

Model TK

THROUGH CONDUIT KNIFE GATE VALVE

The TK model knife gate is a bi-directional wafer type valve designed for media with high consistency. The double seat design assures a non-clogging shut off on either normal or reverse flow. The valve is used in a wide range of demanding applications in industries such as:

- Pulp and Paper
- Wastewater treatment plants
- Chemical plants

- Power plants
- etc.

Sizes

DN 50 to DN 900
Larger diameters on request

Working pressure and temperatures

DN 50 to DN 250: 10 bar
DN 300 to DN 900: 6 bar¹
(¹) 8 bar with duplex gate

CF8M: -20°C / 80°C

Standard flange connection

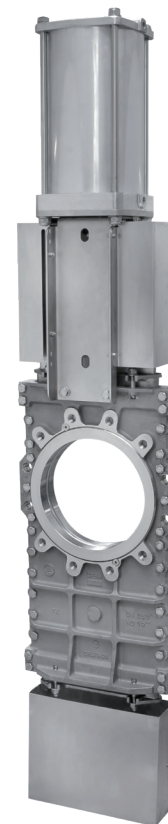
EN-1092 PN 10
ASME B16.5 (class 150)
Other flange connections available on request

Directives

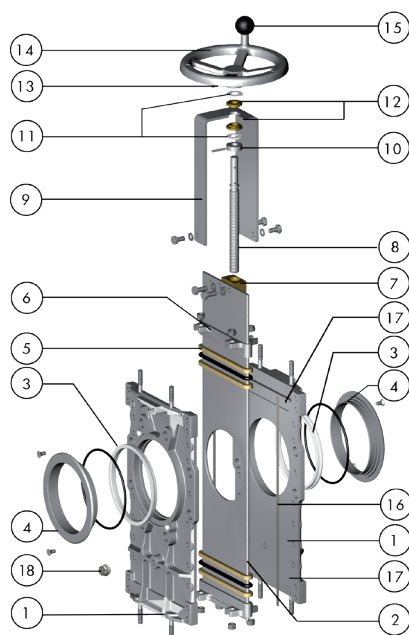
For EU Directives and other Certificates please see the document: Directives & Certificates Compliance - Knife Gate Valves –Catalogues and Datasheets

Testing

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



STANDARD PARTS LIST



Part	Materials
1 Body	CF8M
2 Gate	AISI 316
3 Seat	PTFE + O ring
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
16 Gasket	DN 80-200: Graphite / DN 250-900: NBR
17 Sliders	Glass filled PTFE
18 Cap	AISI 316

DESIGN FEATURES

Body

Wafer style cast two-part bolted body, both internally machined, with reinforcing ribs in larger diameters for extra body strength. With internal glass filled PTFE sliders that ensure smoother gate traveling. Full port design to allow a greater flow capacity and to guarantee a minimal pressure drop

Selfcleaning gate

Stainless steel as standard. One piece through-going gate with o-port design. When closing, the gate cuts and moves a disc of material downwards, which is again returned to the flow when opening. Gate is polished on both sides to avoid jamming and to ensure a greater seal between the gate with both packing and seat. The material of the gate can be changed on request for higher pressure requirements

Seat (Fig.1)

Unique design that mechanically locks the seal in the interior of the valve body with a cast, easy to replace, stainless steel seat ring. Standard PTFE + NBR O-ring

Packing

Long-life packing with several graphite impregnated PTFE and Aramid yarn combination with an elastomeric core, with an easy access packing gland ensuring a tight seal. Long-life braided packing is available in a wide range of materials

Stem (Fig. 2)

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.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

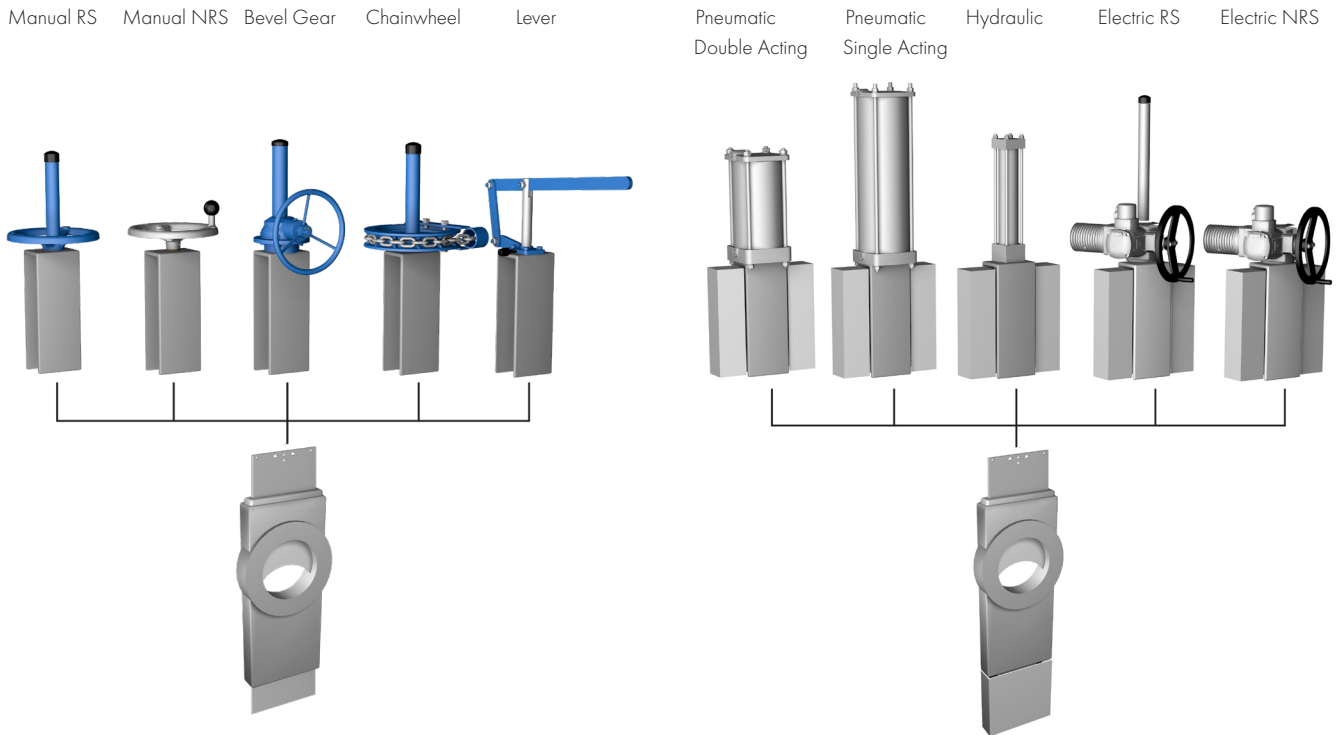
The Epoxy coating on all ORBINOX cast iron and carbon steel components is electrostatically applied, making the valves corrosion-resistant with a high quality finished surface. The ORBINOX standard colour is RAL-5015 blue

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

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, Polyurethane...), against corrosion (Halar, Rilsan, Galvanised...) and against adherence (Polishing, PTFE...)

Gate guards for actuators with proximity switches

Allows horizontal and parallel mounting of the proximity switches including their protection

Bonnet

Assures tight sealing to atmosphere if used with hazardous gas or fluids. Reduces packing maintenance

Diamond port

Excellent flow regulation

Locking device

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

Flush ports

Flush ports allow direct cleaning of solids trapped within the body cavities that can obstruct the flow or prevent the valve from closing. All valve bodies are delivered with plugged pre-drilled ports, ready for final purging connection. Purging can be made with air, steam, liquids, etc. depending on the process

Mechanical Stops

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

Actuator manual override

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

Stem extensions and floor stand

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 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
PTFE (T) + O-ring*		
*NBR (N)	120	Corrosion resistance ¹
*FKM-FPM (V)	200	Corrosion resistance
*VMQ (S)	250	Corrosion resistance
Polyurethan (PU)	90	Abrasion resistance
EPDM (E)	120	Acids and non mineral oils
NBR (N)	120	Resistance to petroleum products
FKM-FPM (V)	200	Chemical service / High temp.

(1) PTFE + NBR O-ring standard ORBINOX arrangement

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

SEAT CONFIGURATIONS/DESIGNS

Type	Features	
Type K seat (PTFE)	<ul style="list-style-type: none"> - Replaceable resilient PTFE + O-ring seat - Replaceable stainless steel ring 	
Type K seat (EPDM)	<ul style="list-style-type: none"> - Standard replaceable resilient EPDM seat - Replaceable stainless steel ring 	
Polyurethane	<ul style="list-style-type: none"> - Replaceable polyurethane seat ring 	

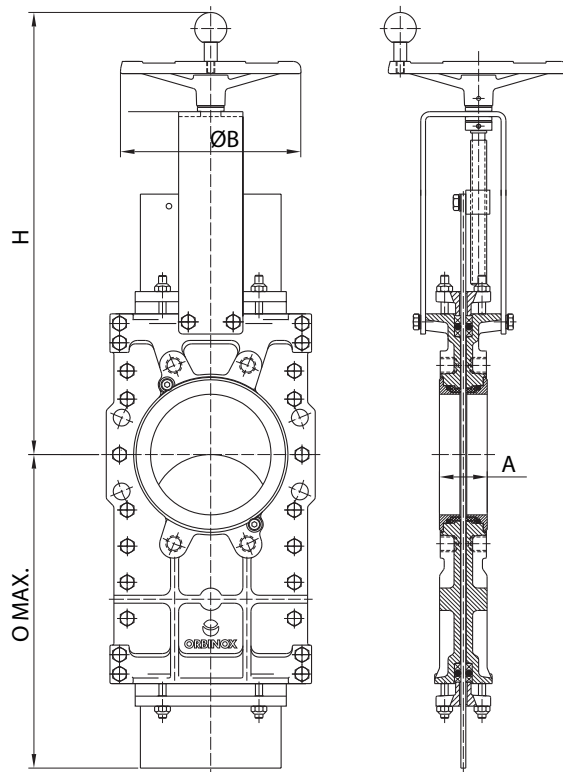
OTHER SEAT FEATURES

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 50 to DN 250 X = 9mm DN 300 to DN 600 X = 12mm Larger diameters on request 	

HANDWHEEL NON-RISING STEM

Standard manual actuator, recommended for installation where space is limited, available from DN 50 to DN 600 and recommended with gearbox from DN 350 and above.

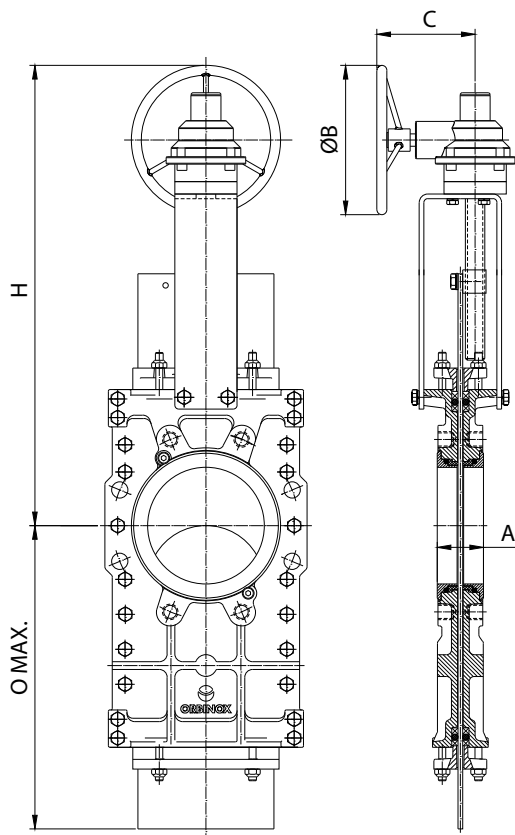
Aluminium handwheel for DN 50 to DN 300 valves and EN-GJS400 from DN 350 and above



DN	A	ØB	H	O max.	Weight (Kg)
50	41	225	317	232	12
65	41	225	339	255	14
80	51	225	425	312	17
100	51	225	466	367	22
125	56	225	500	432	31
150	60	225	551	497	37
200	60	310	656	637	75
250	69	310	756	777	100
300	78	310	856	907	170
350	78	410	994	1047	200
400	89	410	1068	1171	290
450	89	550	1190	1301	405
500	114	550	1315	1573	750
600	122	550	1460	1830	790

BEVEL GEAR

Recommended for valves larger than DN 350. Available both for rising stem and non-rising stem configurations and with different reduction ratios

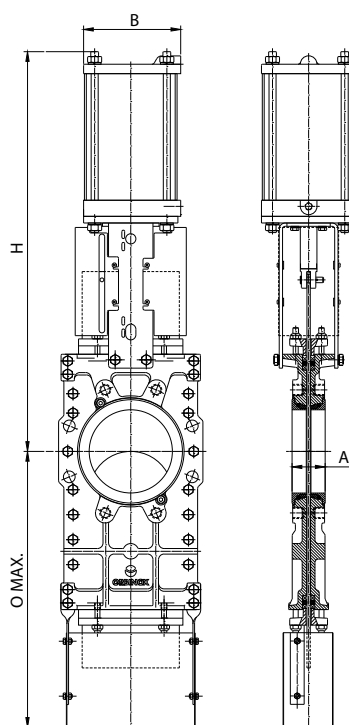


DN	A	ØB	H	C	O max.
200	60	300	773	200	637
250	69	300	868	200	777
300	78	300	962	200	907
350	78	450	1120	270	1047
400	89	450	1220	270	1171
450	89	450	1342	270	1301
500	114	450	1468	270	1573
600	122	450	1612	270	1830
700	128	650	2040	320	2005
800	128	650	2129	320	2340
900	128	1000	2400	540	2595

PNEUMATIC CYLINDER

With a double-acting pneumatic cylinder as standard, it is available in sizes from DN 50 to DN 900. 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



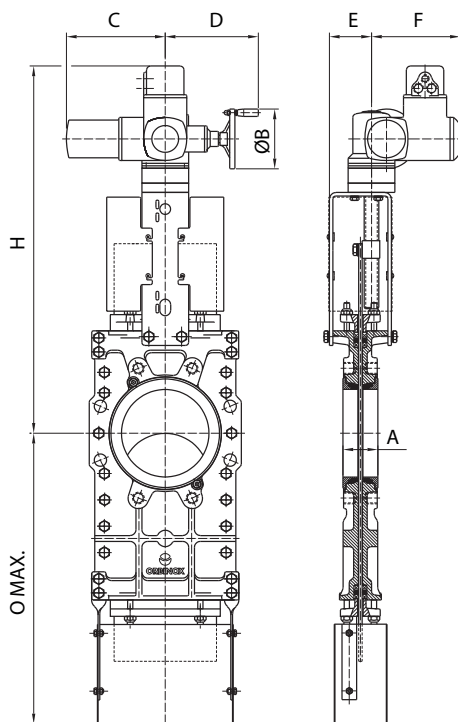
DN	A	O max.	B	H	Connect.	Weight (Kg)
50	41	232	115	417	1/4" G	14
65	41	255	115	454	1/4" G	16
80	51	312	115	497	1/4" G	19
100	51	367	115	558	1/4" G	25
125	56	432	140	632	1/4" G	36
150	60	497	175	722	1/4" G	43
200	60	637	175	872	1/4" G	86
250	69	777	220	1037	3/8" G	116
300	78	907	220	1172	3/8" G	188
350	78	1047	220	1389	3/8" G	233
400	89	1171	277	1526	3/8" G	324
450	89	1301	382	1708	3/8" G	455
500	114	1573	382	1848	1/2" G	800
600	122	1830	444	2170	3/4" G	960
700	128	2005	444	2485	3/4" G	2000
800	128	2340	515	2805	3/4" G	2600
900	128	2595	515	3270	3/4" G	3200

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 900, 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

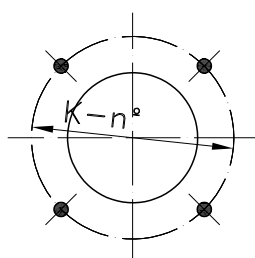


DN	A	ØB	H	O max.	C	D	E	F	Torque (Nm)
50	41	160	592	232	265	249	72	238	10
65	41	160	614	255	265	249	72	238	10
80	51	160	639	312	265	249	72	238	10
100	51	160	680	367	265	249	72	238	15
125	56	160	714	432	265	249	72	238	20
150	60	160	765	497	265	249	72	238	35
200	60	160	867	637	265	249	82	238	40
250	69	200	979	777	283	254	82	248	60
300	78	200	1059	907	283	254	82	248	80
350	78	200	1180	1047	283	254	128	248	95
400	89	315	1273	1171	389	336	130	286	130
450	89	315	1401	1301	389	336	130	286	160
500	114	315	1656	1573	389	336	130	286	190
600	122	315	1641	1830	389	336	130	286	220
700	128	500	1885	2005	389	340	190	286	320
800	128	500	2105	2340	389	340	190	286	400
900	128	500	2375	2595	510	355	190	330	550

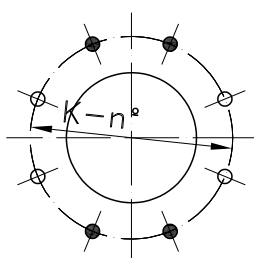
FLANGE AND BOLTING DETAILS EN-1092 PN10

DN	K	n°	M	T	 
50	125	4	M-16	11	4 - 0
65*	145	4	M-16	11	4 - 0
80	160	8	M-16	15	4 - 4
100	180	8	M-16	16	4 - 4
125	210	8	M-16	18	4 - 4
150	240	8	M-20	19	4 - 4
200	295	8	M-20	18	4 - 4
250	350	12	M-20	21	8 - 4
300	400	12	M-20	27	8 - 4
350	460	16	M-20	23	12 - 4
400	515	16	M-24	23	12 - 4
450	565	20	M-24	22	20 - 0
500	620	20	M-24	32	20 - 0
600	725	20	M-27	32	20 - 0
700	840	24	M-27	32	24 - 0
800	950	24	M-30	29	24 - 0
900	1050	28	M-30	32	24 - 0

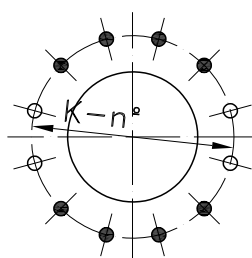
* Flange drilling of DN 65 PN10/16 according to EN-1092 allow 4 or 8 drills. ORBINOX designs of DN 65 PN10/16 have 4 drills



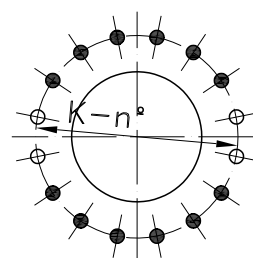
DN 50-65



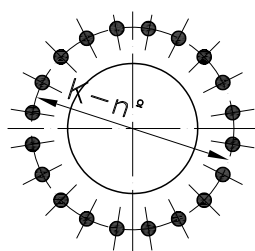
DN 80-200



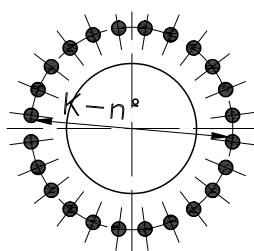
DN 250-300



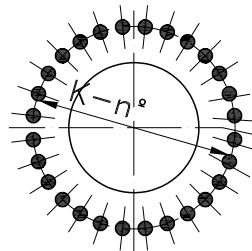
DN 350-400



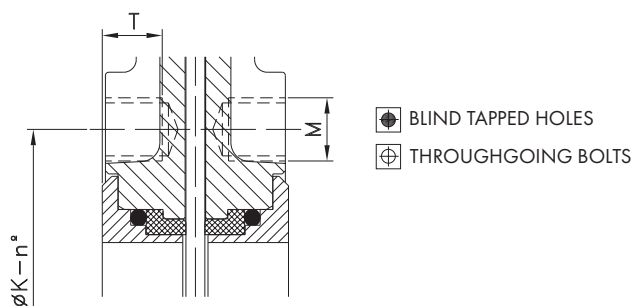
DN 450-600



DN 700-800



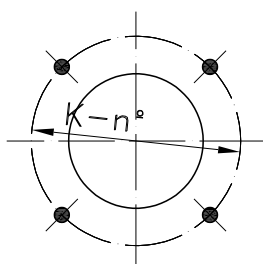
DN 900



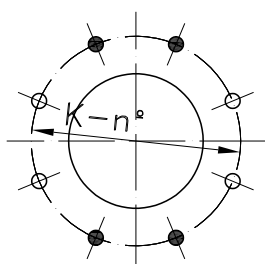
FLANGE AND BOLTING DETAILS ASME B16.5, CLASS 150

DN	K	n°	M	T	
2"	4 3/4"	4	5/8" - 11 UNC	7/16"	4 - 0
2 1/2"	5 1/2"	4	5/8" - 11 UNC	7/16"	4 - 0
3"	6"	4	5/8" - 11 UNC	9/16"	4 - 0
4"	7 1/2"	8	5/8" - 11 UNC	9/16"	4 - 4
5"	8 1/2"	8	3/4" - 10 UNC	9/16"	4 - 4
6"	9 1/2"	8	3/4" - 10 UNC	11/16"	4 - 4
8"	11 3/4"	8	3/4" - 10 UNC	11/16"	4 - 4
10"	14 1/4"	12	7/8" - 9 UNC	7/9"	8 - 4
12"	17"	12	7/8" - 9 UNC	1"	8 - 4
14"	18 3/4"	12	1" - 8 UNC	7/9"	8 - 4
16"	21 1/4"	16	1" - 8 UNC	7/9"	12 - 4
18"	22 3/4"	16	1 1/8" - 7 UNC	7/9"	16 - 0
20"	25"	20	1 1/8" - 7 UNC	1 1/4"	20 - 0
24"	29 1/2"	20	1 1/4" - 7 UNC	1 1/4"	20 - 0
28"	34"	28	1 1/4" - 7 UNC	1 1/4"	28 - 0
32"	38 1/2"	28	1 1/2" - 6 UNC	1 1/4"	28 - 0
36"	42 3/4"	32	1 1/2" - 6 UNC	1 1/4"	32 - 0

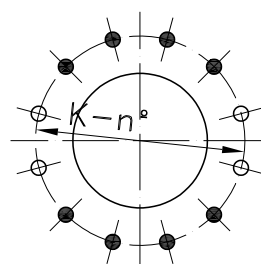
* From NPS 24, acc. to ASME B16.47 Series A (class 150)



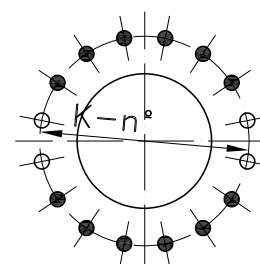
DN 2"-3"



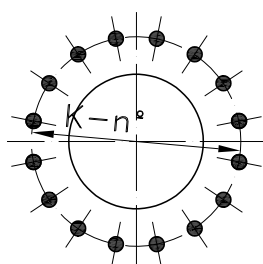
DN 4"-8"



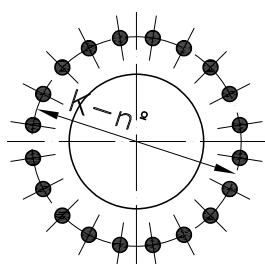
DN 10"-14"



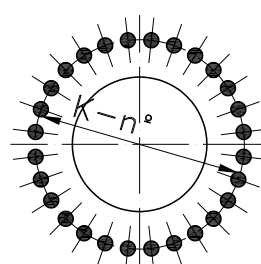
DN 16"



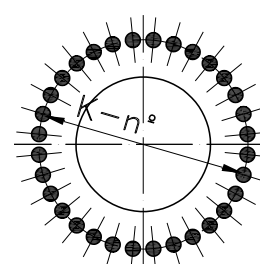
DN 18"



DN 20"-24"



DN 28"-32"



DN 36"

