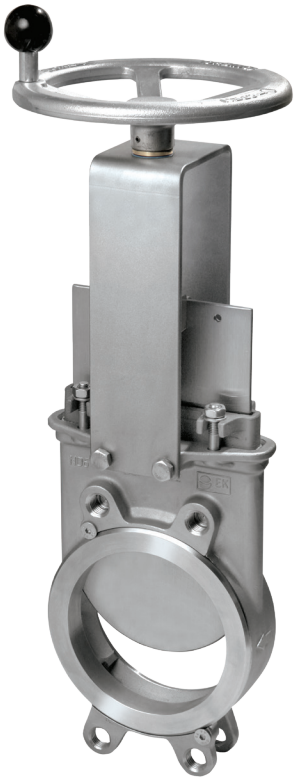
Model **EK**

WAFER STYLE KNIFE GATE VALVE

The EK 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
- Power plants
- Wastewater treatment plants
- Chemical plants
- Food and Beverage
- Bulk handling
- Mining
- etc.



Sizes

DN 50 to DN 1200
Larger diameters on request

Standard flange drilling

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

CF8M: -20°C / 80°C

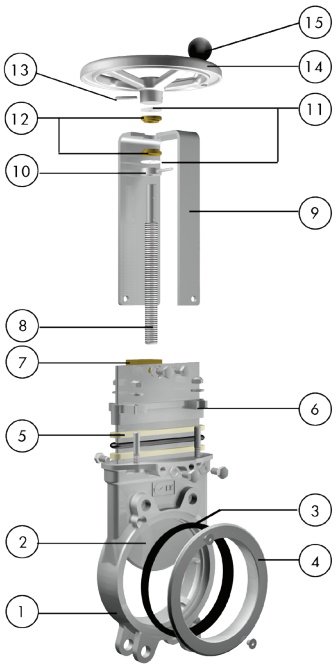
Directives

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	CF8M
2	Gate	AISI 316
3	Seat	EPDM
4	K ring	CF8M
5	Packing	Dynapack (Graphite impregnated PTFE and Aramid yarn combination with an elastomeric core) + EPDM O-ring
6	Gland follower	CF8M
7	Stem nut	Brass
8	Stem	Stainless Steel
9	Yoke	AISI 304
10	Axial fixing bush	AISI 304
11	Friction washer	PET + solid lubricant
12	Bushing	Bronze
13	Spring Pin	AISI 420 (ISO 8752)
14	Handwheel	Ø≤310: Aluminium (AlSi12); Ø≥410: EN-GJS400
15	Knob	Black bakelite

DESIGN FEATURES

Body
Wafer style cast stainless steel monoblock with raised face, with reinforced ribs in larger diameters for extra body strength. Internal cast-in gate wedges and guides allows for tighter shut-off. Full port design for greater flow capacity and minimal pressure drop. Internal design avoids any build up of solids that would prevent 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 cast, easy to replace, stainless steel seat ring. Standard EPDM also available in different materials such as PTFE, etc. (Fig.1)

Packing
Long-life packing with several graphite impregnated PTFE / Aramid yarn combination with an elastomeric core, plus an EPDM O-ring, with an easy access packing gland ensuring a tight seal. Long-life packing is available in a wide range of materials

Stem
The standard stainless steel stem offers a long corrosion resistant life. Standard configuration is non-rising stem. For those pneumatic actuated valves, stem linkage is provided by means of a stainless steel coupling and a pin (Fig. 2)

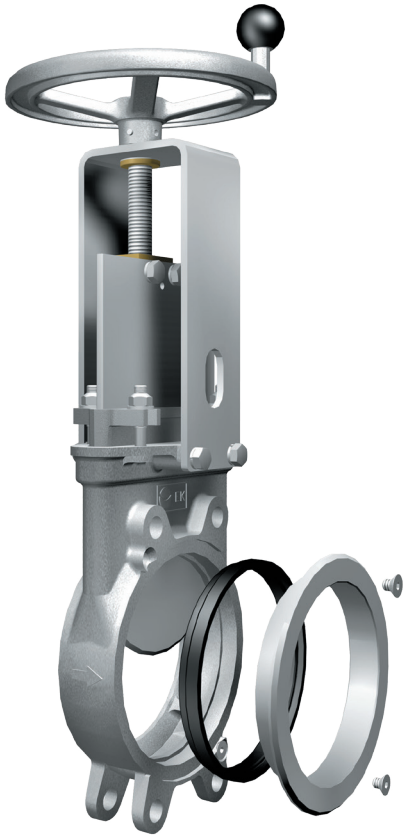


Fig.1

Fig.2

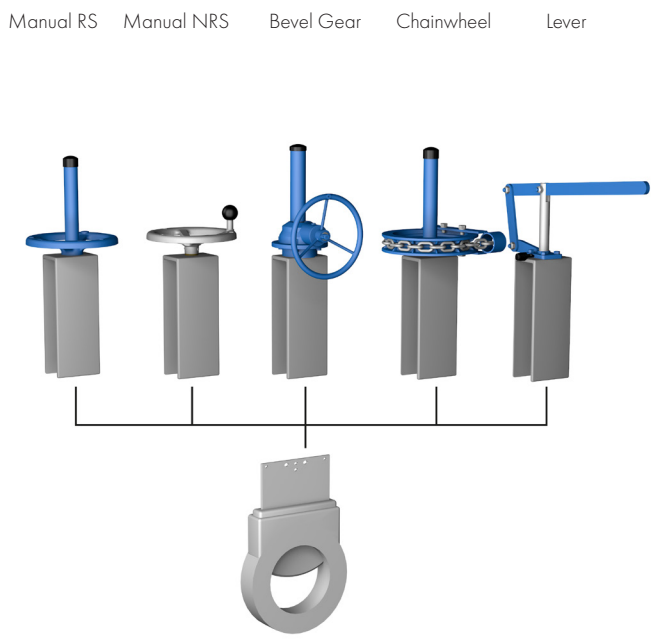
DESIGN FEATURES

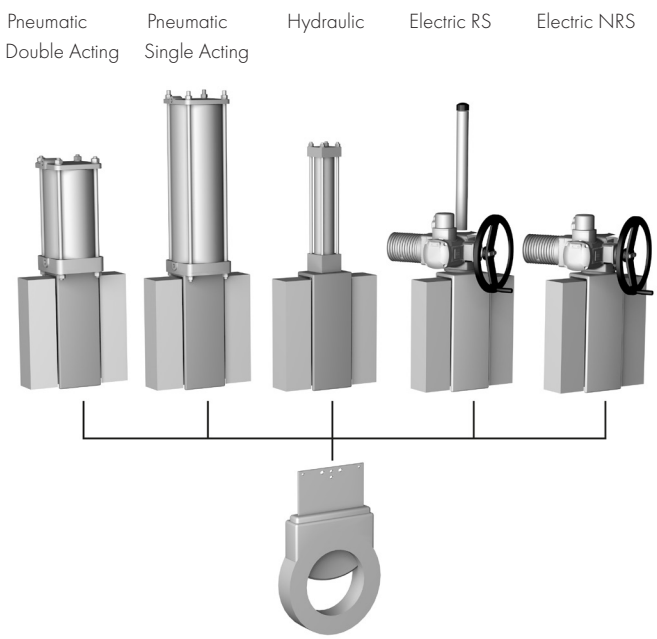
Yoke or actuator support
Made of stainless steel (Epoxy coated steel available on request). Compact design makes it extremely robust even under the most severe conditions

Epoxy coating
The Epoxy coating on all ORBINOX cast iron and carbon steel components is electrostatically applied 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
All actuators supplied by ORBINOX are interchangeable, and supplied with an standard mounting kit for installation purposes on site





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. Double packing as alternative solution to bonnet also available

Fig.1

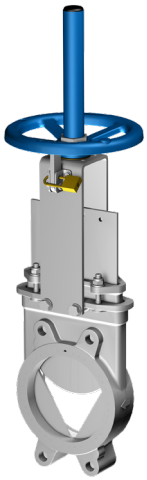


Fig.2

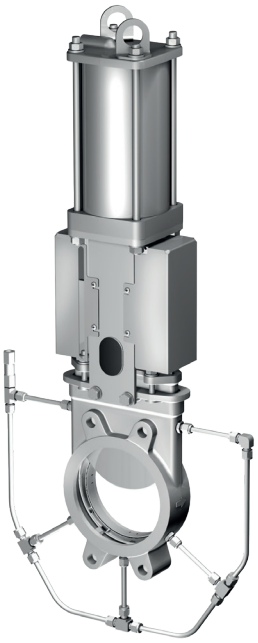


Fig.3

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 overraide 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 (°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.
VMQ (S)	250	Food service / High temp.
PTFE (T)	250	High corrosion
Polyurethane	90	Corrosion resistance

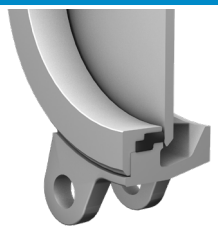
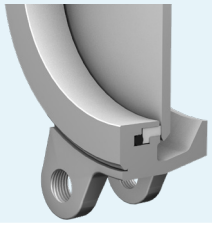
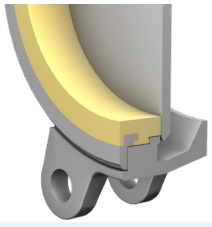
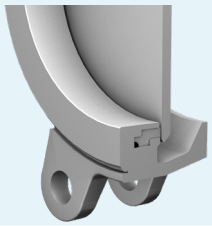
More details and other materials under request

PACKING TYPES

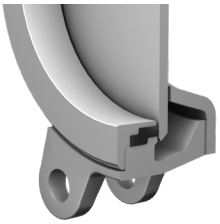
Material	Max.T (°C)	pH
Dynapack (DP)	270	2-14
Braided PTFE (TH)	260	0-14
Graphited (GR)	600	0-14
Ceramic fibre (FC)	1200	- - -

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

SEAT CONFIGURATIONS/DESIGNS

Type	Features	
Type K seat (EPDM)	- Standard replaceable resilient EPDM seat - Replaceable stainless steel ring	
Type K seat (PTFE)	- Replaceable resilient PTFE + O-ring seat - A Replaceable stainless steel ring	
Polyurethane	- Replaceable polyurethane seat ring	
Metal / Metal	- High temperature applications - High density media applications - When full tightness is not required	

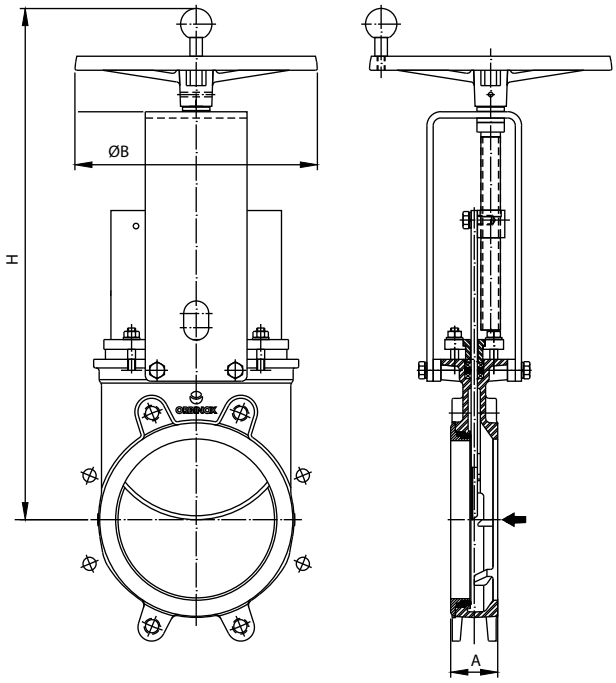
OTHER SEAT FEATURES

Type	Features	
Deflection cone C	- Used to protect valve seats and internals - Material: AISI 316, Ni-Hard, etc. - Face-to-face dimension increases: DN 50 to DN 250, X = 9mm DN 300 to DN 600, X = 12mm Larger diameters on request	

HANDWHEEL NON-RISING STEM

Manual actuator recommended for installation where space is limited, available from DN 50 to DN 1000 and recommended with gearbox from DN 350 and above.

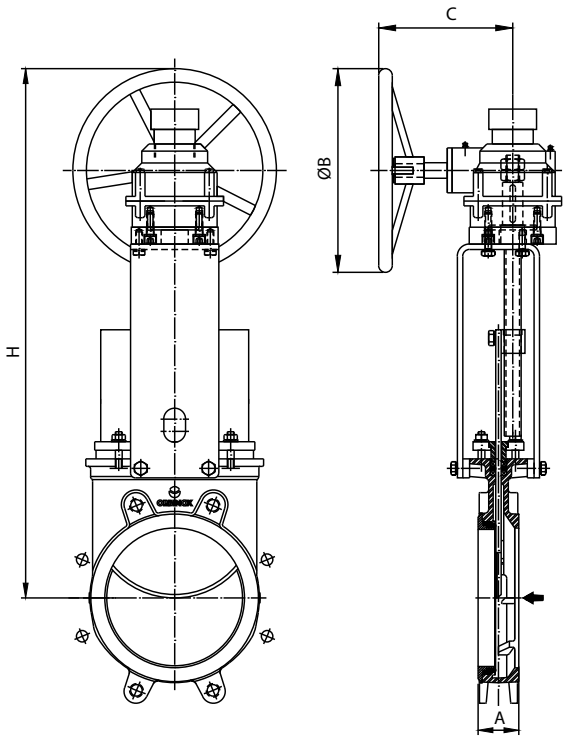
Aluminium handwheel for DN 50 to DN 300 valves and EN-GJS400 from DN 350 and above



DN	A	ØB	H	Weight (Kg)
50	41	225	373	7
65	41	225	400	8
80	51	225	425	9
100	51	225	466	11
125	56	225	500	13
150	60	225	551	15
200	60	310	656	28
250	69	310	756	40
300	78	310	856	55
350	78	410	1013	88
400	89	410	1123	113
450	89	550	1226	148
500	114	550	1342	191
600	114	550	1546	267
700	118	800	1723	405
750	118	800	1855	455
800	118	800	1934	512
900	118	800	2168	630
1000	118	800	2350	732

GEAR

Recommended for valves larger than DN 300. Available both for rising stem and non-rising stem configurations and with different reduction ratios

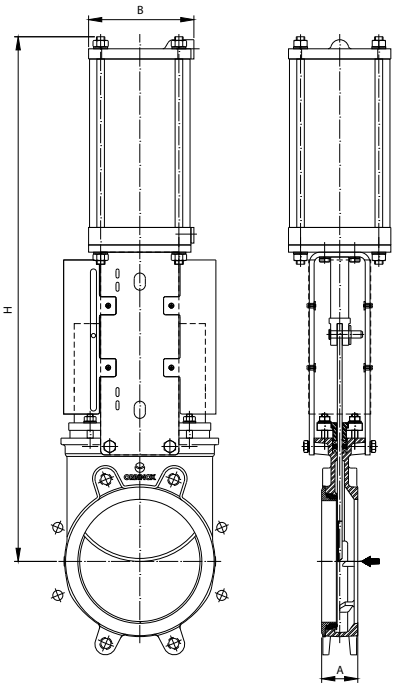


DN	A	ØB	H	C	Weight (Kg)
200	60	300	735	200	-
250	69	300	835	200	-
300	78	300	940	200	75
350	78	450	1097	262	114
400	89	450	1269	262	135
450	89	450	1293	262	172
500	114	450	1474	262	222
600	114	450	1644	262	300
700	118	450	1918	262	-
750	118	450	1977	262	-
800	118	650	2111	260	-
900	118	650	2482	288	-
1000	118	650	2675	288	-
1200	150	850	3450	455	-

PNEUMATIC CYLINDER

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



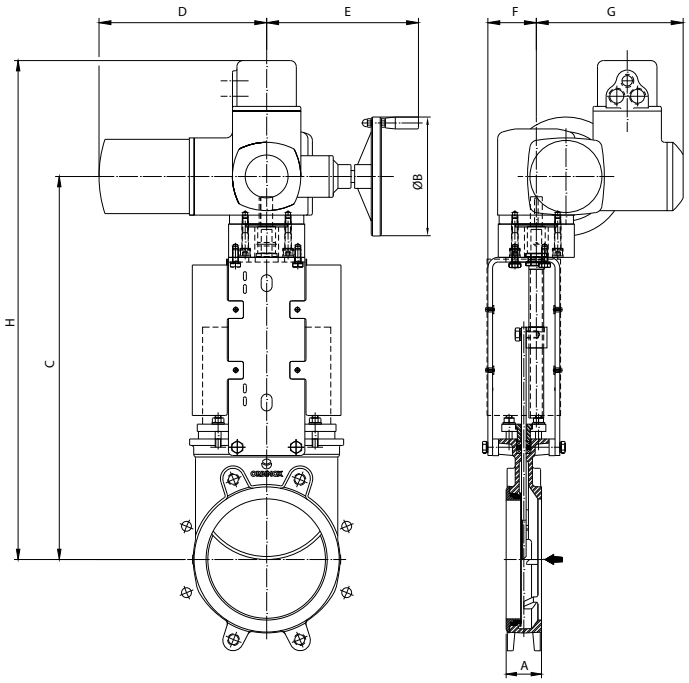
DN	A	B	H	Connect.	Weight (Kg)
50	41	115	412	1/4" G	8
65	41	115	454	1/4" G	9
80	51	115	497	1/4" G	11
100	51	115	558	1/4" G	18
125	56	140	632	1/4" G	19
150	60	140	708	1/4" G	21
200	60	175	872	1/4" G	38
250	69	220	1042	3/8" G	56
300	78	220	1192	3/8" G	73
350	78	220	1379	3/8" G	110
400	89	277	1568	3/8" G	158
450	89	277	1715	3/8" G	191
500	114	277	1882	3/8" G	237
600	114	277	2196	3/8" G	319
700	118	277	2571	3/8" G	520
750	118	382	2740	1/2" G	585
800	118	382	2844	1/2" G	650
900	118	382	3220	1/2" G	850
1000	118	382	3496	1/2" G	1060

ELECTRIC ACTUATOR

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, 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

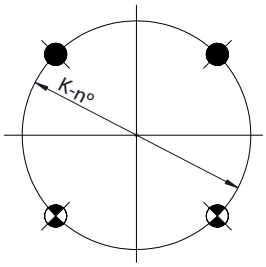


DN	A	C	ØB	H	D	E	F	G	Torque (Nm)
50	41	377	160	552	265	249	72	238	10
65	41	404	160	579	265	249	72	238	10
80	51	429	160	604	265	249	72	238	10
100	51	470	160	645	265	249	72	238	10
125	56	504	160	679	265	249	72	238	15
150	60	560	160	730	265	249	72	238	20
200	60	669	160	814	265	249	82	238	30
250	69	799	160	944	265	249	82	238	45
300	78	904	160	1044	265	249	82	238	40
350	78	940	200	1115	283	254	128	248	70
400	89	1044	200	1219	283	254	128	248	90
450	89	1172	200	1347	283	254	130	248	110
500	114	1280	200	1455	283	254	130	248	95
600	114	1565	315	1750	389	336	130	286	140
700	118	1763	315	1948	389	336	202	285	120
750	118	1882	315	2067	389	336	202	286	140
800	118	1948	315	2133	389	336	202	286	180
900	118	2157	400	2342	389	339	202	286	220
1000	118	2350	400	2535	389	339	202	286	300
1200	150	2732	500	2917	430	365	284	303	480

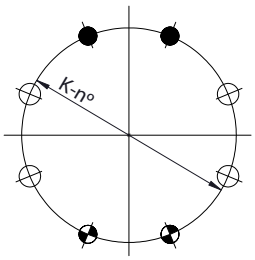
FLANGE AND BOLTING DETAILS EN-1092 PN10

DN	K	nº	M	T	
50	125	4	M-16	11	2 - 2 - 0
65*	145	4	M-16	11	2 - 2 - 0
80	160	8	M-16	11	2 - 2 - 4
100	180	8	M-16	11	2 - 2 - 4
125	210	8	M-16	11	2 - 2 - 4
150	240	8	M-20	14	2 - 2 - 4
200	295	8	M-20	14	2 - 2 - 4
250	350	12	M-20	18	4 - 2 - 6
300	400	12	M-20	18	4 - 2 - 6
350	460	16	M-20	18	6 - 4 - 6
400	515	16	M-24	20	6 - 4 - 6
450	565	20	M-24	20	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

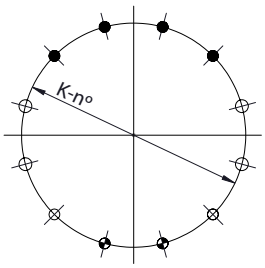
* Flange drilling of DN 65 PN10/16 according to EN-1092 allow 4 or 8 drills. ORBINOX designs of DN 65 PN10/16 have 4 drills



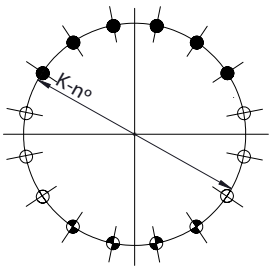
DN 50-65



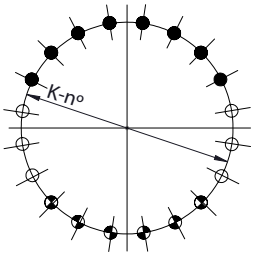
DN 80-200



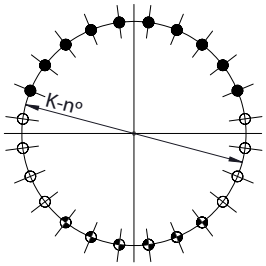
DN 250-300



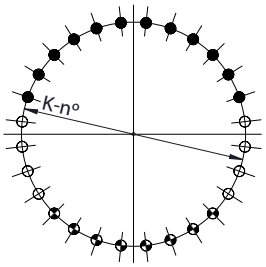
DN 350-400



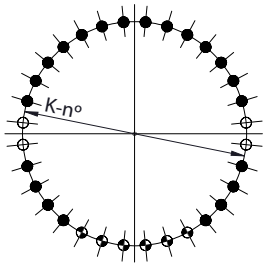
DN 450-600



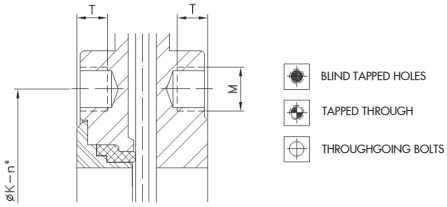
DN 700-800



DN 900-1000

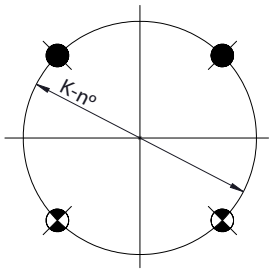


DN 1200

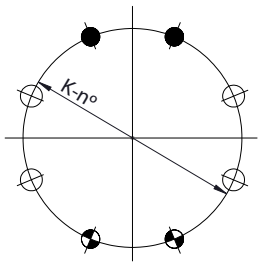


FLANGE AND BOLTING DETAILS ASME B16.5, CLASS 150

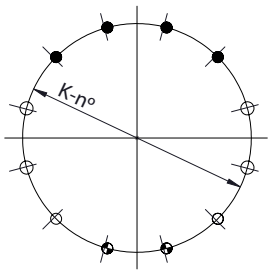
DN	K	nº	M	T	
2″	4 ¾″	4	5/8″ - 11 UNC	1/2″	2 - 2 - 0
2 ½″	5 ½″	4	5/8″ - 11 UNC	1/2″	2 - 2 - 0
3″	6″	4	5/8″ - 11 UNC	1/2″	2 - 2 - 0
4″	7 ½″	8	5/8″ - 11 UNC	1/2″	2 - 2 - 4
5″	8 ½″	8	3/4″ - 10 UNC	1/2″	2 - 2 - 4
6″	9 ½″	8	3/4″ - 10 UNC	1/2″	2 - 2 - 4
8″	11 ¾″	8	3/4″ - 10 UNC	1/2″	2 - 2 - 4
10″	14 ¼″	12	7/8″ - 9 UNC	18/32″	4 - 2 - 6
12″	17″	12	7/8″ - 9 UNC	18/32″	4 - 2 - 6
14″	18 ¾″	12	1″ - 8 UNC	7/8″	4 - 4 - 4
16″	21 ¼″	16	1″ - 8 UNC	3/4″	6 - 4 - 6
18″	22 ¾″	16	1 1/8″ - 7 UNC	3/4″	6 - 4 - 6
20″	25″	20	1 1/8″ - 7 UNC	1/2″	8 - 6 - 6
24″	29 ½″	20	1 1/4″ - 7 UNC	1/2″	8 - 6 - 6



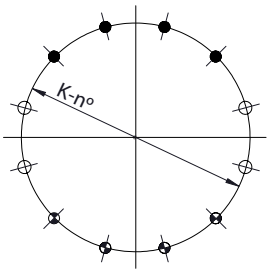
DN 2"- 3"



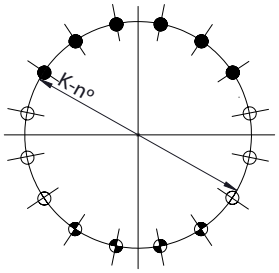
DN 4" - 8"



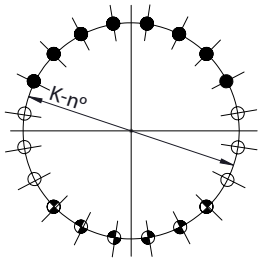
DN 10" - 12"



DN 14"



DN 16" - 18"



DN 20" - 24"