

Model Ser.11 (EB)

BI-DIRECTIONAL KNIFE GATE VALVE

The Series 11 (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)

2in/50mm to 48in/1200mm
Larger diameters on request

Working pressure and temperatures

2in/50mm to 5in/125mm: 230 psi/16 bar
4in/150mm to 10in/250mm: 150 psi/10 bar
12in/300mm to 16in/400mm: 90 psi/6 bar
18in/450mm: 75 psi/5 bar
20in/500mm to 24in/600mm: 60 psi/4 bar
28in/700mm to 48in/1200mm: 30 psi/2 bar

GJS 400: 14°F (-10°C) / 176°F (80°C)

Standard flange drilling

EN-1092 PN10
Other flange drillings available on request

Directives

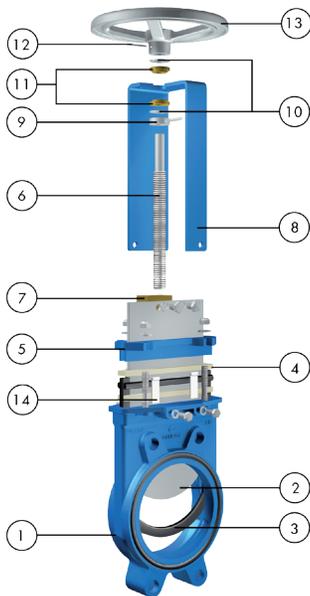
For EU Directives and other Certificates please see the document: Directives & Certificates Compliance - Knife Gate Valves – Catalogues and Datasheets)

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≤12.20in/310mm: Aluminium (AISI12); DN≥16.70in/410mm EN-GJS400
14	Slider (up to DN300) Nylon

DESIGN FEATURES

Body

Wafer style cast monoblock design, internally machined up to DN 20in/500mm, 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-offline installation from DN 2in/50mm to DN 20in/500mm. The valve design changes from DN 24in/600mm 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)

This is the standard seat. 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 is available in a wide range of materials

Non rising stem

The standard stainless steel stem offers a high and long corrosion resistant life

Yoke or actuator support

Made of epoxy coated 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 electrostatically applied making the valves to be corrosion resistant with a high quality finished surface. The ORBINOX standard colour is RAL-5015 blue.

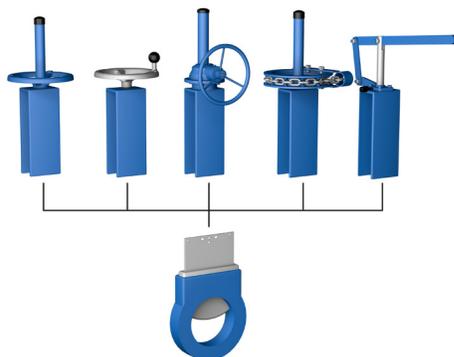
Gate safety protection

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. *ONLY IN EUROPE

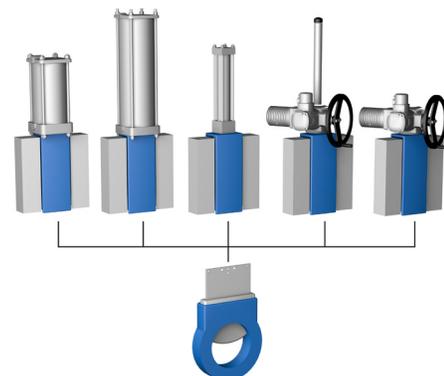
Actuators

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 (°F)	Max.T (°C)	Applications
EPDM (E)	248	120	Acids and non mineral oils.
NBR (N)	248	120	Resistance to petroleum products.
FKM-FPM (V)	392	200	Chemical service / High temp.

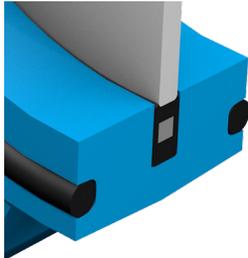
More details and other materials under request

PACKING TYPES

Material	Max.T (°F)	Max.T (°C)	pH
PTFE impregn.synth fibre (ST)	482	250	2-13
Dynapack (DP)	518	270	2-14
Braided PTFE (TH)	500	260	0-14

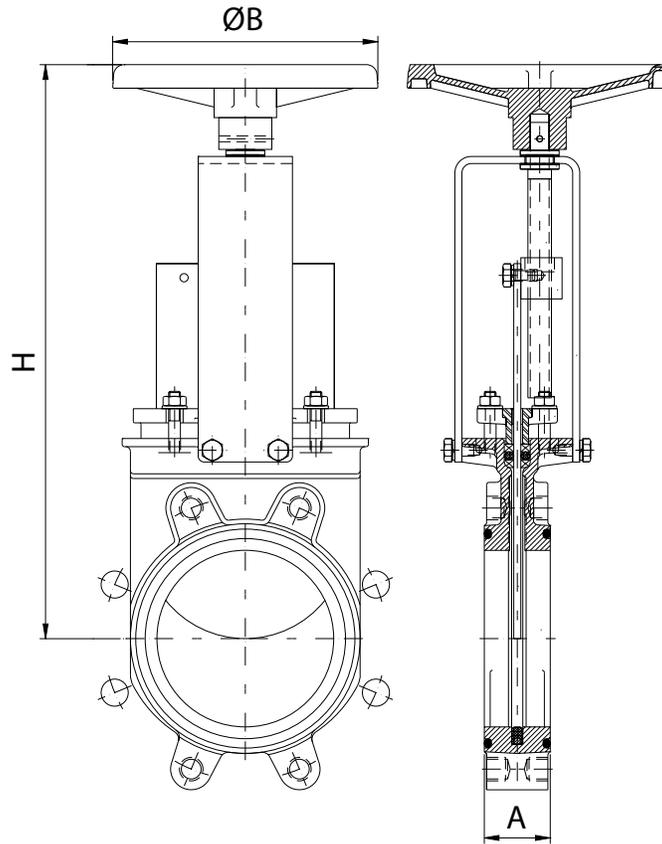
All types include an elastomere O-ring (same material as seal), excluding TH

SEAT CONFIGURATIONS/DESIGNS

Sizes	Features	
DN 2in/50mm-20in/500mm	Moulded seal with an internal steel core	
DN 24in/600mm	Extruded seal with an internal steel wire	

HANDWHEEL NON-RISING STEM

Standard manual actuator available from 2in/50mm to 24in/600mm and recommended with gearbox from 14in/350mm and above

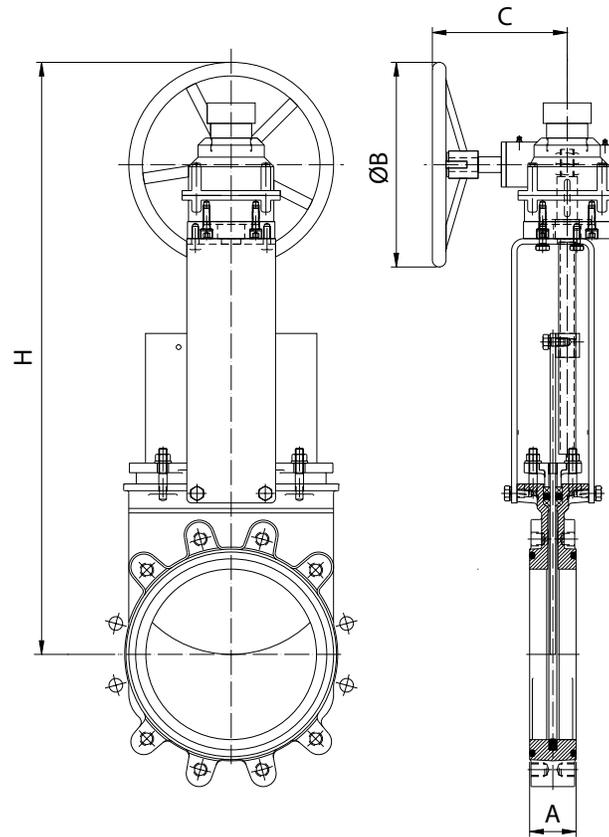


DN (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)	Weight (lbs./kg.)
2/50	1,70/43	8,86/225	12,28/312	18/8
2,5/65	1,81/46	8,86/225	13,34/339	20/9
3/80	1,81/46	8,86/225	14,33/364	23/10
4/100	2,05/52	8,86/225	15,94/405	27/12
5/125	2,20/56	8,86/225	17,28/439	31/14
6/150	2,20/56	8,86/225	19,09/485	36/16
8/200	2,36/60	12,20/310	23,42/595	64/29
10/250	2,68/68	12,20/310	27,36/695	93/42
12/300	3,07/78	12,20/310	31,30/795	126/57
14/350	3,07/78	16,14/410	37,20/945	201/91
16/400	4,02/102	16,14/410	41,30/1049	247/112
18/450	4,49/114	21,65/550	44,92/1141	369/167
20/500	5,00/127	21,65/550	49,37/1254	424/192
24/600	4,33/110	21,65/550	57,44/1459	596/270

A: EN558 series 20 up to DN 20in/500mm, for DN 24in/600mm and above acc. ORBINOX standard

BEVEL GEAR

Manual actuator recommended for valves larger than 14in/350mm. Available for non-rising stem configurations and with different reduction ratios

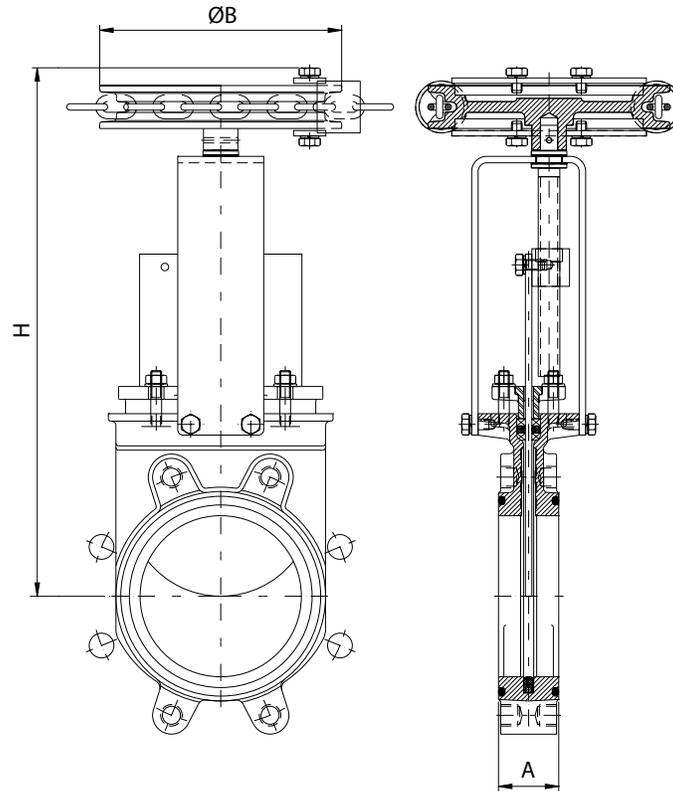


DN (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)	C (in/mm)	Weight (lbs./kg.)
8/200	2,36/60	12/300	28,74/730	8,00/200	106/48
10/250	2,67/68	12/300	32,67/830	8,00/200	135/61
12/300	3,07/78	12/300	36,22/920	8,00/200	168/76
14/350	3,07/78	18/450	43,89/1115	10,31/262	236/107
16/400	4,01/102	18/450	47,24/1200	10,31/262	283/128
18/450	4,48/114	18/450	51,37/1305	10,31/262	400/181
20/500	5,00/127	18/450	55,31/1405	10,31/262	452/205
24/600	4,33/110	18/450	61,61/1565	10,31/262	627/284
28/700	4,33/110	18/450	72,71/1847	12,12/308	-
32/800	4,33/110	25/650	79,01/2007	12,12/308	-
36/900	4,33/110	25/650	90,07/2288	11,34/288	-
40/1000	4,33/110	25/650	110,86/2816	11,34/288	-
48/1200	6,00/150	34/850	130,75/3321	11,34/288	-

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CHAINWHEEL

Manual actuator recommended for elevated installations. The handwheel is replaced by a chainwheel to accommodate the chain. Available for non-rising stem and for sizes from 2in/50mm to 24in/600mm

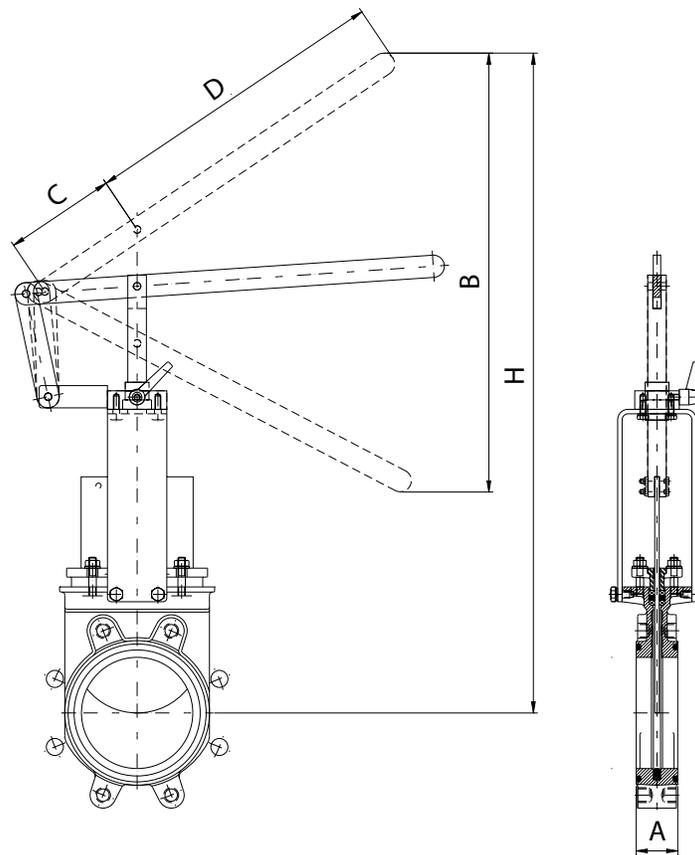


DN (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)
2/50	1,70/43	8,86/225	13,03/331
2,5/65	1,81/46	8,86/225	14,09/358
3/80	1,81/46	8,86/225	15,08/383
4/100	2,05/52	8,86/225	16,69/424
5/125	2,20/56	8,86/225	18,03/458
6/150	2,20/56	8,86/225	19,84/504
8/200	2,36/60	12,00/300	24,01/610
10/250	2,68/68	12,00/300	27,95/710
12/300	3,07/78	12,00/300	31,50/800
14/350	3,07/78	17,87/454	36,69/932
16/400	4,02/102	17,87/454	40,03/1017
18/450	4,49/114	17,87/454	44,05/1119
20/500	5,00/127	17,87/454	47,99/1219
24/600	4,33/110	17,87/454	54,29/1379

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LEVER

Manual actuator recommended for quick opening and closing, available from 2in/50mm to 6in/150mm



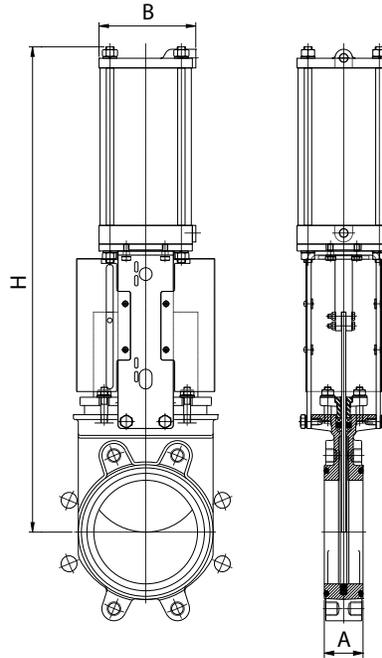
DN (in/mm)	A (in/mm)	B (in/mm)	C (in/mm)	D (in/mm)	H (in/mm)
2/50	1,70/43	9,52/242	6,00/150	12,40/315	16,14/410
2,5/65	1,81/46	9,64/245	6,00/150	12,40/315	17,20/437
3/80	1,81/46	11,29/287	6,00/150	12,40/315	20,07/510
4/100	2,05/52	16,33/415	6,00/150	16,33/415	24,92/633
5/125	2,20/56	19,80/503	6,00/150	16,33/415	29,72/755
6/150	2,20/56	23,30/592	6,00/150	16,33/415	35,03/890

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PNEUMATIC CYLINDER

With a double-acting pneumatic cylinder as standard, it is available in sizes from 2in/50mm to 32in/800mm. 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 85psi/(6 bar) air supply, see ORBINOX Pneumatic Cylinder Catalogue for more information.

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



DN (in/mm)	A (in/mm)	B (in/mm)	H (in/mm)	Connect.	Weight (lbs./kg.)
2/50	1,70/43	4,53/115	16,22/412	1/4 "G	20/9
2,5/65	1,81/46	4,53/115	17,87/454	1/4 "G	23/10
3/80	1,81/46	4,53/115	19,56/497	1/4 "G	27/12
4/100	2,05/52	4,53/115	21,96/558	1/4 "G	29/13
5/125	2,20/56	5,51/140	24,88/632	1/4 "G	45/20
6/150	2,20/56	5,51/140	27,67/703	1/4 "G	49/22
8/200	2,36/60	6,89/175	34,33/872	1/4 "G	86/39
10/250	2,68/68	8,66/220	41,02/1042	3/8" G	128/58
12/300	3,07/78	8,66/220	46,55/1182	3/8" G	164/74
14/350	3,07/78	10,90/277	54,09/1374	3/8" G	287/130
16/400	4,02/102	10,90/277	59,40/1509	3/8" G	340/154
18/450	4,49/114	15,03/382	66,45/1688	1/2" G	494/224
20/500	5,00/127	15,03/382	72,36/1838	1/2" G	556/252
24/600	4,33/110	15,03/382	82,59/2098	1/2" G	754/342
28/700	4,33/110	17,48/444	96,88/2461	3/4" G	1058/480
32/800	4,33/110	17,48/444	106,45/2704	3/4" G	1290/585

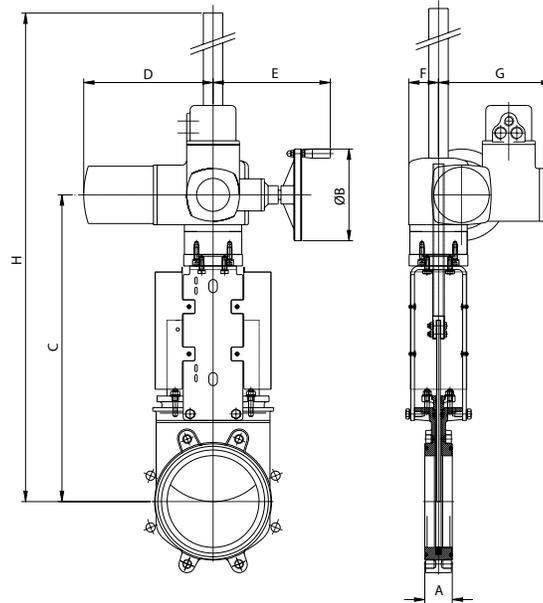
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ELECTRIC ACTUATOR RISING STEM

Designed with a yoke flange for the actuator according to ISO 5210 / DIN 3338 as standard, it is available from 2in/50mm to 48in/1200mm, for rising stem configuration and with manual overrides.

Wide range of electric actuator brands available.

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



DN (in/mm)	A (in/mm)	C (in/mm)	ØB (in/mm)	H (in/mm)	D (in/mm)	E (in/mm)	F (in/mm)	G (in/mm)	Torque (ft.LBS/Nm)	Weight (lbs./kg.)
2/50	1,70/43	14,84/377	6,30/160	20,94/532	10,43/265	9,80/249	2,44/62	9,37/238	7.4/10	146/66
2,5/65	1,81/46	15,90/404	6,30/160	23,62/600	10,43/265	9,80/249	2,44/62	9,37/238	7.4/10	148/67
3/80	1,81/46	16,88/429	6,30/160	26,73/674	10,43/265	9,80/249	2,44/62	9,37/238	7.4/10	153/69
4/100	2,05/52	18,50/470	6,30/160	26,18/665	10,43/265	9,80/249	2,44/62	9,37/238	7.4/10	155/70
5/125	2,20/56	19,84/504	6,30/160	27,55/700	10,43/265	9,80/249	2,44/62	9,37/238	11.1/15	161/73
6/150	2,20/56	21,65/550	6,30/160	44,09/1120	10,43/265	9,80/249	2,44/62	9,37/238	14.8/20	166/75
8/200	2,36/60	25,86/657	6,30/160	48,70/1237	10,43/265	9,80/249	2,44/62	9,37/238	22.2/30	192/87
10/250	2,68/68	29,80/757	6,30/160	52,63/1337	10,43/265	9,80/249	2,44/62	9,37/238	33.3/45	223/101
12/300	3,07/78	33,34/847	6,30/160	56,18/1427	10,43/265	9,80/249	2,44/62	9,37/238	29.50/40	258/117
14/350	3,07/78	37,59/955	7,87/200	60,43/1535	11,14/283	10,00/254	2,55/65	9,76/248	51.8/70	272/123
16/400	4,02/102	40,94/1040	7,87/200	63,77/1620	11,14/283	10,00/254	2,55/65	9,76/248	66.38/90	320/145
18/450	4,49/114	44,44/1129	7,87/200	67,87/1724	11,14/283	10,00/254	2,55/65	9,76/248	81.4/110	439/199
20/500	5,00/127	48,74/1238	7,87/200	72,16/1833	11,14/283	10,00/254	3,58/91	9,76/248	70.06/95	497/225
24/600	4,33/110	54,17/1376	12,40/315	82,40/2093	15,31/389	13,22/336	3,58/91	11,25/286	103.26/140	728/330
28/700	4,33/110	65,35/1660	12,40/315	110,23/2800	15,31/389	13,22/336	3,58/91	11,25/286	88.50/120	-
32/800	4,33/110	72,79/1849	12,40/315	117,67/2989	15,31/389	13,22/336	3,58/91	11,25/286	132.76/180	-
36/900	4,33/110	82,08/2085	12,40/315	126,96/3225	15,31/389	13,22/336	3,58/91	11,25/286	163.74/220	-
40/1000	4,33/110	99,02/2515	15,74/400	144,49/3670	15,31/389	13,34/339	3,58/91	11,25/286	221.27/300	-
48/1200	5,90/150	118,54/3011	20,00/500	174,40/4430	16,93/430	14,37/365	8,00/200	12,99/330	354.03/480	-

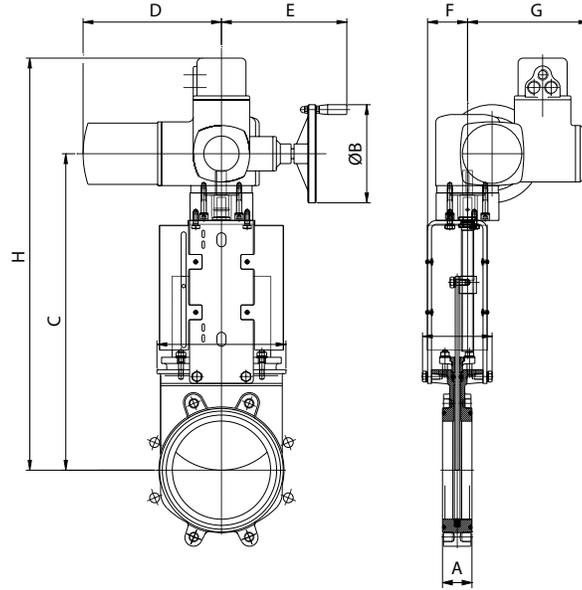
A: EN558 series 20 up to DN 20in/500mm, for DN 24in/600mm and above acc. ORBINOX standard. Maximum pressure torque in clean water at room temperature

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 2in/50mm to 48in/1200mm, 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



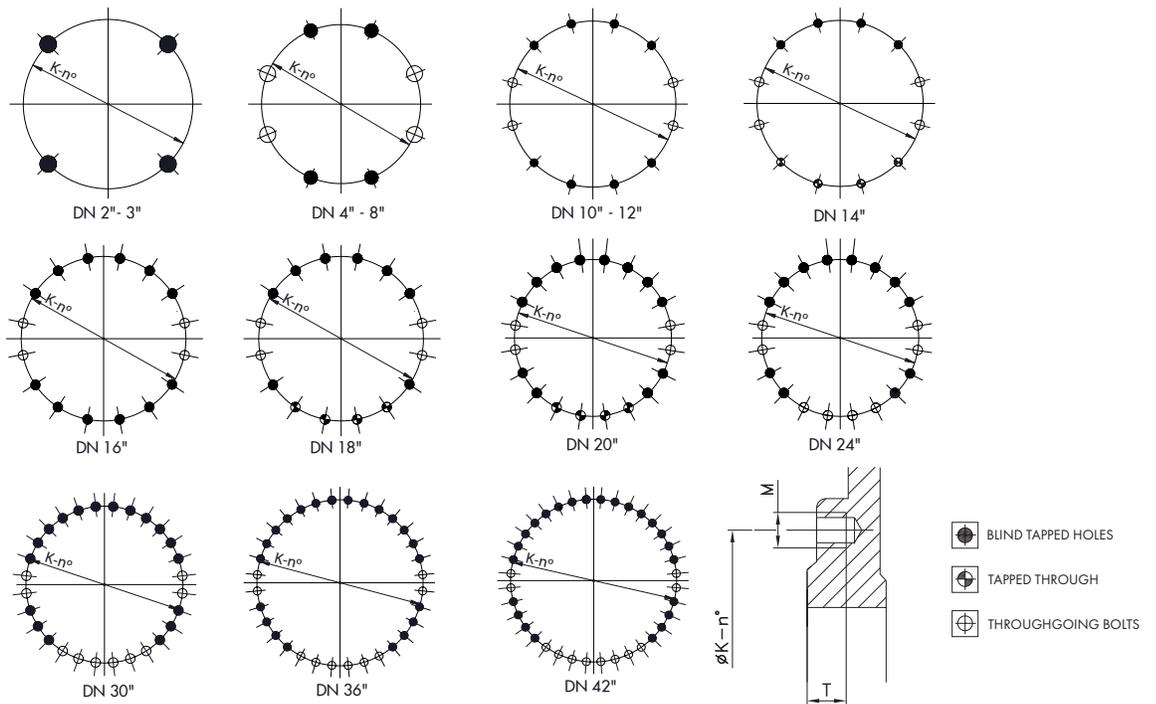
DN (in/mm)	A (in/mm)	C (in/mm)	ØB (in/mm)	H (in/mm)	D (in/mm)	E (in/mm)	F (in/mm)	G (in/mm)	Torque (ft.LBS/Nm)	Weight (lbs./kg.)
2/50	1,70/43	14,56/370	6,30/160	21,45/545	10,43/265	9,80/249	2,83/72	9,37/238	7.4/10	144/65
2,5/65	1,81/46	15,63/397	6,30/160	22,51/572	10,43/265	9,80/249	2,83/72	9,37/238	7.4/10	146/66
3/80	1,81/46	16,61/422	6,30/160	23,50/597	10,43/265	9,80/249	2,83/72	9,37/238	7.4/10	150/68
4/100	2,05/52	18,22/463	6,30/160	25,11/638	10,43/265	9,80/249	2,83/72	9,37/238	7.4/10	155/70
5/125	2,20/56	19,56/497	6,30/160	26,45/672	10,43/265	9,80/249	2,83/72	9,37/238	11.1/15	159/72
6/150	2,20/56	21,38/543	6,30/160	28,27/718	10,43/265	9,80/249	2,83/72	9,37/238	14.8/20	164/74
8/200	2,36/60	26,81/681	6,30/160	33,70/856	10,43/265	9,80/249	3,22/82	9,37/238	22.2/30	192/87
10/250	2,68/68	29,57/751	6,30/160	36,45/926	10,43/265	9,80/249	3,22/82	9,37/238	33.3/45	223/101
12/300	3,07/78	33,11/841	6,30/160	40,00/1016	10,43/265	9,80/249	3,22/82	9,37/238	29.50/40	258/117
14/350	3,07/78	36,41/925	7,87/200	43,31/1100	11,14/283	10,00/254	5,03/128	9,76/248	51.8/70	256/116
16/400	4,02/102	39,76/1010	7,87/200	46,65/1185	11,14/283	10,00/254	5,03/128	9,76/248	66.38/90	303/137
18/450	4,49/114	43,77/1112	7,87/200	50,66/1287	11,14/283	10,00/254	5,11/130	9,76/248	81.4/110	446/202
20/500	5,00/127	47,71/1212	7,87/200	54,60/1387	11,14/283	10,00/254	5,11/130	9,76/248	70.06/95	503/228
24/600	4,33/110	59,01/1500	12,40/315	66,33/1685	15,31/389	13,22/336	5,11/130	11,25/286	103.26/140	739/335
28/700	4,33/110	66,14/1680	12,40/315	73,42/1865	15,31/389	13,22/336	7,95/202	11,25/286	88.50/120	-
32/800	4,33/110	73,03/1855	12,40/315	80,31/2040	15,31/389	13,22/336	7,95/202	11,25/286	132.76/180	-
36/900	4,33/110	81,57/2072	12,40/315	88,85/2257	15,31/389	13,22/336	7,95/202	11,25/286	163.74/220	-
40/1000	4,33/110	99,02/2515	15,74/400	106,30/2700	15,31/389	13,34/339	7,95/202	11,25/286	221.27/300	-
48/1200	5,90/150	124,01/3150	20,00/500	131,30/3335	16,93/430	14,37/365	11,18/284	12,93/330	354.03/480	-

A: EN558 series 20 up to DN 20in/500mm, for DN 24in/600mm and above acc. ORBINOX standard. Maximum pressure torque in clean water at room temperature

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)



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

