife gate valve type WB

DN [mm]	Size [in]	Dimensions [mm]																Weight with hand wheel [kg]
		A	B	C	D	E	F	G	H	J	K	L	N	O	P	Q	R	
50	2	50	43	90	86	200	59	299	465	117	629	227	149	499	128	381	419	6,5
65	2 ½	65	46	105	86	200	66	324	490	131	654	252	147	492	153	407	511	8,0
80	3	80	46	120	86	200	88	346	512	176	677	275	144	479	176	429	598	11,5
100	4	100	52	144	86	200	101	381	547	206	712	310	146	635	17	472	653	14,5
125	5	125	56	169	86	250	112	421	685	236	752	350	137	591	57	512	846	17,5
150	6	150	56	192	86	250	130	464	730	260	794	392	129	554	99	554	1039	22,0
200	8	200	60	256	151	315	154	561	855	327	818	489	217	633	247	716	1117	37,0
250	10	250	68	307	151	315	153	657	1050	392	914	579	-	-	-	-	-	55,0
300	24	300	78	354	151	315	212	753	1146	462	1059	675	-	-	-	-	-	71,0

Subject to change without notice

FLANGE DRILLINGS WB 14



● = Tapped holes ○ = Throughgoing holes

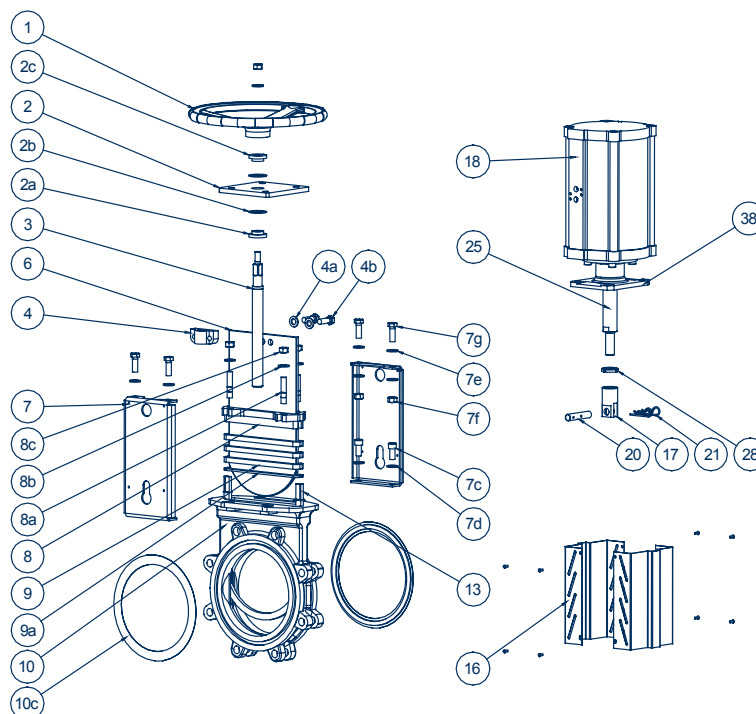
Nominal diameter DN [mm]	50	65	80	100	125	150	200	250	300
Outside flange diameter [mm]	165	185	200	220	250	285	340	395	445
Bolt circle diameter [mm]	125	145	160	180	210	240	295	350	400
Face-to-face length [mm]	43	46	46	52	56	56	60	68	78
Number of throughgoing holes [○]	-	-	-	-	-	-	-	-	-
Number of tapped holes [●]	4	4	8	8	8	8	8	12	12
Bolt size	M16	M16	M16	M16	M16	M20	M20	M20	M20
B°	45	45	22,5	22,5	22,5	22,5	22,5	15	15
Screw lengths *	12	12	11	15	15	15	18	20	2

* Add the values in the table with the thickness of the pipe flanges, the washers and the estimated thickness of the gasket.

Subject to change without notice

KNIFE GATE VALVE WB 14

MATERIAL SPEZIFICATION AND PARTS LIST



Pos.	Part	Material	Material-No.	Pos.	Part	Material	Material-No.
1	Hand Wheel	Cast Iron	GG25	8a	Pin Bolt	Stainless Steel	A2
2	Yoke	Steel	1.0038	8b	Washer	Stainless Steel	A2
2a	Bearing	Brass	CuZn39Pb3	8c	Nut	Stainless Steel	A2
2b	Slide Washer	POM		9*	Box Packing	Twin Pack™	Kavelar/PTFE
2c	Bearing	Brass	CuZn39Pb3	9a*	Box Bottom Scraper	≥DN200 UHMW-PE	
3	Stem	Stainless Steel	1.4016	10	Valve Body	Nodular iron	EN-JS 1082
4	Stem Nut	Brass	CuZn39Pb3	10c*	Flange Sealing	NBR	
4a	Washer	Stainless Steel	A2	13*	Sealing Profile	NBR	
4b	Bolt	Stainless Steel	A2	16	Gate Guard	Steel	1.0038
6	Gate	Stainless Steel	1.4301	17	Gate Clevis	Stainless Steel	1.4305
7	Beam	Steel	1.0038	18	Cylinder	see datasheet 06.04	
7c	Bolt	Stainless Steel	A2	20	Clevis Pin	Stainless Steel	1.4305
7d	Washer	Stainless Steel	A2	21	Locking Pins	Stainless Steel	1.4305
7e	Washer	Stainless Steel	A2	25	Piston Rod	Stainless Steel	1.4301
7f	Nut	Stainless Steel	A2	28	Locking Nut	Stainless Steel	1.4305
7g	Screw	Stainless Steel	A2	38	Valve Adapter	Stainless Steel	1.4308
8	Gland	Carbon Steel	EN-JS-1050				

* Recommended spare parts

Subject to change without notice

DOUBLE FLANGED KNIFE GATE VALVE WB12



Double flanged knife gate valve type WB12 with handle lever for fast and easy opening/closing.

TECHNICAL DATA

Nominal diameters:	DN 150 - DN 200
Flange drilling:	Standard for agricultural applications
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208 Class A
Temperature:	max. 90°C
Actuators:	handlever, handwheel, ratchet wrench, chain wheel, pneumatic cylinder, electric motor, hydraulic cylinder
Working pressure:	max. 4 bar

MATERIALS

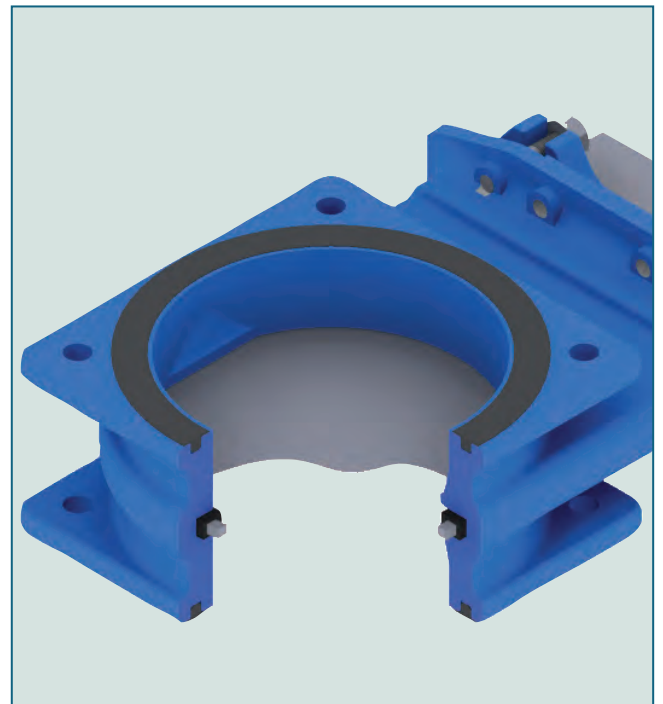
Body:	EN-JL 40
Gate:	Stainless steel, 1.4301
Sealing:	NBR
Stem:	Stainless steel
Box packing:	Twin Pack™

FEATURES

- One piece casted valve body
- The grinded gate ensures low torque and minimum wear
- Flange sealings
- Flange designed for agricultural applications
- Box packing TwinPack™ ensures high operation reliability
- Bi-directional sealing

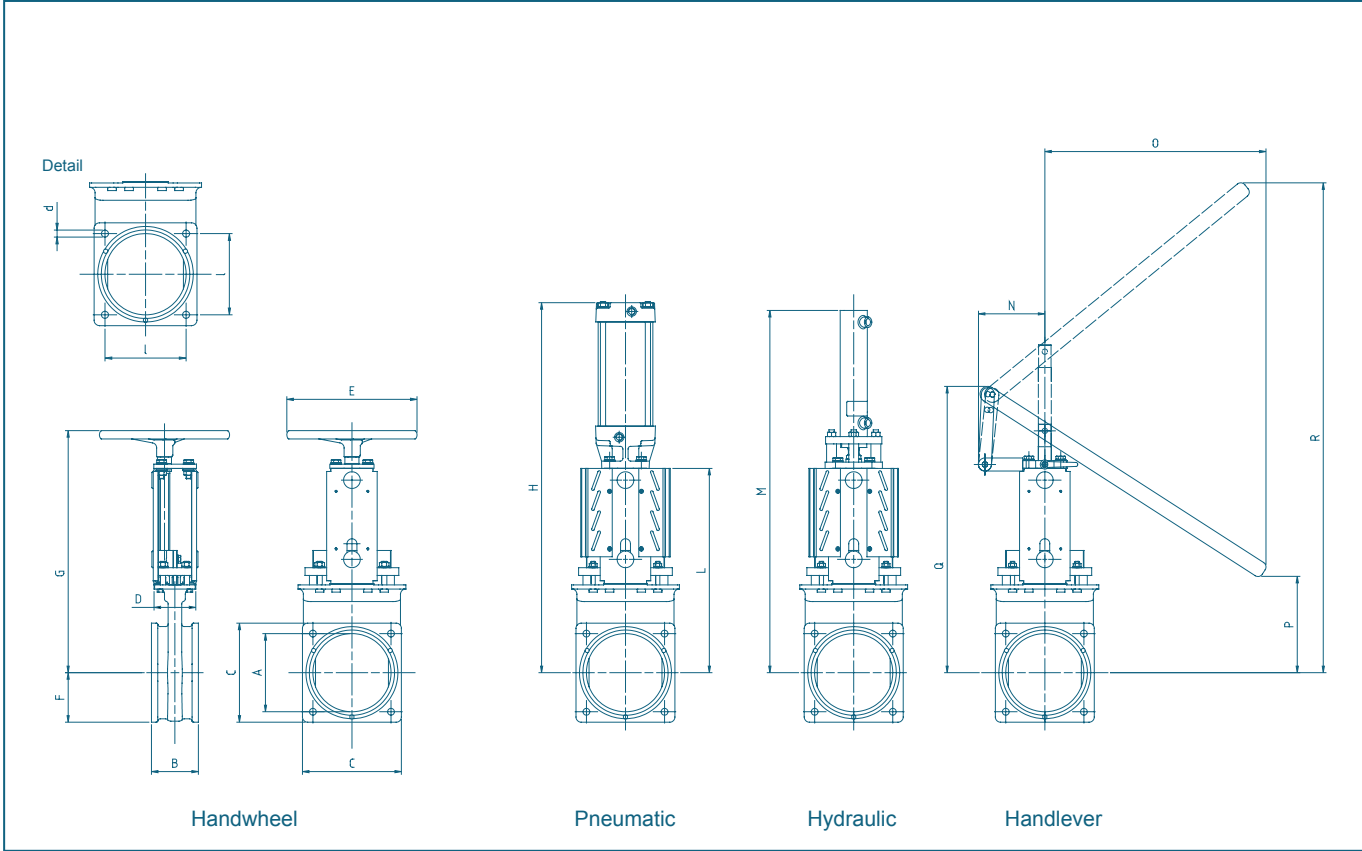
GENERAL APPLICATIONS

- Biogas plants
- Agricultural applications



NBR-seal with metal core for durable sealing.

DOUBLE FLANGED KNIFE GATE VALVE WB12



DN [mm]	Size [in]	Dimensions [mm]																
		ØA	B	C	D	Ød	ØE	F	G	H	L	I	M	N	O	P	Q	R
150	6	150	90	190	80	13	250	95	464	710	392	150	695	127	425	185	549	940
200	8	200	94	235	145	13	317	123	562	888	483	180	852	216	623	249	715	1123

Subject to change without notice

KNIFE GATE VALVE MV



Unidirectional knife gate valve for fluids, bulk solids capable to flow an suspensions up to 5%.

TECHNICAL DATA

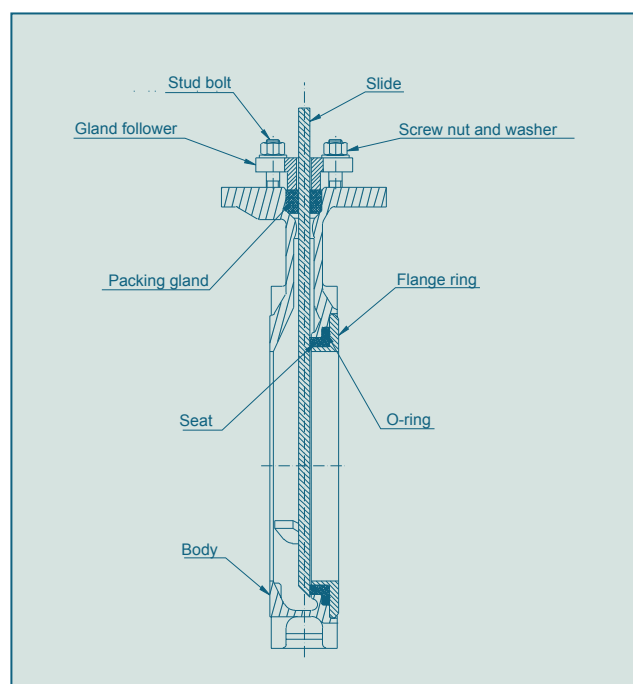
Nominal diameter:	DN 50 - DN 1200
Face-to-face:	Works standard
Flange drilling:	EN 1092 PN 10/16 ASME Class 150
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208 Class A
Temperature range:	max. 300°C (depending on pressure, medium and material)
Actuators:	Hand wheel, ratchet wrench, chain wheel, bevel gear, pneumatic cylinder, electric motor, hydraulic cylinder
Operating pressure:	DN 50 - DN 125: 16 bar DN 150 - DN 300: 10 bar DN 350 - DN 600: 6 bar DN 700 - DN 1000: 4 bar

FEATURES

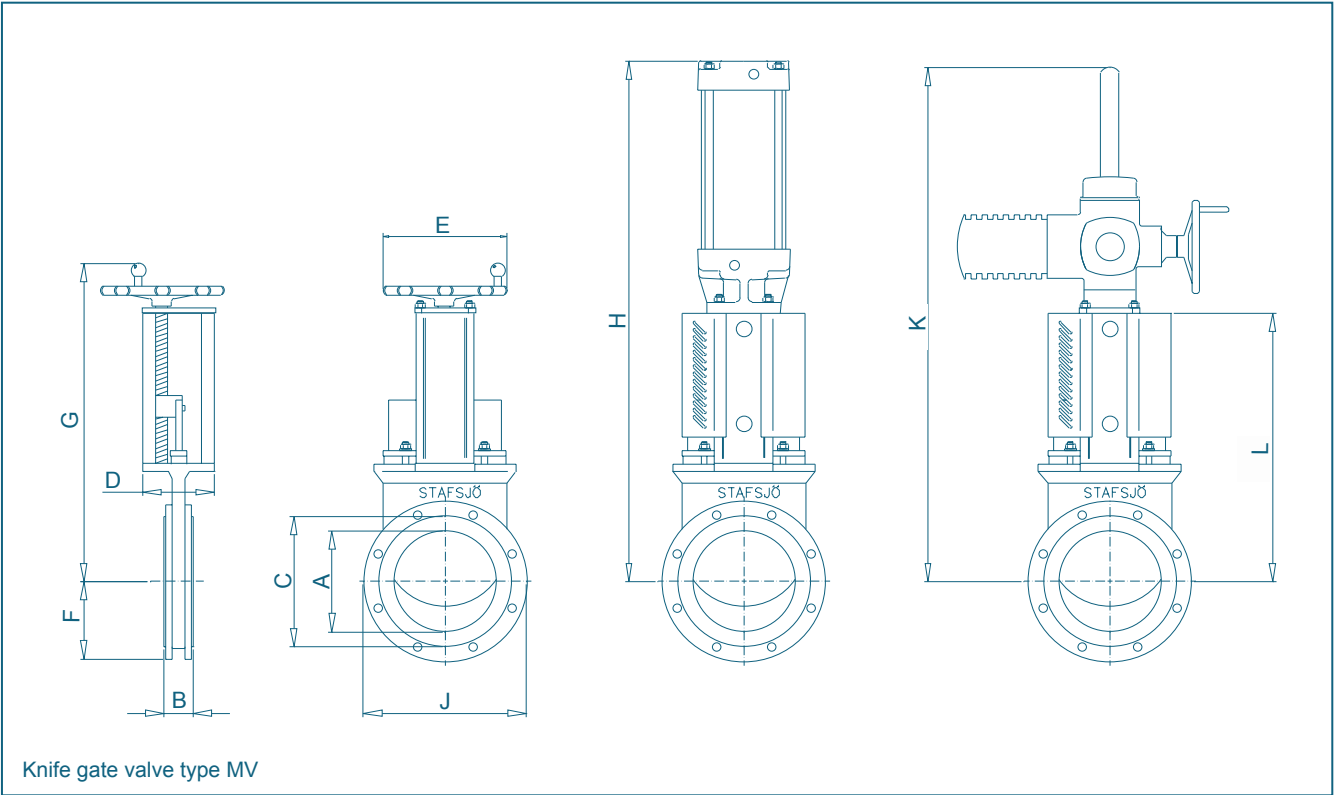
- Box packing TwinPack™ gives high operational reliability
- Easy replacement of seat by mechanically locked retainer ring
- Low maintenance
- Can be disassembled, material specific recycling possible

GENERAL APPLICATIONS

- Sludge, powder, granulates and other solid media
- Pulp, recycled pulp
- Waste water
- Food industry
- Beverage industry



KNIFE GATE VALVE MV

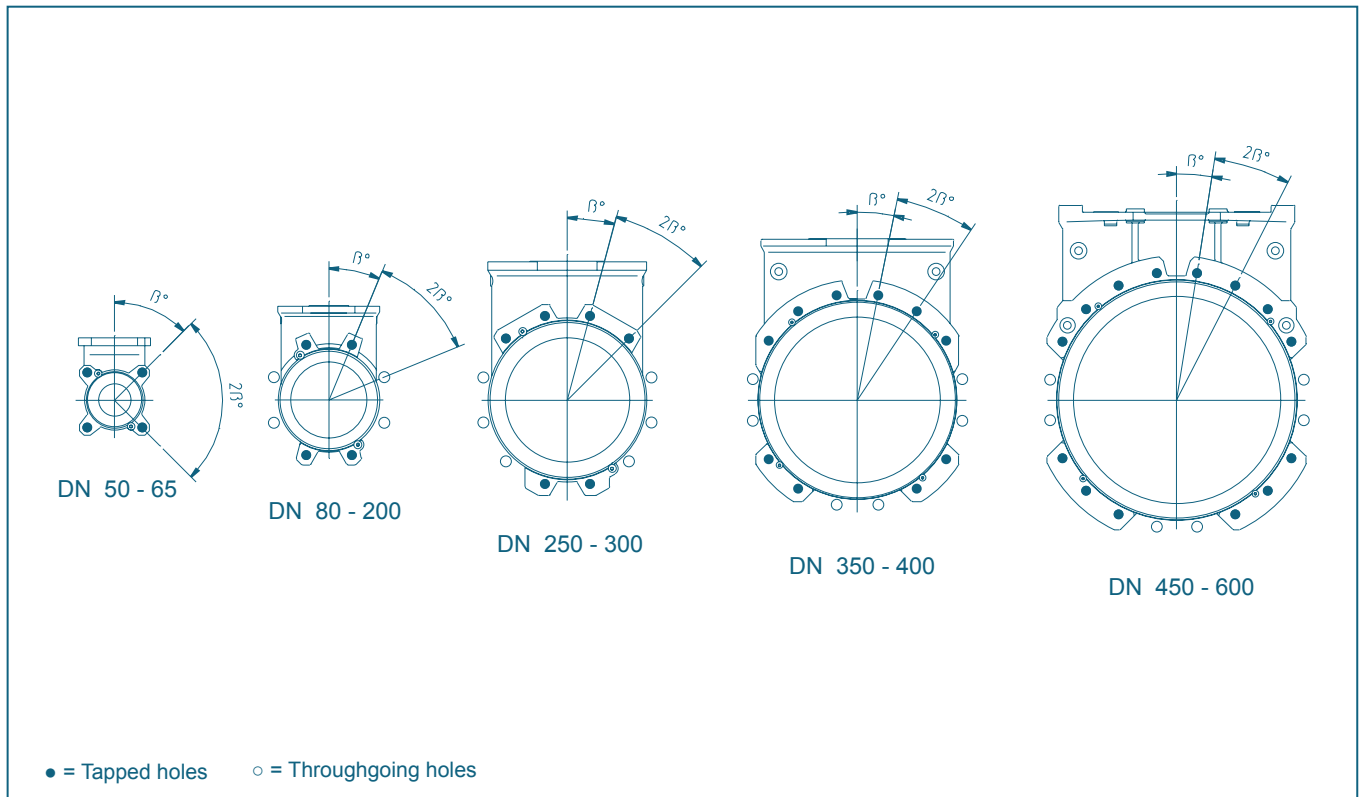


DN [mm]	Size [in]	Dimensions [mm]											Air supply	Weight with hand wheel [kg]
		A	B	C	D	E	F	G	H	J	K	L		
50	2	52	41	91	80	200	56	360	475	116	620	230	¼"	7
65	2½	64	41	107	80	200	65	380	495	130	650	250	¼"	7
80	3	79	51	124	80	200	88	405	545	135	690	275	¼"	8
100	4	103	51	154	80	200	102	453	593	155	765	323	¼"	10
125	5	128	56	179	80	250	116	495	685	178	830	365	¼"	13
150	6	153	60	204	80	250	130	550	740	205	910	420	¼"	15
200	8	202	60	267	145	315	160	694	1017	268	1115	555	½"	31
250	10	250	69	320	145	315	192	779	1102	320	1250	640	½"	40
300	12	302	78	374	145	315	230	879	1252	375	1400	740	½"	55
350	14	332	78	419	175	400	210	993	1415	420	1550	820	½"	90
400	16	380	89	479	175	400	245	1083	1555	490	1690	910	½"	120
450	18	428	89	535	200	520	280	1180	1680	560	1820	990	½"	180
500	20	470	114	580	250	520	313	1315	1865	625	2010	1127	½"	245
600	24	560	114	680	260	635	370	1540	2355	740	2340	1352	1"	340
700	28	665	118	800	310	635	390	1750	2513	865	2650	1565	1"	460
750	30	710	118	860	305	635	490	1880	2900	930	2830	1635	1"	700
800	32	760	118	900	310	635	490	1970	3030	985	2970	1780	-	540
900	36	855	118	1010	320	635	580	2220	3380	1160	3340	1985	-	900
1000	40	950	150	1110	320	635	640	2400	3670	1280	3630	2215	-	1500

Actuator EM is rotated 45° for DN 50 - DN 150

Subject to change without notice

FLANGE DRILLINGS MV



Nominal diameter DN [mm]	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Outside flange diameter [mm]	165	185	200	220	250	285	340	395	445	505	565	615	670	780
Bolt circle diameter [mm]	125	145	160	180	210	240	295	350	400	460	515	565	620	725
Face-to-face length [mm]	41	41	51	51	54	60	60	69	78	78	89	89	114	114
Number of throughgoing holes [○]	-	-	4	4	4	4	4	6	6	6	6	6	6	6
Number of tapped holes [●]	4	4	4	4	4	4	4	6	6	10	10	14	14	14
Bolt size	M16	M16	M16	M16	M16	M20	M20	M20	M20	M20	M24	M24	M24	M27
β°	45	45	22,5	22,5	22,5	22,5	22,5	15	15	11,25	11,25	9	9	9
Screw lengths *	8**	8**	12	12	12	14	13	17	20	19	22	22	27	27

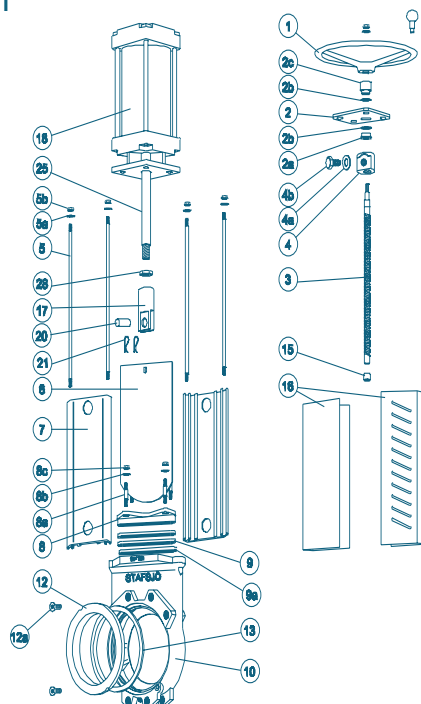
* Add the values in the table with the thickness of the pipe flanges, the washers and the estimated thickness of the gasket.

** The screws on the seatside have to be 3 mm longer

Subject to change without notice

KNIFE GATE VALVE MV

MATERIAL SPEZIFICATION AND PARTS LIST



Parts list of DN 50 - DN 800 (monobloc valve body)

Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Hand wheel				8b	Washer			
	Aluminium	AlSi9Cu3(Fe)				Stainless Steel	X5CrNi18 M 10	1.4301	
	DN > 300 Cast Iron	GG 20	0.6020	A48N30B	8c	Nut			
2	Yoke					A2, verzinkt	X5CrNi18 M 10	1.4301	
	Stainless Steel	X5CrNi18 M 10	1.4301		9	Box packing *			
2a	Bearing					Twin Pack™			
	Brass	CuZn39Pb3		C 36000	9a	Box bottom			
2b	Slide washer					HD-polyethylene, DN 500 - DN 800			
	POM				10	Valve body			
2c	Bearing					Stainless Steel			
	Brass	CuZn39Pb3		C 36000	12	Retainer ring			
3	Stem					Stainless Steel			
	Stainless Steel	X6Cr17	1.4016		12a	Locking screw			
	DN > 250	X12CrMoS17	1.4104			Stainless Steel	X5CrNi18 M 10	1.4301	
4	Stem nut				13	Seat *			
	Brass	CuZn39Pb3		C 36000		EPDM			
4a	Washer				15	Bushing			
	Stainless Steel	X5CrNi18 M 10	1.4301			Oil-bronze			
4b	Screw				16	Gate guard, not for HW			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X5CrNi18 M 10	1.4301	
5	Tie rod				17	Gate clevis			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X10CrNiS18-9	1.4305	
5a	Washer				18	Cylinder			
	Stainless Steel	X5CrNi18 M 10	1.4301			See data sheet			
5b	Nut				20	Clevis pin			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X10CrNiS18-9	1.4305	
6	Gate				21	Split pin			
	Stainless Steel	X5CrNi18 M 10	1.4401			Stainless Steel			
7	Beam				25	Piston rod			
	Aluminium	AlMgSi0,5		AA 6063		Stainless Steel	X12CrMoS17	1.4104	
8	Gland				28	Locking nut			
	Stainless Steel					Stainless Steel	X10CrNiS18-9	1.4305	
8a	Stud bolt								
	A2, zinc	X5CrNi18 M 10	1.4301						

* Recommended spare parts

Subject to change without notice

KNIFE GATE VALVE XV



Knife gate valve for liquids with high solids content up to 8%.

TECHNICAL DATA

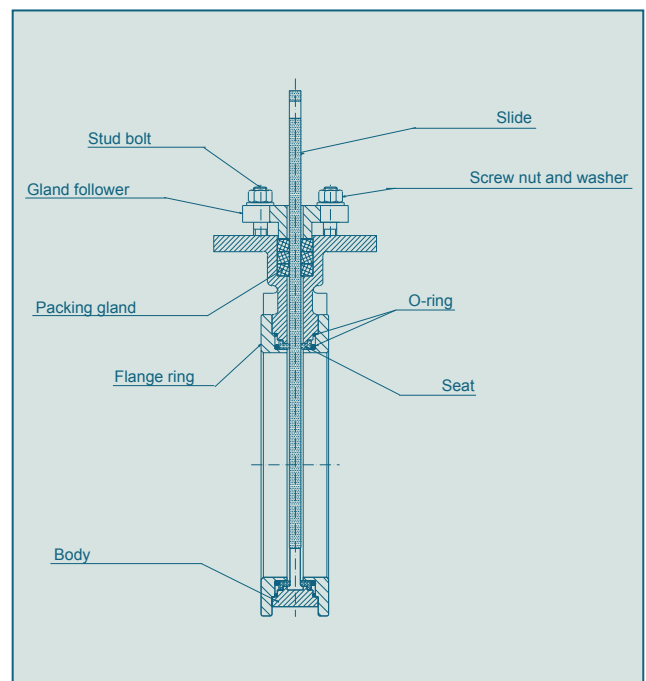
Nominal diameter:	DN 80 - DN 800
Face-to-face:	DN 80 - DN 300 EN 558 Series 20 DN 350 - DN 800 works standard
Flange Surface Design:	EN 1092 PN 10 ASME Class 150
Marking:	EN 19
Tightness check:	EN 12266 (Leakage rate A) ISO 5208 Class A
Temperature range:	max. 180°C
Actuators:	Hand wheel, chain wheel, ratched wrench, pneumatic cylinder, electric motor, hydraulic cylinder
Operating pressure:	DN 80 - DN 350: 10 bar DN 400 - DN 600: 6 bar DN 700 - DN 800: 4 bar

FEATURES

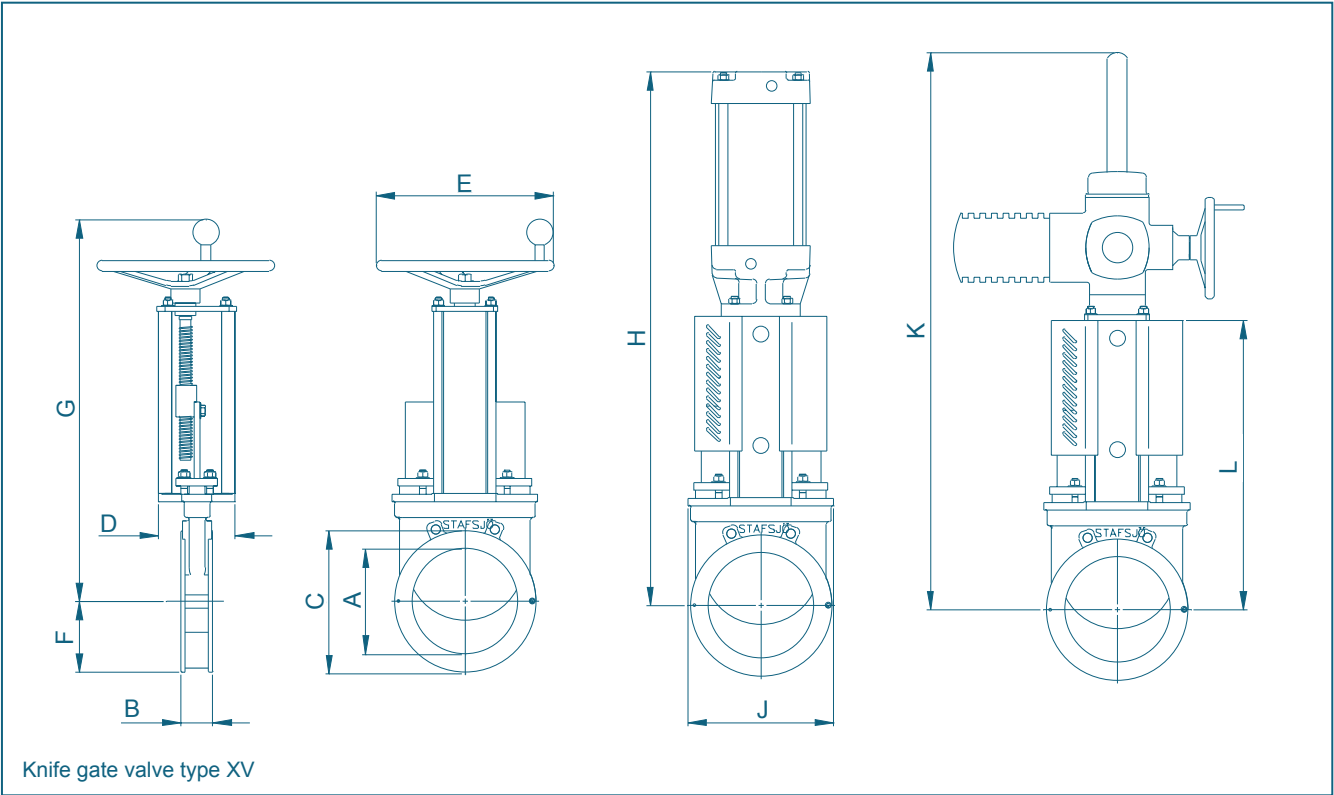
- Box packing TwinPack™ gives high operation reliability
- One side lugging, bi-directional sealing
- Easy replacement of seat by mechanically locked retainer ring
- Low-maintenance
- High resistance against water hammer
- Great differential pressure possible

GENERAL APPLICATIONS

- Process technology
- Pulp and paper
- Granulates, bulk solids and powder



KNIFE GATE VALVE XV

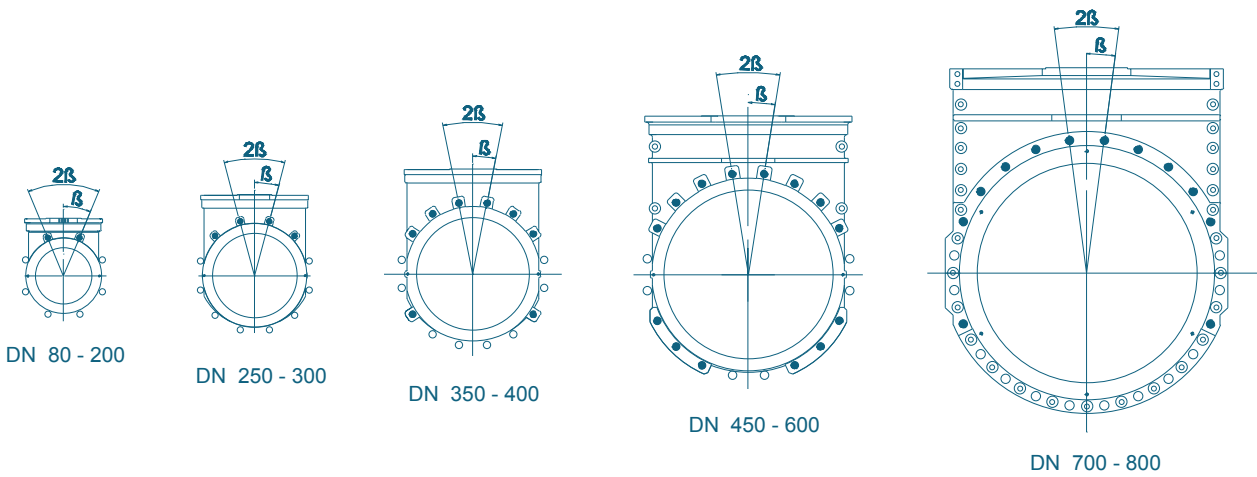


DN [mm]	Size [in]	Dimensions [mm]											Air supply
		A	B	C	D	E	F	G	H	J	K	L	
80	3	80	46	138	80	200	69	444	582	140	636	314	1/4"
100	4	100	52	158	80	200	79	482	620	158	674	352	1/4"
125	5	125	56	188	80	200	94	523	711	188	715	393	1/4"
150	6	150	56	212	80	200	106	567	755	212	759	437	1/4"
200	8	200	60	269	145	315	134,5	691	1006	277	868	546	1/2"
250	10	250	68	322	145	315	161	785	1100	331	994	640	1/2"
300	12	300	78	372	145	315	186	879	1244	382	1149	734	1/2"
350	14	350	78	432	175	400	216	1021	1477	437	1308	841	1/2"
400	16	400	89	481	175	400	241	1116	1622	488	1453	936	1/2"
500	20	500	114	586	250	520	302	1342	1988	603	1770	1152	1/2"
600	24	600	114	686	260	635	343	1546	2329	735	2076	1356	1"
700	28	680	128	800	320	635	450	1650	2465	902	2382	1527	1"
800	32	780	128	901	320	635	500	1866	2952	1002	2697	1742	-

Actuator EM is rotated 45° for DN 80 - DN 150

Subject to change without notice

FLANGE DRILLINGS XV



● = Tapped holes ○ = Throughgoing holes

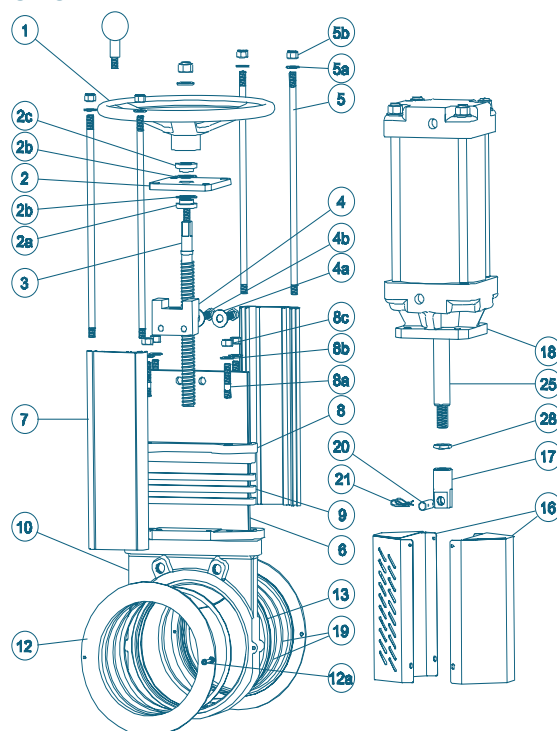
Nominal diameter DN [mm]	80	100	125	150	200	250	300	350	400	500	600	700	800
Outside flange diameter [mm]	200	220	250	285	340	395	445	505	565	670	780	895	1015
Bolt circle diameter [mm]	160	180	210	240	295	350	400	460	515	620	725	840	950
Face-to-face length [mm]	46	52	56	56	60	68	78	78	89	114	114	128	128
Number of throughgoing holes [○]	6	6	6	6	6	8	8	8	8	6	6	12	12
Number of tapped holes [●]	2	2	2	2	2	4	4	8	8	14	14	12	12
Bolt size	M16	M16	M16	M20	M20	M20	M20	M20	M24	M24	M27	M27	M30
β°	22,5	22,5	22,5	22,5	22,5	15	15	11,25	11,25	9	9	7,5	7,5
Screw lengths *	10	12	14	12	3	15	19	19	21	27	27	31	31

* Add the values in the table with the thickness of the pipe flanges, the washers and the estimated thickness of the gasket.

Subject to change without notice

KNIFE GATE VALVE XV

MATERIAL SPEZIFICATION AND PARTS LIST



Pt.	Description	Material	Material-No.	ASTM	Pt.	Description	Material	Material-No.	ASTM
1	Hand wheel				8a	Stud bolt			
	Aluminium	AlSi9Cu3(Fe)				A2, zinc	X5CrNi18 M 10	1.4301	
	DN > 300 Cast Iron	GG 20	0.6020	A48No30B	8b	Washer			
2	Yoke					Stainless Steel	X5CrNi18 M 10	1.4301	
	Stainless Steel	X5CrNi18 M 10	1.4301		8c	Nut			
2a	Bearing					A2, zinc	X5CrNi18 M 10	1.4301	
	Brass	CuZn39Pb3		C 36000	9	Box packing *			
2b	Slide washer					Twin Pack™			
	POM				10	Valve body			
2c	Bearing					Stainless Steel		1.4408	
	Brass	CuZn39Pb3		C 36000	12	Retainer ring			
3	Stem					Stainless Steel		1.4408	
	Stainless Steel	X6Cr17	1.4016		12a	Locking screw			
	DN > 250	X12CrMoS17	1.4104			Stainless Steel	X5CrNi18 M 10	1.4301	
4	Stem nut				13	Seat *			
	Brass	CuZn39Pb3		C 36000		PTFE			
4a	Washer				16	Gate guard, not for HW			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X5CrNi18 M 10	1.4301	
4b	Screw				17	Gate clevis			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X10CrNi18 M 10	1.4305	
5	Tie rod				18	Cylinder			
	Stainless Steel	X5CrNi18 M 10	1.4301			See data sheet			
5a	Washer				19	O-ring			
	Stainless Steel	X5CrNi18 M 10	1.4301			FPM			
5b	Nut				20	Clevis pin			
	Stainless Steel	X5CrNi18 M 10	1.4301			Stainless Steel	X10CrNi18-9	1.4305	
6	Gate				21	Split pin			
	Stainless Steel		1.4401			Stainless Steel			
7	Beam				25	Piston rod			
	Aluminium	AlMnSi0,5		AA 6063		Stainless Steel	X12CrMoS17	1.4104	
8	Gland				28	Locking nut			
	Stainless Steel					Stainless Steel	X10CrNi18-9	1.4305	

* Recommended spare parts

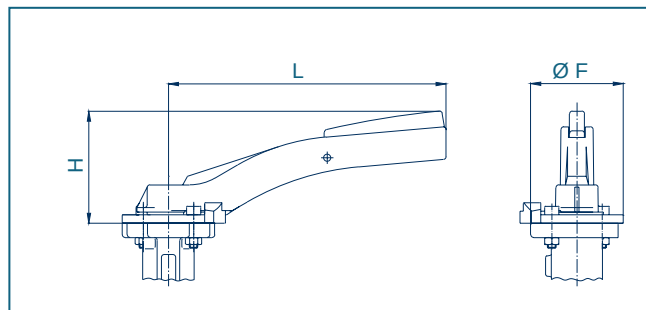
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MANUAL OPERATION



Handlever (Aluminium Version). Adjustable in 15° steps.

HAND LEVER (ALUMINIUM)

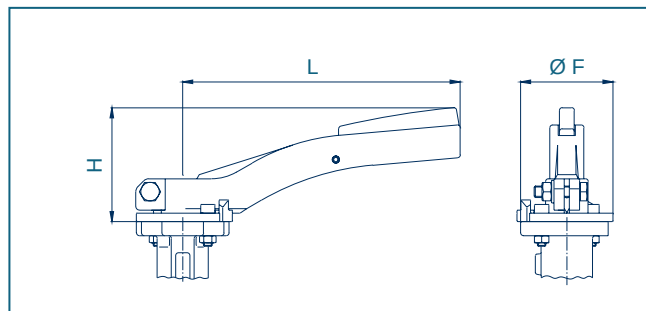


Lever	F	H	L	Weight [kgs]
Size I	54	74	165	0,3
Size II	65	80	195	0,4
Size III	90	100	276	0,6



Stainless Steel handlever with open/close stops.

HAND LEVER (STAINLESS STEEL)



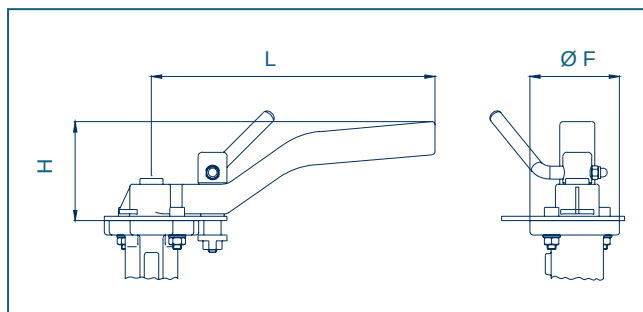
Lever	F	H	L	Weight [kgs]
Size I	54	69	155	0,6
Size II	65	80	195	0,8
Size III	90	100	276	1,4

MANUAL OPERATION



Lever for stepless adjustment (Aluminium).

STEPLESS ADJUSTING LEVER

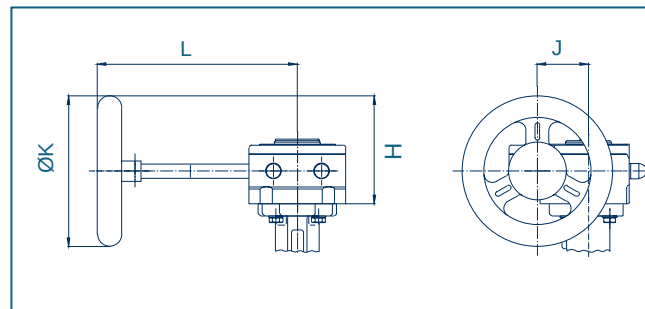


Lever	F	H	L	Weight [kgs]
Size I	54	58	155	0,5
Size II	65	70	195	0,6
Size III	90	90	276	1,1
Size IV	125	74	350	2,3
Size V	150	87	350	2,9



Gear box with self locking mechanism

GEAR BOX



Gear	H	J	K	L	Weight [kgs]
Size I	90	43	125	166	1,1
Size II	107	43	160	190	1,3
Size III	153	50	250	267	3,1
Size IV	240	80	400	376	8,9
Size V	290	80	500	396	9,5
Size VI	225	90	350	318	16,2
Size VII	279	123	457	405	30,7
Size VIII	355	154	610	466	45,2
Size IX	305	211	500	447	49,0
Size X	309	263	500	500	74,0

PNEUMATIC ACTUATOR EB-SYD, DOUBLE ACTING



The double acting version of this series is available in 9 sizes, constructed to the scotch-yoke principle.

TECHNICAL DATA

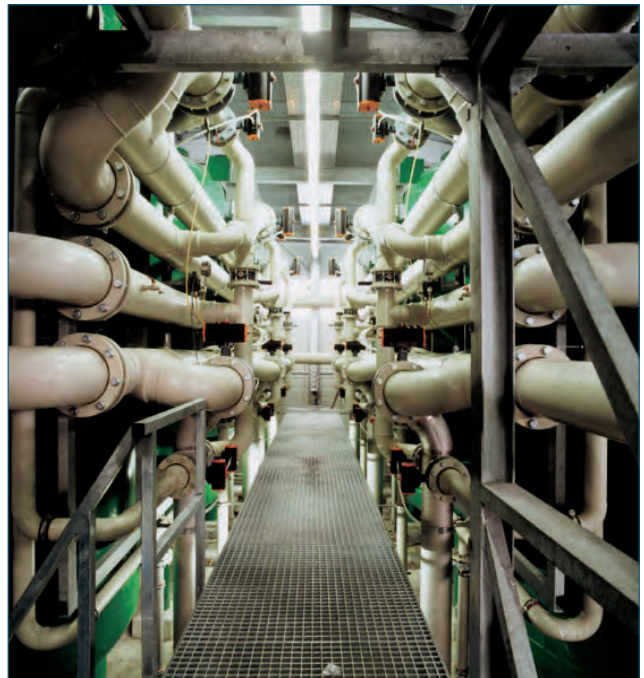
Torque:	27 - 4001 Nm (based on supply pressure of 6 bar)
Limit of travel:	exactly adjustable between $\pm 3^\circ$.
Limit switches and solenoid valve mounting:	VDI / VDE 3845
Supply pressure:	min. 2,5 bar, max. 10 bar
Supply quality:	clean and dry in accordance with ANSI/ ISA S7.0.01. for cycles ≥ 4 /min please lubricate.
Temperature range:	-20°C to +80°C (standard) -40°C to +80°C (low temperature) -15°C to +140°C (high temperature)
Valve interface:	EN ISO 5211
Actuator cylinder:	high quality marine grade Aluminium alloy, hard anodized. Other coatings upon request.

FEATURES

- Maintenance-free
- Suitable for all $\frac{1}{4}$ turn valves
- Blow-out proof shaft
- Torques in agreement with EN ISO 5211
- High visibility position indicator
- All fasteners made of stainless steel

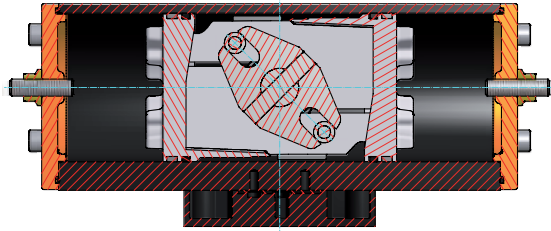
KEY BENEFITS

- High opening- and closing- torques produced by scotch-yoke mechanism
- Ideal sliding properties provided by low friction multiple piston guides
- Operational safety and long service life assured by precise machining of parts

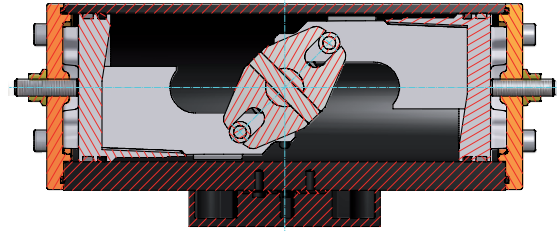


PNEUMATIC ACTUATOR EB-SYD, DOUBLE ACTING

FUNCTION



Open



Close

When the left control connection is pressurized, the pistons are pushed together with the yoke turning counter-clockwise to open the valve. When the right control connection is pressurized,

the yoke turns clockwise to close the valve.

The stroke of the piston can be limited by adjusting the screws located in the end covers.

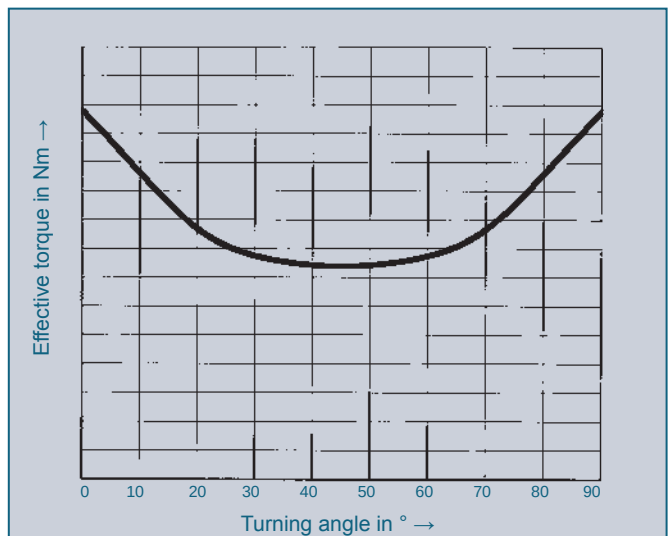
TORQUE (Nm)

Type	Control air pressure									
	2,5 bar	3 bar	3,5 bar	4 bar	4,5 bar	5 bar	5,5 bar	6 bar	7 bar	8 bar
EB 4.1	11	13	16	18	20	22	25	27	31	36
EB 5.1	36	38	44	51	57	63	70	76	89	101
EB 6.1	65	78	91	104	117	130	143	156	182	208
EB 8.1	104	125	146	166	187	208	229	250	292	333
EB 10.1	220	265	309	353	397	441	485	530	618	706
EB 12.1	381	457	534	610	686	762	839	915	1067	1220
EB 265	-	647	755	863	971	1079	1187	1295	1510	1726
EB 270	-	991	1157	1322	1487	1652	1817	1983	2313	2643
EB 280	-	2001	2334	2667	3001	3334	3668	4001	4668	5335

Subject to change without notice

The torques shown in the diagram are measured values. The required size of the actuator can be established by comparing the values of the actuator with the required torque of the valve.

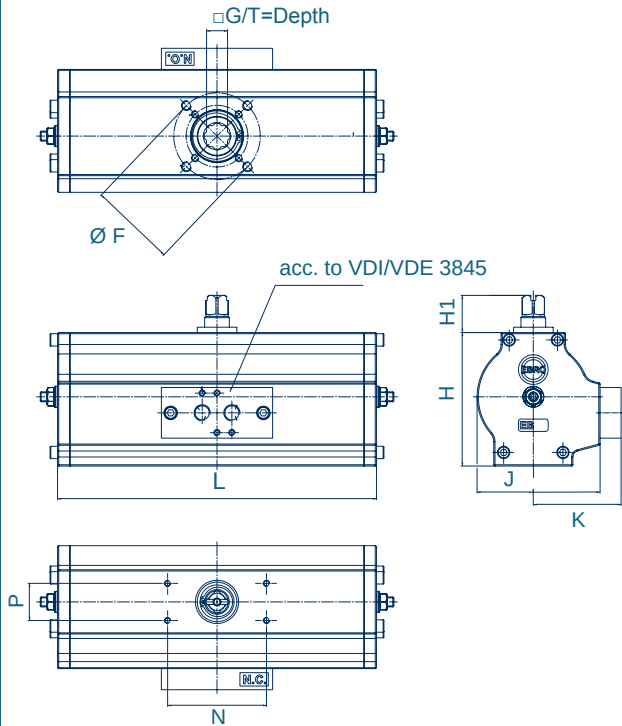
Especially non-lubricant media (e.g. bulk goods and dry gases) may cause an increase of the actuator torque. This is why we recommend to consider a safety of 12%. Choosing an actuator in critical limits, please contact our engineers.



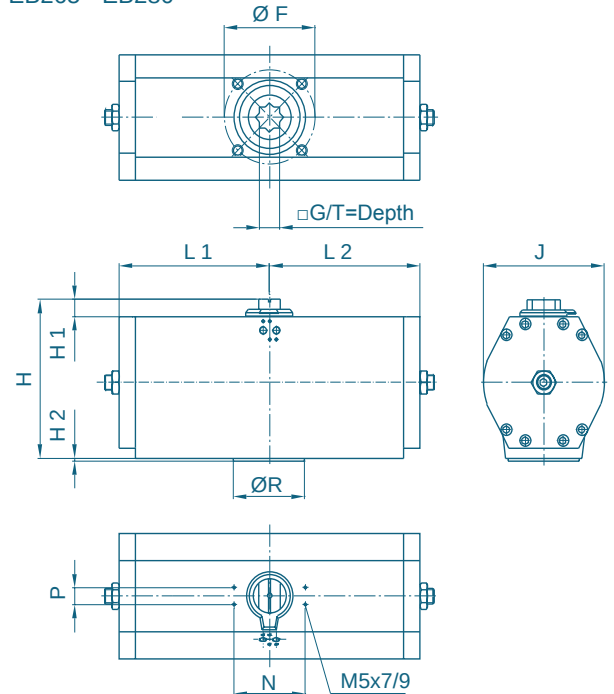
Typical torque curve of a scotch-yoke actuator.

PNEUMATIC ACTUATOR EB-SYD, DOUBLE-ACTING

EB4.1-SYD - EB12.1-SYD



EB265 - EB280



Type	ØF	G***	H	H1	H2	J	K	L	L1	L2	N	P	ØR	T	Weight [kg]
EB 4.1	F04/05*	10/11/12	66	30	-	57	48	148	-	-	80	30	-	13/16	1,1
EB 5.1	F04/05*	10/11/12/14	77	30	-	72	57	174	-	-	80	30	-	13/16	1,7
EB 6.1	F04/05/07*	11/12/14/16/17	91	30	-	88	65	224	-	-	80	30	-	19	3,0
EB 8.1	F05/07/10	12/14/16/17/22	108	30	-	100	71	258	-	-	80	30	-	19	4,1
EB 10.1	F07/10	14/16/17/22	128	30	-	122	82	334	-	-	80	30	-	24	7,5
EB 12.1	F10/12	17/22/24/27	156	30	-	145	93	392	-	-	80	30	-	29	12,7
EB 265	F12/16	32/36	232	30	3	152	-	-	195	195	80	30	85	60	21,0
EB 270	F12/16/25**	32/36/46	278	30	4	220	-	-	145	270	130	30	100	60	32,0
EB 280	F12/16/25	32/36/46	278	30	5	220	-	-	275	275	130	30	130	60	42,0

* F04/F05 no combined flange available

** Topflange F25 via adaption

*** Options (Standard = **BOLD**)

Subject to change without notice

CLOSING TIME* AND AIR CONSUMPTION

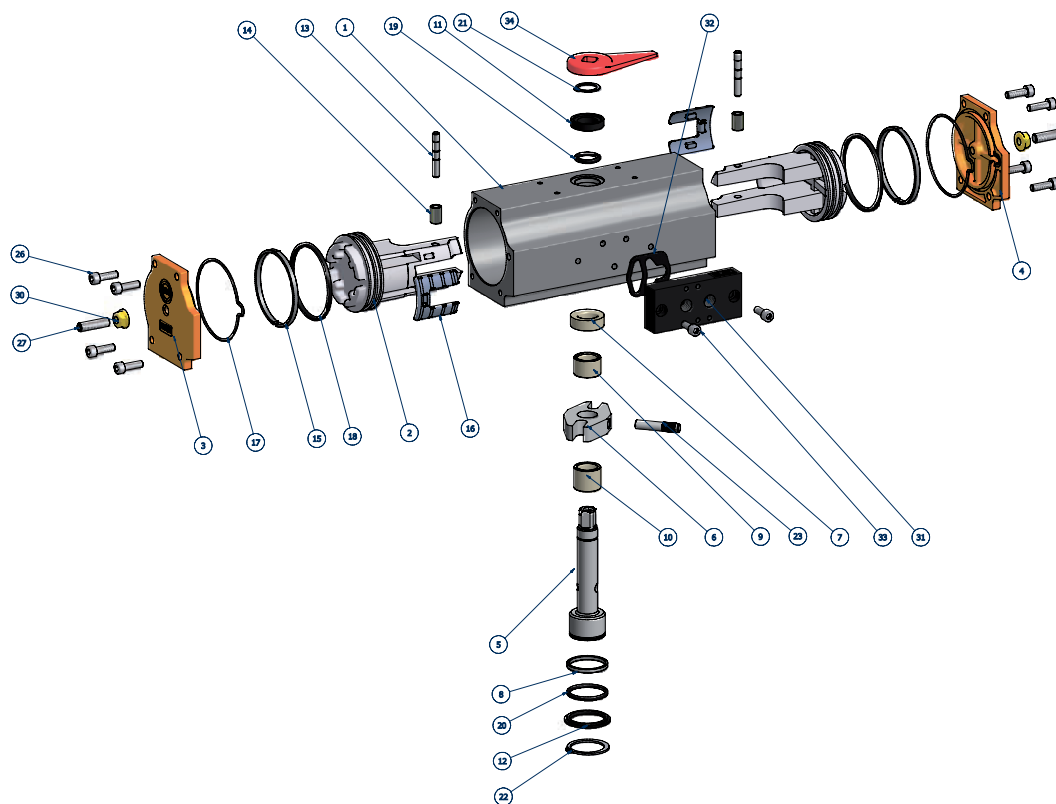
Type	EB4.1	EB 5.1	EB 6.1	EB 8.1	EB 10.1	EB 12.1	EB 265	EB 270	EB 280
Closing time EB-SYD in sec.	0,25	0,25	0,35	0,45	0,70	1,00	<2,5	<6,0	<5,0
Filling volume NL/Hub at 1 atm:	0,18	0,46	0,91	1,49	3,25	5,63	5,00	14,50	22,20

* = closing times with unthrottled air exhaust and air supply, 6 bar control pressure and 75% loadair consumption = filling volume x control pressure

Closing times can be adjusted from 30 sec. up to 300 sec. by using the EBRO speed control block (depending on type of actuator).

PNEUMATIC ACTUATOR EB-SYD, DOUBLE ACTING

MATERIAL SPECIFICATION AND PARTS LIST



Only for EB-SYD (4.1 - 12.1)

Pt.	Description	Qty.	Material	Pt.	Description	Qty.	Material
1	Actuator cylinder	1	EN AW 6063-T6	17D	End cover sealing	2	70 NBR
2	Piston	2	EN AC 46000	18D	Piston O-Ring	2	70 NBR
3	End cover L	1	EN AC 46000	19D	O-Ring, upper shaft	1	70 NBR
4	End cover R	1	EN AC 46000	20D	O-Ring, lower shaft	1	70 NBR
5	Drive shaft	1	16 Mn Cr 5	21D	Upper safety ring	1	C 75
6	Yoke	1	16 Mn Cr 5 / Sint D30	22D	Lower safety ring	1	C 75
7	Upper shaft bearing	1	Polymer blend	23	Bolt	1	42 Cr Mo 4 V
8	Lower shaft bearing	1	Polymer blend	26	Hex. socket screw	8	A2-70
9	Upper piston bearing	1	Polymer blend	27	Stroke adjusting screw	2	A2-70
10	Lower piston bearing	1	Polymer blend	30	Seal nut	2	St
11	Upper washer bearing	1	Polymer blend	31	Valve connection plate	1	EN AC 46000
12	Lower washer bearing	1	Polymer blend	32D	Shaped gasket	1	70 NBR
13	Piston bolt	2	16 Mn Cr S 5	33	Hex. socket screw	2	A2-70
14	Roller	2	100 Cr 6	34	Position indicator	1	EPDM
15	Guide band	2	Polymer blend				
16	Slidepad	2	Polymer blend				

The spare parts marked with D are integrated in the standard seal set.

Subject to change without notice

PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING



EB-SYS single-acting pneumatic actuators are available in either "spring opens" and "spring closes" versions.

TECHNICAL DATA

Torque:	35 - 1368 Nm (based on supply pressure of 6 bar)
Limit of travel:	exactly adjustable between $\pm 3^\circ$.
Limit switches and solenoid valve mounting:	VDI / VDE 3845
Supply pressure:	min. 2,5 bar, max. 10 bar
Supply quality:	clean and dry in accordance with ANSI/ ISA S7.0.01. for cycles ≥ 4 /min please lubricate.
Temperature range:	-20°C to +80°C (standard) -40°C to +80°C (low temperature) -15°C to +140°C (high temperature)
Valve interface:	EN ISO 5211
Actuator cylinder:	high quality marine grade Aluminium alloy, hard anodized. Other coatings upon request.

FEATURES

- Maintenance-free
- Suitable for all $\frac{1}{4}$ turn valves
- Blow-out proof shaft
- Torques in agreement with EN ISO 5211
- High visibility position indicator
- All fasteners made of stainless steel

KEY BENEFITS

- High opening- and closing- torques produced by scotch-yoke mechanism
- Ideal sliding properties provided by low friction multiple piston guides
- Operational safety and long service life assured by precise machining of parts
- Spring cartridges ensure safe and easy maintenance without special tools



EB-SYS fitted to a valve for fail safe operations in gas applications.

PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING

ACTUATOR TORQUE (SINGLE-ACTING) EFF. AIR TORQUE IN NM AT CONTROL PRESSURE

Type	Spring -package	Spring Md in Nm		2,5 bar		3 bar		4 bar		5 bar		5,5 bar		6 bar		7 bar		8 bar	
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
EB 5.1 SYS25	VI	12	20	20	12	26	18	39	31	51	43	58	50	64	56	77	69	89	81
EB 5.1 SYS30	V	17	27			21	11	34	24	46	36	53	43	59	49	72	62	84	74
EB 5.1 SYS40	IV	22	35					29	16	41	28	48	35	54	41	67	54	79	66
EB 5.1 SYS50	III	27	44							36	19	43	26	49	32	62	45	74	57
EB 5.1 SYS55	II	30	49									40	21	46	27	59	40	71	52
EB 5.1 SYS60	I	35	58											41	18	54	31	66	43
EB 6.1 SYS25	VI	27	45	38	20	51	33	77	59	103	85	116	98	129	111	155	137	181	163
EB 6.1 SYS30	V	35	57			43	21	69	47	95	73	108	86	121	99	147	125	173	151
EB 6.1 SYS40	IV	45	74					59	30	85	56	98	69	111	82	137	108	163	134
EB 6.1 SYS50	III	55	90							75	40	88	53	101	66	127	92	153	118
EB 6.1 SYS55	II	63	102									80	41	93	54	119	80	145	106
EB 6.1 SYS60	I	73	119											83	37	109	63	135	89
EB 8.1 SYS25	VI	40	67	64	37	85	58	127	100	168	141	189	162	210	183	252	225	293	266
EB 8.1 SYS30	V	48	82			77	43	119	85	160	126	181	147	202	168	244	210	285	251
EB 8.1 SYS40	IV	65	111					102	56	143	97	164	118	185	139	227	181	268	222
EB 8.1 SYS50	III	82	140							126	68	147	89	168	110	210	152	251	193
EB 8.1 SYS55	II	90	152									139	77	160	98	202	140	243	181
EB 8.1 SYS60	I	107	181											143	69	188	111	226	152
EB 10.1 SYS25	VI	89	151	132	70	176	114	264	202	353	291	397	335	441	379	529	467	618	556
EB 10.1 SYS30	V	107	182			158	83	246	171	335	260	379	304	423	348	511	436	600	525
EB 10.1 SYS40	IV	145	231					208	122	297	211	341	255	385	299	473	387	562	476
EB 10.1 SYS50	III	182	279							260	163	304	207	348	251	436	339	525	428
EB 10.1 SYS55	II	198	322									258	164	332	208	420	296	509	385
EB 10.1 SYS60	I	236	370											294	160	382	248	471	337
EB 12.1 SYS25	VI	155	224	208	139	280	211	425	356	570	501	643	574	715	646	860	791	1005	936
EB 12.1 SYS30	V	185	309			250	126	395	271	540	416	613	489	685	561	830	706	975	851
EB 12.1 SYS40	IV	241	392					339	188	484	333	557	406	629	478	774	623	919	768
EB 12.1 SYS50	III	296	475							429	250	502	323	574	395	719	540	864	685
EB 12.1 SYS55	II	333	546									465	252	537	324	682	469	827	614
EB 12.1 SYS60	I	389	630											481	240	626	385	771	530
EB 265	-	211	302	-	-	436	345	652	561	868	777	-	-	1084	993	1299	1208	-	-
	-	316	453					459	236	763	626	-	-	979	842	1194	1057	-	-
	-	422	603							538	263	-	-	836	639	1088	907	-	-
	-	459	656									-	-	709	373	1051	854	-	-
	-	527	754													838	445	-	-
EB 270	-	385	564	-	-	498	233	937	626	1267	1088	-	-	1598	1419	1928	1749	-	-
	-	461	676					733	376	1191	976	-	-	1522	1307	1852	1637	-	-
	-	541	790							964	517	-	-	1442	1193	1772	1523	-	-
	-	678	1003									-	-	1119	573	1635	1310	-	-
	-	772	1128													1331	705	-	-
EB 280	-	777	1138	-	-	1006	470	1890	1529	2557	2196	-	-	3224	2863	3891	3530	-	-
	-	931	1364					1480	759	2403	1970	-	-	3070	2637	3737	3304	-	-
	-	1087	1592							1952	1046	-	-	2914	2409	3581	3076	-	-
	-	1368	2025									-	-	2258	1156	3300	2643	-	-
	-	1558	2277													2686	1423	-	-

CLOSING TIME* AND AIR CONSUMPTION

Type	EB 5	EB 6	EB 8	EB 10	EB 12	EB 265	EB 270	EB 280
Closing time EB-SYS in sec.	0,15	0,20	0,45	0,50	0,70	<2,0	<5,0	<4,0
Filling volume NL/Hub at 1 atm:	0,19	0,36	0,60	1,30	2,26	2,70	9,00	11,20

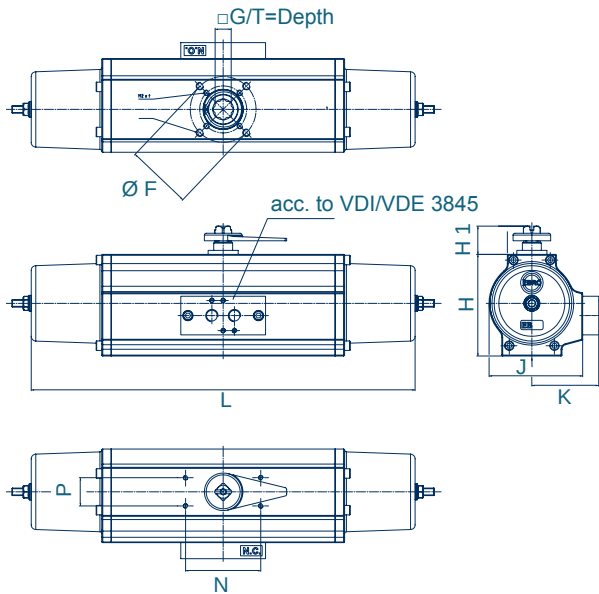
* = closing times with unthrottled air exhaust and air supply, 6 bar control pressure and 75% load air consumption = filling volume x control pressure

Subject to change without notice

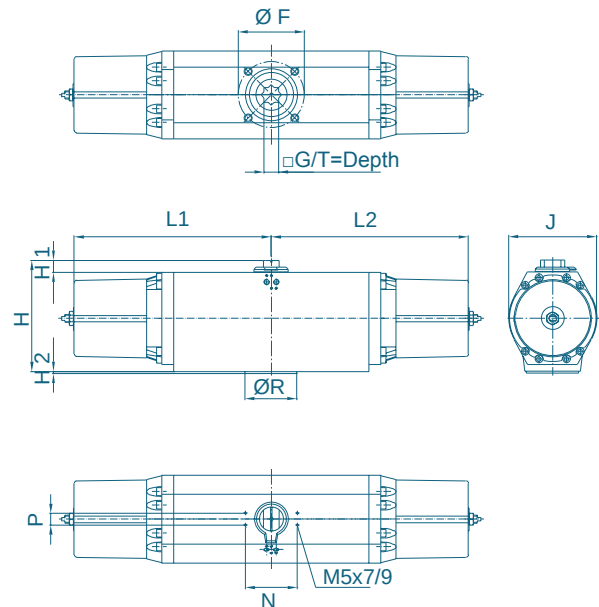
Closing times can be adjusted from 30 sec. up to 300 sec. by using the EBRO speed control block (depending on type of actuator).

PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING

EB5.1-SYS - EB12.1-SYS



EB265 - EB280 SR



Type	Dimensions [mm]														Weight [kg]
	ØF	G***	H	H1	H2	J	K	L	L1	L2	N	P	ØR	T	
EB 5.1	F04/05*	10/11/12	77	30	-	72	57	280	-	-	80	30	-	13/16	2,4
EB 6.1	F04/05/07*	11/12/14/16/17	91	30	-	88	65	351	-	-	80	30	-	19	4,3
EB 8.1	F05/07/10	12/14/16/17/22	108	30	-	99	71	408	-	-	80	30	-	19	6,3
EB 10.1	F07/10	14/16/17/22	128	30	-	122	82	557	-	-	80	30	-	24	12,5
EB 12.1	F10/12	17/22/24/27	156	30	-	145	93	661	-	-	80	30	-	29	21,1
EB 265	F12/16	32/36	232	30	3	152	-	-	317	317	80	30	85	60	26,0
EB 270	F12/16/25**	32/36/46	278	30	4	220	-	-	145	510	130	30	100	60	45,0
EB 280	F12/16/25	32/36/46	278	30	5	220	-	-	510	510	130	30	130	60	68,0

* F04/F05 no combined flange available

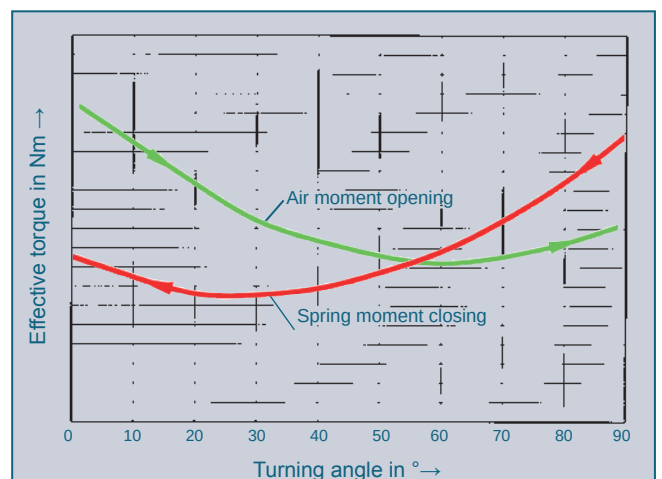
** Topflange F25 via adaption

*** Options (Standard = **BOLD**)

Subject to change without notice

The torques shown in the diagram are measured values. The required size of the actuator can be established by comparing the values of the actuator with the required torque of the valve.

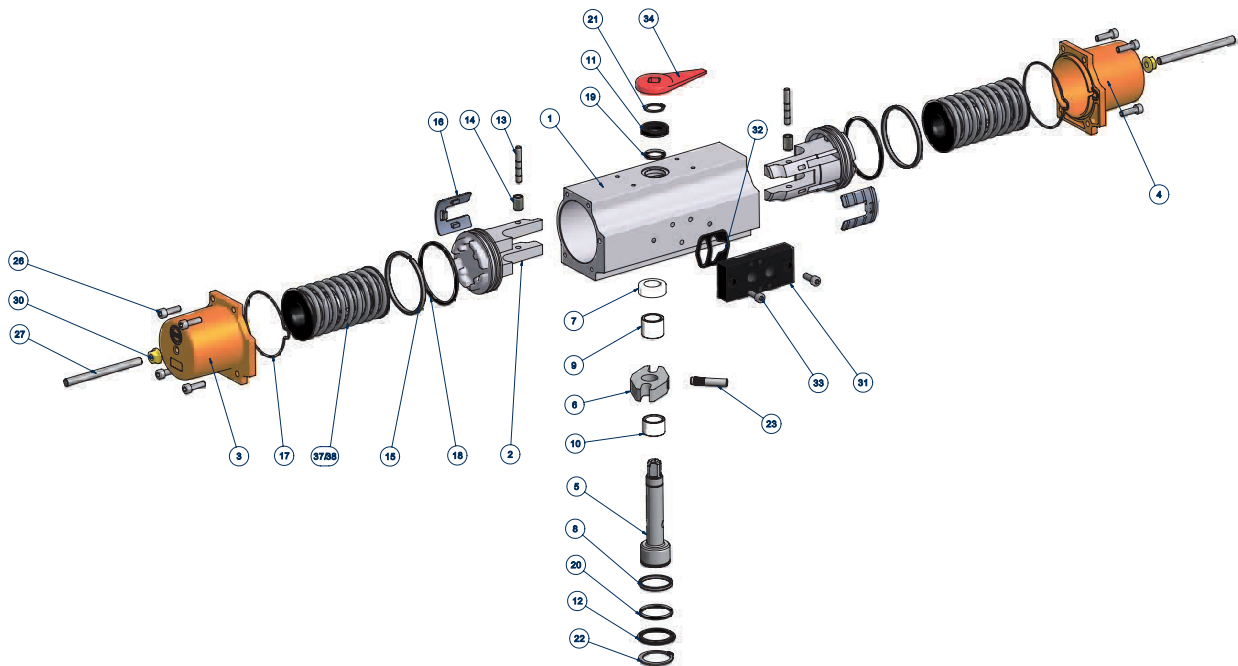
Especially non-lubricant media (e.g. bulk goods and dry gases) may cause an increasement of the actuator torque. This is why we recommend to consider a safety of 12%. Choosing an actuator in critical limits, please contact our engineers.



Typical torque curve of a scotch-yoke actuator.

PNEUMATIC ACTUATOR EB-SYS, SINGLE-ACTING

MATERIAL SPECIFICATION AND PARTS LIST



Only for EB-SYS (5.1 - 12.1)

COMPONENT PARTS

Pt.	Description	Qty.	Material	Pt.	Description	Qty.	Material
1	Actuator cylinder	1	EN AW 6063-T6	17D	End cover sealing	2	70 NBR
2	Piston	2	EN AC 46000	18D	Piston O-Ring	2	70 NBR
3	End cover L	1	EN AC 46000	19D	O-Ring, upper shaft	1	70 NBR
4	End cover R	1	EN AC 46000	20D	O-Ring, lower shaft	1	70 NBR
5	Drive shaft	1	16 Mn Cr 5	21D	Upper safety ring	1	C 75
6	Yoke	1	16 Mn Cr 5 / Sint D30	22D	Lower safety ring	1	C 75
7	Upper shaft bearing	1	Polymer blend	23	Bolt	1	42 Cr Mo 4 V
8	Lower shaft bearing	1	Polymer blend	26	Hex. socket screw	8	A2-70
9	Upper piston bearing	1	Polymer blend	27	Stroke adjusting screw	2	A2-70
10	Lower piston bearing	1	Polymer blend	30	Seal nut	2	St
11	Upper washer bearing	1	Polymer blend	31	Valve connection plate	1	EN AC 46000
12	Lower washer bearing	1	Polymer blend	32D	Shaped gasket	1	70 NBR
13	Piston bolt	2	16 Mn Cr S 5	33	Hex. socket screw	2	A2-70
14	Roller	2	100 Cr 6	34	Position indicator	1	EPDM
15	Guide band	2	Polymer blend	37	Spring package	1	FD Si Cr
16	Slidepad	2	Polymer blend	38	Spring package	1	FD Si Cr

The spare parts marked with D are integrated in the standard seal set.

Subject to change without notice

PNEUMATIC ACTUATOR EC



This series of linear pneumatic actuators is designed to automate knife gate valves. Available in 6 sizes and different stroke lengths.

TECHNICAL DATA

Design:	Double-acting pneumatic linear cylinder
Diameter of cylinder barrel:	Ø 100 mm Ø 125 mm Ø 160 mm Ø 200 mm Ø 250 mm Ø 320 mm
Stroke:	90 mm up to 1030 mm
Supply pressure:	max. 10 bar
Temperature range:	Standard: -20 to +80 °C High and low temperature design on request
Power range: (at 6 bar):	4524 N - 46322 N
Namur Interface:	NAMUR, VDI / VDE 3845
Air supply:	clean and dry compressed air acc. to ISO 8573-1: 2010 min. class 3 Other supply media on request
Valve interface:	based on ISO 5211
Surface:	Body anodized Cover: powder-coated
Approval:	Fulfills the requirements of DIN EN 15714-3

FEATURES:

- Body groove for integration of limit switches acc. to ISO 15552 for contact-free position indication with magnetic pistons (optional)
- Both Namur interface for direct mounting of solenoid valves and air ducts integrated in the body reduce mounting and piping efforts to a minimum
- Robust stainless steel pull rod design
- Optimal sliding properties by precise guided piston and exact bearing of piston rod
- Low maintenance by lifetime lubrication
- Low weight by aluminium lightweight construction
- Body: In- and exterior made of anodized aluminium for optimal abrasion and sliding properties
- Cover and extruded body made of aluminium form a compact and stable cylinder for multifunctional application

OPTIONS:

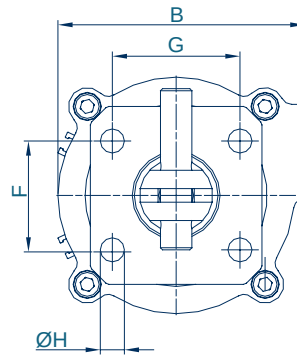
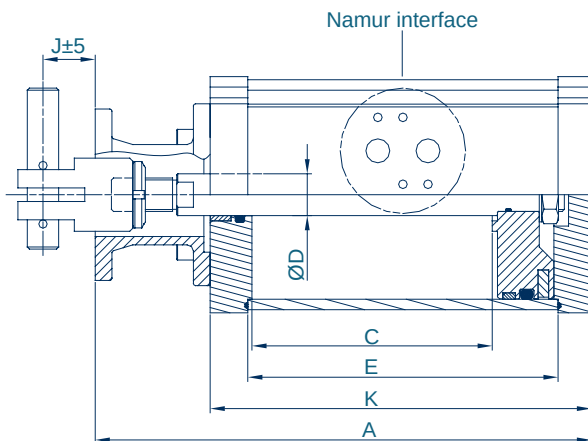
- Spring return version
- End of stroke damping
- Adjustable stroke
- Emergency manual override
- Special surface coating
- Trip function



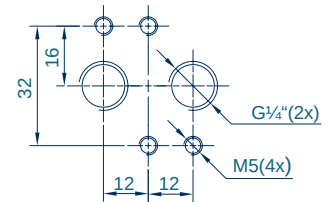
The body groove to integrate limit switches and the Namur interface

PNEUMATIC ACTUATOR EC

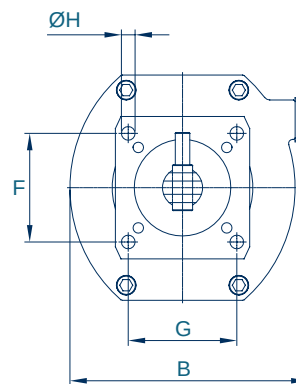
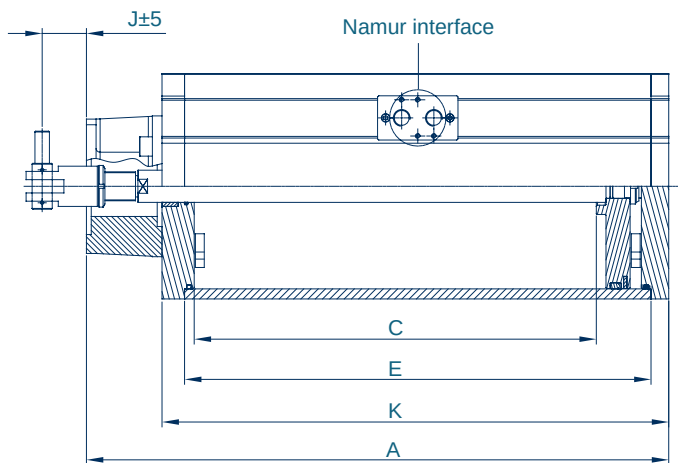
EC 100 - EC 160



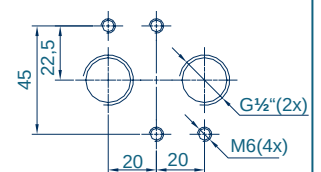
Namur interface
VDI/VDE 3845



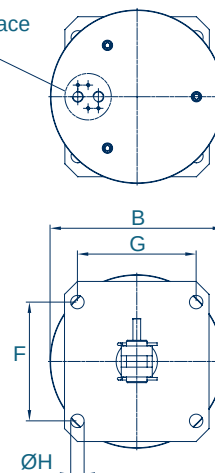
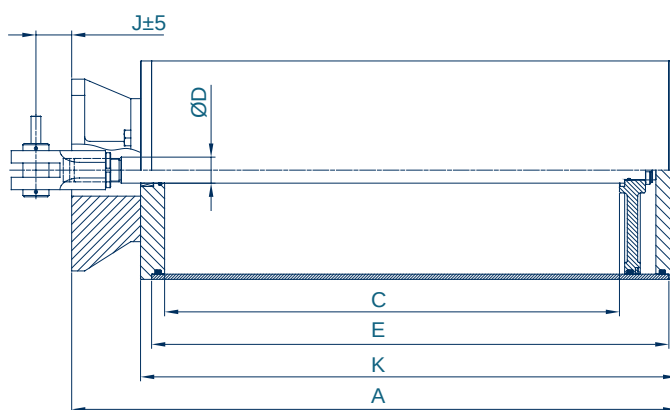
EC 200 - EC 250



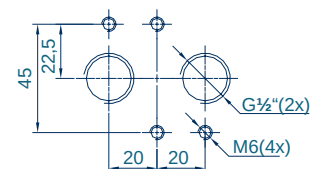
Namur Interface
VDI/VDE 3845



EC 320



Namur interface
VDI/VDE 3845



Subject to change without notice

PNEUMATIC ACTUATOR EC

Type EC	Stroke length [mm]	Dimensions [mm]										Weight [kg]	*Filling volume / Stroke
		A	B	C	D	E	F	G	H	J	K		
100	90	213	118	90	20	124	52	61	11	25	158	4,1	0,7
100	115	238	118	115	20	149	52	61	11	25	183	4,5	0,9
100	140	263	118	140	20	173	52	61	11	25	208	4,6	1,1
100	165	288	118	165	20	199	52	61	11	25	233	4,9	1,3
125	115	285	147	115	32	153	52	61	11	25	198	7,6	1,4
125	165	335	147	165	32	203	52	61	11	25	248	8,0	2,0
160	115	285	188	115	32	153	52	61	11	25	198	10,0	2,3
160	140	310	188	140	32	178	52	61	11	25	223	10,5	2,8
160	165	335	188	165	32	203	52	61	11	25	248	11,0	3,3
160	215	366	188	215	32	253	100	110	13	40	298	13,0	4,3
160	270	421	188	270	32	308	100	110	13	40	353	14,0	5,4
160	320	471	188	320	32	358	100	110	13	40	403	15,0	6,4

200	215	432	245	215	40	290	100	110	13	40	338	30	7,4
200	270	487	245	270	40	345	100	110	13	40	393	32,5	9,4
200	320	537	245	320	40	395	100	110	13	40	443	34,5	11,1
200	350	567	245	350	40	425	135	135	17	55	473	36	12,1
200	400	637	245	400	40	475	160	160	21	55	523	46	13,9
200	450	667	245	450	40	525	160	160	21	55	573	50	15,6
200	550	787	245	550	40	625	160	160	21	55	673	54,5	19,1

250	350	574	296	350	40	430	135	135	17	55	480	48,0	17,9
250	400	644	296	400	40	480	135	135	17	55	530	58,0	20,4
250	450	694	296	450	40	530	160	160	21	55	580	63,5	23,0
250	500	744	296	500	40	580	160	160	21	55	630	71,0	25,5
250	575	819	296	575	40	655	230	230	26	55	705	75,0	29,4
250	630	874	296	630	40	710	200	200	21	55	760	78,5	32,2
250	800	1044	296	800	40	880	230	230	26	55	930	90,0	40,9

320	500	731	336	500	40	596	230	230	26	55	625	67,0	39,2
320	575	806	336	575	40	671	230	230	26	55	700	70,5	45,1
320	700	931	336	700	40	796	230	230	26	55	825	76,0	54,9
320	715	954	336	715	40	811	230	230	26	55	840	78,0	56,1
320	800	1031	336	800	40	896	230	230	26	80	925	84,0	62,8
320	915	1146	336	915	40	1011	230	230	26	80	1040	89,0	71,8
320	1030	1261	336	1030	40	1126	230	230	26	80	1155	95,0	80,8

*Filling volume / Stroke at 1 atm

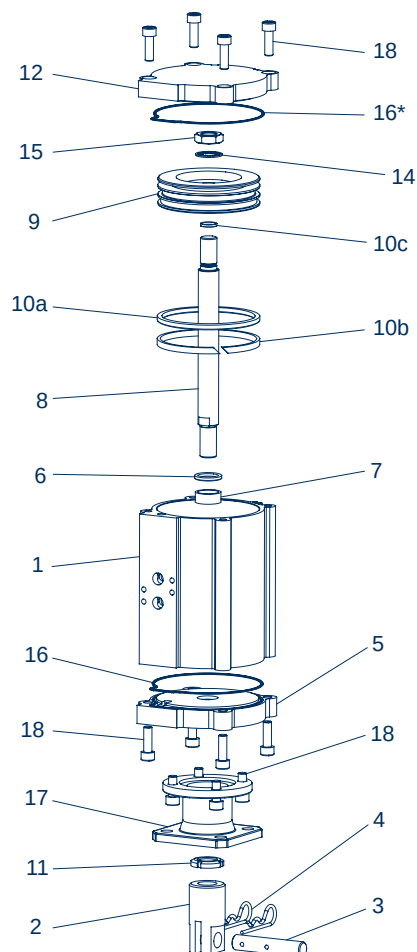
EC	Force / Stroke in Newton (N)									
	4 bar		4,5 bar		5 bar		5,5 bar		6 bar	
	Close	Open	Close	Open	Close	Open	Close	Open	Close	Open
100	3142	3016	3534	3393	3927	3770	4320	4147	4712	4524
125	4909	4587	5522	5160	6136	5734	6750	6307	7363	6881
160	8042	7721	9048	8686	10053	9651	11058	10616	12064	11581
200	13854	13352	15586	15021	17318	16690	19050	18359	20782	20028
250	20428	19926	22982	22416	25535	24907	28089	27398	30642	29888
320	31385	30882	35308	34742	39231	38602	43154	42463	47077	46323

Subject to change without notice

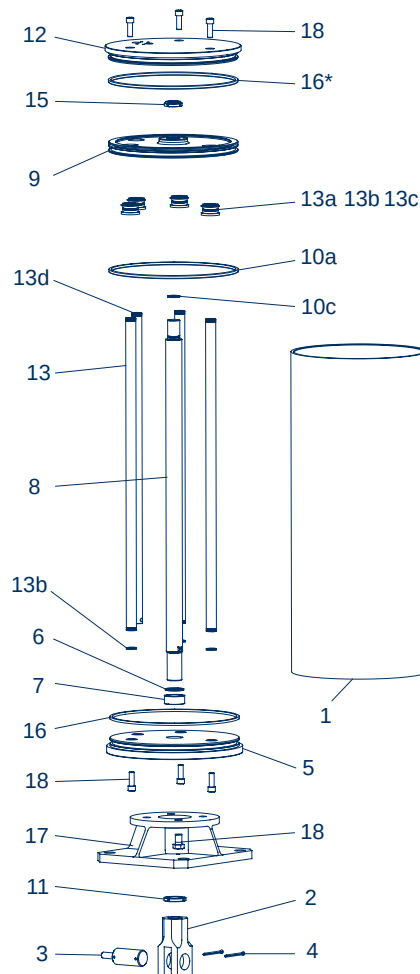
PNEUMATIC ACTUATOR EC

MATERIAL SPECIFICATION AND PARTS LIST

EC 100 - EC 250



EC 320



Pt.	Description	Material	Pt.	Description	Material
1	Cylinder barrel	Aluminium	11	Locking nut	Stainless steel
2	Gate clevis	Stainless steel	12	Top cover	Aluminium
3	Clevis pin	Stainless steel	13	Guide bar	Stainless steel
4	Locking pin	Stainless steel	13a*	Guide bar bushing	Bronze
5	Lower cover	Aluminium	13b*	Guide bar O-ring	Nitrile
6*	Lower cover internal O-ring	Nitrile	13c*	Clips	Steel
7	Lower cover internal bushing	Bronze	13d	Air supply bar	Steel
8	Piston rod	Stainless steel	14	Piston washer	Stainless steel
9	Piston	Aluminium	15	Self locking nut	Stainless steel
10a*	Piston O-Ring	Nitrile	16*	Covers O-Ring	Nitrile
10b*	Piston bearing	POM	17	Mounting bracket	Stainless steel
10c*	Piston rod O-Ring	Nitrile	18	Hex socket screws	Stainless steel

* Component of the sealing set

ELECTRIC ACTUATORS E 50 - E 210



E 65 and E 110.

TECHNICAL DATA

Types:	E 50 - E 210
Duty class:	Class C acc. to prEN WI69000095
Valve interface:	EN ISO 5211
Actuation time:	30 s - 180 s
Corrosion protection:	C4 acc. to prEN WI 6900095 tested acc. to EN 600068-2-52
Protection class:	IP 67 acc. to EN IEC 60529
Insulation class:	F
Limit switches:	max. 250 V AC, 3A for DS-Actuators max. 250 V AC, 3A for WS-Actuators max. 24 V DC, 10 A for GS-Actuators
Operation temperature:	-20°C to +70°C
Cable glands:	2 x M20 x 1,5; Ø min = 6 mm, Ø max = 13 mm
Hand wheel:	15 revolutions for 90°
Hand wheel torque:	8 Nm for E 50 4 Nm for E 65 20 Nm for E 110 35 Nm for E 160 50 Nm for E 210

FEATURES

- Robust aluminum body
- Completely ball beared wormgear
- Safe arresting by self-inhibition
- Changeable clutch nuts for mounting on different shaft ends
- Mechanical position indicator disc for an optical control of the valve's position
- Motor with thermic winding protection switch
- Hand wheel enables immediate hand emergency operation if necessary
- Maintenance-free, long life service by continuous lubrication

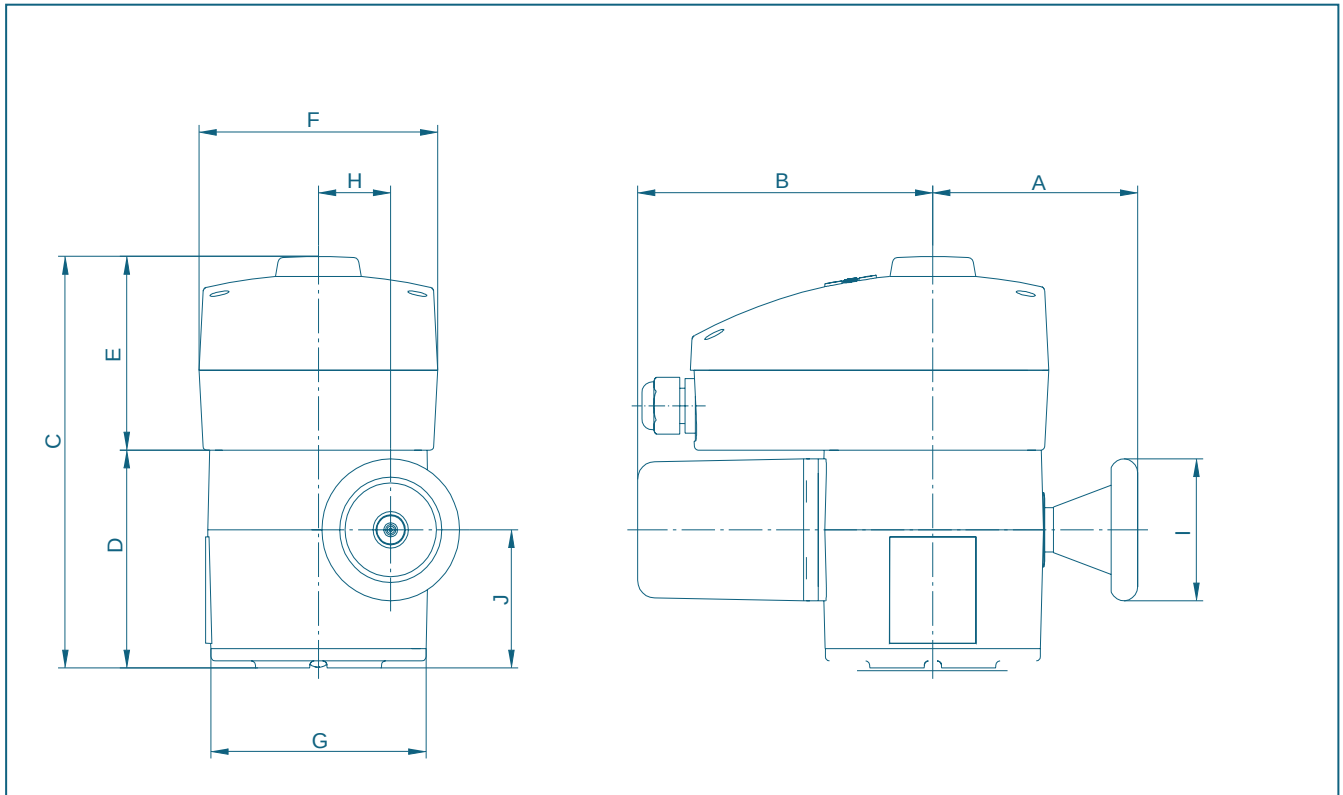
GENERAL APPLICATIONS:

- Water and waste water technology
- Chemical industry
- Car industry
- Civil engineering
- Everywhere applicable, where butterfly valves are installed



E 160 and E 210.

DIMENSIONS E 50 - E 210



Type	Dimensions [mm]										Weight [kg]
	A	B	C	D	E	F	G	H	I	J	
E 50	110	149	210	123	87	124	126	42	80	73	5
E 65	119	172	235	123	112	139	125	42	80	78	7
E 110	136	247	257	145	112	139	150	58	125	88	14
E 160	157	280	282	170	112	139	175	89	200	112	25
E 210	212	352	274	162	112	139	240	125	315	84	40

Subject to change without notice

FEATURES

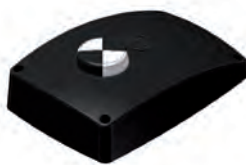
Valve interface: EN ISO 5211

Type	E 50 WS	E 65 WS	E 65 DS	E 65 GS	E 110 WS	E 110 DS	E 110 GS	E 160 WS	E 160 DS	E 160 GS	E 210 DS
Actuation time from 0° - to 90°	25 s	6 s	6 s	6 s	12 s	12 s	6 s	24 s	24 s	12 s	24 s
Rated torque	40 Nm	100 Nm	100 Nm	100 Nm	400 Nm	400 Nm	360 Nm	1000 Nm	1000 Nm	800 Nm	3500 Nm
Rated current	0,15 A	0,7 A	0,3 A	5 A	1,3 A	1,0 A	8,8 A	1,3 A	1,0 A	8,8 A	1 A
Starting current	0,18 A	1,0 A	0,3 A	8,0 A	2 A	1,8 A	12,5 A	2 A	1,8 A	12,5 A	3,2 A
Power consumption	0,04 kW	0,16 kW	0,09 kW	0,08 kW	0,26 kW	0,22 kW	0,4 kW	0,26 kW	0,22 kW	0,4 kW	0,54 kW
Rated voltage	230 V	230 V	400 V	24 V	230 V	400 V	24 V	230 V	400 V	24 V	400 V
Frequency	50 Hz	50 Hz	50 Hz	-	50 Hz	50 Hz	-	50 Hz	50 Hz	-	50 Hz
Duty cycle	30 %	30 %	30%	30%	30%	30%	30 %	30%	30%	30%	30%
Protection class	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67	IP 76	IP 67	IP 67	IP 67	IP 67

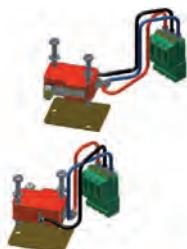
OPTIONS



Cover plate with position indicator (E 50)



Cover plate with position indicator (E 65 - E 210)



Additional volt-free limit switches



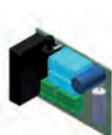
Current feedback 4-20 mA



Potentiometer 1000 Ω



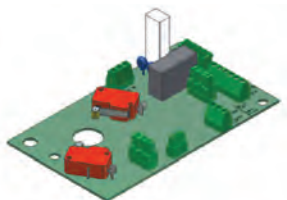
Torque control



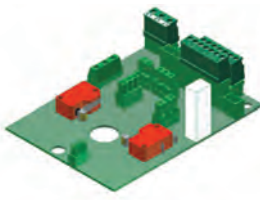
Timer



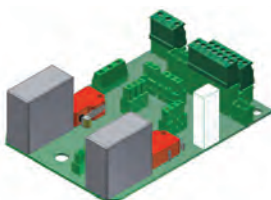
Conector terminals



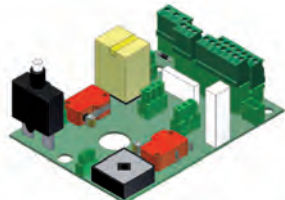
E 50 - 230 V AC



400 V AC



230 V AC



24 V DC



Switch box with cable glands



E 50



E 65



E 110



E 160



E 210

CERTIFICATE



Declaration of conformity

CE

We, **EBRO ARMATUREN**
Gebr. Bröer GmbH, Karlstraße 8, 58135 Hagen, Germany

declare in our sole responsibility, that the electric quarter-turn actuators of the E-series,

E 50 WS	E 65 WS	E 110 WS	E 160 WS	
	E 65 DS	E 110 DS	E 160 DS	E 210 DS
	E 65 GS	E 110 GS	E 160 GS	

and the enhanced unit box system

M71-WS-XXX-40 and **M71-DS-XXX-40** and **M71-GS-XXX-40**

this declaration is valid for, fulfil the requirements of the guideline rights of the european member states about EMC directive (89/336/EWG) and the low voltage directive 73/23/EWG (NSR).

For assessment of these products related to electromagnetic compatibility and low voltage directive following standards have been consulted:

EN 50178 : 1997
EN 61010 -1 : 1993 for low voltage directive

EN 55011 : 1998
EN 61000 for EMC directive

As manufacturer of these products, we declare additionally, that following standards according to machinery directive 89/392/EWG have been consulted:

EN ISO 5211
EN 60068-2-52
EN IEC 60529 acc. to machinery directive 89/392/EWG

The starting is not permitted till it is ensured, that the complete machine, where EBRO quarter-turn actuators are installed, fulfil the guidelines of directive 89/392/EWG.

Hagen, dated 22.07.2008


Dipl.-Ing. H. Konopatzki, Technical director

SWITCH BOX SBU



Double-acting pneumatic actuator with SBU-switch box directly mounted.

TECHNICAL DATA

Body:	Aluminium (powder coated)
Sealing:	NBR (Silicone on request)
Connection:	Colour coded spring type terminals 2,5mm ²
Protection class:	IP 65, IP 67 and IP 68 to EN 60529
Temperature range:	-20°C to +85°C
Screws:	Stainless steel
Sensors:	2 or 3 microswitches 2 or 3 V3 proximity switches 2 proximity switches M12 or M8
Adjustment range:	max. three control switches, adjustable within 240°
Solenoid valve:	max. 2 inductors

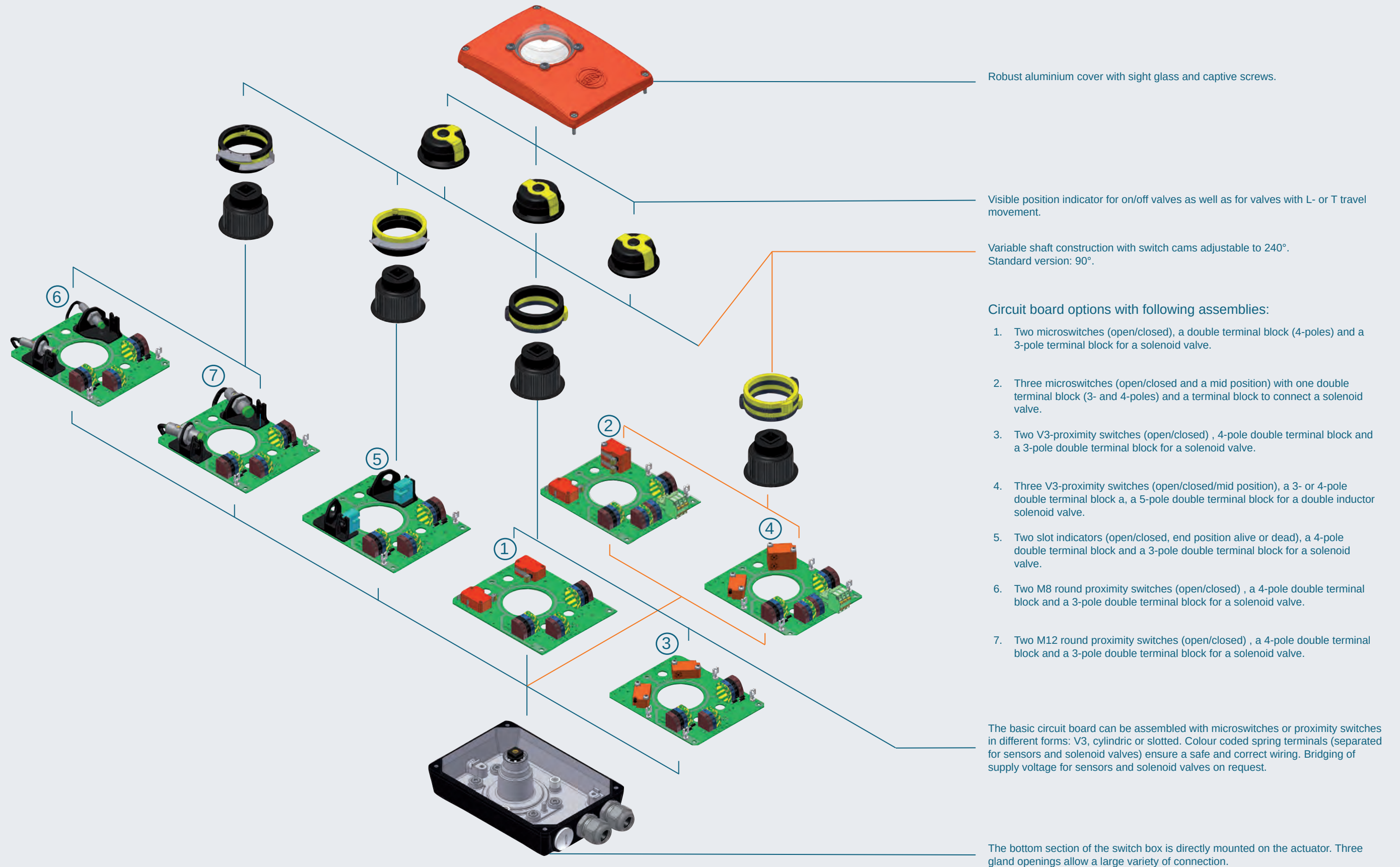
FEATURES

- Direct mounting acc. to VDI/VDE 3845 (EB4.1 - EB12.1)
- Bracket mounting possible
- Compact dimensions
- The operating voltage for microswitches is selectable with isolated changeover contacts
- The aluminium body protects against mechanical damages
- Cover attachment with captive screws
- Separate terminal boards for sensors and solenoid valves
- Colour coded 2-pole spring-type terminals
- Labelling of clamping units of the circuit board
- Terminal diagram within the cover
- Connection of a third switch and of a solenoid valve with two inductors (optional)
- 360° position indicator
- Switches are contacted directly on the circuit board
- Sensors are connected via spring-type terminals and can be replaced separately

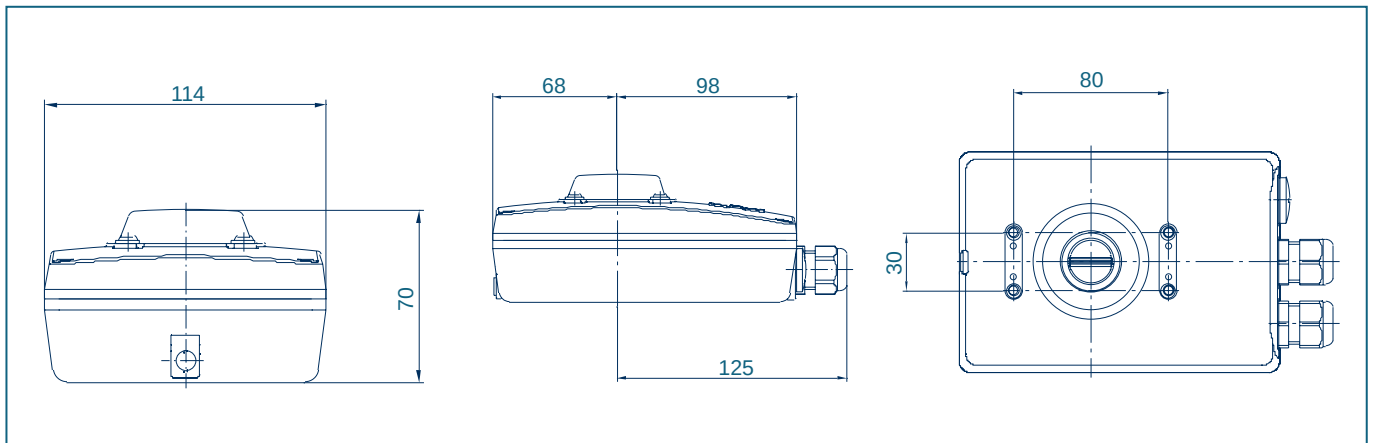


Optional:
Switch box with diaphragm for ventilation and plug-in connection (pic. below).

MODULAR DESIGN SBU



SWITCH BOX SBU



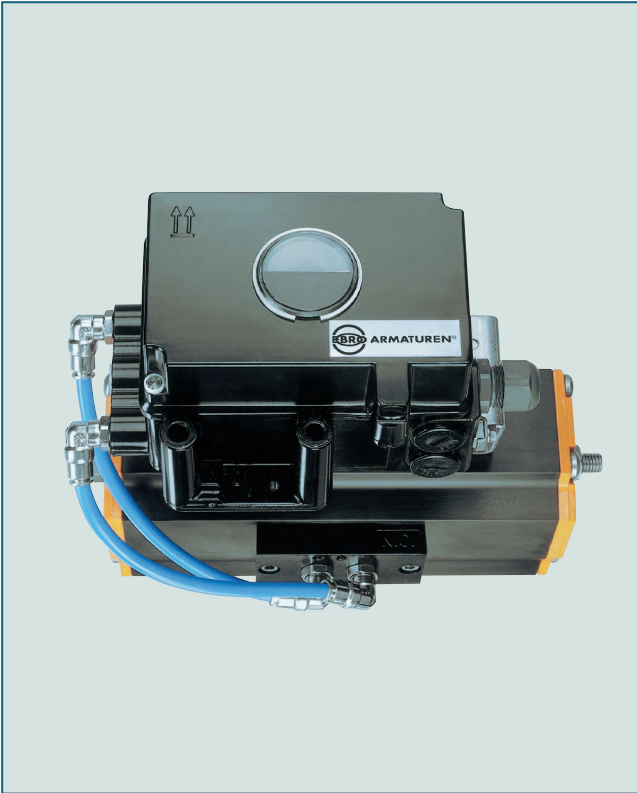
TYPE CODE

Switch box unit	SBU -	X	N	N	X-	X	N	N	N	-X	NN
Type of sensor											
Microswitch		M									
Proximity switch / voltage de-energized (Standard)		P									
Proximity switch / voltage energized*		V									
Quantity of sensors											
without			0								
1			1								
2			2								
3 (possible only with 5 terminals for solenoid valves)			3								
Ex-version											
without				0							
Terminal blocks for solenoid valves											
3 terminals (one inductor)					3						
5 terminals (two inductors, prepared for third sensor)					5						
Screw connection											
Plastic						K					
Metal						M					
Plug in / Electrical connections											
Sealing plug							1	1	1		
M20x1,5 for wiring 8-13mm							2	2	2		
M20x1,5 for wiring 5-9mm							3	3	3		
*Valve connector configuration A (acc. to DIN EN 175301-803)								4	4		
*Valve connector configuration A (acc. to DIN EN 175301-803) with LED and protection circuit (24 V)								5	5		
Plug connector M12								S			
Plug connector M 18							M				
Diaphragm								B	B		
Sensors											
Marquard										M	
Pepperl+Fuchs										P	
Type of sensor											
Marquard / 1006.0701											01
NBB2-V3-E2											01
NCB2-V3-N0											02
SJ3,5-N											03
NJ4-12GK40-E2											05
Further on request.											

* For sensors type V an additional variant number is added to the type code, e.g. -V123

Subject to changes without notice.

ELECTRO-PNEUMATIC POSITIONER EP 100 / EP 200



EP 100 (analog)

The analog positioner EP 100 with input signal 4...20 mA serves to activate single or double acting pneumatic quarter turn actuators. The settings are carried out in a simple way via switches and potentiometers.

In the version EP100-Option R it achieves the option travel indication. Position of the actuator is shown by an analog 4...20 mA signal.

Options:

- Integrated inductive or mechanical value transmitter, independent from actuator technology
- Gauge attachment for air supply and outputs
- Power amplifier

EP 200 (digital)

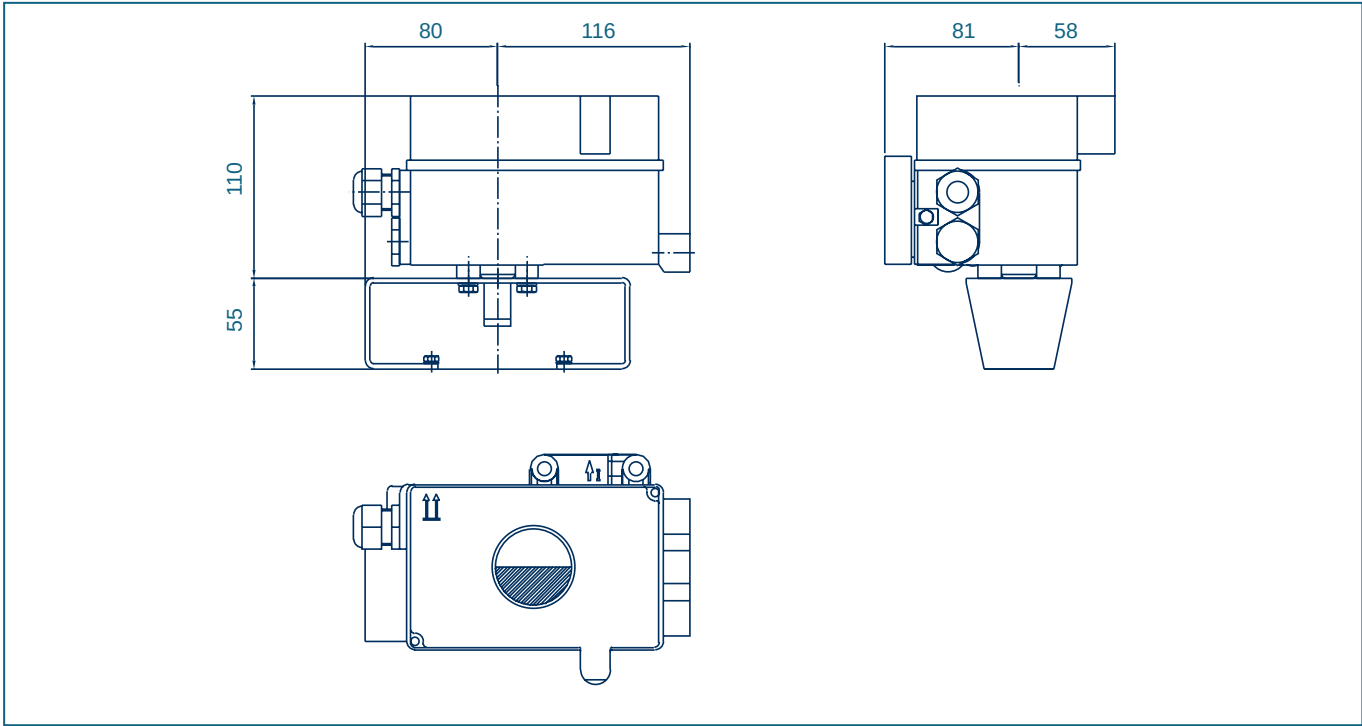
The positioner EP 200 is controlled by micro processor and is designed to operate and control single or double acting pneumatic actuators by means of an analog signal of 4...20 mA. It provides the advanced functionality of latest positioners, e.g. Autostart for the determination of control parameters and easy operation on site.

Further options (kompatible to EP 100)

- Integrated inductive or mechanical value transmitter, independent from actuator technology
- Gauge attachment for air supply and outputs
- Power amplifier



ELECTRO-PNEUMATIC POSITIONER EP 100 / EP 200



TYPE CODE

Electro-pneumatic Positioner		
Analog (EP100)	EP100-	
Digital (EP200)	EP200-	
Version		
single-acting	E	
double-acting	D	
Analog Signal		
without (only EP100)	0	
Output-Signal 4..20 mA	R	
Limit Switch		
without		S-
inductive limit switch Two-Wire-Version (NAMUR)		T-
inductive limit switch Two-Wire-Version (NAMUR Safety-Version)		U-
inductive limit switch in Three-Wire-Version		R-
mechanical switch (potential-free)		V-
Explosion Protection		
without		ZZZ

Subject to change without notice

DIGITAL ELECTROPNEUMATIC POSITIONER EP 501



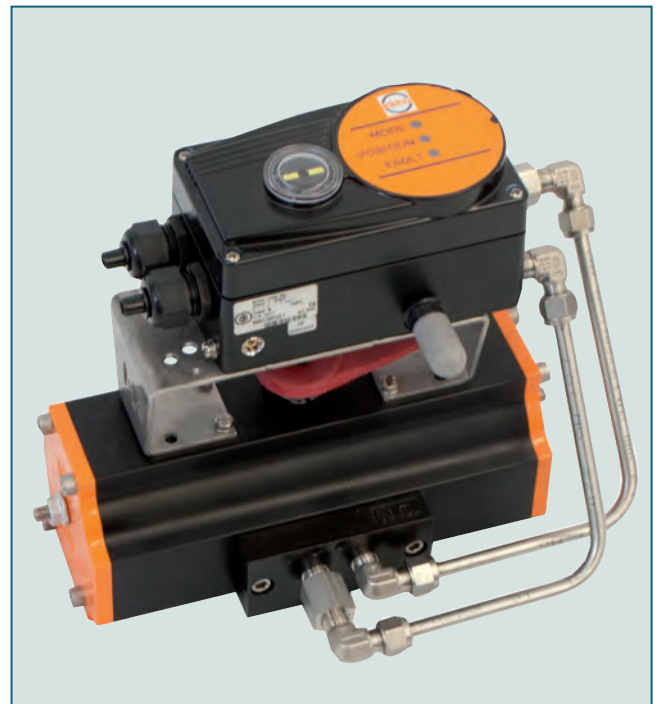
Digital Electropneumatic Positioner Type EP 501

TECHNICAL DATA

Operating voltages:	24 VDC +/- 10%
Setpoint setting:	0/4 to 20 mA and 0 to 5/10 V
Analogue feedback:	4-20 mA, 0-20 mA 0-10 V, 0-5 (optional)
Binary input:	1x galvanically isolated
Binary output:	2 Outputs (optional) galvanically separated 100 mA
Operation:	Graphic display with backlight (EP 501)
Control medium:	Neutral gases, air DIN ISO 8573-1
Installation:	As required, display above or sideways
Pilot air ports:	Threaded ports G 1/4
Supply pressure:	1,4 to 7 bar
Temperature:	0 to 60°C
Actuator system:	Single- or double acting
Air capacity	$Q_{Nn} = 100 \text{ l}_N/\text{min}$ at 7 bar; $\Delta T=1\text{bar}$
Type of protection:	IP 65/67 acc. to EN 60529
Protection class:	3 acc. to VDE 0580
Conformity:	EMV2004/ 108/ EG
Position detection module:	Potentiometer, max. angle 180°
Bus communication:	Profibus DP V1 (optional)

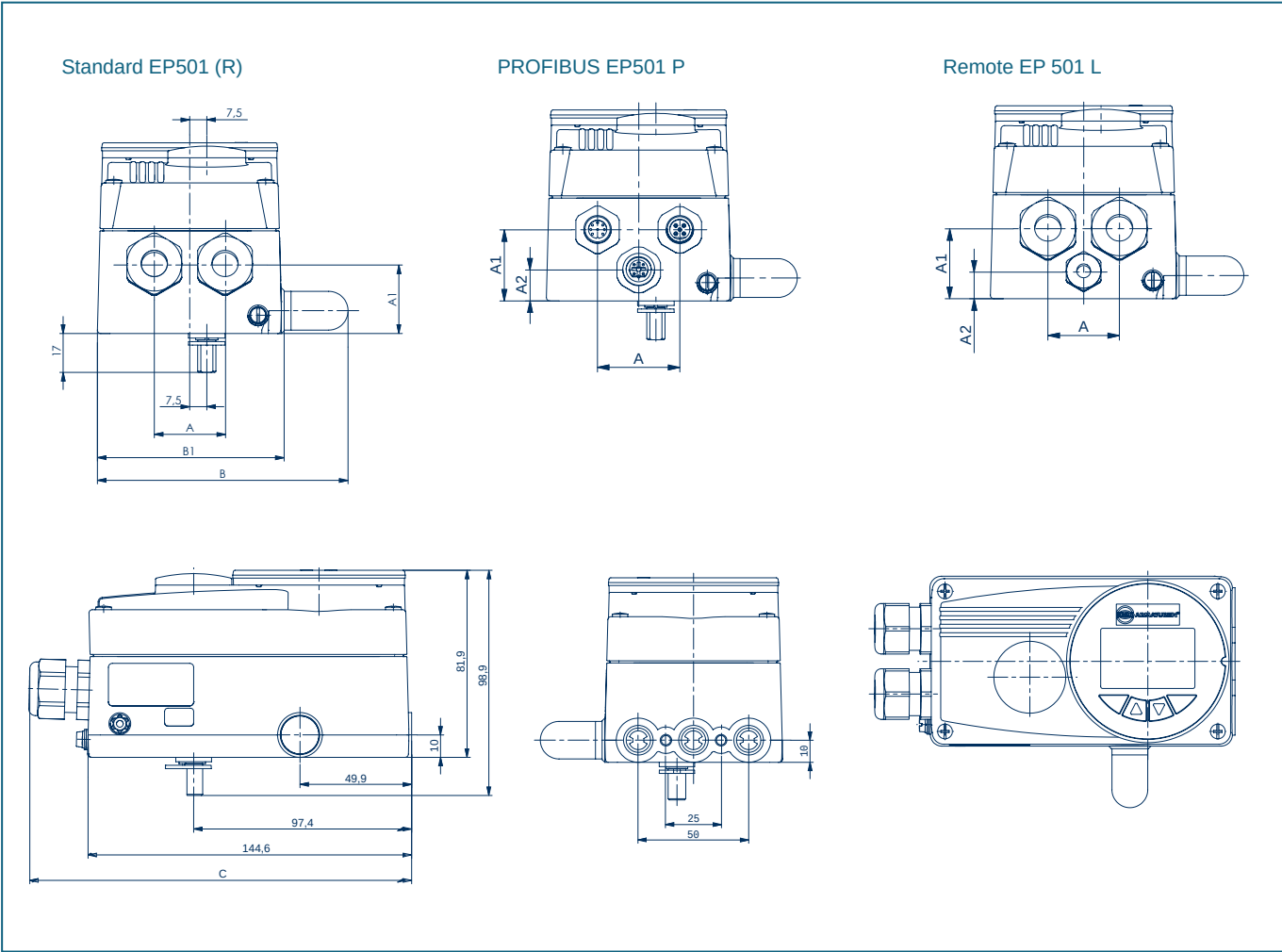
FEATURES

- Compact positioner for assembly with rotary and linear actuators
- Robust aluminium body (plastic coated)
- Cover sealings EPDM, NBR or FKM
- Position indication via digital display (EP 501) and mechanical indication
- Fits to double- and single acting actuators
- Supply pressure: max. 7 bar
- Simple and clear operation via external graphic display
- PROFIBUS DP V1 interface (optional)
- Works with all current signals
- In case of failure of electr. or pneumatic power supply, a defined safety position will be piloted



Basic version (EP 501-B) without a digital display. Stainless steel piping on request.

DIGITAL ELECTROPNEUMATIC POSITIONER EP 501



	Dimensions [mm]					
	A	A1	A2	B	B1	C
Standard	31	30	-	109,8	81,8	171,1
PROFIBUS	36	31	13,5	109,8	81,8	157,8
Remote	31	30	11,5	109,8	81,8	171,1

Type	EP 501	EP 501 R	EP 501 P	EP 501 L
Communication	no	no	Profibus DP V1	no
Electrical connection	Cable gland	Cable gland	Multipole	Cable gland
Analogue feedback	no	yes	via Bus	yes
2 Binary outputs	no	yes	yes	yes
Binary input	yes	yes	yes	yes
Control function single- and double acting	yes	yes	yes	yes
Assembly variations	NAMUR IEC 534-6 VDI/VDE 3845			Remote

Subject to change without notice

MODULAR SYSTEM FOR ELECTRIC ACTUATORS



Electric quarter turn actuators series E 65 - E 210 with modular system are designed to automate control valves.

TECHNICAL DATA

Nominal torque:	100 Nm to 4000 Nm
Protection class:	IP67
Duty cycle:	up to Class C (max.1200 c/n) acc. to prEN 15714-2
Limit switches:	max. 250V AC, 3A
Torque control:	directional contact, max. 250V AC 5A
Switch box heater:	supply 230V AC permanently, 5W
Potentiometer:	1000 Ω
Current feedback:	4-20mA, supply max. 30V DC
Thermal motor switch:	integrated
Insulation class:	F
Corrosion protection Class:	C4 acc. to prEN 15714-2, tested acc. to EN 60068-2-52
Cable entries:	4 x M20 x 1,5 $\varnothing$ -min = 6 mm $\varnothing$ -max = 13 mm
Operation temperature:	-20°C to +70°C
Hand wheel:	15 revolutions 90°
Hand wheel Torque:	4 Nm for E65 20 Nm for E110 35 Nm for E160 50 Nm for E210
Supply voltage:	from 110V AC/1~ to 480V AC/3~

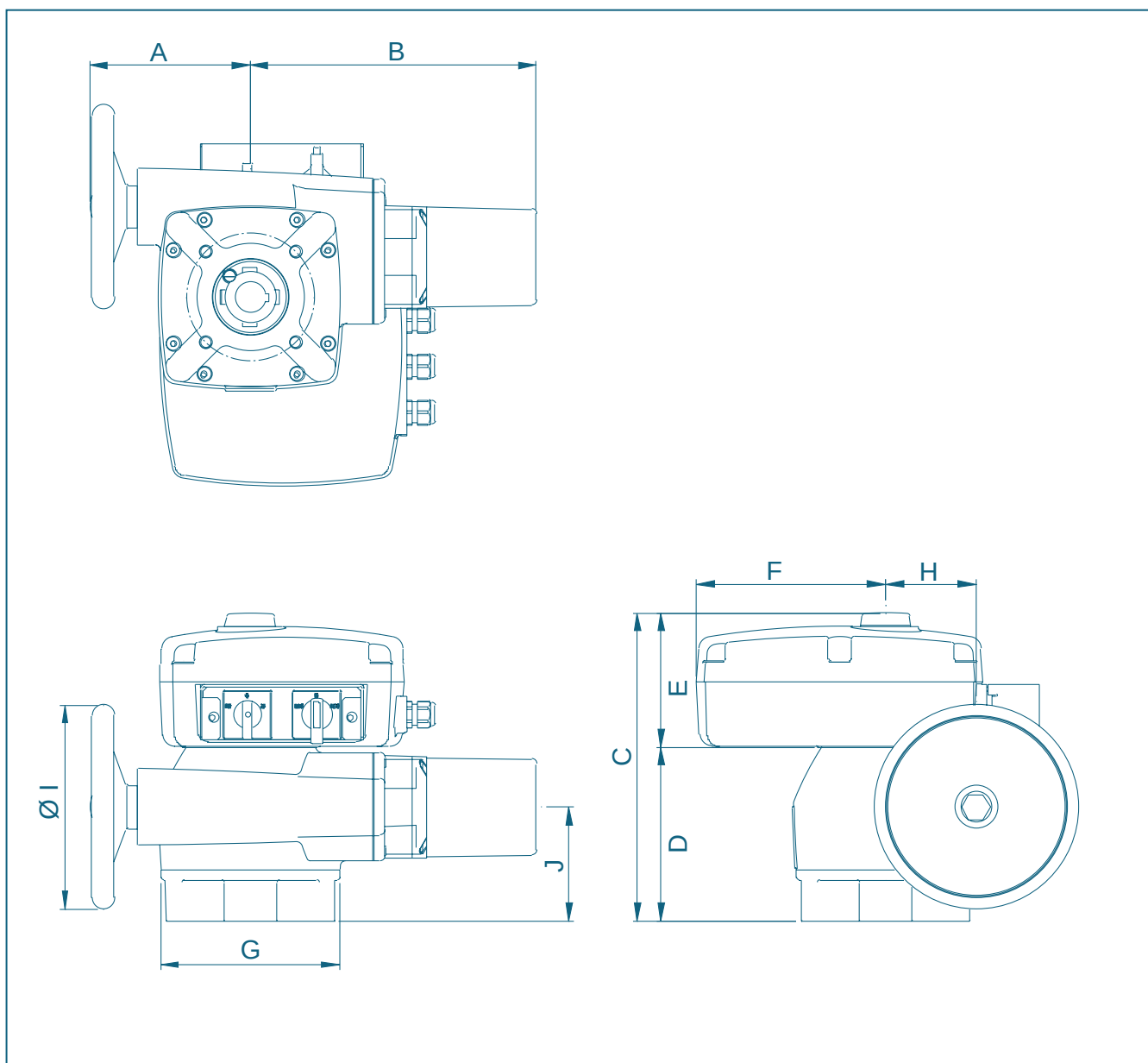
GENERAL APPLICATIONS

- Integrated torque control
- Digital control input
- Integrated 24V DC control voltage supply
- 5 digital feedback signals
- Switch box heater
- Prepared for further options
- Actuator mounting and optional modules as modular system
- Self-locking, separately capsuled worm gear ensures a safe positioning of the actuating element
- Top flange acc. to EN ISO 5211
- Replaceable shaft notch enables the adaption of different valves
- The optical position indicator shows the exact position of the actuating element



Complete equipment with additional board for positioner.

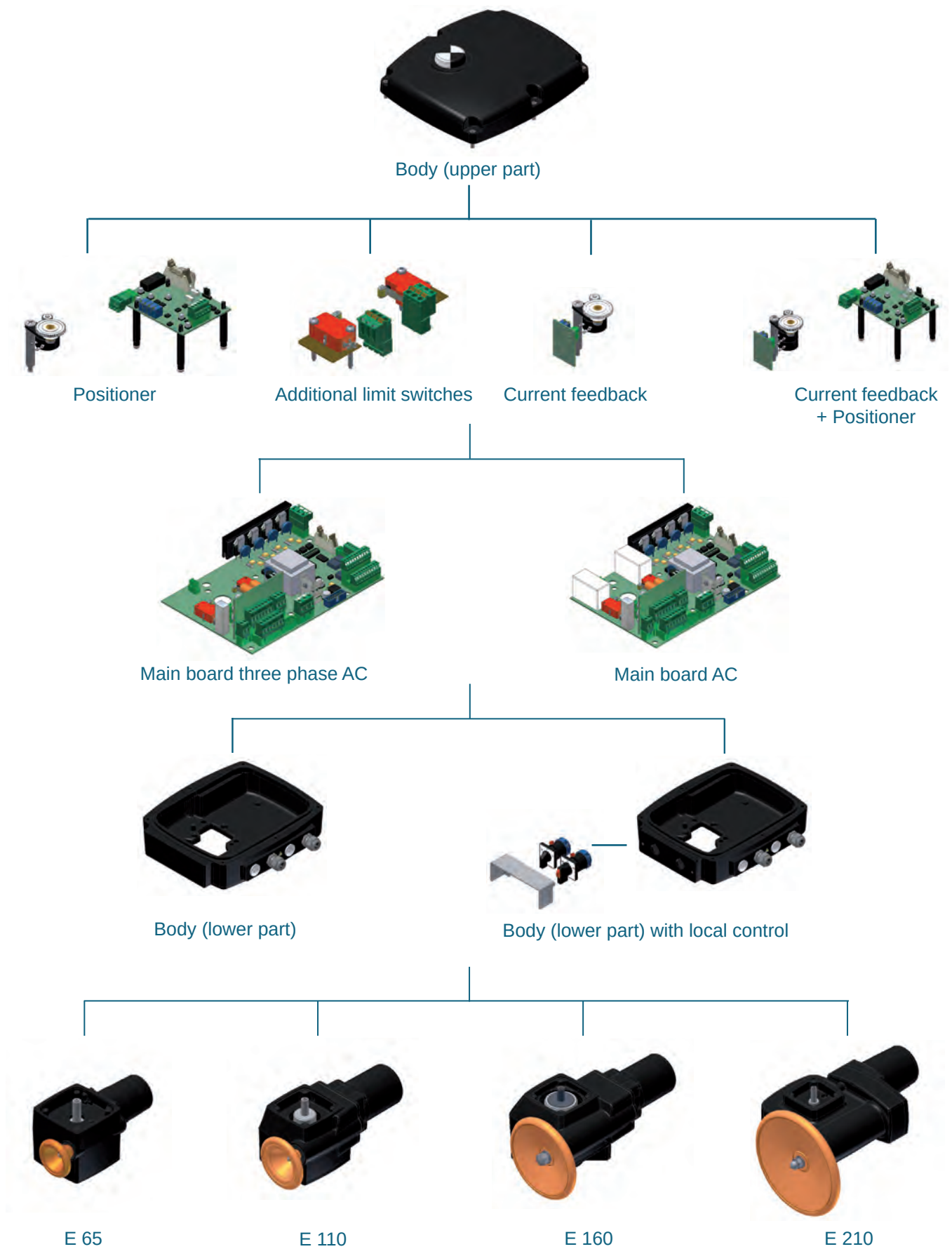
DIMENSIONS MODULAR SYSTEM



Type	Dimensions [mm]									Top flange
	A	B	C	D	E	G	H	ØI	J	
E 65	119	171	255	123	132	125	42	80	78	F04, F05, F07
E 110	136	247	277	145	132	150	58	125	88	F07, F10
E 160	157	280	302	170	132	175	89	200	112	F10, F12, F16
E 210	212	352	294	162	132	240	125	315	84	F12, F14, F16

Subject to change without notice

MODULAR MOUNTING



ORDER CODES

Order Code		Standard			Options			
		Main Board PI.E71-Local	Digital remote control inputs	Digital feedback	Additional Limit Switches	Current Feedback 4-20mA	Local control	Positioner PI.E71-POS
Alternating Current	Three-Phase Current							
M71-WS-001-40	M71-DS-001-40	X	X	X				
M71-WS-002-40	M71-DS-002-40	X	X	X	X			
M71-WS-003-40	M71-DS-003-40	X	X	X		X		
M71-WS-004-40	M71-DS-004-40	X	X	X			X	
M71-WS-005-40	M71-DS-005-40	X	X	X	X	X		
M71-WS-006-40	M71-DS-006-40	X	X	X		X	X	
M71-WS-007-40	M71-DS-007-40	X	X	X	X		X	
M71-WS-008-40	M71-DS-008-40	X	X	X	X	X	X	
M71-WS-009-40	M71-DS-009-40	X		X				X*
M71-WS-010-40	M71-DS-010-40	X		X	X			X*
M71-WS-011-40	M71-DS-011-40	X		X		X		X*
M71-WS-012-40	M71-DS-012-40	X		X			X	X*
M71-WS-013-40	M71-DS-013-40	X		X	X	X		X*
M71-WS-014-40	M71-DS-014-40	X		X		X	X	X*
M71-WS-015-40	M71-DS-015-40	X		X	X		X	X*
M71-WS-016-40	M71-DS-016-40	X		X	X	X	X	X*

* If a positioner is installed, remote control information is disconnected

Actuators with fail-safe positon OPEN/CLOSE

Direct Current				
M71-GS-100-40	PI.E71-GS		X	without additional power charge unit for battery pack
M71-GS-200-40	PI.E71-GS		X	with additional power charge unit for battery pack



This version provides a safety position in case of power loss.

WAFER TYPE CHECK VALVE RSK

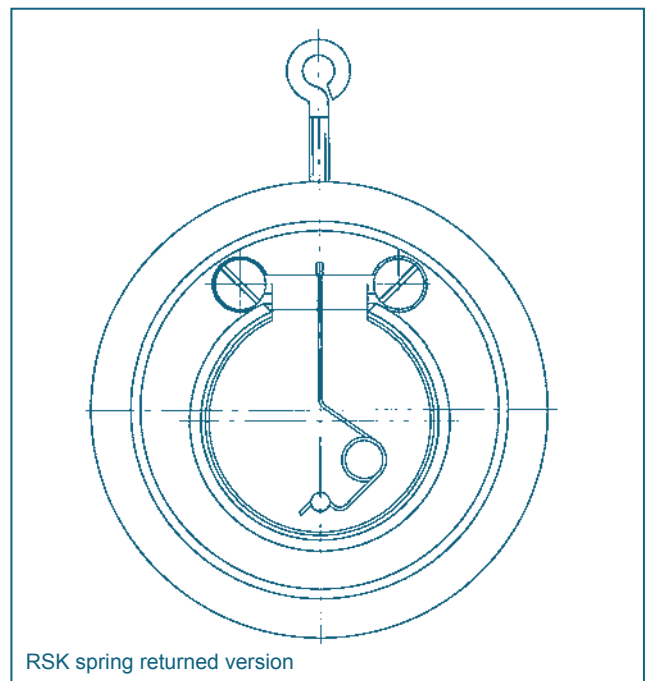


TECHNICAL DATA

Nominal diameter:	DN 32 - DN 600
Face-to-face:	EBRO works standard
Flange accommodation:	EN 485 PN 10/16
Marking:	DIN EN 19
Tightness check:	EN 12266 (Leakage Rate A) ISO 5208, Category 3 API 598 Table 5
Temperature range:	0°C to +200°C (depending on temperature, sealing and body material) NBR 90°C EPDM 120°C FPM 150°C PTFE 200°C
Body:	Aluminium, 1.4305, 1.4571, Brass, Rg 7, PVC, PP
Disc:	1.4305, 1.4571, 1.4581
Attaching pins:	1.4305, 1.4571, Rg 7
Seals:	NBR, FPM, EPDM, PTFE Other materials upon request
Pressure range:	Δp 10 bar

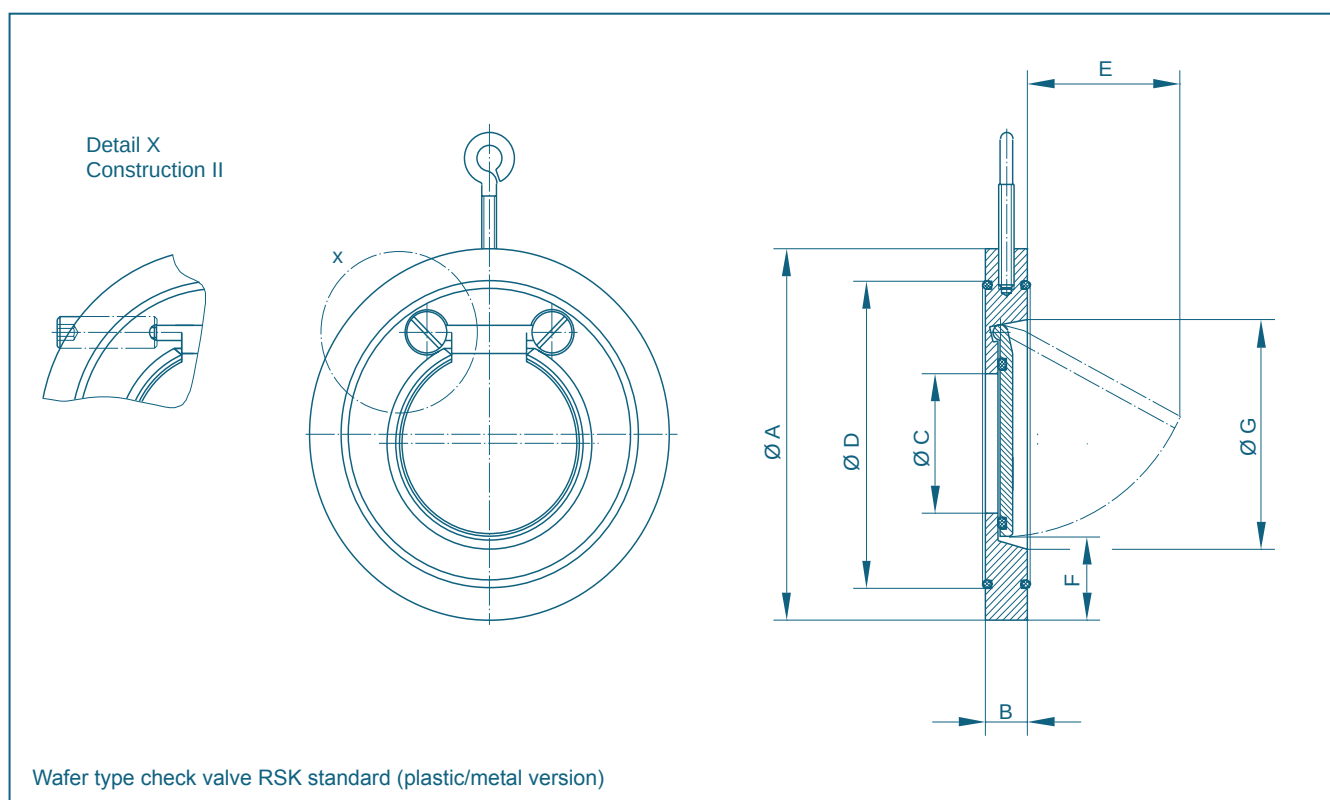
FEATURES

- Universal all-purpose
- Can be installed in any desired position
- Centering over the outside diameter of the body
- Sealing through O-rings
- Holder-eye for easy centering
- Extremely short face-to-face length
- Materials can be changed among each other
- All constructions are available in spring returned version
- For resonant flow conditions:
RSK with spring reset
- Maintenance-free - simple mounting



Subject to change without notice

WAFER TYPE CHECK VALVE RSK



DN [mm]	Size [in]	Dimensions [mm]										Weight [kg]	
		A	B	Plastic with spring	B	Metal with spring	C	D	E	F	G*	Plastic	Metal
32	1¼	85	15	15	15	15	18	59	22	25	37	0,1	0,6
40	1½	95	16	16	16	16	22	72	25	28	43	0,1	0,9
50	2	109	18	18	17	17	31	86	37	29	54	0,17	1,1
65	2½	129	20	20	17	17	40	105	50	31	70	0,22	1,5
80	3	144	20	20	17	17	54	119	61	32	82	0,26	1,8
100	4	164	23	33	21	21	70	146	77	31	106	0,37	3,0
125	5	195	23	23	18	22	92	173	94	35	131	0,5	3,4
150	6	220	26	26	20	26	105	197	100	40	159	0,74	5,4
200	8	275	35	35	22	29	154	255	152	38	207	1,4	7,7
250	10	330	40	40	26	36	192	312	180	41	260	2,4	13,2
300	12	380	45	45	32	43	227	363	215	41	309	3,52	23,3
350	14	440	49	49	38	47	266	416	245	54	341	5,1	38,0
400	16	491	65	65	44	53	310	467	285	55	392	7,3	52,5

The detail X shows the hand emergency actuation (can be delivered for an extra charge).

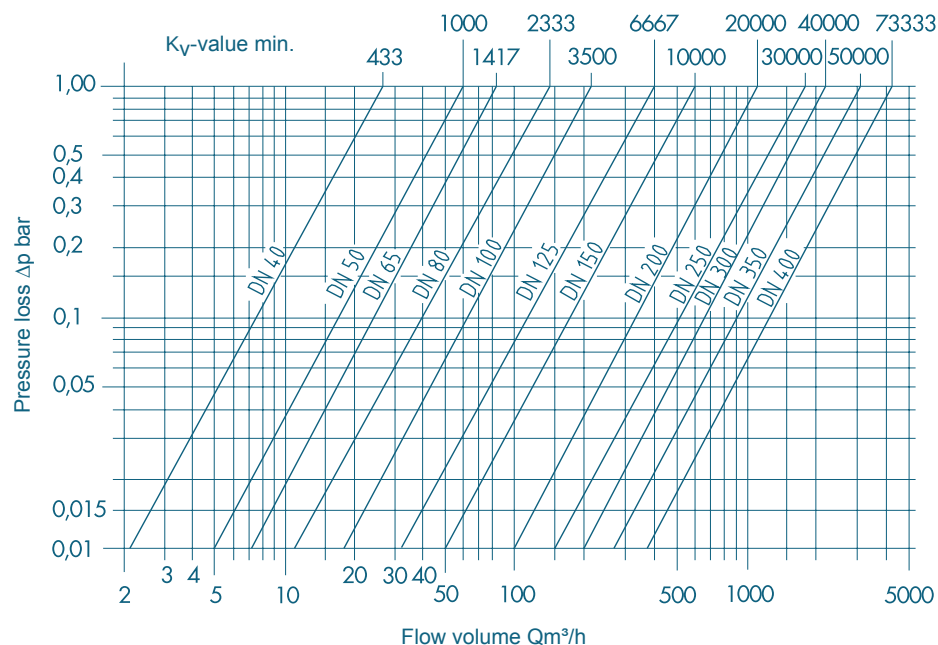
Subject to change without notice

G = min. mounting-, pipe- inside diameter

* For reduced inside diameters, a bend sleeve is available.

PRESSURE LOSS DIAGRAM

The diagram shows the pressure loss Δp bar over the flow volume Q m³/h. Der K_V -value (=Ql/min. p = 1,0 bar) is declared. For a conversion please note:
 $Ql/min. = 16,67 \times Q \text{ m}^3/h$
 $kv = 14,28 \times Cv = 17,09 \times fv$



OPENING PRESSURE [mbar]

DN [mm]	Size [in]	Direction of flow							
		PVC version		PVC spring returned		Metal version		Metal spring returned	
		vert.	hor.	vert.	hor.	fert.	hor.	vert.	hot.
32	1¼	4	1	12	7	-	-	-	-
40	1½	4	1	12	7	5	1	-	-
50	2	4	1	12	7	5	1	12	7
65	2½	4	1	12	7	5	1	12	7
80	3	7	1	20	7	12	1	12	7
100	4	7	1	20	7	12	1	20	8
125	5	7	1	20	7	12	1	20	8
150	6	7	1	20	7	20	1	20	8
200	8	12	1	27	8	20	1	27	8
250	10	12	1	27	8	20	1	27	8
300	12	12	1	27	8	25	1	27	8
350	14	16	1	35	9	25	1	35	9
400	16	16	1	35	9	25	1	35	9
500	20	16	1	35	9	-	-	-	-

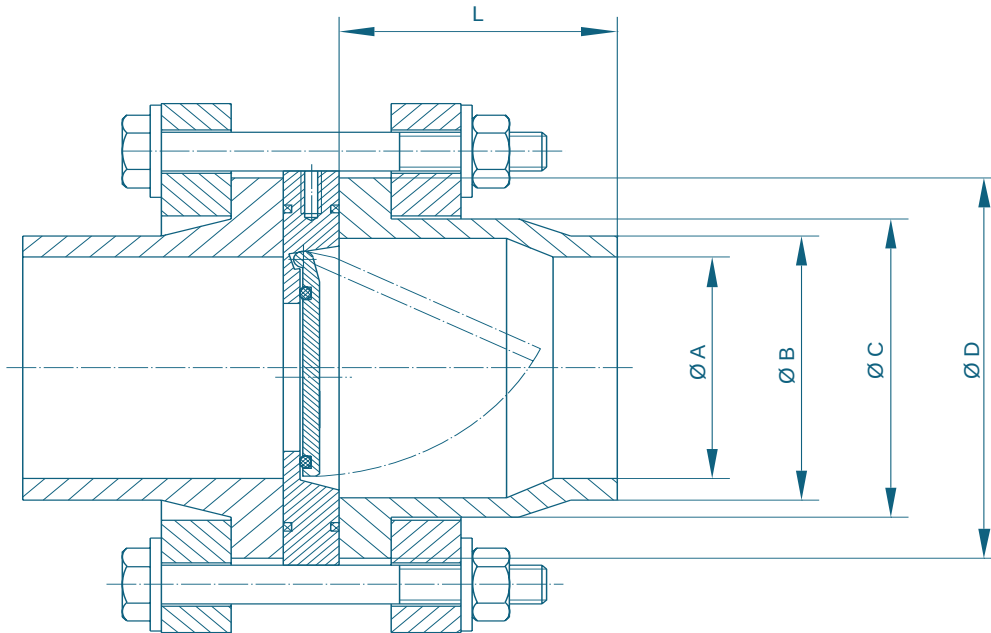
Approximate values

Subject to change without notice

Installing the check valve on top of a pump please ensure that neither the valve is mounted directly on the pump flange or the following bend a smoothing section of less than 5xDN is observed. For tight sealing of the RSK a back pressure of not less than 0,3 bar is required.

WAFER TYPE CHECK VALVE RSK

MATERIAL SPEZIFICATION AND PARTS LIST

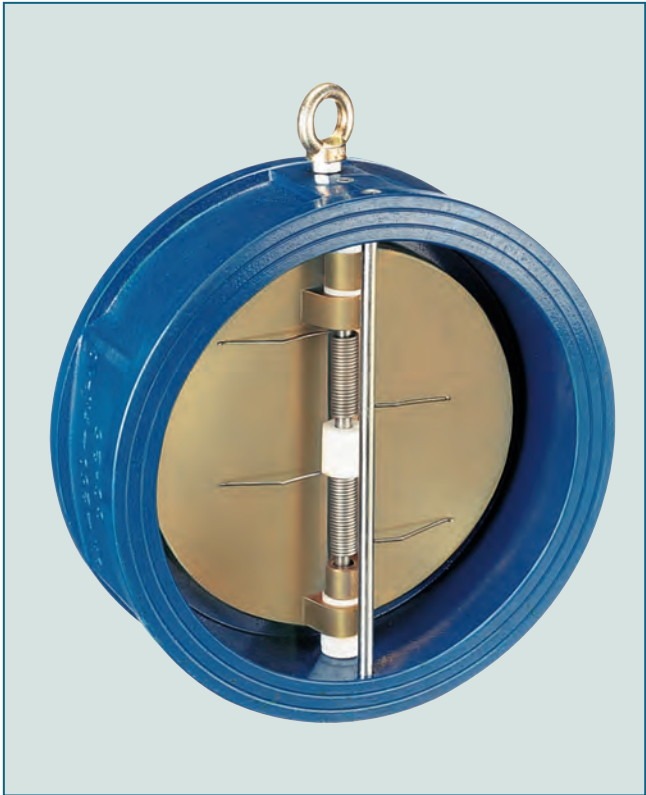


Bend sleeve for RSK (PN 10)

DN [mm]	Size [in]	Dimensions [mm]				
		A	B	C	D	L
32	1¼	35	40	50	80	45
40	1½	44	50	61	90	48
50	2	55	63	77	105	54
65	2½	66	75	91	125	58
80	3	79	90	109	140	72
100	4	97	110	132	160	92
125	5	124	140	166	190	100
150	6	141	160	189	215	120
200	8	199	225	249	270	165
250	10	248	280	293	325	195
300	12	280	315	337	385	250

Subject to change without notice

DOUBLE CHECK VALVE DC



TECHNICAL DATA

Nominal diameter:	DN 50 - DN 300
Face-to-face:	EN 558-1
	ISO 5752
Flange accommodation:	EN 485 PN 10/16
	ASME Class 150
Flange Surface Design:	EN 1092 Form A/B
	ASME RF, FF
Marking:	EN 19
Tightness check:	EN 12266 (Leakage Rate A)
	ISO 5208, Category 3
Temperature range:	0°C to +130°C (depending on pressure, medium and temperature)

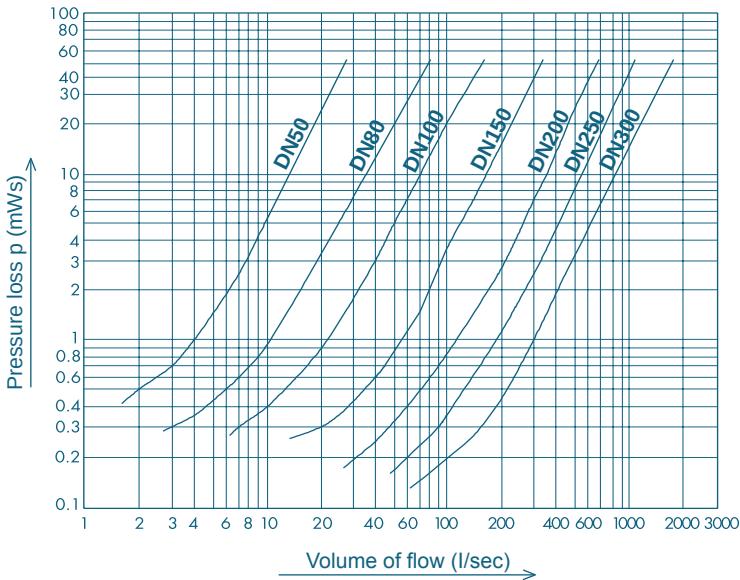
Standard construction:

	DC 1	DC 2
Body	EN-JS 1030	EN-JS 1030
Disc	Bronze	Stainless Steel
Shafts	Stainless Steel	Stainless Steel
Springs	Stainless Steel	Stainless Steel
Seal	NBR	EPDM
Bearing operating	PTFE	PTFE
Pressure	16 bar	16 bar

FEATURES

- Maintenance-free wafer double check valve
- Can be disassembled, material-specific recycling possible

PRESSURE LOSS DIAGRAM



The values given in the diagram are valid for water at 20°C. They result of measurements at valves which are mounted in a horizontal conduction. For the ascertainment of pressure losses for other media, the water flow amount has to be calculated with the following formular:

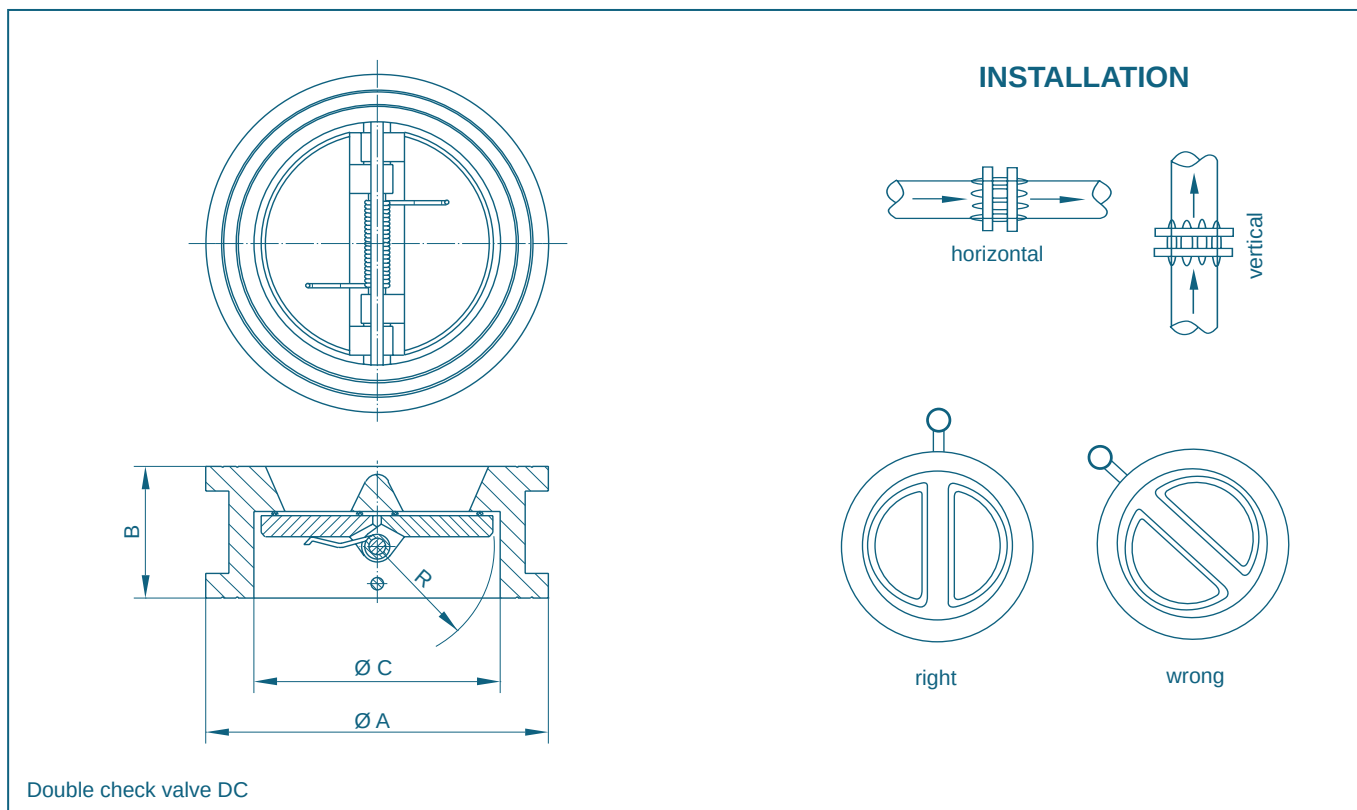
$$W_{ap} = \sqrt{\frac{\gamma_B}{1000}} \times Q_B$$

W_{ap} = equivalent water flow in m³/h

γ_B = flow amount of the media in its operating conditions kg/m³

Q_B = volume of flow in operating condition (m³/h)

DOUBLE CHECK VALVE DC



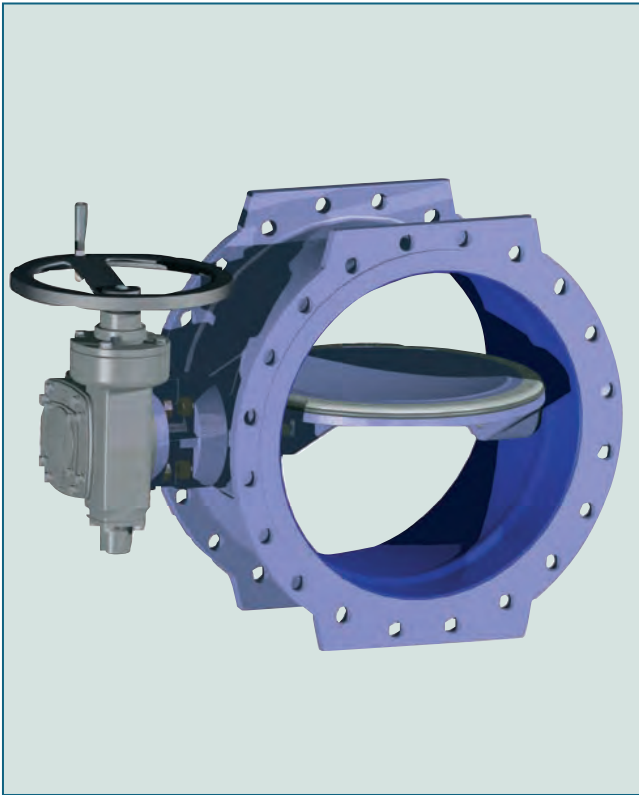
DN [mm]	Size [in]	Dimensions [mm]				min. opening pressure [mbar]	K _V [m³/h]	Weight [kg]
		A	B	C	R			
50	2	109	43	72	31	42	45	1,7
65	2½	129	46	75	35	42	70	2,4
80	3	144	64	90	42	38	120	3,6
100	4	164	64	118	56	30	240	4,5
125	5	194	70	142	66	25	350	7,0
150	6	220	76	170	79	25	650	9,8
200	8	275	89	222	102	20	1300	25,0
250	10	330	114	274	128	18	2100	30,0
300	12	380	114	328	155	16	3500	36,5

Installing the check valve on top of a pump please ensure that neither the valve is mounted directly on the pump flange or the following bend or a smoothing section of less than 5 x DN is observed.

For tight sealing of the DC a back pressure of not less than 1 bar is required.

Subject to change without notice

BUTTERFLY VALVE TYPE F 012-DE



Butterfly valve type F 012-DE with worm gear and handwheel.

TECHNICAL DATA

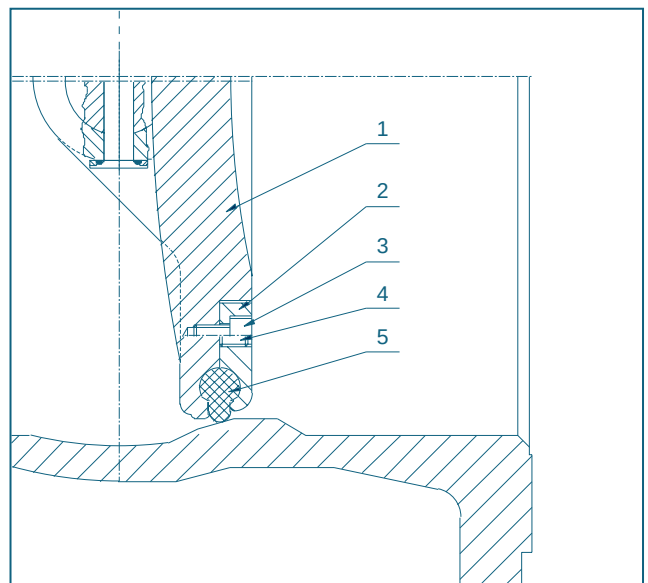
Nominal diameter:	DN 200 - DN 1400
Face-to-face:	EN 558-1-GR14
Flange accommodation:	EN 1092-2 PN 10/16
Top flange:	EN ISO 5211
Marking:	EN 19
Design standard:	EN 593
Temperature range:	Up to + 50°C
Corrosion protection:	EKB >250/300 µm, RAL 5015, sky blue Option: inside enameled, cobalt blue

FEATURES

- Soft seated, double eccentric butterfly valve
- Tight sealing in both flow directions. One side flanging is possible
- Suitable for subsurface installation
- The sealing can be adjusted or replaced without dismantling the disc
- Shafts are capsuled. No media contact
- DIN DVGW certified

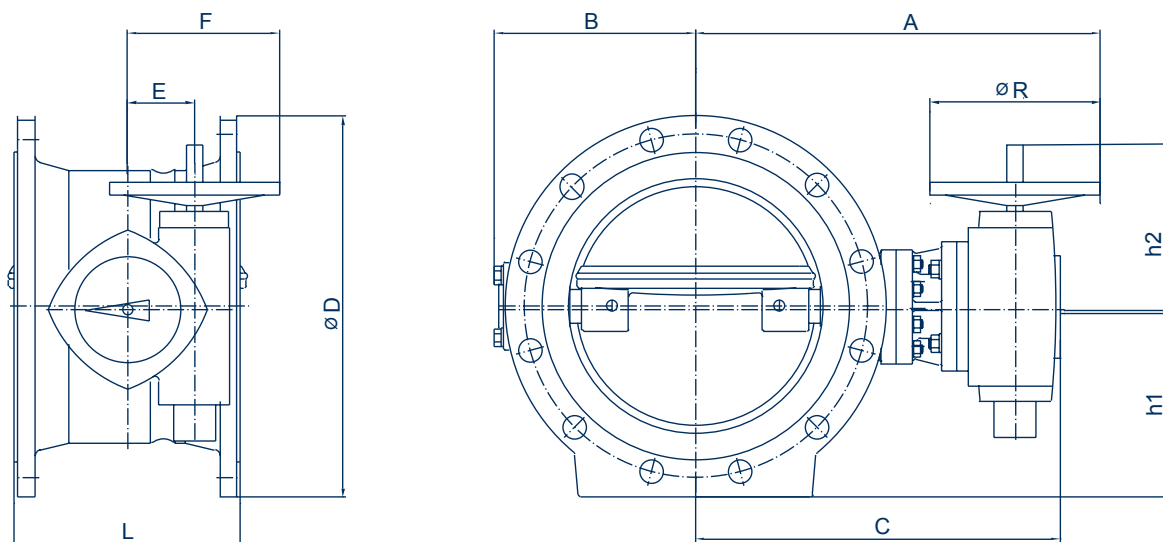
GENERAL APPLICATIONS

- Water and wastewater technology
- Potable water
- Wastewater, TS max. 3%
- Not applicable with long-fibred media



- 1 = Disc
2 = Pressure ring
3 = Fastening screw
4 = Counter set screw
5 = Elastomer seat

BUTTERFLY VALVE TYPE F 012-DE



F 012-DE with worm gear and handwheel

PN 10

DN [mm]	Size [in]	Dimensions [mm]										Weight [kg]
		A	B	C	ØD	E	F	h1	h2	L	ØR	
200	8	380	180	320	340	50	150	170	145	230	200	55
250	10	445	210	378	400	63	190	200	183	250	250	95
300	12	520	235	425	455	80	240	230	186	270	315	125
350	14	545	270	453	505	80	240	255	186	290	315	145
400	16	655	295	538	565	100	300	285	319	310	400	195
500	20	715	365	599	670	100	300	335	319	350	400	265
600	24	780	425	668	780	125	325	390	327	390	400	360
700	28	787	510	687	895	160	360	450	400	430	400	585
800	32	840	560	737	1015	160	360	510	400	470	400	738
900	36	904	628	804	1115	160	360	560	400	510	400	995
1000	40	1090	680	990	1230	160	360	620	400	550	400	1285
1200	48	1305	825	1225	1455	200	450	730	505	630	400	2120
1400	56	1355	965	1225	1675	250	500	840	600	710	500	2850

PN 16

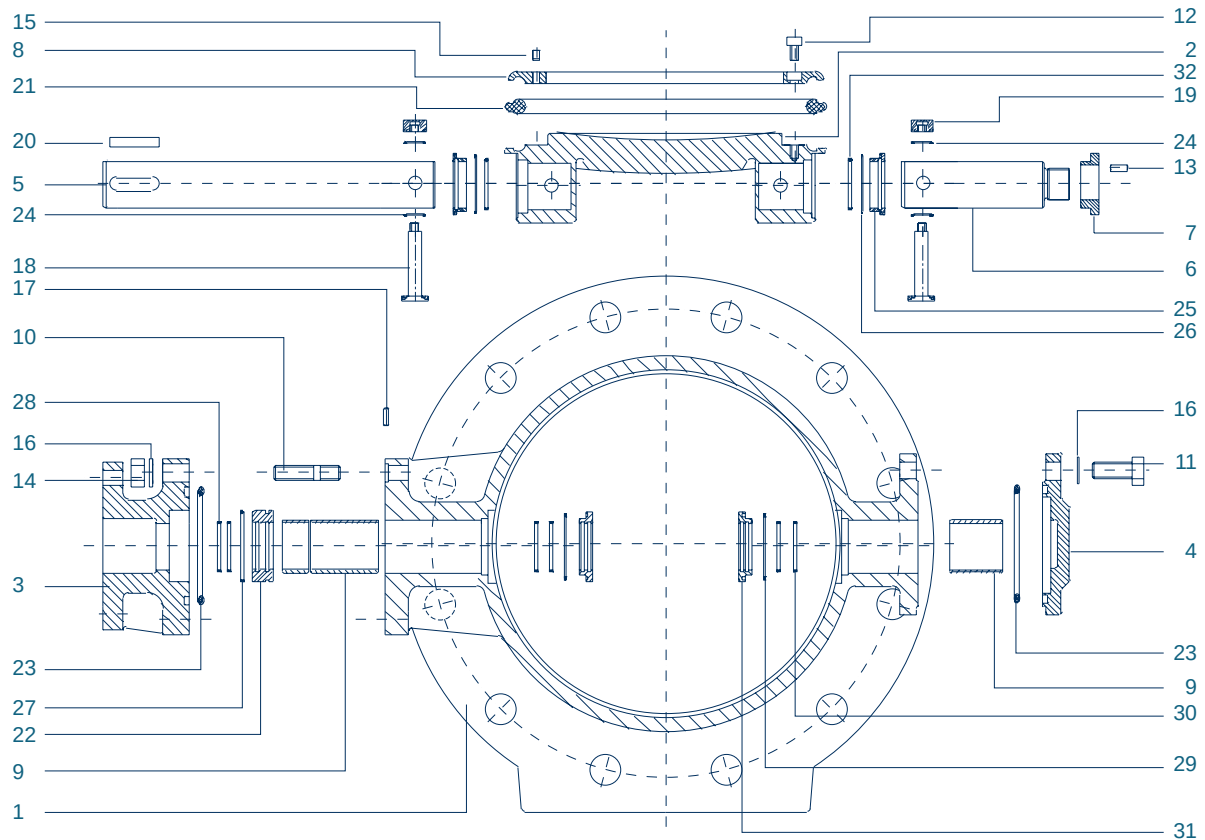
DN [mm]	Size [in]	Dimensions [mm]										Weight [kg]
		A	B	C	ØD	E	F	h1	h2	L	ØR	
200	8	380	180	320	340	50	150	170	145	230	200	55
250	10	445	210	378	400	63	190	200	183	250	250	95
300	12	520	235	425	455	80	240	230	186	270	315	125
350	14	545	270	453	520	80	240	260	186	290	315	150
400	16	655	295	538	580	100	300	290	319	310	400	200
450	18	690	340	568	640	100	300	318	319	330	400	235
500	20	735	380	623	715	125	325	360	327	350	400	310
600	24	768	474	667	840	160	360	420	400	390	400	480

Bigger sizes and higher operating pressure upon request.

Subject to change without notice

BUTTERFLY VALVE TYPE F 012-DE

MATERIAL SPECIFICATION AND PARTS LIST



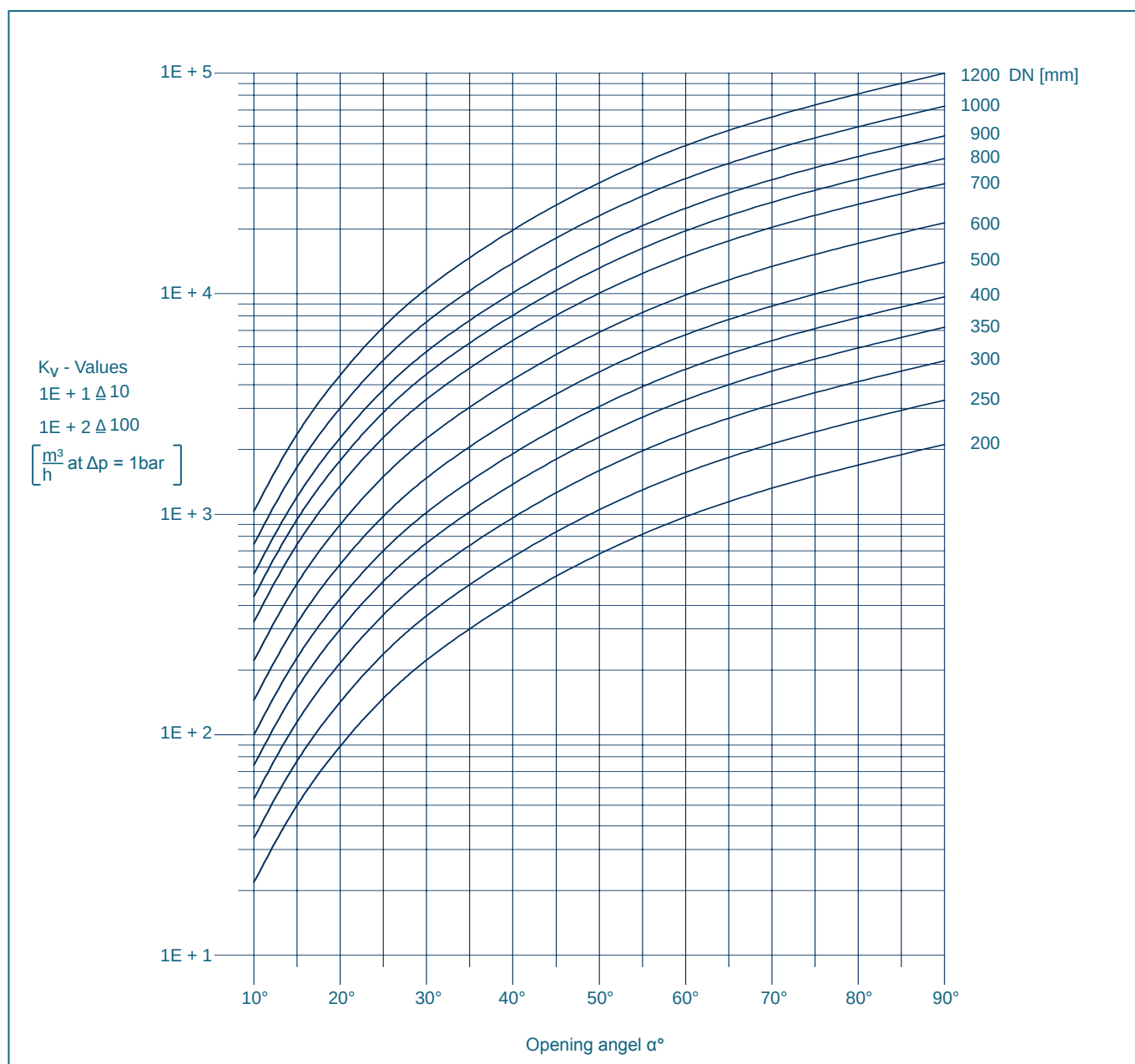
Butterfly valve F 012-DE

Pos.	Description	Material	Material-No.	Pos.	Description	Material	Material-No.
1	Body	GGG	EN-JS 1030	15	Set screw	St. Steel	A2-70
2	Flap	GGG	EN-JS 1030	16	Disc	St. Steel	1.4301
3	Connection flange	GGG	EN-JS 1030	17	Grooved stud	St. Steel	A2-70
4	Cover plate	GGG	EN-JS 1030	18	Threaded pin	St. Steel	A2-70
5	Driveshaft	St. Steel	1.4021	19	Threaded pin - screw nut	St. Steel	A2-70
		St. Steel	1.4122	20	Fitting key	Steel	1.0037
		Duplex	1.4462	21	Seal ring		EPDM/ NBR
6	Shaft	St. Steel	1.4021	22	Holding ring	Brass	2.0402
		St. Steel	1.4122	23	O-ring		EPDM/ NBR
		Duplex	1.4462	24	O-ring		EPDM/ NBR
7	Checking nut	St. Steel	1.4021	25*	Sealing bush	Brass	2.0402
8	Clamping ring	St. Steel	1.4301	26*	O-ring		EPDM/ NBR
		St. Steel	1.4571	27	O-ring		EPDM/ NBR
9	Bearing sleeve	Du	PTFE/ Bronze	28	O-ring		EPDM/ NBR
10	Stud bolt	St. Steel	A2-70	29*	O-ring		EPDM/ NBR
11	Hex bolt	St. Steel	A2-70	30*	O-ring		EPDM/ NBR
12	Pan screw	St. Steel	A2-70	31*	Sealing bush	Brass	2.0402
13	Pan screw	St. Steel	A2-70	32*	O-ring		EPDM/ NBR
14	Pan screw	St. Steel	A2-70				

* These parts are replaced by a profile ring at DN 200 and DN 250.
Other materials upon request.

Subject to change without notice

BUTTERFLY VALVE TYPE F 012-DE



The valve series F 012-DE are mainly used for on/ off operations. They can be used as a control valve conditionally. The differential pressure to be regulated is between 1 to 3 bar (depending on size).

INSPECTION AND ACCEPTANCE

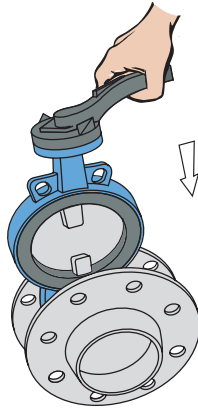
DN [mm]	Flange [DIN EN 1092-2]	Body	Testpressure [bar] Closing-off	Operating pressure [bar]
200-1400	PN 10	16	11,0	10
200-1400	PN 16	24	17,6	16

The inspection is conducted according to DIN EN 12266-1; DIN EN 1074-1/2 with water or air allowing leakage rate A. Valves used with gas be tested according to DIN 3230/5 and on customer request in testing groups PG1, PG2 or PG3.

MONTAGEHINWEISE

INSTALLATION INSTRUCTIONS - NOTICE D'INSTALLATION - INSTRUCCIONES DE INSTALACIÓN

1



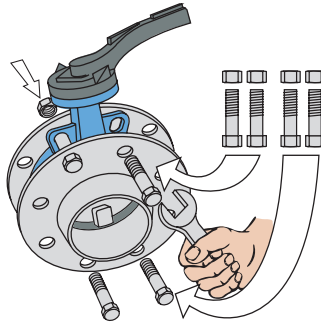
Absperrklappe zwischen die Flansche bringen

Place valve between the flanges.

Insérer la vanne entre les brides.

Situar la válvula entre las bridas.

2



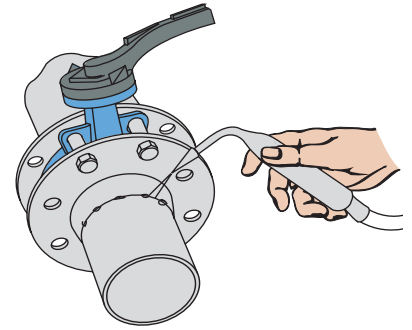
und mit 4 Flanschschrauben leicht anziehen und ausrichten.

Align and fix loosely by means of four flange bolts and nuts.

Serrer légèrement la boulonnerie et centrer la vanne.

Alinear la válvula con la ayuda de los tornillos.

3



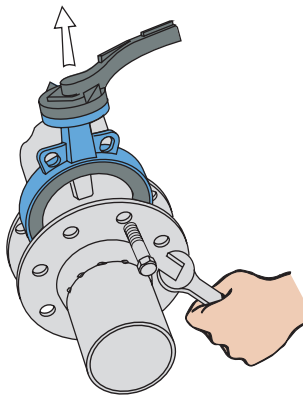
Die Rohrleitungsflansche mit elektr. Punktschweißung an die Rohrleitung anheften.

Spot weld pipe flanges to the pipe.

Pointer les soudures des brides sur la tuyauterie.

Soldar la brida a la tubería con un pequeño punto.

4



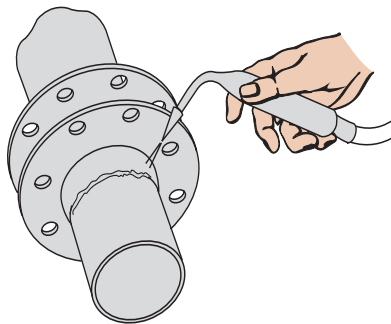
Absperrklappe wieder ausbauen.

Remove the valve.

Démonter la vanne.

Quitar la válvula.

5



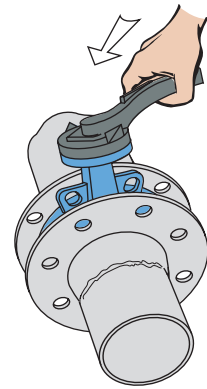
Flansche an die Rohrleitung anschweißen.

Weld flanges to the pipe.

Souder les brides à la tuyauterie.

Soldar por completo la brida a la válvula.

6



Nach dem Abkühlen der Flansche Absperrklappe einbauen. Die Armatur muss sich leicht zwischen die Flansche schieben lassen, damit die Manschette nicht beschädigt wird. Klappenscheibe leicht geöffnet lassen.

Let flanges cool down and re-install the valve. The valve must move easily between the flanges to prevent damage to the collar. Leave valve disc slightly open.

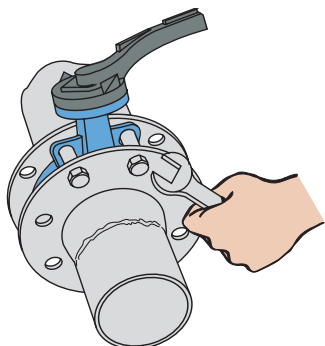
Laisser refroidir les soudures et remonter la vanne. La vanne doit se glisser facilement entre les brides afin que la manchette ne soit pas détériorée. Ouvrir légèrement le papillon.

Dejar que la brida y la tubería se enfíe. Situar nuevamente la válvula entre las bridas. Abrir ligeramente la válvula.

EINBAUANLEITUNG

INSTALLATION INSTRUCTIONS - NOTICE D'INSTALLATION - INSTRUCCIONES DE INSTALACIÓN

7



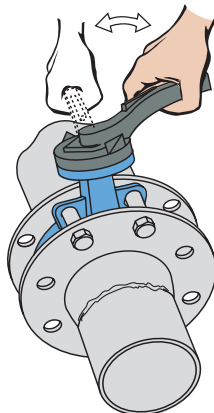
Absperrklappe ausrichten und 4 Flanschschrauben leicht anziehen.

Align valve and fasten 4 flange bolts loosely.

Positionner la vanne et visser la boulonnerie.

Alinear la válvula con ayuda de los tornillos y apretar los ligeramente.

8



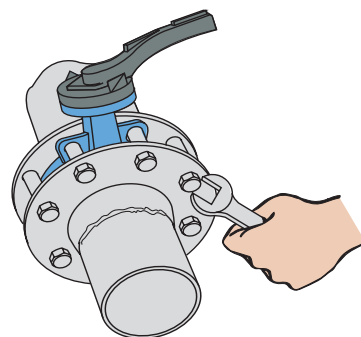
Klappenscheibe öffnen und prüfen, ob diese frei beweglich ist. Klappenscheibe leicht geöffnet lassen.

Open valve disc and check free movement. Leave valve disc slightly open.

Tester la vanne, vérifier que le papillon se manoeuvre facilement. Laisser le papillon ouvert.

Abrir y cerrar la válvula un par de veces y dejarla ligeramente cerrada.

9



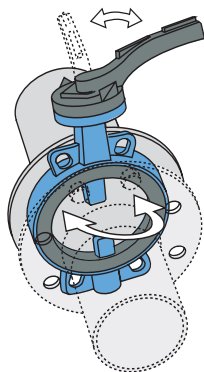
Sämtliche Flanschschrauben über kreuz fest anziehen.

Fasten all flange bolts tightly and crosswise.

Serrer la boulonnerie en étoile.

Apretar finalmente los tornillos diagonalmente.

10



Ordnungsgemäße Funktion überprüfen. Achtung! Scheibe darf nicht an die Rohrleitung anschlagen.

Check proper operation. Attention: make sure disc does not hit the pipe.

Vérifier le fonctionnement de la vanne. Attention: vérifier que le papillon ne cogne pas la tuyauterie.

Accionar la válvula para verificar su funcionamiento y comprobar que el disco no roce con la tubería.

