

Model Ser.10 (EX)

WAFER STYLE KNIFE GATE VALVE

The Series 10 (EX) model knife gate is an uni-directional wafer 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:

- Pulp and Paper
- Wastewater treatment plants
- Food and Beverage
- Mining
- Power plants
- Chemical plants
- Bulk handling
- Etc.

Sizes (DN)

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

Working pressure and temperatures

2in/50mm 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

GJL250/ GJS 400: 14°F (-10°C) / 176°F (80°C)
CF8M: -4°F (-20°C) / 176°F (80°C)

Standard flange drilling

ASME B16.5 (class 150)
EN 1092 PN10 / PN 16
Other flange drillings available on request

Directives

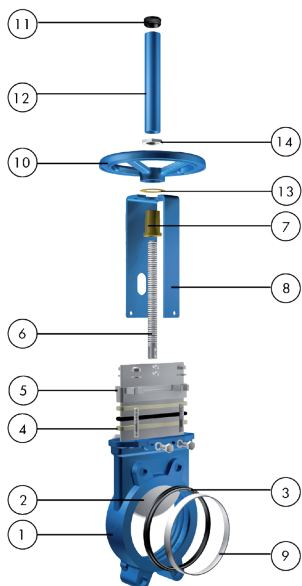
For EU Directives and other Certificates please see the document: Directives & Certificates Compliance - Knife Gate Valves –Catalogues and Datasheets)

Testing

All valves are tested prior to shipping in accordance with the standard EN-12266-2



STANDARD PARTS LIST



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

¹ Stainless steel configuration

DESIGN FEATURES

Body

Wafer style cast monoblock with raised faces and reinforcing ribs in large diameters for extra body strength. Internal cast-in gate wedges and guides allow for a tighter shut-off between gate and seat. Full port design for greater flow capacity and minimal pressure drop. The internal body design avoids any accumulation of solids that would prevent the valve from closing

Gate

Stainless steel 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 with DIN 103 trapezoidal thread 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

Epoxy coating

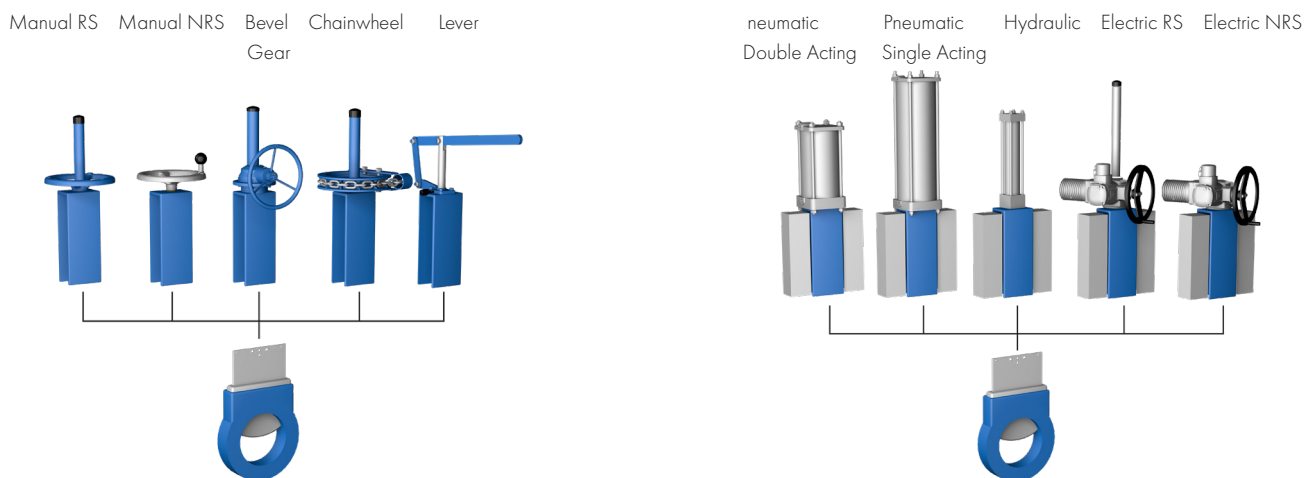
The epoxy coating on all ORBINOX cast iron and carbon steel valve bodies and components is applied by means of an electrostatic process, making the valves corrosion-resistant with a high quality finished surface. The ORBINOX standard colour is RAL-5015 blue

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.* IN EUROPE ONLY

Actuators

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



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



Fig.1

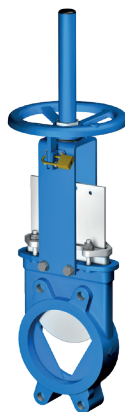


Fig.2

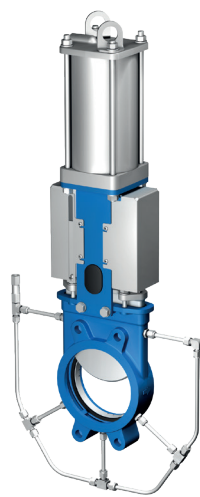


Fig.3



Fig.4



Fig.5

V-Port (Fig. 2)

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

Locking device (Fig. 2)

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

Flush ports (Fig. 3)

Allow for cleaning of solids trapped within the body cavities that can obstruct the flow or prevent the valve from closing. Depending on the process, purging can be made with air, steam, liquids, etc.

Mechanical stops

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

Actuator manual override (Fig. 4)

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. 5)

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
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	High corrosion

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 seat), excluding TH, GR and FC

More details and other materials under request

SEAT CONFIGURATIONS/DESIGNS

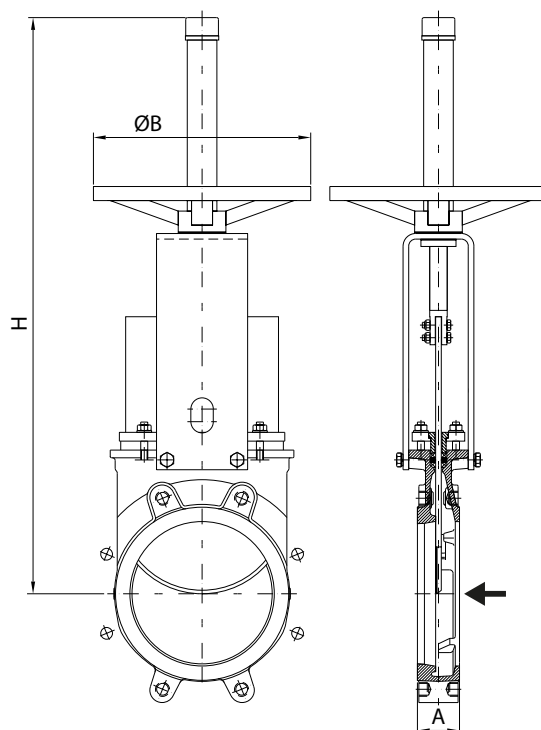
Type	Features	
Metal / Metal	<ul style="list-style-type: none"> - High temperature applications - High density media applications - When full tightness is not required 	
A Ring Resilient	<ul style="list-style-type: none"> - Standard resilient seat - See temperature chart for seat materials - Seat with 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 - Material: AISI 316, Ni-Hard, etc. - Face-to-face dimension increases: DN 2in/50mm - DN 10in/250mm X = 0.35in/9mm DN 12in/300mm - DN 24in/600mm X = 0.47in/12mm Larger diameters on request 	

HANDWHEEL RISING STEM

Standard manual actuator available from 2in/50mm to 40in/1000mm and recommended with gearbox from 12in/300mm and above

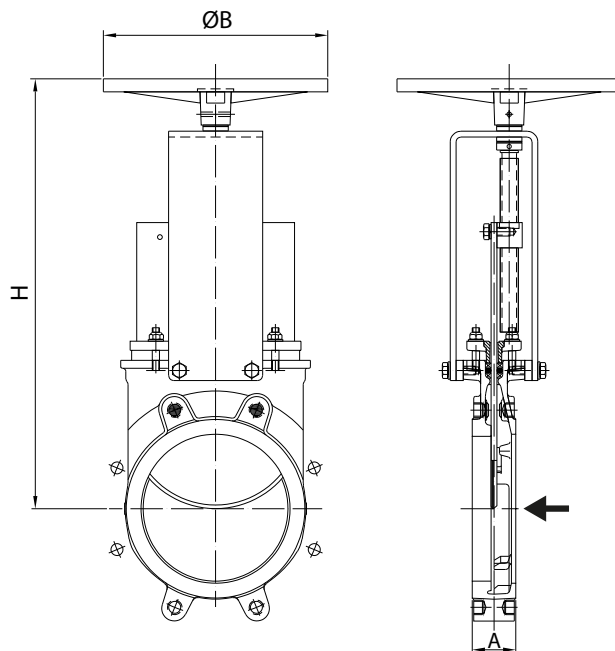


DN (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)	Weight (lbs./kg.)
2/50	1,57/40	8,86/225	16,53/420	25/11
2,5/65	1,57/40	8,86/225	17,71/450	27/12
3/80	2,00/50	8,86/225	18,70/475	28/13
4/100	2,00/50	8,86/225	20,47/520	31/14
5/125	2,00/50	8,86/225	23,62/600	38/17
6/150	2,36/60	8,86/225	25,67/652	47/21
8/200	2,36/60	12,20/310	32,36/822	75/34
10/250	2,75/70	12,20/310	40,23/1022	101/46
12/300	2,75/70	12,20/310	44,17/1122	142/64
14/350	3,78/96	16,14/410	52,08/1323	208/94
16/400	3,93/100	16,14/410	56,18/1427	276/125
18/450	4,17/106	21,65/550	62,75/1594	356/162
20/500	4,33/110	21,65/550	67,20/1707	440/200
24/600	4,33/110	21,65/550	79,60/2022	630/286
28/700	4,33/110	31,50/800	109,37/2778	893/405
30/750	4,33/110	31,50/800	114,17/2900	1003/455
32/800	4,33/110	31,50/800	117,32/2980	1129/512
36/900	4,33/110	31,50/800	126,57/3215	1499/680
40/1000	4,33/110	31,50/800	133,86/3400	1907/865

HANDWHEEL NON-RISING STEM

Manual actuator recommended for installation where space is limited, available from 2in/50mm to 40in/1000mm and recommended with gearbox from 14in/350mm and above.

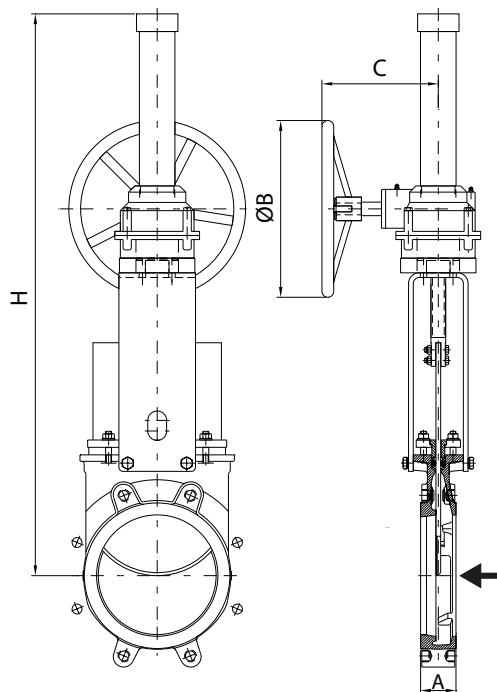
Aluminium handwheel for 2in/50mm to 12in/300mm valves and EN-GJS400 from 14in/350mm and above



DN (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)	Weight (lbs./kg.)
2/50	1,57/40	8,86/225	12,28/312	22/10
2,5/65	1,57/40	8,86/225	13,34/339	25/11
3/80	2,00/50	8,86/225	14,33/364	27/12
4/100	2,00/50	8,86/225	15,94/405	29/13
5/125	2,00/50	8,86/225	17,28/439	33/15
6/150	2,36/60	8,86/225	19,29/490	40/18
8/200	2,36/60	12,20/310	23,42/595	70/32
10/250	2,75/70	12,20/310	27,36/695	99/45
12/300	2,75/70	12,20/310	31,30/795	132/60
14/350	3,78/96	16,14/410	37,20/945	204/93
16/400	3,93/100	16,14/410	41,30/1049	278/126
18/450	4,17/106	21,65/550	44,92/1141	395/179
20/500	4,33/110	21,65/550	49,37/1254	457/207
24/600	4,33/110	21,65/550	57,44/1459	615/279
28/700	4,33/110	31,50/800	68,38/1737	-
30/750	4,33/110	31,50/800	73,07/1856	-
32/800	4,33/110	31,50/800	76,34/1939	-
36/900	4,33/110	31,50/800	85,59/2174	-
40/1000	4,33/110	31,50/800	93,74/2381	-

BEVEL GEAR

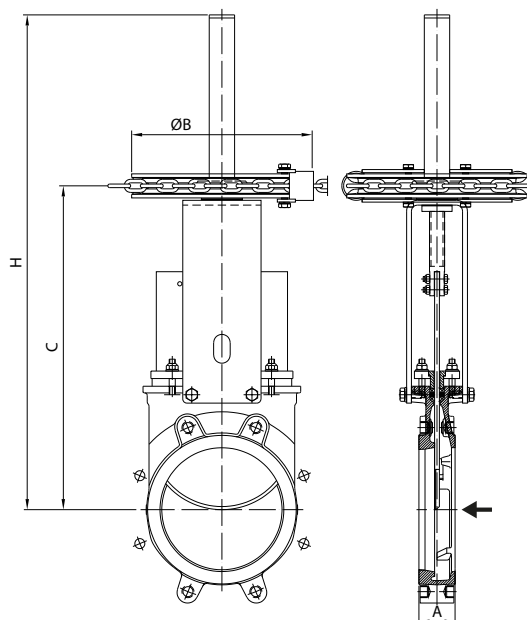
Manual actuator recommended for valves larger than 12in/300mm. Available both for rising stem and non-rising stem configurations and with different reduction ratios



DN (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)	C (in/mm)	Weight (lbs./kg.)
8/200	2,36/60	12,00/300	39,13/994	7,87/200	111/50
10/250	2,75/70	12,00/300	43,07/1094	7,87/200	141/64
12/300	2,75/70	12,00/300	47,00/1194	7,87/200	172/78
14/350	3,78/96	18,00/450	65,24/1657	10,31/262	251/114
16/400	3,93/100	18,00/450	69,33/1761	10,31/262	309/140
18/450	4,17/106	18,00/450	72,95/1853	10,31/262	382/173
20/500	4,33/110	18,00/450	77,40/1966	10,31/262	484/220
24/600	4,33/110	18,00/450	85,47/2171	10,31/262	653/296
28/700	4,33/110	18,00/450	95,39/2423	10,31/262	-
30/750	4,33/110	18,00/450	100,59/2555	10,31/262	-
32/800	4,33/110	26,00/650	115,19/2926	10,24/260	-
36/900	4,33/110	26,00/650	124,41/3160	11,34/288	-
40/1000	4,33/110	26,00/650	131,57/3342	11,34/288	-
48/1200	6,00/150	33,00/850	154,92/3935	14,37/365	-

CHAINWHEEL

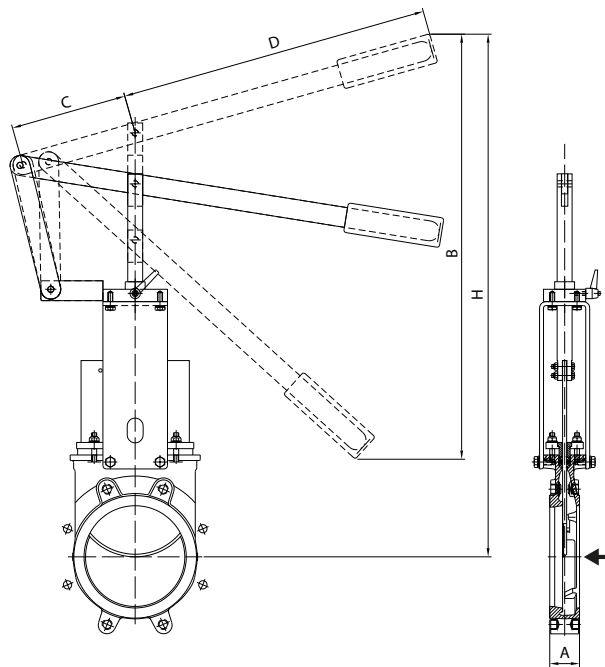
Manual actuator recommended for elevated installations. The handwheel is replaced by a chainwheel to accommodate the chain. Available both for rising stem and non-rising stem and for sizes from 2in/50mm to 24in/600mm



DN (in/mm)	A (in/mm)	ØB (in/mm)	C (in/mm)	H (in/mm)	Weight (lbs./kg.)
2/50	1,57/40	8,86/225	9,96/253	16,53/420	31/14
2,5/65	1,57/40	8,86/225	11,02/280	17,71/450	33/15
3/80	2,00/50	8,86/225	12,00/305	18,70/475	36/16
4/100	2,00/50	8,86/225	13,66/347	20,47/520	40/18
5/125	2,00/50	8,86/225	14,96/380	23,62/600	44/20
6/150	2,36/60	8,86/225	16,97/431	25,67/652	53/24
8/200	2,36/60	11,81/300	21,18/538	32,36/822	86/39
10/250	2,75/70	11,81/300	25,11/638	40,23/1022	117/53
12/300	2,75/70	11,81/300	29,05/738	44,17/1122	153/69
14/350	3,78/96	17,87/454	33,70/856	52,08/1323	234/106
16/400	3,93/100	17,87/454	37,79/960	56,18/1427	292/132
18/450	4,17/106	17,87/454	41,41/1052	62,75/1594	386/175
20/500	4,33/110	17,87/454	45,87/1165	67,20/1707	479/217
24/600	4,33/110	17,87/454	53,93/1370	79,60/2022	646/293

LEVER

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

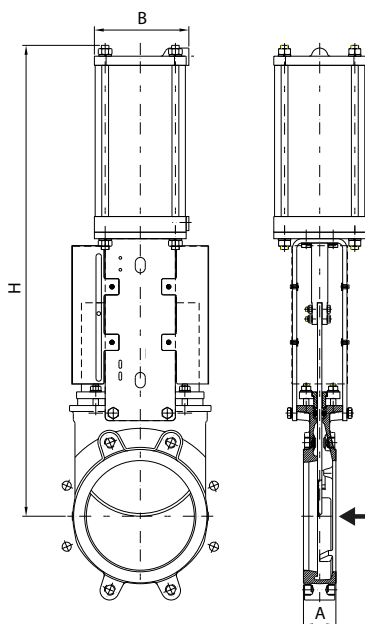


DN (in/mm)	A (in/mm)	B (in/mm)	C (in/mm)	D (in/mm)	H (in/mm)	Weight (lbs./kg.)
2/50	1,57/40	10,08/256	5,90/150	12,40/315	16,06/408	25/11
2,5/65	1,57/40	10,20/259	5,90/150	12,40/315	17,12/435	27/12
3/80	2,00/50	12,08/307	5,90/150	12,40/315	20,03/509	31/14
4/100	2,00/50	17,28/439	5,90/150	16,33/415	25,08/637	33/15
5/125	2,00/50	20,83/529	5,90/150	16,33/415	29,72/755	38/17
6/150	2,36/60	24,40/620	5,90/150	16,33/415	35,23/895	42/19
8/200	2,36/60	32,36/822	9,25/235	24,40/620	40,86/1038	82/37

PNEUMATIC CYLINDER

With a double-acting pneumatic cylinder as standard, it is available in sizes from 2in/50mm to 40in/1000mm. 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



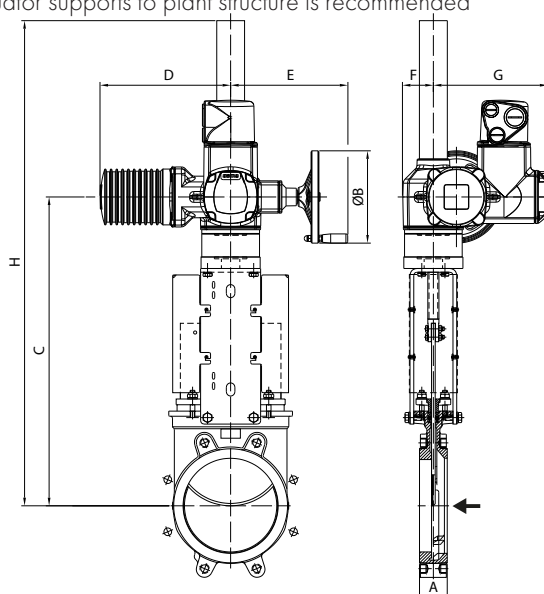
DN (in/mm)	A (in/mm)	B (in/mm)	H (in/mm)	Connect.	Weight (lbs./kg.)
2/50	1,57/40	4,53/115	16,22/412	1/4 "G	23/10
2,5/65	1,57/40	4,53/115	17,87/454	1/4 "G	27/12
3/80	2,00/50	4,53/115	19,56/497	1/4 "G	29/13
4/100	2,00/50	4,53/115	21,96/558	1/4 "G	34/15
5/125	2,00/50	5,51/140	24,88/632	1/4 "G	47/21
6/150	2,36/60	5,51/140	27,87/708	1/4 "G	56/25
8/200	2,36/60	6,89/175	34,33/872	1/4 "G	91/41
10/250	2,75/70	8,66/220	41,02/1042	3/8" G	133/60
12/300	2,75/70	8,66/220	46,93/1192	3/8" G	166/75
14/350	3,78/96	10,90/277	54,60/1387	3/8" G	283/128
16/400	3,93/100	10,90/277	60,67/1541	3/8" G	344/156
18/450	4,17/106	15,03/382	67,32/1710	1/2" G	516/234
20/500	4,33/110	15,03/382	73,74/1873	1/2" G	589/267
24/600	4,33/110	15,03/382	85,71/2178	1/2" G	737/334
28/700	4,33/110	17,48/444	100,24/2546	3/4" G	1146/520
30/750	4,33/110	17,48/444	107,28/2725	3/4" G	1290/585
32/800	4,33/110	17,48/444	112,20/2850	3/4" G	1433/650
36/900	4,33/110	20,27/515	126,06/3202	3/4" G	1874/850
40/1000	4,33/110	20,27/515	137,32/3488	3/4" G	2334/1060

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 48in/1200mm, both for rising stem and non-rising stem configurations and with manual overrides.

Knife gate valves with a wide range of electric actuator brands available.

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

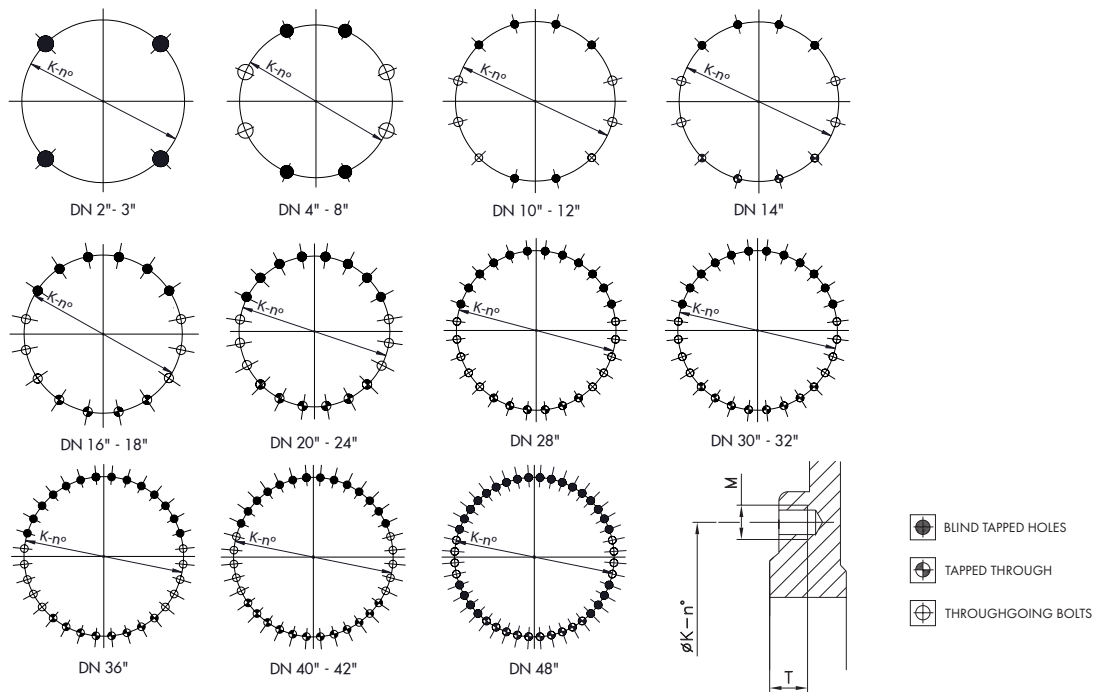


DN (in/mm)	A (in/mm)	C (in/mm)	ØB (in/mm)	H (in/mm)	D (in/mm)	E (in/mm)	F (in/mm)	G (in/mm)	Torque (ft.LBS/Nm)	Weight (lbs./kg.)
2/50	1,57/40	14,84/377	6,30/160	21,53/547	10,43/265	9,80/249	2,44/62	9,37/238	7,4/10	150/68
2,5/65	1,57/40	15,90/404	6,30/160	22,60/574	10,43/265	9,80/249	2,44/62	9,37/238	7,4/10	153/69
3/80	2,00/50	16,88/429	6,30/160	23,58/599	10,43/265	9,80/249	2,44/62	9,37/238	7,4/10	155/70
4/100	2,00/50	18,50/470	6,30/160	25,19/640	10,43/265	9,80/249	2,44/62	9,37/238	7,4/10	159/72
5/125	2,00/50	19,84/504	6,30/160	26,53/674	10,43/265	9,80/249	2,44/62	9,37/238	11,1/15	164/74
6/150	2,36/60	21,85/555	6,30/160	41,55/1055	10,43/265	9,80/249	2,44/62	9,37/238	14,8/20	175/79
8/200	2,36/60	26,33/669	6,30/160	46,02/1169	10,43/265	9,80/249	2,44/62	9,37/238	22,2/30	199/90
10/250	2,75/70	30,27/769	6,30/160	49,96/1269	10,43/265	9,80/249	2,44/62	9,37/238	33,3/45	225/102
12/300	2,75/70	34,21/869	6,30/160	53,89/1369	10,43/265	9,80/249	2,44/62	9,37/238	29,50/40	267/121
14/350	3,78/96	37,00/940	7,87/200	56,69/1440	11,14/283	10,00/254	2,55/65	9,76/248	51,8/70	280/127
16/400	3,93/100	41,10/1044	7,87/200	60,78/1544	11,14/283	10,00/254	2,55/65	9,76/248	66,38/90	318/144
18/450	4,17/106	46,14/1172	7,87/200	65,82/1672	11,14/283	10,00/254	2,55/65	9,76/248	81,4/110	422/191
20/500	4,33/110	50,39/1280	7,87/200	70,07/1780	11,14/283	10,00/254	3,58/91	9,76/248	70,06/95	514/233
24/600	4,33/110	61,61/1565	12,40/315	81,29/2065	15,31/389	13,22/336	3,58/91	11,25/286	103,26/140	741/336
28/700	4,33/110	69,40/1763	12,40/315	112,04/2846	15,31/389	13,22/336	3,58/91	11,25/286	88,50/120	-
30/750	4,33/110	74,09/1882	12,40/315	116,73/2965	15,31/389	13,22/336	3,58/91	11,25/286	103,26/140	-
32/800	4,33/110	76,69/1948	12,40/315	110,33/3031	15,31/389	13,22/336	3,58/91	11,25/286	132,76/180	-
36/900	4,33/110	84,92/2157	15,74/400	127,55/3240	15,31/389	13,34/339	3,58/91	11,25/286	163,74/220	-
40/1000	4,33/110	92,51/2350	15,74/400	135,07/3431	15,31/389	13,34/339	3,58/91	11,25/286	221,27/300	-
48/1200	5,90/150	107,55/2732	20,00/500	162,87/4137	16,93/430	14,37/365	4,61/117	11,93/303	354,03/480	-

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"	6 - 0 - 6
12"	17"	12	7/8" - 9 UNC	3/4"	6 - 0 - 6
14"	18 3/4"	12	1" - 8 UNC	7/8"	4 - 4 - 4
16"	21 1/4"	16	1" - 8 UNC	1"	6 - 4 - 6
18"	22 3/4"	16	1 1/8" - 7 UNC	1"	6 - 4 - 6
20"	25"	20	1 1/8" - 7 UNC	1"	8 - 6 - 6
24"	29 1/2"	20	1 1/4" - 7 UNC	1"	8 - 6 - 6
28"	34"	28	1 1/4" - 7 UNC	3/4"	12 - 6 - 10
30"	36"	28	1 1/4" - 7 UNC	3/4"	12 - 8 - 8
32"	38 1/2"	28	1 1/2" - 6 UNC	3/4"	12 - 8 - 8
36"	42 3/4"	32	1 1/2" - 6 UNC	3/4"	14 - 8 - 10
40"	47 1/4"	36	1 1/2" - 6 UNC	3/4"	14 - 12 - 10
42"	49 1/2"	36	1 1/2" - 6 UNC	3/4"	14 - 12 - 10
48"	56"	44	1 1/2" - 6 UNC	13/16"	26 - 10 - 8

* 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	11	4 - 0 - 0
65*	145	4	M-16	11	4 - 0 - 0
80	160	8	M-16	11	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 - 0 - 6
300	400	12	M-20	18	6 - 0 - 6
350	460	16	M-20	22	6 - 4 - 6
400	515	16	M-24	24	6 - 4 - 6
450	565	20	M-24	24	8 - 6 - 6
500	620	20	M-24	24	8 - 6 - 6
600	725	20	M-27	24	8 - 6 - 6
700	840	24	M-27	20	10 - 6 - 8
800	950	24	M-30	20	10 - 6 - 8
900	1050	28	M-30	20	12 - 8 - 8
1000	1160	28	M-33	20	12 - 8 - 8
1200	1380	32	M-36	30	22 - 6 - 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

