

# Model EB

## BI-DIRECTIONAL KNIFE GATE VALVE

The EB model knife gate is a bi-directional wafer type valve designed for general industrial service applications. The design of the body and seat assures non-clogging shut off on suspended solids in industries such as:

- Wastewater treatment plants
- Sludge Handling and storm tanks
- Biogas plants
- Chemical plants
- Food and Beverage
- Agriculture
- etc.

### Sizes

DN 50 to DN 1200  
Larger diameters on request

### Working pressure and temperatures

DN 50 to DN 125: 16 bar  
DN 150 to DN 250: 10 bar  
DN 300 to DN 400: 6 bar  
DN 450: 5 bar  
DN 500 to DN 600: 4 bar  
DN 700 to DN 1200: 2 bar

GJS 400: -10°C / 80°C

### Standard flange drilling

EN-1092 PN10  
Other flange drillings available on request

### Directives

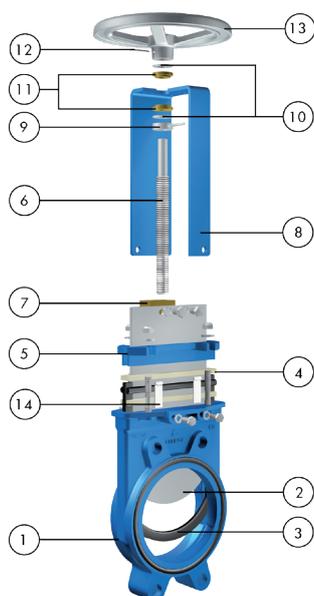
For EU Directives and other Certificates please see the document: Directives & Certificates Compliance - Knife Gate Valves –Catalogues and Datasheets

### Testing

All valves are tested prior to shipping in accordance with the standard EN-12266-1



## STANDARD PARTS LIST



Part	Description
1	Body EN-GJS400
2	Gate AISI 304
3	Seat EPDM / NBR
4	Packing PTFE Impreg. Synth. Fibre (ST) + EPDM O-ring
5	Gland follower EN-GJS400
6	Stem Stainless Steel
7	Stem nut Brass
8	Yoke Epoxy-coated Carbon Steel
9	Axial fixing bush AISI 304
10	Friction washer PET + solid lubricant
11	Bushing Bronze
12	Spring pin AISI 420 (ISO 8752)
13	Handwheel DN≤310: Aluminium (AlSi12); DN≥410 EN-GJS400
14	Slider (up to DN300) Nylon

## DESIGN FEATURES

### Body

Wafer style cast monoblock design, internally machined up to DN 500, with reinforced ribs in larger diameters for extra body strength. Special design that includes a new manufacturing process, the machining of the body inside, allowing for more control in the different dimensions tolerances. This machining results in a perfect adjustment of the body with the gate and the seal, reducing the required torque to maintain the tightness and avoiding any build-up of solids that could prevent the valve from closing. The valve design allows an end-of-line installation from DN50 to DN500. The valve design changes from DN 600 and above to a two-part bolted body, also internally machined. Full port design in all cases for greater flow capacity and minimal pressure drop. The gate is guided on the whole stroke to ensure bi-directional shutoff. Standard EPDM O-ring on both valve flange connections for sealing

### Gate

Stainless steel gate, as standard. Gate is polished on both sides for a greater seal between the gate with both packing and seat. Gate is fully guided in the body allowing for bi-directional service

### Seat (resilient)

The joint is seated on the body, fitted with a metallic core, in contact with the gate all over its perimeter. This layout provides an adequate watertightness and seamless liquid flow on both ways, avoiding at the same time any build-up of solids that would prevent the valve from closing. The seal is protected by the body itself

### Packing

Standard PTFE impregnated synthetic fibre (ST) with EPDM O-ring, with an easy access packing gland ensuring a tight seal. Long-life braided packing available in a wide range of materials

### Non rising stem

The standard stainless steel trapezoidal thread stem offers a long corrosion-resistant life

### Yoke or actuator support

Made of Epoxy coated carbon steel (stainless steel available on request). Compact design makes it extremely robust even under the most severe conditions

### Epoxy coating

The Epoxy coating on all ORBINOX cast iron and carbon steel valve bodies and components is applied by means of an electrostatic process, making the valves corrosion-resistant with a high quality finished surface. The ORBINOX standard colour is RAL-5015 blue

### Gate safety protection

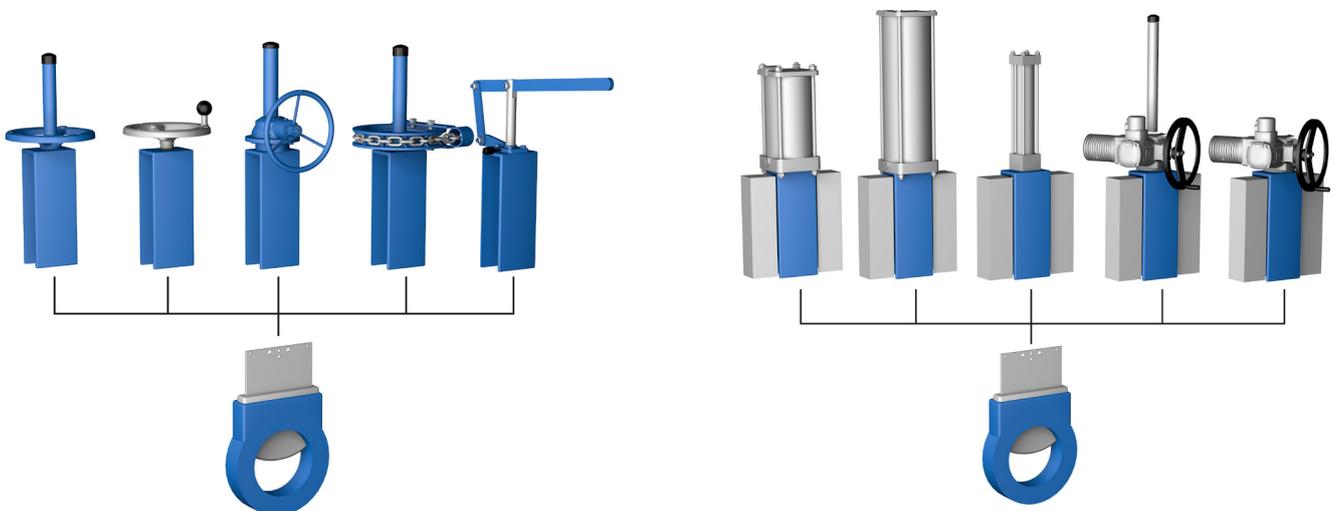
ORBINOX automated valves are provided with gate guards in accordance with EU Safety Standards. The design feature prevents any objects from being caught accidentally while the gate is moving

### Actuators

ORBINOX offers a complete range of actuator solutions, including manual, pneumatic, electric and hydraulic actuators

Manual RS   Manual NRS   Bevel Gear   Chainwheel   Lever

Pneumatic Double Acting   Pneumatic Single Acting   Hydraulic   Electric RS   Electric NRS



## OTHER OPTIONS

### Other materials of construction

Ductile iron, carbon steel, special stainless steels (CF8M, AISI 316, Duplex, ...), special alloys (254SMO, Hastelloys, ...), etc.

### Fabricated valves

ORBINOX designs, produces and delivers special fabricated valves for special process conditions (big sizes and/or high pressures)

### Surface treatments

Valve components can be protected or coated for a longer life expectancy, depending on the application of the valves and the valve service conditions. At ORBINOX we can offer alternative treatments and coatings for the different valve components to improve their properties against abrasion (Stellite, hard-chroming, carbides, ...), against corrosion and against adherence

### V-Port (Fig. 1)

60 degree and pentagonal port design. Selection depends on the desired fluid control type



Fig.1



Fig. 2



Fig.3

### Locking device (Fig. 1)

The valve can be designed with a locking pin system to block the gate in emergency situations or for maintenance operations

### Mechanical stops

Mechanical stops can be added to limit stem travel at a certain stroke position

### Actuator manual override (Fig. 2)

Pneumatic and electric actuators can be equipped with manual override handwheels to manually operate the actuators in emergency situations or for maintenance operations

### Stem extensions and floor stand (Fig. 3)

Extensions for valve operation when valves are installed in positions below operation level are available, including wall brackets and different types of pedestals for actuators

### Accessories for pneumatic valve automation

Limit and proximity switches, solenoid valves, positioners, flow regulations, air filter units, silencers, junction boxes

## SEAT/SEAL TYPES

Material	Max.T (°C)	Applications
EPDM (E)	120	Acids and non mineral oils
NBR (N)	120	Resistance to petroleum products
FKM-FPM (V)	200	Chemical service / High temp.

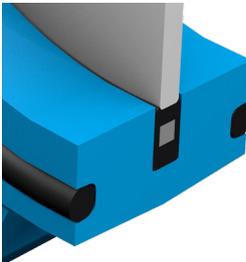
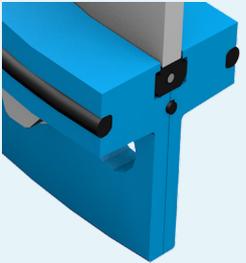
More details and other materials under request

## PACKING TYPES

Material	Max.T (°C)	pH
PTFE impregn.synth fibre (ST)	250	2-13
Dynapack (DP)	270	2-14
Braided PTFE (TH)	260	0-14

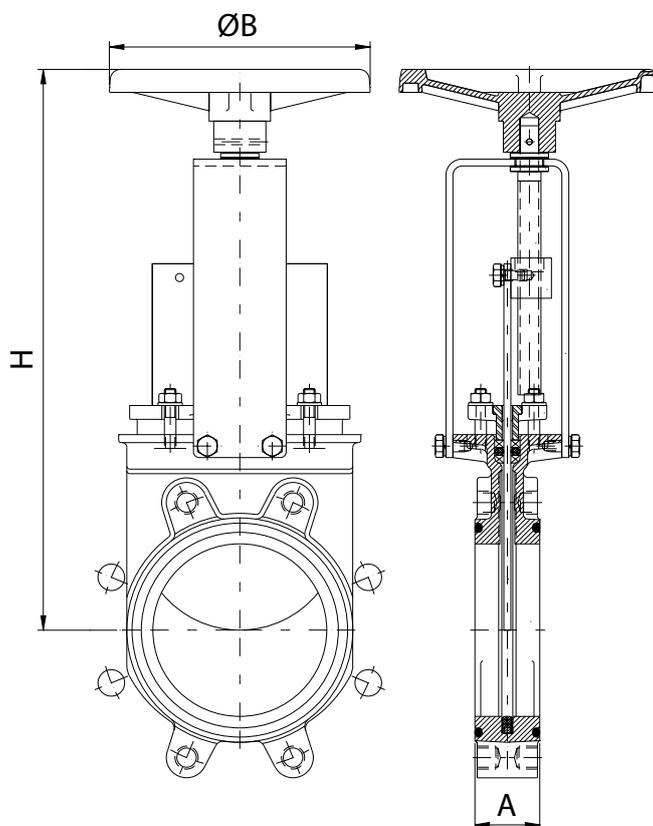
All types include an elastomere O-ring (same material as seal), excluding TH

## SEAT CONFIGURATIONS/DESIGNS

Sizes	Features	
<b>DN50-500</b>	Moulded seal with an internal steel core	
<b>DN ≥ 600</b>	Extruded seal with an internal steel wire	

## HANDWHEEL NON-RISING STEM

Standard manual actuator available from DN 50 to DN 600 and recommended with gearbox from DN 350 and above

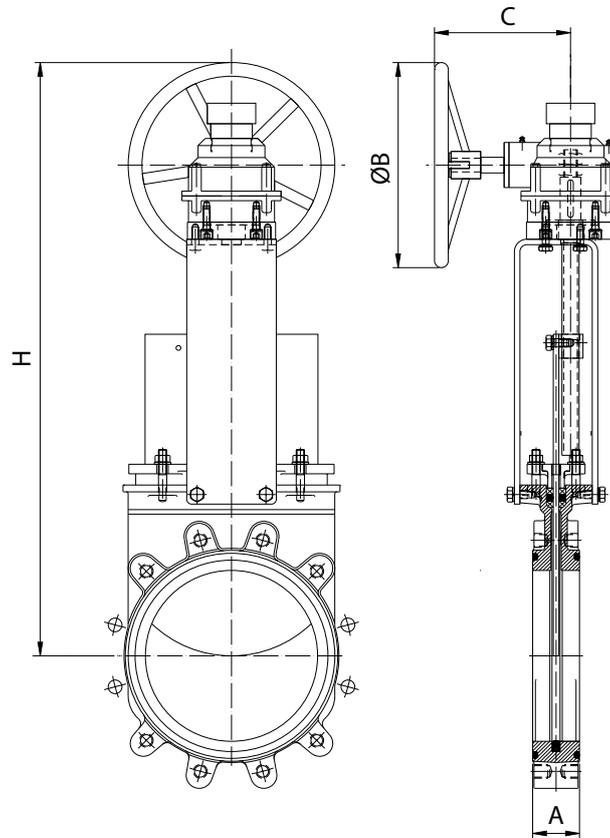


DN	A	ØB	H	Weight (Kg.)
50	43	225	312	8
65	46	225	339	9
80	46	225	364	10
100	52	225	405	12
125	56	225	439	14
150	56	225	485	16
200	60	310	595	29
250	68	310	695	42
300	78	310	785	57
350	78	410	932	91
400	102	410	1017	112
450	114	550	1119	167
500	127	550	1219	192
600	110	550	1379	270

A: EN558 series 20 up to DN500, for DN600 and above acc. ORBINOX standard

## BEVEL GEAR

Recommended for valves larger than DN 350, available for non-rising stem configurations and with different reduction ratios

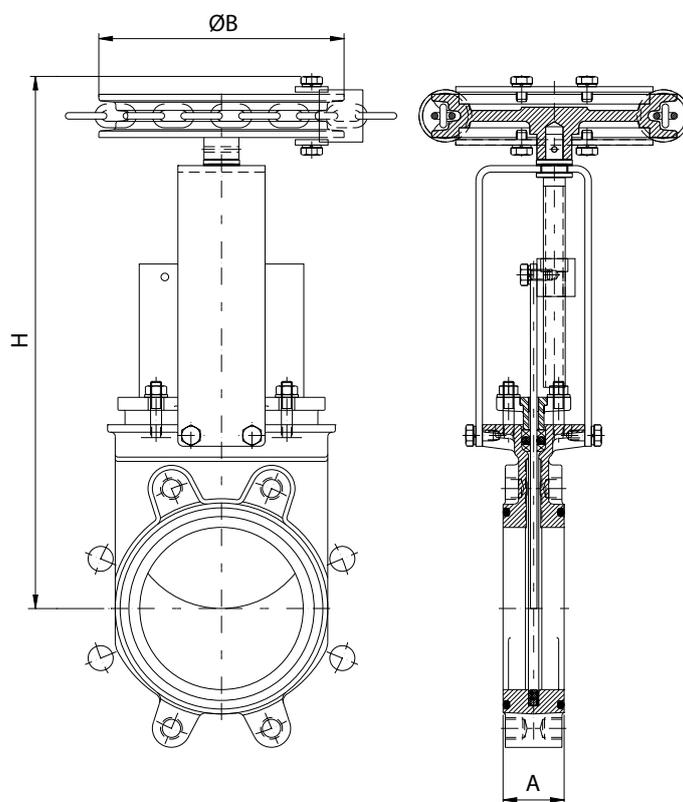


DN	A	ØB	H	C	Weight (Kg.)
200	60	300	730	200	48
250	68	300	830	200	61
300	78	300	920	200	76
350	78	450	1115	262	107
400	102	450	1200	262	128
450	114	450	1305	262	181
500	127	450	1405	262	205
600	110	450	1565	262	284
700	110	450	1847	308	-
800	110	650	2007	308	-
900	110	650	2288	288	-
1000	110	650	2816	288	-
1200	150	850	3321	288	-

A: EN558 series 20 up to DN500, for DN600 and above acc. ORBINOX standard

## CHAINWHEEL

Recommended for elevated installations, the handwheel is replaced by a chainwheel to accommodate the chain. Available for non-rising stem and for sizes from DN 50 to DN 600

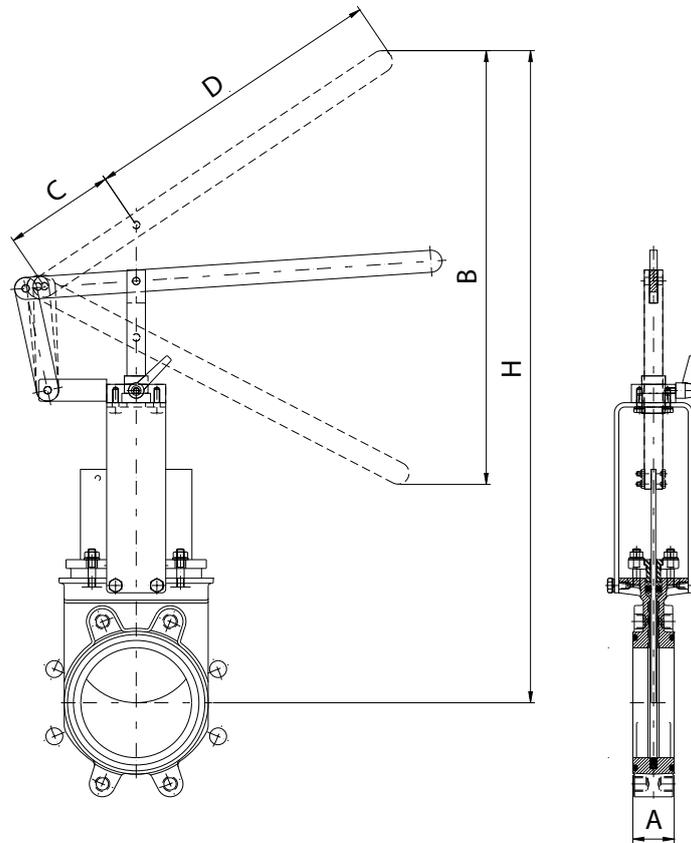


DN	A	ØB	H
50	43	225	331
65	46	225	358
80	46	225	383
100	52	225	424
125	56	225	458
150	56	225	504
200	60	300	610
250	68	300	710
300	78	300	800
350	78	454	932
400	102	454	1017
450	114	454	1119
500	127	454	1219
600	110	454	1379

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## LEVER

Recommended for quick opening and closing, available from DN 50 to DN 150



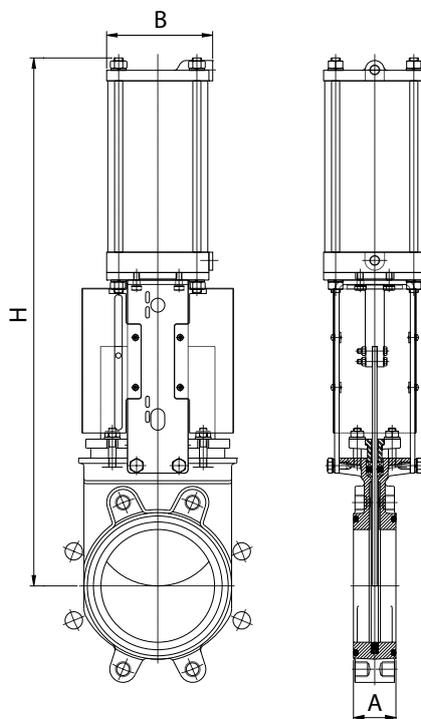
DN	A	B	C	D	H
50	43	242	150	315	410
65	46	245	150	315	437
80	46	287	150	315	510
100	52	415	150	415	633
125	56	503	150	415	755
150	56	592	150	415	890

A: EN558 series 20 up to DN500, for DN600 and above acc. ORBINOX standard

## PNEUMATIC CYLINDER

With a double-acting pneumatic cylinder as standard, it is available in sizes from DN 50 to DN 800. Single-acting pneumatic cylinders, manual overrides, fail-safe systems as well as a wide variety of pneumatic accessories for valve automation available. Actuator sized for 6 bar air supply, see ORBINOX Pneumatic Solutions Catalogue for more information

For valves installed in a horizontal position, actuator supports to plant structure is recommended



DN	A	B	H	Connect.	Weight (Kg.)
50	43	115	412	1/4 "G	9
65	46	115	454	1/4 "G	10
80	46	115	497	1/4 "G	12
100	52	115	558	1/4 "G	13
125	56	140	632	1/4 "G	20
150	56	140	703	1/4 "G	22
200	60	175	872	1/4 "G	39
250	68	220	1042	3/8" G	58
300	78	220	1182	3/8" G	74
350	78	277	1374	3/8" G	130
400	102	277	1509	3/8" G	154
450	114	382	1688	1/2" G	224
500	127	382	1838	1/2" G	252
600	110	382	2098	1/2" G	342
700	110	444	2461	3/4" G	480
800	110	444	2704	3/4" G	585

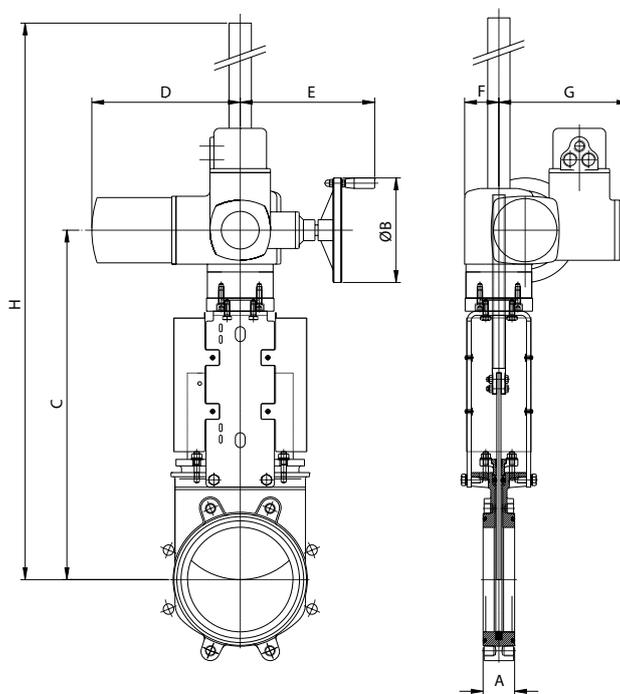
A: EN558 series 20 up to DN500, for DN600 and above acc. ORBINOX standard

## ELECTRIC ACTUATOR RISING STEM

Designed with a yoke flange for the actuator according to ISO 5210 / DIN 3338 as standard, it is available from DN 50 to DN 1200, for rising stem configuration and with manual override.

Wide range of electric actuator brands available.

For valves installed in a horizontal position, actuator supports to plant structure is recommended



DN	A	C	ØB	H	D	E	F	G	Torque (Nm)	Weight (Kg.)
50	43	377	160	532	265	249	62	238	10	66
65	46	404	160	600	265	249	62	238	10	67
80	46	429	160	674	265	249	62	238	10	69
100	52	470	160	665	265	249	62	238	10	70
125	56	504	160	700	265	249	62	238	15	73
150	56	550	160	1120	265	249	62	238	20	75
200	60	657	160	1237	265	249	62	238	30	87
250	68	757	160	1337	265	249	62	238	45	101
300	78	847	160	1427	265	249	62	238	40	117
350	78	955	200	1535	283	254	65	248	70	123
400	102	1040	200	1620	283	254	65	248	90	145
450	114	1129	200	1724	283	254	65	248	110	199
500	127	1238	200	1833	283	254	65	248	95	225
600	110	1376	315	2093	389	336	91	286	140	330
700	110	1660	315	2800	389	336	91	285	120	-
800	110	1849	315	2989	389	336	91	286	180	-
900	110	2085	315	3225	389	336	91	286	220	-
1000	110	2515	400	3670	389	339	91	286	300	-
1200	150	3011	500	4430	430	365	200	330	480	-

A: EN558 series 20 up to DN500, for DN600 and above acc. ORBINOX standard

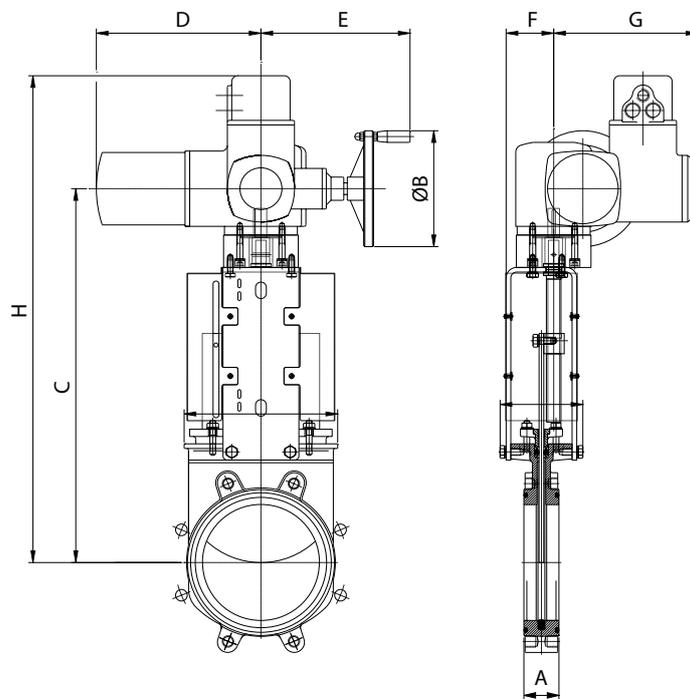
Maximum pressure torque in clean water at room temperature

## ELECTRIC ACTUATOR NON RISING STEM

Designed with a yoke flange for the actuator according to ISO 5210 / DIN 3338 as standard, it is available from DN 50 to DN 1200, for non-rising stem configuration and with manual override.

Wide range of electric actuator brands available.

For valves installed in a horizontal position, actuator supports to plant structure is recommended



DN	A	C	ØB	H	D	E	F	G	Torque (Nm)	Weight (Kg.)
50	43	370	160	545	265	249	72	238	10	65
65	46	397	160	572	265	249	72	238	10	66
80	46	422	160	597	265	249	72	238	10	68
100	52	463	160	638	265	249	72	238	10	70
125	56	497	160	672	265	249	72	238	15	72
150	56	543	160	718	265	249	72	238	20	74
200	60	681	160	856	265	249	82	238	30	87
250	68	751	160	926	265	249	82	238	45	101
300	78	841	160	1016	265	249	82	238	40	117
350	78	925	200	1100	283	254	128	248	70	116
400	102	1010	200	1185	283	254	128	248	90	137
450	114	1112	200	1287	283	254	130	248	110	202
500	127	1212	200	1387	283	254	130	248	95	228
600	110	1500	315	1685	389	336	130	286	140	335
700	110	1680	315	1865	389	336	202	285	120	-
800	110	1855	315	2040	389	336	202	286	180	-
900	110	2072	315	2257	389	336	202	286	220	-
1000	110	2515	400	2700	389	339	202	286	300	-
1200	150	3150	500	3335	430	365	284	330	480	-

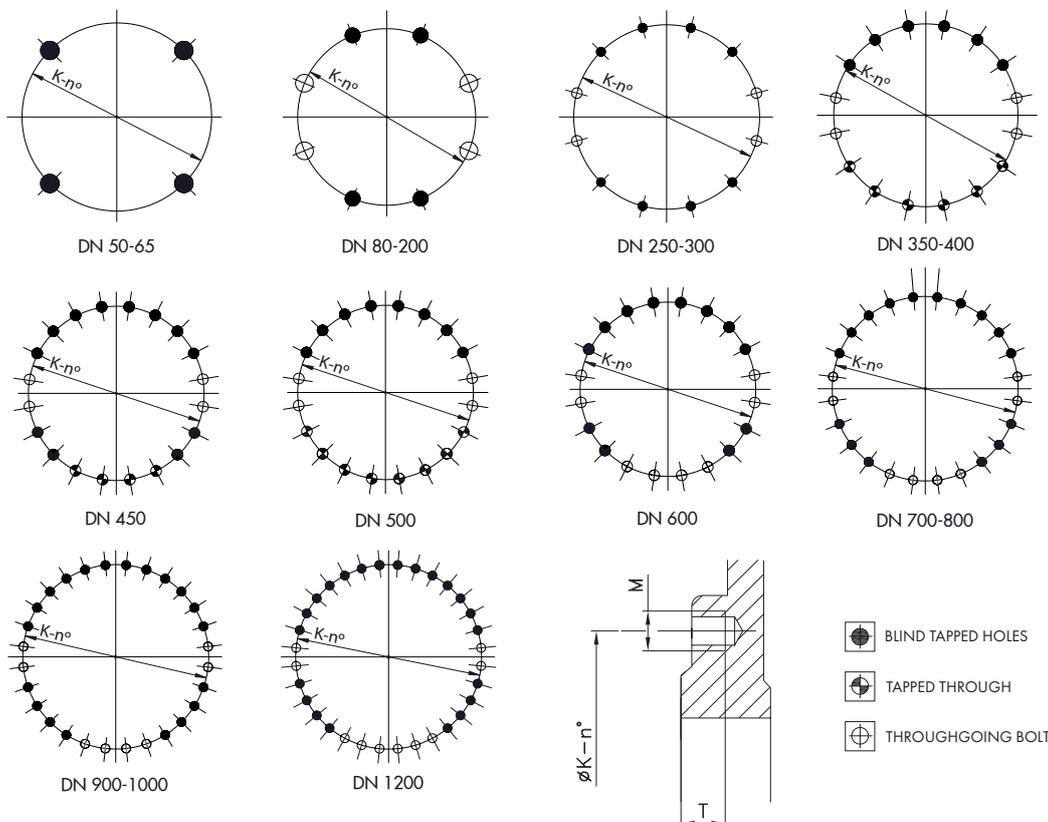
A: EN558 series 20 up to DN500, for DN600 and above acc. ORBINOX standard

Maximum pressure torque in clean water at room temperature

## FLANGE AND BOLTING DETAILS EN-1092 PN10

DN	K	n°	M	T	  
50	125	4	M-16	10	4 - 0 - 0
65*	145	4	M-16	10	4 - 0 - 0
80	160	8	M-16	12	4 - 0 - 4
100	180	8	M-16	12	4 - 0 - 4
125	210	8	M-16	14	4 - 0 - 4
150	240	8	M-20	14	4 - 0 - 4
200	295	8	M-20	14	4 - 0 - 4
250	350	12	M-20	18	8 - 0 - 4
300	400	12	M-20	21	8 - 0 - 4
350	460	16	M-20	21	6 - 6 - 4
400	515	16	M-24	28	6 - 6 - 4
450	565	20	M-24	30	12 - 4 - 4
500	620	20	M-24	40	8 - 8 - 4
600	725	20	M-27	26	12 - 0 - 8
700	840	24	M-27	20	16 - 0 - 8
800	950	24	M-30	20	16 - 0 - 8
900	1050	28	M-30	20	20 - 0 - 8
1000	1160	28	M-33	20	20 - 0 - 8
1200	1380	32	M-36	35	22 - 0 - 10

\* Flange drilling of DN 65 PN10/16 according to EN-1092 allow 4 or 8 drills. ORBINOX designs of DN 65 PN10/16 have 4 drills



## FLANGE AND BOLTING DETAILS ASME B16.5, CLASS 150 \*

DN	K	n°	M	T	
2"	4 3/4"	4	5/8" - 11 UNC	3/8"	4 - 0 - 0
2 1/2"	5 1/2"	4	5/8" - 11 UNC	3/8"	4 - 0 - 0
3"	6"	4	5/8" - 11 UNC	3/8"	4 - 0 - 0
4"	7 1/2"	8	5/8" - 11 UNC	3/8"	4 - 0 - 4
5"	8 1/2"	8	3/4" - 10 UNC	3/8"	4 - 0 - 4
6"	9 1/2"	8	3/4" - 10 UNC	1/2"	4 - 0 - 4
8"	11 3/4"	8	3/4" - 10 UNC	1/2"	4 - 0 - 4
10"	14 1/4"	12	7/8" - 9 UNC	3/4"	8 - 0 - 4
12"	17"	12	7/8" - 9 UNC	3/4"	8 - 0 - 4
14"	18 3/4"	12	1" - 8 UNC	7/8"	4 - 4 - 4
16"	21 1/4"	16	1" - 8 UNC	1"	12 - 0 - 4
18"	22 3/4"	16	1 1/8" - 7 UNC	1"	8 - 4 - 4
20"	25"	20	1 1/8" - 7 UNC	1"	12 - 4 - 4
24"	29 1/2"	20	1 1/4" - 7 UNC	1"	16 - 0 - 8
30"	36"	28	1 1/4" - 7 UNC	3/4"	18 - 0 - 10
36"	42 3/4"	32	1 1/2" - 6 UNC	3/4"	22 - 0 - 10
42"	49 1/2"	36	1 1/2" - 6 UNC	3/4"	24 - 0 - 12

\* From NPS 24, acc. to ASME B16.47 Series A (class 150)

