

**CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
WITH FOOD SILICONE SEAT AND POLISH STAINLESS STEEL DISC**

Wafer butterfly valve TTV excellence range for high temperature, oil, acids, air or inerted gas, food products.
 Approval Bureau Veritas marine certificate., 5 years warranty.
 Ductile iron EN GJS-500-7 body, polish stainless steel disc and Food Silicone seat FDA and CE 1935/2004.
 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).



- Size :** DN32 to DN600
- 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, Food 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)
- Between flanges PN10 from DN450 to DN 600
- Full crossing stem
- Removable food silicone seat, dovetail type above DN40
- Polish stainless steel disc
- 9 positions lever with locking device up to DN200 , stop in all positions but non lockable from DN250 to 300
- 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 :

- High temperature, oil, acids, air or inerted gas, alimentary products
- Min and max Temperature Ts : - 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
- IP65 gear box possible (**Ref. 1197**) from DN 32 to DN 600
- IP65 chain gear box (**Ref. 1194**) from DN 32 to DN 500
- On request, stem extension with special length (**Ref. 98665**)
- On request, stainless steel handle and bolting **Ref. 9831250-9831264**

CONNECTION :

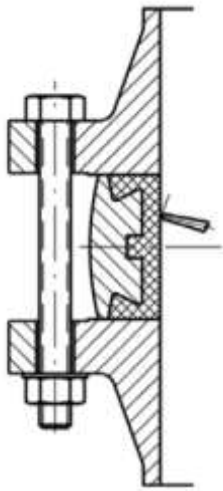
- Between flanges PN10/16 from DN32/40 to 400 and Class 150 (PN20) from DN40 to 400
- Between flanges PN10 from DN450 to DN 600

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					

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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	5	10	16	22	31	36	36	36
50	3	7	15	33	44	48	54	54	54
65	6	10	21	40	57	86	102	102	102
80	7	16	37	56	84	182	246	246	246
100	9	22	51	88	134	187	255	336	336
125	21	33	91	153	232	331	468	560	560
150	45	69	149	281	302	597	822	1015	1072
200	55	131	254	420	631	904	1388	1758	1758
250	64	246	442	710	1056	1522	2128	3096	3096
300	100	275	472	953	1450	2093	2972	4193	4480
350	152	341	766	881	1773	2788	3978	6251	6260
400	182	542	1060	1764	2666	3836	5470	8403	8839
450	227	611	1229	2064	3133	4510	6458	9387	9387
500	342	837	1635	2795	4100	5896	8398	11830	13079
600	432	1143	2286	3833	6187	8369	11916	17917	17917

HEAD LOSS CALCULATIONS :

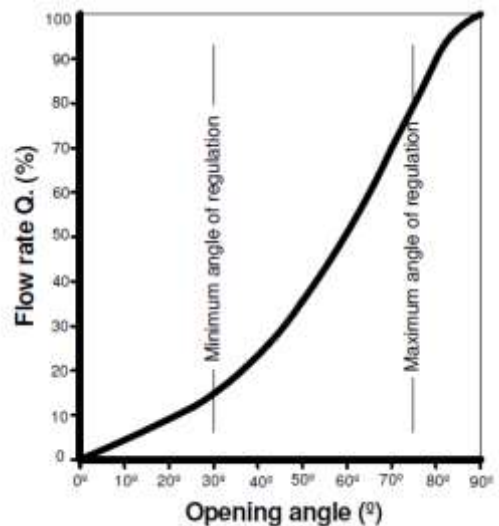
$\Delta p = (Q / Kv)^2 \times SG$

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 20°C)

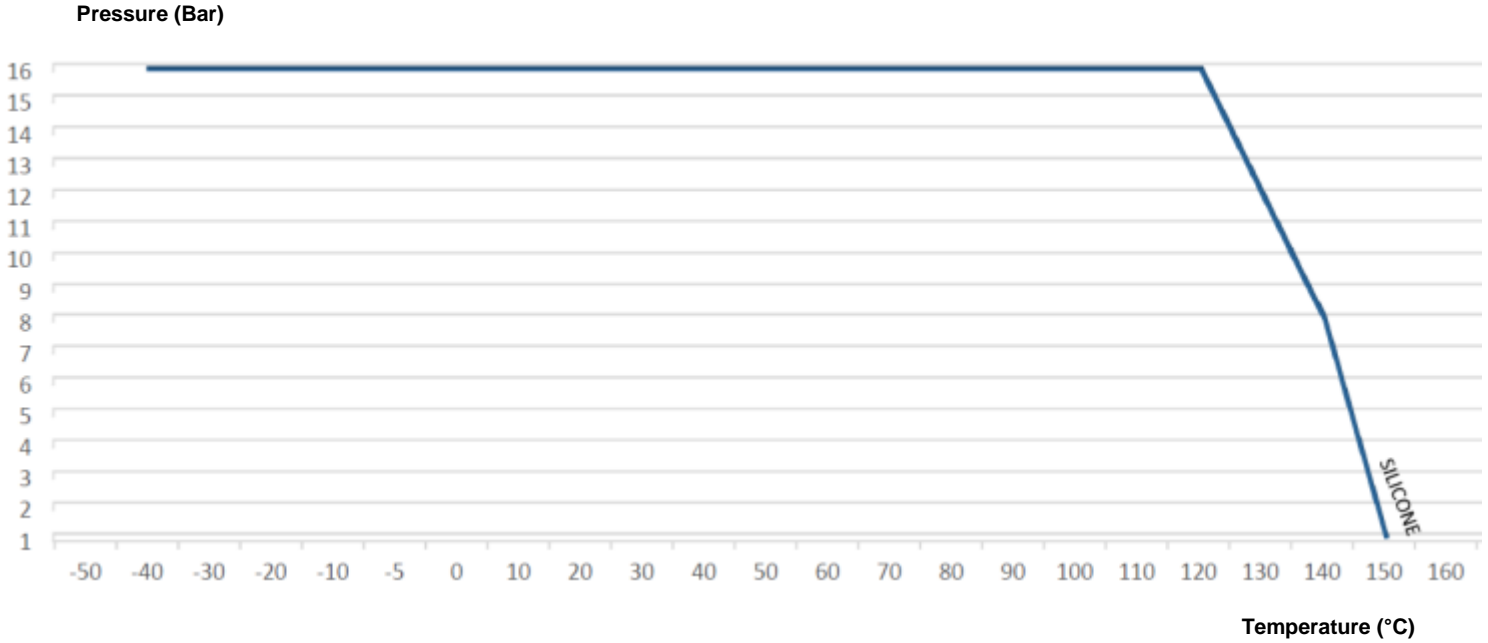




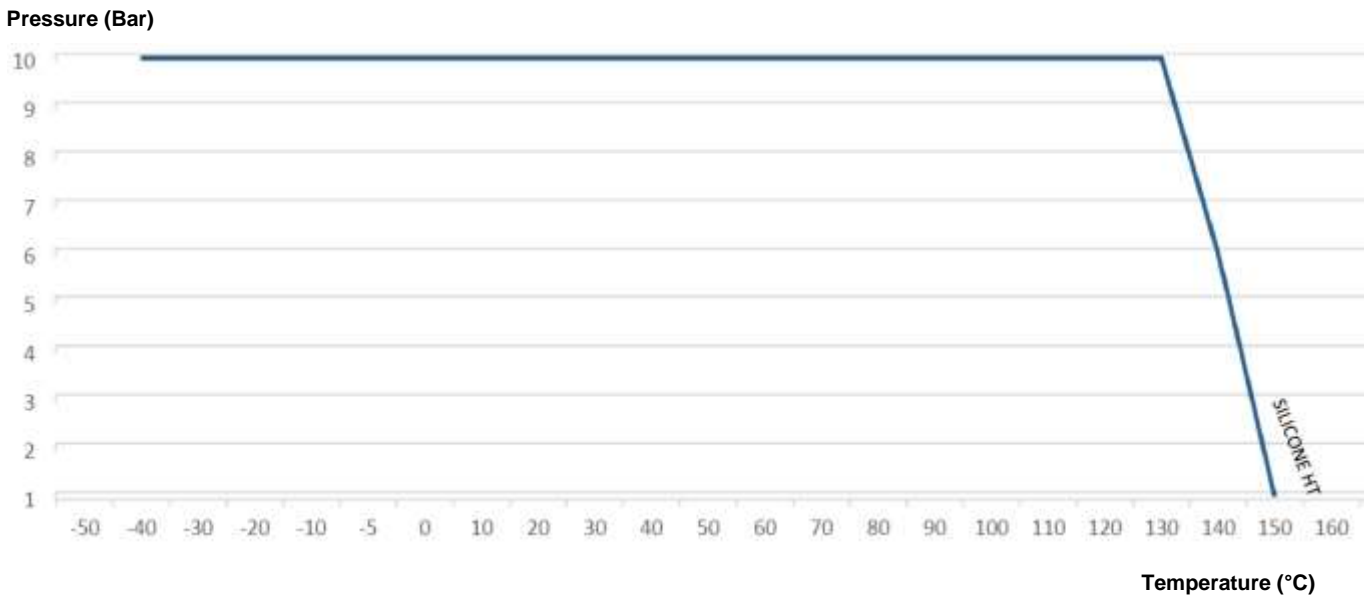
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PRESSURE / TEMPERATURE GRAPH (STEAM EXCLUDED) :

- **DN40-300 :**



- **DN350-600 :**



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REPAIRABILITY :



SEAT

STEM

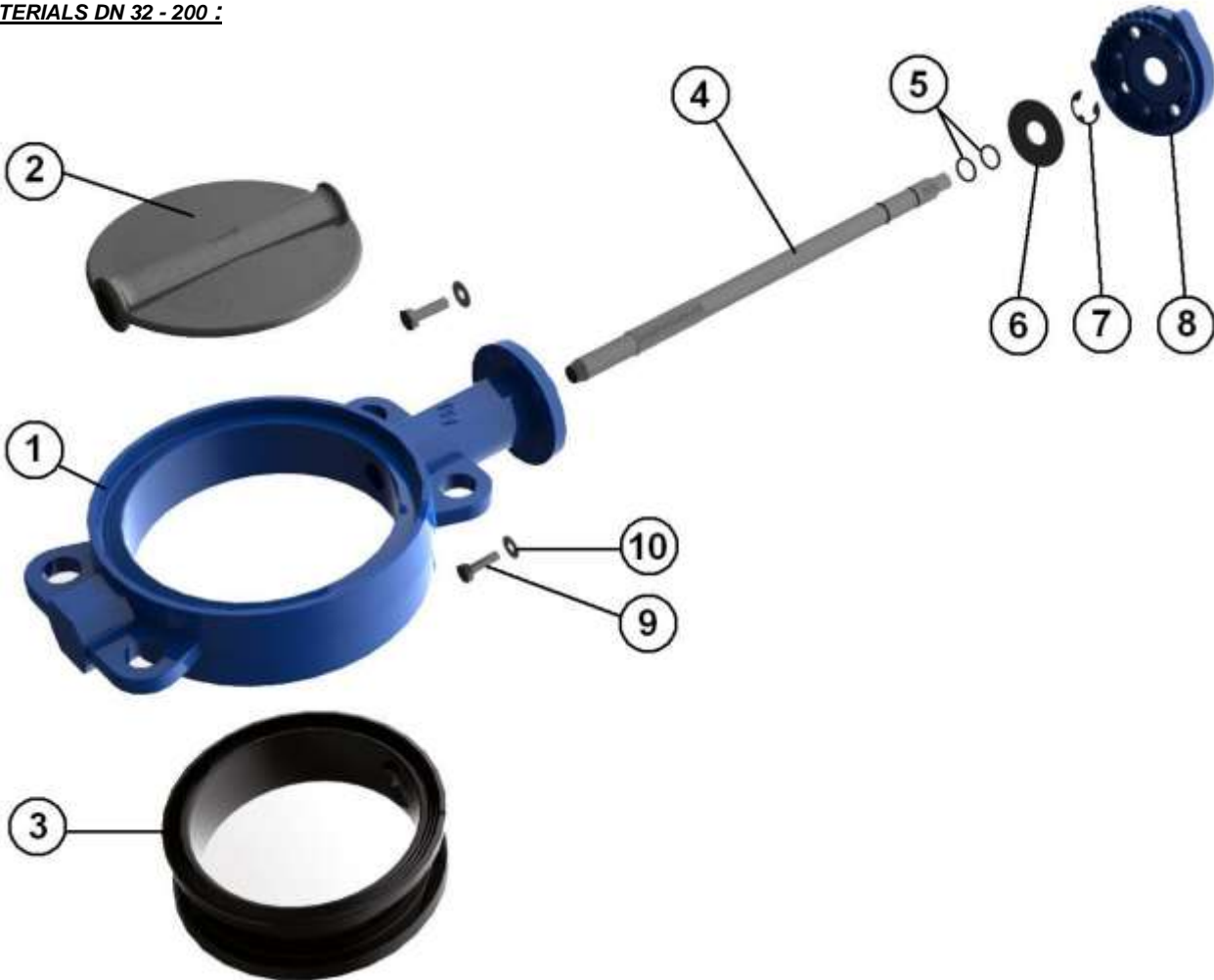
HANDLE



	DN	40	50	65	80	100	125	150	200	250	300
Seat	Ref.	9865240	9865241	9865242	9865243	9865244	9865245	9865246	9865247	9865248	9865249
Stem	Ref.	9865040	9865041	9865042	9865043	9865044	9865045	9865046	9865047	9865048	9865049
Handle	Ref.	9831331		9831332	9831333		9831334		9831335	9831336	9831337

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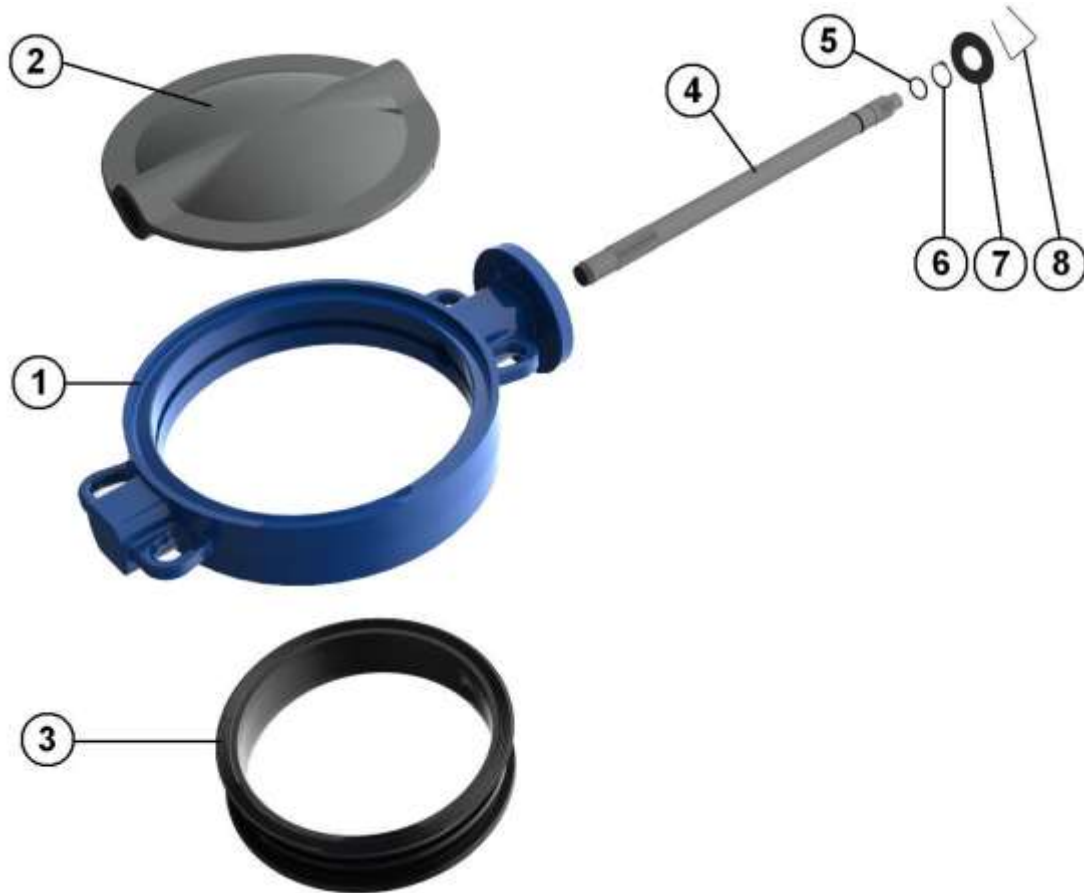
MATERIALS DN 32 - 200 :



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 polish
3	Seat	Food silicone
4	Stem	AISI 304
5	O ring	NBR
6	Ring	Steel
7	Circlips	Steel
8	Plate	Aluminium
9	Plate screw	5.6
10	Washer	Steel
	Handle	Aluminium ADC10 with epoxy painting 50μ thickness

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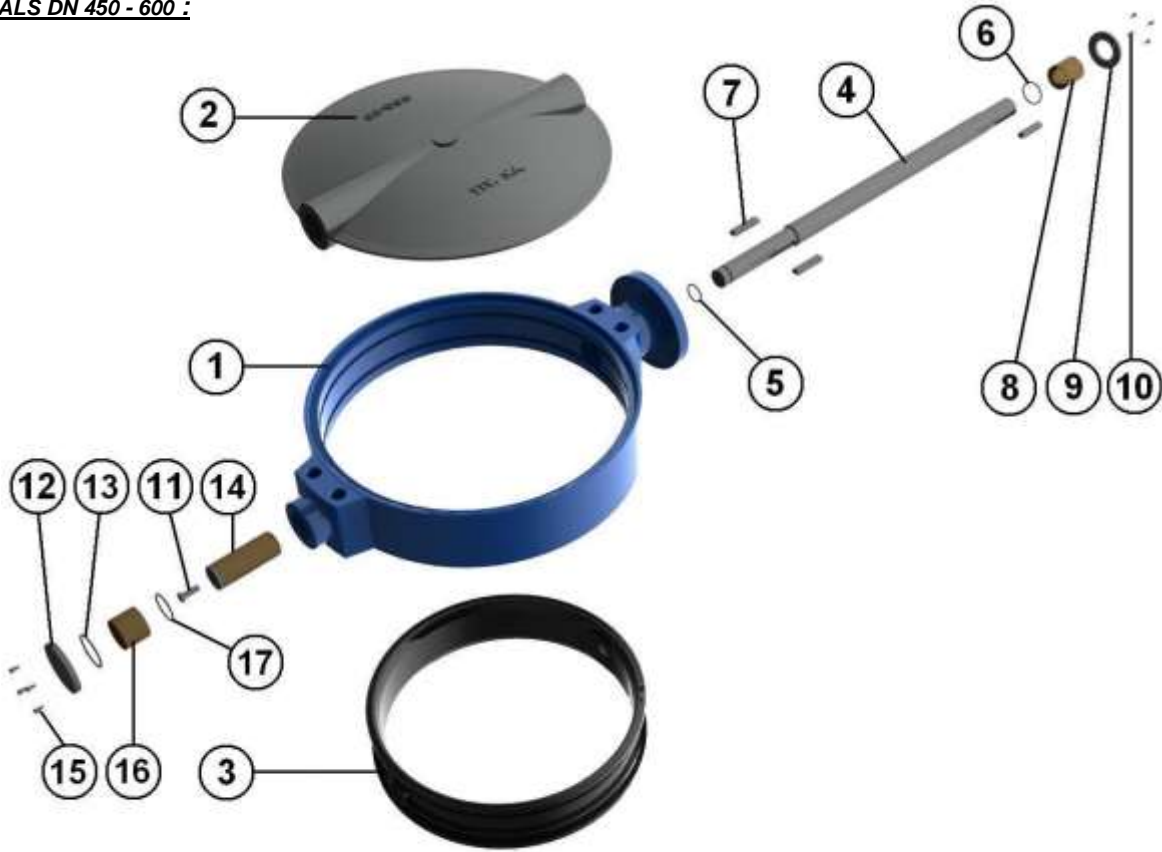
MATERIALS DN 250 - 400 :



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 polish
3	Seat	Food Silicone
4	Stem	AISI 304
5	O ring	NBR
6	Circlips	Steel
7	Ring	Steel
8	Spring	Steel
Handle (up to DN300)		Ductile iron EN GJS-500-7 with epoxy painting 50μ thickness

**CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
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MATERIALS DN 450 - 600 :



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 polish
3	Seat	Food Silicone
4	Stem	AISI 304
5	O ring	NBR
6	O ring	NBR
7	Pin	ST – 60
8	Bushing	BRONZE
9	Ring	F1110
10	Screw	5.6
11	Screw	5.6
12	Cap	F1110
13	O ring	NBR
14	Bushing	F1110
15	Screw	5.6
16	Bushing	BRONZE
17	O ring	NBR

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GEARBOX MATERIALS REF. 1197 :

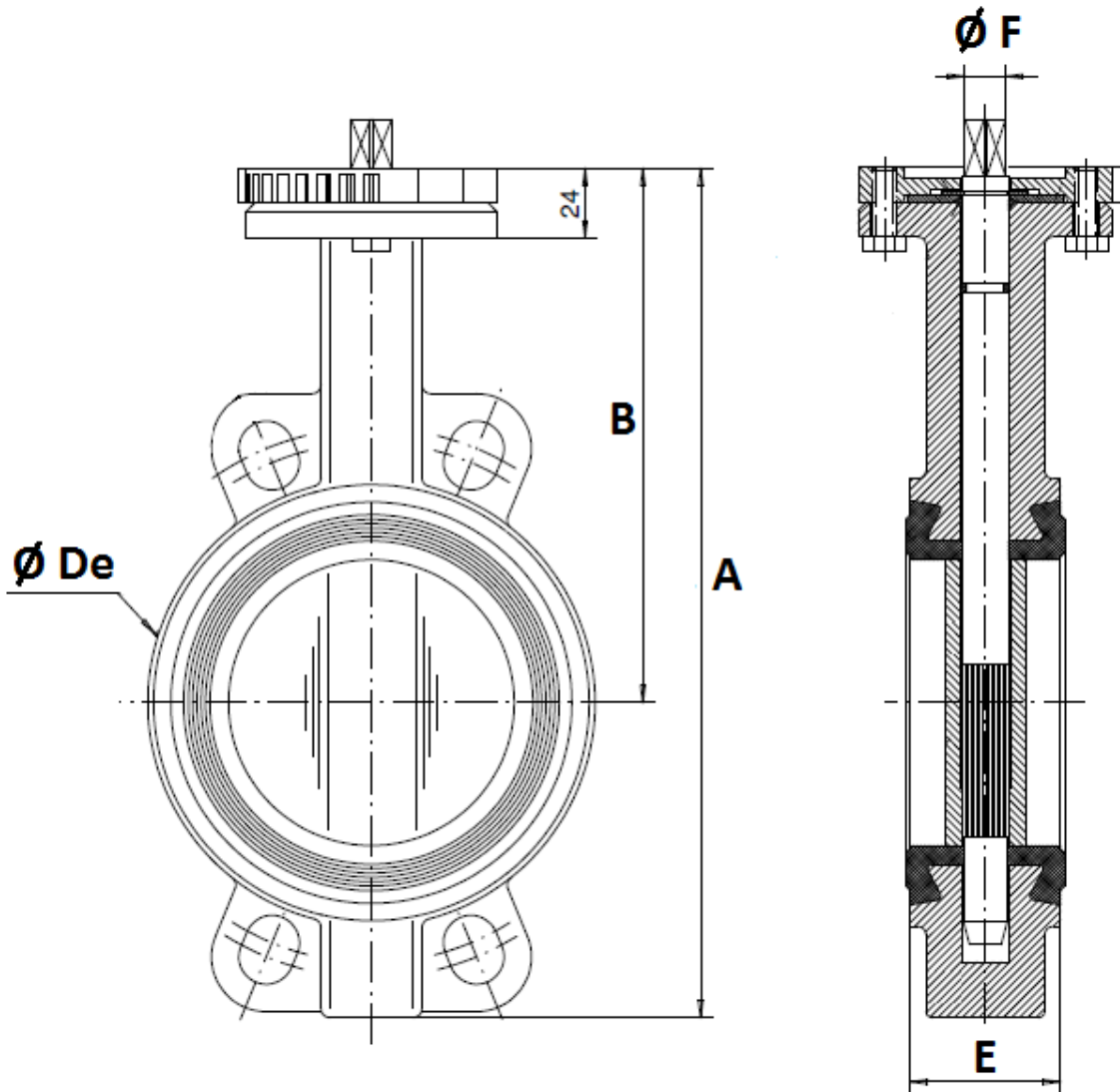


Item	Designation	Materials Ref. 1197
1	Screw	AISI 304
2	Pointer	PVC
3	Bonnet	Aluminium
4	O ring	NBR
5	Pin	Carbon steel
6	Quadrant	Ductile iron EN GJS-400-15
7	Gasket	NBR
8	Body	Aluminium
9	Adjusting bolt	Carbon steel
10	Washer	Galvanized steel
11	Nut	Galvanized steel
12	Cap	NBR 70
13	Bushing	Bronze
14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

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

- Valves DN 32 - 200 :

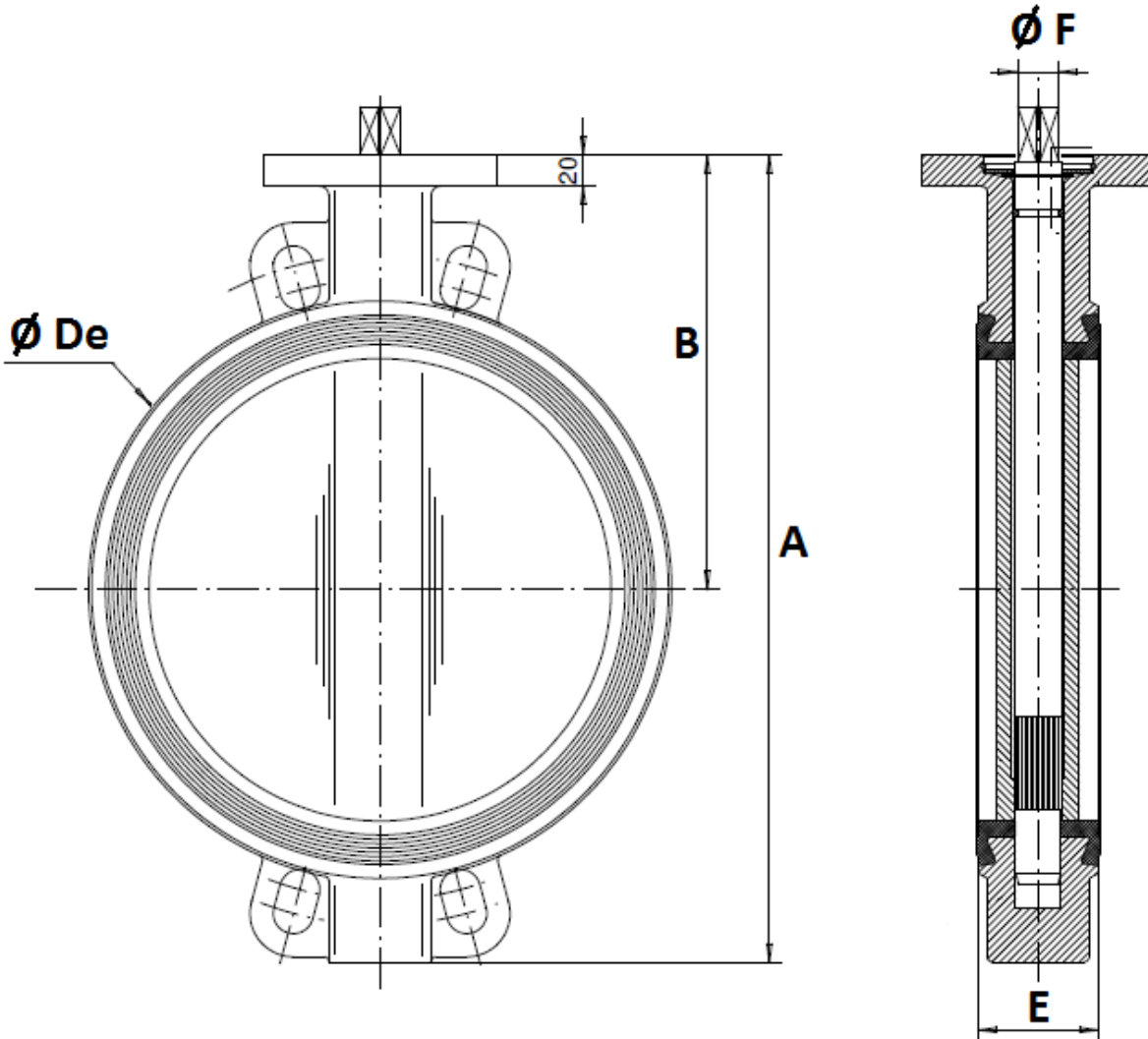


DN	32/40	50	65	80	100	125	150	200
A	206	228	248	265	298	331	349	430
B	140	156	161	169	187	206	215	255
$\varnothing De$	82	102	119	135	155	185	208	270
E	33	43	46	46	52	56	56	60
$\varnothing F$	9.5	9.5	12	14	14	17	17	21
Weight (Kg)	2.46	3.66	4.4	4.6	6	7.6	9.2	14.7

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SIZE (in mm) :

- **Valves DN 250 -400 :**

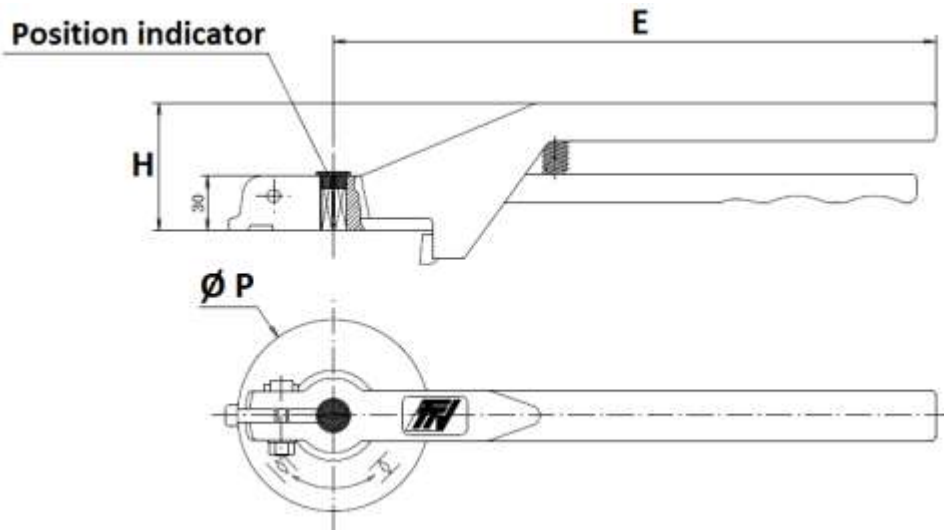


DN	250	300	350	400
A	461	524	570	644
B	248	280	300	340
$\varnothing De$	328	381	437	486
E	68	78	78	102
$\varnothing F$	23	26.5	26.5	33
Weight (Kg)	24.7	33	39	52

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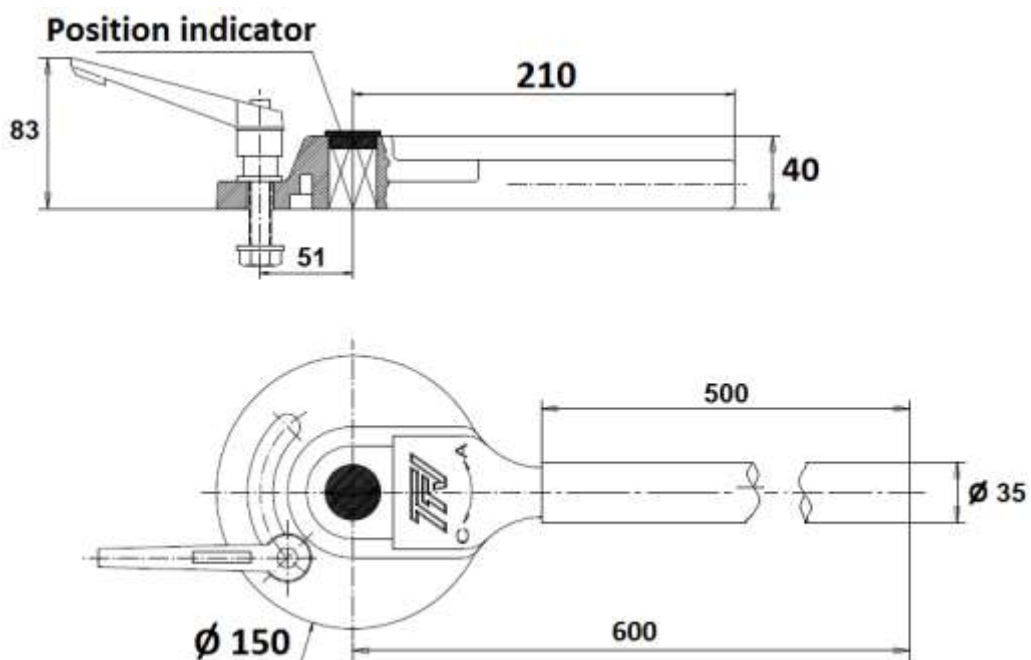
STANDARD LEVERS SIZE (in mm) :

DN 32 – 200 :



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

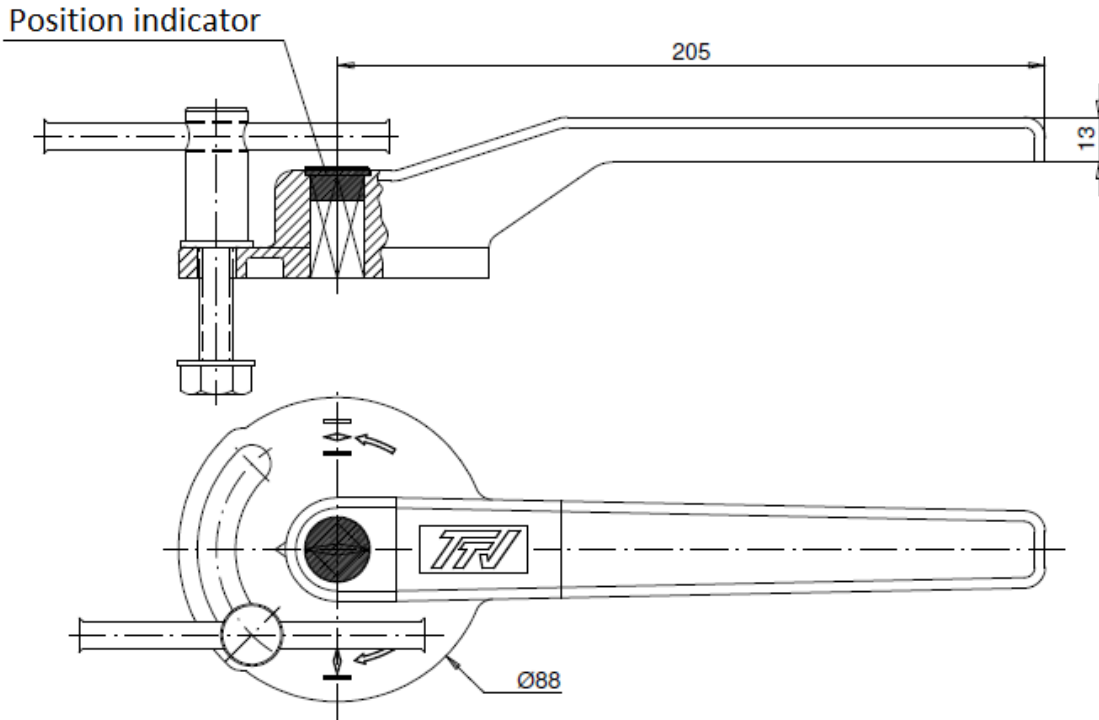
DN 250 – 300 :



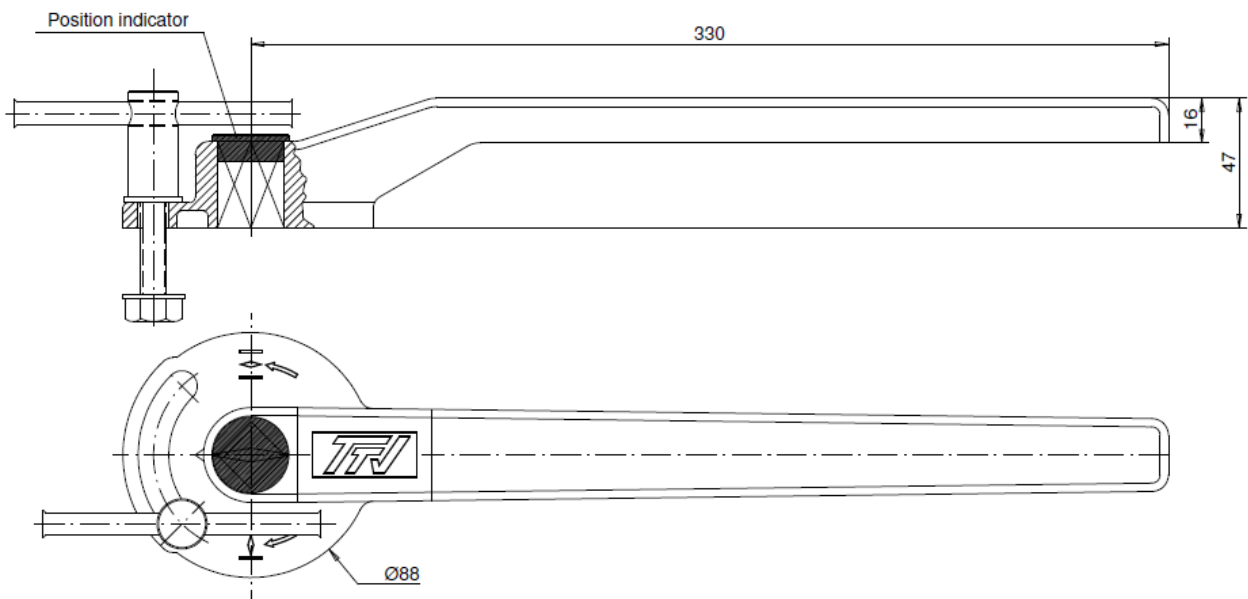
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ASTM A351 CF8M STAINLESS STEEL LEVERS SIZE (in mm) (ON REQUEST) :

DN 40 - 100



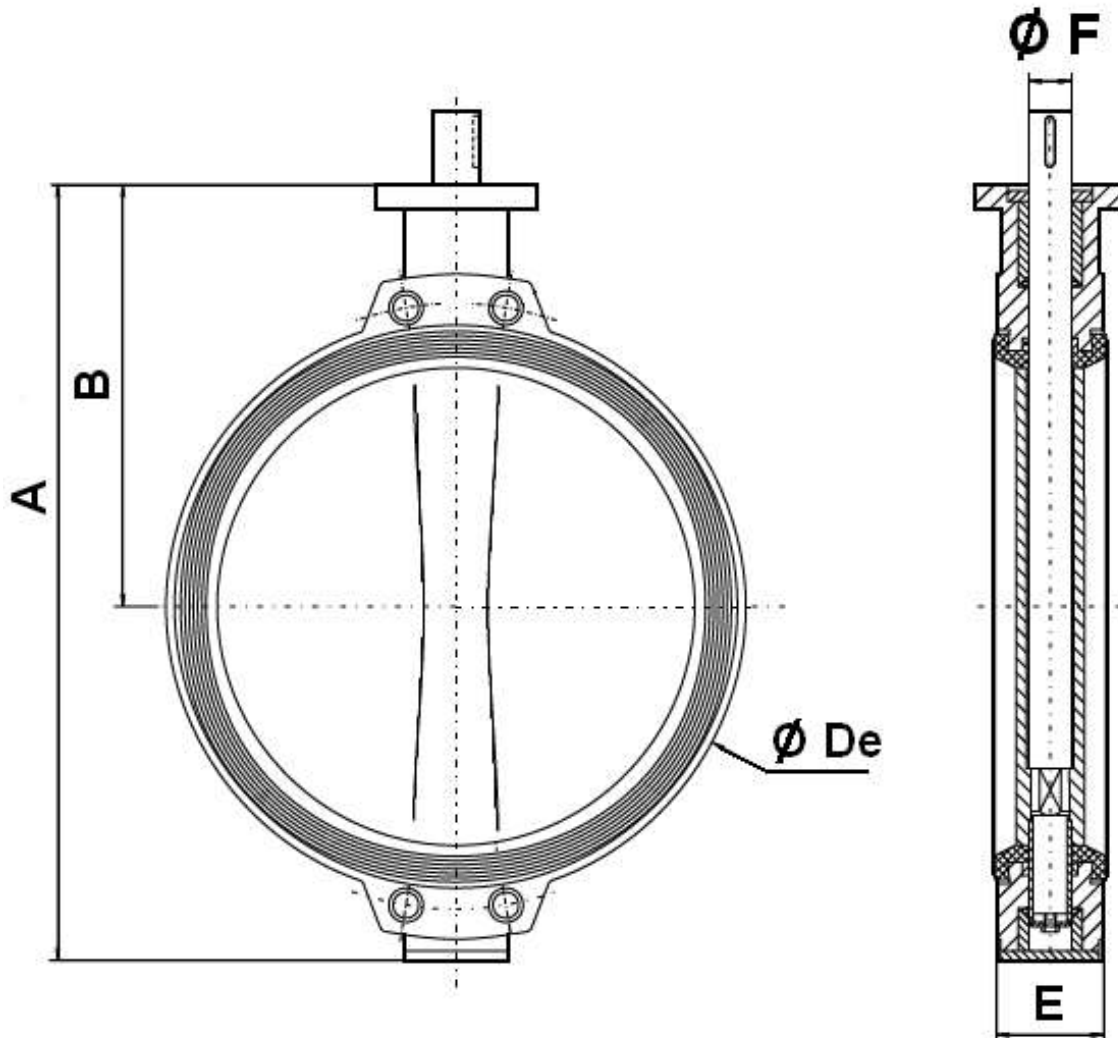
DN 125 - 200



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

- Valves DN 450 - 600 :



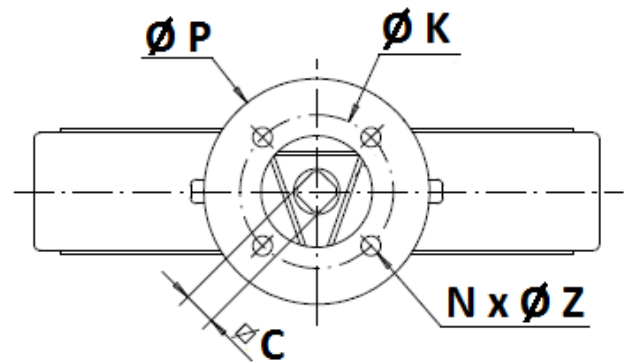
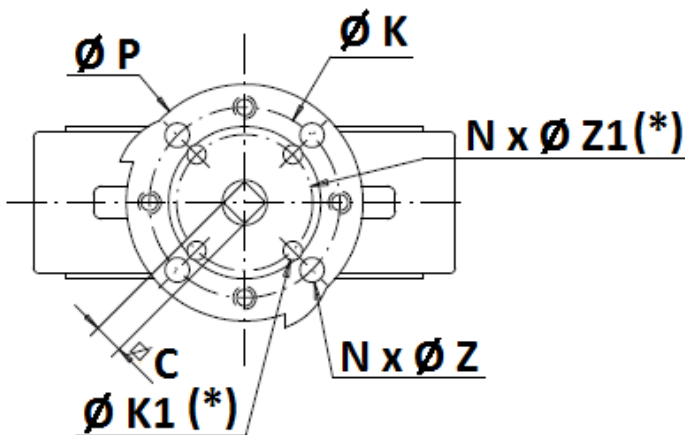
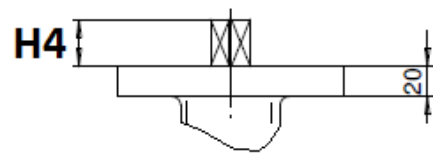
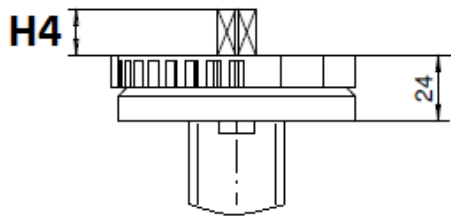
DN	450	500	600
A	738	822	965
B	394	440	507
Ø De	538	595	695
E	114	127	154
Ø F	50	50	60
Ø P	175	175	250
Weight (Kg)	87	117	177

**CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
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ISO MOUNTING PAD SIZE DN32-400 (in mm) :

DN 32 – 200

DN250-400

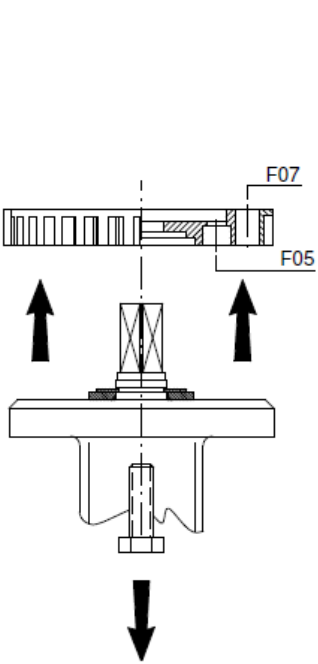


(*) : Only from DN32 to DN100 (see installation with ISO plate F05 next page)

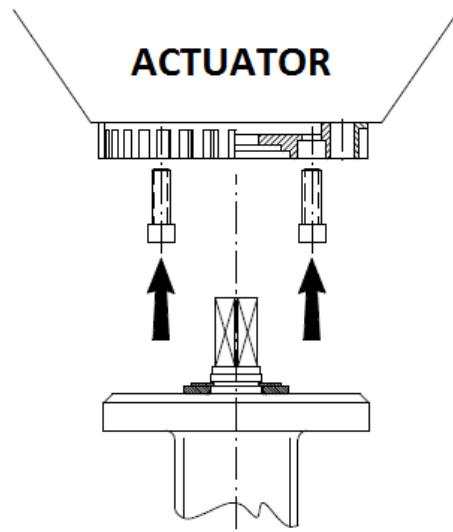
DN	32/40	50	65	80	100	125	150	200	250	300	350	400
H4	14	16	20		24		29					
C	8	9	11	14	17	19	22	27				
Ø K	70				102				140			
ISO	F07				F10				F14			
N x Ø Z	4 x 9				4 x 11				4 x 18			
Ø K1	50				-							
ISO 1	F05											
N x Ø Z1	4 x 7											
Ø P	88				105				150		170	

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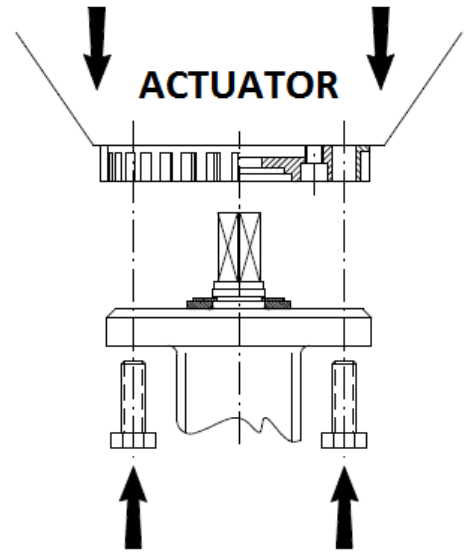
ISO PLATE INSTALLATION FOR DN32-100 ISO F05 :



Unscrew and remove the flange



Screw the flange to the actuator with hexagon socket screws

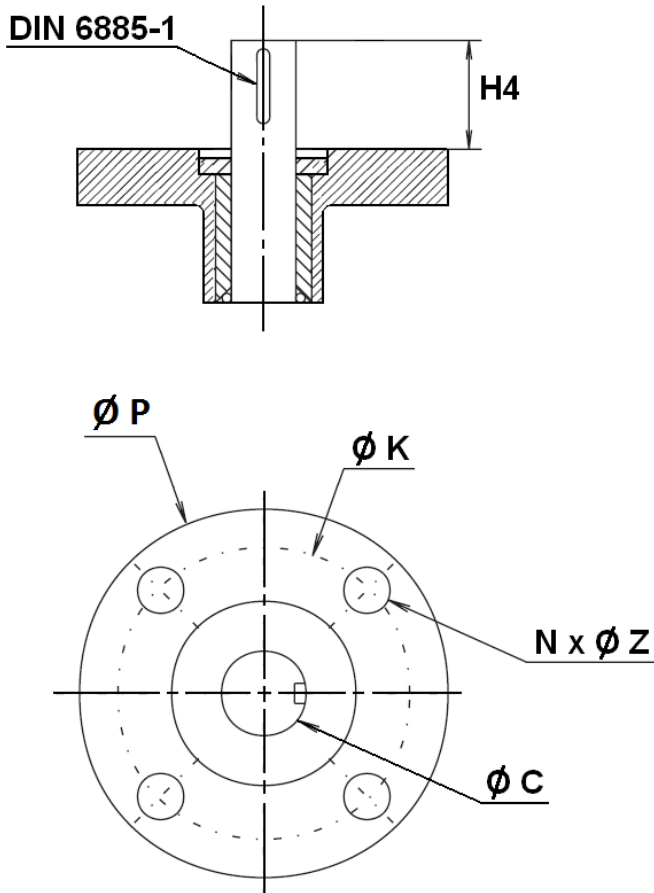


Screw the valve to the flange

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ISO MOUNTING PAD SIZE DN450-600 (in mm) :

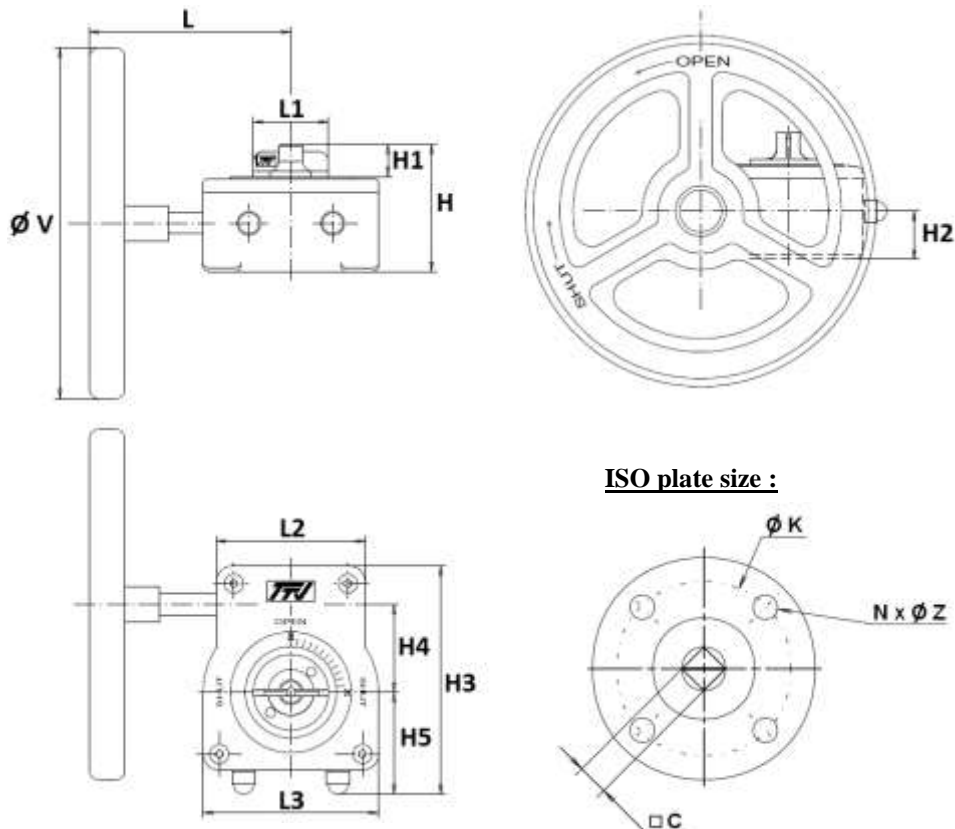
DN 450 - 600



DN	450	500	600
H4	80	80	90
Ø C	50	50	60
Ø K	140	140	165
ISO	F14	F14	F16
N x Ø Z	4 x 18	4 x 18	4 x 22
Ø P	175	175	250

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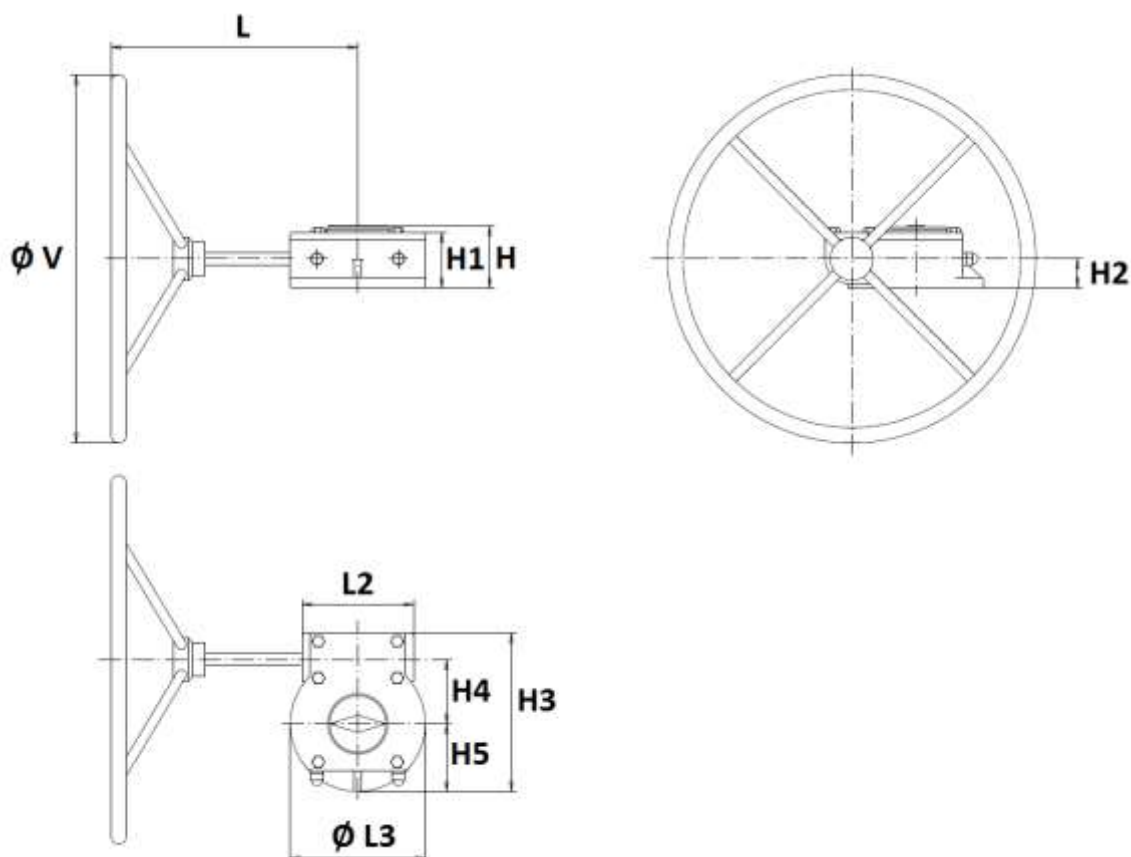
GEARBOX SIZE REF.1197 DN32-400 (in mm) :



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

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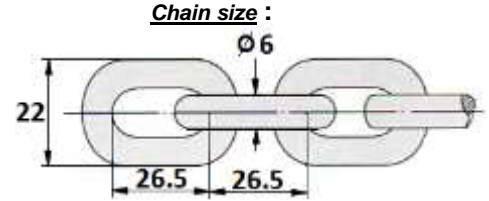
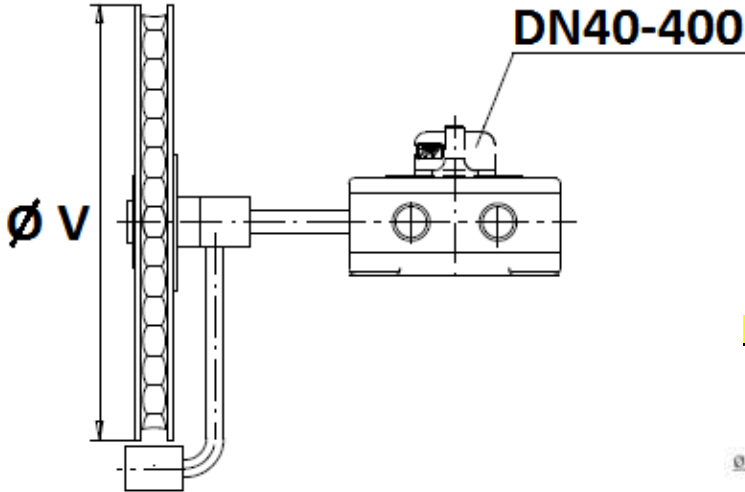
GEARBOX SIZE REF.1197 DN450-600 (in mm) :



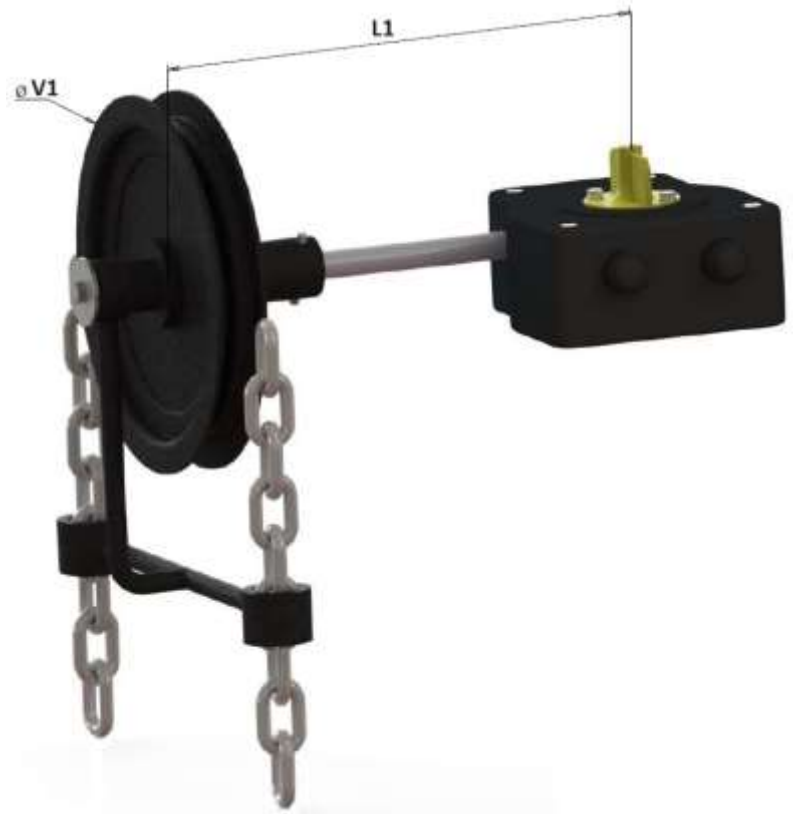
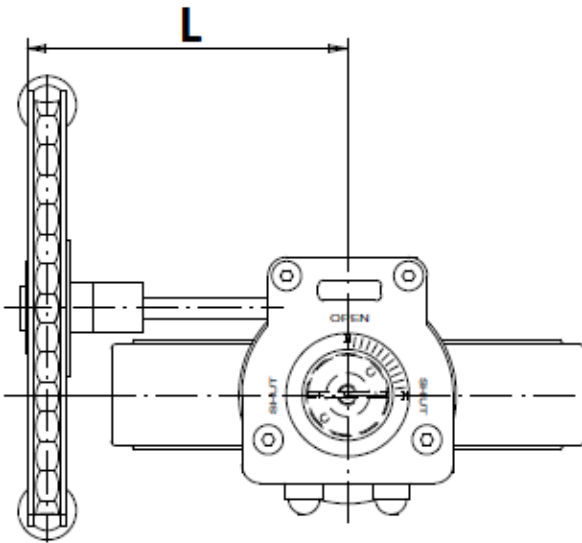
DN	450	500	600
L	381	402	447
L2	150	182	194
Ø L3	200	220	285
H	93	102	123.4
H1	82	91	109.5
H2	42	48	55
H3	226	258	322.5
H4	86	104.5	130
H5	100	110	142.5
Ø V	600	600	700
Weight (Kg)	18.8	26.8	38.3
Ref.	1197451	1197501	1197601

**CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
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CHAIN GEARBOX SIZE REF.1194 (in mm):



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
Ø V1	160			210			300		400		500
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		



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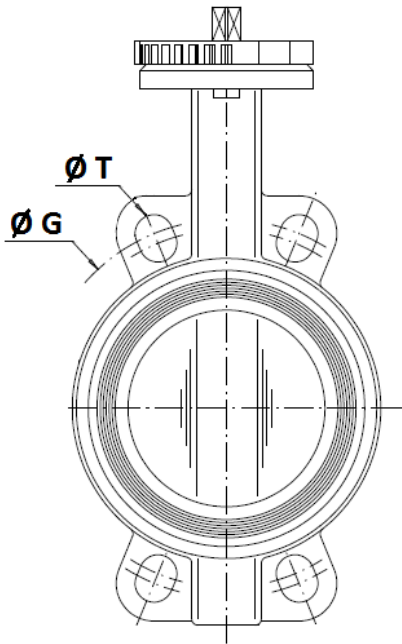
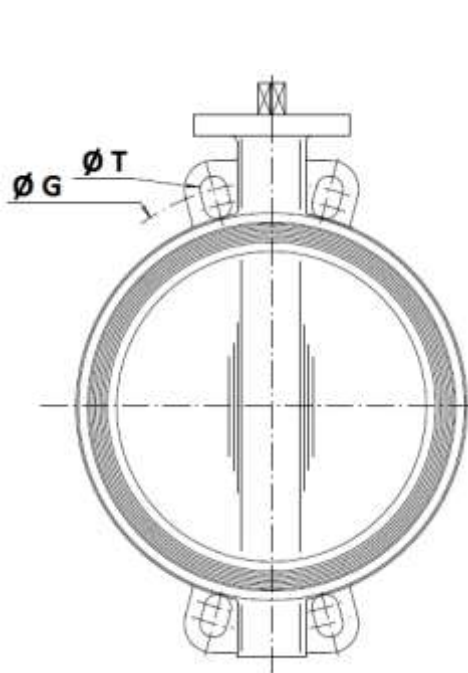
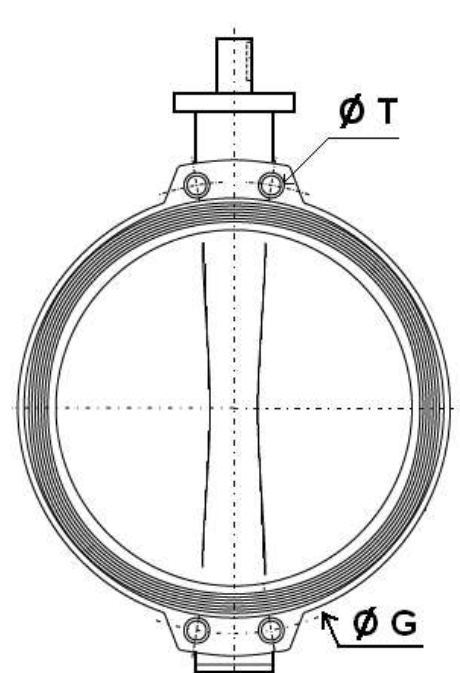
GEARBOX SPECIFICATIONS :

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
Ref.	1197400	1197451	1197501	1197601
Ratio factor	50 : 1	38 : 1	55 : 1	52 : 1
Turns number for closing / opening	12.5	9.5	13.75	13
Input torque (Nm)	32	56.8	64	115.4
Output torque (Nm)	1200	1620	2640	4500

**CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
WITH FOOD SILICONE SEAT AND POLISH STAINLESS STEEL DISC**

BETWEEN FLANGES SIZE (in mm) :

DN 32-200

DN250 – 400

DN450-600


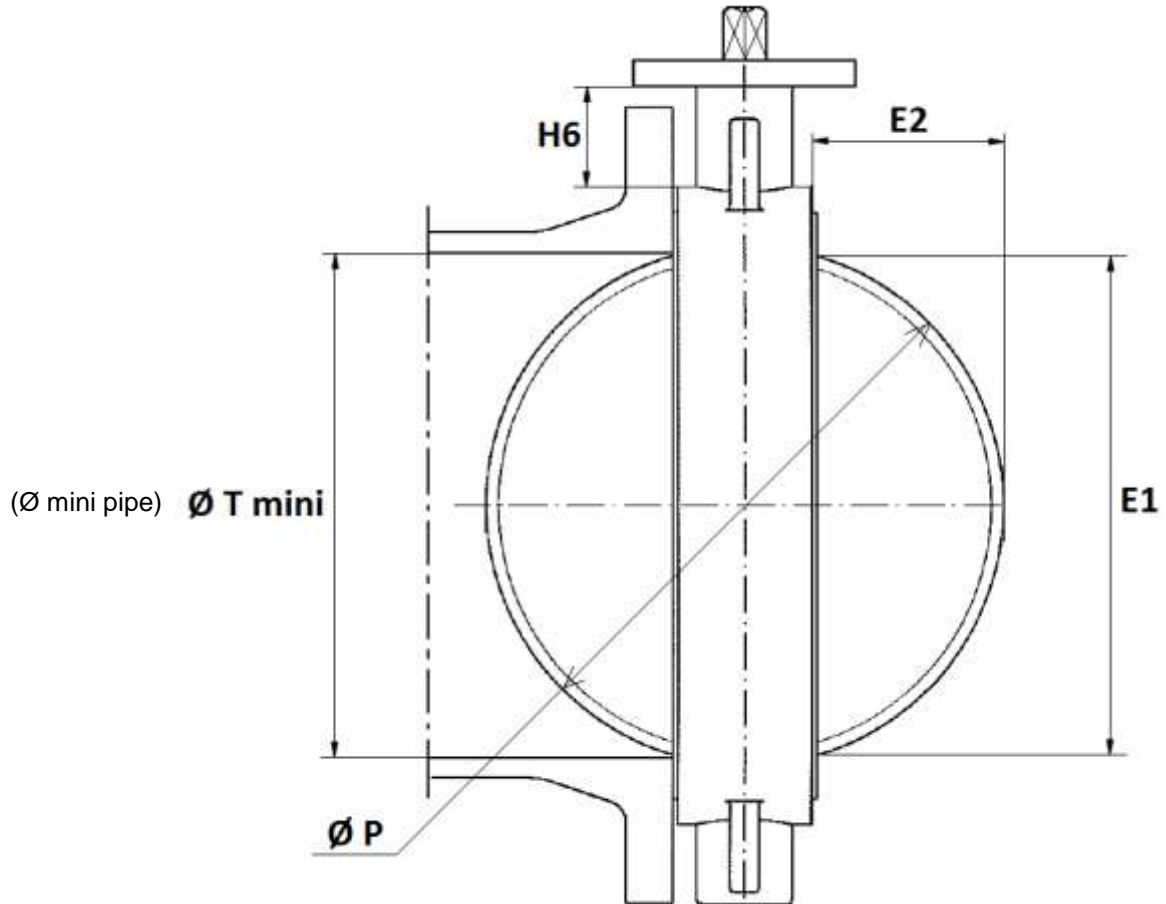
	DN (mm)	32	40	50	65	80	100	125	150	200	250	300	350	400
	NPS (")	1"1/4	1"1/2	2"	2"1/2	3"	4"	5"	6"	8"	10"	12"	14"	16"
PN10	Ø G	100	110	125	145	160	180	210	240	295	350	400	460	515
	Ø T	18	18	18	18	18	18	18	23	23	23	23	23	27
PN16	Ø G	100	110	125	145	160	180	210	240	295	355	410	470	525
	Ø T	18	18	18	18	18	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
	NPS (")	18"	20"	24"
PN10	Ø G	565	620	725
	Ø T	M24	M24	M27
PN16	Ø G	585	650	770
	Ø T	M27	M30	M33
Class 150	Ø G	577.9	635	749.3
	Ø T (BSW)*	1 1/8"	1 1/8"	1 1/4"
	Ø T (Metric)	M30	M30	M33

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

**CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
 WITH FOOD SILICONE SEAT AND POLISH STAINLESS STEEL DISC**

NECK AND DISC SIZE (in mm):

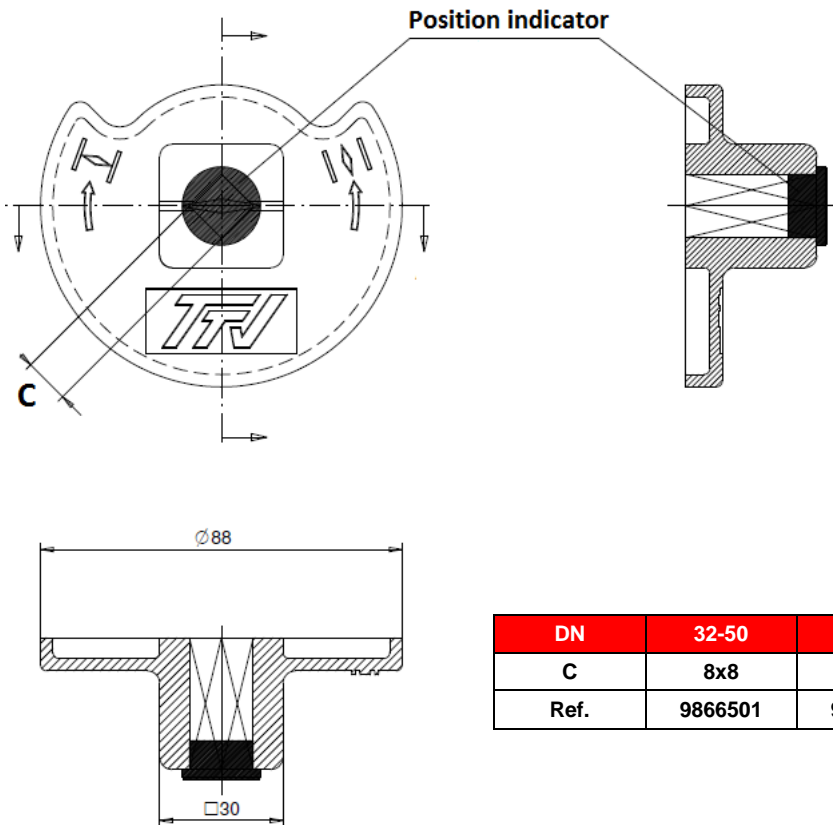


DN	32/40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
E1	23	24.5	46	65	85	109	136	188	238	289	331	385	424	479	575
E2	3.5	3.5	9.5	17	24	33.5	45.5	69	90	110.5	131	148	162.5	184	221
H6	76	82	80	80	88	93	89	99	71	76	69	80	96	119	127
$\varnothing T \text{ mini}$	26	27.5	49	68	88	112	139	191	241	292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

**CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
WITH FOOD SILICONE SEAT AND POLISH STAINLESS STEEL DISC**

SIZE (in mm) :

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



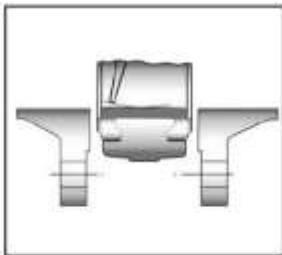
DN	32-50	65	80-100	125-150	200
C	8x8	9x9	11x11	14x14	17x17
Ref.	9866501	9866502	9866503	9866504	9866505

**CONCENTRIC WAFER BUTTERFLY VALVE EXCELLENCE RANGE TTV
WITH FOOD SILICONE SEAT AND POLISH STAINLESS STEEL DISC**

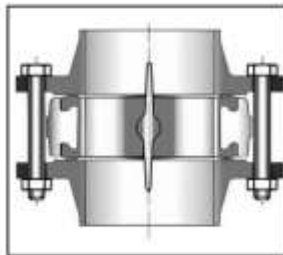
STANDARDS :

- 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
- 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**
- Food silicone elastic ring produced according to requirements **FDA and CE 1935/2004**

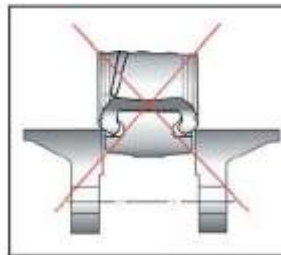
INSTALLATION INSTRUCTIONS :



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.