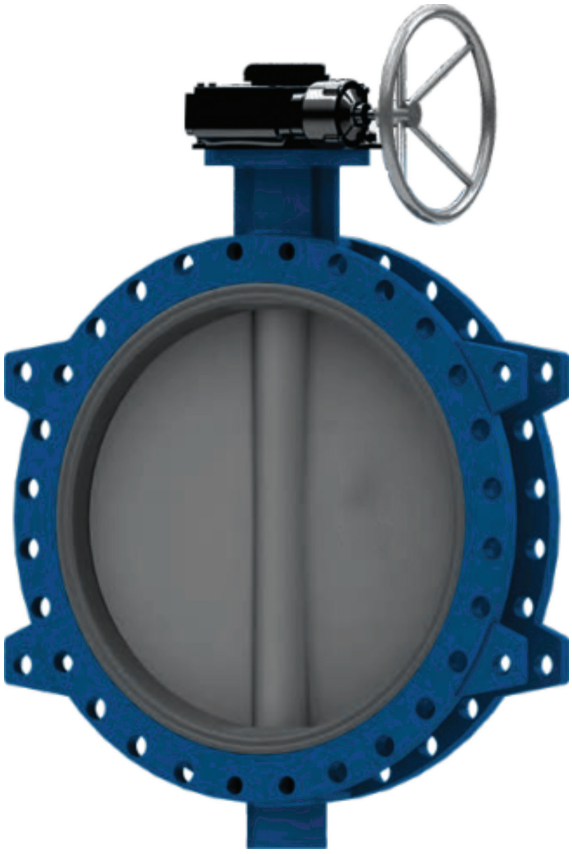
Concentric Butterfly Valves

Type VA5001.A

Simple design with variability of different rubber materials and elastomers.



TECHNICAL PARAMETERS

Body design	Interflanged • WAFER type with through holes • LUG type with threaded holes Double flanged • With through / threaded holes	Working media	Potable water, Waste water, Hot industrial water, Heating water, Sea water, Chemicals, Gas / Oil and gas, Oil / Oil derivates, Loose materials, Air, Beverages / Food, Malt, Sugar juice
Nominal size	Interflanged • DN 32 - DN 600 Double flanged • DN700-DN1600 (Series 20) • DN50 - DN2200 (Series 13)	Features	• Concentric design • Bidirectional valve • Body with safety plug (up to DN400) • Body with pin cover (DN450-DN600) • Demountable valve, Easy service
Working pressure	6 bar / 10 bar / 16 bar	Working temperature	-40°C / +150°C
Flange connection	PN6/PN10/PN16/Class 150	Tightness	Class A

APPLICATION

Wafer/Lug/Double flanged concen-tric butterfly valves of Series VA5001.A are resistant soft-sealing valves designed for industrial applications like:

- purification, treatment and distribution of potable or waste water, waste slurry treatment
- heating, heating water distribution
- ventilation, airconditioning conveying and distribution of sea and industrial water
- distribution of light chemicals, pharmaceuticals, oils and oil derivatives
- distribution of sugar juice, food industry applications
- conveying loose materials
- pulp and paper industry
- gas distribution

dust or gas explosive environment (zones 0,1;20 and 21; except mining environment)

CHARACTERISTICS

- concentric design, bidirectional
- wafer/lug type with split stem
- disc is moved by stem with diagonally fit square-end stem
- pivot plug enables to dismantle the valve (valid for wafer/lug valves up to DN 400), pin cover at DN450-DN600
- body long neck according to the regulations of thermoprocessing equipment
- red epoxy coating acc. RAL 2002-80 µm
- certified by DWGV for potable water and gas ABS certified - PED certificate ACS certification

Based on customers' special requests we offer:

- bonded seat - for vacuum systems with maximum absolute pressure of 200 mbar
- NBR conduct - ATEX design for group II, category 1 /2 GD TX
- special seat types certified by FDA for food industry
- WRAS certification for potable water inspection certificates 3.1/3.2 customer tailored valve design - special body or disc coatings, stem extensions for non-standard valve control etc

DESIGN MODELS

• INTERFLANGED DESIGN

FIG. 1 - VESION B
- WAFER DESIGN
- DN32-DN600

FIG. 2 - VERSION T
- LUG DESIGN, ATEX CERTIFIED
- DN32-DN600

• DOUBLEFLANGED DESIGN

FIG. 3 - VERSION U
- WAFER/LUG DESIGN
- DN700-DN1600
- SHORT FACE-TO-FACE LENGTH SERIES 20

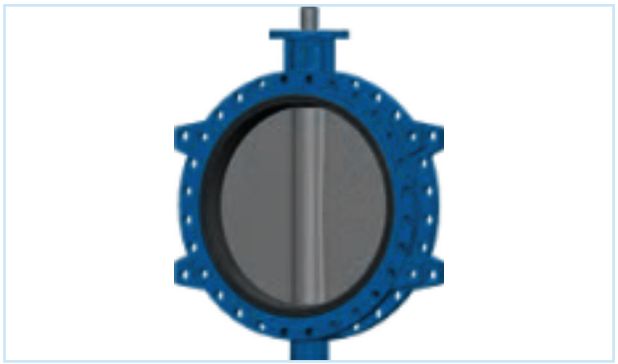


FIG. 4 VERSION F
- WARER/LUG DESIGN, ATEX CERTIFIED
- DN50-DN2200
- LONG FACE-TO-FACE LENGTH SERIES 13

• DVGW CERTIFICATION GAS/POTABLE WATER

FIG. 5
- DN32-DN400
- ATEX CERTIFIED, DVGW CDERT.

• ALUMINIUM BODY

FIG. 6 - VERSION B
- WAFER DESIGN
- DN32-DN300

QUALITY CONTROL

- valve production facilities are certified in accordance with ISO 9001:2015 (ISO 14001, 45001)
- tightness test procedures according to standards EN 12266-1, ISO 5208, ANSI/FCI 70-2
- production in accordance with the Pressure Equipment Directive 2014/68/EU (Module H)
- 3.1, 3.2 inspection certificates
- all the actuators are adjusted and tested while assembled
- manual actuator, if delivered, is adjusted and tested while assembled

FOR NATURAL GAS INTERFLANGED DISTRIBUTION SYSTEMS

are offered gas versions valves of the Series VA5001xx. The gas valves are fitted with a control lever with a yellow sleeve. The valves are designed for natural gas, are supplied with a special set of seat with **DVGW** certification, tightness class A, working pressure max. 10 bar.

FOR DISTRIBUTION OF POTABLE WATER

are offered valves of Series VA5001.A with special set of seats with DVGW/WRAS certification. The valves are designed for cold water, inc. potable water, tightness class A, working pressure 10/16 bar. The valves are equipped with control lever with a grey sleeve.

AS A LIGHTWEIGHT VARIANT

(valves with lower weight) are offered valves of Series 900 with aluminium body, working pressure 10/16 bar, working temperature: - 40°C / +150°C.

DESIGN ADVANTAGES

FIG. 7 - INTERFLANGED DESIGN

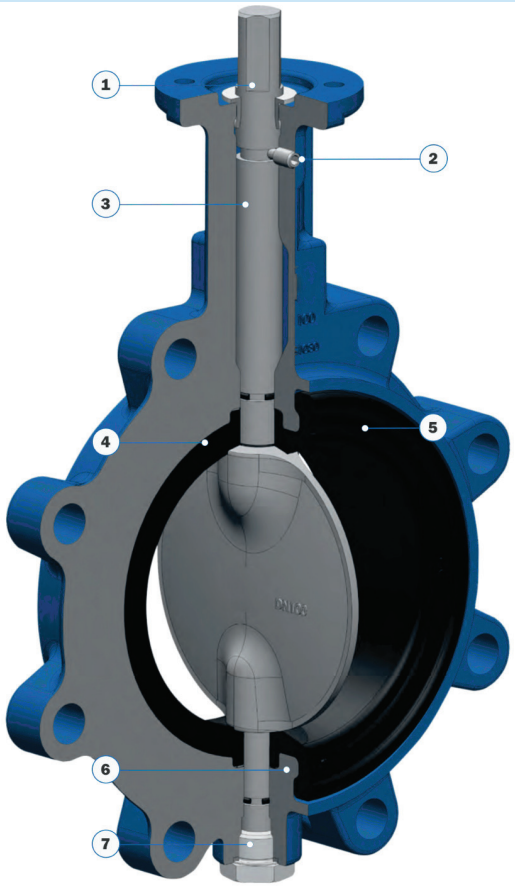


TABLE 1 - ADVANTAGES OF DESIGN

č.	Advantage	Discription
1	International standard compat-ibility	According to the standard ISO 5211 top flange enables to directly mount any manual operators and actuators. Valve long neck enables to use insulation and protects control elements on the ISO flange. The design complies with the requirements for heating system control valves.
2	Blow-out proof shaft system	A retaining bolt disables a stem movement upwards.
3	Split stem	With the divided stem the valve reaches better Kv/Cv values and thus a low pressure loss.
4	Seat design	Seat profile in the body (groove and tongue system) prevents the seat to slip out from the body when the disc moves.
5	Double-sided profile	Enables to correctly fit the seat in the body.
6	Groove shape	The seat is inserted in the stem position inside the body profile to enable better support.
7	Demountable design	Enables to simply change the seal.

FIG. 8 - <DN 400 RETANING WASHER AGAINST STEM MOVEMENT

FIG. 9 - >DN 400 RETAINING BOLT AGAINST STEM BLOW-OUT

BODY SURFACE TREATMENT

Epoxy coating

Standard high quality epoxy coating system, complying with the C2 corrosion aggressiveness degree according to the standard ČSN EN ISO 12944-1, minimum coating thickness 80 µm.

Marine environment coating

Resistant coating suitable for marine environment or high corrosion risk environment. Available are variants resistant to corrosion aggressiveness grades C3, C4 and C5.

Rilsan

Highly resistant coating for very demanding applications of high flexibility, elasticity and excellent corrosion resistance. This coating option is recommended for applications such as seawater, cement, process water, food or media contamina- ted with chemicals.

Halar

Thermoplastic Fluoroplast coating to be installed in pipelines with aggressive media. The coatings of high chemical resistance are suitable also for joining material, sealing washers and similar.

Inter Zone 954

Coating provides superior protection in sea water environment. The coating is designed for bodies exposed to high humidity or other very arduous climate conditions. It is highly resistant to acid and solvent vapours and sprinkles, common and salt water.

SEAT ANCHORING OPTIONS

Groove/tongue STANDARD

- groove/tongue system prevents seat movement
- reliability
- simple replacing seat.

Vulcanized(bonded) seat UPON REQUEST

Vulcanized seat is intended for use in vacuum and difficult operation conditions. For lower vacuum glued seat version can be used.

FIG. 10 - GROOVE/TONGUE

The seat is guiding and prevents anchored by **a groove/tongue system** enabling stable unwanted seat movement.

3-STAGE SEALING SYSTEM

3-stage sealing system guarantees 100% tightness, long term product lifespan and safe operation in the most demanding applications.

1. Primary sealing
Sealing surface of the seat in the contact area with disc, stem and pivot has a precisely defined geometry.

2. Secondary sealing
Secondary sealing is created by the stem and pivot disc overlap depending on the seat diameter.

3. Tertiary sealing
Stems and pivots are equipped with safety O-rings that further enhance operational performance and reliability
O-rings protect stem bearings against penetration of abrasive particles from environment.

FIG. 11 - 3-STAGE SEALING SYSTEM

VALVES FOR SPECIAL PURPOSES

VALVES WITH STEM EXTENSION FOR SPECIAL ACTUATION REQUIREMENTS AT INACCESSIBLE PLACES

Stem extensions of various lengths are installed on valve stems according to particular projects. For inaccessible installations in vats, pits etc.

VALVES WITH LIGHTENED ALUMINIUM BODY

Light weight valve. Suitable for installations in plastic pipes (pools).

VALVE DISCS WITH SPECIAL COATINGS

Discs are coated with high resistant coatings for aggressive environment (Rilsan/Halar).

FIG. 12

FIG. 13

FIG. 14

ALUMINIUM BRONZE VALVE DISCFOR SEAWATER TREATMENT SYSTEMS

Specially designed for maritime and marine environment where a maximum product reliability is required in highly saline environment.

POLYURETHANE COATED VALVE BODIES

Specially designed for underground applications. Polyurethane coating protects the valve body against corrosion.

VALVE WITH SPECIAL LEVER AND LIMIT SWITCHES

Can be equipped with non-standard lever type (up to 10 position degrees). The disc position is scanned by limit switches connected to the valve stem.

FIG. 15

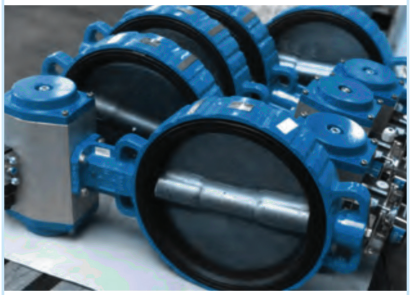


FIG. 16

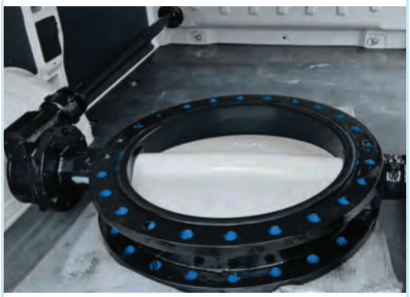
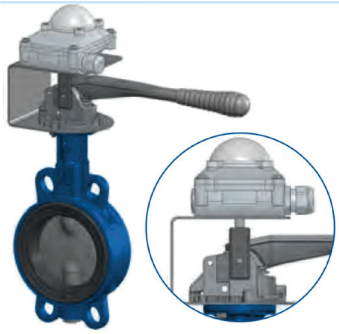


FIG. 17



VALVE ACTUATOR INSTALLATION ACCORDING TO CUSTOMERS' REQUIREMENTS

Standard - actuator on the side. Possibility to place valve actuator according the specific disposition or specific requirements.

ATEX DESIGN

For valves intended for explosive atmospheres i.e where explosive mixtures of gases, vapours, fog or dust are created.

DVGW certification.

VALVES WITH WORM GEAR CONTROLLED BY CHAIN

Chain installed for worm gear control. The chain replaces handwheel. Suitable for inaccessible places.

FIG. 18

FIG. 19

FIG. 20

VALVES WITH FDA CERTIFIED SEATS

For food industry. For potable water medium WRAS certification can be provided.

VALVE WITH STEM EXTENSION

Stem extensions are used in hard-to-reach places where there is no direct access to the valve.

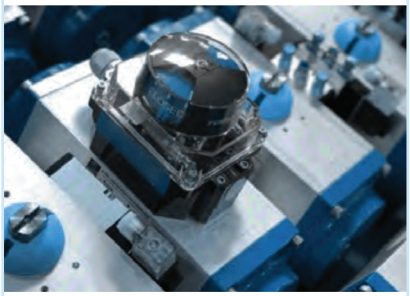
ADDITIONAL EQUIPMENT FOR PNEUMATIC ACTUATORS

Pneumatic actuators can be equipped with positioners, solenoids, limit switch boxes, etc..

FIG. 21

FIG. 22

FIG. 23



FLOAT VALVE

For installations in tanks/reservoirs. The float controls valve opening by the level height.

VALVES WITH STAINLESS FLANGES

Non-standard connection to pipelines. Connection flanges are screwed to the valve body.

FIG.24

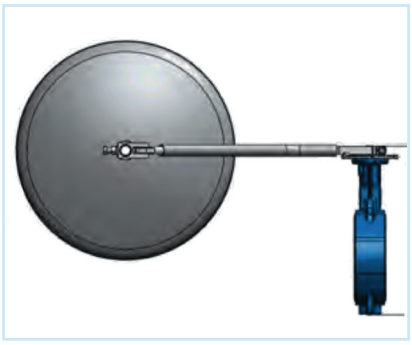
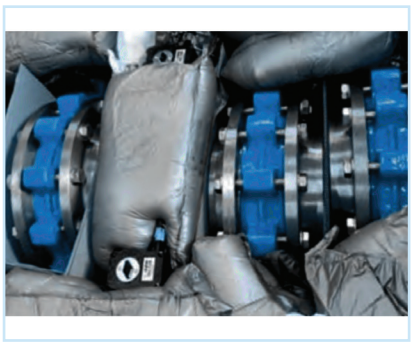


FIG. 25



SEATS / POSSIBLE APPLICATIONS

TABLE 2

Industry	Medium	Marking	Seat materia	Applications	Working temperature range
Water management Potable water treatment	Potable water	EPDM	DRINKING WATER EPDM (EPDM-018)	WRAS, ACS. Certified by DVGW GmbH (DVGW W 363-P)	-20 °C ... + 90°C
Water management Potable water distribution / Heating	Potable water Heating water		DRINKING WATER EPDM-HT (EPDM-019)	For potable water purification, treatment and distribution - higher temperature resistance	-20°C ... + 130°C
Water management Potable water distribution / Food industry	Beverages Juices / Malt Hot service water		EPDM-HT***)** (EPDM-022)	**FDA certified.** For sugar mills, beverage factories, malt houses. **Seat colour - black.**	-20°C ... + 130°C
Food industry	Beverages Juices Malt		EPDM-014 (FDA)	**FDA certified -** for lower Temperature ranges. **Seat colour - white.** Corresponds to standard 1935/2004	10°C ... + 90°C
Chemical industry Ventilation Air conditioning Water treatment	Air Non-aggressive acids and alkalis Non-aggressive minerals Water distribution		EPDM-008/1	Air Non-aggressive acids and alkalis Non-aggressive minerals Water distribution	-20°C ... + 90°C
Industrial production processes / Gas distribution	Gas	NBR	DVGW-GAS NITRILE	For natural gas transport and distribu-tion. Certificated by **DVGW** CERT GmbH	-10°C ... + 60°C

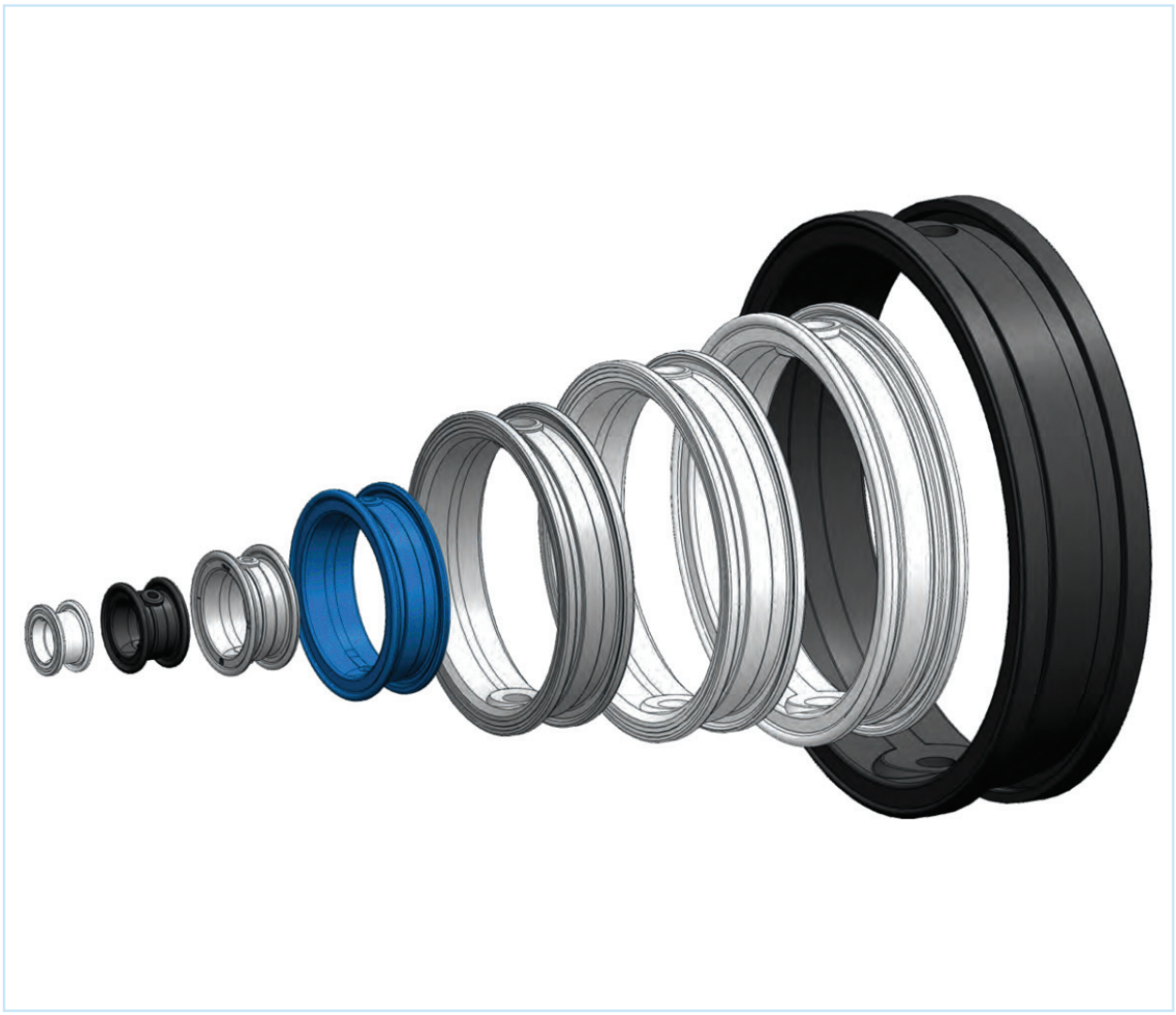
Industry	Medium	Marking	Seat materia	Applications	Working temperature range
Oil industry Petrochemistry Fuel processing Waste oils processing Fat sorting Loose materials conveying Cement and lime industry	Abrasive media	NBR-X	CARBOXYLIC NITRILE	For oily media applications with present abrasive particles in transported media. **Certified by FDA.**	0°C ... + 90°C
		FLUCAST	FLUCAST AB/N	For oily media installations - crude oil distribution.	0°C ... + 90°C
		FLUCAST	FLUCAST AB/E	For abrasive resistant applications - for „wet" media like sludges etc.	-5°C ... + 90°C
		FLUCAST	FLUCAST AB/P	For abrasive resistant applications - for „dry" media like loose materials, powder media (gypsum, carbon black, china clay, oxides), pneumatic conveying of cement and powder in mining industry.	-10°C ... + 70°C
		FLUCAST	FLUCAST AB/T	For abrasive media with high temperature resistance.	-5°C ... + 130°C
Sea water treatment Water softening for industry in general Petrochemistry Fuel processing Biogas distribution	Salt water Biogas Crude oil Fuel	ECO	EPICHLORHYDRIN	For seawater, saltwater, gas/biogas, crude oil and fuel distribution applications	40 °C ... +90°C
Chemical industry Recovery / Stem heating / Biogas distribution / System for production and distribution of pure steam	Steam Biogas Agressive acids Oils	FPM	VITON BIO STANDARD VITON (FPM-002)	High fluorine contents, suitable for distribution of acids and oils, chemically resistance	-5 °C ... +150°C
Chemical industry Petrochemistry	Industrial grease Oils Non-agressive acids	CSM	HYPALON	Suitable for applications with standard rubber mixtures lifespan limited by action of high temperatures - distribution of oils, diluted acids and alkalines.	-10 °C ... +100°C
Chemical industry Recovery Steam heating Industrial pipelines for steam distribution	Steam	MVQ	HYPALON	For heat recovery, steam supply and distribution systems.	-40 °C ... +150°C
Food industry	Food steam	VMQ	FOOD SILICONE	Steam distribution systems with higher work temperatures, **certified by FDA.**	-40 °C ... +150°C
Chemical industry Recovery Steam heating Industrial pipelines for steam distribution	Steam - high temperature ranges	VMQ	SILICONE	For media requiring higher temperature resistance at negative and positive work media temperatures (steam).	-40 °C ... +160°C

***) EPDM Super HT seat:** -10°C .. +150°C. This new EPDM Super HT seat has much better mechanical properties if we compare it to other rubber compounds used at high temperatures like silicones of fluorelastomers. In addition to being used for hot water, EPDM Super HT is also suitable for steam. Here it can replace f.e. steam silicone seat.

*) possible alternatives of the seats with WRAS certification:

1. Material EPDM, type designation Y**L-E-7010,** black color of the seat,
for temperature ranges max. 60°C.
2. Material EPDM, type designation **Sunaflex T 9635**, black color of the seat,
for temperature ranges max. 85°C

FIG. 26



MATERIAL PERFORMANCE - INTERFLANGED DESIGN

FIG.27-B WAFER DESIGN

FIG. 28 - T LUG DESIGN

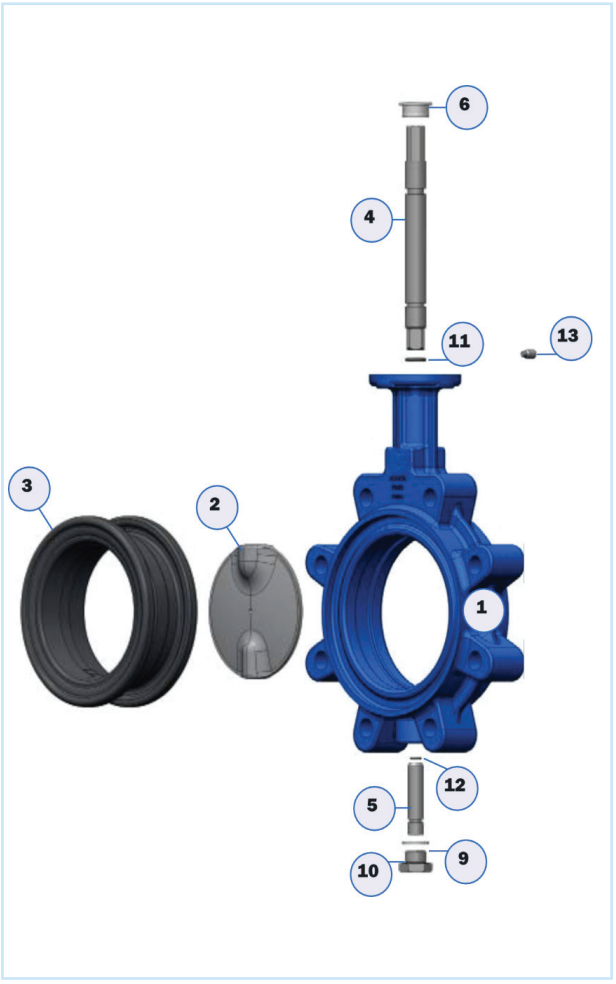


TABLE 3 - MATERIALS WITH SPECIFICATION

Pos.	Name	Material
1	Body	Ductile iron 0.7040 (GGG40 epoxy coated Carbon steel 1.0446 (A216 WCB) Stainless steel 1.4408 (CF8M) Low carbon steel 1.1156 (LCC) Aluminium EN AC 4300 (C95500) Aluminium bronze 2.0975 (C95800)
2	Disc	0 - Brass 2.0402 (UNS C38000) 1 - Aluminium bronze 2.0975 (C95800) 2 - Stainless steel 1.4308 (CF8) 3 - Ductile iron 0.7040 (GGG40) epoxy coated 4 - Stainless steel 1.4408 (CF8M) 5 - HASTELLOY 6 - Stainless steel 1.4539 (Uranus B6) 7 - Titaniu
3	Seat	1 - NBR 2 - EPDM 3 - NBR Carboxyl 4 - Viton Bio 5 - Silicone steam (MVQ) 6 - Silicone (VMQ) 7 - Epichlorohydrin 8 - HYPALON® (CSM) 9 - NBR 70-AG - NBR conduct
4	Stem	Stainless steel 1.4021 (AISI 420)

Pos.	Name	Material
5	Pivot	Stainless steel 1.4021 (AISI 420)
6	Bushing	Delrin (to DN 300) Brass (from DN 350)
9	Seal	Klingersil C-4400
10	Plug	Stainless steel A2
11	Stem O-ring	NBR, EPDM, optionally VITON
12	Pivot O-ring	NBR, EPDM, optionally VITON
13	Retaining bolt	Stainless steel A2

Note:
Other materials upon request.
Seat and disc materials are recommended based on particular inquiry.

INSTALLATION BETWEEN FLANGES

TABLE 4 - INSTALLATION BETWEEN FLANGES DN32 TO DN600 - WAFER/LUG DESIGN

	DN	32/40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
B	PN 6											•	•	•	•	•
	PN10															
	PN16													•		
	Class 150											•	•	•	•	•
T	PN6	•	•	•	•	•	•	•	•	•	•	•	•	x	x	x
	PN10													•	•	•
	PN16								•	•	•	•	•	•	•	•
	Class 150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Standard • Upon request x Impossible

TABLE 5 - INSTALLATION BETWEEN FLANGES DN700 TO DN1600 - DOUBLE FLANGED DESIGN - SERIES 20

	DN	32/40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
U	PN 6	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	PN10															
	PN16	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Class 150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Standard • Upon request

TABLE 6 - INSTALLATION BETWEEN FLANGES DN50 - DN2200 - DOUBLE FLANGED DESIGN - SERIES 13

	DN	50-2200
F	PN 6	•
	PN10	
	PN16 *)	•
	Class 150	•

Standard • Upon request

*) PN16 for nominal sizes DN50-300 is standard, for nominal sizes bigger than DN300 PN16 upon request

FIG. 29

VALVE ACTUATION

All the valves can be equipped with hand levers, worm gears, pneumatic and electric actuators. The top flange design according to the standard ISO 5211 enables to directly assemble actuators on valves. Thus compatibility between valves and actuators is guaranteed.

HANDLEVER

For manual actuation offers carbon steel lever suitably painted to improve resistance to corrosion, abrasion and shock. Stainless lever on request. Top flange conection according to ISO standards F05 for DN50 to DN65 a nd F 07 for DN80 to DN200. Controlled lever upon request. The levers can be equipped with a lock to ensure an optimized position.The levers can be supplemented with limit switches.

FIG. 30 - HANDLEVER DN32 - DN200

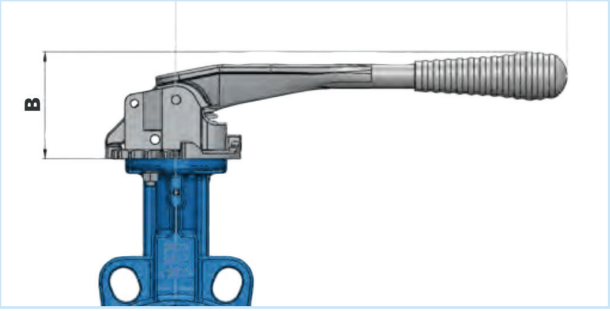


FIG. 31 - HANDLEVER DN250 - DN300

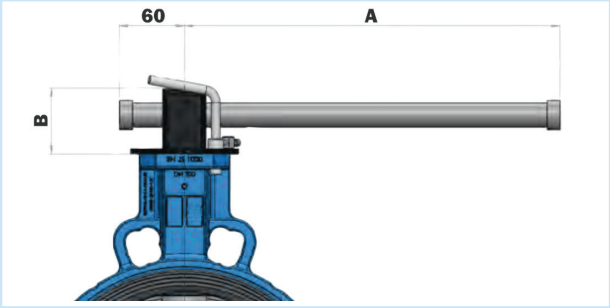


TABLE 7 - DIMENSIONS OF THE HAND LEVER

DN	32-100	125	150-200	250	300
A	270	270	362	450	750
B	75	75	75	135	135
Weight	1,24	1,26	1,40	2,20	3,10
Shaft	14x14	17x17	17x17	22x22	22x22

WORM GEAR WITH HANDWHEEL

Manual gearbox casing is made from cast iron with suitable surface treatment and protection degree class IP 67. Self-locking design of the worm gear enables both to set basic positions open/shut and to control (throttle) media flow. The worm gearbox is simply controlled hand-wheel of a suitable diameter. End positions of the worm gearbox are adjusted by screws. The gearbox can be equipped with a lockable system secured by a padlock. The worm gearbox as well as the hand lever can be completed with limit switch boxes.

FIG. 32 - HANDLEVER

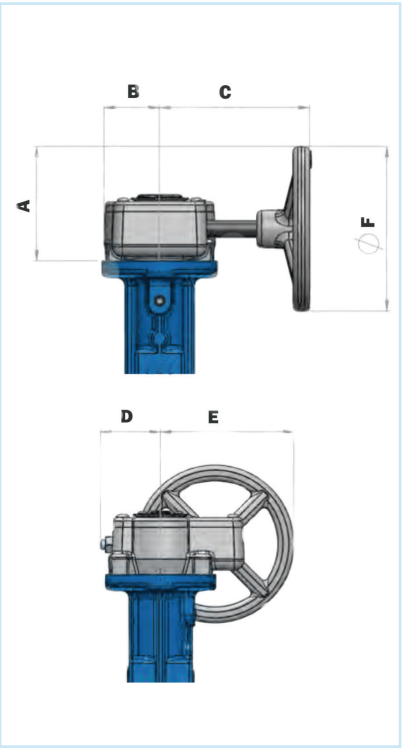


TABLE 8 - DIMENSIONS OF GEARBOX WITH HANDWHEEL [MM]

DN	PN	ISO Flange	Shaft	A	B	C	D	E	F	Kg
32/40	16	F05	14x14	70	35	91	38	84	100	1,2
50	16	F05	14x14	70	35	91	38	84	100	1,2
65	16	F05	14x14	70	35	91	38	84	100	1,2
80	16	F05	14x14	70	35	91	38	84	100	1,2
100	16	F05	14x14	70	35	91	38	84	100	1,2
125	16	F07	17x17	127,5	46	139	59	141	200	2,2
150	16	F07	17x17	127,5	46	139	59	141	200	2,2
200	16	F07	17x17	127,5	46	139	59	141	200	2,2
250	16	F10	22x22	134	57	156	60	155	200	4,2
300	16	F10	22x22	134	57	156	60	155	200	4,2
350	10	F12	27x27	183	57	210	95	205	300	4,5
350	16	F12	27x27	238	67	255	131	267	400	6,5
400	10	F14	27x27	292	78	350	169	331	500	11,0
400	16	F14	27x27	341	78	350	219	381	600	12,0
450	10	F14	ø 38	348	110	346	196	405	600	26,0
450	16	F14	ø 38	348	110	346	196	405	600	26,0
500	10	F14	ø 42	348	110	346	196	405	600	26,0
500	16	F14	ø 42	405	143	387	220	480	700	35,0
600	10	F16	ø 50	405	143	387	220	480	700	35,0
600	16	F16	ø 50	455	143	387	270	530	800	37,0

ACTUATORS

- **Pneumatic actuators**

Pneumatic actuators can be assembled to valves in two options: single-acting or double-acting.

- **Electric actuators**

Electric drives are designed quarter-turn. Electric actuators can be installed on valves for voltages of 24 V, 230 V or 400 V.

- **Special actuators types**

Valves are equipped with special actuator types from major world suppliers (Auma, Regada, Valpes etc.).

FIG. 33 - ELEKTRIC ACTUATOR

FIG. 34-PNEUMATIC ACUATOR

FIG. 35 - SPECIAL ACTUATORS

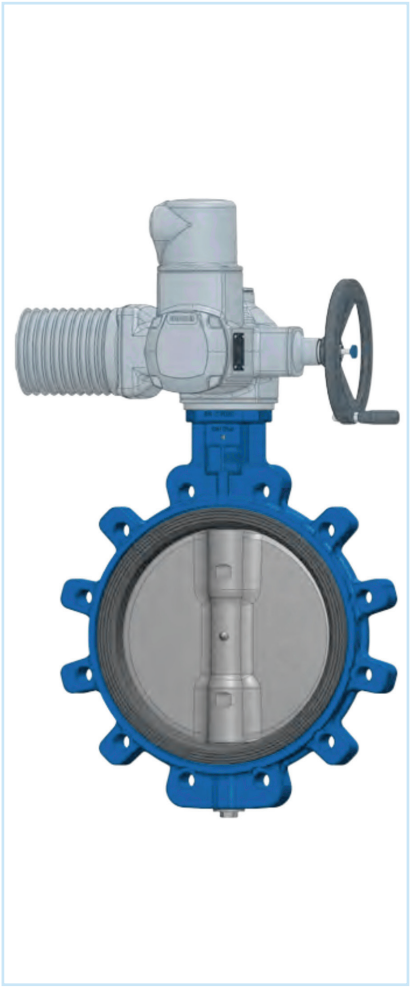


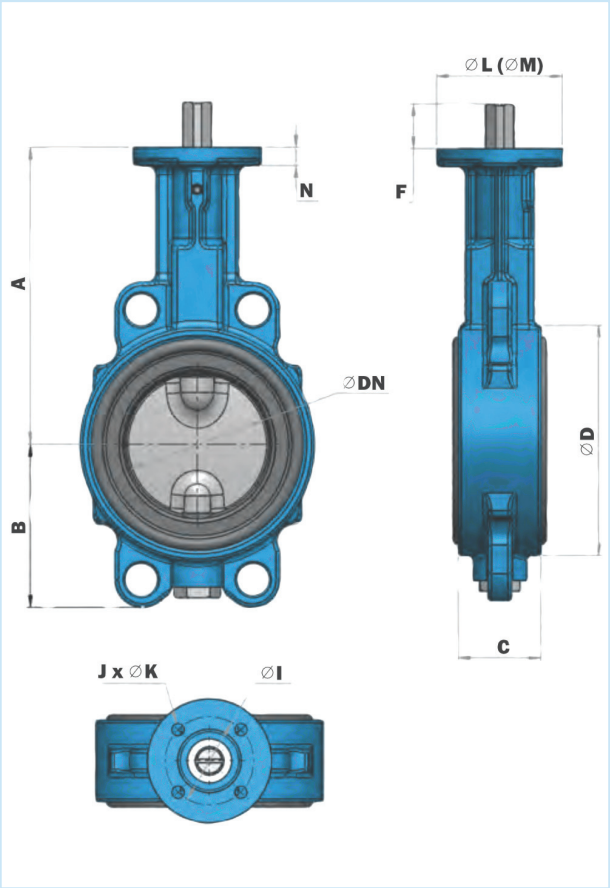
TABLE 9 - OPERATING TORQUES (NM) VS WORKING PRESSURE (BAR)

DN	32/40	50	65	080	100	125	150	200	250	300	350	400	450	500	600
PMAX 6 bar	8	11	15	20	38	55	70	100	160	235	480	750	1180	1380	2050
PMAX 10 bar	9	12	17	25	46	70	80	125	200	290	530	1200	1550	2050	2700
PMAX 16 ba	10	12	50	30	55	85	100	150	290	380	580	1650	2100	2700	3750

Mentioned torques are valid only for valves with EPDM seats and stainless discs for liquid media. For valve actuation the declared values must be multiplied by 1,2. For NBR seats to be multiplied by 1,4. For gas media or media with abrasive particles use secondary coefficient 1,35. For NBR and VITON (FPM) seats multiply by 1,4. For specific work conditions contact manufacturer to get advised the actuation type choice.

VALVE BASIC DIMENSIONS

FIG. 36 - B - WAFER DESIGN



OBR. 37 - T - LUG DESIGN

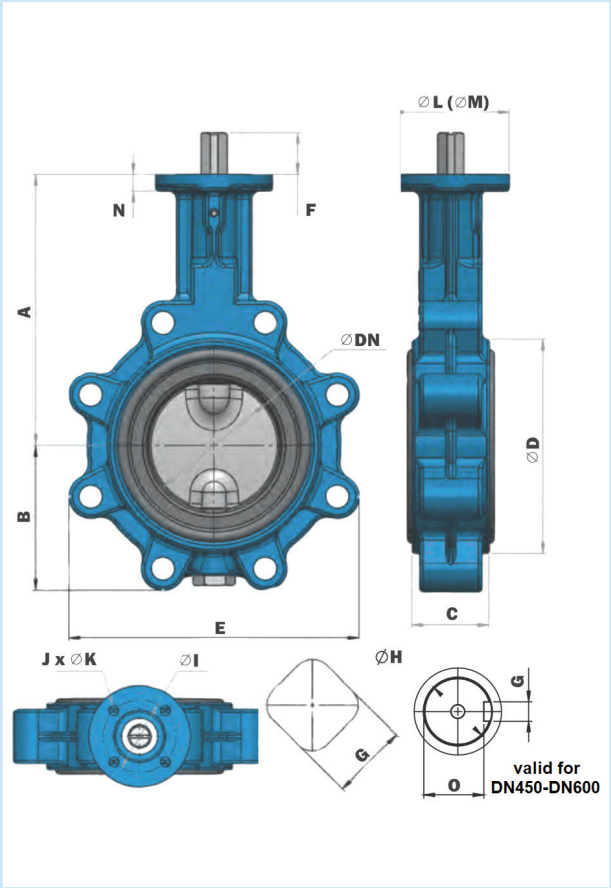


TABLE 10 - DIMENSIONS [mm]

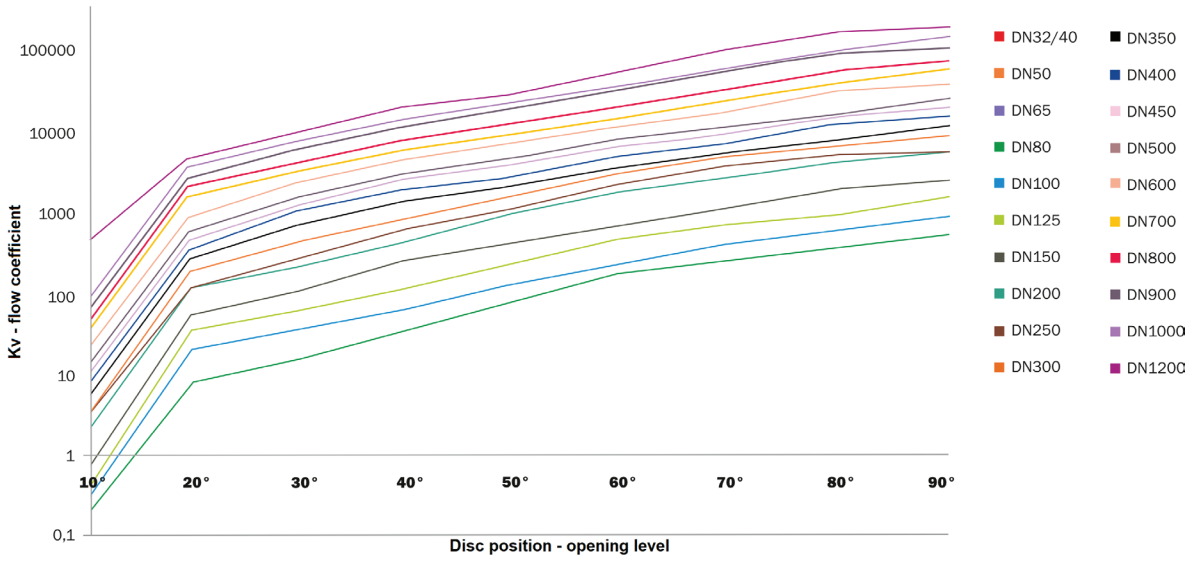
DN	DN	32/40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Valve dimen-sions	A	136	146	154	163	173	193	205	234	270	310	325	365	375	485	565
	B	54	64	72	89	105	119	130	166	202	237	271	314	330	368	464
	C	33	43	46	46	52	56	56	60	68	78	78	102	114	127	154
	D	78	96	113	128	150	184	212	268	320	378	435	488	544	590	695
	E	110	115	129	174	204	234	255	319	396	465	509	590	610	682	810
Endshaft dimen-sions	F	25	25	25	25	25	25	25	25	30	30	36	36	80	80	80
	G	14	14	14	147	14	17	17	17	22	22	27	27	10	12	14
	H	-	-	-	-	-	-	-	-	-	-	-	-	ø 38	ø 42	ø 50
	O	-	-	-	-	-	-	-	-	-	-	-	-	33,3	37,1	44,5
Flange dimen-sions	I	50/70	50	50	50	50	70	70	70	102	102	125	140	140	140	165
	J	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	K	7	7	7	7	7	9	9	9	11	11	14	18	18	18	23
	L	-	70	70	70	70	-	-	-	-	-	-	-	175	175	210
	M	70	-	-	-	-	70	70	70	105	105	130	140	-	-	-
	N	8	8	8	9	8	12	12	14	17	17	17	21	22	27	27
Weight (kg)	Ver. WAFER	1,9	2,7	3,2	3,7	4,7	6,7	8,4	13,3	22,0	29,3	46,4	69,8	83,0	112,0	216,0
	Ver. LUG	2,3	3,0	3,7	4,8	6,1	9,2	10,2	15,3	28,4	41,2	62,0	96,3	130,0	149,0	288,0
ISO Flange		F05/07	F05	F05	F05	F05	F07	F07	F07	F10	F10	F12	F14	F14	F14	F16

NOMINAL FLOW VALUES

TABLE 11 - FLOW COEFFICIENT Kvs **[1KV=0,854701 CV]**

DN	10 °	20 °	30 °	40 °	50 °	60 °	70 °	80 °	90 °
32/40	0,1	2	4	9	17	30	45	61	84,4
50	0,1	3	6	11	23	50	81	110	147
65	0,1	5	10	21	53	90	160	210	290
80	0,2	8	15	33	76	160	238	340	450
100	0,3	20	35	60	122	220	362	520	730
125	0,4	35	60	110	223	430	626	797	1260
150	0,7	54	105	248	400	640	987	1630	1990
200	2	120	210	410	915	1630	2331	3446	4396
250	3	129	274	590	1037	2000	3210	4164	4500
300	3	188	424	820	1500	2710	4180	5433	6800
350	5	265	685	1327	1990	3214	4690	6292	8900
400	7	345	1000	1825	2550	4383	6090	9779	11500
450	9	449	1200	2518	3680	5929	7840	11925	15000
500	12	586	1511	2909	4340	7167	9508	12762	18800
600	19	847	2217	4203	6560	9863	14614	23621	27600
700	31	1554	3118	5686	8569	12810	19511	29904	42416
800	39	2045	4105	7486	11815	17633	29902	41231	52776
900	53	2614	5767	10917	17326	27849	44987	68209	74979
1000	72	3584	7194	13117	20702	30991	47201	72344	102614
1200	390	4597	10146	19195	26221	43873	79092	119966	131962

FIG. 38 - DEPENDENCE OF THE FLOW COEFFICIENT



DN>600 / DOUBLE FLANGED DESIGN - SERIES „U”

TECHNICAL PARAMETERS

Body design	Double flanged • body with threaded / tapped holes	Leak test	1,1 MPa - 1,76 MPa
Design performance	Series „U” • Short face-to-face length, Series 20 • According to ISO 5752-20	Working temperature	• NBR -10°C / +90°C • Seat EPDM -20°C / +125°C (other alternatives depending on the specific medium)
Nominal size Working pressure	Design „U” DN700 - DN1600 1,0 MPa - 1,6 MPa (PN10 / PN16)	Features	Concentric design Top flange according to ISO 5211 Flange connection according to BS4504/DIN/ANSI Design complies with API609

FIG. 39 - DOUBLE-FLANGED DESIGN

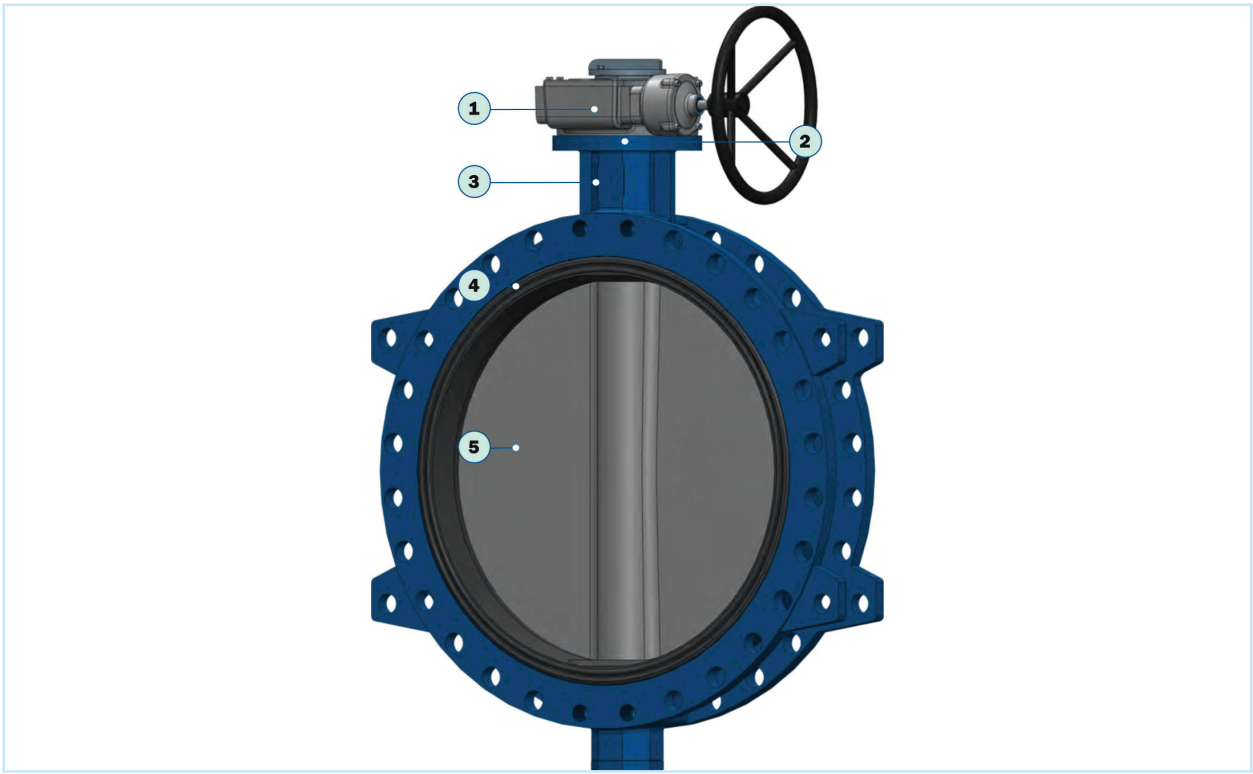


TABLE 12 - ADVANTAGES OF THE DESIGN

č.	Advantage	Description
1	International Standard compatibility	According to the standard ISO 5211 the top flange enables to directly assemble any manual operators and actuators. Valves are usually delivered with worm gear actuators. A wide scale of pneumatic or electric actuators can be assembled, too.
2	Blow-out proof system	A retaining washer disables shaft movement upwards.
3	Lenghtened neck	Enables to insulate the actuator from conveyed media warm effects and thus meets requirements on heating systems controls.
4	Seat design	Seat movement or incorrect position is impossible - seat can be vulcanized. Vulcanizaton leads to decreasing torque values needed to handle the valve. Valve inner part is fully rubber lined and thus protected against corrosive effects.
5	Disc design	Disc with polished edges is protective to seat and provides a long lifespan. Symmetric disc profile improves valve performance by increasing Kv (Cv) values, decreases turbulence and minimizes pressure loss.

MATERIAL SPECIFICATION

FIG. 40 - DN>600 / DOUBLE FLANGED DESIGN - SERIES „U" WITH TROUGHT / THREADED HOLES

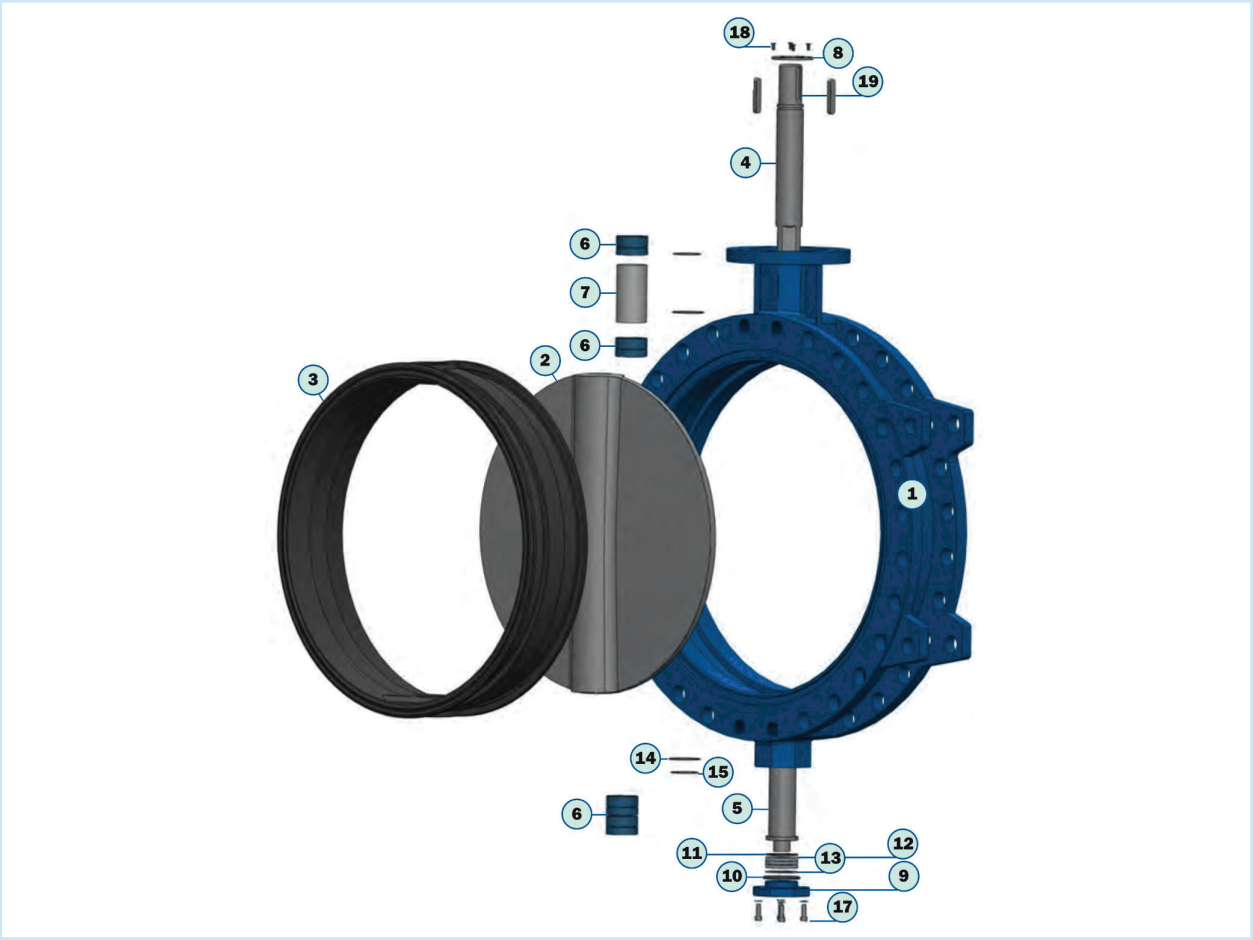


TABLE 13 - LIST OF PARTS WITH MATERIAL SPECIFICATION

Pos.	Name	Material
1	Body	0.7040
2	Disc	upon request
3	Seat	upon request
4	Shaft	1.4021
5	Pivot	1.4021
6	Bushing	Bronze
7	Supporting liner	1.4301
8	Retaining ring	1.4401 (316)
9	Cover	0.7040
10	Washer	1.4301 (304)
11	Washer	1.4301 (304)
12	Bearing	upon standard
13	O-ring	upon request
14	O-ring	upon request
15	O-ring	upon request
16	Washer	A4
17	Bolt	A4
18	Bolt	A4
19	Spring	A4

Advantages of concentric shut-off valve double-flanged design

• 100 % tightness, • 0% leakinesst, • vulcanized seat, • tuation by various actuator types - manual, electric, pneumatic or special types, • on/off and for regulation, • fully sealed stem, medium is not in contact, with stem and body, • bi-directional tightness, • low body weight, • disc aerodynamic design minimising pressure loss, • disc with polished edges, high through put profile.

Material options Body / Disc / Seat/ Shaft

Body Grey cast iron / Ductile iron / Carbon steel / Stainless steel / Epoxy coating / Coating C4, C5

Disc Ductile iron / Stainless steel / Aluminium Bronze / Duplex / Super Duplex / HC276 / RILSAN, HALAR coating

Seat NBR / EPDM / EPDM for potable water/FPM/ Silicone

Shaft AISI420 / AISI431 / F51/ F55 or

*) special materials upon request

BASIC DIMENSIONS OF THE VALVE

FIG. 41 - DN>600 / DOUBLE FLANGED DESIGN - SERIES „U”

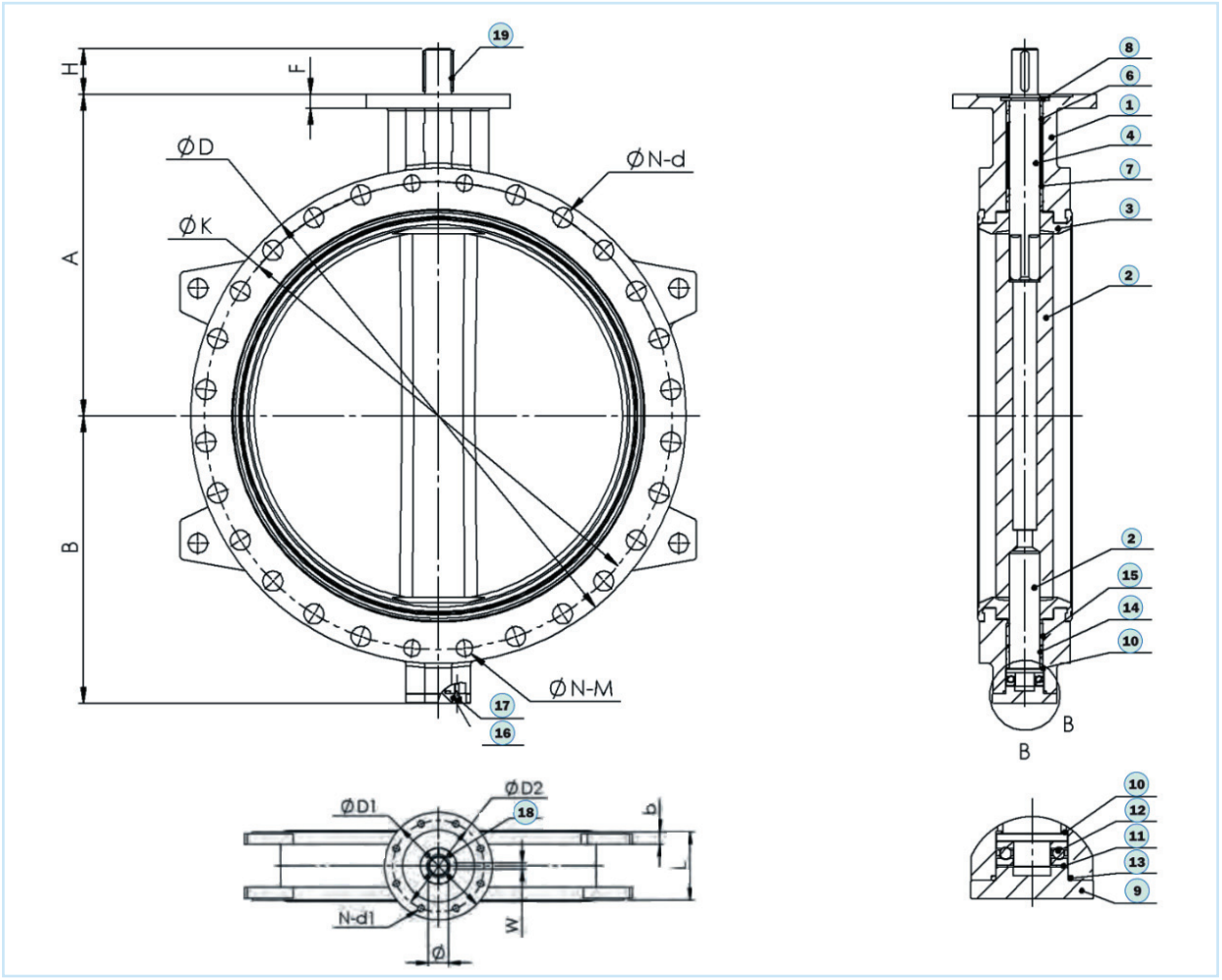


TABLE 14 - DIMENSIONS TABLE [mm] FOR DN700-DN1600 / PN10

DN	700	800	900	1000	1100	1200	1400	1600
A	624	672	720	800	900	941	1040	1150
B	535	606	670	735	830	878	1009	1138
H	95	95	130	130	135	150	150	180
D	910	1025	1125	1255	1355	1485	1685	1930
K	840	950	1050	1160	1270	1380	1590	1820
N-d	20-31	20-34	24-34	24-37	28-37	28-41	32-44	36-50
N-M	4-M27	4-M30	4-M30	4-M33	4-M33	4-M36	4-M39	4-M45
L	165	190	203	216	254	254	279	318
b	32,5	35	37,5	40	42,5	45	46	49
D1	300	300	300	300	350	350	415	415
D2	254	254	254	254	298	298	356	356
N-D1	8-18	8-18	8-18	8-18	8-22	8-22	8-33	8-33
F	30	30	34	34	34	34	40	50
ø	55	55	75	85	105	105	120	160
W	16	16	20	22	28	28	32	40

PN16 / Class 150 upon request

TABLR 15 - OPERATING TORQUES (NM) VS WORKING PRESSURE (BAR) SERIES 20

DN	PN10 Nm	PN 16 Nm
700	3500	4200
750	3800	4800
800	4600	5600
900	5800	7800
1000	8800	10800
1100	11240	15600
1200	13800	19320
1300	16900	23660
1400	20000	28000
1500	25000	35000
1600	29000	40600
1800	39900	55860
2000	52250	73150

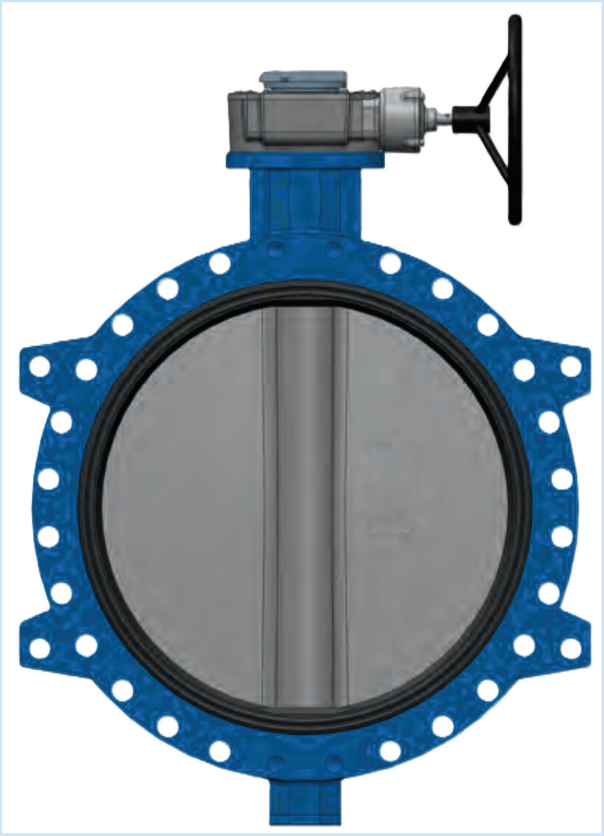
Mentioned torques are valid for valves of Series 20 with interchangeable seats. The data do not include values of the safety factor. Using seat EPDM multiply the values by 1,2. Using seats NBR/VITON/SILICONE multiply the values by 1,3.

TABLE 16 - OPERATING TORQUES (NM) VS WORKING PRESSURE (BAR) SERIES 13

DN	PN10 Nm	PN 16 Nm
50	17	17
65	25	25
80	38	38
100	56	56
125	90	90
150	124	124
200	233	233
250	392	392
300	560	560
350	736	988
400	1011	1479
450	1355	1887
500	1807	2444
600	2825	4054
700	4410	6204
750	5080	-
800	5812	8782
900	7092	12142
1000	10584	16122
1050	12172	-
1200	16935	26984
1400	22000	34500

Mentioned torques does not include safety factor. Please use a factor of 1.3

FIG. 42 - VALVE ACTUATION WORM GEARBOX WITH HANDWHEEL



VALVE ACTUATION WORM GEARBOX WITH HANDWHEEL

Manual gearbox casing is made from cast iron with suitable surface treatment and protection degree class IP 67. Self--locking design of the worm gear enables both to set basic positions open/shut and to control (throttle) media flow. The worm gearbox is simply controlled hand-wheel of a suitable diameter. End positions of the worm gearbox are adjusted by screws. The gearbox can be equipped with a lockable system secured by a padlock. The worm gearbox as well as the hand lever can be completed with limit switch boxes.

ACTUATORS

Pneumatic actuators

Two standard designs: single-action/double-action.

Electric actuators

Electric actuators can be installed for voltages of 24 V, 230 V or 400 V.

Special actuators types

Made by suppliers Auma, Regada, Valpes, etc.

*) smaller sizes with manual lever

DOUBLE FLANGED DESIGN - SERIES „F”

TECHNICAL PARAMETERS

Body design	Double flanged • Body with through / threaded holes	Leak test	1,1 MPa - 1,76 MPa
Design performance	Series „F“ • Increased face-to-face length, Series 13 • According to ISO 5752-13	Working temperature	• Seat NBR -10°C / +90°C vulcanized • Seat EPDM -20°C / +125°C vulcanized (other alternatives upon request)
Nominal size	Design „F” DN50 - DN2200 1,0 MPa - 1,6 MPa (PN10 / PN16)	Features	Concentric design Top flange according to ISO 5211 Flange connection according to S4504/ DIN/ANSI Design complies with API609

FIG. 43 - DOUBLE FLANGED DESIGN - SERIES „F“

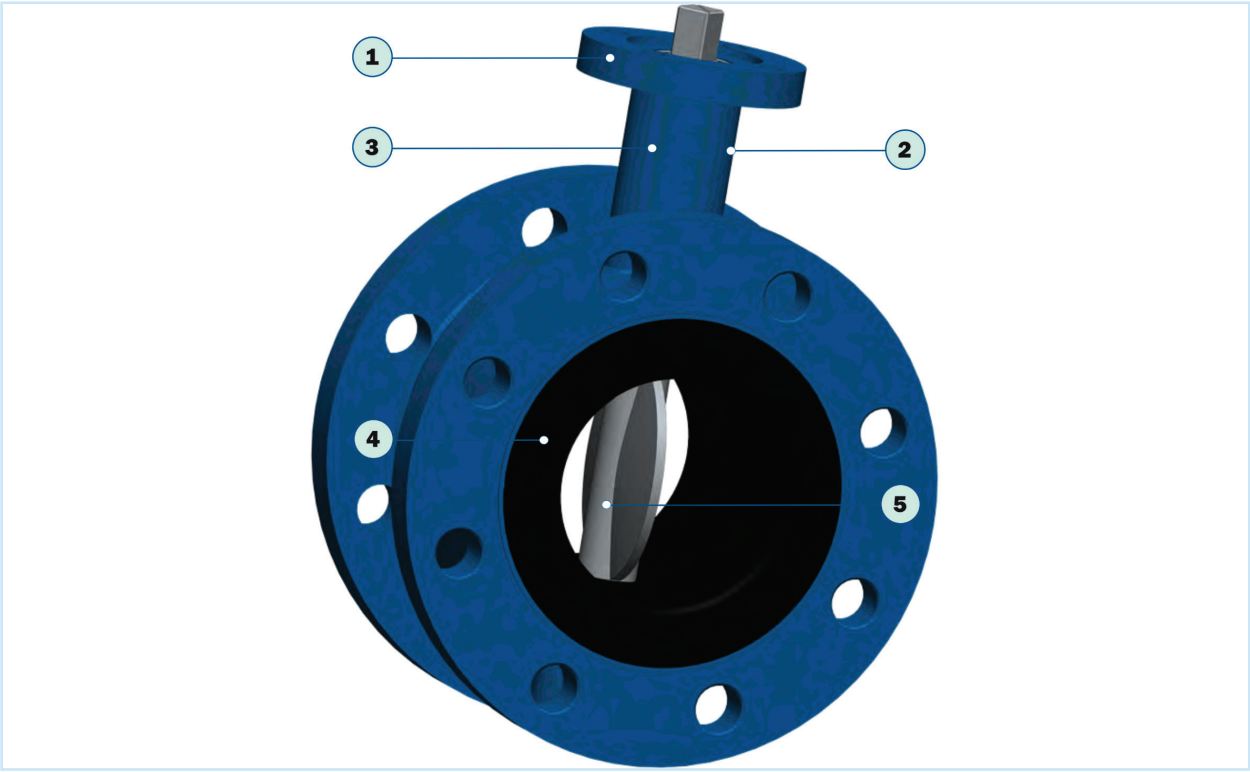


TABLE 17 - ADVANTAGES OF THE DESIGN

Nr.	Advantage	Description
1	International Standard compatibility	According to the standard ISO 5211 the top flange enables to directly assemble any manual operators and actuators. Valves are usually delivered with worm gear actuators. A wide scale of pneumatic or electric actuators can be assembled, too.
2	Blow-out proof system	A retaining washer disables shaft movement upwards.
3	Lenghtened neck	Enables to insulate the actuator from conveyed media warm effects and thus meets requirements on heating systems controls.
4	Seat design	Seat movement or incorrect position is impossible - seat can be vulcanized. Vulcanizaton leads to decreasing torque values needed to handle the valve. Valve inner part is fully rubber lined and thus protected against corrosive effects.
5	Disc design	Disc with polished edges is protective to seat and provides a long lifespan. Symmetric disc profile improves valve performance by increasing Kv (Cv) values, decreases turbulence and minimizes pressure loss.

MATERIAL SPECIFICATION

FIG. 44 - DOUBLE FLANGED DESIGN SERIES „F“ WITH THROUGH / THREADED HOLES

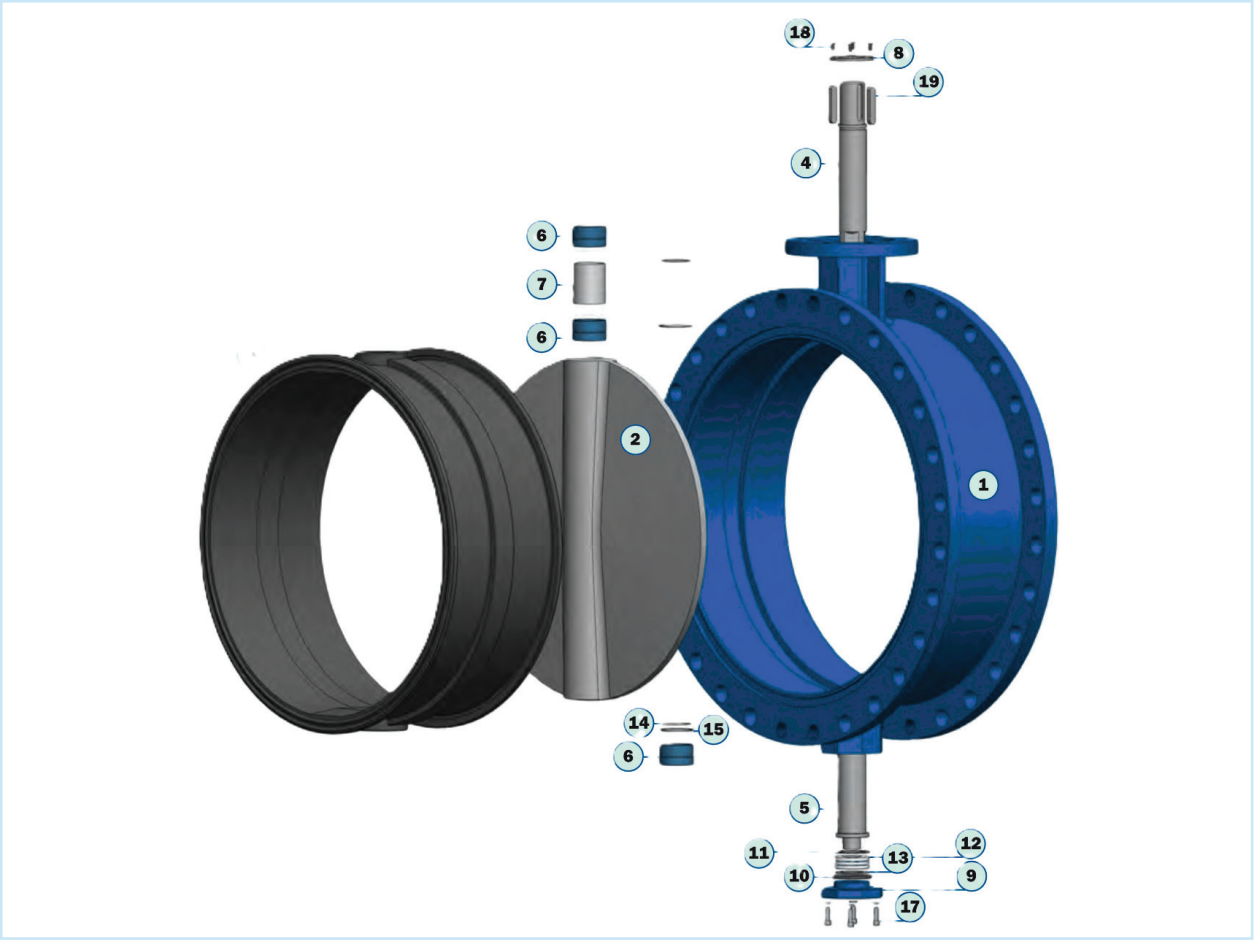


TABLE 18 - LIST OF PARTS WITH MATERIAL SPECIFICATION DN50-2200 / PN10

Pos.	Name	Material
1	Body	0.7040
2	Disc	upon request
3	Seat	upon request
4	Shaft	1.4021
5	Pivot	1.4021
6	Bushing	Bronze
7	Supporting liner	1.4301
8	Retaining ring	1.4401 (316)
9	Cover	0.7040
10	Washer	1.4301 (304)
11	Washer	1.4301 (304)
12	Bearing	upon standard
13	O-ring	upon request
14	O-ring	upon request
15	O-ring	upon request
16	Washer	A4
17	Bolt	A4
18	Bolt	A4
19	Spring	A4

Material options
Body / Disc / Seat/ Shaft

Body Grey cast iron / Ductile iron / Carbon steel / Stainless steel / Epoxy coating / Coating C4, C5

Disc Ductile iron / Stainless steel / Aluminium Bronze / Duplex / Super Duplex / HC276 / RILSAN, HALAR coating

Seat NBR / EPDM / EPDM for potable water /FPM/Silicone

Shaft AISI420 / AISI431 / F51/ F55 or

*) special materials upon request

DESIGN PARAMETERS / SERIES - „F”

TABLE 19 - LIST OF PARTS WITH MATERIAL SPECIFICATION DN50-350 / PN10

Pos.	Name	Material
1	Body	0.7040 + EPDM
2	Bushing	Bronze
3	Pivot	SS 1.4021/420t
4	Disc	Disc
5	Rivet	Rivet
6	Label	1.4301/SS304
7	Bushing	Bronze
8	O-Ring	EPDM/NBR
9	Washer	1.4301/SS304
10	Retaining ring	SS A2
11	Shaft	SS 1.4021/420

FIG. 45 - CONSTRUCTION TYPE – “F” DN50-DN350 / PN10

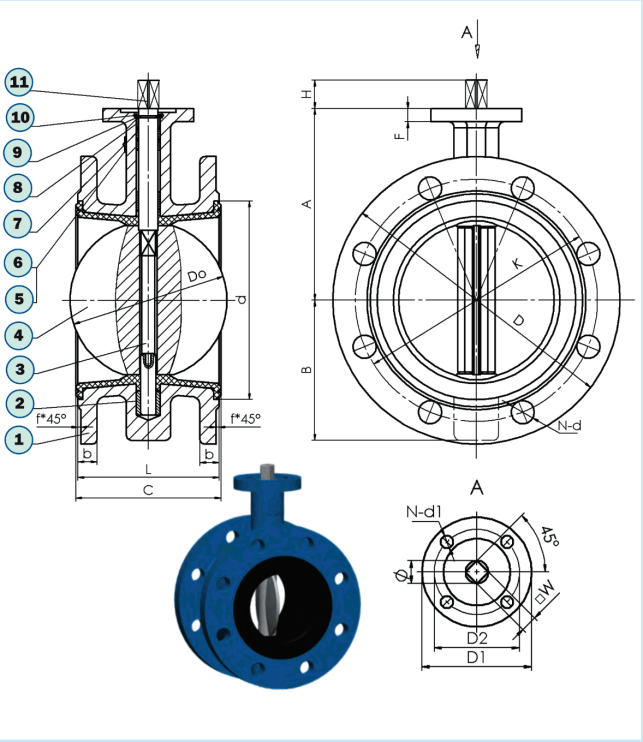


TABLE 20 - DIMENSIONS TABLE [mm] FOR DN50-DN350 / PN10

	50	65	80	100	125	150	200	250	300	350	400
A	120	130	145	155	170	190	205	235	280	310	340
B	80	89	95	114	125	139	170	198	223	254	306
H	25	25	25	25	25	25	25	30	30	36	36
D	165	135	200	220	250	285	340	395	445	505	580
K	125	145	160	180	210	240	295	350	400	460	525
N-d	4-19	4-19	8-19	8-19	8-19	8-23	8-23	12-23	12-23	16-23	16-31
Do	52,6	64,3	78,8	104	123,3	155,7	202,4	250,4	301,5	333,3	389,6
d	89	106	120	144	170	197	252	305	350	415	460
L	108	112	114	127	140	140	152	165	178	190	216
C	111	115	117	130	143	143	155	168	182	194	221
b	19	19	19	19	19	19	20	22	24,5	24,5	28
f	3	3	3	3	3	3	3	3	3	4	4
D1	65	65	65	90	90	90	125	125	125	150	175
D2	50	50	50	70	70	70	102	102	102	125	140
N-d1	4-7	4-7	4-7	4-10	4-10	4-10	4-12	4-12	4-12	4-14	4-18
F	13	13	13	13	13	13	15	15	20	20	22
Ø	12,6	12,6	12,6	15,77	18,92	18,92	22,1	28,45	31,6	31,6	37,95
W	14	14	14	14	17	17	17	22	22	27	27

*) PN16 upon request

FIG. 46 - DESIGN PARAMETERS / SERIES - „F
DN450-DN1200 / PN10

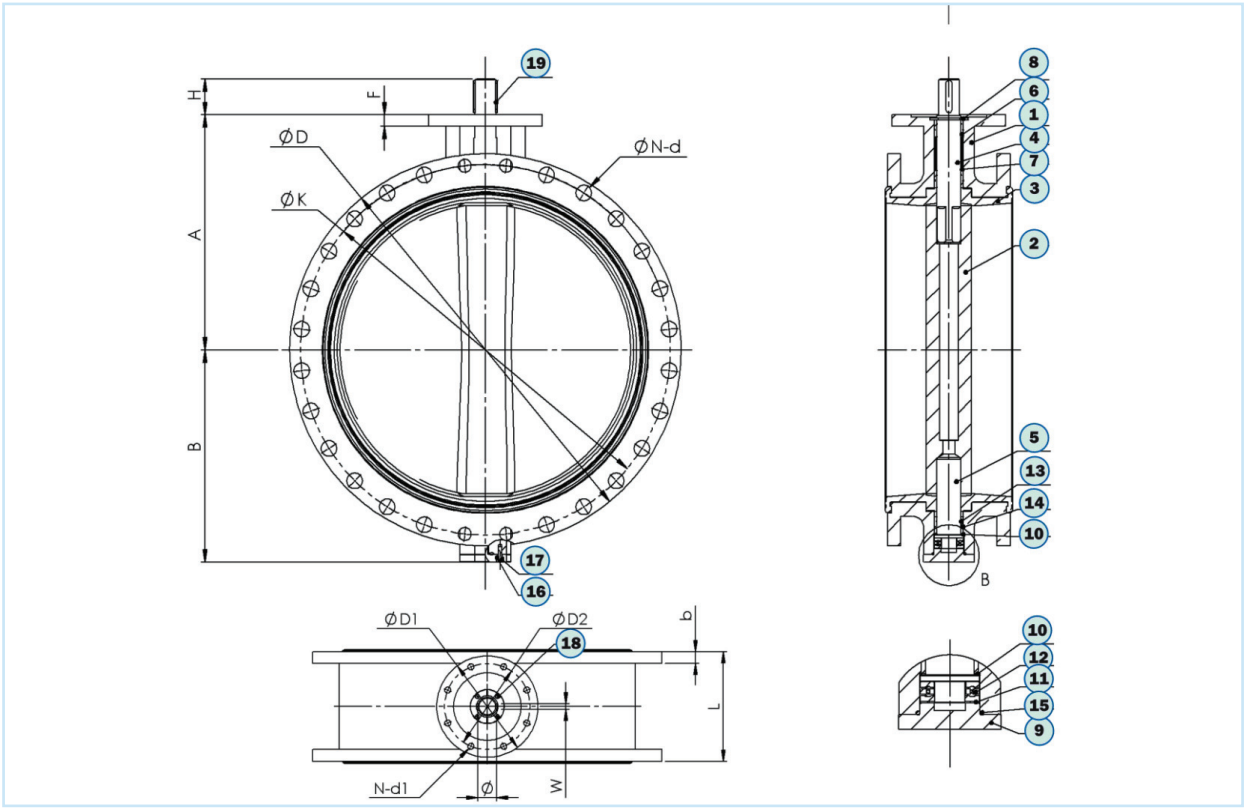
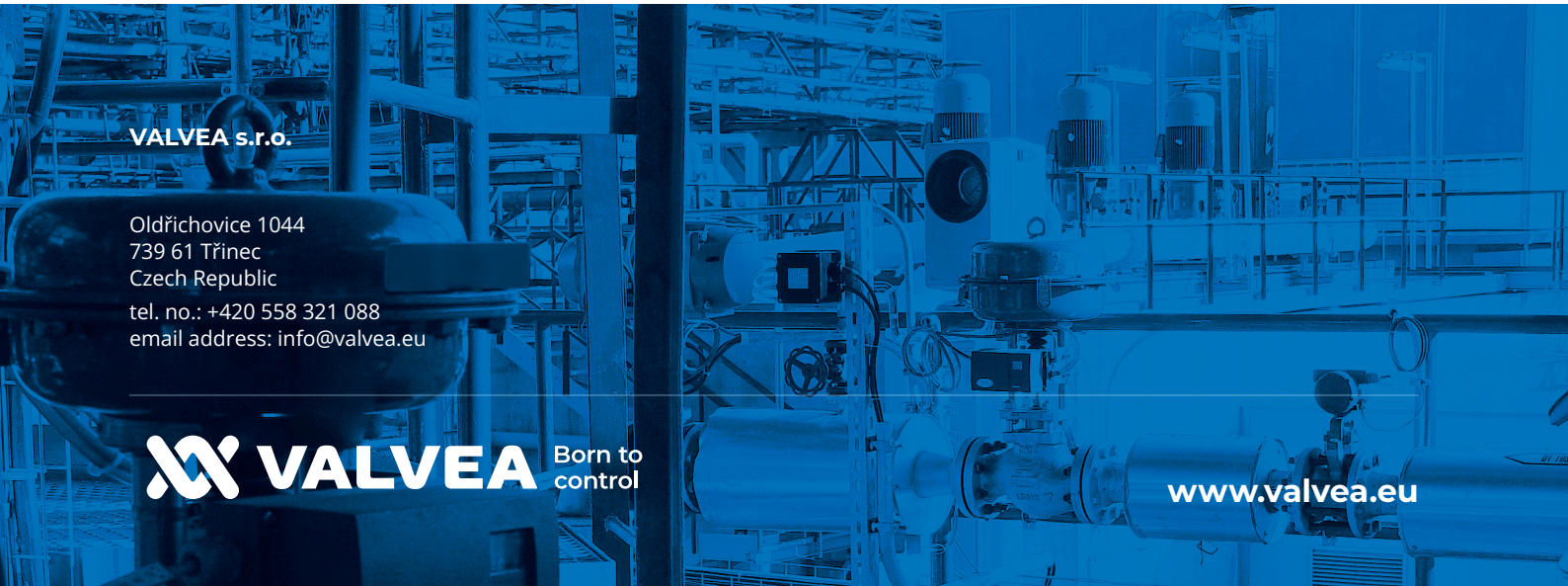


TABLE 21 - DIMENSIONS TABLE [mm] FOR DN450-DN1200 / PN10

	450	500	600	700	800	900	1000	1200
A	375	430	500	560	620	685	735	917
B	345	378	440	510	560	638	705	815
H	80	80	80	95	95	130	130	150
D	615	670	780	895	1015	1115	1230	1455
K	565	620	725	840	950	1050	1160	1380
N-d	20-28	20-28	20-31	24-31	24-34	28-34	28-37	32-41
Do	440,5	491,6	592,5	695	794,7	864,7	965	1160,6
d	510	560	660	770	871	972	1080	1270
L	222	229	267	292	318	330	410	470
C	227	234	272	299	325	337	417	478
b	25,5	26,5	30	32,5	35	37,5	40	45
f	4	4	5	5	5	5	5	5
D1	175	175	210	300	300	300	300	350
D2	140	140	165	254	254	254	254	298
N-d1	4-18	4-18	4-22	8-18	8-18	8-18	8-18	8-22
F	22	22	22	30	30	34	34	34
ø	38	42	50	55	55	75	85	105
W	10	12	14	16	16	20	22	28

*) sizes above DN1200 upon request.
*) PN16 on request



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