

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

Design Attributes

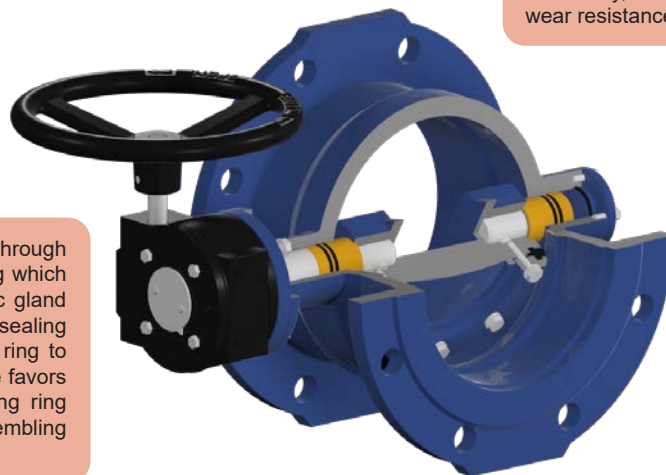
These series are quarter turn rotary valves, unidirectional, with rubber sealing, for stopping or regulating the flow of the service fluid when necessary. A metal disc with rubber sealing is positioned in the centre of the valve. The valve closes by turning the handwheel clockwise. The two offsets apply to the location of the shaft with respect to the center line of the bore and the center line of the disc/seal 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

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

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



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

Nameplate incl. batch no. for full traceability

Epoxy coat protection for body and disc

Shaft bushings support the disc effectively so the valves can be installed vertically up to certain size

Main Features

Valve design: EN 593, EN 12516

Nominal Pressure: PN10/16/25/40

Face to face length: EN 558 S14 (DIN 3202 F4)

Valve end connections: Flanged to EN 1092-2 type 21/B, PN10/16/25/40

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 40 bar DN100 (for PN25 design pressure PS25 bar / for PN16 design pressure PS16 bar / for PN10 design pressure PS10 bar)

PS 25 bar DN125 (for PN16 design pressure PS16 bar / for PN10 design pressure PS10 bar)

PS 16 bar DN150-200 (for PN10 design 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 40 bar* DN100-1200 (Art.4-Parr.3 DN100-200)

*for PN25 design pressure PS25 bar / for PN16 design pressure PS16 bar / for PN10 design pressure PS10 bar

TS: -10/80°C (NBR and Hypalon sealing), -10/110°C (EPDM sealing), -10/130°C (heat EPDM sealing), -10/170°C (Viton sealing)

Questions referring to chemical resistance, please consult us

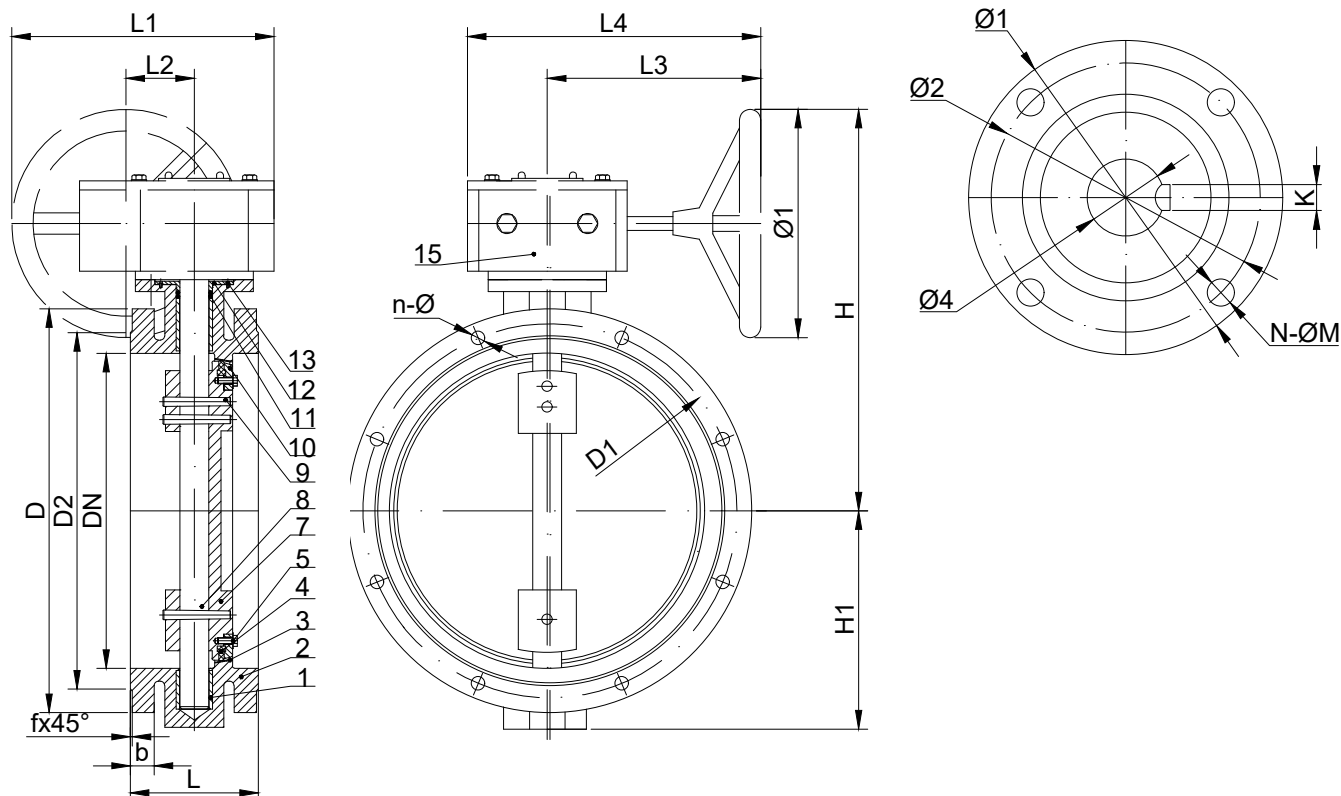
*Classification of fluids (group 2) acc. to Directive 2014/68/EU, Article 13

Options

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

TYPE VF791 PN10/16/25 DN100-250

Main Parts and Materials



No.	NAME	MATERIAL	
		PN10/16	PN25
1	BUSHING	Steel+PTFE	
2	BODY	EN-GJS-450-10 (EN JS1040)	Ductile Iron
3	BODY SEALING SEAT	St. steel	
4	DISC SEALING SEAT	EPDM	
5	BOLT	A2-70	
7	DISC	EN-GJS-450-10 (EN JS1040)	Ductile Iron
8	SHAFT	SS420	SS431
9	PIN	SS420	
10	PRESS RING	St34-2	
11	O-RING	EPDM	
12	GLAND	EN-GJS-450-10 (EN JS1040)	Ductile Iron
13	BOLT	A2-70	
15	GEAR BOX	EN-GJS-450-10 (EN JS1040)	Ductile Iron

TYPE VF791 PN10/16/25 DN100-250

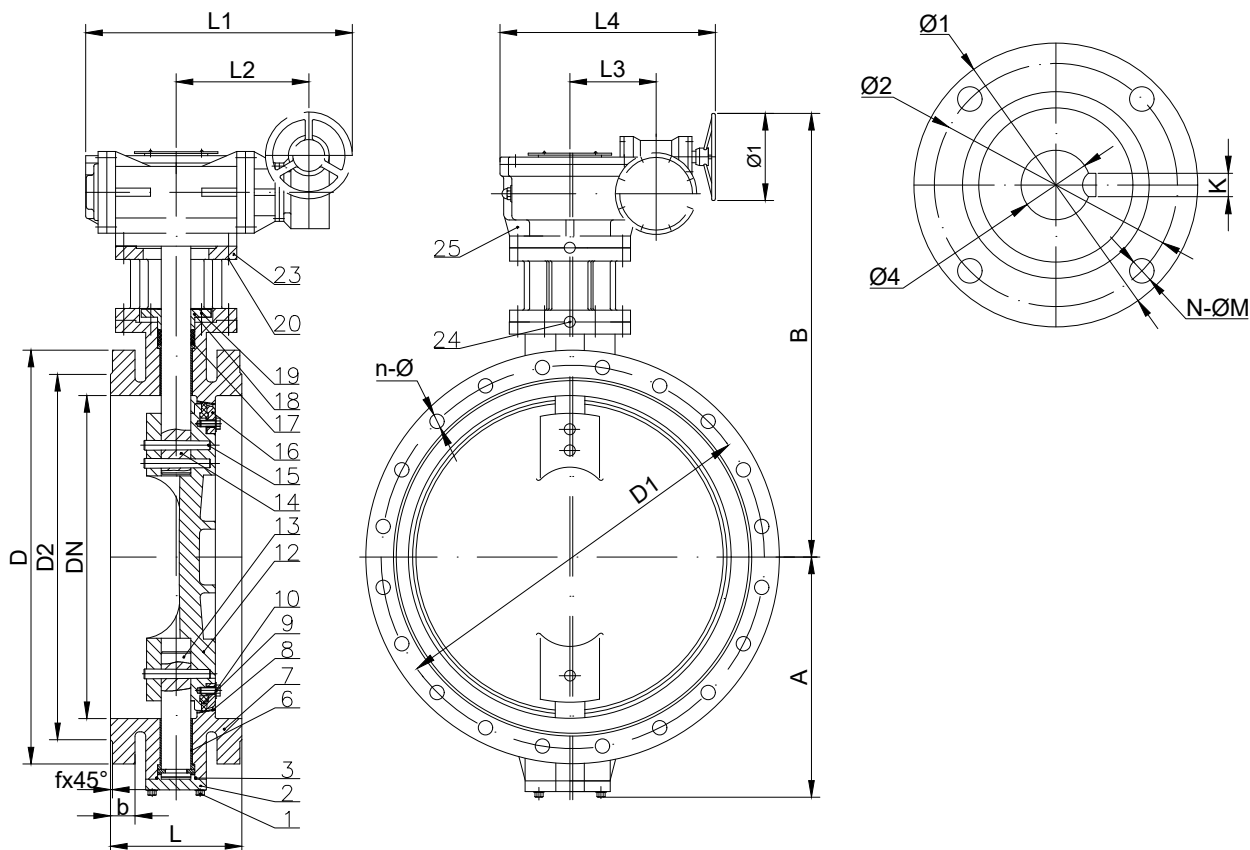
Main Valve Parameters

DN		100	125	150	200	250
L		190	200	210	230	250
f		3	3	3	3	3
PN10/16	A	122	136	162	177	210
	B	311	307	434	446	491
	PN10	D	220	250	285	340
		D1	180	210	240	295
		D2	158	184	212	268
		n-Ød	8-Ø19	9-Ø19	8-Ø23	12-Ø23
		b	19	19	19	20
	PN16	D	220	250	285	340
		D1	180	210	240	295
		D2	158	184	212	268
		n-Ød	8-Ø19	8-Ø19	8-Ø23	12-Ø23
		b	19	19	19	20
	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
		Ø2	70	70	102	102
		N-ØM	4-Ø10	4-Ø10	4-Ø12	4-Ø12
		Ø4	16	16	20	25
		K	5	5	6	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

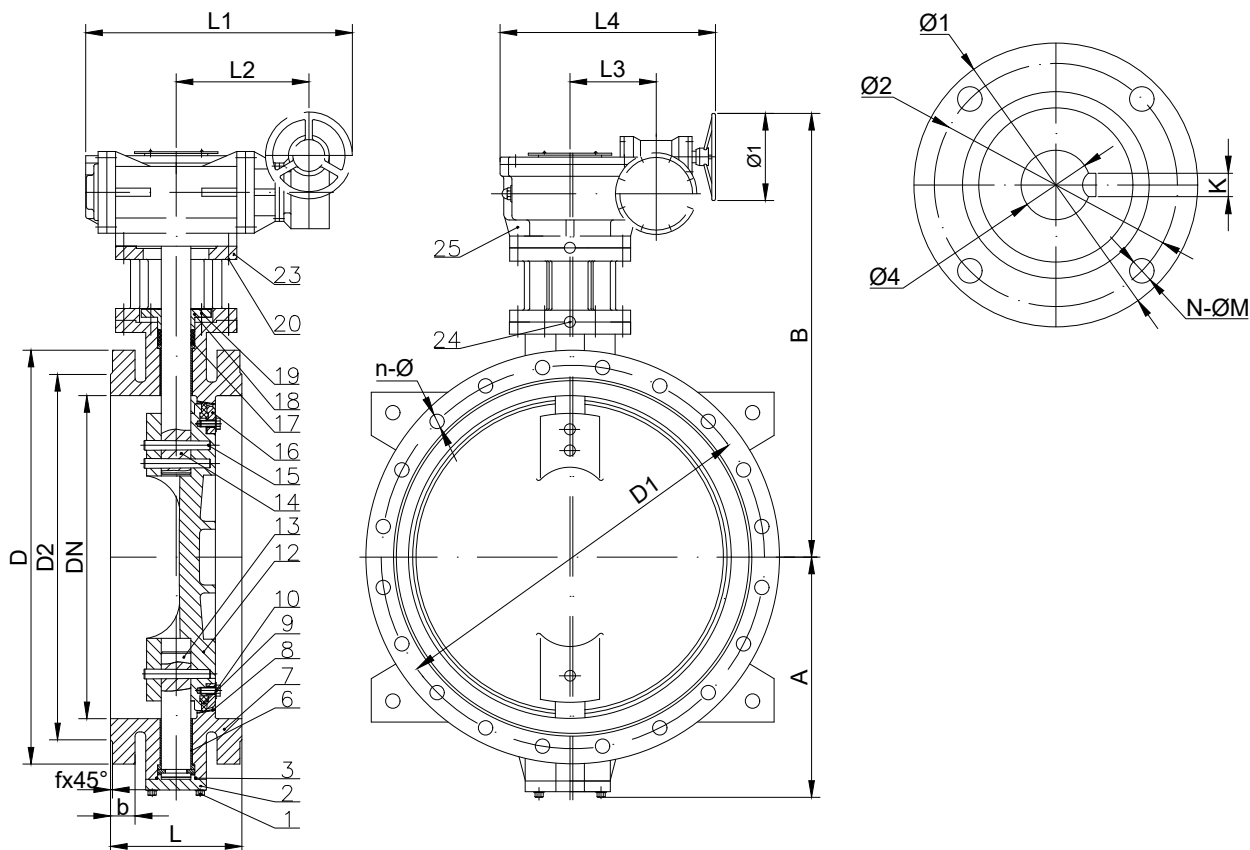
TYPE VF791 PN10/16/25 DN300-350

Main Parts and Materials



TYPE VF791 PN10/16/25 DN400-500

Main Parts and Materials

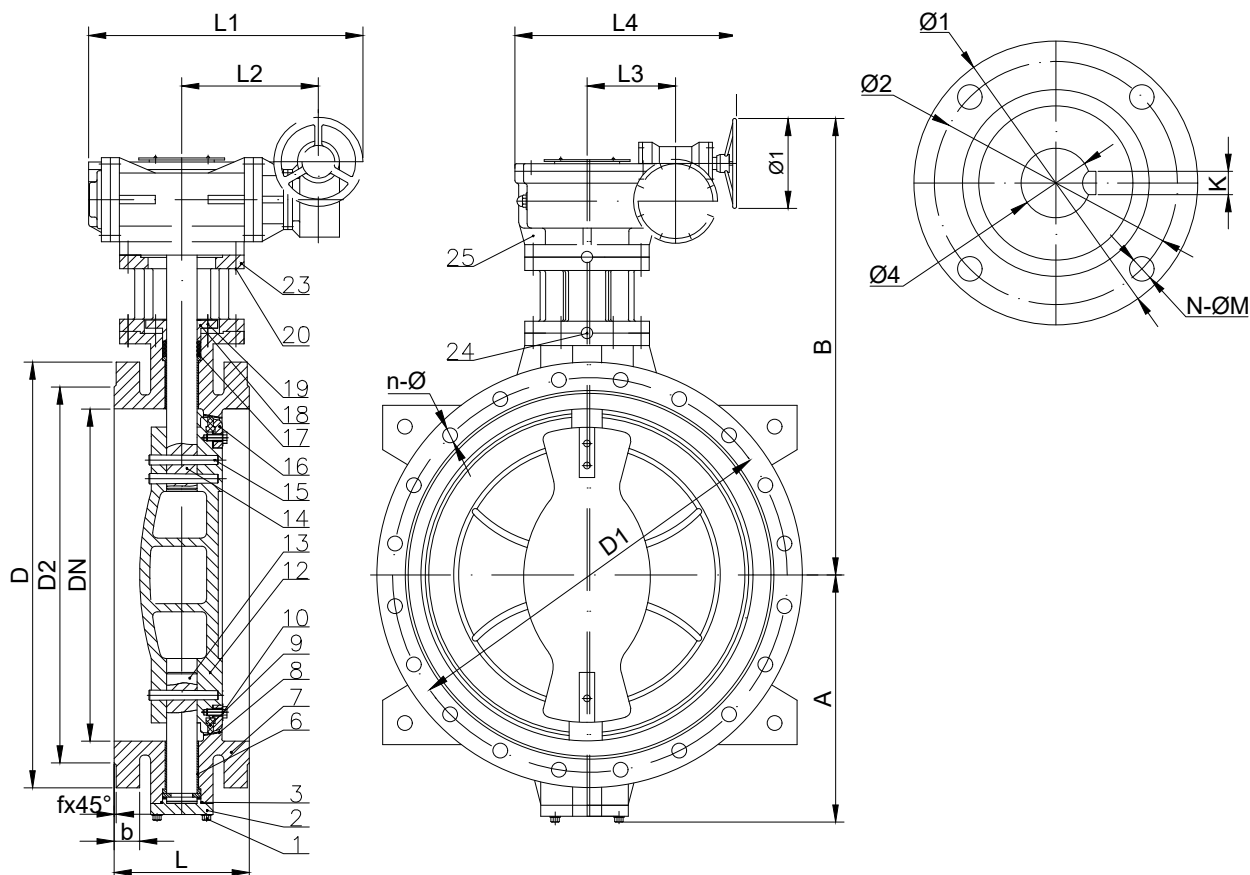


Information / restriction of technical rules need to be observed!
 Installation, Operating and Maintenance Manual can be downloaded at www.comeval.es

The engineer, designing a system or a plant, is responsible for the selection of the correct valve
 Product suitability must be verified, contact manufacturer for information

TYPE VF791 PN10/16/25 DN600-1200

Main Parts and Materials



TYPE VF791 PN10/16/25 DN300-1200

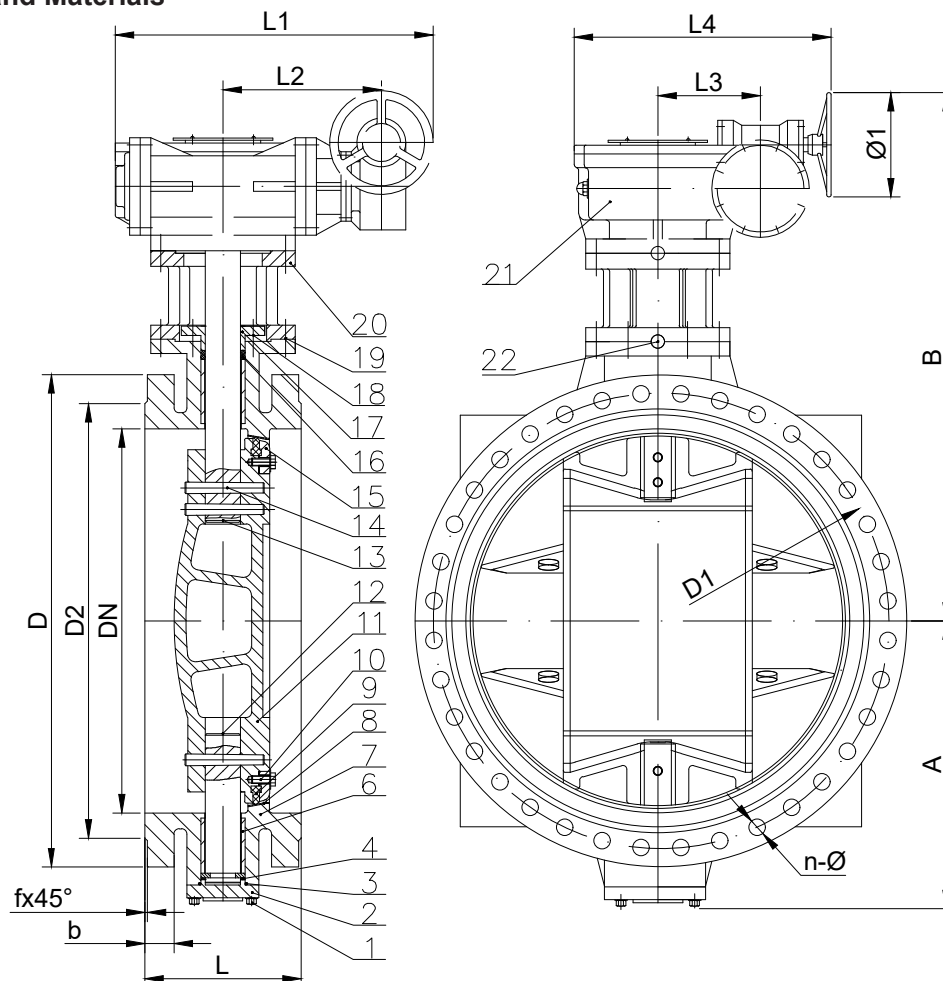
No.	NAME	MATERIAL	
		PN10/16	PN25
1	BOLT	A2-70	
2	COVER	EN-GJS-450-10 (EN JS1040)	Ductile Iron
3	O-RING	EPDM	
6	BUSHING	Steel+PTFE	
7	BODY	EN-GJS-450-10 (EN JS1040)	Ductile Iron
8	BODY SEALING SEAT	St. steel	
9	DISC SEALING SEAT	EPDM	
10	BOLT	A2-70	1.4021
12	DISC	EN-GJS-450-10 (EN JS1040)	Ductile Iron
13	DOWN SHAFT	SS420	SS431
14	UP SHAFT	SS420	SS431
15	PIN	SS420	1.4021
16	PRESS RING	St34-2	
17	O-RING	EPDM	
18	GLAND	EN-GJS-450-10 (EN JS1040)	Ductile Iron
19	BOLT	A2-70	
20	BOLTS & NUTS	A2-70	
23	ISO TOP FLANGE	EN-GJS-450-10 (EN JS1040)	Ductile Iron
24	PIN	SS420	1.4021
25	GEAR BOX	EN-GJS-450-10 (EN JS1040)	Ductile Iron

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	A	295	317	345	377	395	450	512	575	640	695	850
	B	695	715	788	786	918	1016	1060	1117	1180	1339	1444
	PN10	D	445	505	565	615	670	780	895	1015	1115	1230
		D1	400	460	515	565	620	725	840	950	1050	1160
		D2	370	430	482	532	585	680	795	905	1005	1110
		n-Ød	12-Ø23	16-Ø23	16-Ø28	20-Ø28	20-Ø31	24-Ø31	24-Ø34	28-Ø34	28-Ø37	32-Ø40
	PN16	b	24,5	24,5	24,5	25,5	26,5	30	32,5	35	37,5	40
		D	460	520	580	640	715	840	910	1025	1125	1255
		D1	410	470	525	585	650	770	840	950	1050	1170
		D2	370	430	482	548	609	720	794	901	1001	1112
		n-Ød	12-Ø28	16-Ø28	16-Ø31	20-Ø31	20-Ø34	20-Ø37	24-Ø37	24-Ø40	28-Ø40	28-Ø43
		b	24,5	26,5	28	30	31,5	36	39,5	43	46,5	50
	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
	ISO top flange	Ø1	210	210	210	210	210	300	300	300	350	350
		Ø2	165	165	165	165	165	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
		Ø4	34	40	45	45	52	55	65	70	80	92
		K	10	12	14	14	16	16	18	20	22	25
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

TYPE VF791 PN10/16 DN 1400-2000**Main Parts and Materials**

No.	NAME	MATERIAL
1	BOLT	A2-70
2	COVER	EN-GJS-450-10 (EN JS1040)
3	O-RING	EPDM
6	BUSHING	STEEL+PTFE
7	BODY	EN-JS1030
8	BODY SEALING SEAT	SS316
9	DISC SEALING SEAT	EPDM
10	BOLT	A2-70
11	DISC	EN-JS1030
12	DOWN SHAFT	SS420
13	UP SHAFT	SS420
14	PIN	SS420
15	PRESS RING	St34-2
16	O-RING	EPDM
17	GLAND	EN-GJS-450-10 (EN JS1040)
18	BOLT	A2-70
19	BOLTS & NUTS	A2-70
20	ISO TOP FLANGE	EN-GJS-450-10 (EN JS1040)
22	PIN	SS420
21	GEAR BOX	EN-GJS-450-10 (EN JS1040)

TYPE VF791 PN10/16 DN1400-2000

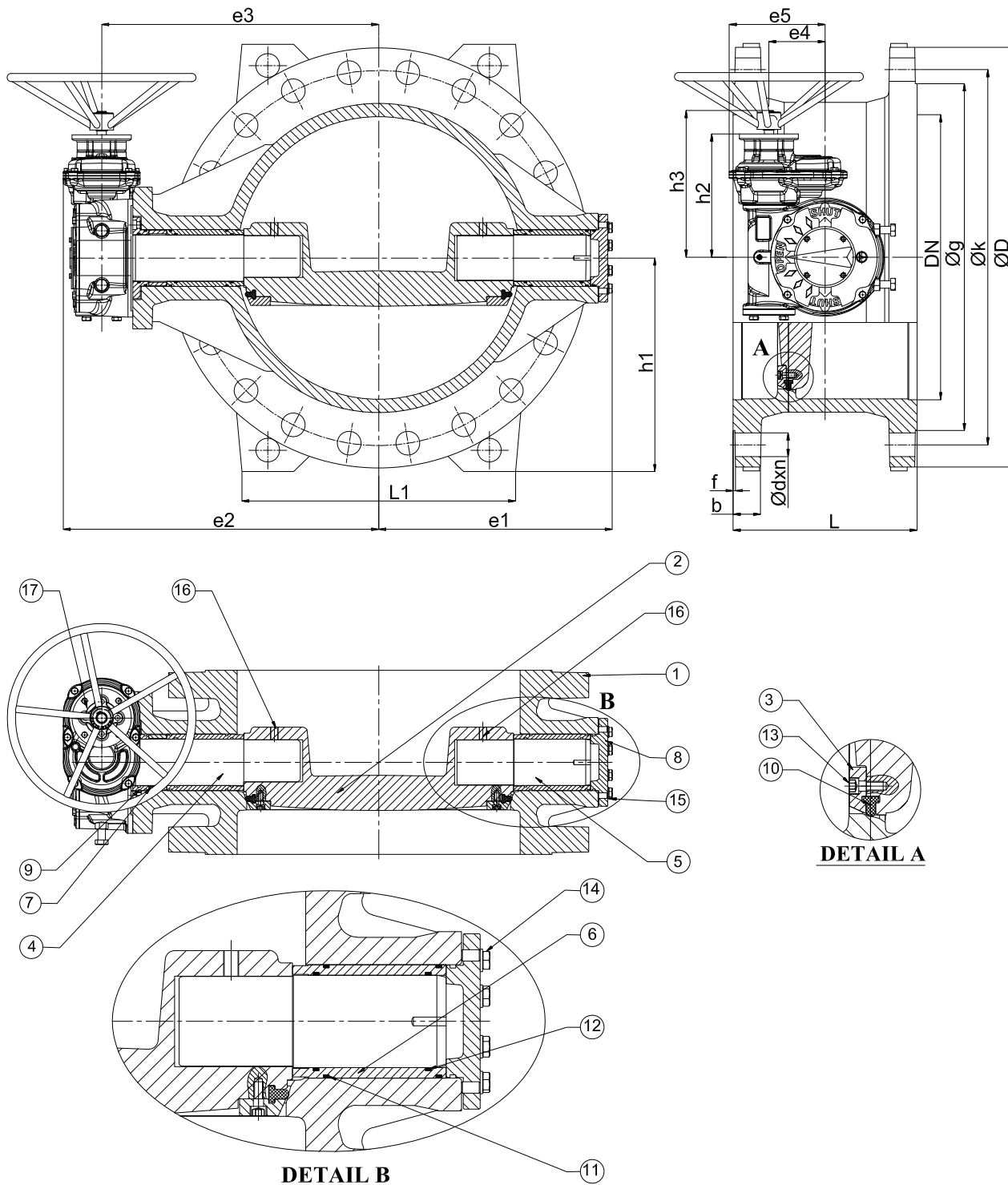
Main Valve Parameters

DN	1400	1600	1800	2000
L	710	790	870	950
f	5	5	5	5
A	1031	1170	1270	1360
B	1785	1912	2091	2210
PN10	D	1675	1915	2115
	D1	1590	1820	2020
	D2	1530	1750	1950
	n-Ød	36-Ø44	40-Ø50	44-Ø49
	b	46	49	52
PN16	D	1685	1930	2130
	D1	1590	1820	2020
	D2	1530	1750	1950
	n-Ød	36-Ø49	40-Ø56	44-Ø56
	b	60	65	70
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

Dimensions in mm subject to manufacturing tolerance / Weights in kg

TYPE VF791 PN40

Main Parts and Materials



No.	NAME	MATERIAL
1	BODY	EN JS1030
2	DISC	EN JS1030
3	RETAINING RING	AISI 304
4	SHAFT	1.4021
5	SHAFT	1.4021
6	BEARING	BRONZE
7	BUSH	DELIN
8	COVER	EN JS1030
9	COVER	EN JS1030

No.	NAME	MATERIAL
10	SEALING RING	EPDM
11	O-RING	EPDM
12	O-RING	EPDM
13	BOLT	A2
14	SCREW	A2
15	WASHER	A2
16	PIN	1.4021
17	GEARBOX	Assembly

TYPE VF791 PN40

Main Valve Parameters

DN	100	150	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1500
ØD	235	300	375	450	515	580	660	685	755	890	995	1140	1250	1360	1575	1910
Øk	190	250	320	385	450	510	585	610	670	795	900	1030	1140	1250	1460	1790
Øg	156	211	284	345	409	465	535	560	615	735	840	960	1070	1180	1380	1700
b	19	26	30	34,5	39,5	44	48	49	52	58	64	72	76	86	95	105
f	3	3	4	4	4	4	4	4	4	5	5	5	5	5	5	5
Ød	23	28	31	34	34	37	41	41	44	50	50	57	57	57	62	70
n	8	8	12	12	16	16	16	20	20	20	24	24	28	28	32	36
e1	118	133	192	232	274	299	339	388	426	485	549	650	740	791	932	1110
e2	259	284	333	402	437	466	532	617	639	709	575	954	1030	1291	1290	1482
e3	196	221	270	324	359	381	447	496	531	601	689	796	871	935	1085	1274
e4	65	65	79	95	95	119	119	145	145	145	230	230	198	310	360	430
e5	128	128	142	179	179	203	203	262	263	263	387	388	435	515	560	636
h1	123	156	200	235	270	300	340	353	390	455	515	585	640	647	805	970
h2	146	146	154	231	231	264	264	315	315	315	412	412	552	568	579	624
h3	196	196	204	281	281	314	314	365	365	365	472	472	622	698	639	684
L1	140	180	240	300	360	420	430	480	480	580	700	780	800	920	1060	1240
L	190	210	230	250	270	290	310	330	350	390	430	470	510	550	630	750
Approx. weight	32	49	75	128	155	-	305	-	508	679	1020	1480	2250	2600	-	-

Dimensions in mm subject to manufacturing tolerance / Weights in kg

TYPE VF791

Kv values

DN	PN10	PN16	PN25
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 20°C, 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 60°F, 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:

$$Cv = Kv \times 1,17$$

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

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

q = water flow (m³/h)

SG = specific gravity (1 for water)

dp = pressure drop (bar)

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

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 20° to 70° 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.

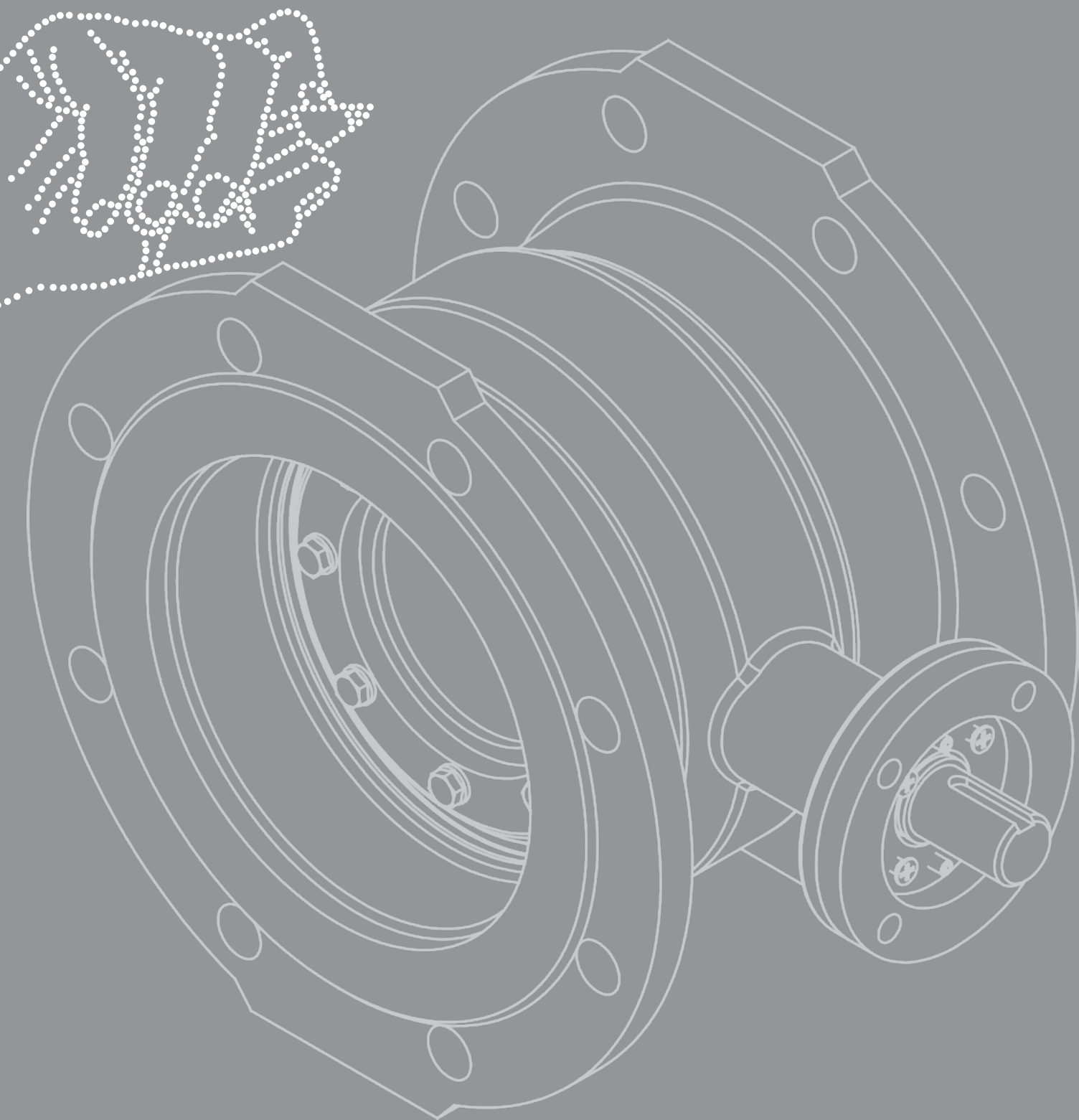
There are three torques to be considered when selecting the proper actuator for a butterfly valve:

- 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 inclusive of the 2 torques, the actuator selected must provide the calculated torque over its total opening and closing travel angle.

Excelling the best.

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