Double Flanged Type

Technical Data

General Product Information

Description	:	GVC double flanged type bonded vulcanised liner butterfly valve with centric disc
Design Code	:	EN 593 - 2004
Size Range	:	DN 50 - DN 1000 (Larger sizes on request)
Pressure Classes	:	DIN PN10, DIN PN 16 and ANSI/ASME 150
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; • Hand lever • Gearbox • Pneumatic actuator • Electric actuator • Hydraulic actuator

Design

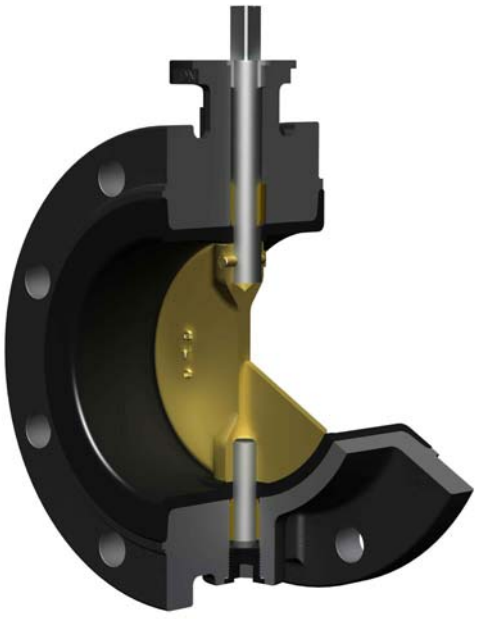
Process Connections:		Suitable for mounting between flanges acc. to EN 1092 - PN 10/16, ASME B16.5 - 150
Face to Face	:	EN 558 Basic series 13 ISO 5752 Basic series 13
Liner	:	Elastomeric bonded liner vulcanized to body Non-collapsible Non-replaceable Bi-directional tight shut-off
Shaft Seal Design	:	Primary and secondary shaft seal system within liner
Shaft	:	DN 40-DN 300 with 2-pc shaft construction DN > DN 300 with 1-pc shaft construction
Bearings	:	Bearings vulcanized to liner

Double Flanged Type
Series 150

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
- On-Off and throttling / regulating applications
- Suitable for high velocity applications up to;
  - 4 m/sec. for liquids
  - 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.)

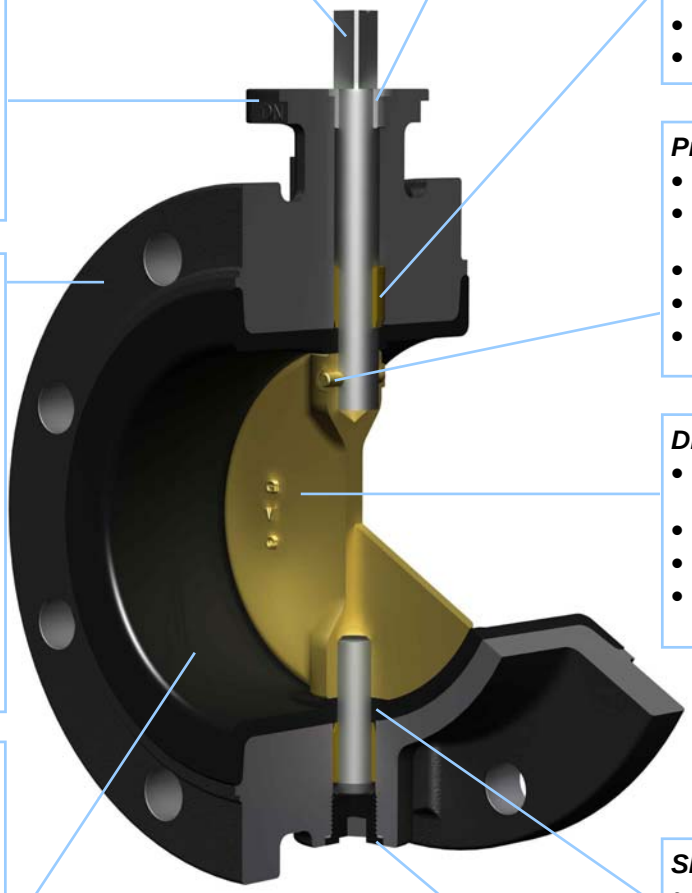
The Bonded Liner Concept

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
- Full flanged process connections
- End of line service
- Easy to mount, mount and forget
- Available in various materials

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

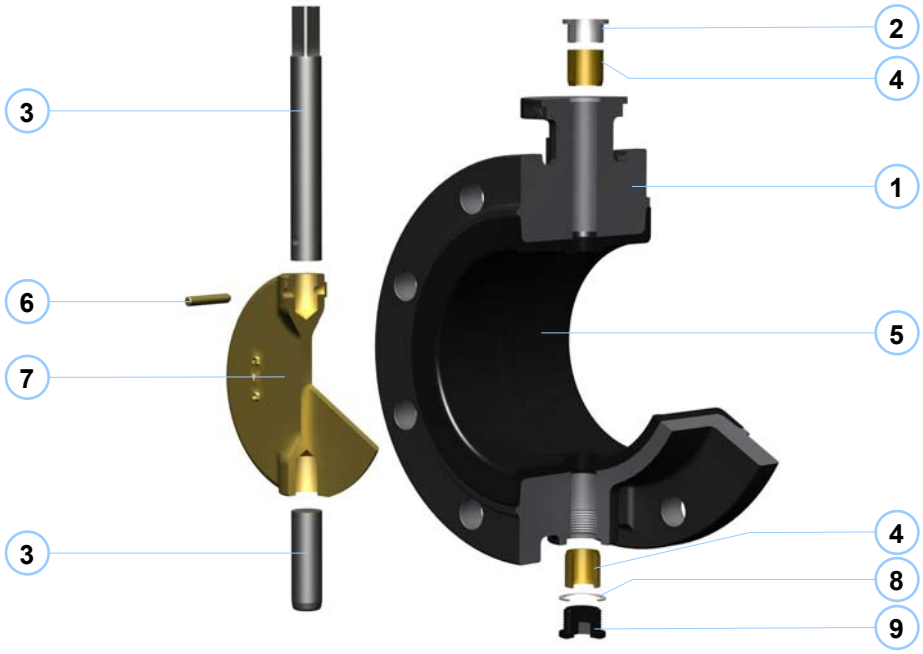
Disc
- Streamlined disc for low pressure loss in fully open position
- Precision machined
- Bubble tight shut off
- Low torque

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

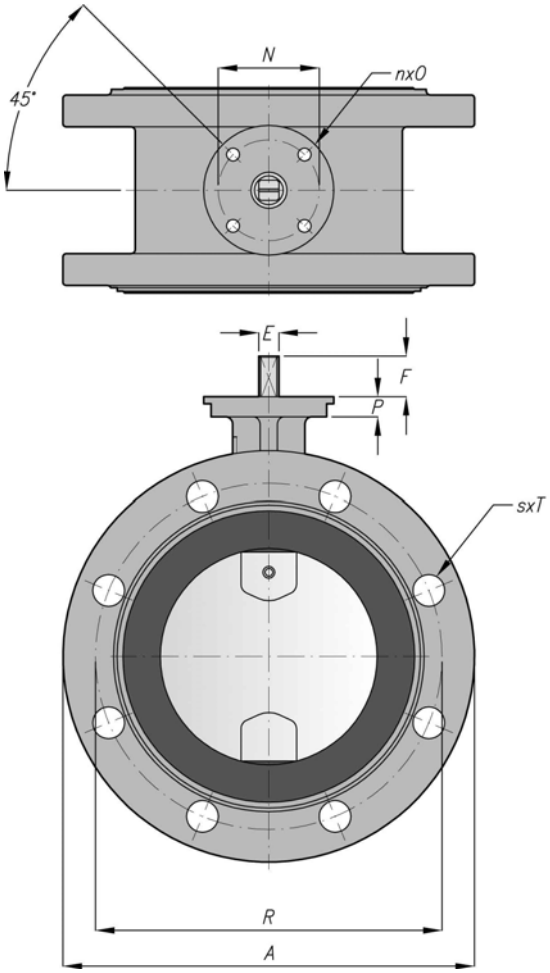


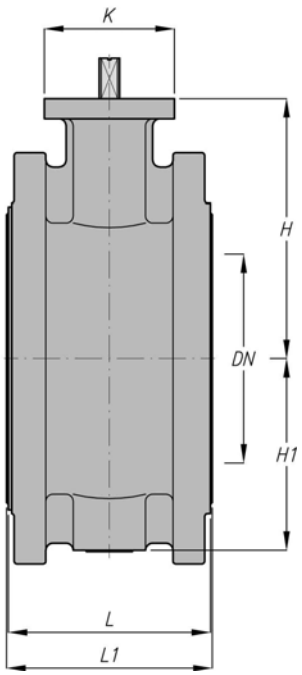
No	Part	Material	Name	Number	Standard	Former	W. Nr.	Note
1	Body	Nodular Cast Iron Cast Steel Cast Stainless Steel Cast Aluminium Bronze Cast Low Zinc Bronze	EN-GJS-400-15 A216 Grade WCB A351 Grade CF8M CuAl10Fe5Ni5-C G-CuSn10Zn	JS1030 CC333G 	EN 1563 ASTM A216 ASTM A351 EN 1982 DIN 1705	GGG-40 BS 1400-AB2 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

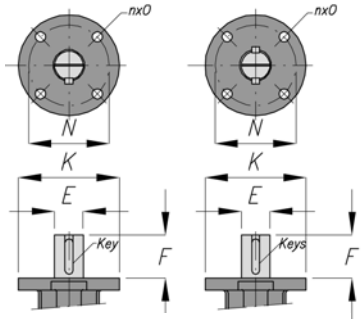
Other materials on request

Dimensions DN 50 - 1000 (PN 10)

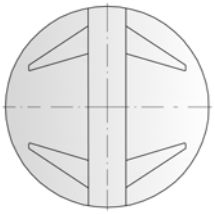




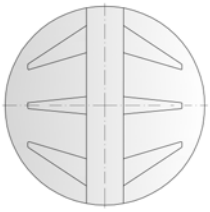
Top Works ≥ DN 700



DN 700 - 800 *DN 900 - 1000*



Disc DN 350 - 600

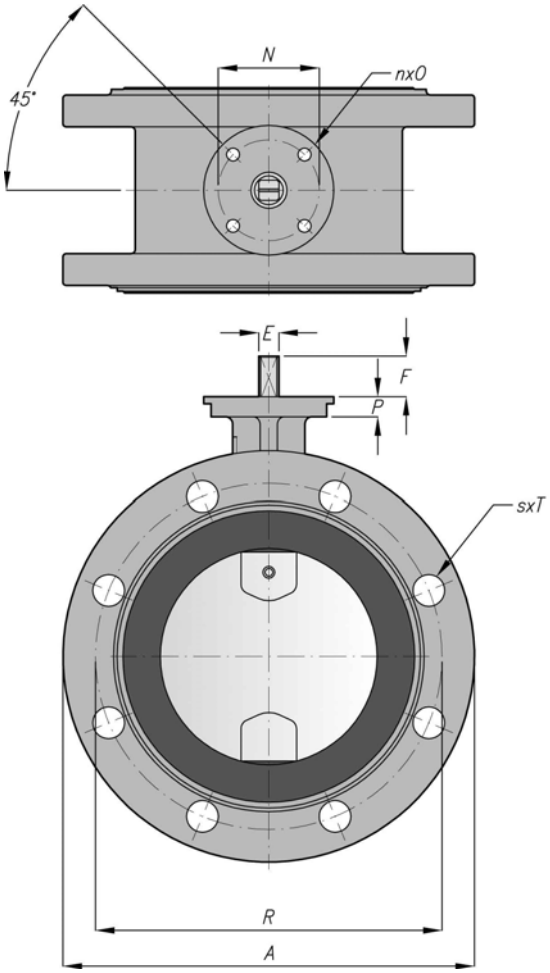


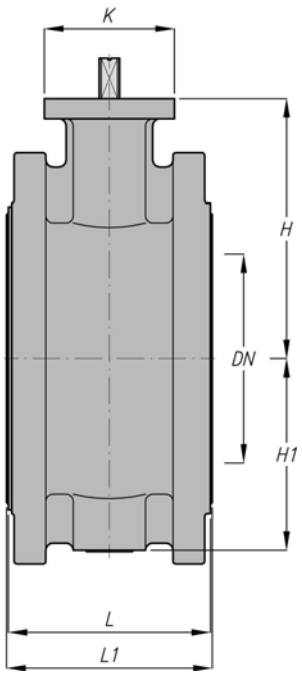
Disc DN 700 - 1000

Dimensions DN 50 - 1000, **DIN PN10** [mm]

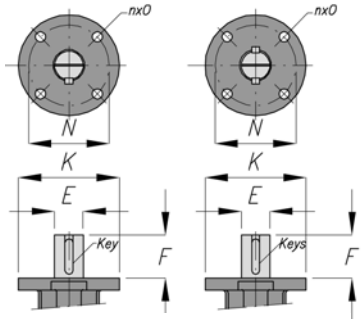
DN	øA	□E	øE	Key(s)		F	H	H1	øK	L	L1	N	ISO	nxO	P	R	s x T	Weight
50	165	10	--	--	--	25	118	67	90	108	109.8	70	F07	4xø9	12	125	4 x ø18	6.8 Kg
65	185	10	--	--	--	25	126	74	90	112	113.8	70	F07	4xø9	12	145	4 x ø18	8.6 Kg
80	200	10	--	--	--	25	133	82	90	114	115.8	70	F07	4xø9	14	160	8 x ø18	9.8 Kg
100	228	12	--	--	--	25	147	100	90	127	129.0	70	F07	4xø9	14	180	8 x ø18	13.3 Kg
125	254	12	--	--	--	25	160	112	90	140	142.2	70	F07	4xø9	14	210	8 x ø18	17.0 Kg
150	285	16	--	--	--	25	180	134	90	140	142.4	70	F07	4xø9	14	240	8 x ø18	20.8 Kg
200	343	16	--	--	--	25	204	172	90	152	155	70	F07	4xø9	14	295	8 x ø22	31.4 Kg
250	405	24	--	--	--	30	245	203	125	165	168	102	F10	4xø11	15	350	12 x ø22	46.3 Kg
300	445	24	--	--	--	30	270	223	125	178	181.2	102	F10	4xø11	15	400	12 x ø22	51.1 Kg
350	505	27	--	--	--	29	315	282	150	190	193.4	125	F12	4xø14	20	460	16 x ø22	80.0 Kg
400	565	27	--	--	--	29	350	307	150	216	219.6	125	F12	4xø14	20	515	16 x ø26	101.0 Kg
450	615	36	--	--	--	38	375	352	175	222	225.8	140	F14	4xø18	20	565	20 x ø26	123.2 Kg
500	670	36	--	--	--	38	415	387	175	229	233.0	140	F14	4xø18	20	620	20 x ø26	170.0 Kg
600	780	46	--	--	--	48	465	452	210	267	271.2	165	F16	4xø22	25	725	20 x ø30	231.0 Kg
700	895	--	70	1 pc	20x12x100	110	555	495	210	292	296.4	165	F16	4xø22	25	840	24 x ø30	On request
800	1015	--	80	1 pc	22x14x110	120	620	550	300	318	322.6	254	F25	8xø18	30	950	24 x ø33	On request
900	1115	--	90	2 pcs	25x14x110	120	675	620	300	330	334.8	254	F25	8xø18	30	1050	28 x ø33	On request
1000	1230	--	90	2 pcs	25x14x110	120	740	670	300	410	415.0	254	F25	8xø18	30	1160	28 x ø36	On request

Dimensions DN 50 - 1000 (PN 16)

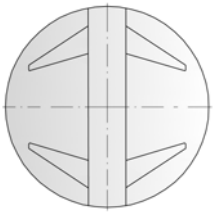




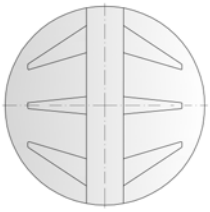
Top Works ≥ DN 700



DN 700 - 800 *DN 900 - 1000*



Disc DN 350 - 600

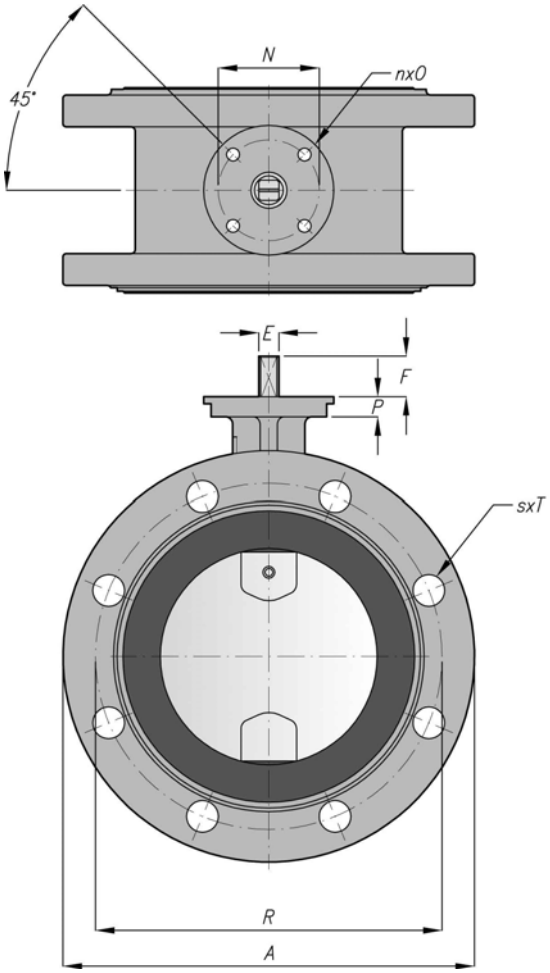


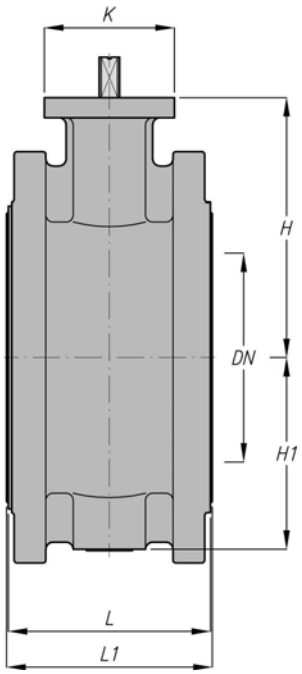
Disc DN 700 - 1000

Dimensions DN 50 - 1000, **DIN PN10** [mm]

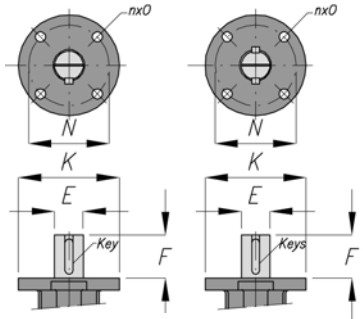
DN	øA	□E	øE	Key(s)		F	H	H1	øK	L	L1	N	ISO	nxO	P	R	s x T	Weight
50	165	10	--	--	--	25	118	67	90	108	109.8	70	F07	4xø9	12	125	4 x ø18	6.8 Kg
65	185	10	--	--	--	25	126	74	90	112	113.8	70	F07	4xø9	12	145	4 x ø18	8.6 Kg
80	200	10	--	--	--	25	133	82	90	114	115.8	70	F07	4xø9	14	160	8 x ø18	9.8 Kg
100	228	12	--	--	--	25	147	100	90	127	129.0	70	F07	4xø9	14	180	8 x ø18	13.3 Kg
125	254	12	--	--	--	25	160	112	90	140	142.2	70	F07	4xø9	14	210	8 x ø18	17.0 Kg
150	285	16	--	--	--	25	180	134	90	140	142.4	70	F07	4xø9	14	240	8 x ø18	20.8 Kg
200	343	16	--	--	--	25	204	172	90	152	155	70	F07	4xø9	14	295	12 x ø22	31.4 Kg
250	405	24	--	--	--	30	245	203	125	165	168	102	F10	4xø11	15	355	12 x ø26	46.3 Kg
300	482	24	--	--	--	30	270	241	125	178	181.2	102	F10	4xø11	15	410	12 x ø26	68.8 Kg
350	533	27	--	--	--	29	315	282	150	190	193.4	125	F12	4xø14	20	470	16 x ø26	95.0 Kg
400	597	27	--	--	--	29	350	307	150	216	219.6	125	F12	4xø14	20	525	16 x ø30	120.5 Kg
450	640	36	--	--	--	38	375	352	175	222	225.8	140	F14	4xø18	20	585	20 x ø30	150.0 Kg
500	715	36	--	--	--	38	415	387	175	229	233.0	140	F14	4xø18	20	650	20 x ø33	210.0 Kg
600	840	46	--	--	--	48	465	452	210	267	271.2	165	F16	4xø22	25	770	20 x ø36	291.0 Kg
700	910	--	80	1 pc	22x14x110	120	555	495	300	292	296.4	254	F25	8xø18	30	840	24 x ø36	On request
800	1025	--	100	1 pc	28x16x110	120	620	550	300	318	322.6	254	F25	8xø18	30	950	24 x ø36	On request
900	1112	--	110	2 pcs	28x16x110	120	675	620	300	330	334.8	254	F25	8xø18	30	1050	28 x ø39	On request
1000	1255	--	120	2 pcs	32x18x140	160	740	670	300	410	415.0	254	F25	8xø18	30	1170	28 x ø42	On request

Dimensions DN 50 - 1000 (ANSI 150)

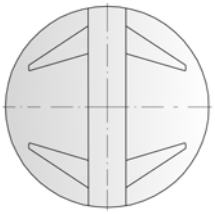




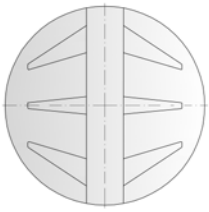
Top Works ≥ DN 700



DN 700 - 800 *DN 900 - 1000*



Disc DN 350 - 600



Disc DN 700 - 1000

Dimensions DN 50 - 1000, **ANSI 150**

DN	øA	□E	øE	Key(s)		F	H	H1	øK	L	L1	N	ISO	nxO	P	R	s x T	Weight
50	165	10	--	--	--	25	118	67	90	108	109.8	70	F07	4xø9	12	120.6	4 x ø19	6.8 Kg
65	185	10	--	--	--	25	126	74	90	112	113.8	70	F07	4xø9	12	139.7	4 x ø19	8.6 Kg
80	200	10	--	--	--	25	133	82	90	114	115.8	70	F07	4xø9	14	152.4	4 x ø19	9.8 Kg
100	228	12	--	--	--	25	147	100	90	127	129.0	70	F07	4xø9	14	190.5	8 x ø19	13.3 Kg
125	254	12	--	--	--	25	160	112	90	140	142.2	70	F07	4xø9	14	215.9	8 x ø22	17.0 Kg
150	285	16	--	--	--	25	180	134	90	140	142.4	70	F07	4xø9	14	241.3	8 x ø22	20.8 Kg
200	343	16	--	--	--	25	204	159	90	152	155	70	F07	4xø9	14	298.4	8 x ø22	31.4 Kg
250	405	24	--	--	--	30	245	195	125	165	168	102	F10	4xø11	15	361.9	12 x ø25	46.3 Kg
300	482	24	--	--	--	30	270	220	125	178	181.2	102	F10	4xø11	15	431.8	12 x ø25	51.1 Kg
350	533	27	--	--	--	29	315	282	150	190	193.4	125	F12	4xø14	20	476.2	12 x ø28	95.0 Kg
400	597	27	--	--	--	29	350	307	150	216	219.6	125	F12	4xø14	20	539.7	16 x ø28	120.5 Kg
450	640	36	--	--	--	38	375	352	175	222	225.8	140	F14	4xø18	20	577.8	16 x ø32	150.0 Kg
500	715	36	--	--	--	38	415	387	175	229	233.0	140	F14	4xø18	20	635.0	20 x ø32	210.0 Kg
600	840	46	--	--	--	48	465	452	210	267	271.2	165	F16	4xø22	25	749.3	20 x ø35	231.0 Kg
700*	927	--	70	1 pc	20x12x100	110	555	502	210	292	296.4	165	F16	4xø22	25	840	28 x ø35	On request
800*	1060	--	80	1 pc	22x14x110	120	620	557	300	318	322.6	254	F25	8xø18	30	950	28 x ø41	On request
900*	1168	--	90	2 pcs	25x14x110	120	675	622	300	330	334.8	254	F25	8xø18	30	1050	32 x ø41	On request
1000*	1829	--	90	2 pcs	25x14x110	120	740	672	300	410	415.0	254	F25	8xø18	30	1160	36 x ø41	On request

* Maximum working pressure for DN 700 - DN1000 is 10 barg

"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;

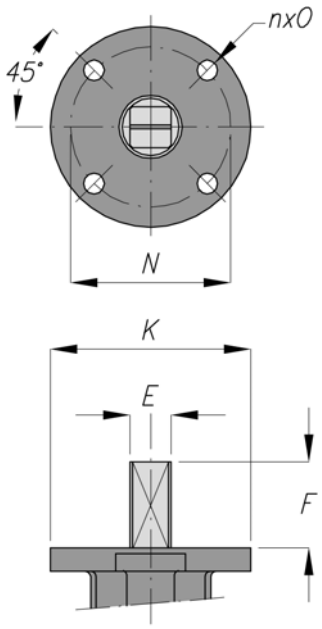
- For liquid and lubricant media sf = 1.20
- For powdery (non-lubricant) media sf = 1.55
- For dry gasses and high viscous media sf = 1.45

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.

	PN 10			PN 16			
DN	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
50	--	--	--	6.9	7.6	9.9	13.0
65	--	--	--	9.9	10.7	13.0	14.5
80	--	--	--	13.0	15.2	18.3	22.8
100	--	--	--	21.3	16.0	22.8	28.9
125	--	--	--	29.7	30.4	38.0	53.2
150	--	--	--	45.6	53.2	62.4	83.6
200	--	--	--	91.2	106.4	121.6	144.4
250	144.5	167.5	190.0	228.0	243.5	213.0	281.5
300	205.5	236.0	266.0	319.5	342.0	312.0	395.5
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:

$$KV = Q \cdot \sqrt{\frac{\rho / \rho 0}{P1 - P2}}$$

For Gasses (Where P1<2·P2):

$$KV = \frac{Q}{457} \cdot \sqrt{\frac{G \cdot Ti}{(P1 - P2)P1}}$$

Where

Q	=	Flow	[m³/hr]
ρ	=	Specific Gravity	[Kg/m³]
ρ0	=	Specific Gravity of water under standard conditions (ρ0 = 1000 kg/m³ at 288K)	
P1	=	Inlet Pressure	[Barg]
P2	=	Outlet Pressure	[Barg]
G	=	Relative Specific Gravity in relation to air (G = ρ / ρ air) under standard conditions	
Ti	=	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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THE VALVE SPECIALIST