

Wafer Type



Technical Data

General Product Information

Description	: GVC wafer type bonded vulcanised liner butterfly valve with centric disc, top and bottom heavy duty centering lugs
Design Code	: EN 593 - 2004
Size Range	: DN 40 - DN 1000 (Larger sizes on request)
Pressure Classes	: DIN PN 10, 16, ASME 150 (PN 25 on request)
Pressure & Temp.	: DIN PN 10 = 10 barg NBR = -10 to +90°C DIN PN 16 = 16 barg EPDM = -30 to +130°C ANSI 150 = 19 barg FPM = -10 to +200°C
Operation	: ISO 5211 top flange for direct mount of; <ul style="list-style-type: none">• Hand lever• Gearbox• Pneumatic actuator• Electric actuator• Hydraulic actuator



Wafer Type
Series 110

Design

Process Connections:	Suitable for mounting between flanges acc. to EN 1092 - PN 10/16, ASME B16.5 - 150
Face to Face	: EN 558-1 Basic series 20 ISO 5752 Basic Series 20 API 609 Table 1 (Category A Valves)
Liner	: Elastomeric bonded liner vulcanized to body Non-collapsible Non-replaceable Bi-directional tight shut-off
Shaft Seal Design	: Primary and secondary shaft seal system within liner
Shaft	: DN 50-DN 300 with 2-pc shaft construction DN > DN 300 with 1-pc shaft construction
Bearings	: Bearings vulcanized to liner

Valve Testing

Valves have been tested and found acceptable in compliance with the following standards

Shell strength	: Test P10 - EN 12266-1 API 598
Shell tightness	: Test P11 - EN 12266-1 API 598
Seat tightness	: Test P12 - EN 12266-1 Rate A API 598
Operability	: Test F20 - EN 12266-2
Anti static design	: Test F21 - EN 12266-2

Additional information

- Suitable for vacuum applications
- Suitable for end of line service (Please consult our engineers)
- On-Off and throttling / regulating applications
- Suitable for high velocity applications up to; 4 m/sec. for liquids and 30 m/sec. for gasses
- Marking EN 19 - 2002
- Material and Test certification, EN 10204 - 2.2, 3.1 and 3.2
- Special coating systems available (Off-shore coating etc.)



The Bonded Liner Concept

Top and Bottom Shaft

- DN ≤ 300 2 piece system
- DN > 300 1 piece system
- High accuracy polished material
- ISO fit system
- High strength stainless steel
- Square shaft end with position indication
- Available in various materials

EN ISO 5211 Top Flange

for Direct Mount of

- Hand levers
- Gear boxes
- Pneumatic actuators
- Electric actuators
- Hydraulic actuators

Body

- Standard EN JS1030 Nodular Cast Iron body, painted in RAL 7036 (60 µm 2 layer coating)
- Certified material from Maritime classification societies approved foundries
- Extreme High Strength body, during vulcanization body is exposed to internal pressures of up to 100 barg
- Extra reinforced centering lugs for centering and end of line service
- Easy to mount, mount and forget

Bonded Liner

- High accuracy bonded liner fully vulcanized to body
- Vulcanization in precision machined transfer molding tools
- Repeatable accurate liner dimensions
- Reliable low torque figures
- No corrosion between liner and body
- No flange gasket required
- No rolling up of liner
- Long life liner
- Non collapsible, stretch resistant, blow out proof liner
- Suitable for end of line service
- Suitable for vacuum and high fluid velocity applications
- Suitable for dry service
- Available in various materials

Additional Support

- Preventing shaft distortion and ensuring low torque values
- Preventing foreign matter from entering the valve

Top and Bottom Bearings

- Tin Bronze high accuracy bearings
- Vulcanized to liner
- Self lubricating
- ISO fit system
- Perfect alignment of valve shaft

Precision Pin(s)

- High accuracy polished pin(s)
- Press fitted in a blind hole, no leakage over pin
- Vibration proof
- Shaft to disc connection
- Available in various materials

Disc

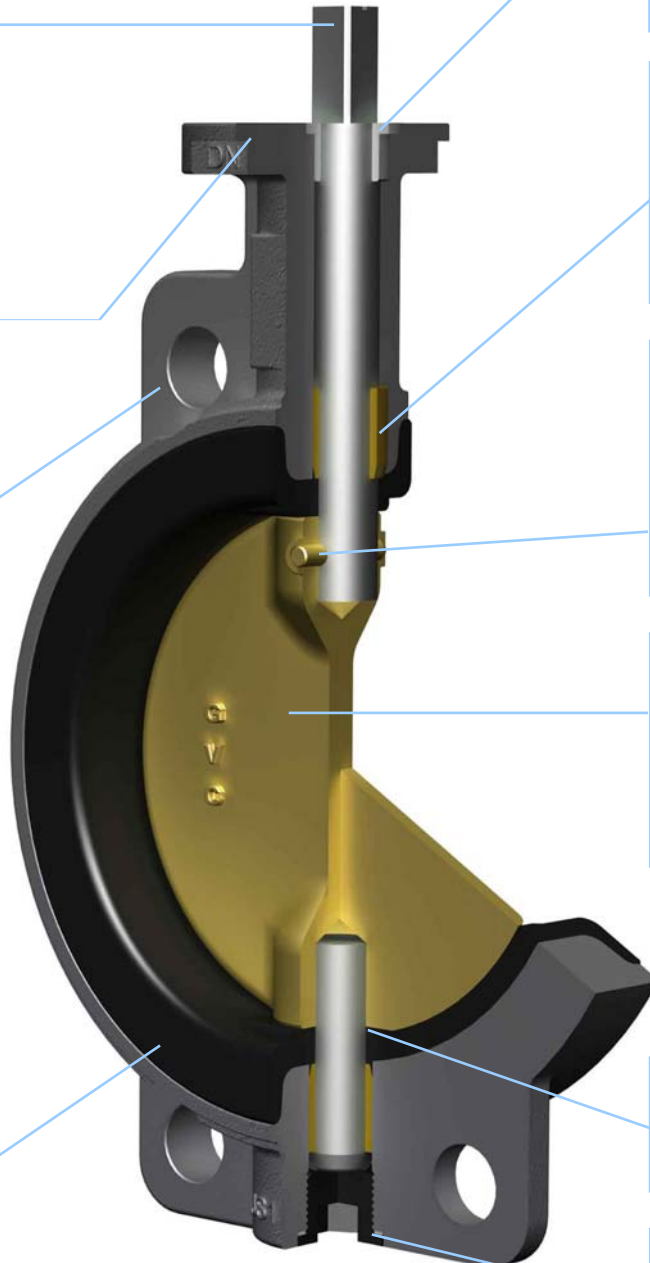
- Streamlined disc for low pressure loss in fully open position
- Precision machined
- Bubble tight shut off
- Low torque

Shaft Sealing System

- Top and bottom shaft sealing with primary and secondary sealing system

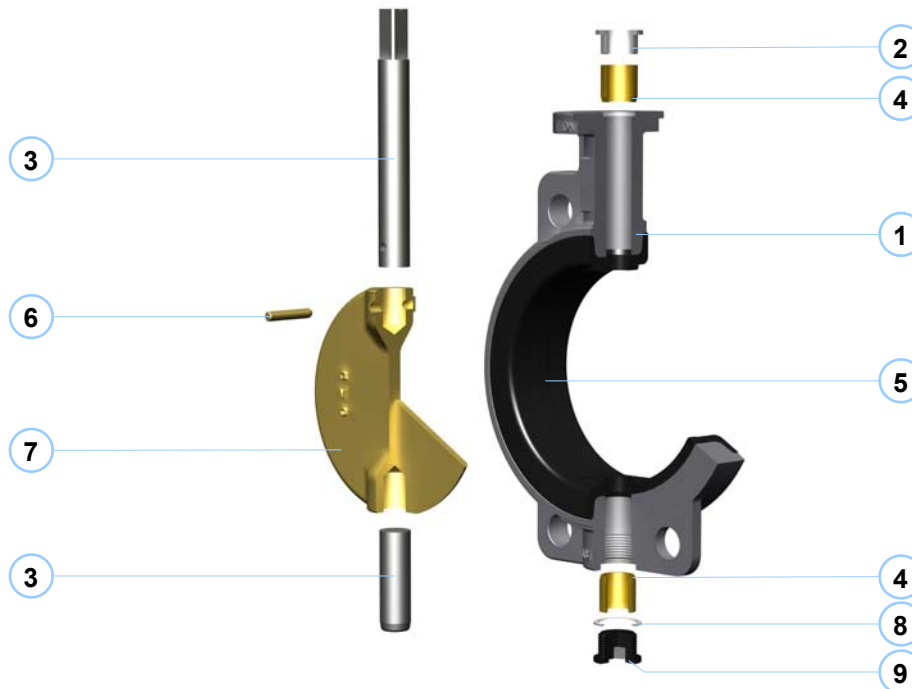
Plug and Gasket

- Bottom shaft support
- Safety sealing system



The “Long Life Butterfly Valve”

Materials

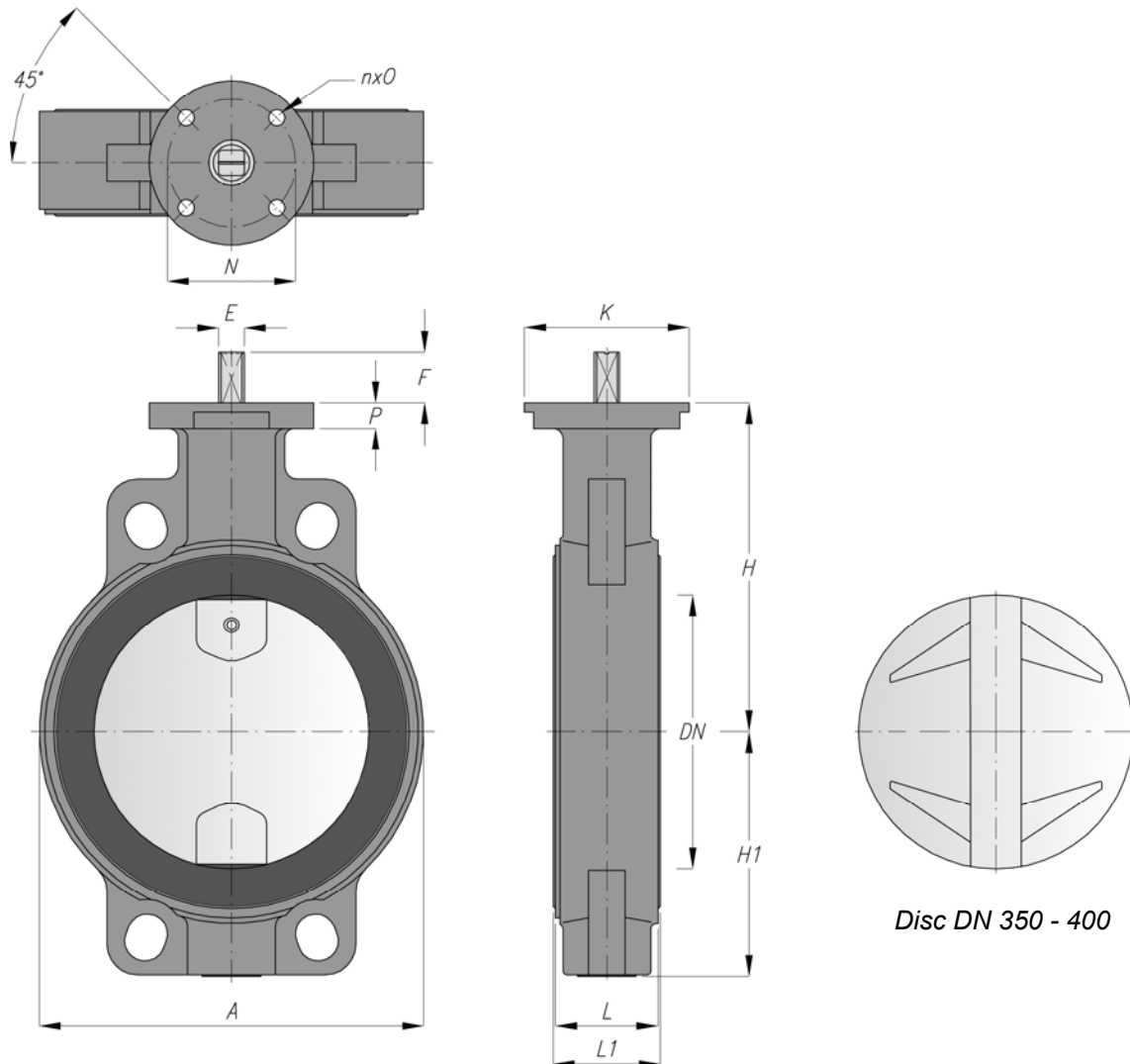


No	Part	Material	Name	Number	Standard	Former	W. Nr.	Note
1	Body	Nodular Cast Iron Cast Steel Cast Stainless Steel Cast Aluminium Bronze Cast Low Zinc Bronze	EN-GJS-400-15 A216 Grade WCB A351 Grade CF8M CuAl10Fe5Ni5-C G-CuSn10Zn	JS1030 CC333G	EN 1563 ASTM A216 ASTM A351 EN 1982 DIN 1705	GGG-40 BS 1400-AB2 Rg10	0.7040 1.0619 1.4408 2.0976 2.1086	A+B C C C C
2	Support	Polyamide	PA66					A+B
3	Shaft	Stainless Steel Duplex Stainless Steel Monel K500® Aluminium Bronze	X39CrMo 17-1 X2CrNiMoN22-5-3 NA 18 UNS C 63000		EN 10088 ASTM A276 BS 3076 ASTM B150	X35CrMo17	1.4122 1.4462 2.0966	A+B C C C
4	Bearing	Bronze	CuSn7ZnPb	CC493K	EN 1982		2.1090	A+B
5	Liner	Elastomeric	NBR EPDM FPM					A B C
6	Pin	Stainless Steel Stainless Steel Monel K500® Aluminium Bronze	X39CrMo 17-1 X2CrNiMo17-12-2 NA 18 UNS C 63000		EN 10088 EN 10088 BS 3076 ASTM B150	X35CrMo17	1.4122 1.4404 2.0966	C B C A
7	Disc	Nodular Cast Iron (Rilsan) Aluminium Bronze Stainless Steel Duplex Stainless Steel Monel K400®	EN-GJS-400-15 CuAl10Fe5Ni5-C A743 Grade CF8M X2CrNiMoN22-5-3 A494 M35	JS1030 CC333G	EN 1563 EN 1982 ASTM A743 ASTM A276 ASTM A494	GGG-40 BS 1400-AB2	0.7040 1.4408 1.4462	C A B C C
8	Gasket	Non asbestos						A+B
9	Plug	Galvanized Steel						A+B

A = Standard stock material combination (for Marine applications)
B = Standard stock material combination (for General Industry applications)
C = Upon request

Other materials on request

Dimensions DN 50 - 400 (PN10, 16 and ANSI 150#)

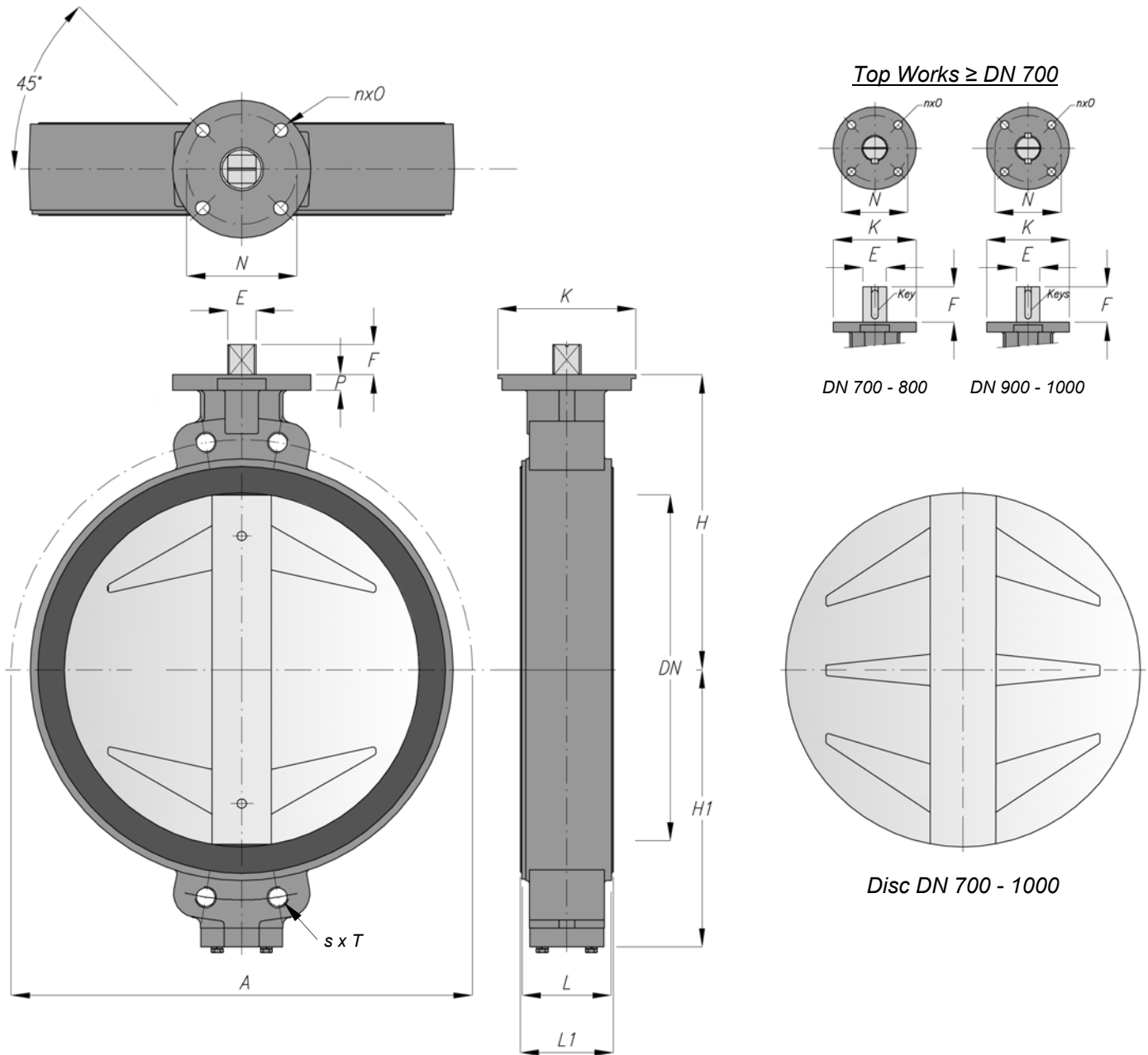


Dimensions DN 50 - 400, **DIN PN10, DIN PN16 and ANSI 150** [mm]

DN*	øA	□E	F	H	H1	øK	L	L1	N	ISO	nxO	P	Weight
50	90	10	25	118	67	90	43	44.8	70	F07	4 x ø9	12	2.8 Kg
65	105	10	25	126	74	90	46	47.8	70	F07	4 x ø9	12	3.3 Kg
80	124	10	25	133	82	90	46	47.8	70	F07	4 x ø9	14	3.6 Kg
100	150	12	25	147	100	90	52	54.0	70	F07	4 x ø9	14	5.0 Kg
125	182	12	25	160	112	90	56	58.2	70	F07	4 x ø9	14	7.2 Kg
150	210	16	25	180	134	90	56	58.4	70	F07	4 x ø9	14	9.2 Kg
200	265	16	25	204	159	90	60	63.0	70	F07	4 x ø9	14	13.2 Kg
250	315	24	30	245	195	125	68	71.0	102	F10	4 x ø11	15	20.0 Kg
300	371	24	30	270	220	125	78	81.5	102	F10	4 x ø11	15	29.4 Kg
350	434	27	29	315	282	150	78	81.5	125	F12	4 x ø14	20	43.1 Kg
400	488	27	29	350	307	150	102	105.6	125	F12	4 x ø14	20	69.9 Kg

* Size DN 40 available on request

Dimensions DN 450 - 1000 (PN 10)

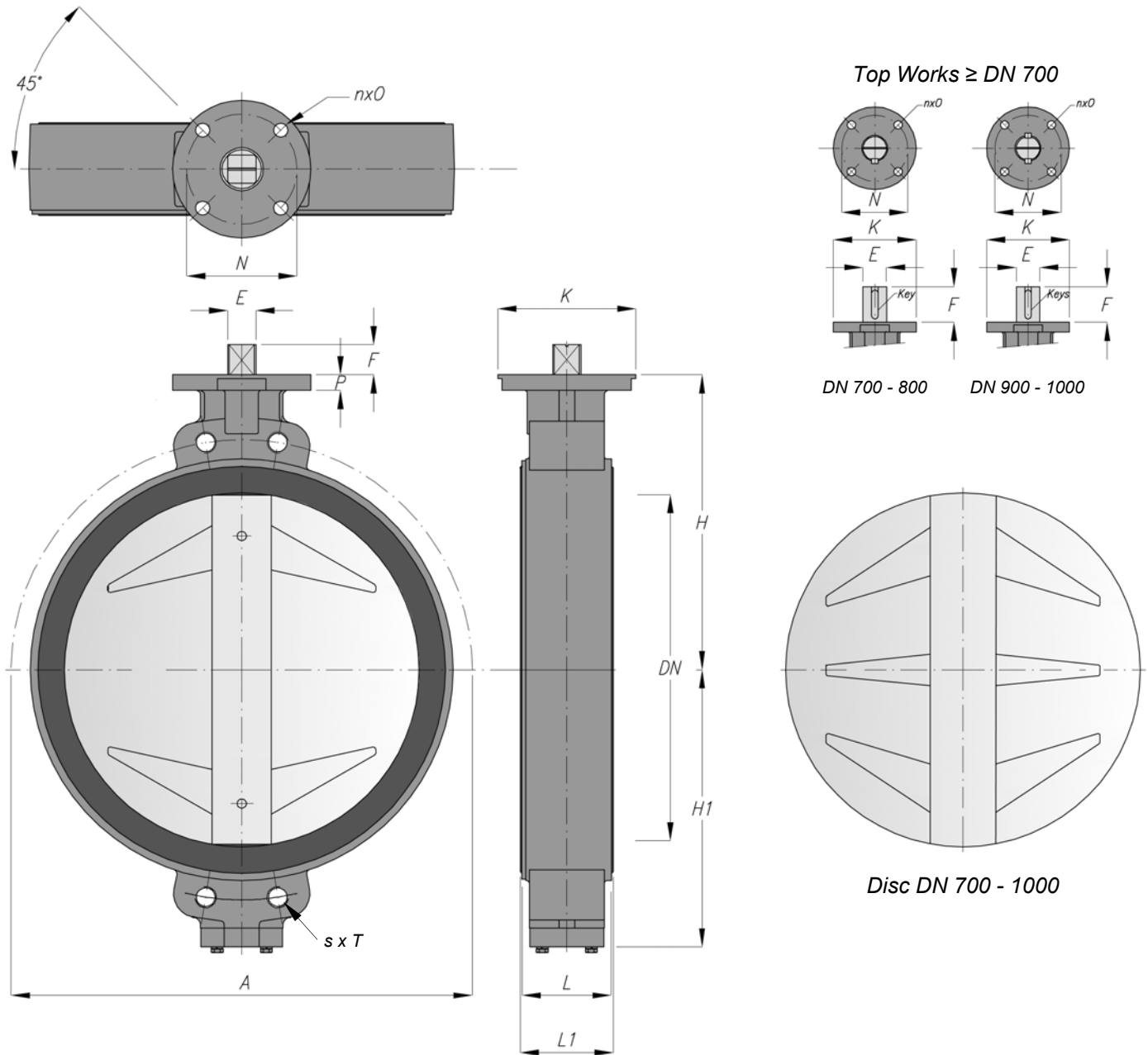


Dimensions DN 450 - 1000, **DIN PN10** [mm]

DN	øA	E*	Key	F	H	H1	øK	L	L1	N	nxO	ISO	P	R	s x T	Weight
450	532	□36	--	38	375	352	175	114	117.8	140	4xø18	F14	20	565	4xM24 _(through)	98 Kg
500	585	□36	--	38	415	387	175	127	131.0	140	4xø18	F14	20	620	4xM24x36	128 Kg
600	685	□46	--	48	465	452	210	154	158.2	165	4xø22	F16	25	725	4xM27x40	203 Kg
700	805	ø70	1x 20x12x100	110	555	502	210	165	169.4	165	4xø22	F16	25	840	4xM27x36	On request
800	910	ø80	1x 22x14x110	120	620	557	300	190	194.6	254	8xø18	F25	30	950	4xM30x45	On request
900	1010	ø90	2x 25x14x110	120	675	622	300	203	207.8	254	8xø18	F25	30	1050	4xM30x45	On request
1000	1110	ø90	2x 25x14x110	120	740	672	300	216	221.0	254	8xø18	F25	30	1160	4xM33x50	On request

* Stem DN 450 - DN 600 with square (90°) and DN 700 - DN 1000 cylindrical with key(s)

Dimensions DN 450 - 1000 (PN 16)



Dimensions DN 450 - 1000, **DIN PN16** [mm]

DN	øA	E*	Key	F	H	H1	øK	L	L1	N	nxO	ISO	P	R	s x T	Weight
450	532	□36	--	38	375	352	175	114	117.8	140	4xø18	F14	20	585	4xM27 (through)	97 Kg
500	585	□36	--	38	415	387	175	127	131.0	140	4xø18	F14	20	650	4xM30x40	127 Kg
600	685	□46	--	48	465	452	210	154	158.2	165	4xø22	F16	25	770	4xM33x47	204 Kg
700	805	ø80	1x 22x14x110	120	555	502	300	165	169.4	254	8xø18	F25	30	840	4xM33x47	On request
800	910	ø100	1x 28x16x110	120	620	557	300	190	194.6	254	8xø18	F25	30	950	4xM33x47	On request
900	1010	ø110	2x 28x16x110	120	675	622	300	203	207.8	254	8xø18	F25	30	1050	4xM36x52	On request
1000	1110	ø120	2x 32x18x140	160	740	672	300	216	221.0	254	8xø18	F25	30	1170	4xM39x55	On request

* Stem DN 450 - DN 600 with square (90°) and DN 700 - DN 1000 cylindrical with key(s)

“Everything You Need to Size”

Torque Figures

Torque

Torque figures as mentioned in the torque table are;

- Initial break away values in Nm (Newton Meters)
- **Excluding** any safety factor
- For valves that are operated at least once per month
- Temperature 0° to 50°C

Safety factor (sf)

For sizing and safe operation purposes the specified torque values need to be multiplied with the following minimum safety factors;

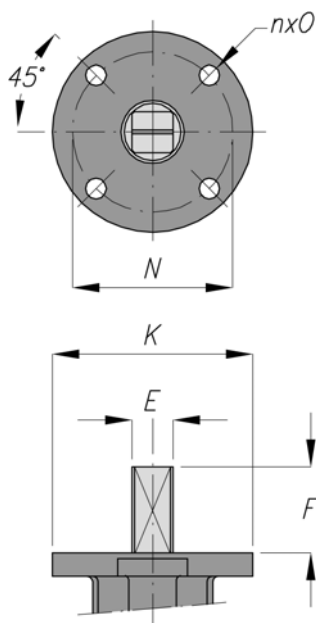
- For liquid and lubricant media **sf = 1.20**
- For powdery (non-lubricant) media **sf = 1.55**
- For dry gasses and high viscous media **sf = 1.45**

Service

For assistance in sizing and dimensioning actuators-valve combinations please contact our Engineers. We have wide experience in sizing Pneumatic, Electric and Hydraulic actuators.

DN	PN 10			PN 16				PN 25
	ΔP 2.5 bar	ΔP 6.0 bar	ΔP 10 bar	ΔP 2.5 bar	ΔP 6.0 bar	ΔP 10 bar	ΔP 16 bar	ΔP 25 bar
50	--	--	--	6.9	7.6	9.9	13.0	16.0
65	--	--	--	9.9	10.7	13.0	14.5	20.8
80	--	--	--	13.0	15.2	18.3	22.8	34.4
100	--	--	--	21.3	16.0	22.8	28.9	49.6
125	--	--	--	29.7	30.4	38.0	53.2	88.0
150	--	--	--	45.6	53.2	62.4	83.6	144.0
200	--	--	--	91.2	106.4	121.6	144.4	196.0
250	144.5	167.5	190.0	228.0	243.5	213.0	281.5	392.0
300	205.5	236.0	266.0	319.5	342.0	312.0	395.5	592.0
350	236.0	274.0	312.0	365.0	403.0	410.5	593.0	--
400	350.0	410.5	486.5	532.0	593.0	585.5	851.5	--
450	479.0	562.5	646.0	730.0	836.0	828.5	1087.0	--
500	638.5	737.5	836.0	988.0	1064.0	1102.5	1368.0	--
600	1064.0	1216.0	1444.0	1596.0	1824.0	2052.0	2356.0	--
700	1824.0	2128.0	2432.0	2812.0	3116.0	2736.0	3952.0	--
800	2508.0	2888.0	3344.0	3800.0	4180.0	3785.0	5320.0	--
900	3420.0	4104.0	4864.0	5168.0	5852.0	5108.0	7600.0	--
1000	4408.0	5244.0	6156.0	6688.0	7524.0	7752.0	9880.0	--

Sizing Dimensions



DN	E	F	øK	N	ISO	nxO
50	□10	25	90	70	F07	4 x ø9
65	□10	25	90	70	F07	4 x ø9
80	□10	25	90	70	F07	4 x ø9
100	□12	25	90	70	F07	4 x ø9
125	□12	25	90	70	F07	4 x ø9
150	□16	25	90	70	F07	4 x ø9
200	□16	25	90	70	F07	4 x ø9
250	□24	30	125	102	F10	4 x ø12
300	□24	30	125	102	F10	4 x ø12
350	□27	29	150	125	F12	4 x ø14
400	□27	29	150	125	F12	4 x ø14
450	□36	38	175	140	F14	4 x ø18
500	□36	38	175	140	F14	4 x ø18
600	□46	48	210	165	F16	4 x ø22
700	DN 700 - DN 1000 butterfly valves have cylindrical stems with key(s), dimensions depend on the applicable pressure class. Please check the dimensions table in this brochure.					
800						
900						
1000						

KV Values

Opening Angle Disc								
DN	20°	30°	40°	50°	60°	70°	80°	90°
50	0.88	3.37	13.8	34.6	56.3	87.0	125	170
65	1.46	5.35	22	55	90	138	198	270
80	2.47	10.2	40.4	102	167	256	368	505
100	4.05	16.1	63.4	159	263	406	581	795
125	7.15	29.8	117	293	481	744	1064	1460
150	10.5	41.9	167	418	691	1068	1529	2095
200	21.0	81.8	329	822	1367	2096	3000	4110
250	25.6	101	402	1005	1658	2563	3669	5025
300	34.9	140	559	1394	2302	3558	5092	6975
350	42.4	152	678	1516	2501	3866	5533	7580
400	55.2	201	885	2008	3313	5119	7329	10040
450	70.6	257	1118	2568	4237	6548	9372	12840
500	86.3	320	1380	3197	5275	8152	11669	15985
600	124	466	1986	4663	7694	11891	17067	23315
700	157	891	2528	6321	10429	16118	23071	31605
800	194	774	3096	7740	12771	19737	28251	38700
900	259	1038	4828	10380	17127	26469	37844	51901
1000	324	1295	5179	12948	21365	33018	47261	64742

KV-values

KV values as mentioned in the KV-Value Table are;

- German KV values (m³/hour water of 20°C at a ΔP of 1 bar over the valve)
- Maximum allowable flow velocities;
 - 4 m/sec. for liquids
 - 30 m/sec. for gasses
- Make sure there is no cavitation

Calculations

Pressure drop (P1-P2) and/or flow (Q) calculations can be performed using the formula's below.

You can calculate pressure drop and/or flow with a fully opened disc when the valve is used in on-off applications or you can calculate the pressure drop and/or flow in above intermediate disc positions when the valve is used in throttling and regulating applications.

For Liquids:

$$KV = Q \cdot \sqrt{\frac{\rho / \rho_0}{P_1 - P_2}}$$

For Gasses (Where P1 < 2 · P2):

$$KV = \frac{Q}{457} \cdot \sqrt{\frac{G \cdot T_i}{(P_1 - P_2) P_1}}$$

Where

Q	=	Flow	[m ³ /hr]
ρ	=	Specific Gravity	[Kg/m ³]
ρ ₀	=	Specific Gravity of water under standard conditions	(ρ ₀ = 1000 kg/m ³ at 288K)
P ₁	=	Inlet Pressure	[Barg]
P ₂	=	Outlet Pressure	[Barg]
G	=	Relative Specific Gravity in relation to air (G = ρ / ρ _{air})	under standard conditions
T _i	=	Inlet Temperature	[K]

Service

For assistance on pressure drop calculations and other belonging matters please contact our Engineers.

The GVC Bonded Liner Valve Range

Series 110



Wafer

- DN 40-1000
- DIN PN 10/16/25
- ANSI 150

Series 140



Lug

- DN 50-1000
- DIN PN 10/16
- ANSI 150

Series 120



Mono Short

- DN 50-400
- DIN PN 10/16
- ANSI 150

Series 150



Flanged

- DN 50-1000
- DIN PN 10/16
- ANSI 150

Series 130



Mono Long

- DN 50-400
- DIN PN 10/16
- ANSI 150



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