

LUG type Butterfly valves

Serie L9



The shut-off LUG butterfly valves in Series L9, with a centred Disc and LUG type body, are made of ductile iron, manufactured in accordance with severe product norms and in conformity to EN ISO 9001.

These valves are suitable for heating and conditioning (HVAC), water treatment and water distribution, industrial applications, agricultural purposes, for compressed air, gas, oils and hydrocarbon.

(Please ensure the choice of the corresponding item)

YES: for in line and end of line installation with frequent actuation; the integrated support, in accordance with ISO 5211, allows easy mounting of a wide range of actuators and drives.

They are suitable for choking and regulating the flow.

NO: for steam.

Accessories

- Extension for main water system connection
- Position indicator and padlocking for gear box
- Micro-switch for gear box
- Kit: micro-switches for ON/OFF position indicator

Actuators

- Double acting and single acting pneumatic actuators
- On request: micro-switches, position indicators
- Electric actuators
- Gear box
- Chain driven control



In conformity with directive 2014/68/UE (ex 97/23/CE PED)

In conformity with D.M. 174 (directive 98/83/CE) and with UNI

EN 1074-1:2001 - UNI EN 1074-2:2004

Design and testing standards (correspondences):

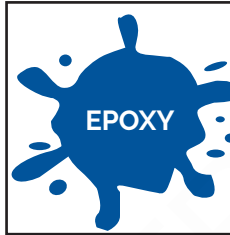
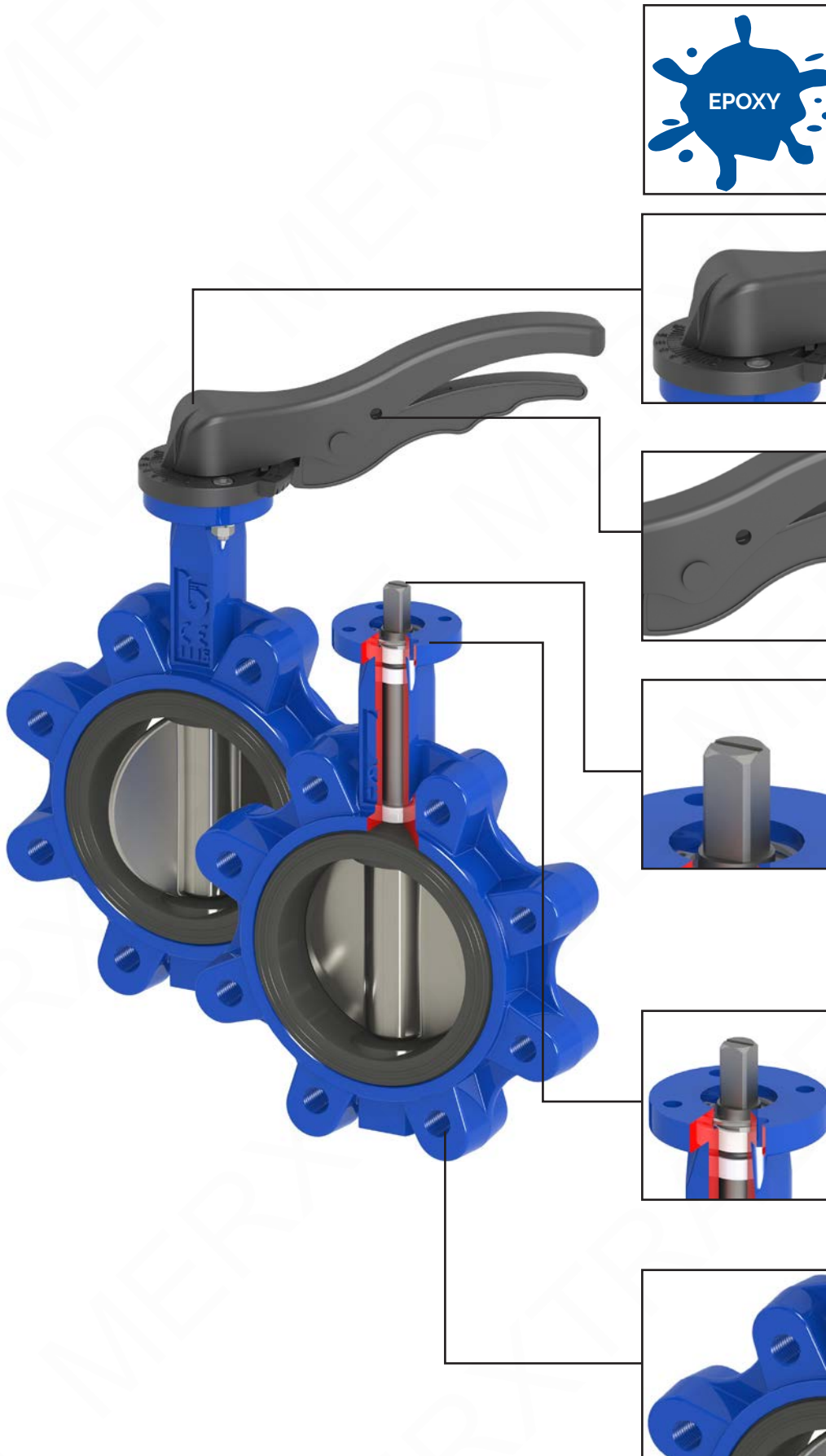
Face-to-face: EN558/1-20 (ISO 5752-20, DIN 3202K1)

Flanges: EN1092 ISO 7005, ANSI B16.5 #150

Design: EN593, EN12516, ISO 5211, EN12570

Marking: EN19

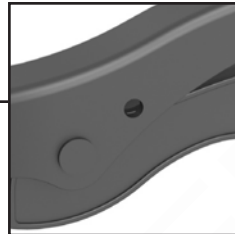
Testing: 100% testing in accordance with EN 12266 cat. A (ISO 5208 cat. A)



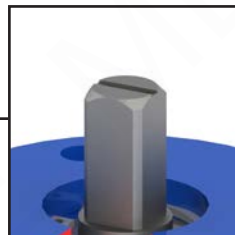
Inside and outside epoxy coating, high temperature resistant. Environmentally friendly, water-based paint. 150 μ thickness.



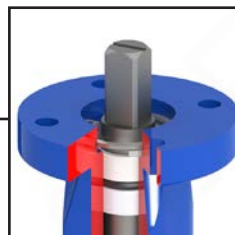
Lever suitable for intermediate regulation.



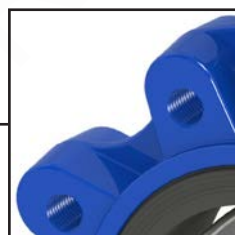
Lockable operation lever.



A notch machined at the top of the stem indicates the position of the disc and allows adjusting the lever/actuator to the correct position, when the command/lever is removed.



Integrated ISO 5211 flange.



Threaded holes suitable for mounting between PN16 for DN25-300 flanges (on request PN 10) and for mounting between PN 10 for DN 350-600 flanges.

EPDM



L9.100

Body: ductile iron
Disc: nickel plated ductile iron
Liner: EPDM
Temp: -10 a +120°C



L9.120

Body: ductile iron Disc:
AISI 316
Liner: EPDM
Temp: -10 a +120°C



L9.128

Body: ductile iron
Disc: AISI 316
Liner: EPDM
Temp: -10 a +120°C
Wras approv. up to 80° C



L9.170

Body: ductile iron Disc:
Aluminium-bronze
Liner: EPDM
Temp: -10 a +120°C

NBR



L9.101

Body: ductile iron
Disc: nickel plated ductile iron
Liner: NBR
Temp: -10 a +80°C



L9.101 gas

Body: ductile iron
Disc: nickel plated ductile iron
Liner: NBR
Temp: -10 a +70°C



L9.121

Body: ductile iron Disc:
AISI 316
Liner: NBR
Temp: -10 a +80°C



L9.121 gas

Body: ductile iron Disc:
AISI 316
Liner: NBR
Temp: -10 a +70°C

NBR

VITON/FKM



L9.171

Body: ductile iron Disc:
Aluminium-bronze
Liner: NBR
Temp: -10 a +80°C



L9.102

Body: ductile iron
Disc: nickel plated ductile iron
Liner: FKM
Temp: -10 a +150°C



L9.122

Body: ductile iron Disc:
AISI 316
Liner: FKM
Temp: -10 a +150°C



L9.172

Body: ductile iron Disc:
Aluminium-bronze
Liner: FKM
Temp: -10 a +150°C

PTFE



L9.103

Body: ductile iron
Disc: nickel plated ductile iron
Liner: PTFE
Temp: -10 a +120°C



L9.123

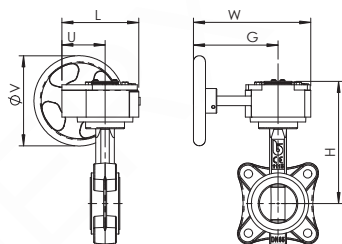
Body: ductile iron Disc:
AISI 316
Liner: PTFE
Temp: -10 a +120°C



L9.173

Body: ductile iron Disc:
Aluminium-bronze
Liner: PTFE
Temp: -10 a +120°C

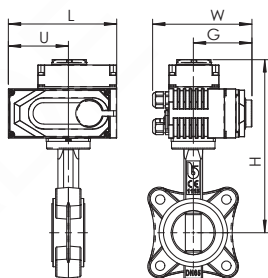
Actuators and accessories



Lg + RM

Gear box

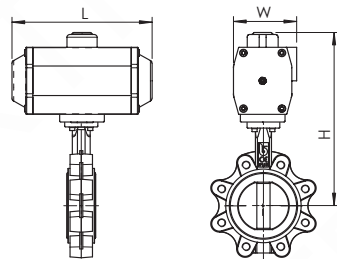
DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400
Lg + RM	RM.0250	RM.0250	RM.0250	RM.0250	RM.0250	RM.0250	RM.0250	RM.0250	RM.0250	RM.0750	RM.1200	RM.1200	RM.1200	RM.1200
L	130	130	130	130	130	130	130	130	130	180	205	205	205	278
U	77	77	77	77	77	77	77	77	77	104	124	124	124	118
H	166	172	178	188	198	212	232	242	262	308	346	372	448	497
W	225	225	225	225	225	225	225	225	225	338	345	345	345	291
F	170	170	170	170	170	170	170	170	170	260	260	260	260	167
V	150	150	150	150	150	150	150	150	150	300	300	300	300	380
Weight Kg	6,6	6,6	6,3	7,2	8,1	9,22	10,52	12,91	14,11	28,4	42	50,5	79,3	122,6



Lg + AOX

Electric actuators

DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400
Lg + AOX	003	003	003	003	005	005	008	010	015	030	060	060	100	160
L	123	123	123	123	160	160	160	189	189	268	268	268	268	508
U	74	74	74	74	89	89	89	107	107	152	152	152	152	366
H	217	223	229	239	257	271	291	309	329	394	430	456	499	789
W	100	100	100	100	121	121	121	145	145	225	225	225	225	285
G	65	65	65	65	84	84	84	89	89	119	119	119	119	149
Weight Kg	4,7	4,7	4,4	5,3	7,7	9	10,3	14,2	15,4	34,5	46,5	52,2	81,5	146



Lg + AP

Pneumatic actuator

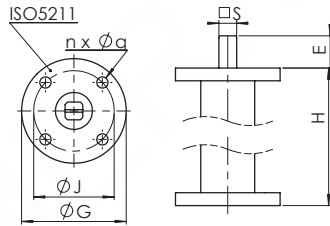
DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400
Lg + AP DE	AP040	AP040	AP040	AP052	AP063	AP063	AP075	AP092	AP105	AP125	AP140	AP160	AP160	AP190
L	120	120	120	147	165	165	182	262	270	298	395	454	454	528
H	224	230	196	218	244	258	290	317	353	394	458	509	552	700
W	65	65	65	72	83	83	95	109	125	134	153	174	174	206
Kg	3,6	3,6	3,3	4,4	6,1	7,4	9,3	14,2	16,8	29,8	46,7	61,8	87,6	111,2
Lg + AP SE - SPRING RETURN	AP052S	AP052S	AP063S	AP075S	AP083S	AP092S	AP105S	AP125S	AP140S	AP160S	AP190S	AP210S	AP240S	AP270S
L	147	147	165	182	208	262	270	298	395	454	528	536	608	721
H	236	242	224	246	315	337	373	344	452	447	606	657	744	798
W	72	72	83	95	103	109	125	134	153	174	206	226	260	294
Weight Kg	4	4	4,5	6,06	7,7	10,8	13,5	19,6	27,3	45,5	72,9	90,4	137	178

Actuators and accessories

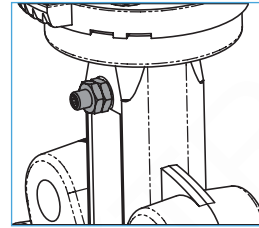


KPROg

Stem extension for water main system connection

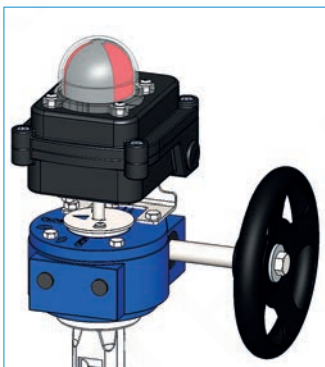


DN	40-100	125-150	200	250-300
H	250-500-800-1000			
ISO 5211	F05	F07	F10	F12
G	65	90	125	150
J	50	F07	F10	F12
n x Ø q	4 x 7	4 x 9	4 x 11	4 x 13
E	20	26	26	26
S	11	14	17	27



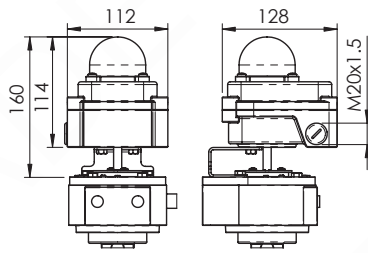
LgX

Complying with European Directive 2014/34/EU, ATEX II 2 GD IIB - DN40÷400 on request

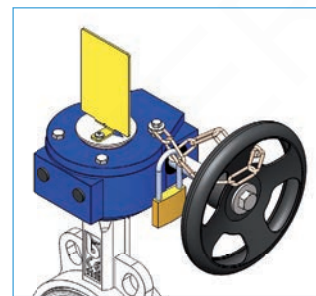


KBOXRM

Limit switches box for gear box

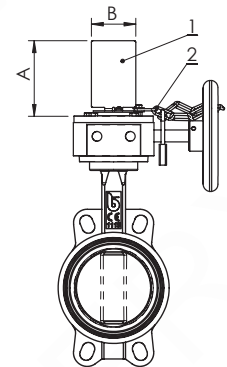


Mechanical switches per standard. Available on request: proximity switches, ATEX explosion proof proximity switches.



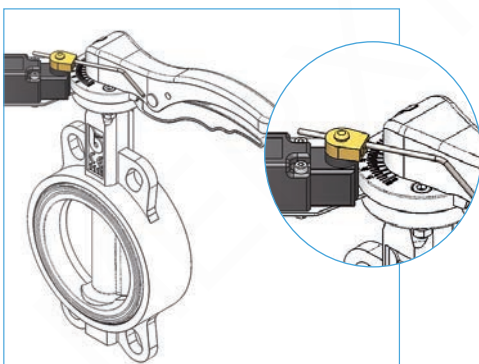
KPOSRM

Position indicator and padlocking for gear box



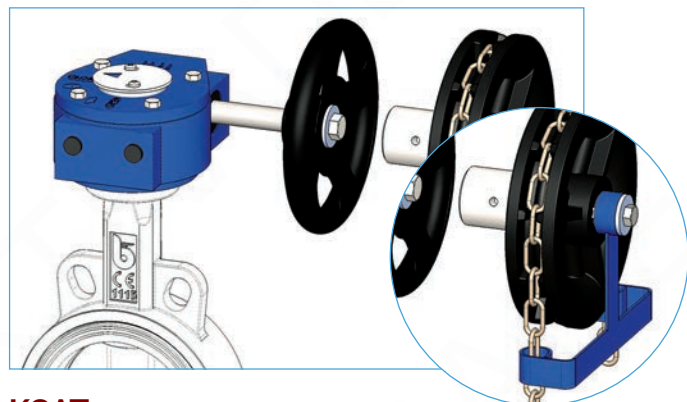
DN	25-150	200-400
A	100	120
B	60	80

1) Position indicator
2) Chain for padlocking



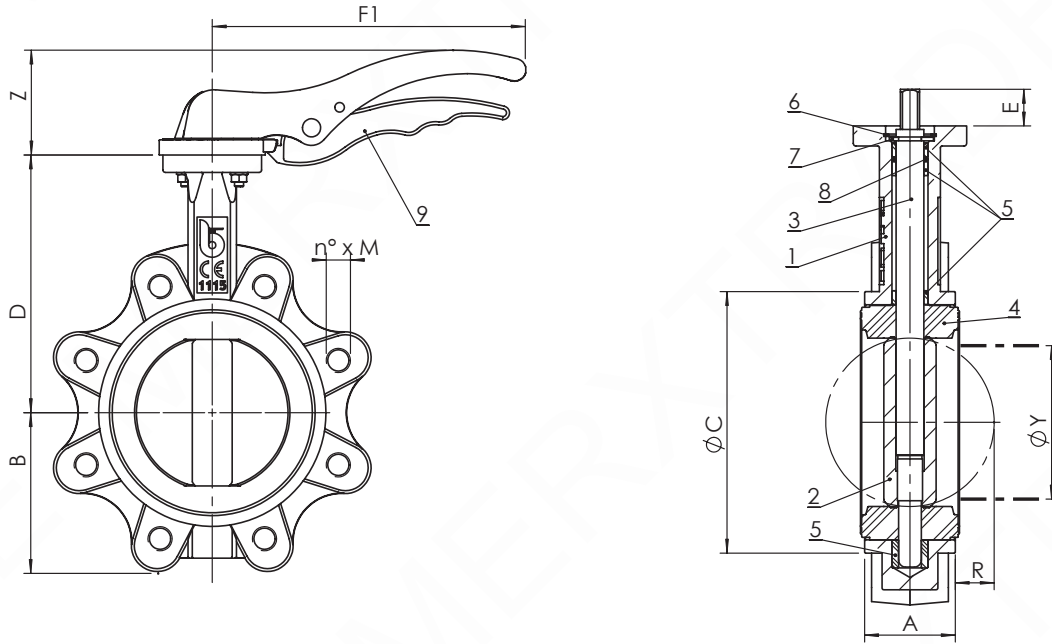
KFC109

Limit switches kit for ON-OFF indication



KCAT

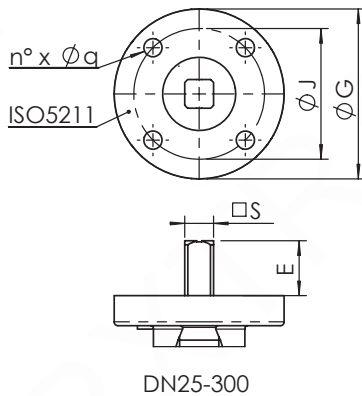
Chain driver kit



Dimensions (mm)

DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A	33	33	33	43	46	46	52	56	56	60	68	78	78	102	114	127	154
ØC	65	73	82	89	102	118	150	174	205	260	318	376	406	471	539	594	695
D	104	110	116	126	136	150	170	180	200	230	266	292	335	360	422	480	562
B	51	56	63	62	69	90	106	119	131	166	202	235	257	292	317	358	447
F1	192	192	170	170	170	206	206	285	285	400	530	-	-	-	-	-	-
Z	68	68	50	50	50	69	69	90	90	72	72	-	-	-	-	-	-
R	-	1	5	5	9	17	26	34	50	71	91	112	128	144	163	182	219
ØY min pipe	-	12	27	31	45	65	90	110	146	194	241	291	324	379	428	475	573

NOTE: valves with EPDM, NBR and FKM ≥ DN 300 and those with PTFE ≥ DN 125 will be supplied with MANUAL REDUCER



DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
n x M	re - please see drilling dimen																
ISO 5211	F05	F05	F05	F05	F05	F05	F05	F07	F07	F10	F12	F12	F12	F12	F14	F14	F16
G	65	65	65	65	65	65	65	90	90	125	150	150	150	150	175	175	210
J	50	50	50	50	50	50	50	70	70	102	125	125	125	125	140	140	165
n x q	4 x 7	4 x 7	4 x 7	4 x 7	4 x 7	4 x 7	4 x 7	4 x 9	4 x 9	4 x 11	4 x 13	4 x 13	4 x 13	4 x 13	4 x 18	4 x 18	4 x 22
S	7	7	9	9	9	11	11	14	14	17	27	27	27	27	32	32	36
E	32	32	21	21	21	21	21	27	27	27	27	27	27	27	52	65	70

1: please see Instruction and Recommendations

Weight (kg)

DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
with lever	2,6	2,6	2,3	3,2	4,1	5,4	6,7	9,6	10,8	21,1	32,7	41,2	67	78	151	188	301

Operating torque (Nm)

DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
DP bar																	
3	2,9	4,7	7,8	11,3	17	23	33	48	68	120	189	290	298	481	-	-	-
6	3,1	5,1	8,4	12	18	25	36	54	78	134	212	316	347	551	-	-	-
10	3,3	5,4	8,8	13	20	26	40	61	88	148	234	342	396	622	1011	1355	1800
16	3,4	5,7	9,2	13	21	28	44	68	99	162	257	367	550	850	1230	1600	2400

N.B.: In order to choose the right actuator, we recommend multiplying the operating torque figure by a safety coefficient, K=1.5

Minimum pipe diameter Y

To ensure complete disc opening, make sure that the inner diameter of the pipe exceeds the following values

DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
	-	12	27	31	45	65	90	110	146	194	241	291	324	379	428	475	573

Drilling dimension

DN	Flange / Flanges	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
F	PN10 EN1092	85	100	110	125	145	160	180	210	240	295	350	400	460	515	565	620	725
n° x M	PN10 EN1092	4 x M12	4 x M16	4 x M16	4 x M16	4 x M16	8 x M16	8 x M16	8 x M16	8 x M20	8 x M20	12 x M20	12 x M20	16 x M20	16 x M24	20 x M24	20 x M24	20 x M27
F	PN16 EN1092	85	100	110	125	145	160	180	210	240	295	355	410	470	525	585	650	770
n° x M	PN16 EN1092	4 x M12	4 x M16	4 x M16	4 x M16	4 x M16	8 x M16	8 x M16	8 x M20	8 x M20	12 x M24	12 x M24	16 x M24	16 x M27	20 x M27	20 x M30	20 x M33	
F	ANSI B16.5 #150	-	-	98,6	120,7	139,7	152,4	190,5	215,9	241,5	298,5	362	431,8	-	-	-	-	-
n° x M	ANSI B16.5 #150	-	-	4 x M14	4 x M16	4 x M16	4 x M16	8 x M16	8 x M20	8 x M20	8 x M20	12 x M24	12 x M24	-	-	-	-	-

Flange chart

DN		25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
For mounting between flanges	PN10 EN1092	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	PN16 EN1092	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	ANSI B16.5 #150	-	-	V	V	V	V	V	V	V	V	V	V	-	-	-	-	-

Recommended flange types

Norms	Type	
EN 1092-1 PN6/10/16	Type 11	weld neck
	Type 21	integral
	Type 02 + 35	loose plate with weld ring neck
	Type 02 + 36	loose plate with pressed collar
	Type 04 + 34	loose plate with weld neck collar
ANSI B16.1#150° ANSI B16.5#150°		flat face
		raised face
		lap joint

Materials

Component	Material
1 Body	Ductile iron EN GJS 400 - 15
2 Disco	Ductile iron nickel plated EN GJS 400 - 15 / Stainless steel ASTM A351 gr. CF8-M / Aluminium-bronze C95800 ASTM B148
3 Stem	Stainless Steel AISI 420
4 Liner	EPDM / NBR / FKM (Viton®) / PTFE
5 Bushing	PTFE
6 Washer	Galvanized carbon steel
7 Circlip ISO3075	Spring steel
8 O-Ring	FKM (Viton®)
9 Lever	DN25-150-aluminium / DN200-250 - Ductile iron EN GJS 400-15
10 Bolts	Stainless steel AISI 201

Maximum pressure

Fluids *	Mounting	
	BETWEEN FLANGES	END OF LINE
Hazardous gases	16 bar DN25-200 10 bar DN250-350 NO DN400-600	10 bar DN25-100 NO DN125-600
Hazardous liquids	16 bar DN25-400 10 bar DN450-600	10 bar DN25-400 6 bar DN450-600
Non hazardous liquids	16 bar DN25-300 10 bar DN350-500 6 bar DN600	10 bar DN25-300 6 bar DN350-500 4 bar DN600
Non hazardous liquids	16 bar DN25-400 10 bar DN450-600	10 bar DN25-400 6 bar DN450-600
Water**	16 bar	16 bar

Temperature

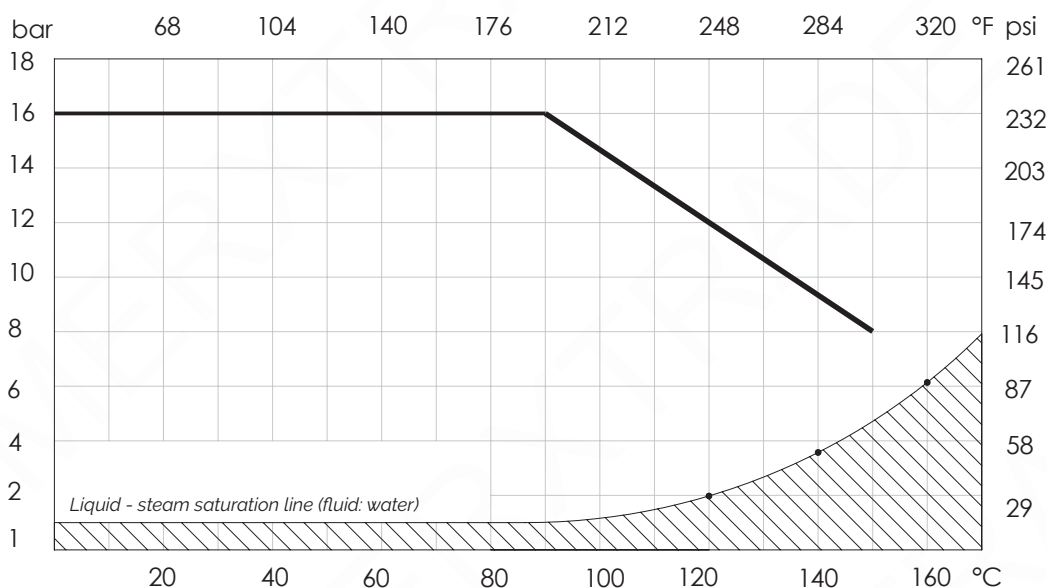
Temperature	min °C	Max°C	
		continuous	peak
EPDM	-10	120	130
NBR	-10	80	90
FKM (Viton®)	-10	150	170
PTFE	-10	120	120

NB: the maximum working pressure decreases while the temperature increases; please refer to "pressure/temperature" chart

* hazardous gas, liquids acc. 2014/68/EU e 1272/2008 (CLP)

** For supply, distribution and discharge of water (PED 2014/68/EU 11.2b)

Pressure/temperature chart

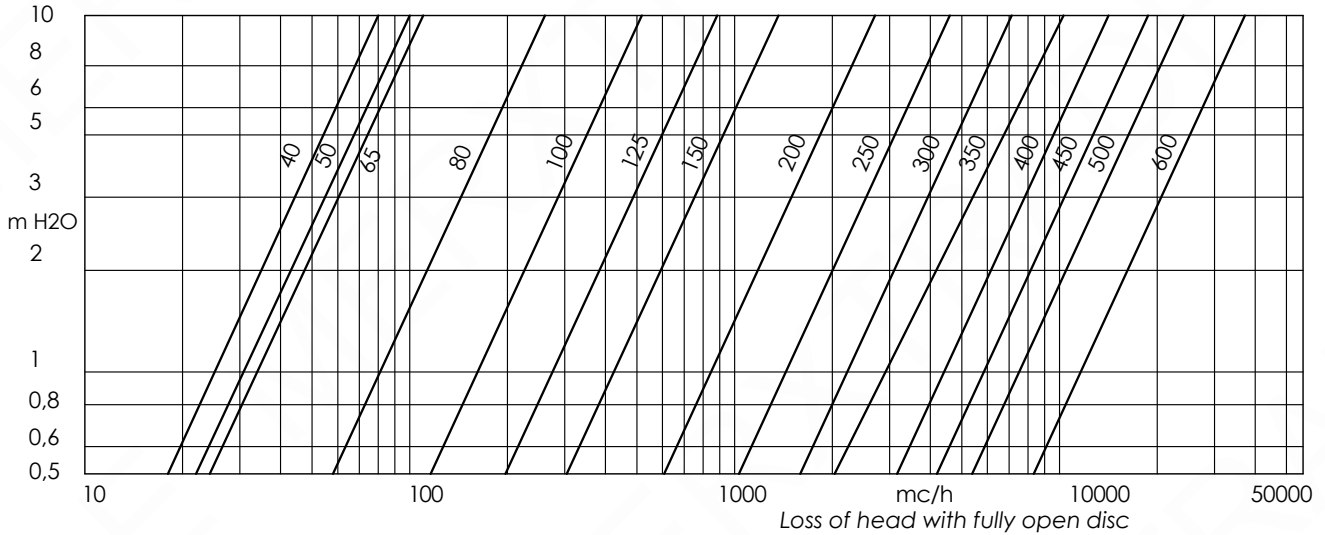


RANGE NOT SUITABLE FOR STEAM. DO NOT use when temperature and pressure are below the liquid-steam saturation line (hatched area)

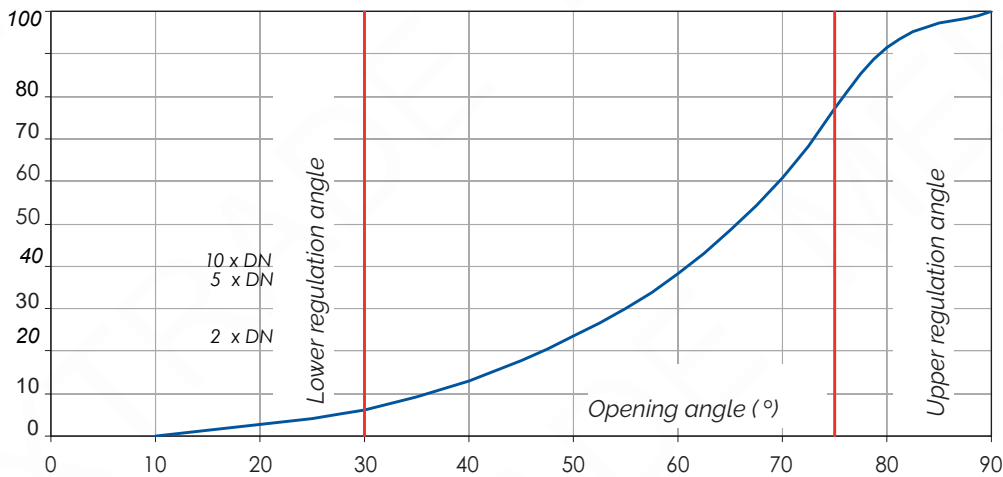


Head loss Fluid: water (1m H₂O = 0,098bar) - Head loss with shutter fully op

Data and features indicated in this brochure are just for information



Flow rate / opening position chart Flow percentage on the flow at full opening under the same loss of head.



Kv - DN chart (mc/h per bar)

DN	mm	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
	ins	1" 1/2	2"	2" 1/2	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	10°	0.04	0.05	0.00	0.17	0.26	0.43	0.69	2.6	2.6	3.5	5.2	6.9	9.5	12	19
OPENING ANGLE	20°	2.1	2.6	3.8	7.8	15	25	39	52	130	202	292	401	531	683	1'055
	30°	4.8	6	14	16	31	53	82	142	276	427	617	849	1'124	1'445	2'234
	40°	10	13	33	34	67	115	177	250	599	926	1'376	1'839	2'437	3'133	4'840
	50°	19	23	53	60	120	205	316	450	1'068	1'650	2'384	3'279	4'342	5'609	8'626
	60°	30	38	75	100	199	339	522	713	1'768	2'730	3'945	5'425	7'185	9'238	14'272
	70°	48	60	98	158	314	535	827	1'122	2'798	4'322	6'243	8'585	11'371	14'620	22'587
	80°	73	91	108	237	471	803	1'241	1'723	4'196	6'483	9'364	12'878	17'057	21'930	33'882
	90°	79	99	108	261	518	883	1'364	2'716	4'611	7'124	10'291	14'152	18'743	24'099	37'232

BOLT LENGTH CALCULATION

$$L_{max} \leq T+w+P$$

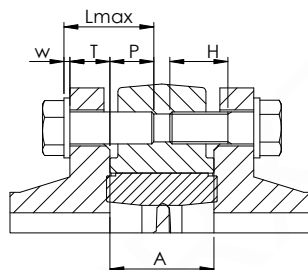
L max = maximum length of screws

P = maximum implantation depth

T = flange thickness (customer)

w = thickness of washer at the screw head

H > *L-T* = minimum threaded length



DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
A	33	33	33	43	46	46	52	56	56	60	68	78	78	102	114	127	154
P	14	14	14	18	20	20	22	22	25	27	30	34	34	38	38	42	45
w (DIN125/ISO7089)	2,5	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	5

As an example, the recommended screw length are given in the following table provided the valve is installed between steel EN 1092-1 type 11 PN16 and PN10 flanges, and with DIN125/ISO7089 washers. We recommend checking for the correct screw length according to actual installation features.

DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
M X L	M12	M16	M16	M16	M16	M16	M16	M16	M20	M20	M24	M24	M24	M27	M27	M30	M33
PN16	x30	x30	x35	x35	x40	x40	x45	x45	x50	x50	x60	x60	x60	x70	x70	x80	x90
M X L	M12	M16	M16	M16	M16	M16	M16	M16	M20	M20	M20	M20	M20	M24	M24	M24	M27
PN10	x30	x30	x35	x35	x40	x40	x45	x45	x50	x50	x60	x60	x60	x70	x70	x70	x80

We do not supply the bolting only on request

Instruction and Recommendations for series J9 - L9

INSTALLATION AND TRANSPORT

- Keep in dry and closed place.
- While stored, the disc must be partially open (Fig. 1).
- Avoid knocks, take special care to protect lever, hand wheel, gear boxes/actuators.
- Do not use lever or hand wheel to lift the valve.

MAINTENANCE

The valve does not require maintenance.

Recommendations

Before carrying out maintenance or dismantling the valve, be sure that the pipes, valves and liquids have cooled down, that the pressure has decreased and that the lines and pipes have been drained in case of toxic, corrosive, inflammable or caustic liquids.

Temperatures above 50°C and below 0°C might cause damage to people.

INSTALLATION

- Handle with care.
- Do not weld the flanges to the piping after installing the valve.
- Water hammers might cause damage and ruptures. Inclination, twisting and misalignments of the piping may subject the valve to stress, once installed. It is recommended that elastic joints be used in order to reduce these effects as much as possible. The disc must be partially open (Fig. 1).

The stem has a machined notch N (Fig. 2), which indicates the position of the disc; consider this indication, in order to mount the levers and actuators correctly.

The mounting can be made with the stem axis in a horizontal or vertical position. In case the fluid contains suspended solid particles (for example, sand, impurities, etc.) or solid particles that may leave deposits, it is recommended that the valve be installed with its axis horizontal, and in such a way that the bottom end of the disc opens in the direction of flow, F. (Fig. 3)

The item L9 allows the dismantling of the pipes downstream, for pressures below 6 bar. For end of line installation:

- series J9 (all pressures), series L9 (pressure > 6 bar): counter flange **MUST** be installed
- series L9 (pressure < 6 bar): it is recommended that a counter flange be installed.

Verify maximum working pressure and limits of use under section "maximum pressure".

Place the valve between two flanges. While placing the valve, ensure there is sufficient space in order not to damage the rubber. Do not mount seals between valve and flanges (Fig. 1).

FIG.1

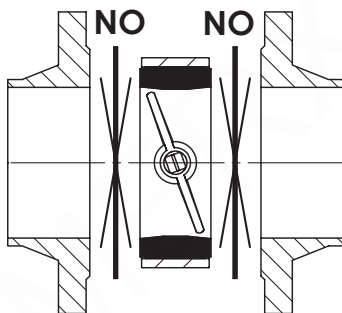


FIG.2

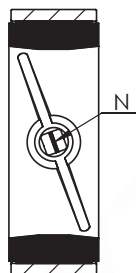
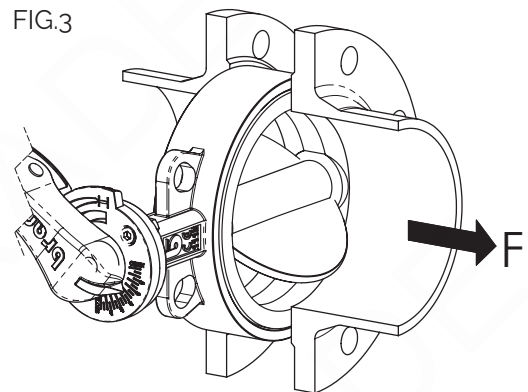


FIG.3



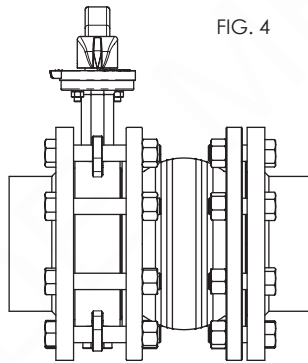


FIG. 4

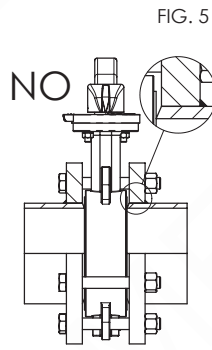


FIG. 5

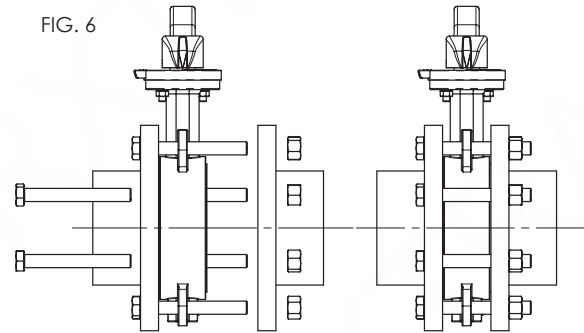


FIG. 6

With regard to the Lug version, check that the screws are the correct length, in order to allow complete compression of the lining rubber. Turbulences of the fluid might increase erosion and reduce the life-cycle of the valve. Install the valve at a distance of at least $1 \times DN$ upstream, and at a distance of $2-3 \times DN$ downstream, away from fittings or bends. In the open position, the valve is larger than the nominal Face to Face value.

Check that no other components of the piping interfere or create damage or malfunction (Fig. 7A).

If they do, a spacer should be inserted for the valve to operate correctly (Fig. 7B).

Carefully clean the contact surface. Do not install the butterfly valve in direct contact with a rubber surface (for example, expansion joints); the best installation is when the rubber is in contact with metal (Fig. 4). In order to achieve correct working, the internal diameter of the pipe must be greater than the value indicated in the chart. Do not weld the flanges to the tube if the valve has already been installed. It is recommended that the flanges listed in the chart be used. As far as possible, avoid flat flanges for welding (EN 1092 01 type); if these flanges are used, ensure perfect centring between the flange and valve, and be sure to weld exactly edgewise to the flange. Do not let protrusions or sharp edges on the piping cause damage to the rubber surface of the valve (Fig. 5).

Centre the valve on holes while using wafer type valves.

Tighten the bolts crosswise and progressively, in order to distribute the pressure equally before the body and flanges come into contact with each other. (Fig. 6)

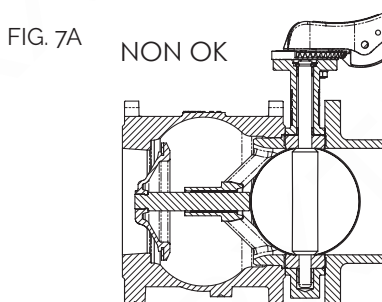


FIG. 7A

NON OK

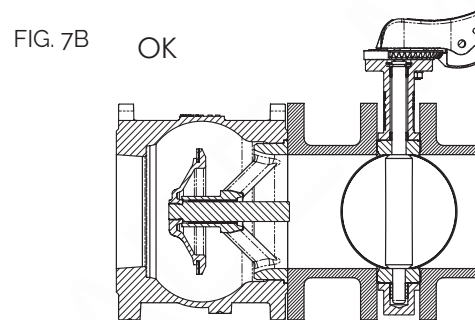


FIG. 7B

OK

DISPOSAL

For valve operating with hazardous media (toxic, corrosive...) , if there is a possibility of residue remaining in the valve, take due safety precaution and carry out required cleaning operation. Personnel in charge must be trained and equipped with appropriate protection devices.

Prior to disposal, disassemble the valve and separate the component according to various materials. Please refer to product literature for more information. Forward sorted material to recycling (e.g. metallic materials) or disposal, according to local and currently valid legislation and under consideration of the environment.