Uniwat®







Double offset Butterfly Valves

Series VF791

www.comeval.es

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Codification

Butterfly valve

V	F	7	9	1	P	G	G	N	0	0	0	5	0

V F : UNIWAT butterfly valve identification

BUTTERFLY TYPE	
791	Double flange double eccentric

OPERATION	
R	With worm gear
B	Bare shaft

BODY	
G	Ductile iron JS1030 (EN JS1030)

DISC	
G	Ductile iron JS1030 (EN JS1030)

SEAT	
E	EPDM
N	NBR

OPTIONS	
00	PN16 FTF EN 558 S14
25	PN25 FTF EN 558 S14
40	PN40 FTF EN 558 S14
..	Other options

VALVE SIZE	
050	DN50
300	DN300
910	DN1000
912	DN1200

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Design Attributes

These series are quarter turn rotary valves, unidirectional, with rubber sealing, for stopping or regulating the flow of the service fluid when necessary. A metal disc with rubber sealing is positioned in the centre of the valve. The valve closes by turning the handwheel clockwise.
The two offsets apply to the location of the shaft with respect to the center line of the bore and the center line of the disc/seat sealing surfaces. The first offset moves back the disc rotation axis from the disc sealing surfaces. This allows having a continuous sealing surface on the disc. The second offset moves away the disc rotation axis from the center-line of the valve body which provides interference free opening and closing of the valve.
Through their accurate design, with its double eccentric feature, and production, they offer a reliable and durable performance through the life span, with relative low torque and full seat tightness, even with certain presence of sediments, being widely used mainly in water works service.

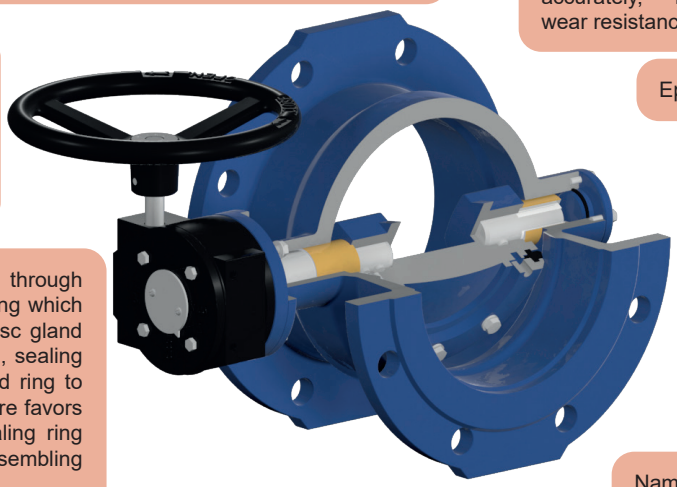
The streamlined inner cavity efficiently lowers the resistance of the medium

St. steel seat embedded into the body to fit accurately, forming a corrosion-proof and wear resistance seal surface for a longer life span

The sealing shaft design protects the shaft from medium and increase the coaxiality to reduce the torque, together extending the service life of the shaft

Epoxy coat protection for body and disc

Steel self lubricated shaft bushings (outer bronze plated, inner PTFE coated) support the disc effectively so the valves can be installed vertically up to certain size



Perfect seating performance through its T-type resilience sealing ring which is inlaid between disc and disc gland ring. When the disc is closed, sealing ring is extruded by disc gland ring to form two-way sealing. Pressure favors its sealing performance. Sealing ring can be replaced without disassembling the disc



Nameplate incl. batch no. for full traceability

Main Features

Valve design: EN 593, EN 12516
Nominal Pressure: PN10/16/25
Face to face length: EN 558 S14 (DIN 3202 F4)
Valve end connections: Flanged to EN 1092-2 type 21/B, PN10/16/25
Top flange: ISO 5211
Marking: EN 19. See arrow on body for flow direction
Pressure Tests: EN 12266-1
Seat leakage rate: Rate A (full seat tightness)
Epoxy coating protection blue color similar to RAL5005. Min. average thickness 250 microns
Product compliant with Directive 2014/68/EU on Pressure Equipment (PED) and Machinery Directive 2006/42/EC

Main Duties / Limits of use

Fresh water & neutral liquids of group 2*, acc. to Directive 2014/68/EU, Annex II table 9 up to category I
Neutral gases of group 2* acc. to Directive 2014/68/EU, Annex II table 7 up to category I
Table 7: PS 25 bar DN125 (*for PN16 dessign pressure PS16 bar / for PN10 dessign pressure PS10 bar)*
PS 16 bar DN150-200 (*for PN10 dessign pressure PS10 bar)*
PS 13 bar DN250
PS 10 bar DN300-350
PS 6 bar DN400-500
PS 2,5 bar DN600-1200
Table 9: PS 25 bar* DN100-1200 (Art.4-Parr.3 DN100-200)
**for PN16 dessign pressure PS16 bar / for PN10 dessign pressure PS10 bar*
TS: -10/80ºC
Questions referring to chemical resistance, please consult us
**Classification of fluids (group 2) acc. to Directive 2014/68/EU, Article 13*

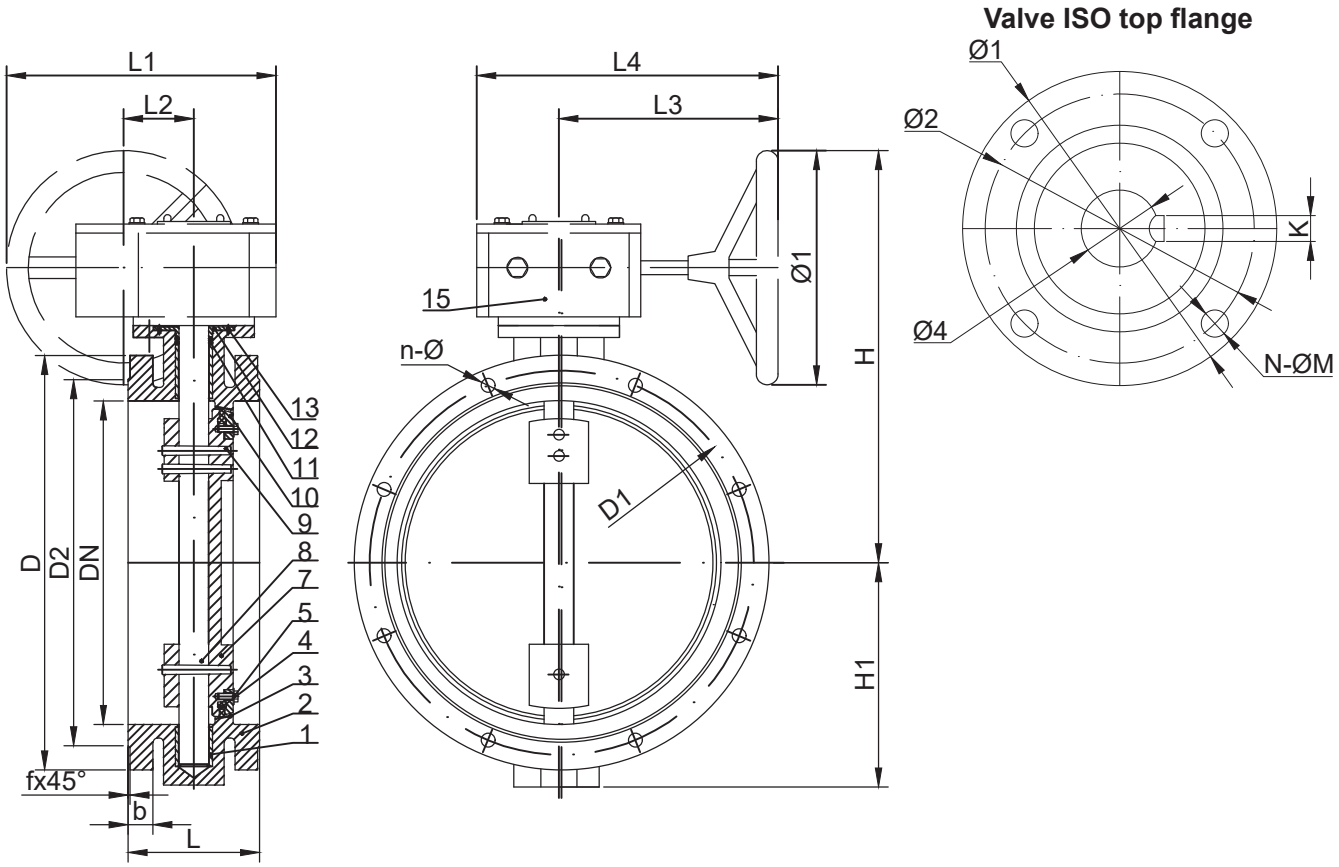
Options

Drinking water approval, higher service pressure ratings and temperatures, other connections, other designs and approvals, limit switches, different actuation. Please consult us

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TYPE VF791 PN10/16/25 DN100-250

Main Parts and Materials



No.	NAME	MATERIAL	
		PN10/16	PN25
1	BUSHING	Bronze plated Steel+inner PTFE coated	
2	BODY	EN-GJS-500-7 (EN JS1050)	
3	BODY SEALING SEAT	St. steel	
4	DISC SEALING SEAT	EPDM	
5	BOLT	A2-70	
7	DISC	EN-GJS-500-7 (EN JS1050)	
8	SHAFT	SS420	SS431
9	PIN	SS420	
10	PRESS RING	St34-2	
11	O-RING	EPDM	
12	GLAND	EN-GJS-400-15 (EN JS1030)	
13	BOLT	A2-70	
15	GEAR BOX	Assembly	

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TYPE VF791 PN10/16/25 DN100-250

Main Valve Parameters

DN			100	125	150	200	250
L			190	200	210	230	250
f			3	3	3	3	3
PN10/16	H1		122	136	162	177	210
	H		311	307	434	446	491
	PN10	D	220	250	285	340	395
		D1	180	210	240	295	350
		D2	158	184	212	268	320
		n-Ød	8-Ø19	9-Ø19	8-Ø23	8-Ø23	12-Ø23
		b	19	19	19	20	22
	PN16	D	220	250	285	340	405
		D1	180	210	240	295	355
		D2	158	184	212	268	320
		n-Ød	8-Ø19	8-Ø19	8-Ø23	12-Ø23	12-Ø28
		b	19	19	19	20	22
	L1		172	172	288	288	310
	L2		45	45	63	63	78
	L3		173	173	238	238	225
	L4		226	226	313	313	307
	Ø1		150	150	300	300	300
	Approx. weight		28	-	42	65	104
	ISO top flange	Ø1	90	90	125	125	175
		Ø2	70	70	102	102	140
		N-ØM	4-Ø10	4-Ø10	4-Ø12	4-Ø12	4-Ø18
		Ø4	16	16	20	25	30
		K	5	5	6	8	8
PN25	A		146	165	181	235	263
	B		356	373	457	487	579
	D		235	270	300	360	425
	D1		190	220	250	310	370
	D2		162	188	218	278	335
	n-Ød		8-Ø23	8-Ø28	8-Ø28	12-Ø28	12-Ø31
	b		19	19	20	22	24,5
	L1		216	216	270	270	346
	L2		60	60	72	72	96
	L3		155	155	175	175	183
	L4		221	221	253	253	283
	Ø1		180	180	240	240	300

Dimensions in mm subject to manufacturing tolerance / Weights in kg

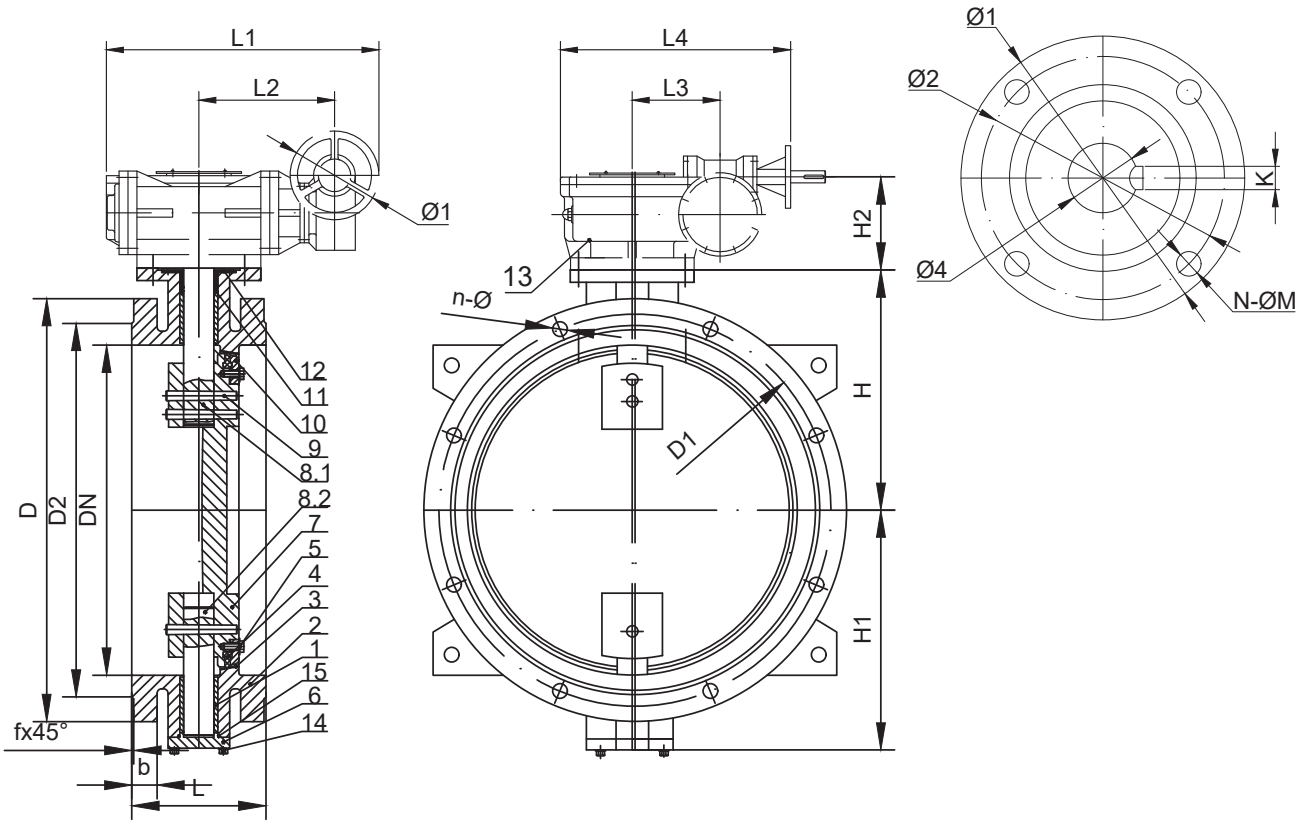
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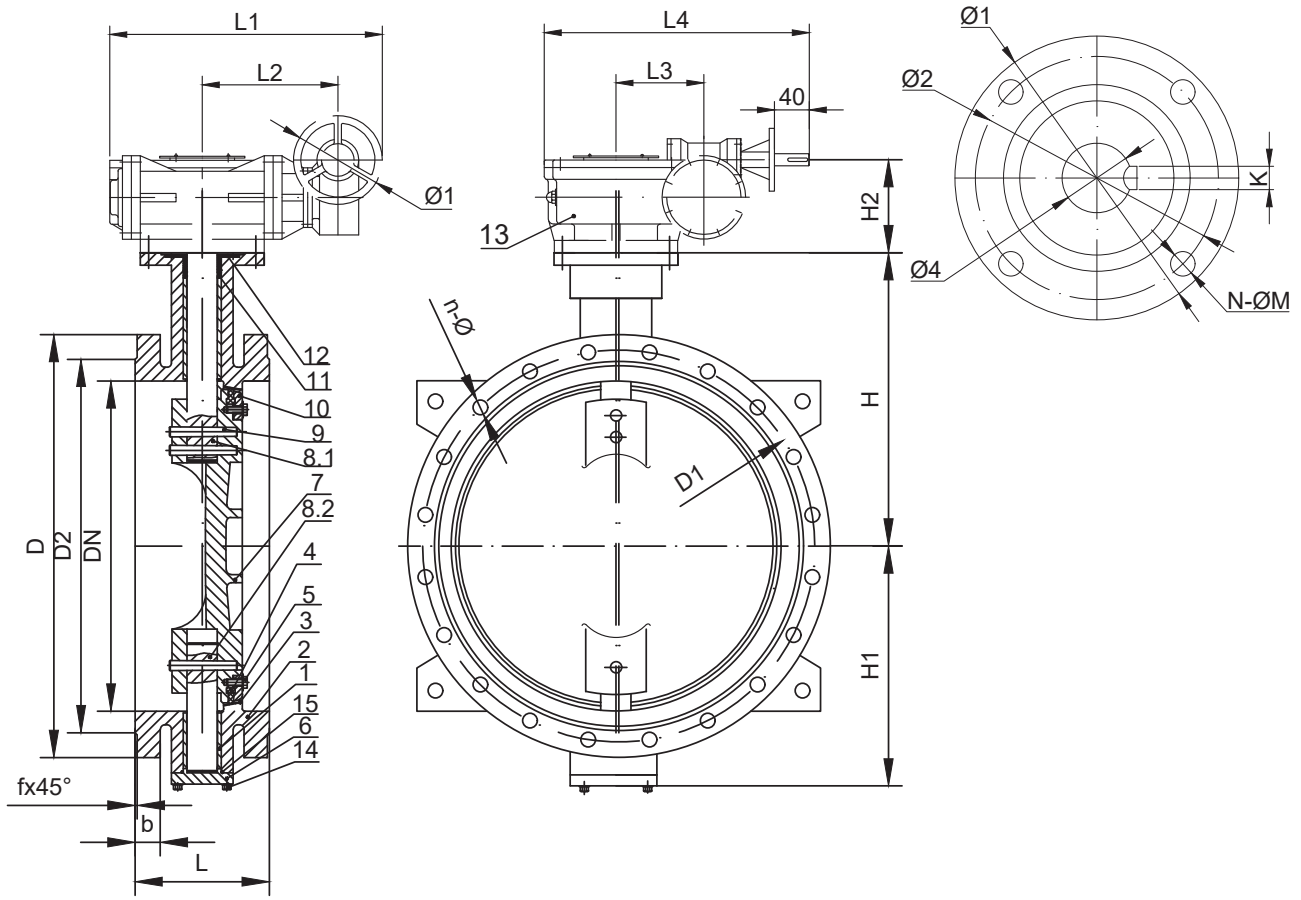
TYPE VF791 PN10/16/25 DN300-350

Main Parts and Materials



TYPE VF791 PN10/16/25 DN400-500

Main Parts and Materials



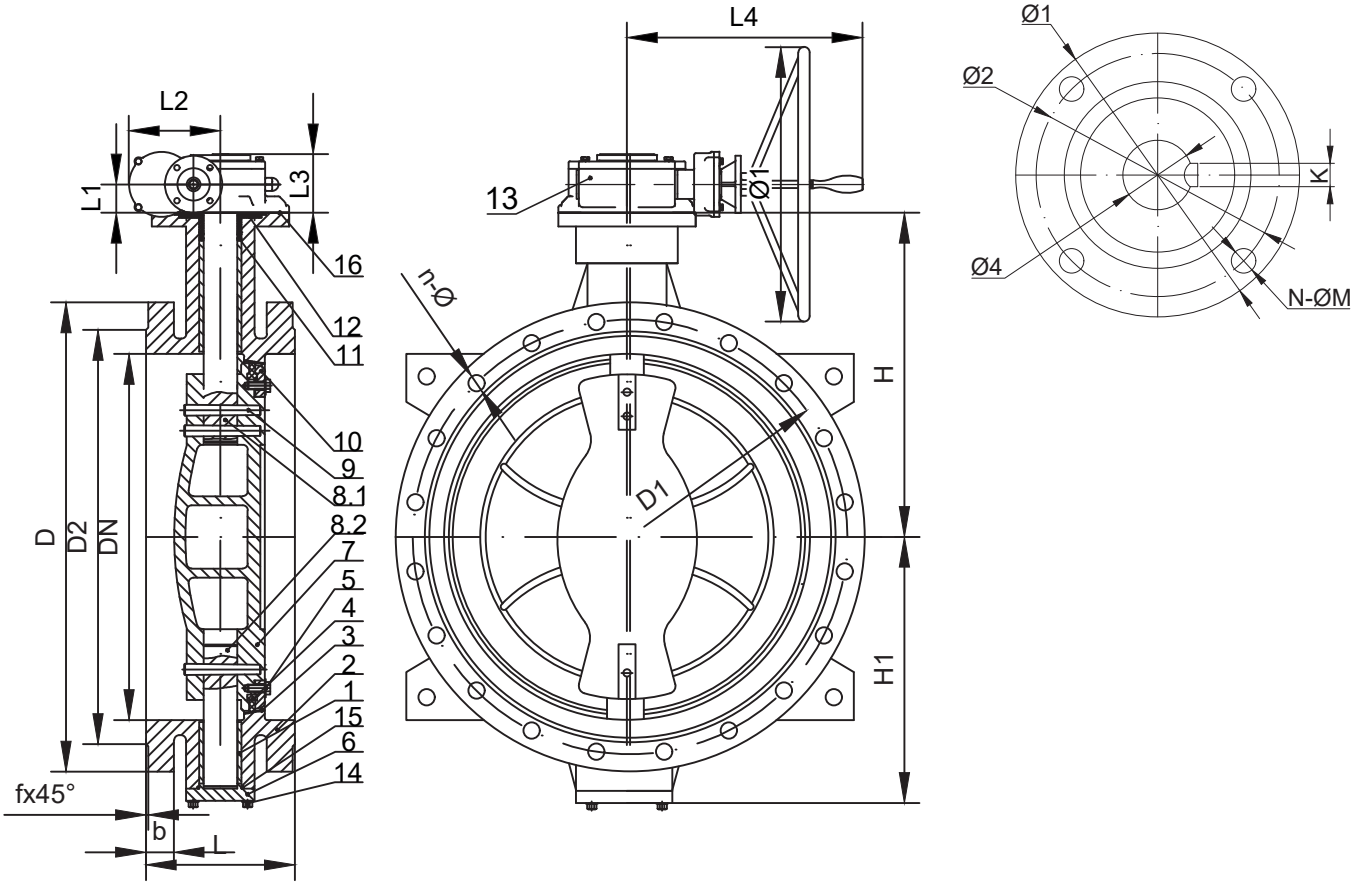
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TYPE VF791 PN10/16/25 DN600-1200

Main Parts and Materials



TYPE VF791 PN10/16/25 DN300-1200

No.	NAME	MATERIAL	
		PN10/16	PN25
1	BUSHING	Bronze plated Steel+inner PTFE coated	
2	BODY	EN-GJS-500-7 (EN JS1050)	
3	BODY SEALING SEAT	St. steel	
4	DISC SEALING SEAT	EPDM	
5	BOLT	A2-70	1.4021
6	COVER	EN-GJS-500-7 (EN JS1050)	
7	DISC	EN-GJS-500-7 (EN JS1050)	
8.1	UP SHAFT	SS420	SS431
8.2	DOWN SHAFT	SS420	SS431
9	PIN	SS420	1.4021
10	PRESS RING	St34-2	
11	O-RING	EPDM	
12	GLAND	EN-GJS-400-15 (EN JS1030)	
13	GEAR BOX WITH ISO PAD	Assembly	
14	BOLT	A2-70	
15	O-RING	EPDM	
16	HOLDING RING	St. steel	

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TYPE VF791 PN10/16/25 DN300-1200

Main Valve Parameters

DN			300	350	400	450	500	600	700	800	900	1000	1200
L			270	290	310	330	350	390	430	470	510	550	630
f			4	4	4	4	4	5	5	5	5	5	5
PN10/16	H1		295	317	345	377	395	450	512	575	640	695	850
	H		695	715	788	786	918	1016	1060	1117	1180	1339	1444
	PN10	D	445	505	565	615	670	780	895	1015	1115	1230	1455
		D1	400	460	515	565	620	725	840	950	1050	1160	1380
		D2	370	430	482	532	585	685	800	905	1005	1110	1330
		n-Ød	12-Ø23	16-Ø23	16-Ø28	20-Ø28	20-Ø28	20-Ø31	24-Ø31	24-Ø34	28-Ø34	28-Ø37	32-Ø40
		b	24,5	24,5	24,5	25,5	26,5	30	32,5	35	37,5	40	45
	PN16	D	460	520	580	640	715	840	910	1025	1125	1255	1485
		D1	410	470	525	585	650	770	840	950	1050	1170	1390
		D2	370	430	482	548	609	720	794	901	1001	1112	1328
		n-Ød	12-Ø28	16-Ø28	16-Ø31	20-Ø31	20-Ø34	20-Ø37	24-Ø37	24-Ø40	28-Ø40	28-Ø43	32-Ø49
		b	24,5	26,5	28	30	31,5	36	39,5	43	46,5	50	57
	L1		434	434	434	434	531	574	574	574	638	777	777
	L2		181	181	181	181	200	228	228	228	243	302	302
	L3		94	94	94	94	125	140	140	140	162	236	236
	L4		357	357	357	357	432	501	501	501	547	656	656
	Ø1		300	300	300	300	400	400	400	400	450	450	450
	Approx. weight		150	174	198	255	314	480	571	703	907	1223	2080
	Valve ISO flange	Ø1	210	210	210	210	210	300	300	300	300	350	350
		Ø2	165	165	165	165	165	254	254	254	254	298	298
		N-ØM	4-Ø22	4-Ø22	4-Ø22	4-Ø22	4-Ø22	8-Ø18	8-Ø18	8-Ø18	8-Ø18	8-Ø22	8-Ø22
		Ø4	34	40	45	45	52	55	65	70	80	92	100
		K	10	12	14	14	16	16	18	20	22	25	28
	Gearbox ISO flange	Ø1	-	-	125	125	125	175	175	175	175	175	175
		Ø2	-	-	102	102	102	140	140	140	140	140	140
		N-ØM	-	-	4-Ø12	4-Ø12	4-Ø12	4-Ø18	4-Ø18	4-Ø18	4-Ø18	4-Ø18	4-Ø18
		Ø4	-	-	20	20	20	30	30	30	30	30	30
		K	-	-	6	6	6	8	8	8	8	8	8
PN25	A		303	338	371	396	425	493	551	623	688	772	850
	B		718	753	795	820	918	1025	1082	1140	1233	1354	1484
	D		485	555	620	670	730	845	960	1085	1185	1320	1530
	D1		430	490	550	600	660	770	875	990	1090	1210	1420
	D2		395	450	505	555	615	720	820	930	1030	1140	1350
	n-Ød		16-Ø31	16-Ø34	16-Ø37	20-Ø37	20-Ø37	20-Ø41	24-Ø44	24-Ø50	28-Ø50	28-Ø57	32-Ø57
	b		27,5	30	32	34,5	36,5	42	46,5	51	55,5	60	69
	L1		434	434	434	434	531	574	574	574	638	777	777
	L2		181	181	181	181	200	228	228	228	243	302	302
	L3		94	94	94	94	125	140	140	140	162	236	236
	L4		357	357	357	357	432	501	501	501	547	656	656
	Ø1		300	300	300	300	400	400	400	400	450	450	450

Dimensions in mm subject to manufacturing tolerance / Weights in kg

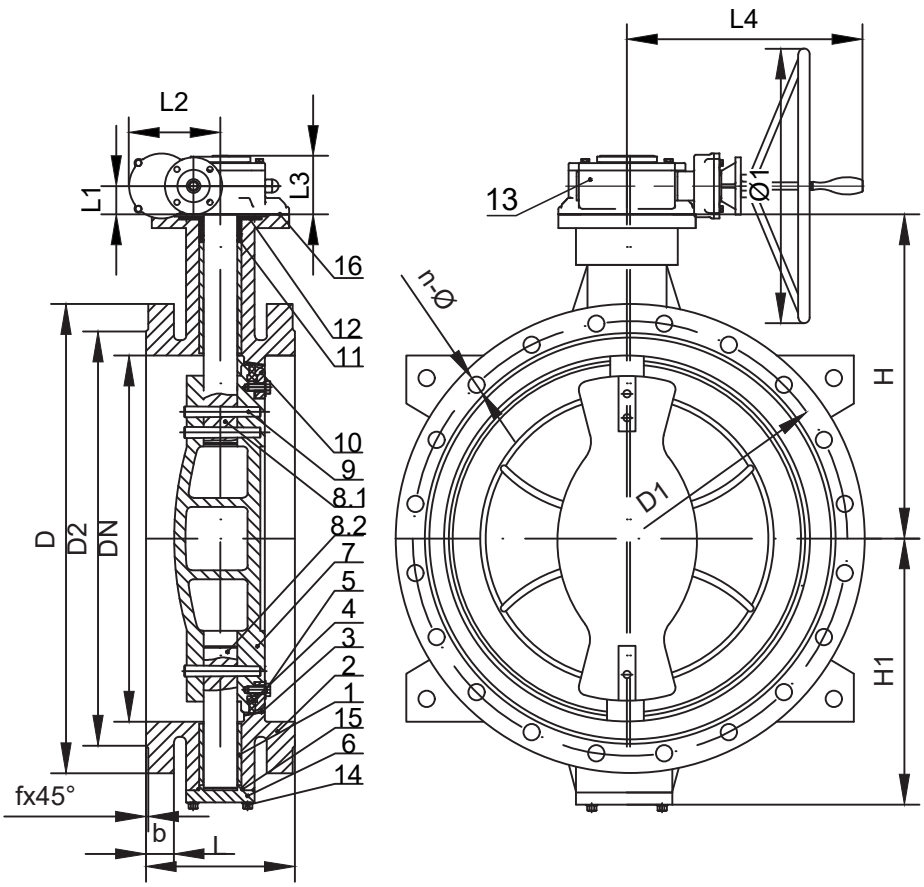
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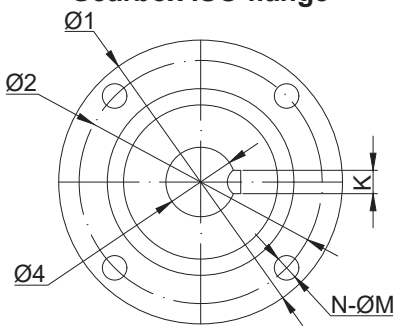
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TYPE VF791 PN10/16 DN 1400-2000

Main Parts and Materials



Gearbox ISO flange



No.	NAME	MATERIAL
		PN10/16
1	BUSHING	Bronze plated Steel+inner PTFE coated
2	BODY	EN-GJS-500-7 (EN JS1050)
3	BODY SEALING SEAT	St. steel
4	DISC SEALING SEAT	EPDM
5	BOLT	A2-70
6	COVER	EN-GJS-500-7 (EN JS1050)
7	DISC	EN-GJS-500-7 (EN JS1050)
8.1	UP SHAFT	SS420
8.2	DOWN SHAFT	SS420
9	PIN	SS420
10	PRESS RING	St34-2
11	O-RING	EPDM
12	GLAND	EN-GJS-400-15 (EN JS1030)
13	GEAR BOX WITH ISO PAD	Assembly
14	BOLT	A2-70
15	O-RING	EPDM
16	HOLDING RING	St. steel

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TYPE VF791 PN10/16 DN1400-2000

Main Valve Parameters

DN		1400	1600	1800	2000
L		710	790	870	950
f		5	5	5	5
H1		1031	1170	1270	1360
H		1785	1912	2091	2210
PN10	D	1675	1915	2115	2325
	D1	1590	1820	2020	2230
	D2	1530	1750	1950	2150
	n-Ød	36-Ø44	40-Ø50	44-Ø49	48-Ø50
	b	46	49	52	55
PN16	D	1685	1930	2130	2345
	D1	1590	1820	2020	2230
	D2	1530	1750	1950	2150
	n-Ød	36-Ø49	40-Ø56	44-Ø56	48-Ø62
	b	60	65	70	75
gearbox ISO flange	Ø1	175	210	210	210
	Ø2	140	165	165	165
	N-ØM	4-18	4-22	4-22	4-22
	Ø4	30	40	40	40
	K	8	12	12	12
L1		1026	1025	1173	1236
L2		414	414	448	461
L3		345	345	410	460
L4		848	848	981	1075
Ø1		500	500	600	600

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TYPE VF791

Kv values

DN	PN10	PN16	PN25
100	448	444	444
125	875	868	868
150	1213	1209	1209
200	2252	2244	2244
250	3893	3879	3879
300	5903	5878	5878
350	8651	8621	8621
400	12106	11197	11197
450	12726	12749	11528
500	16595	14939	14245
600	24212	22701	20217
700	33993	32323	27181
800	49618	43625	37295
900	61927	56825	49209
1000	77657	71581	61541
1200	124827	106672	92021

Kvs in m³/h

A valve flow coefficient represents the standard flow rate which flows through the valve at a given opening, referred to pre-established conditions:

* Kv value is the volume of water at 20ºC, in cubic meters per hour (m3/h), that will flow through the valve at a static pressure drop of 1 bar across the valve.

* Cv value is the volume of water at 60ºF, in gallons per minute (gpm), that will flow through the valve at a static pressure drop of 1 psi across the valve.

Conversion from Kv to Cv can be roughly calculated by means of the following expression:

Cv = Kv x 1,17

Flow rate through the valve with other liquids can be calculated with the following expressions (for gases please consult us):

$Kv = q\,(SG / dp)^{1/2}$ *where*

q = water flow (m3/h)

SG = specific gravity (1 for water)

dp = pressure drop (bar)

$Cv = q\,(SG / dp)^{1/2}$ *where*

q = water flow (US gallons per minute)

SG = specific gravity (1 for water)

dp = pressure drop (psi)

It is common practice to size the valves on the basis of pipe DN for on off application. Nevertheless, Butterfly Valves used for control purpose should be calculated on the basis of operating conditions.

First step is to calculate the Kv values for the different working conditions and then choose the DN with such Kv values in the region of 20º to 70º valve opening angle.

COMEVAL Technical Department is at your disposal to help you sizing your system.

Valve torques

DN	PN10	PN16	PN25
150	100	140	210
200	180	250	390
250	250	390	480
300	390	480	850
350	480	850	1480
400	810	1080	1760
450	1200	1600	2800
500	1500	2300	3900
600	2000	3500	6700
700	3300	6500	8600
800	4500	8500	14000
900	6800	12500	18700
1000	8700	14500	21400
1200	16000	28200	35200

Torque in Nm

Remarks for Actuator Sizing:
The torque values given are for water or other non-viscous lubricating liquids at ambient temperature at full differential pressure.

For gases or viscous liquid please consult us.

There are three torques to be considered when selecting the proper actuator for a butterfly valve:

1) Seating Torque: The torque to displace a resilient seat and effect shutoff.
2) Bearing Torque: The torque required to overcome friction forces on the valve shaft bearing surfaces during valve travel angle (about 30% of seating torque)
3) Dynamic Torque: Due to fluid forces which tend to close the valve when the valve is partially open. This torque is due to the velocity of the fluid created by a differential pressure across the valve. Systems should be projected to avoid high velocities across the valve

Above given values are for bareshaft valves and include the 3 torques, the actuator selected must provide the calculated torque over its total opening and closing travel angle.
Recommended safety factor to be applied of 30% should be considered

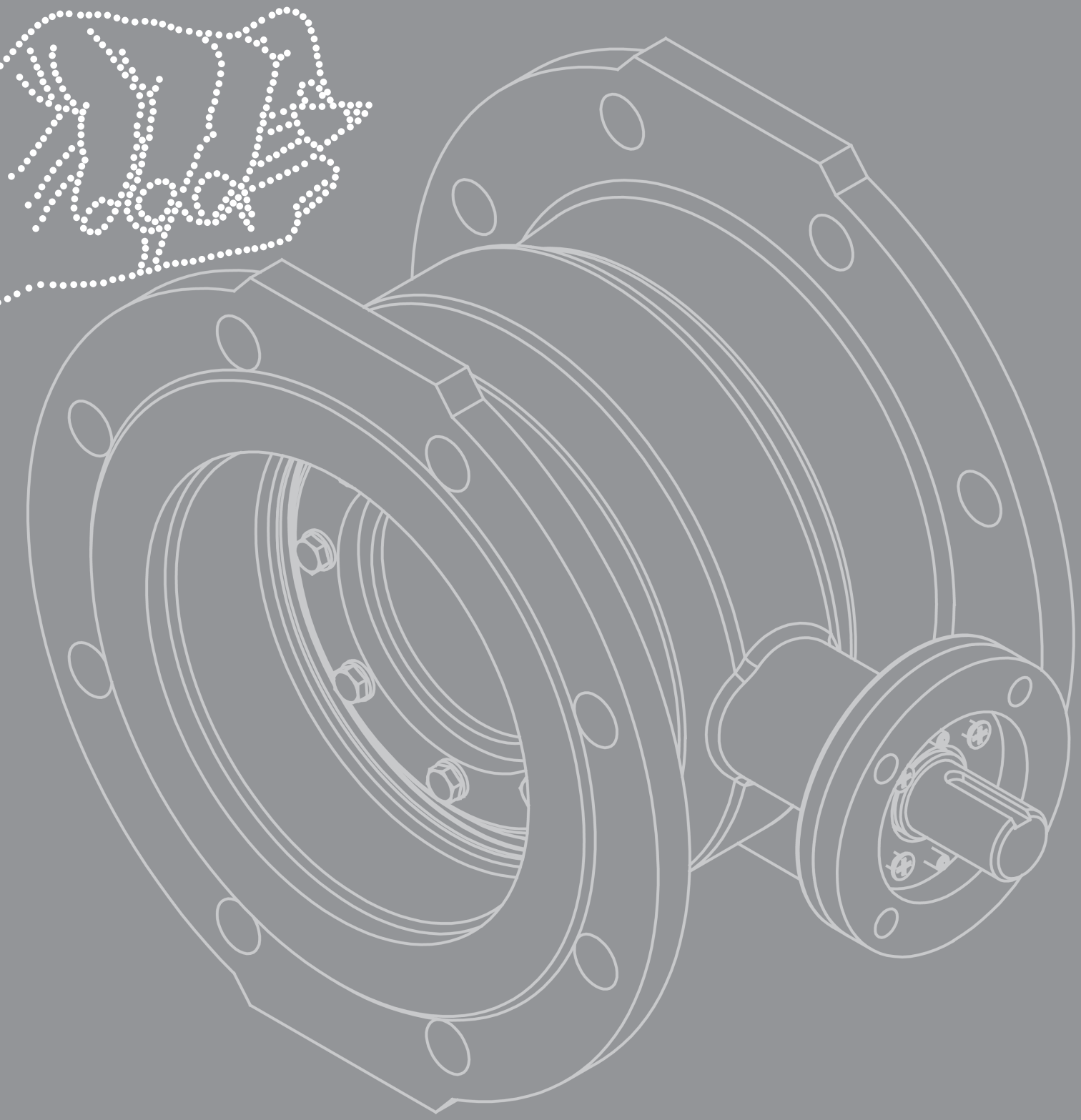
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