

Technische Dokumentation Technical Documentation



XOMOX Fully Lined Butterfly Valve Global Type XLD

XOMOX®

Design Features

The XOMOX lined butterfly valve is available in DIN under the term XLD12 as wafer version and XLD22 as lug version. The ASME types are termed XLD11 as wafer version and XLD21 as lug version, and in JIS as XLD13 wafer version and XLD23 lug version.

For XOMOX Lined Butterfly Valves bi-directional flow is possible at max. operating pressure. Since the valve port corresponds to the piping diameter, a high flow capacity is guaranteed.

The seamless one piece molded liner together with the underlying elastic O-ring provides trouble- and maintenance-free operation. It covers the lower shaft completely and renders an additional sealing to atmosphere unnecessarily.

The liner extends up the shaft to above the secondary seal. This sealing prevents leakage to atmosphere. The body seal ring is designed to provide a 360° sealing for in-line shutoff and at the upper and lower shaft to act as primary seal to atmosphere.

A further special feature is the one-piece disc consisting of a metallic core (disc/shaft) with a homogeneous non-porous plastic coating standing up to the secondary external seals.

All these features combine to make the XOMOX lined butterfly valve the solution for tight shutoff and corrosion resistance and represent an advance on all previously available products of this type.

Scope of Supply

Materials:

Body: Ductile iron EN-JS1049 – ASTM A395
 Body liner: PFA up to 300 / PTFE Teflon® from 350
 Disc: Ductile iron EN-JS1049 - ASTM A395
 PFA lined up to 300 / PTFE Teflon® from 350

Face to face acc. to EN 558, basic column 20

Operation:

DN 50 / NPS 2 up to DN 150 / NPS 6 latching lever
 from DN 200 / NPS 8 with worm gear, pneumatic and electric actuators on request

Tightness

The actual leakage rate to atmospheric pressure is less than $1 \cdot 10^{-6}$ mbar · l/s of helium gas.
 Requirements according to TA-Luft specification will be accomplished.

Paint:

Standard paint: Epoxy - primer and coating based on AY-PUR (Acryle-Polyuretane) Orange RAL 2009, FV7133
 prevent external corrosion

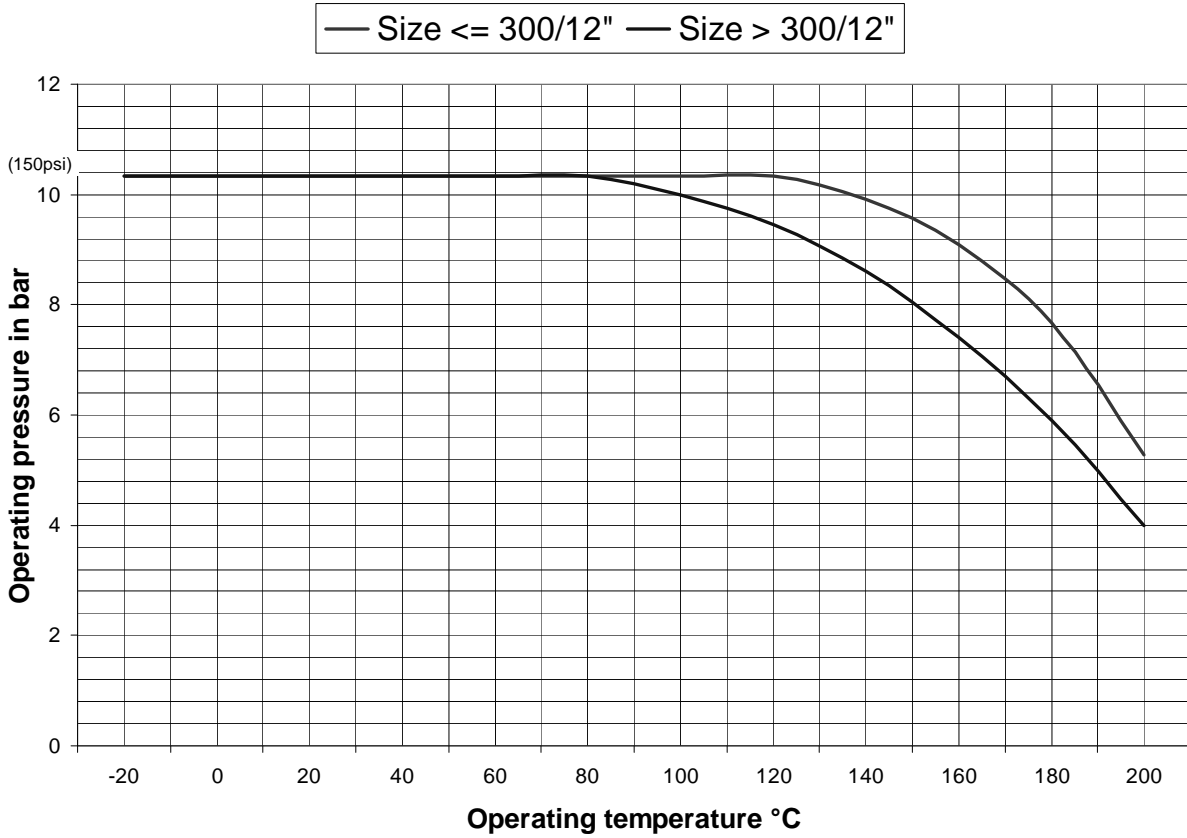
Type test approval VdTÜV-M229 for plants subject to inspection:

Rule	DampfkV	DruckbehV	Gas HL-V0	VbF
Code	TRD	TRB/TRR	TRGL/DVGW	TrbF

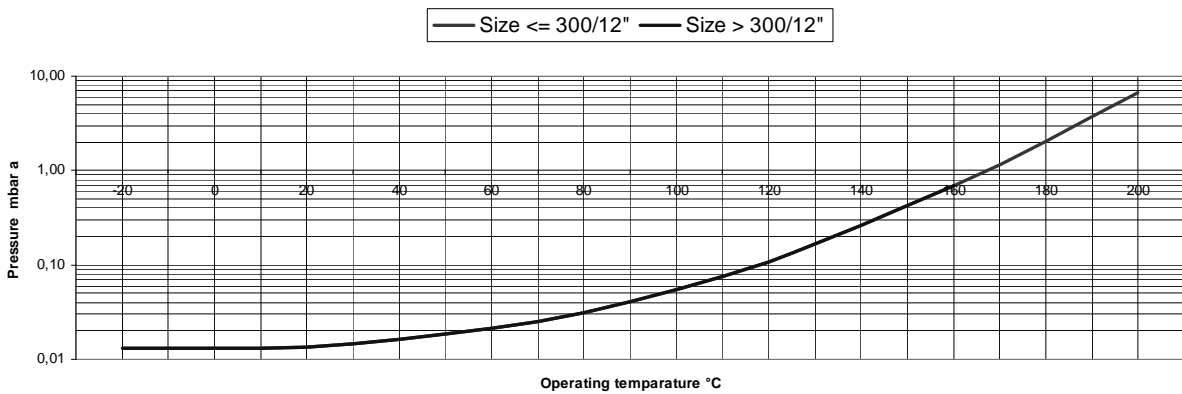
Options:

- Chlorine - application;
- Oxygen - application
- Disc in stainless steel or Titanium (without lining)
- O-ring Silicon
- Safety manual adjustable packing
- PFA antistatic lining
- other painting on request

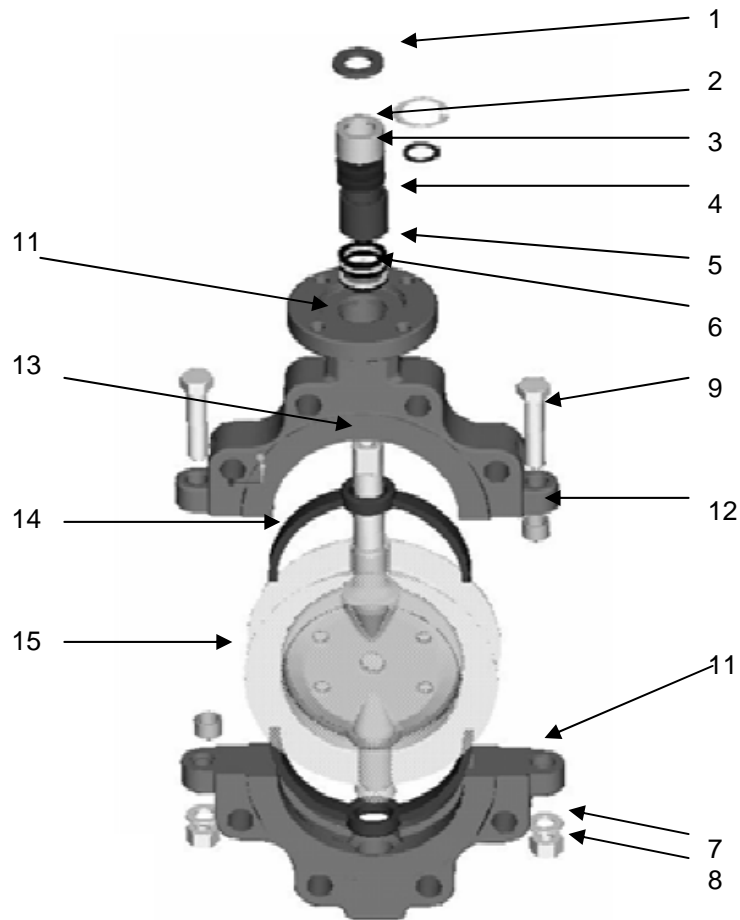
XLD Pressure /Temperature -Diagram



XLD Vacuum/Temperature Diagram



Part Description



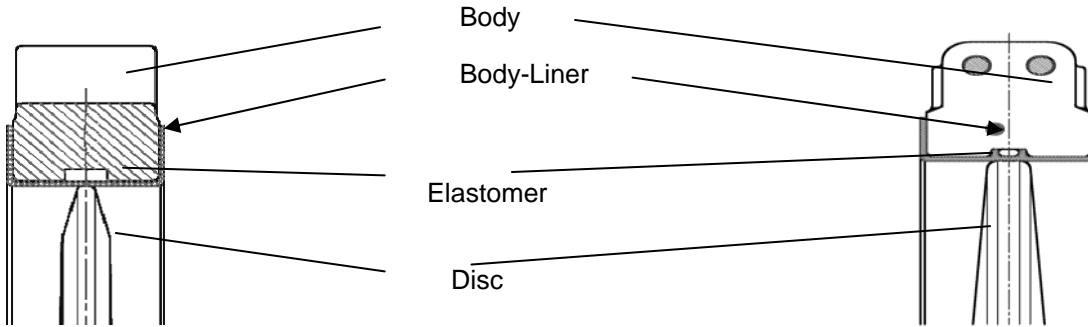
Item	Quantity	Part	Material
1	1	Atmospheric seal	PTFE Teflon®
2	1	Thrust Collar	1.4408
3	1	Washer Spring	1777 PH
4	1	Gland	1.4571
5	3	O-Ring	FKM
6	2	Spacer	1.4571
7	2	Washer	1.4301
8	2	Nut	A4-70 (108/109, 808/809) , A1942H (008/009)
9	2	Body Bolt	A4-70 (108/109, 808/809) , A193B7 (008/009)
11	2	Body	EN-JS1049/ASTM A395
12	2	Pin	1.0460
13	1	Disc	EN-JS1049/ASTM A395, DN 80-300: PFA above DN 300 PTFE Teflon®
14	2	Body Seal Ring	FKM
15	1	Liner	DN 80-300: PFA, above DN 300 PTFE Teflon®

Sealing Principles

1. In-line seal – valve in closed position

Up to DN 300

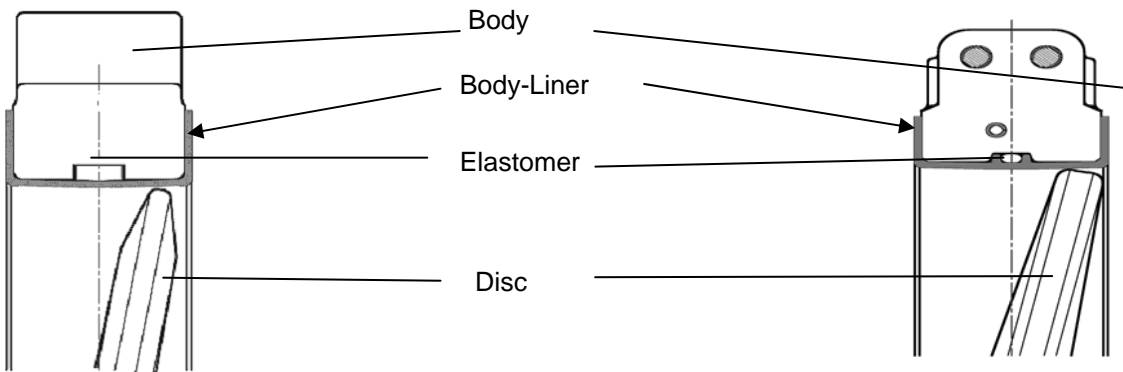
Above DN 350



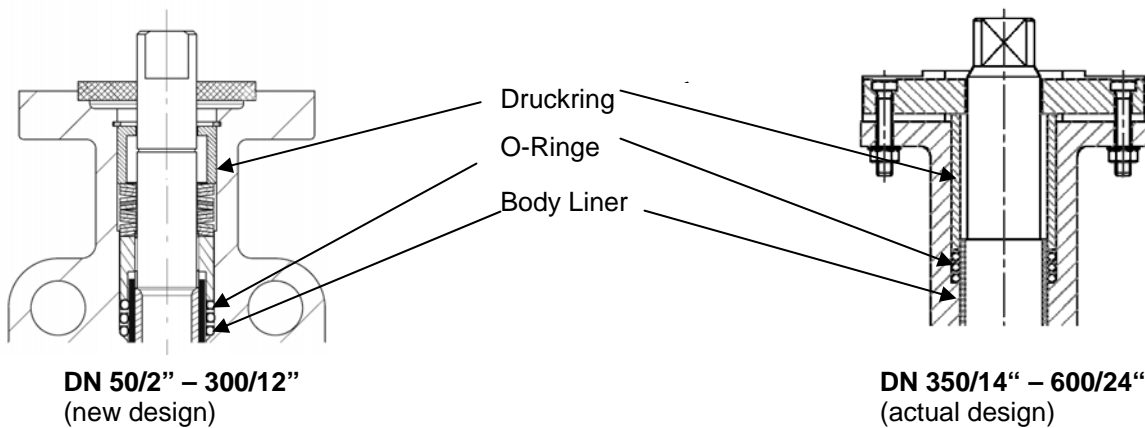
2. In-line seal – valve in opening position

Up to DN 300

Above DN 350



3. Secondary shaft seal



Flow Characteristics

K_v values in m^3/h , $C_v=1,156 K_v$

Angel of aperture	0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°
Angel of aperture (%)	0	10	20	30	40	50	60	70	80	90	100
DN / NPS											
50 / 2	0	0.62	2.6	12	30	65	95	135	165	170	180
80 / 3	0	0.82	3.6	14.4	38	70	112	166	212	228	233
100 / 4	0	1.5	5.8	22	55	102	177	296	408	464	486
125 / 5	0	4.6	13	40	92	164	267	413	564	698	790
150 / 6	0	12.12	31	82	183	296	415	595	834	1115	1445
200 / 8	0	18.4	44	130	280	435	640	910	1282	1705	2227
250 / 10	0	27.3	65	200	410	660	958	1345	1912	2550	3320
300 / 12	0	40.7	99	295	596	965	1396	1975	2827	3795	4908
350 / 14	0	68	216	413	720	1225	1944	2890	4104	5520	7200
400 / 16	0	90	268	518	895	1535	2416	3663	5100	6960	8950
450 / 18	0	116	340	660	1135	1934	3065	4610	6470	8810	13350
500 / 20	0	164	415	822	1390	2400	3750	5670	7925	10700	13900
600 / 24	0	231	570	1060	1900	3250	5130	7790	10830	14440	19000

DN65 NPS 21/2 on request

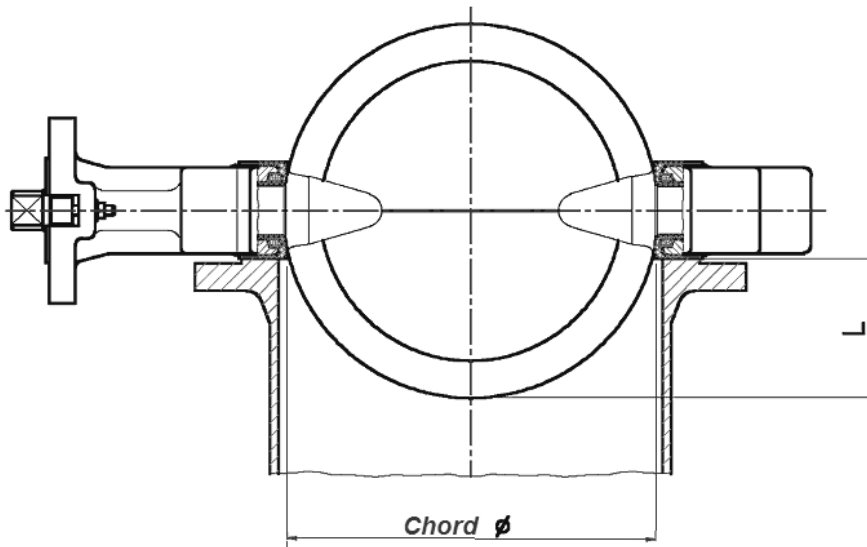
Valve coefficients for process control: DN 50 – 200 / NPS 3 – 8

Angle of aperture	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°
Rated travel	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Recovery factor F_L	0.85	0.85	0.85	0.85	0.81	0.73	0.67	0.61	0.59	0.55
Factor F_L^2	0.72	0.72	0.72	0.72	0.66	0.53	0.45	0.37	0.35	0.30
Valve characteristic z_y	0.47	0.47	0.47	0.47	0.43	0.37	0.33	0.28	0.27	0.24
Pressure differential ratio κ_T	0.61	0.61	0.61	0.61	0.55	0.45	0.38	0.31	0.29	0.25
Valve style modifier F_d	0.08	0.15	0.23	0.31	0.38	0.45	0.52	0.58	0.64	0.70

Valve coefficients for process control: DN 250 – 600, NPS 10 – 24

Angle of aperture	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°
Rated travel	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Recovery factor F_L	0.80	0.82	0.82	0.82	0.78	0.67	0.56	0.51	0.48	0.42
Factor F_L^2	0.64	0.67	0.67	0.67	0.61	0.45	0.31	0.26	0.23	0.18
Valve characteristic z_y	0.43	0.44	0.44	0.44	0.41	0.33	0.25	0.22	0.20	0.16
Pressure differential ratio κ_T	0.54	0.56	0.56	0.56	0.51	0.38	0.26	0.22	0.19	0.15
Valve style modifier F_d	0.08	0.15	0.23	0.31	0.38	0.45	0.52	0.58	0.64	0.70

In-Line Mounting Dimensions



Dimensions in mm

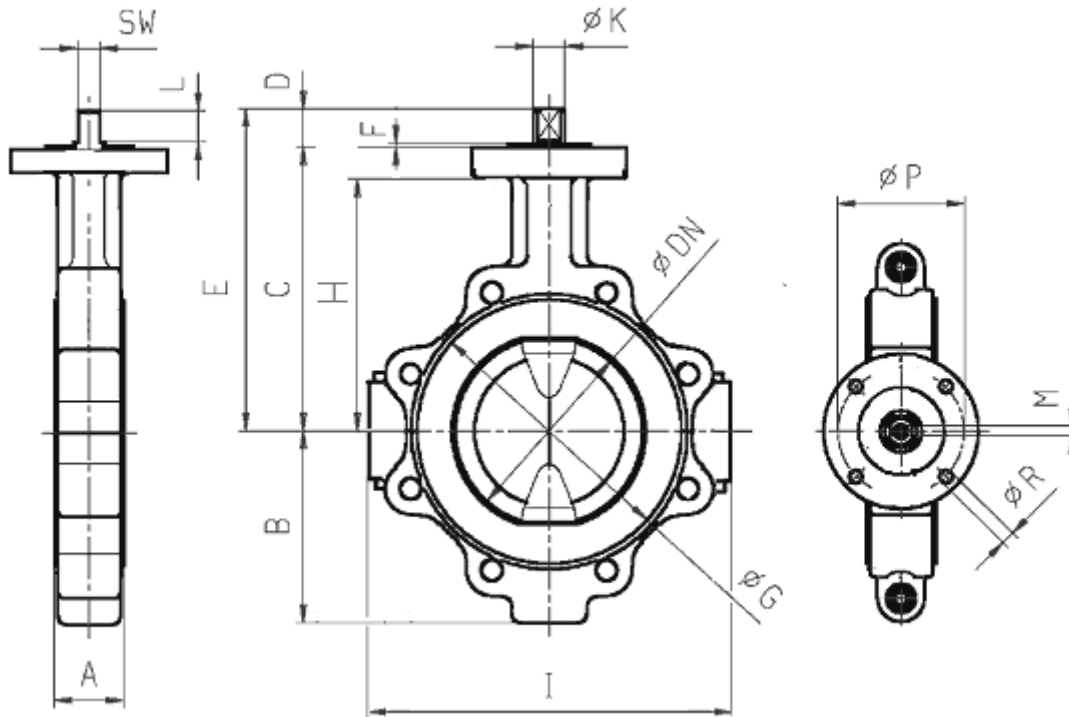
DN	NPS	In-line mounting dimensions		Free space sectional area at 90° in cm ²	ξ ₁	Break-away torque in Nm	Maximal Allowable torque on stem in Nm
		Dimension L in mm	Chord Ø mm				
50	2	8	29	10.6	3.2	35	162
80	3	16	62	24.7	2.4	35	162
100	4	25	88	51.8	0.85	50	162
125	5	37	114	89.2	0.72	62	162
150	6	49	141	138	0.45	94	296
200	8	72	193	255.2	0.53	209	628
250	10	93	245	411.3	0.58	242	628
300	12	113	294	610.6	0.55	308	628
350	14	124	327	709.5	0.45	900	2488
400	16	144	376	923.3	0.50	1300	2488
450	18	163	425	1201.1	0.50	1700	2946
500	20	181	473	1527.7	0.51	2700	2946
600	24	218	570	2306.6	0.56	4000	5954

DN65 NPS 21/2 on request

*1 Coefficient of resistance, acc. to theoretical pipe diameter (DN) and K_{va} (opening angle 90°)

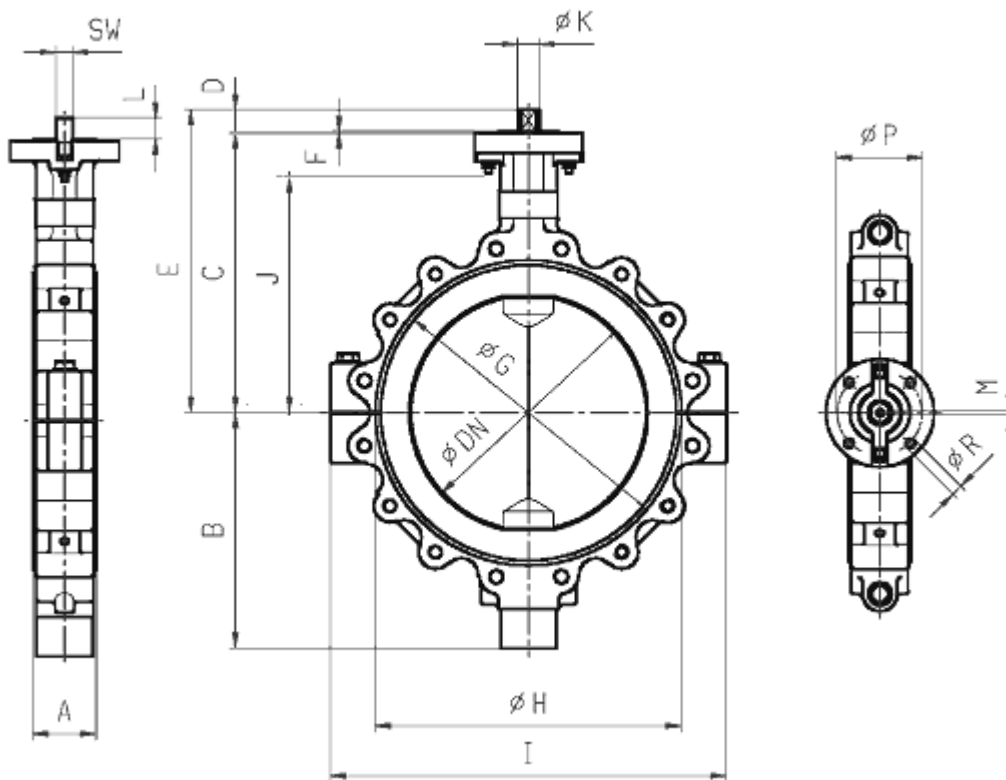
*2 Identical torque at opening and closing, running torque = 40% of break away torque

*4 Max. permissible torque Mall with EN-JS1049 [Nm]



Dimensions in mm

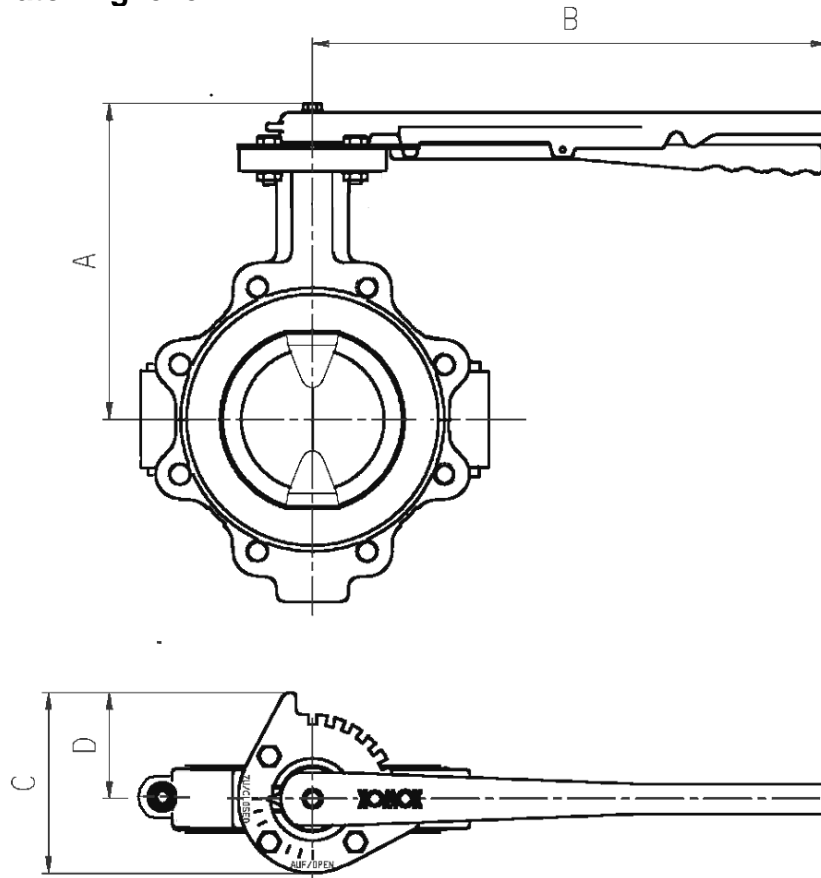
DN NPS	50 2	65 2 1/2	80 3	100 4	125 5	150 6	200 8	250 10	300 12
A	43	46	46	52	56	56	60	68	78
B	81	87	102	120	135	145	190	233	258
C	133	146	160	170	185	203	230	258	288
D	30	30	22	26	29	25	26	26	30
E	163	176	182	196	214	228	256	284	318
F	3	3	3	3	3	3	3	3	3
ØG	100	128	127	153	184	212	265	324	374
H	119	135	138	154	166	180	210	231	266
I	168	175	223	267	295	321	394	462	552
ØK	15.9	15.9	15.9	15.9	15.9	25.4	31.8	31.8	31.8
SW	11.1	11.1	11.1	11.0	11.05	17.5	20.6	20.5	20.6
L	25	25	17	21	24	20	21	21	25
M	M6	M6	M6	M6	M6	M8	M8	M8	M8
DIN ISO 5211	F07	F07	F07	F07	F07	F10	F10	F10	F12
ØP	70	70	70	70	70	102	102	102	125
ØR	9	9	9	9	9	11	11	11	14
Weight in kg	7.5	7.5	7.5	9.5	12.0	15.0	25.0	33.0	53.0



Dimensions in mm

DN NPS	350 14	400 16	450 18	500 20	600 24
A	92	102	114	127	154
B	353	380	410	460	520
C	417	452	470	500	560
D	38	38	60	60	65
E	455	490	530	560	625
F	3	3	5	5	5
ØG	424	495	533	591	692
ØH	445	500	560	620	712
I	576	640	676	740	880
J	345	380	393	423	468
ØK	36	36	48	48	60
SW	27	27	36	36	46
L	35	35	55	55	62
M	M8	M8	M12	M12	M12
Actuator connection					
DIN / ISO	F14	F14	F16	F16	F16
ØP	140	140	165	165	165
ØR	18	18	22	22	22
Weight in kg	On Request				

Dimensions with latching lever



Lever design:

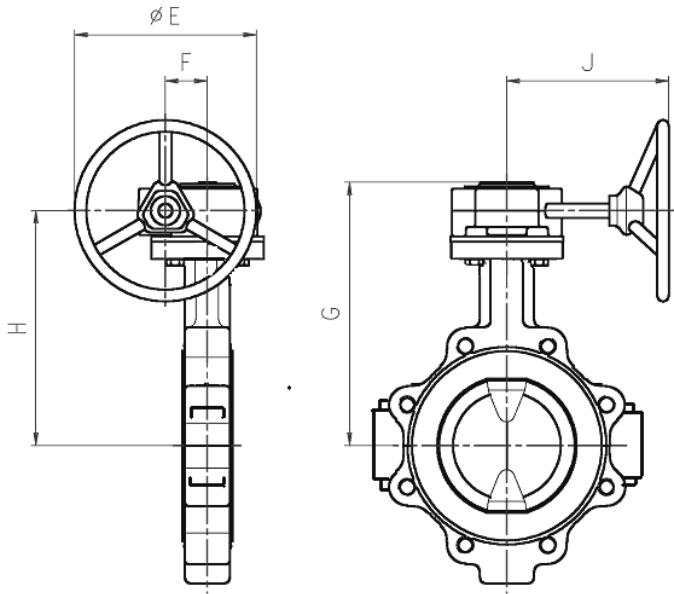
Lever: ENJS 1049 (GGG 40.3); zinc - phosphate coated
 Notch plate: 1.4571
 Screws: A4 - 70
 Nuts: A4

Dimensions in mm

DN NPS	50 2	65 2.5	80 3	100 4	125 5	150 6	200 8
A	173	186	192	208	225	245	301
B	356	356	356	356	356	432	432
C	134	134	134	134	134	134	134
D	89	89	89	89	89	89	89
Weight in kg	8.5	9	9.5	11.5	14.0	17.5	27.5

Dimensions with gear

DN 50 – 300, NPS 3 – 12

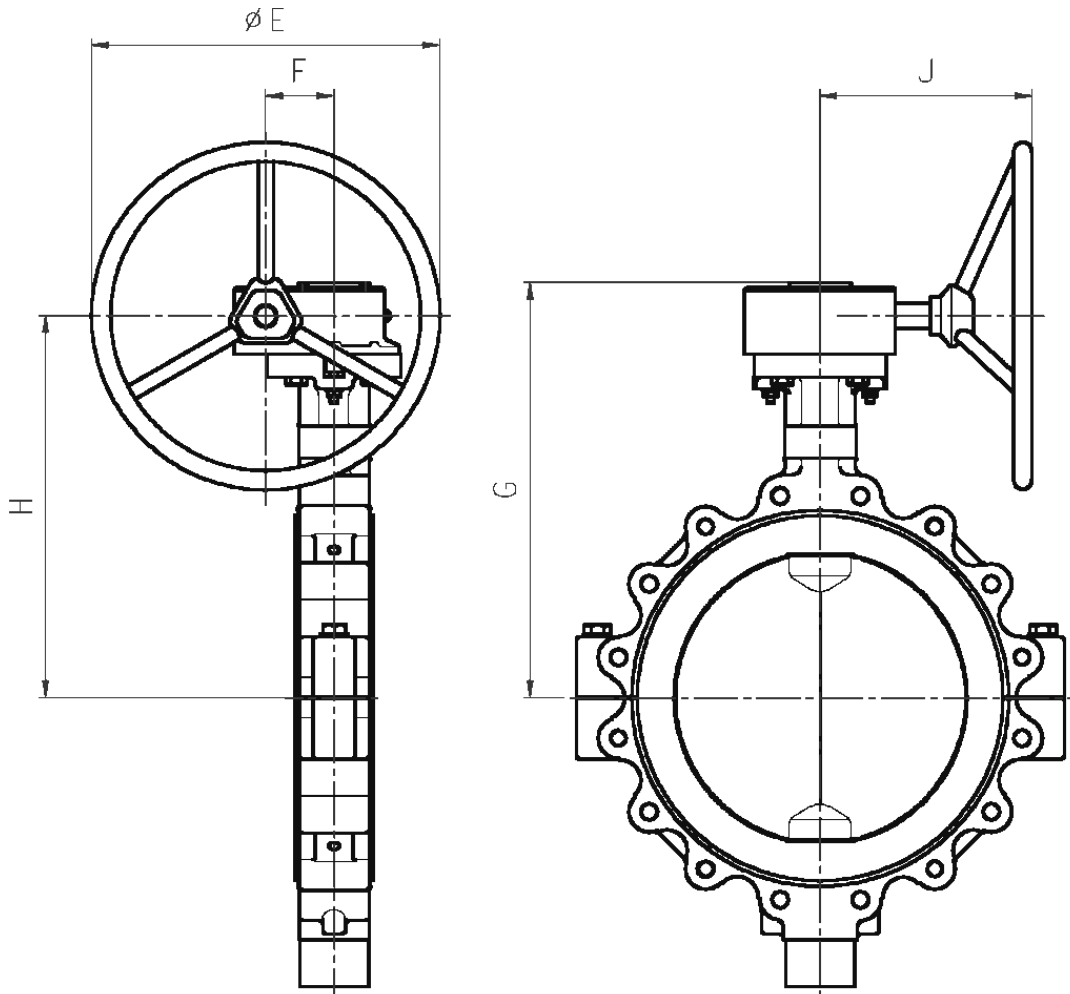


Gear designs:

Standard: Alu-Gear (aluminium-molded, chromed)
Screws: A4-70;
Wheel: EN 10025 (1.0038), powder coated

Dimensions in mm

DN NPS	50 2	65 2.5	80 3	100 4	125 5	150 6	200 8	250 10	300 12
ØE	125	125	125	125	125	203	203	203	203
F	38.5	38.5	38.5	38.5	38.5	46.5	60	60	60
G	188	201	207	223	241	260	289	314	401
H	163	173	179	196	211	228	257	283	369
J	134	134	134	134	134	180	205.5	205.5	205.5
Weight in kg	8	8.5	9	11	13.5	17.5	29.3	36	58

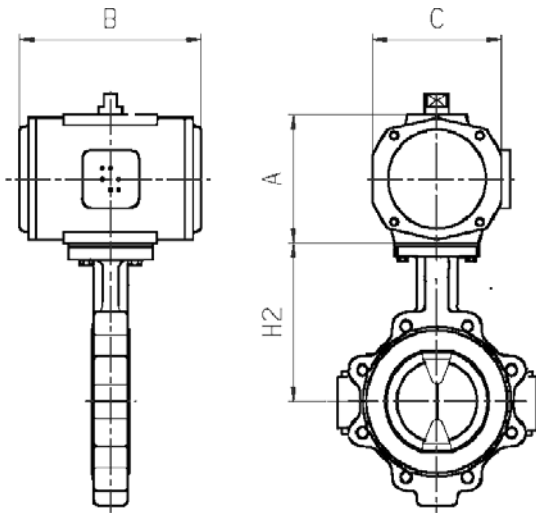


Dimensions in mm

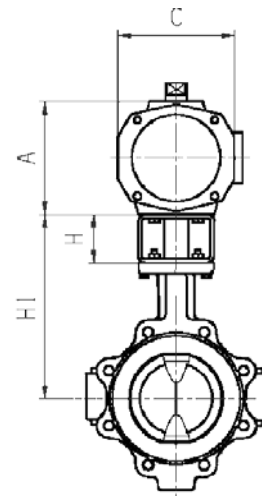
DN NPS	350 14	400 16	450 18	500 20	600 24
ØE	457	457	457	457	610
F	66.7	66.7	89.5	89.5	89.5
G	498	533	563.5	593.5	653.5
H	459	494	520	550	610
J	223	223	278	278	310
Weight in kg (inkl. MG)	112	136	194	210	277

Dimensions with actuator

Direct mounting



With bracket and coupling



Single acting pneumatic actuators

DN	A	B	C	H1	H2	H	Direct mounting
50	143	360	128	213	133	80	Yes
80	143	360	128	232	152	80	Yes
100	143	360	128	248	168	80	Yes
125	143	360	128	265	185	80	Yes
150	181	387	173	279	199	80	Yes
200	259	517	231	318	N/A	90	No
250	259	517	231	344	N/A	90	No
300	259	517	231	430	N/A	90	No

DN65 NPS21/2 on request

Double acting pneumatic actuators

DN	A	B	C	H1	H2	H	Direct mounting
50	93	180	86	193	133	60	Yes
80	93	180	86	212	152	60	Yes
100	105	199	98	228	166	60	Yes
125	118	221	108	247	184	60	Yes
150	143	283	128	279	198	80	Yes
200	181	305	173	308	226	80	Yes
250	181	305	173	334	254	80	Yes
300	181	305	173	368	288	80	Yes

DN65 NPS21/2 on request

These dimensions refer to standard pneumatic actuators with 4 bar pressure. Please be aware that these data can therefore only be used for general actuator sizing purposes within piping systems. Actuator sizing above DN 300 on request.



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