

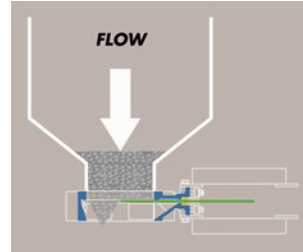
Model Ser.14 (XC)

HOPPER SHAPE KNIFE GATE VALVE

The Series 14 (XC) model knife gate is a uni-directional wafer valve designed for industrial bulk handling service applications (powdered and granular products). The special design of the body allows for easy passage of the fluid and makes it ideal for use as silo outlet valve. Widely used in industries such as:

- Power plants
- Chemical plants
- Mining
- Food and Beverage
- Etc.

Valve is usually installed under silos or hoppers in vertical pipes with the seat in the upstream side of the valve in order to protect it from the solids flow. This set up helps to protect the seat from premature wear and gate jamming due to solid build-up



Sizes (DN)

2in/50mm to DN 24in/600mm
larger diameters on request

Working pressure and temperatures

2in/ 50mm to DN 10in/250mm: 150 psi / 10 bar
12in/300mm to DN 16in/400mm: 90 psi / 6 bar
18in/450mm: 75 psi / 5 bar
20in/500mm to DN 24in/600mm: 60 psi / 4 bar
For specific tightness requirements contact ORBINOX technical department

GJL250: 14°F (-10°C) / 176°F (80°C)
CF8M: -4°F (-20°C) / 176°F (80°)

Standard flange connection

ASME B16.5 (class 150)
EN 1092 PN10
Other flange drillings available on request

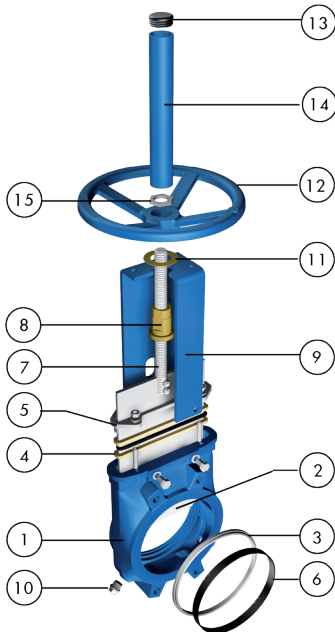
Directives

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-GJL250 / CF8M ¹
2	Gate AISI 304 / AISI 316 ¹
3	Seat Metal-Metal / EPDM / NBR
4	Packing PTFE Impreg. Synth. Fibre (ST) + EPDM O-ring
5	Gland follower Al. (DN 2in/50mm - 12in/300mm) / EN-GJS400 (DN 14in/350mm - 48in/1200mm) / CF8M ¹
6	Seat retainer ring AISI 304 / AISI 316 ¹
7	Stem Stainless Steel
8	Stem nut Brass
9	Yoke Epoxy-coated Carbon Steel
10	Cleaning Carbon steel / Stainless steel ¹
11	Friction washer Brass
12	Handwheel EN-GJS400
13	Cap Plastic
14	Stem protector Epoxy-coated Carbon Steel
15	Nut Zinc Plated Carbon Steel

¹ Stainless steel configuration

DESIGN FEATURES

Body

Wafer style cast monoblock design for installation between raised face flanges, with reinforced ribs in larger diameters for extra body strength. Internal cast gate wedges and guides allow for tighter shut-off. Special cast gate supports ensure permanent contact between the gate and the seat when the valve is installed in the reverse position of the flow direction. The wide face to face distance as well as the internal design with the integrated flushing corners avoid any build up of solids that would prevent the valve from closing. Full port design for greater flow capacity and minimal pressure drop. The standard flush ports allow the cleaning of solids trapped within the body cavities that can obstruct the flow or the sealing in the closed position. Depending on the media, the purge ports can be injected with air, steam, liquids, etc.

Gate

Stainless steel rectangular shape gate. Gate is polished on both sides to avoid jamming and seat damage. Bottom of the gate edge is machined to a bevel to cut through solids for a tighter seal in the closed position. The thickness and/or material of the gate can be changed on request for higher pressure requirements

Seat (resilient)

Unique design that mechanically locks the seal in the internal of the valve body with a stainless steel retainer ring. Standard EPDM also available in different materials such as Viton, PTFE, etc.

Packing

Long-life packing with several layers of braided fibre plus an 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

Stem

The standard stainless steel stem offers a long corrosion resistant life. For rising stem handwheel actuators only, a stem protector is provided for additional protection against dust while the valve is in the open position

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. Reinforced design is standard starting from DN 10in/250mm

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

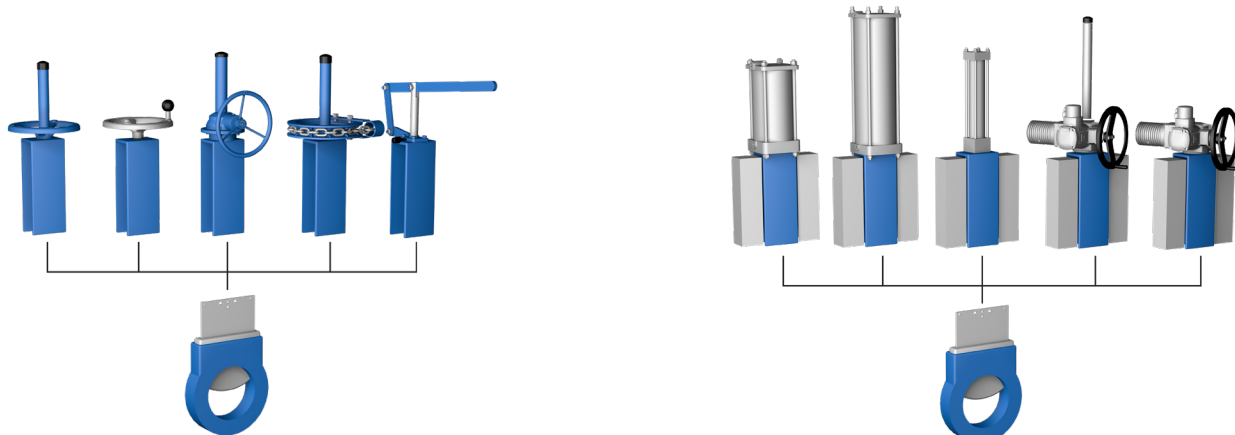
ORBINOX automated valves are provided with gate guards in accordance with EU Safety Standards. The design feature prevents any objects from being caught accidentally while the gate is moving* IN EUROPE ONLY

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 (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

Bonnet (Fig. 1)

Assures tight sealing to atmosphere. Reduces packing maintenance

Locking device

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

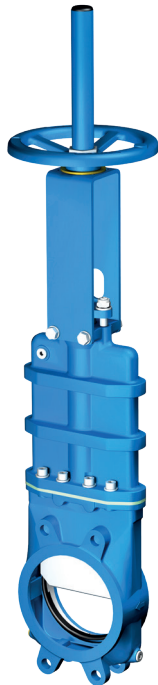


Fig.1



Fig.2

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
Metal/Metal	>482	>250	High temp./Low tightness
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.
VMQ (S)	482	250	Food service / High temp.
PTFE (T)	482	250	Corrosion resistance

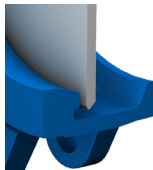
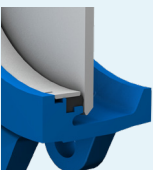
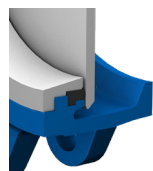

More details and other materials under request

PACKING TYPES

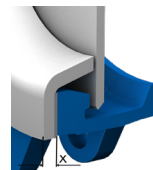
Material	Max.T (°F)	Max.T (°C)	pH
PTFE impregn. synth. fibre (ST)	482	250	2-13
Braided PTFE (TH)	500	260	0-14
Graphited (GR)	1112	600	0-14
Ceramic fibre (FC)	2192	1200	- - -

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

SEAT CONFIGURATIONS/DESIGNS

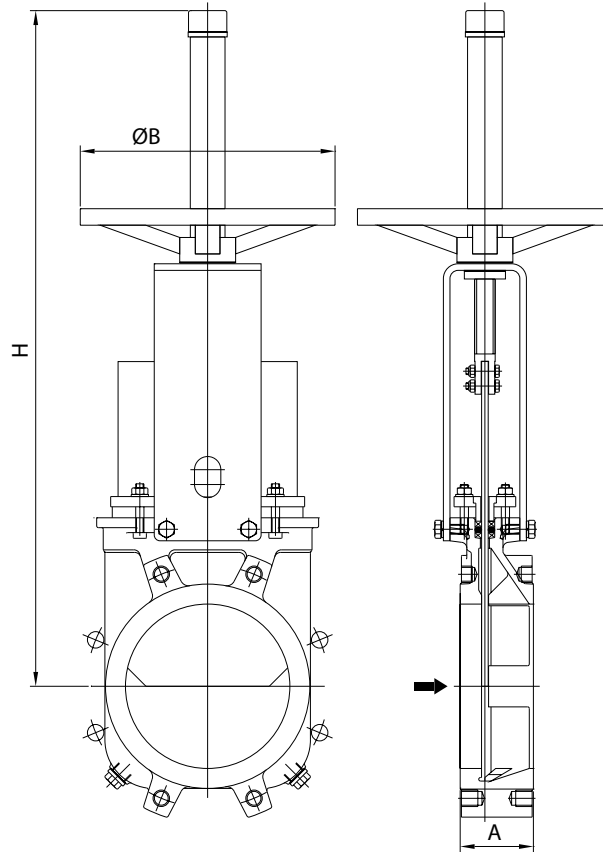
Type	Features	
Metal / Metal	<ul style="list-style-type: none"> -High temperature applications -High density media applications -When full tightness is not required 	
A ring Resilient	<ul style="list-style-type: none"> -Standard resilient seat -See temperature chart for seat materials -Seat with replaceable ring 	
B ring Resilient	<ul style="list-style-type: none"> -Reinforced resilient seat design -See temperature chart for seat materials -Seat with replaceable retainer ring - Ring available in different materials: AISI 316, Ni Hard,... 	
B ring Metal/Metal	<ul style="list-style-type: none"> -High temperature applications -High density media applications -When full tightness is not required -Replaceable ring 	

OTHER SEAT FEATURES

Type	Features	
Deflection cone C	<ul style="list-style-type: none"> -Used to protect valve seats and internals from wear deflecting the media away from them -Material: AISI 316, CA15, Ni-Hard, etc. -Face-to-face dimension increases: DN 2in/50mm to DN 10in/250mm X = 0.35in/9mm DN 12in/300mm to DN 24in/600mm X = 0.47in/12mm Larger diameters on request 	

HANDWHEEL RISING STEM

Standard manual actuator available from 2in/50mm to 24in/600mm and recommended with gearbox from 12in/300mm and above

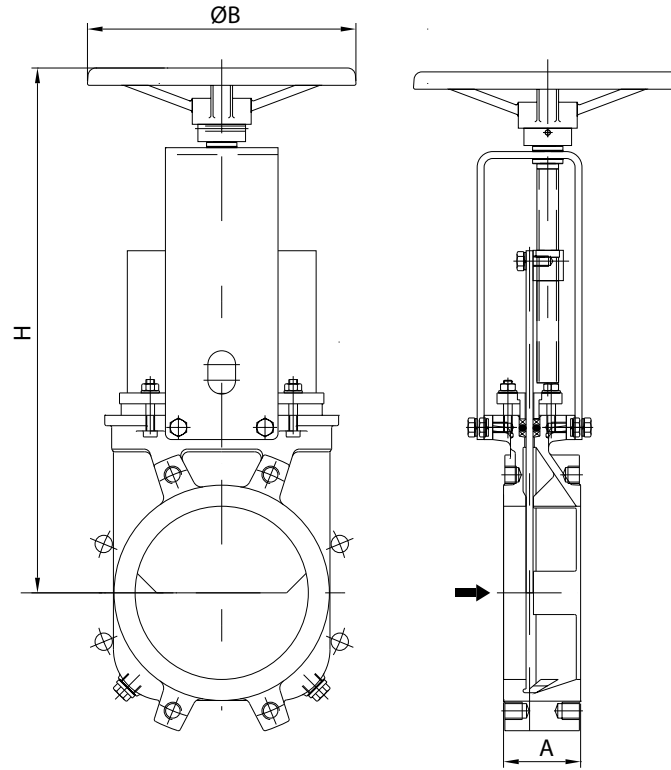


DN (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)	Weight (lbs./kg.)
2/50	1,81/46	8,86/225	16,53/420	20/9
2,5/65	1,81/46	8,86/225	17,71/450	21/10
3/80	2,52/64	8,86/225	18,70/475	27/12
4/100	2,52/64	8,86/225	20,47/520	31/14
5/125	2,75/70	8,86/225	23,62/600	34/15
6/150	2,99/76	8,86/225	25,67/647	38/17
8/200	3,50/89	12,20/310	32,36/822	75/34
10/250	4,48/114	12,20/310	39,84/1012	124/56
12/300	4,48/114	12,20/310	43,38/1102	146/66
14/350	5,00/127	16,14/410	51,37/1305	245/111
16/400	5,51/140	16,14/410	54,53/1385	327/148
18/450	5,98/152	21,65/550	62,28/1582	435/187
20/500	5,98/152	21,65/550	65,82/1672	459/208
24/600	7,00/178	21,65/550	77,24/1962	642/291

HANDWHEEL NON-RISING STEM

Manual actuator recommended for installation where space is limited, available from DN 2in/50mm to DN 24in/600mm and recommended with gearbox from 14in/350mm and above.

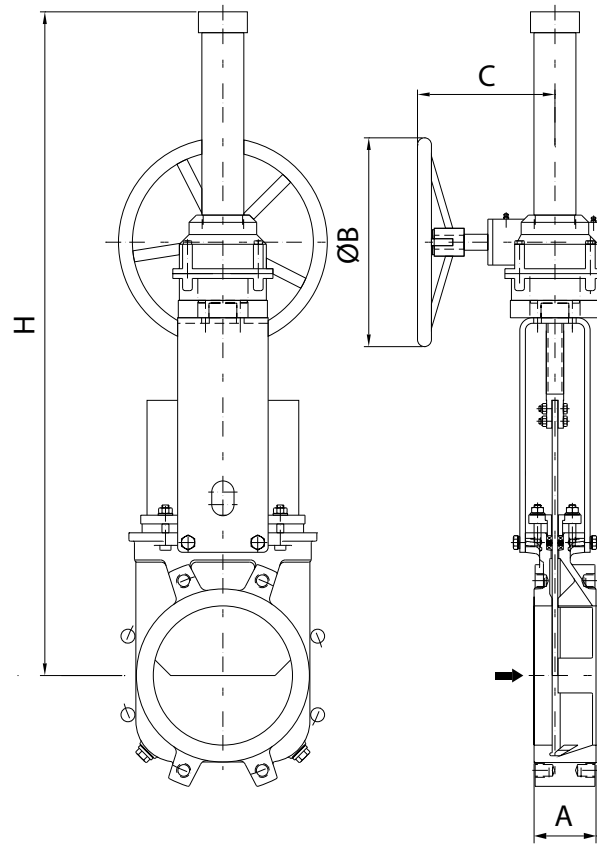
Aluminium handwheel for 2in/50mm to 12in/300mm valves and EN-GJS400 from 14in/350mm and above



DN (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)	Weight (lbs./kg.)
2/50	1,81/46	8,86/225	12,28/312	16/7
2,5/65	1,81/46	8,86/225	13,34/339	20/9
3/80	2,52/64	8,86/225	14,33/364	25/11
4/100	2,52/64	8,86/225	15,94/405	29/13
5/125	2,75/70	8,86/225	17,28/439	31/14
6/150	2,99/76	8,86/225	19,09/485	36/16
8/200	3,50/89	12,20/310	23,42/595	69/31
10/250	4,48/114	12,20/310	26,97/685	109/49
12/300	4,48/114	12,20/310	30,51/775	128/58
14/350	5,00/127	16,14/410	36,50/927	236/107
16/400	5,51/140	16,14/410	39,65/1007	314/142
18/450	5,98/152	21,65/550	44,44/1129	-
20/500	5,98/152	21,65/550	47,99/1219	-
24/600	7,00/178	21,65/550	55,08/1399	-

BEVEL GEAR

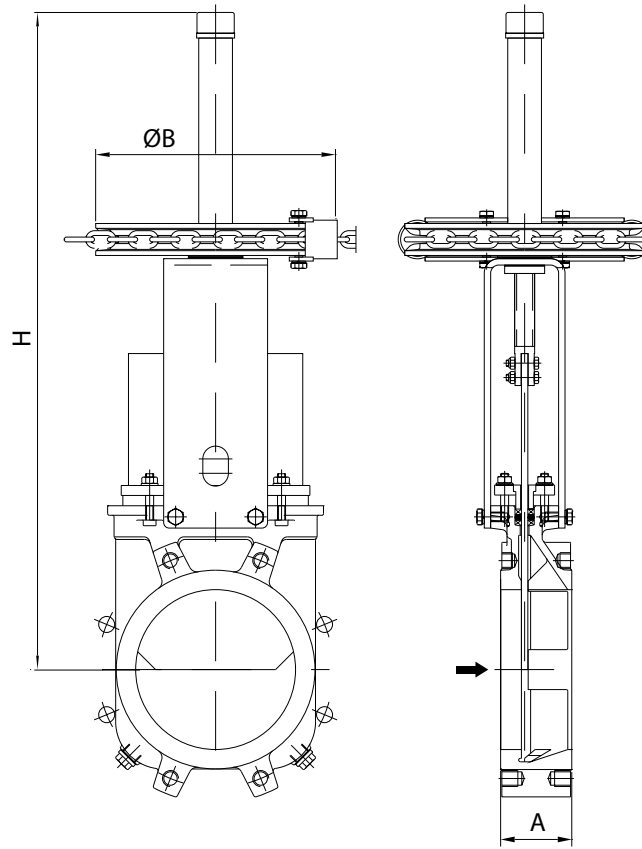
Manual actuator recommended for valves larger than 12in/300mm. Available both for rising stem and non-rising stem configurations and with different reduction ratios



DN (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)	C (in/mm)	Weight (lbs./kg.)
8/200	3,50/89	12/300	37,95/964	7,79/198	111/50
10/250	4,48/114	12/300	41,50/1054	7,79/198	161/73
12/300	4,48/114	12/300	45,03/1144	7,79/198	181/82
14/350	5,00/127	18/450	60,82/1545	8,58/218	285/129
16/400	5,51/140	18/450	64,02/1626	8,58/218	366/166
18/450	5,98/152	18/450	68,58/1742	8,58/218	470/213
20/500	5,98/152	18/450	72,16/1833	8,58/218	497/225
24/600	7,00/178	18/450	79,29/2014	8,58/218	680/308

CHAINWHEEL

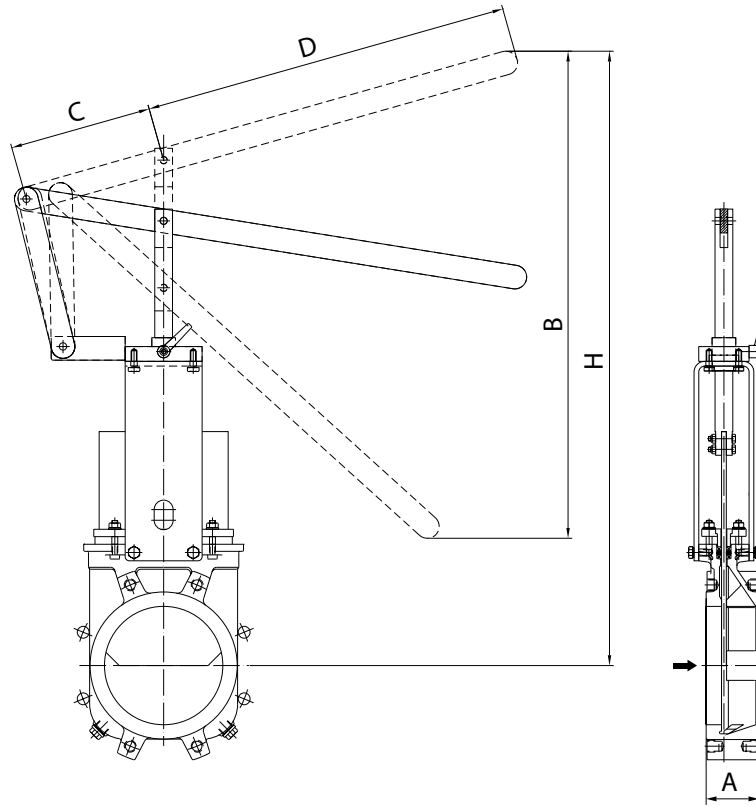
Manual actuator recommended for elevated installations. The handwheel is replaced by a chainwheel to accommodate the chain. Available both for rising stem and non-rising stem and for sizes from 2in/50mm to 24in/600mm



DN (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)
2/50	1,81/46	8,86/225	16,69/424
2,5/65	1,81/46	8,86/225	17,75/451
3/80	2,52/64	8,86/225	18,74/476
4/100	2,52/64	8,86/225	20,39/518
5/125	2,75/70	8,86/225	23,66/601
6/150	2,99/76	8,86/225	25,47/647
8/200	3,50/89	11,81/300	32,36/822
10/250	4,48/114	11,81/300	39,84/1012
12/300	4,48/114	11,81/300	43,38/1102
14/350	5,00/127	17,87/454	51,37/1305
16/400	5,51/140	17,87/454	54,52/1385
18/450	5,98/152	17,87/454	62,08/1577
20/500	5,98/152	17,87/454	65,43/1662
24/600	7,00/178	17,87/454	77,24/1962

LEVER

Manual actuator recommended for quick opening and closing, available from 2in/50mm to 8in/200mm

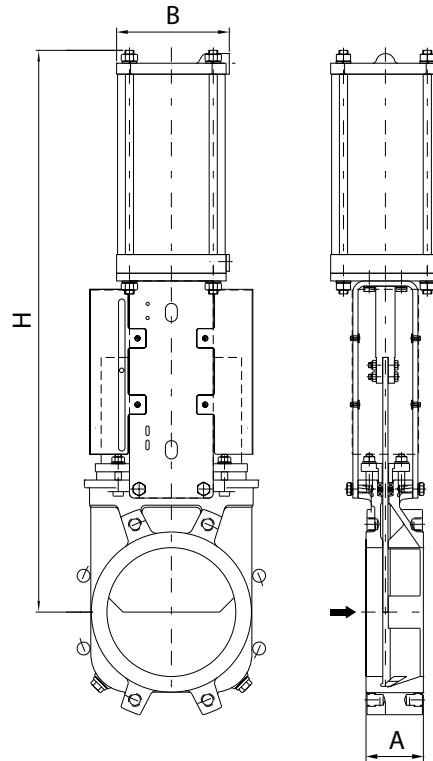


DN (in/mm)	A (in/mm)	B (in/mm)	C (in/mm)	H (in/mm)	D (in/mm)
2/50	1,81/46	10,08/256	5,90/150	16,06/408	12,40/315
2,5/65	1,81/46	10,20/259	5,90/150	17,12/435	12,40/315
3/80	2,52/64	12,08/307	5,90/150	20,03/509	12,40/315
4/100	2,52/64	14,88/378	5,90/150	25,08/637	16,33/415
5/125	2,75/70	17,28/439	5,90/150	29,72/755	16,33/415
6/150	2,99/76	20,83/529	5,90/150	35,03/890	16,33/415
8/200	3,50/89	24,40/620	9,25/235	40,86/1038	24,40/620

PNEUMATIC CYLINDER

With a double-acting pneumatic cylinder as standard, it is available in sizes from 2in/50mm to 24in/600mm. 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



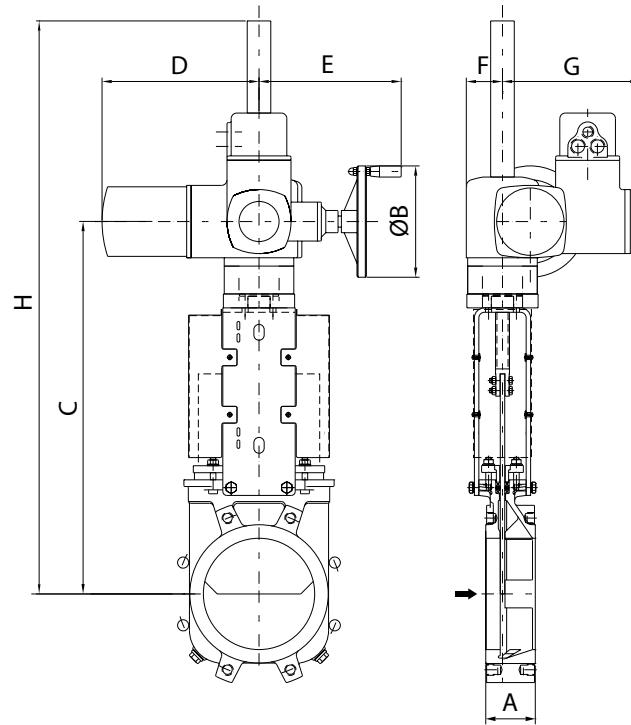
DN (in/mm)	A (in/mm)	B (in/mm)	H (in/mm)	Connect.	Weight (lbs./kg.)
2/50	1,81/46	4,53/115	16,22/412	1/4" G	18/8
2,5/65	1,81/46	4,53/115	17,87/454	1/4" G	23/10
3/80	2,52/64	4,53/115	19,56/497	1/4" G	27/12
4/100	2,52/64	4,53/115	21,96/558	1/4" G	31/14
5/125	2,75/70	5,51/140	24,88/632	1/4" G	42/19
6/150	2,99/76	5,51/140	27,68/703	1/4" G	49/22
8/200	3,50/89	6,89/175	34,33/872	1/4" G	91/41
10/250	4,48/114	8,66/220	40,62/1032	3/8" G	153/69
12/300	4,48/114	8,66/220	46,14/1172	3/8" G	177/80
14/350	5,00/127	10,90/277	53,89/1369	3/8" G	320/145
16/400	5,51/140	10,90/277	59,01/1499	3/8" G	406/184
18/450	5,98/152	15,03/382	66,85/1698	1/2" G	565/256
20/500	5,98/152	15,03/382	72,36/1838	1/2" G	594/269
24/600	7,00/178	15,03/382	83,38/2118	1/2" G	788/357

ELECTRIC ACTUATOR

Designed with a yoke flange for the actuator according to ISO 5210 / DIN 3338 as standard, it is available from 2in/50mm to DN 24in/600mm, both for rising stem and non-rising stem configurations and with manual overrides.

Wide range of electric actuator brands available

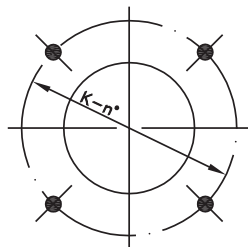
For valves installed in a horizontal position, actuator supports to plant structure is recommended



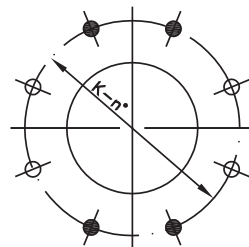
DN (in/mm)	A (in/mm)	C (in/mm)	ØB (in/mm)	H (in/mm)	D (in/mm)	E (in/mm)	F (in/mm)	G (in/mm)	Weight (lbs./kg.)
2/50	1,81/46	14,84/377	6,30/160	21,53/547	10,43/265	9,80/249	2,44/62	9,37/238	69/31
2,5/65	1,81/46	15,90/404	6,30/160	22,60/574	10,43/265	9,80/249	2,44/62	9,37/238	71/32
3/80	2,52/64	16,88/429	6,30/160	23,58/599	10,43/265	9,80/249	2,44/62	9,37/238	75/34
4/100	2,52/64	18,50/470	6,30/160	25,19/640	10,43/265	9,80/249	2,44/62	9,37/238	80/36
5/125	2,75/70	19,84/504	6,30/160	26,53/674	10,43/265	9,80/249	2,44/62	9,37/238	84/38
6/150	2,99/76	21,65/550	6,30/160	44,09/1120	10,43/265	9,80/249	2,44/62	9,37/238	89/40
8/200	3,50/89	26,33/669	6,30/160	50,74/1289	10,43/265	9,80/249	2,44/62	9,37/238	124/56
10/250	4,48/114	29,88/759	6,30/160	52,71/1339	10,43/265	9,80/249	2,44/62	9,37/238	175/79
12/300	4,48/114	33,42/849	6,30/160	56,45/1434	10,43/265	9,80/249	2,44/62	9,37/238	197/89
14/350	5,00/127	37,40/950	7,87/200	60,43/1535	11,14/283	10/254	2,55/65	9,76/248	311/141
16/400	5,51/140	40,55/1030	7,87/200	63,58/1615	11,14/283	10/254	2,55/65	9,76/248	393/178
18/450	5,98/152	46,96/1193	7,87/200	70,59/1793	11,14/283	10/254	2,55/65	9,76/248	501/227
20/500	5,98/152	50,51/1283	7,87/200	74,13/1883	11,14/283	10/254	2,55/65	9,76/248	530/240
24/600	7,00/178	57,59/1463	12,40/315	85,15/2163	15,31/389	13,22/336	3,58/91	11,25/286	783/355

FLANGE AND BOLTING DETAILS ASME B16.5, CLASS 150

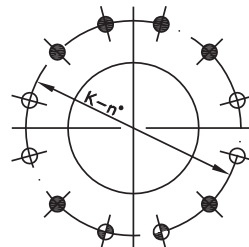
DN	K	n°	M	T	
2"	4 3/4"	4	5/8" - 11 UNC	5/16"	4 - 0 - 0
2 1/2"	5 1/2"	4	5/8" - 11 UNC	5/16"	4 - 0 - 0
3"	6"	4	5/8" - 11 UNC	3/8"	4 - 0 - 0
4"	7 1/2"	8	5/8" - 11 UNC	7/16"	4 - 0 - 4
5"	8 1/2"	8	3/4" - 10 UNC	7/16"	4 - 0 - 4
6"	9 1/2"	8	3/4" - 10 UNC	9/16"	4 - 0 - 4
8"	11 3/4"	8	3/4" - 10 UNC	9/16"	4 - 0 - 4
10"	14 1/4"	12	7/8" - 9 UNC	11/16"	6 - 2 - 4
12"	17"	12	7/8" - 9 UNC	11/16"	8 - 0 - 4
14"	18 3/4"	12	1" - 8 UNC	7/8"	6 - 2 - 4
16"	21 1/4"	16	1" - 8 UNC	13/16"	10 - 2 - 4
18"	22 3/4"	16	1 1/8" - 7 UNC	7/8"	10 - 2 - 4
20"	25"	20	1 1/8" - 7 UNC	7/8"	14 - 2 - 4
24"	29 1/2"	20	1 1/4" - 7 UNC	15/16"	14 - 2 - 4



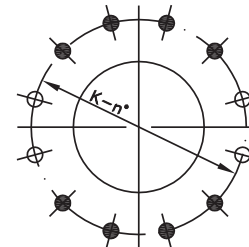
DN 2" - 3"



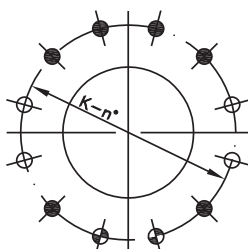
DN 4" - 8"



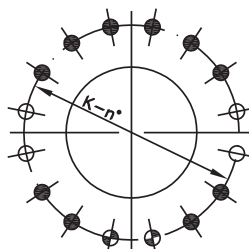
DN 10"



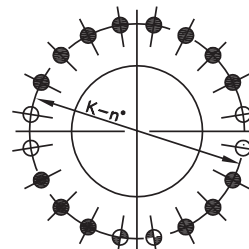
DN 12"



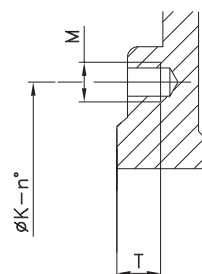
DN 14"



DN 16" - 18"






DN 20" - 24"



- BLIND TAPPED HOLES
- TAPPED THROUGH
- THROUGHGOING BOLTS

FLANGE AND BOLTING DETAILS EN-1092 PN10

DN	K	n°	M	T	  
50	125	4	M-16	8	4 - 0 - 0
65*	145	4	M-16	8	4 - 0 - 0
80	160	8	M-16	9	4 - 0 - 4
100	180	8	M-16	11	4 - 0 - 4
125	210	8	M-16	11	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	6 - 2 - 4
300	400	12	M-20	18	8 - 0 - 4
350	460	16	M-20	22	10 - 2 - 4
400	515	16	M-24	21	10 - 2 - 4
450	565	20	M-24	22	14 - 2 - 4
500	620	20	M-24	22	14 - 2 - 4
600	725	20	M-27	24	14 - 2 - 4

* 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

