CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

Wafer butterfly valve TTV excellence range for high temperature, oil, acids, air or inerted gas, sodium hydroxide.
Approval Bureau Veritas marine certificate., 10 years warranty.
Ductile iron EN GJS-500-7 body, stainless steel disc and Silicone seat.
Between flanges PN10/16 or class 150 according to DN.
Compatible with explosive atmosphere, ATEX Zone 1&21 and Zone 2&22 on request.
Handling possible with stainless steel handle, gearbox or, chain gearbox and stem extension.
Thanks to the ISO 5211 plate and the square stem, an actuator can be installed direct on the valve (up to DN400).

BUREAU VERITAS Marine & Offshore Division

Certificate 3.1

Lloyd's Register PED/2014/68/UE

WARRANTY 10 years MANUFACTURE *

SIL3 IEC 61508 / IEC 61511



Size :	DN32/40 to DN1400
Connection :	Between flanges PN10/16 and Class 150 (PN20)
Min Temperature :	-40°C
Max Temperature :	+150°C
Max Pressure :	16 Bars up to DN300
Specifications :	Long neck for isolation Wafer type Full crossing stem ISO 5211 direct mounting pad
Materials :	Ductile iron GJS 500-7 body, Silicone seat

*the installation defects and wear defects are not covered by the guarantee

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SPECIFICATIONS :

- Long neck for isolation
- ISO 5211 mounting pad
- Wafer type
- Between flanges PN10/16 from DN32/40 to 400 and Class 150 (PN20) from DN40 to 400 (over on request)
- Betwwen flanges PN10 from DN450 to DN 1400
- Full crossing stem
- Removable Silicone seat, dovetail type above DN40
- Stainless steel disc
- 9 positions lever up to DN200, stop in all positions over, locking device in opened or closed position from DN32 to DN300
- Rilsan coated body color RAL 5024 , 250-300 microns thickness
- Stem extension 75 mm length (option)
- Square lever 30x30 mm for special key (option)

USE :

- Fluids : High temperature, oil, acids, air or inerted gas, sodium hydroxide
- Not advisable : Solvent, steam and hot water(100°C max)
- Min and max Temperature Ts : From -40°C to + 150°C
- Max Pressure Ps : 16 bars up to DN300 , 10 bars over (see graphs page 5)

RANGE :

- With lever from DN 32 to DN 300
- Naked stem from DN 350 to DN1400
- IP65 gear box possible (**Ref. 1197**) from DN 32 to DN 1400
- IP65 chain gear box (**Ref. 1194**) from DN 32 to DN 500
- On request, stem extension with special length (**Ref. 98665**)
- On request, CF8M stainless steel handle and bolting **Ref. 9831250-9831264**

CONNECTION :

- Between flanges PN10/16 from DN32/40 to 400 and Class 150 (PN20) from DN40 to 400
- Between flanges PN10 from DN450 to DN 1400

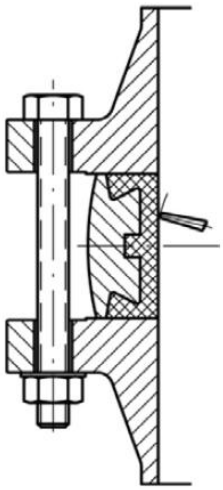
TORQUE VALUES (in Nm with safety coefficient of 30 % included) :

		DN														
	Pressure (Bar)	**32/40**	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**600**
Torque (Nm) with machined disc (on request)	1-5*	2	4	6	8	10	14	15	25	64	118	179	265	353	490	686
	6*	3	5	7	10	12	18	31	55	123	216	333	519	735	931	1372
	10*	6	8	10	14	18	31	59	93	206	330					
Torque (Nm)	**16**	**9**	**11**	**20**	**29**	**47**	**82**	**130**	**210**	**360**	**475**					

		DN												
	Pressure (Bar)	**350**	**400**	**450**	**500**	**600**	**700**	**750**	**800**	**900**	**1000**	**1100**	**1200**	**1300**	**1400**
Torque (Nm)	**10**	**425**	**640**	**1176**	**1450**	**2850**	**4600**	**5800**	**7400**	**11000**	**13600**	**14200**	**16400**	**17800**	**19200**
*On request	16*	760	1300	1600	2340	3300									

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MAXIMUM TIGHTENING TORQUES FOR BOLTING FLANGES :



		Maximum torques (Nm)			
	Bolting types	5,6 / A307 Gr.B	8,8 / A193 B7	10,9	12,9
Bolting DN	M12 (1/2'')	41,16	84,28	117,6	142,1
	M14 (9/16'')	66,64	132,3	186,2	225,4
	M16 (5/8'')	102,9	205,8	289,1	347,9
	M18 (3/4'')	142,1	284,2	396,9	475,3
	M20 (3/4'')	196	401,8	568,4	676,2
	M22 (7/8'')	259,7	539	764,4	911,4
	M24 (1'')	338,1	695,8	980	1176
	M27 (1''1/8)	499,8	1029	1470	1764
	M30 (1''1/4)	666,4	1421	1960	2352

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FLOW COEFFICIENT Kv (m3 / h) :

DN	Opening Angle								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
32-40	3	4	8	17	25	35	45	56	70
50	3	6	14	22	37	60	95	147	164
65	4	7	10	22	48	78	140	160	201
80	5	12	29	52	88	156	216	281	359
100	9	21	48	87	147	234	346	519	627
125	19	35	78	148	232	372	562	761	995
150	28	48	108	203	324	536	865	1211	1471
200	35	91	206	320	554	952	1427	2163	2509
250	43	143	329	562	865	1471	2336	3460	3936
300	69	216	476	770	1341	2206	3460	4758	5865
350	87	282	606	1101	1817	2768	4325	6661	8179
400	112	363	779	1453	2318	3547	6055	7785	10660
450	138	476	1021	1730	2941	4758	7785	9515	12889
500	173	593	1254	2336	3806	5882	9515	12543	16023
600	260	839	1817	3287	5320	7785	13840	18598	22741
700	346	1038	2336	4325	6470	11678	18079	24609	32448
750	389	1125	2682	4498	7353	11937	19376	29843	35033
800	476	1557	3460	6315	9515	15570	27680	34492	44850
900	952	1903	4239	7699	12110	18598	31659	42385	51247
1000	1644	2682	5017	8564	14705	22923	40655	50170	66104
1100	1817	3028	6920	11245	18165	25950	43250	60193	81526
1200	2509	4325	10380	17300	25950	38925	58820	75688	97355
1300	2768	5190	12975	21625	32870	47575	73525	87365	119787
1400	3287	6055	13840	22490	34600	54495	84770	95583	138400
1600	7482	22836	41953	58820	79580	86677	105530	134421	166080

HEAD LOSS CALCULATIONS :

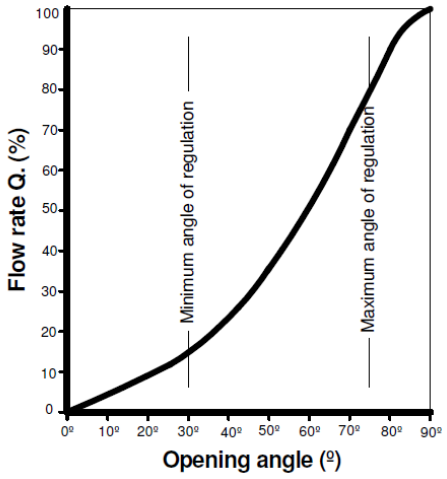
Δp = (Q / Kv)² x SG

Q : flow in m³/h

Δp : Head loss in bar

SG : Specific gravity (= 1 for water)

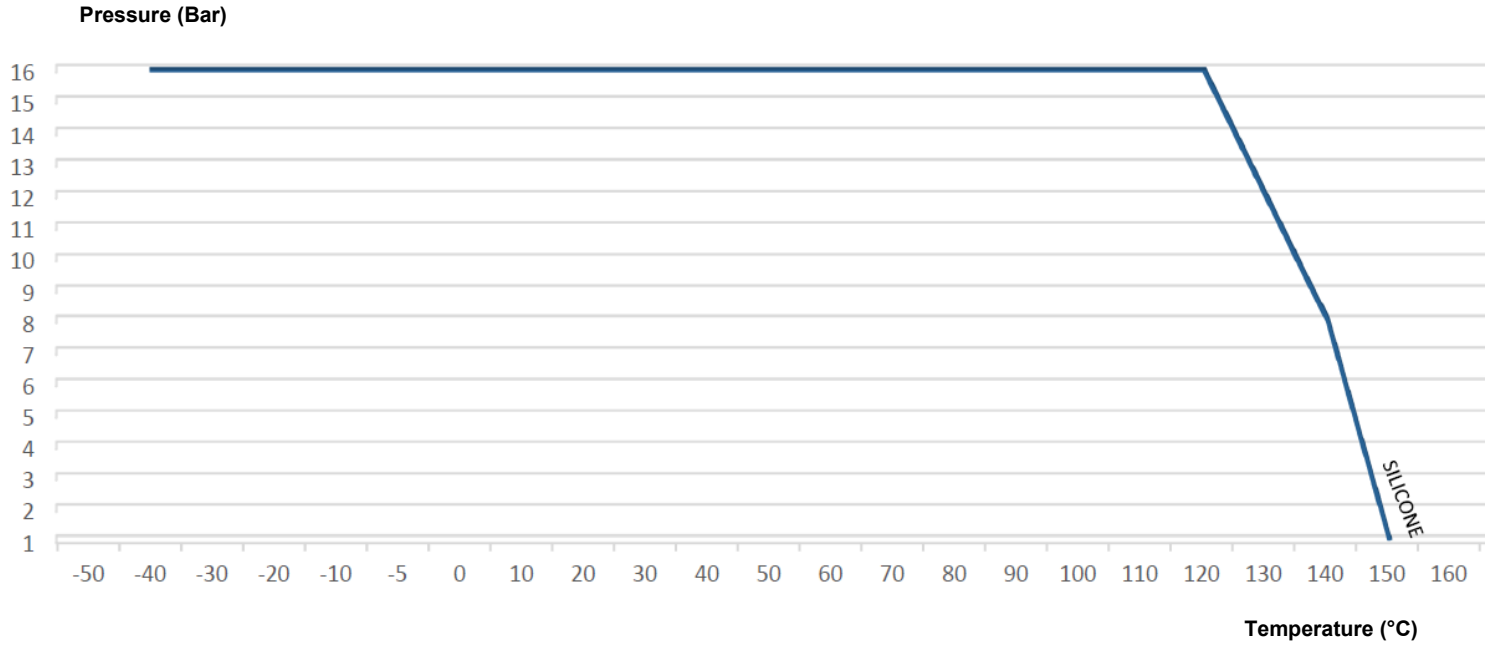
Kv : Volume of water in m³/h, that will flow through a given restriction or valve opening with a pressure drop of 1 bar at 20ºC)



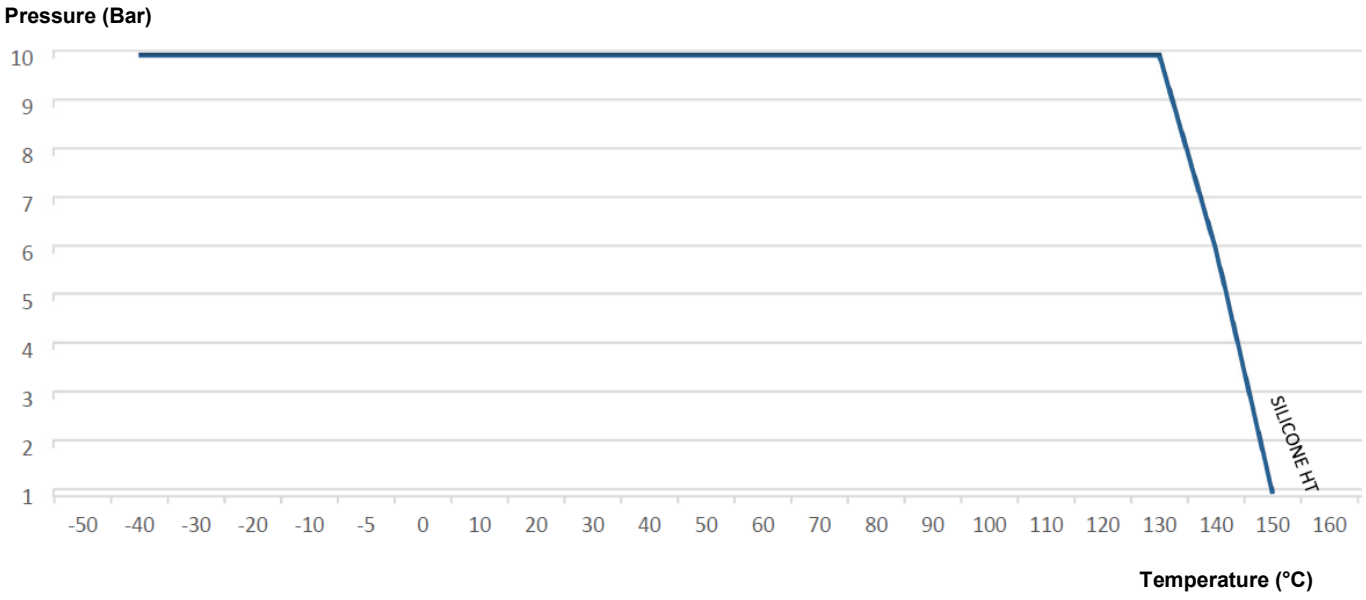
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PRESSURE / TEMPERATURE GRAPH (STEAM EXCLUDED) :

- ***Ps 16 BAR DN40-300 :***



- ***Ps 10 BAR DN350-1200 :***



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REPAIRABILITY :



SEAT **DISC** **STEM** **HANDLE**









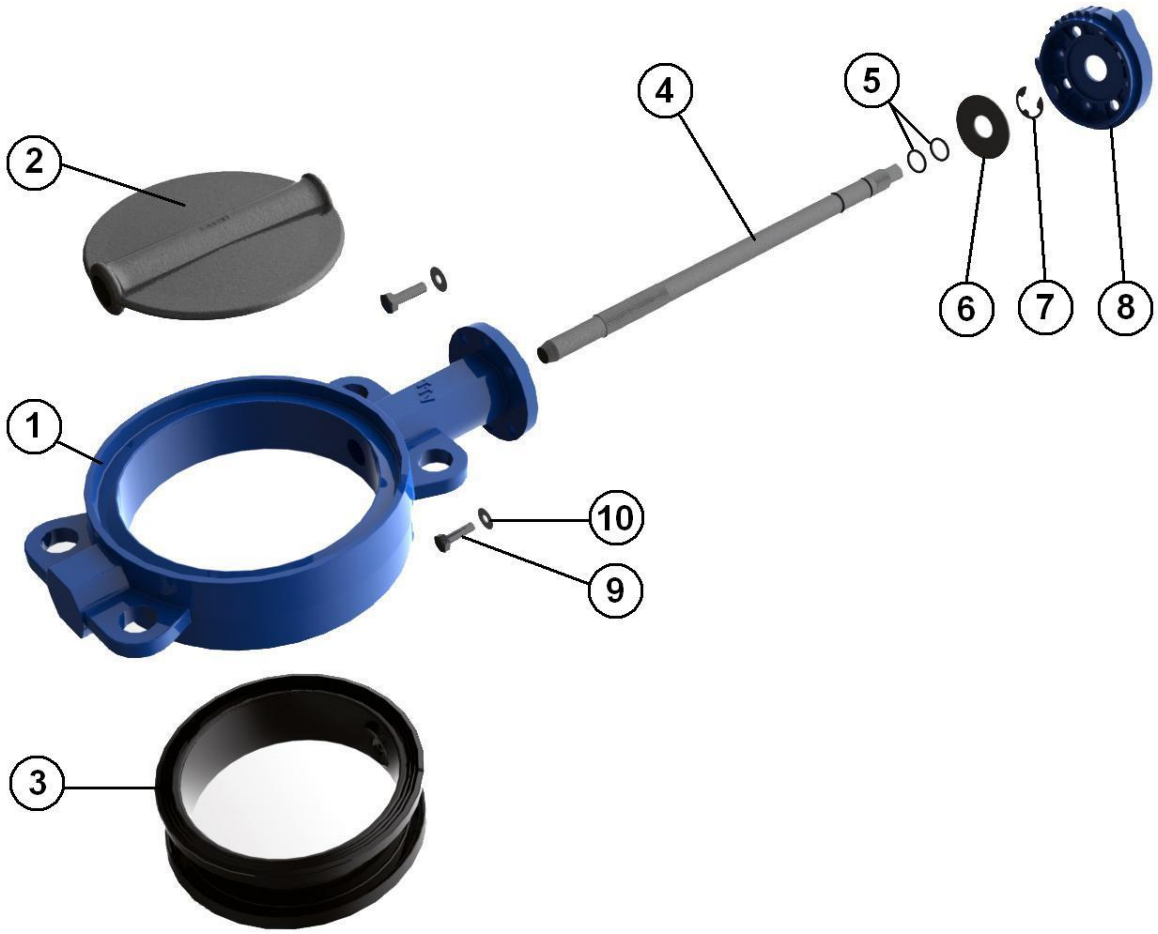
	DN	40	50	65	80	100	125	150	200	250	300
Seat	Ref.	-	9865117	9865118	9865119	9865120	9865121	9865122	9865123	9865134	9865135
Disc	Ref.	9865020	9865021	9865022	9865023	9865024	9865025	9865026	9865027	9865028	9865029
Stem	Ref.	9865040	9865041	9865042	9865043	9865044	9865045	9865046	9865047	9865048	9865049
Handle	Ref.	9831331		9831332	9831333		9831334		9831335	9831336	9831337

	DN	350	400	450	500
Disc	Ref.	9865212	9865213	9865214	9865215

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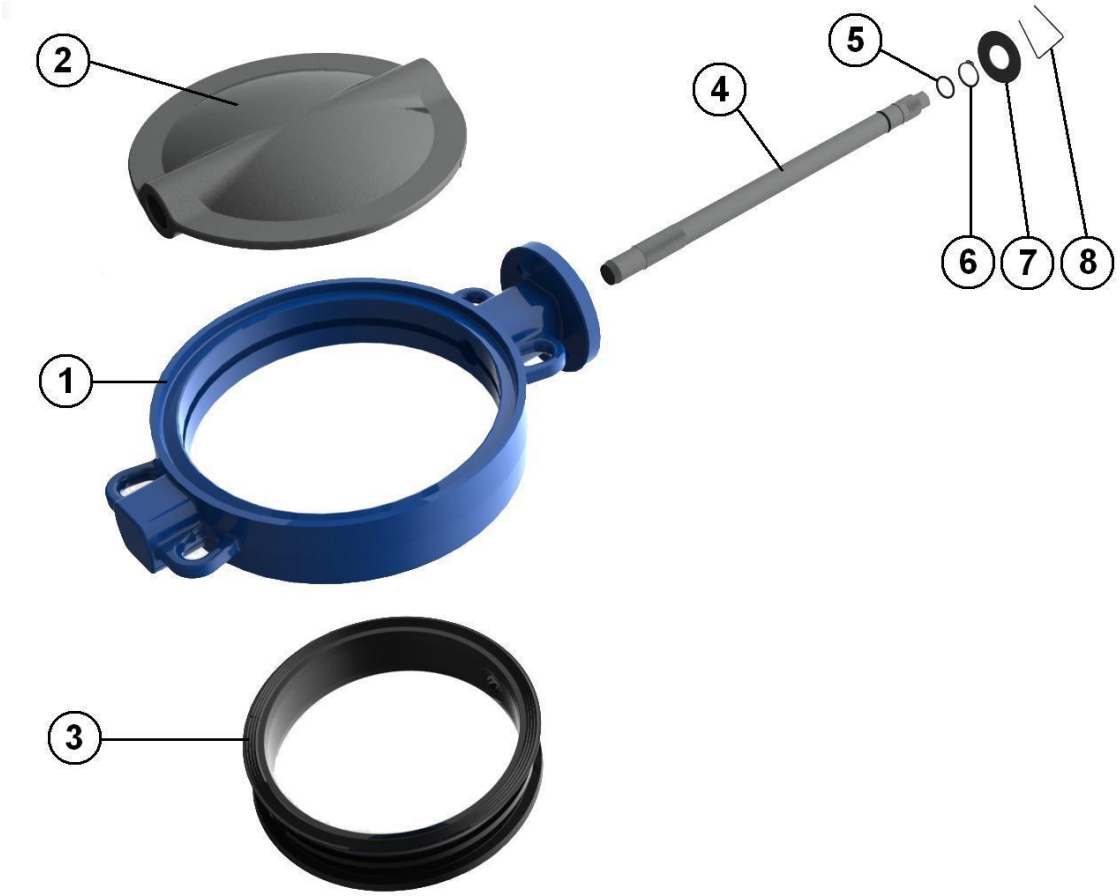
MATERIALS DN 32 - 200 :



Item	Designation	Materials
1	Body	Ductile iron EN GJS-500-7 rilsan coated color RAL 5024 250-300 µ thickness
2	Disc	ASTM A351 CF8M
3	Seat	Silicone
4	Stem	AISI 304
5	O ring	NBR
6	Ring	Steel
7	Circlips	
8	Plate	Aluminium
9	Plate screw	5.6
10	Washer	Steel
	Lever	Aluminium ADC10 with epoxy painting 50µ thickness

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MATERIALS DN 250 - 400 :

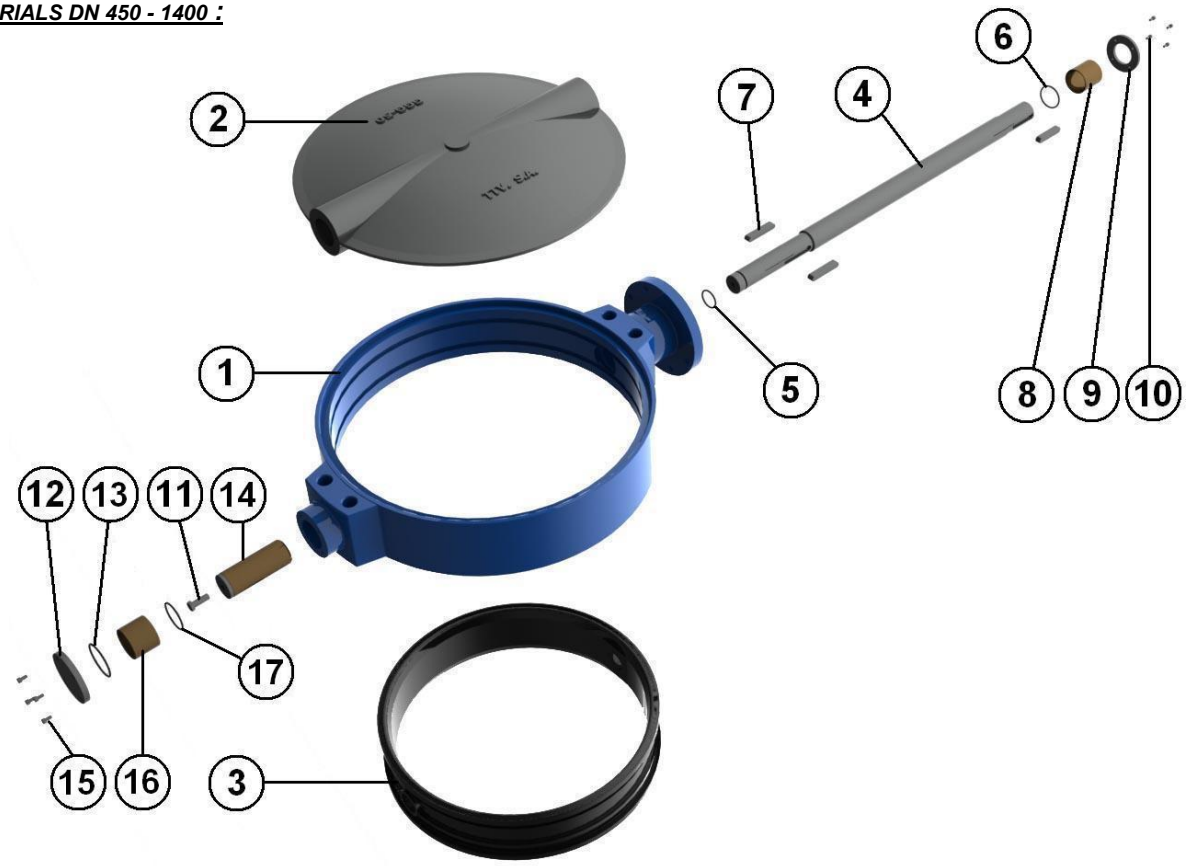


Item	Designation	Materials
1	Body	Ductile iron EN GJS-500-7 rilsan coated color RAL 5024 250-300 µ thickness
2	Disc	ASTM A351 CF8M
3	Seat	Silicone
4	Stem	AISI 304
5	O ring	NBR
6	Circlips	Steel
7	Ring	
8	Spring	
Lever (up to DN300)		Ductile iron EN GJS-500-7 with epoxy painting 50µ thickness

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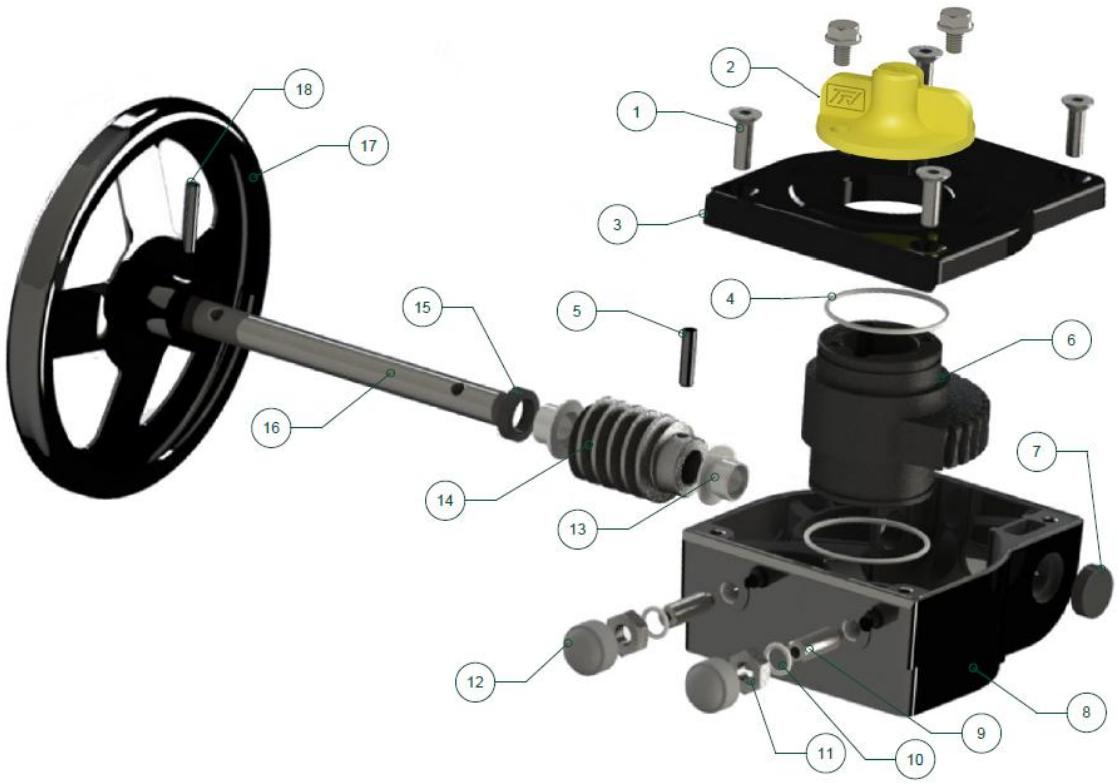
MATERIALS DN 450 - 1400 :



Item	Designation	Materials
1	Body	Ductile iron EN GJS-500-7 rilsan coated color RAL 5024 250-300 µ thickness
2	Disc	ASTM A351 CF8M
3	Seat	Silicone
4	Stem	AISI 304
5	O ring	NBR
6	O ring	NBR
7	Pin	ST – 60
8	Socket	BRONZE
9	Ring	F1110
10	Screw	5.6
11	Screw	5.6
12	Cap	F1110
13	O ring	NBR
14	Socket	F1110
15	Screw	5.6
16	Socket	BRONZE
17	O ring	NBR

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GEARBOX MATERIALS REF. 1197 :

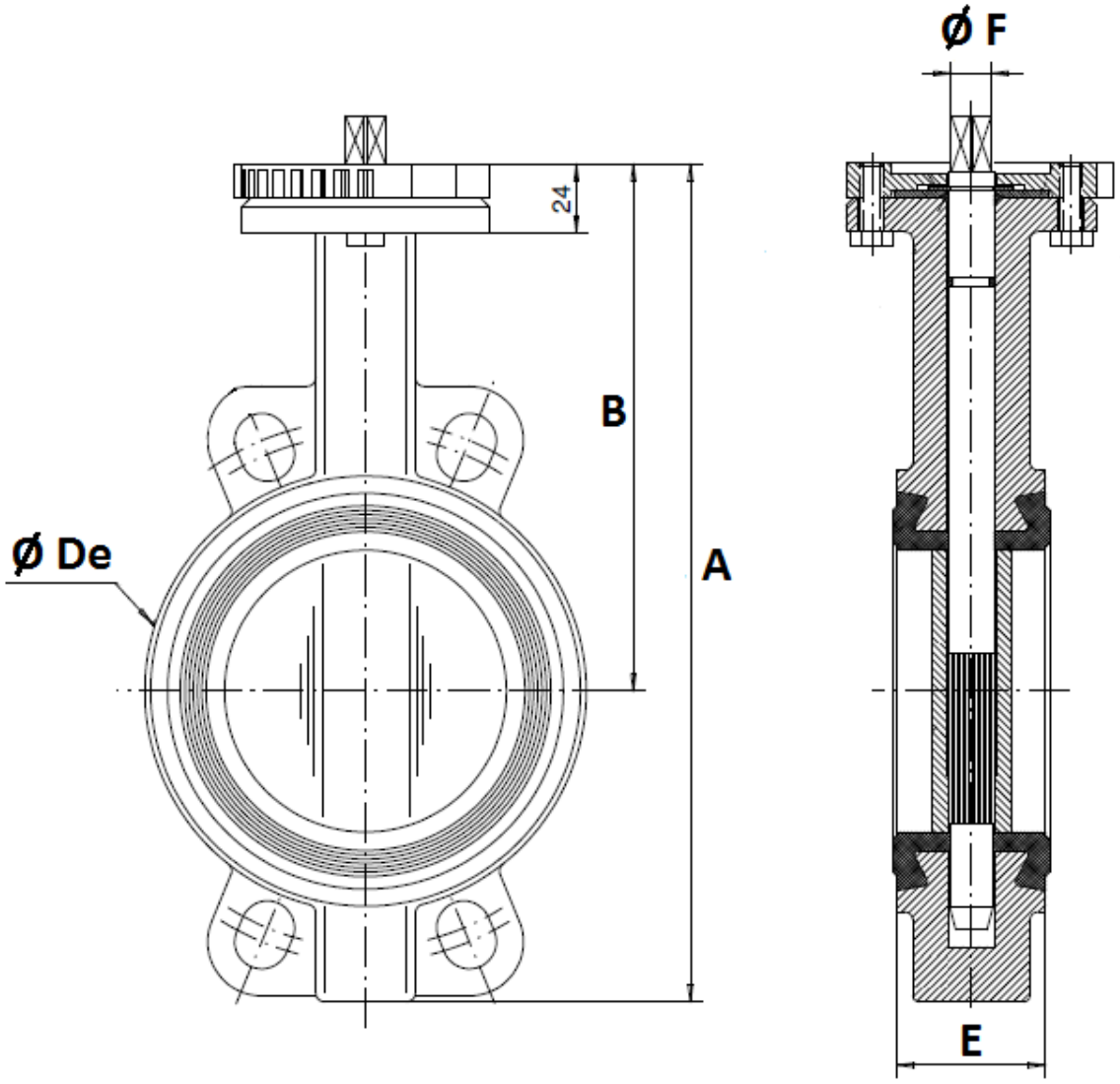


Item	Designation	Materials Ref. 1197
1	Screw	AISI 304
2	Pointer	PVC
3	Bonnet	Aluminium
4	O ring	NBR
5	Pin	Carbon steel
6	Quadrant	Ductile iron EN GJS-400-15
7	Gasket	NBR
8	Body	Aluminium
9	Adjusting bolt	Carbon steel
10	Washer	Galvanized steel
11	Nut	Galvanized steel
12	Cap	NBR 70
13	Bushing	Bronze
14	Worm	Carbon steel 45
15	Gasket	NBR
16	Stem	Carbon steel 45
17	Handwheel	Carbon steel
18	Pin	Carbon steel

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SIZE (in mm) :

- **Valves DN 32 - 200 :**



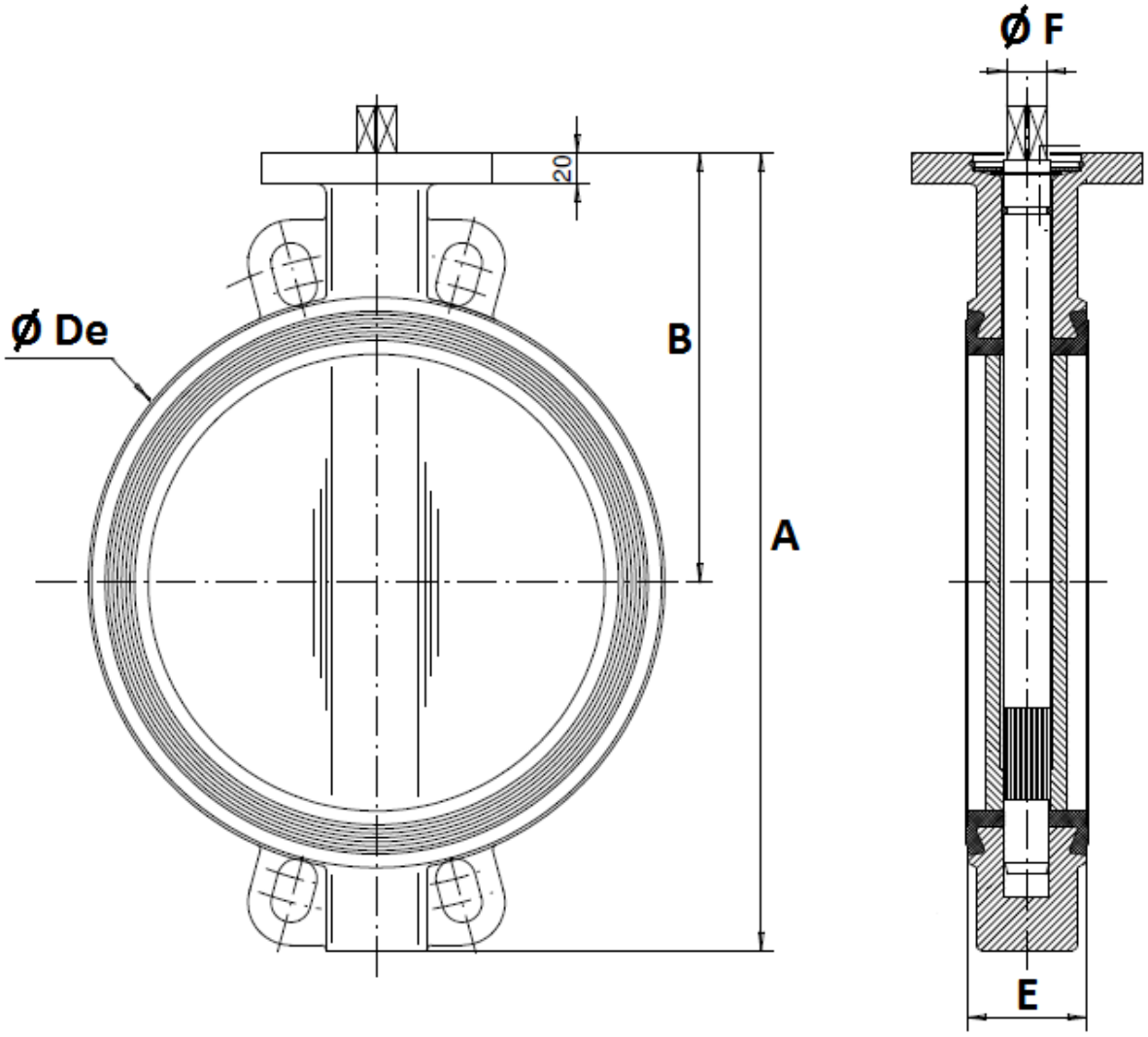
DN	32/40	50	65	80	100	125	150	200
A	206	228	248	265	298	331	349	430
B	140	156	161	169	187	206	215	255
Ø De	82	102	119	135	155	185	208	270
E	33	43	46	46	52	56	56	60
Ø F	9.5	9.5	12	14	14	17	17	21
Weight (Kg)	2.46	3.66	4.4	4.6	6	7.6	9.2	14.7

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SIZE (in mm) :

- **Valves DN 250 -400 :**



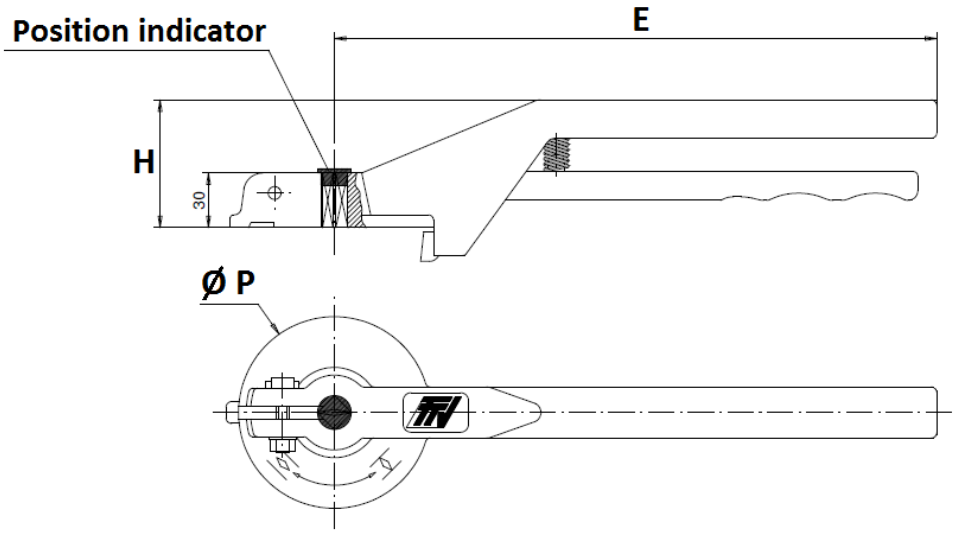
DN	250	300	350	400
A	461	524	570	644
B	248	280	300	340
Ø De	328	381	437	486
E	68	78	78	102
Ø F	23	26.5	26.5	33
Weight (Kg)	24.7	33	39	52

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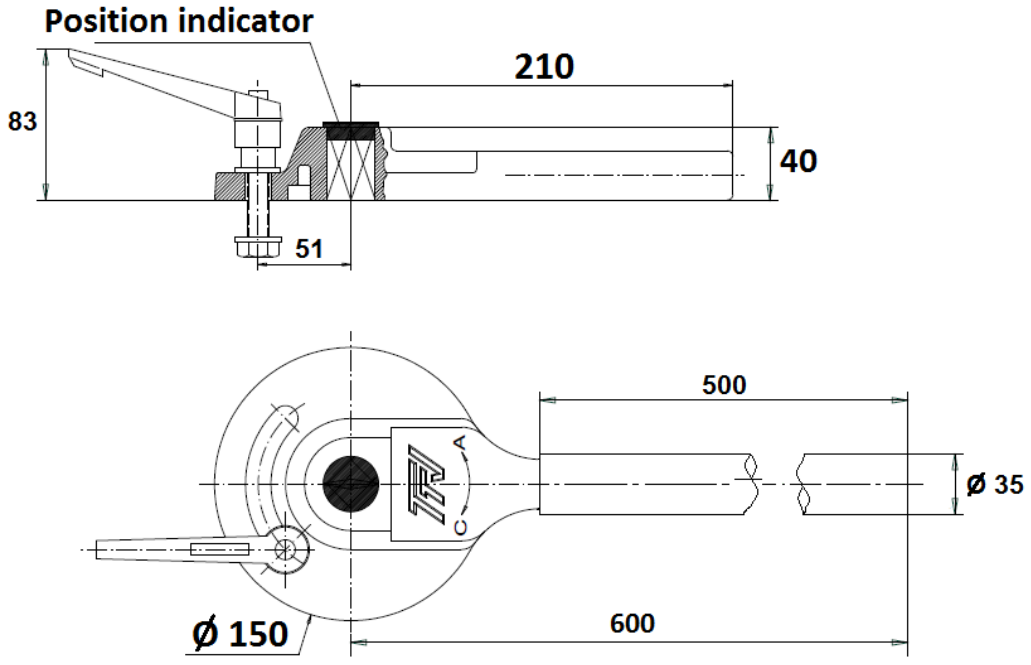
STANDARD LEVERS SIZE (in mm) :

DN 32 – 200 :



DN	32-100	125-200
E	205	330
H	57	70
Ø P	88	105

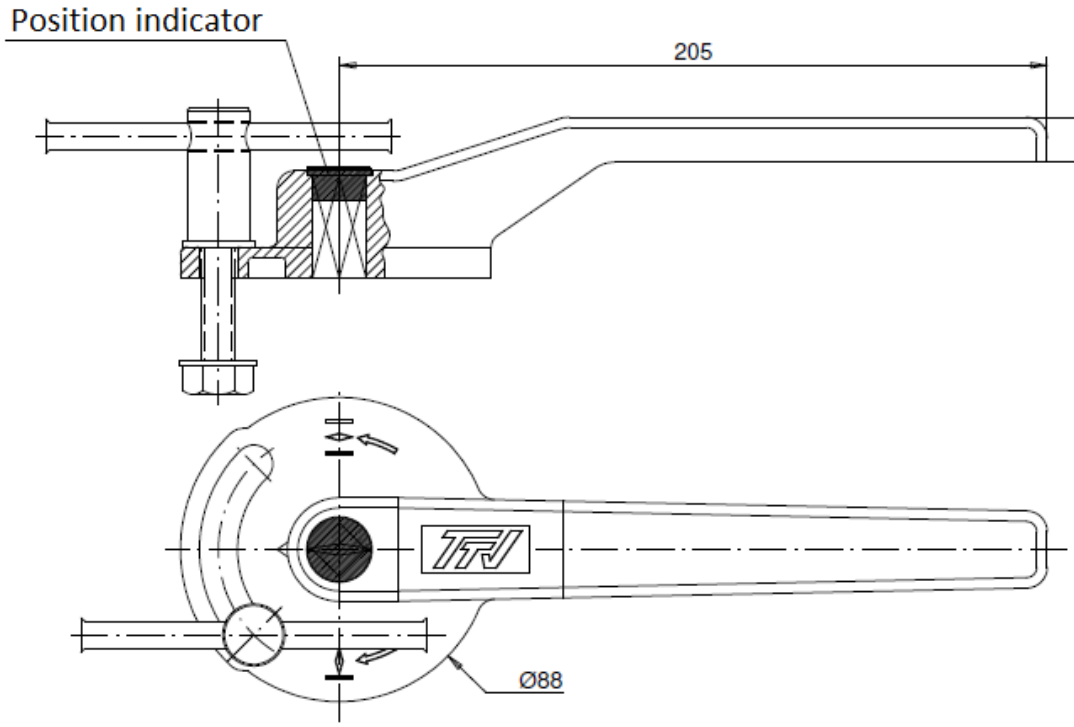
DN 250 – 300 :



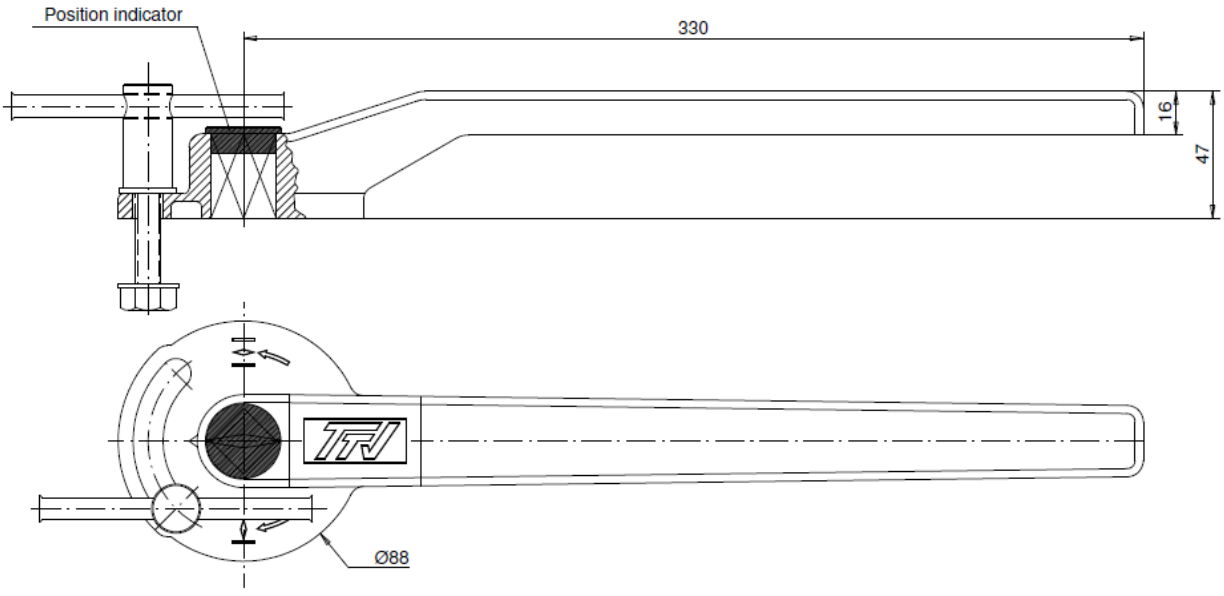
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ASTM A351 CF8M STAINLESS STEEL LEVERS SIZE (in mm) (ON REQUEST) :

DN 40 - 100



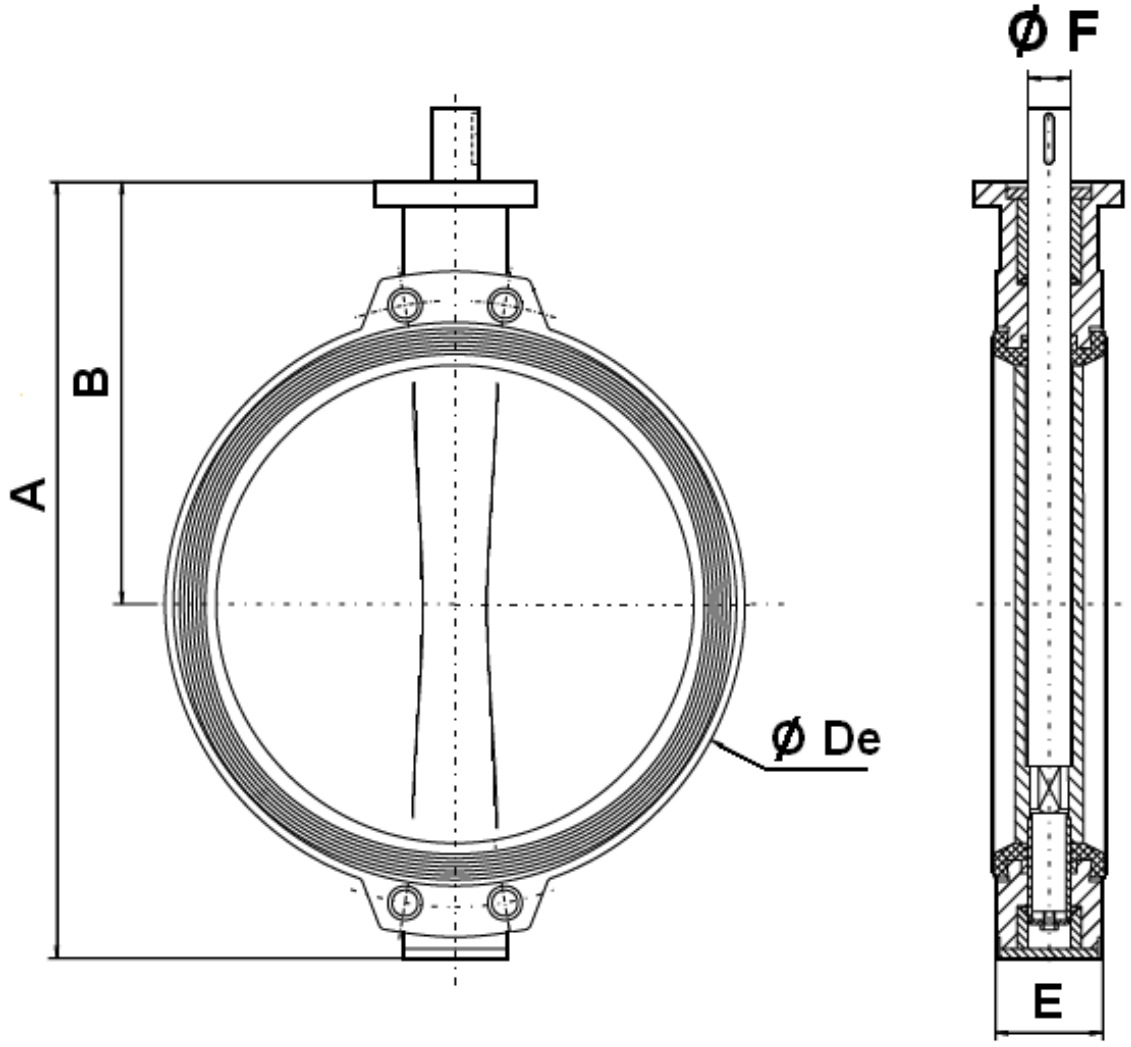
DN 125 - 200



CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
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SIZE (in mm) :

- **Valves DN 450 - 1400 :**



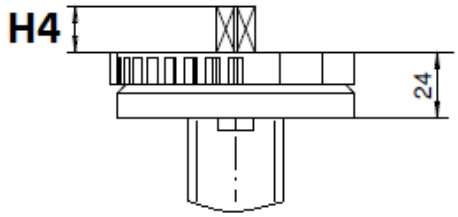
DN	450	500	600	700	750	800	900	1000	1100	1200	1300	1400
A	738	822	965	1100	1150	1248	1325	1457	1580	1720	1910	1990
B	394	440	507	575	600	655	685	754	815	873	1005	1025
Ø De	538	595	695	804	860	911	1010	1124	1225	1330	1460	1530
E	114	127	154	165	190	190	203	216	216	254	360	360
Ø F	50	50	60	60	65	65	80	80	80	100	120	120
Poids (Kg)	87	117	177	258	296	330	505	661	840	1020	1650	1900

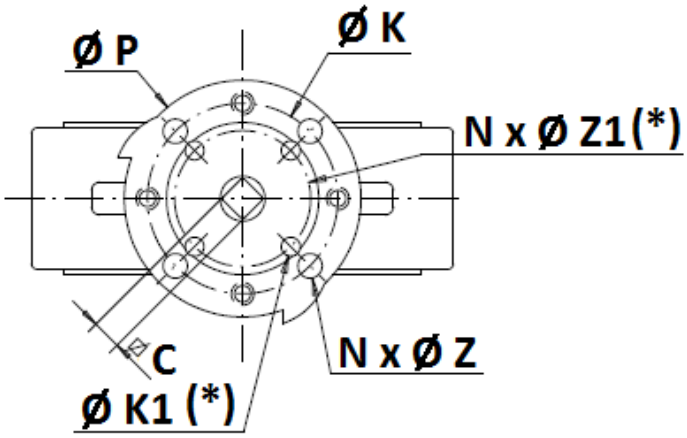
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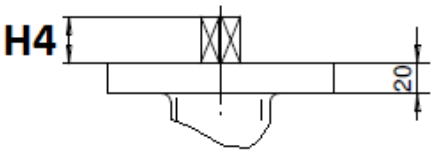
ISO MOUNTING PAD SIZE DN32-400 (in mm) :

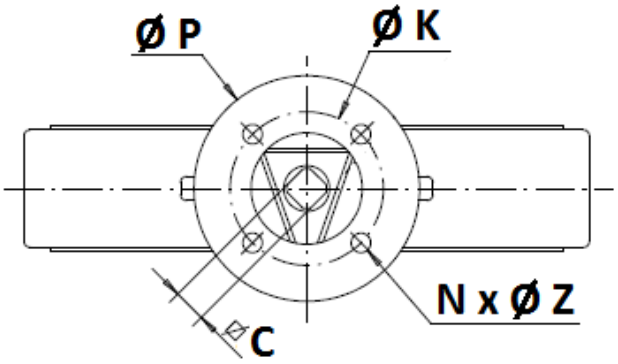
DN 32 – 200





DN250-400





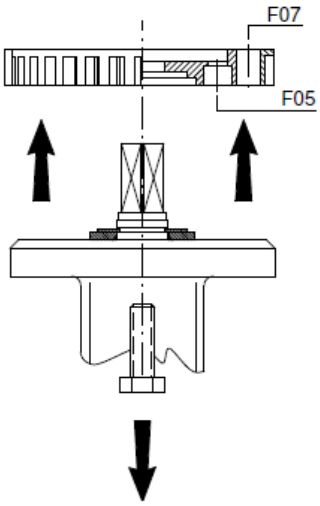
(*) : Only from DN32 to DN100 (see installation with ISO plate F05 next page)

DN	32/40	50	65	80	100	125	150	200	250	300	350	400
H4	14		16		20			24			29	
C	8		9	11		14		17	19	22		27
Ø K	70								102		140	
ISO	F07								F10		F14	
N x Ø Z	4 x 9								4 x 11		4 x 18	
Ø K1	50					-						
ISO 1	F05											
N x Ø Z1	4 x 7											
Ø P	88					105			150		170	

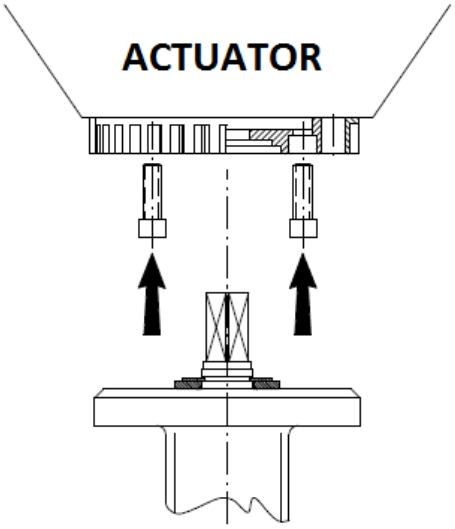
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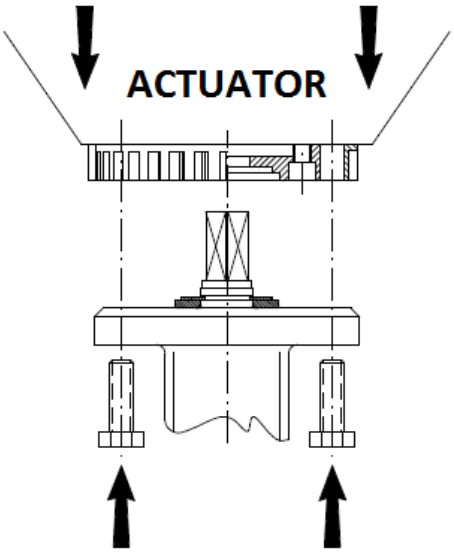
ISO PLATE INSTALLATION FOR DN32-100 ISO F05 :



Unscrew and remove the flange



Screw the flange to the actuator with hexagon socket screws

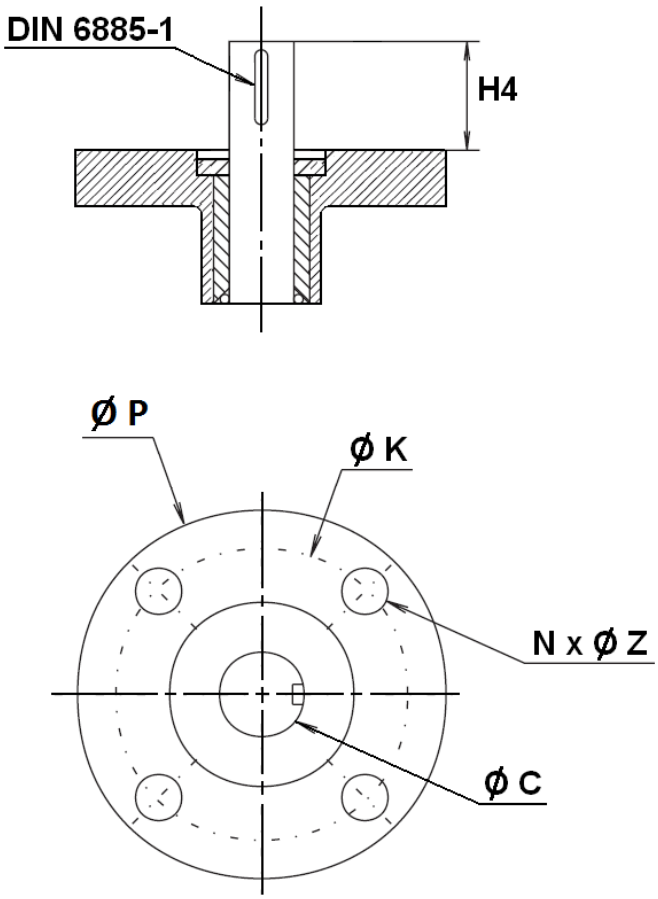


Screw the valve to the flange

CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

ISO MOUNTING PAD SIZE DN450-1400 (in mm) :

DN 450 - 1400

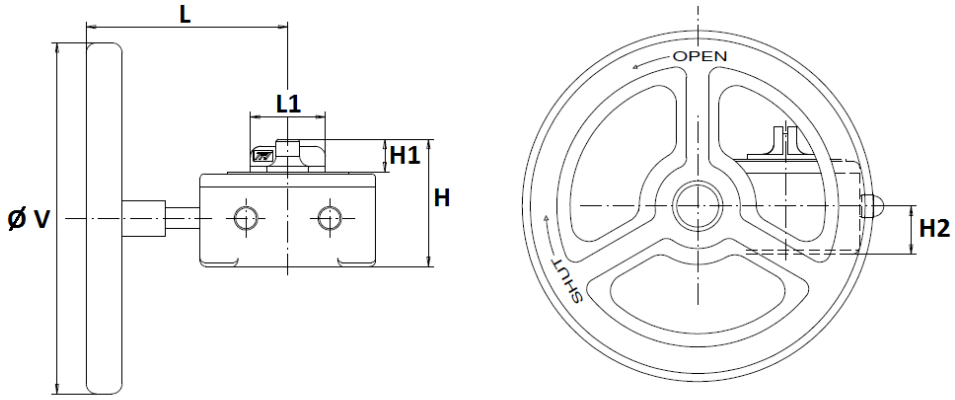


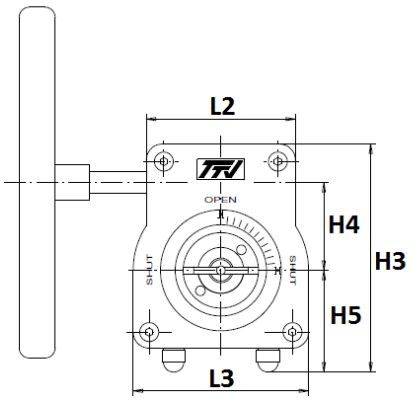
DN	450	500	600	700	750	800	900	1000	1100	1200	1300	1400
H4	80		90		110						120	
Ø C	50		60		65		80			100	120	
Ø K	140		165	254							298	
ISO	F14		F16	F25							F30	
N x Ø Z	4 x 18		4 x 22	8 x 18							8 x 22	
Ø P	175		250	300							350	

Information provided as an indication and subject to possible modification

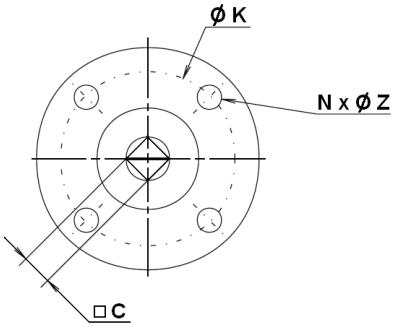
CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

GEARBOX SIZE REF.1197 DN32-400 (in mm) :





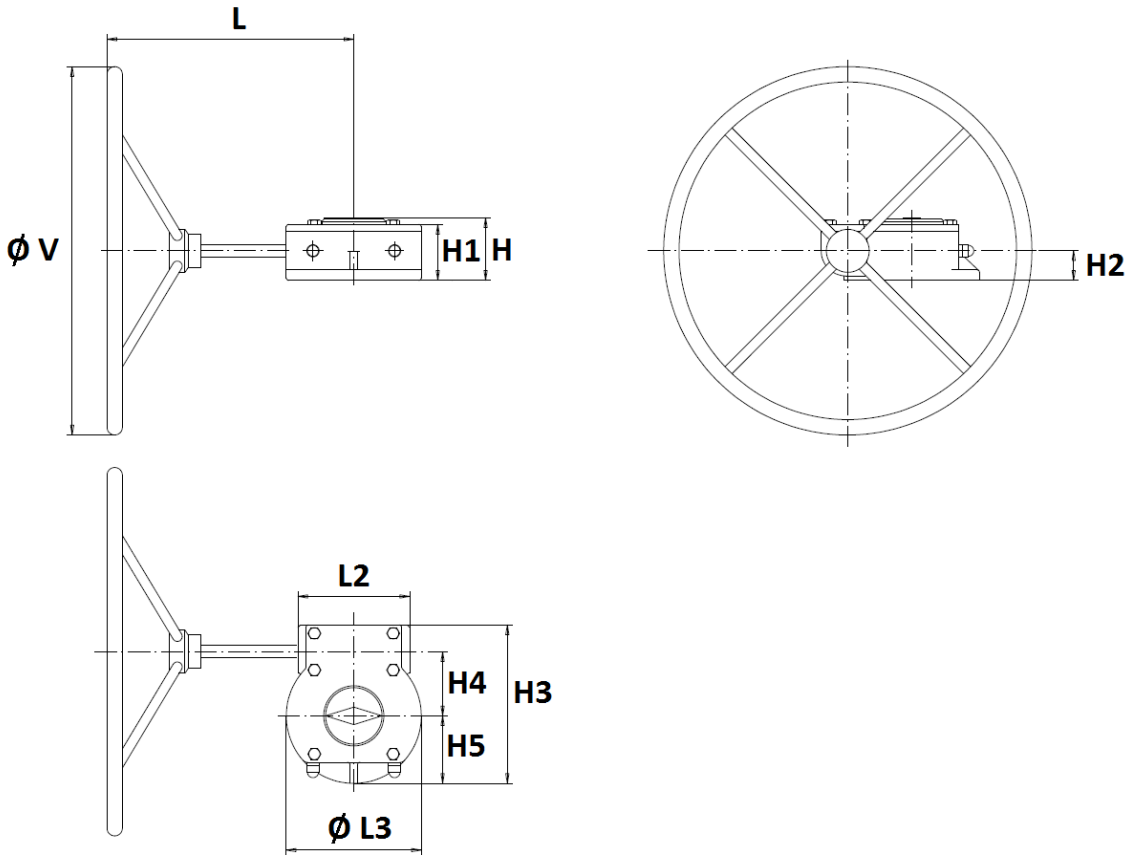
ISO plate size :



DN	32/50	65	80/100	125/150	200	250	300	350	400
L	115	115	115	115	115	223.5	223.5	325	325
L1	43	43	43	43	43	55	55	75	75
L2	85	85	85	85	85	110	110	150	150
L3	100	100	100	100	100	142	142	185	185
H	73	73	73	73	73	103	103	126	126
H1	19	19	19	19	19	33	33	32	32
H2	27.5	27.5	27.5	27.5	27.5	42	42	51	51
H3	130	130	130	130	130	176	176	224	224
H4	50	50	50	50	50	60	60	80	80
H5	58	58	58	58	58	82	82	98	98
Ø V	140	140	140	200	200	300	300	400	400
C	8	9	11	14	17	19	22	22	27
Ø K	70	70	70	70	70	102	102	140	140
ISO	F07	F07	F07	F07	F07	F10	F10	F14	F14
N x Ø Z	4 x M8	4 x M8	4 x M8	4 x M8	4 x M8	4 x M10	4 x M10	4 x M16	4 x M16
Weight (Kg)	1.35	1.35	1.35	1.75	1.75	4	4	9.5	9.5
Ref.	1197050	1197065	1197100	1197150	1197200	1197250	1197300	1197350	1197400

CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

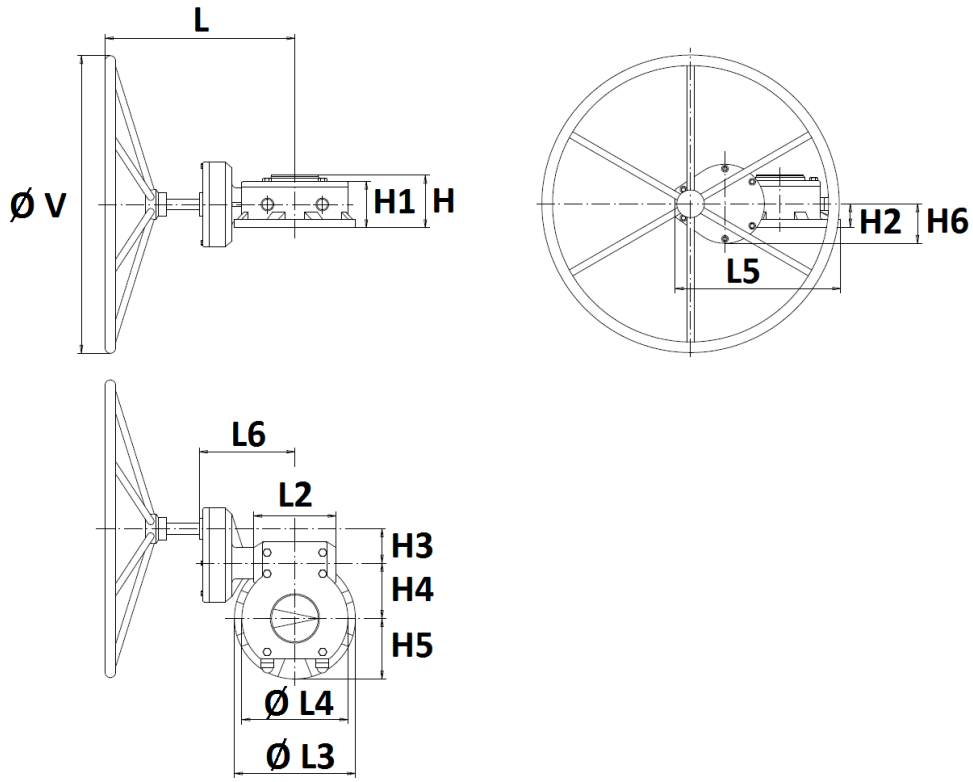
GEARBOX SIZE REF.1197 DN450-600 (in mm) :



DN	450	500	600
L	381	402	447
L2	150	182	194
Ø L3	200	220	285
H	93	102	123.4
H1	82	91	109.5
H2	42	48	55
H3	226	258	322.5
H4	86	104.5	130
H5	100	110	142.5
Ø V	600	600	700
Weight (Kg)	18.8	26.8	38.3
Ref.	1197451	1197501	1197601

CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

GEARBOX SIZE REF.1197 DN700-1200 (in mm) :

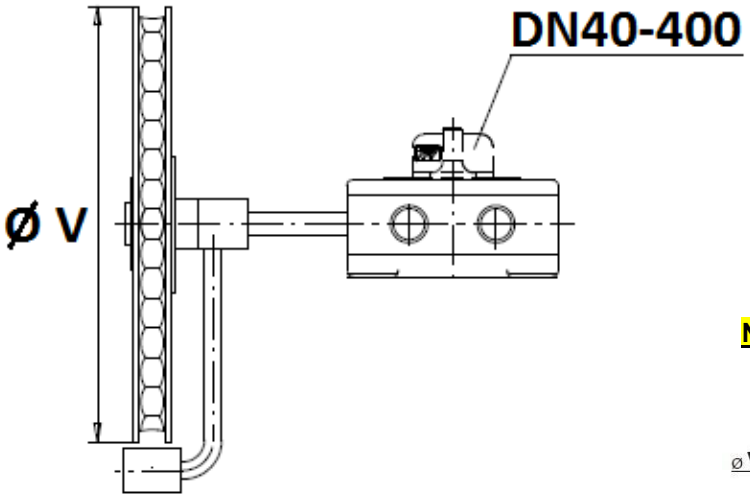


DN	700	750	800	900-1100	1200
L	447	447	447	500	556
L2	194	194	194	300	324
Ø L3	285	285	285	370	370
Ø L4	250	250	250	370	370
L5	389.5	389.5	389.5	469	574
H	123.4	123.4	123.4	138.9	139
H1	109.5	109.5	109.5		
H2	55	55	55	59	59
H3	81	81	81	81	175
H4	130	130	130	182	182
H5	142.5	142.5	142.5	170	170
H6	93	93	93	93	90
Ø V	500	500	700	600	800
Weight (Kg)	49	49	49	75	87
Ref.	1197700		1197800		

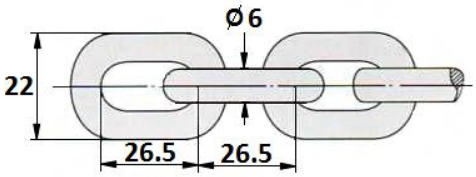
Information provided as an indication and subject to possible modification

CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

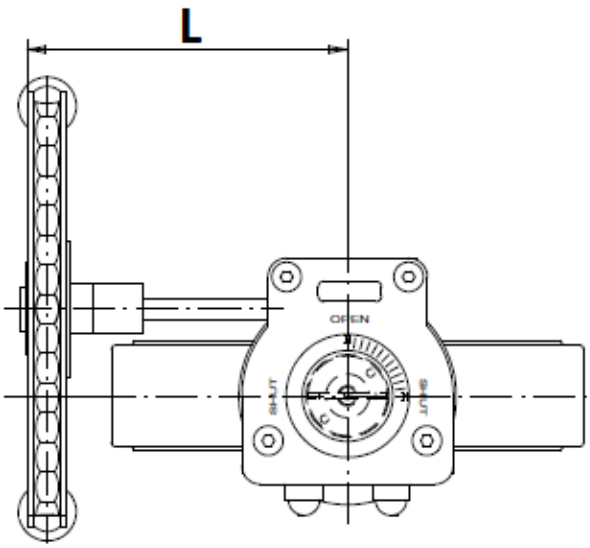
CHAIN GEARBOX SIZE REF.1194 (in mm) :

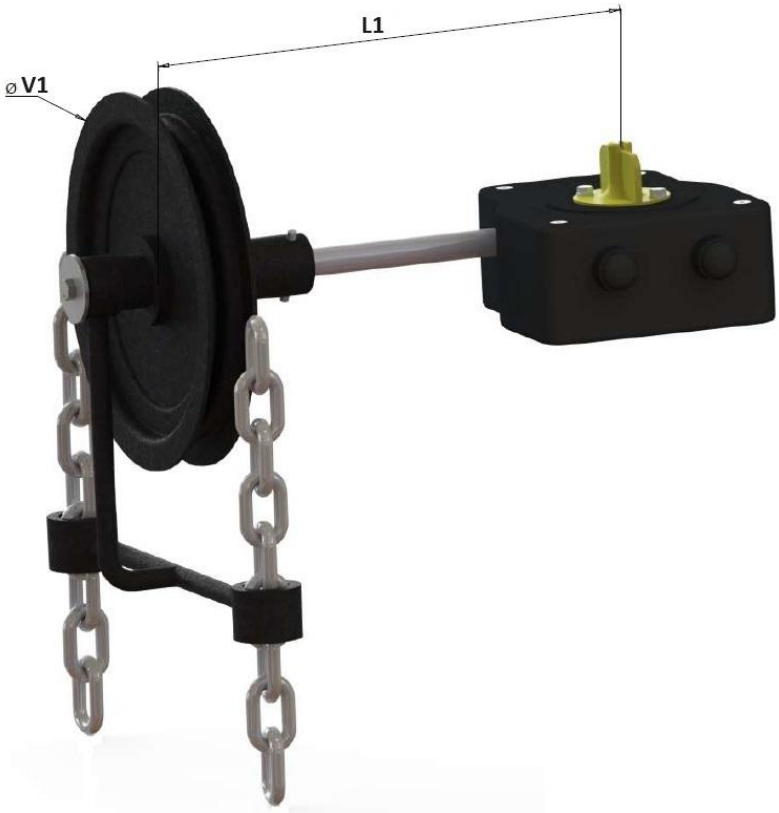


Chain size :



NEW TYPE (MODIFICATION IN PROGRESS) :





DN	32/50	65	80/100	125/150	200	250	300	350	400	450	500
L	120			215		325		331	352	350	365
L1	110					250		300			
Ø V	160			210		300		400		500	500
Ø V1											
Weight (in Kg)	2.35	2.35	2.35	2.75	2.75	6.8	6.8	14.3	14.3	26.2	33.7
Ref.	1194050	1194065	1194100	1194150	1194200	1194250	1194300	1194350	1194400		

CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

GEARBOX SPECIFICATIONS :

DN	32/50	65	80/100	125/150	200	250	300	350
Ref.	1197050	1197065	1197100	1197150	1197200	1197250	1197300	1197350
Ratio factor	37 : 1	37 : 1	37 : 1	37 : 1	37 : 1	36 : 1	36 : 1	50 : 1
Turns number for closing / opening	9.25	9.25	9.25	9.25	9.25	9	9	12.5
Input torque (Nm)	9	9	9	9	9	18.5	18.5	32
Output torque (Nm)	250	250	250	250	250	500	500	1200

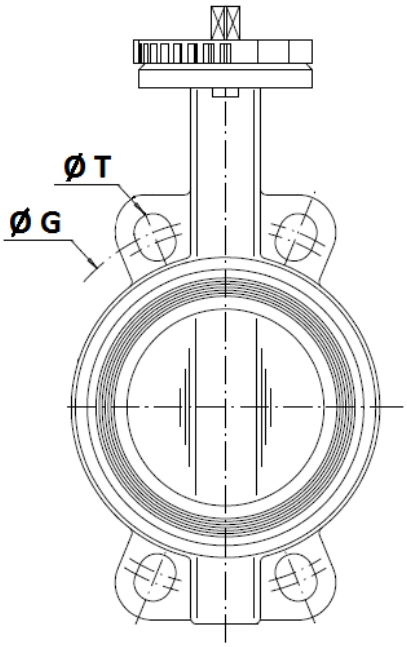
DN	400	450	500	600	700	800	900	1000
Ref.	1197400	1197451	1197501	1197601	1197700	1197800	-	-
Ratio factor	50 : 1	38 : 1	55 : 1	52 : 1	208 : 1	208 : 1	312 : 1	312 : 1
Turns number for closing / opening	12.5	9.5	13.75	13	52	52	78	78
Input torque (Nm)	32	56.8	64	115.4	43.6	43.6	53.4	53.4
Output torque (Nm)	1200	1620	2640	4500	6800	6800	12500	12500

DN	1200
Ratio factor	702 : 1
Turns number for closing / opening	175.5
Input torque (Nm)	32.3
Output torque (Nm)	17000

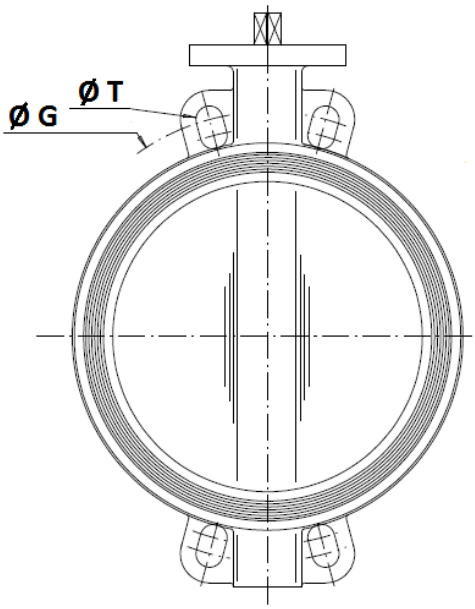
CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

BETWEEN FLANGES SIZE (in mm) :

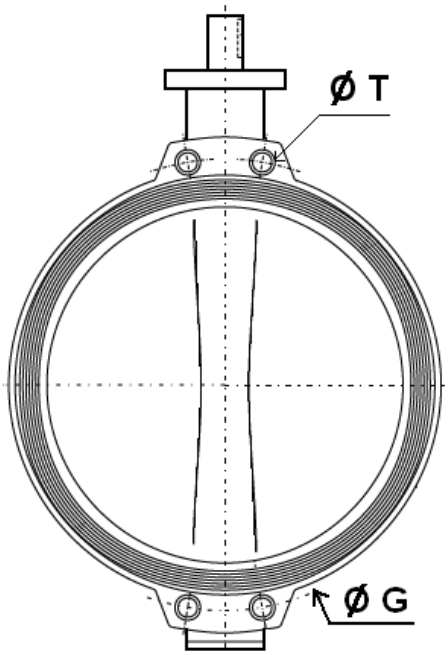
DN 32-200



DN250 – 400



DN450-1400



	DN (mm)	32	40	50	65	80	100	125	150	200	250	300	350	400
	NPS (")	1"1/4	1"1/2	2"	2"1/2	3"	4"	5"	6"	8"	10"	12"	14"	16"
PN10	Ø G	100	110	125	145	160	180	210	240	295	350	400	460	515
	Ø T	18	18	18	18	18	18	18	23	23	23	23	23	27
PN16	Ø G	100	110	125	145	160	180	210	240	295	355	410	470	525
	Ø T	18	18	18	18	18	18	18	23	23	27	27	27	30
Class 150	Ø G	88.9	98.5	120.6	139.7	152.4	190.5	215.9	241.3	298.5	362	431.8	476.3	539.8
	Ø T	16	16	19	19	19	19	23	23	23	26	26	29	29

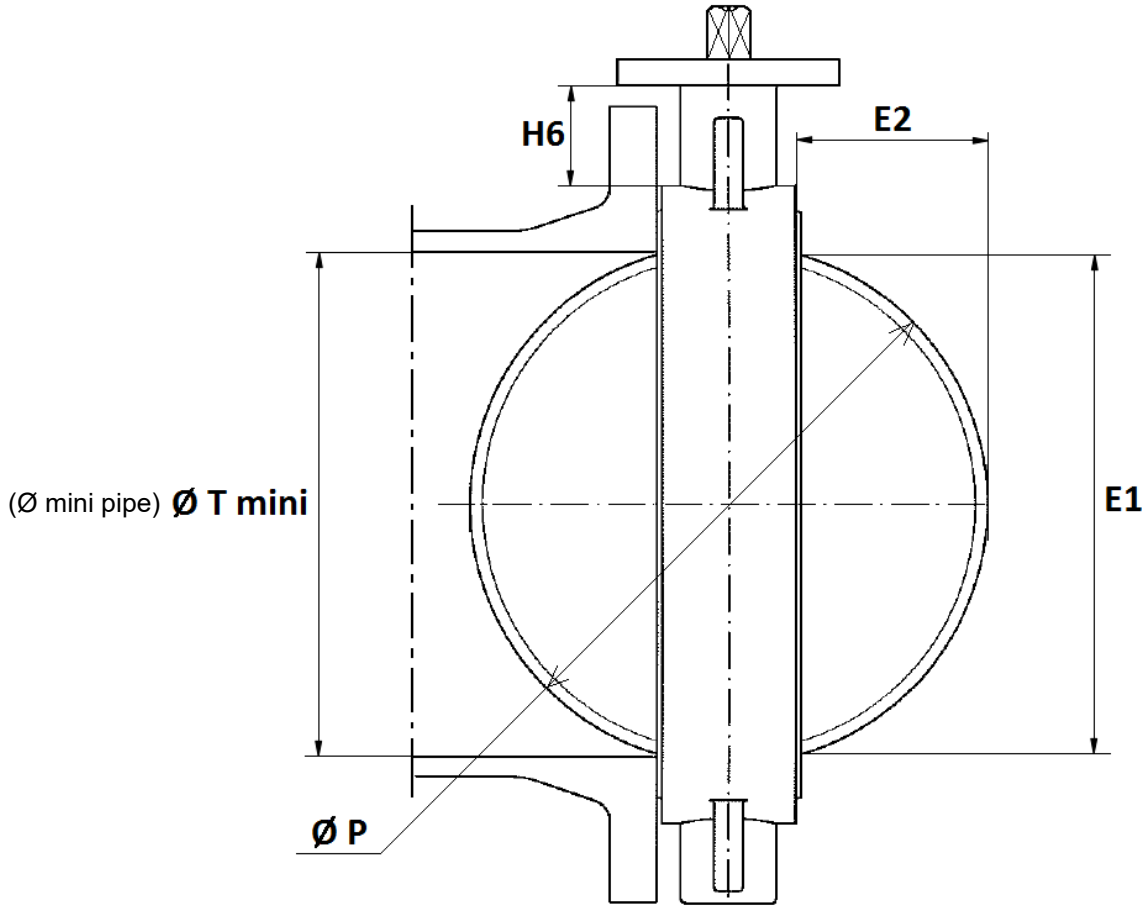
	DN (mm)	450	500	600	700	750	800	900	1000	1100	1200	1300	1400
	NPS (")	18"	20"	24"	28"	30"	32"	36"	40"	44"	48"	52"	56"
PN10	Ø G	565	620	725	840	900	950	1050	1160	1270	1380	-	1590
	Ø T	M24	M24	M27	M27	M30	M30	M30	M33	M33	M36	-	M39
PN16	Ø G	585	650	770	840	900	950	1050	1170	1270	1390	-	1590
	Ø T	M27	M30	M33	M33	M33	M36	M36	M39	M39	M45	-	M45
Class 150	Ø G	577.9	635	749.3	863	914	978	1086	1200	1314	1422	1537	1651
	Ø T (BSW)*	1 1/8"	1 1/8"	1 1/4"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 3/4"	1 3/4"
	Ø T (Metric)	M30	M30	M33	M33	M33	M39	M39	M39	M39	M39		

* Threaded BSW on standard, on request metric threaded for Class 150

Information provided as an indication and subject to possible modification

CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

NECK AND DISC SIZE (in mm) :



DN	32/40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
E1	23	24.5	46	65	85	109	136	188	238	289	331	385	424	479	575
E2	3.5	3.5	9.5	17	24	33.5	45.5	69	90	110.5	131	148	162.5	184	221
H6	76	82	80	80	88	93	89	99	71	76	69	80	96	119	127
Ø T mini	26	27.5	49	68	88	112	139	191	241	292	334	388	427	482	578
Ø P	40	50	65	80	100	123	147	198	248	299	340	398	439	495	596

DN	700	750	800	900	1000	1100	1200	1300	1400
E1	680	721	777	850	957	1052	1146	1261	1368
E2	267.5	278	305	335.5	382.5	429	460	475.5	527.5
H6	148	140	170	150	162	175	176	240	228
Ø T mini	683	724	780	853	960	1055	1149	1264	1371
Ø P	700	746	800	874	981	1074	1174	1311	1415

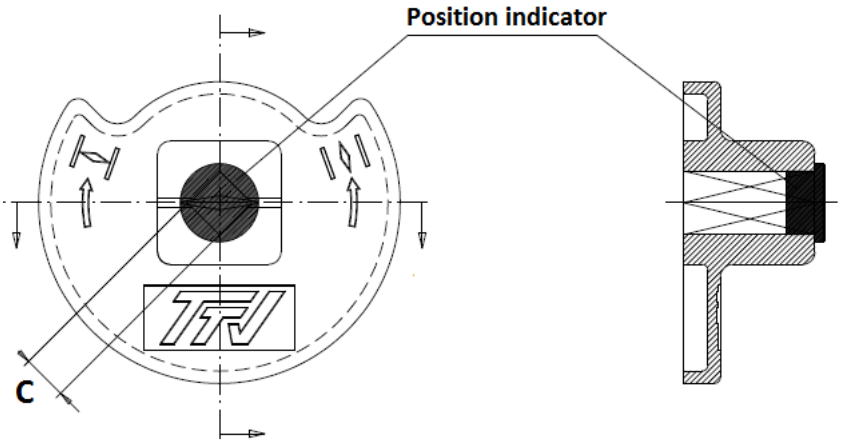
Sferaco 90 rue du Ruisseau 38297 St Quentin Fallavier Tel: + 33 (0) 474.94.15.90 Fax: + 33 (0) 474.95.62.08 Internet: www.sferaco.com E-mail : info@sferaco.fr

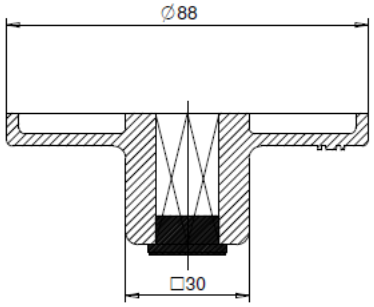
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CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

SIZE (in mm) :

- **Square lever for special key (30x30 mm) :**





DN	32-50	65	80-100	125-150	200
C	8x8	9x9	11x11	14x14	17x17
Ref.	9866501	9866502	9866503	9866504	9866505

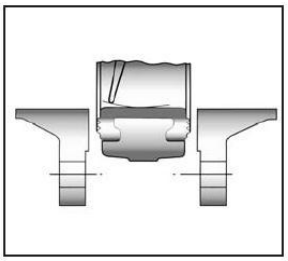
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CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
DUCTILE IRON BODY-STAINLESS STEEL DISC AND SILICONE SEAT

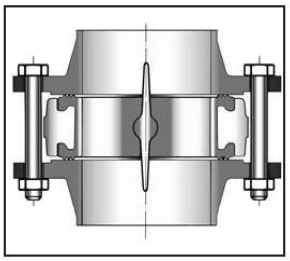
STANDARDS :

- Manufacturer certified ISO 9001:2015
- Designing according to ISO 10631 and EN 593
- DIRECTIVE 2014/68/EU : For liquids or Gas of Group 1
  - DN32-50 : Risk category I, CE marking
  - DN65-200 : Risk category II, CE0094 marking
  - DN250-300 : Risk category III, CE0094 marking
  - DN350 : Risk category II, CE0094 marking
  - DN400-600 : Risk category III, CE0094 marking
- Certificate 3.1 on request
- Pressure tests according to EN 12266-1, Rate A
- Between flanges according to EN 1092-1 PN10/16
- ISO 5211 mounting pad
- Length according to :
  - ISO 5752 short series 20
  - EN 558 series 20 (NF 29305)
  - BS 5155 series 4
  - DIN 3202 part 3, series K1
  - API 609 Table 1 up to DN600
  - ASME B16.10 Table 8 column 3 up to DN350, column 4 from DN400 to 600
- ATEX Group II Category 2 G/2D Zone 1 & 21 Zone 2 &22 (on request)
- The valves are suitable for use in a safety instrumented system up to SIL 2 in low demand mode. Under consideration of the minimum required hardware fault tolerance HFT= 1 the valves may be used in a redundant architecture up to SIL 3.
- Approval certificate **Marine BUREAU VERITAS on request**

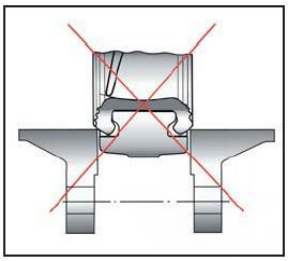
INSTALLATION INSTRUCTIONS :



Half open valve introduction



Complete opened disc valves when screw tightening



ADVICE : Our opinion and our advice are not guaranteed and SFERACO shall not be liable for the consequences of damages.
The customer must check the right choice of the products with the real service conditions.

Sferaco 90 rue du Ruisseau 38297 St Quentin Fallavier Tel: + 33 (0) 474.94.15.90 Fax: + 33 (0) 474.95.62.08 Internet: www.sferaco.com E-mail : info@sferaco.fr

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