

Model ET

HEAVY DUTY KNIFE GATE VALVE

The ET model knife gate is an uni-directional lug type valve designed according to MSS-SP-81 and TAPPI TIS 405-8 for industrial service applications. The design of the body and seat assures nonclogging shut off on suspended solids in industries such as:

- Pulp and Paper
- Power plants
- Mining
- Chemical plants
- Wastewater treatment plants
- Food and Beverage
- etc

Sizes (DN)

50mm/2in to 900mm/36in
Larger diameters on request

Working pressure and temperatures

50mm/2in to 600/24in: 10 bar / 150 psi
750mm/30in : 7 bar / 100 psi
900mm/36in: 7 bar / 100psi

CF8M: -20°C / 80°C

Standard flange drilling

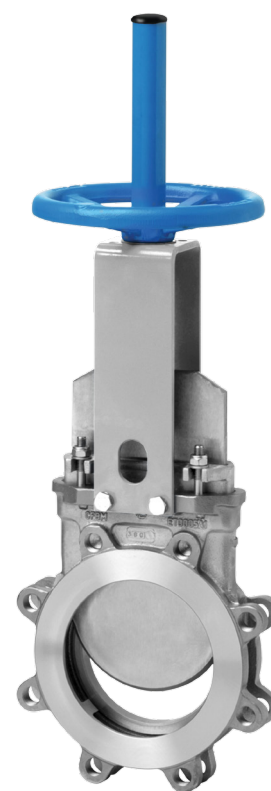
EN-1092 PN10 / PN 16
ASME B16.5 (class 150)
Other flange drillings available on request

Directives

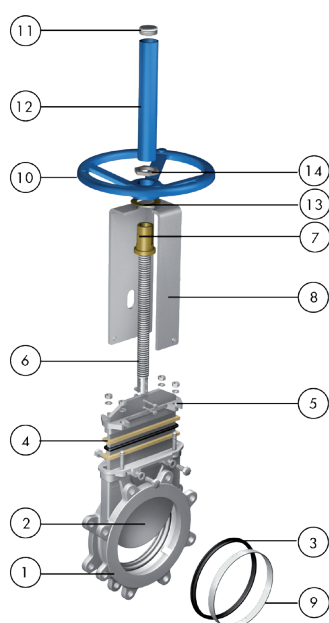
For EU Directives and other Certificates please see the document: Directives & Certificates Compliance - Knife Gate Valves
–Catalogues and Datasheets

Testing

All valves are tested prior to shipping in accordance with the standard MSS-SP 151



STANDARD PARTS LIST



Part	Description
1 Body	CF8M
2 Gate	AISI 316
3 Seat	Metal/Metal or EPDM
4 Packing	PTFE Impreg. Synth. Fibre + EPDM O-Ring
5 Gland follower	CF8M
6 Stem	Stainless Steel
7 Stem nut	Brass
8 Yoke	AISI 304 / Epoxy-coated Carbon Steel
9 Seal retainer ring	AISI 316
10 Handwheel	EN-GJS400
11 Cap	Plastic
12 Stem protector	Epoxy-coated Carbon Steel
13 Friction washer	Brass
14 Nut	Zinc Plated Carbon Steel

DESIGN FEATURES

Body

Lug type one piece integrally cast stainless steel body with reinforced ribs in larger diameters for extra body strength. Internal cast gate wedges and guides allows for tighter shutoff. Port design follows the MSS-SP-81 and Tappi TIS 405-8 standards. The internal design of the valve avoids any build up of solids that would prevent the valve from closing

Gate

Standard AISI 316 stainless steel gate. The gates are polished and lapped to attain a greater seal between the gate and both the packing and the seat. The bottom of the gate edge is also machined to a bevel, so that it cuts through the solids for a tighter seal in the closed position

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 PTFE impregnated 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 actuators only, a stem protector is provided for additional protection against dust while the valve in the open position

Yoke or actuator support

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

Epoxy coating

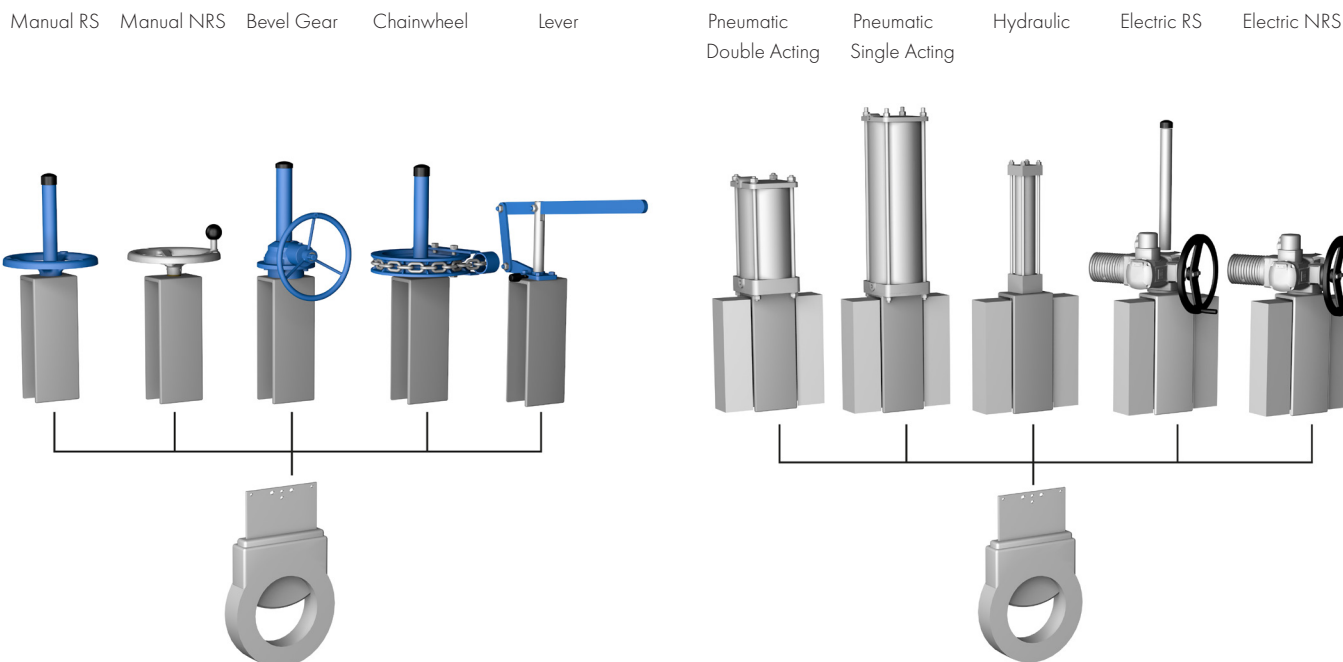
The Epoxy coating on all ORBINOX cast iron and carbon steel valve bodies and components is electrostatically applied making the valves to be corrosion resistant with a high quality finished surface. The ORBINOX standard colour is RAL-5015 blue

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

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

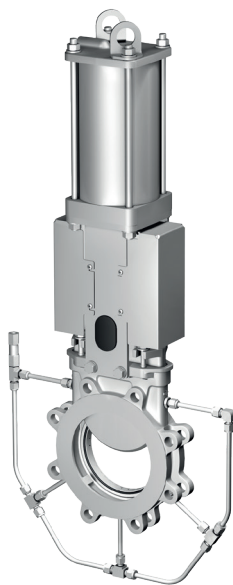


Fig.2



Fig.3



Fig.4

V-Port

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

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 (Fig. 2)

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. 3)

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. 4)

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
Metal/Metal	>250	High temp./Low tightness
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	Corrosion resistance

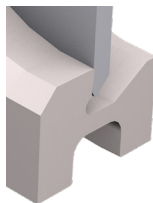
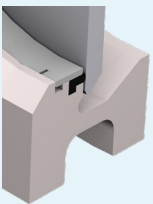
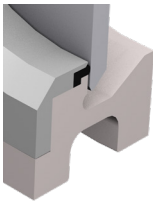
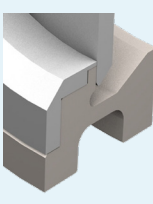
More details and other materials under request

PACKING TYPES

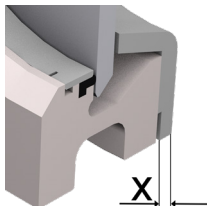
Material	Max.T (°C)	pH
PTFE impregn. synth. fibre (ST)	250	2-13
Braided PTFE (TH)	260	0-14
Graphited (GR)	600	0-14
Ceramic fibre (FC)	1200	- - -

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

SEAT CONFIGURATIONS/DESIGNS

Type	Features	
Metal / Metal	- High temperature applications - High density media applications - When full tightness is not required	
A Ring Resilient	- Standard resilient seat - See temperature chart for seat materials - Seat with replaceable ring	
B Ring Resilient	- 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	- High temperature applications - High density media applications - When full tightness is not required - Replaceable ring	

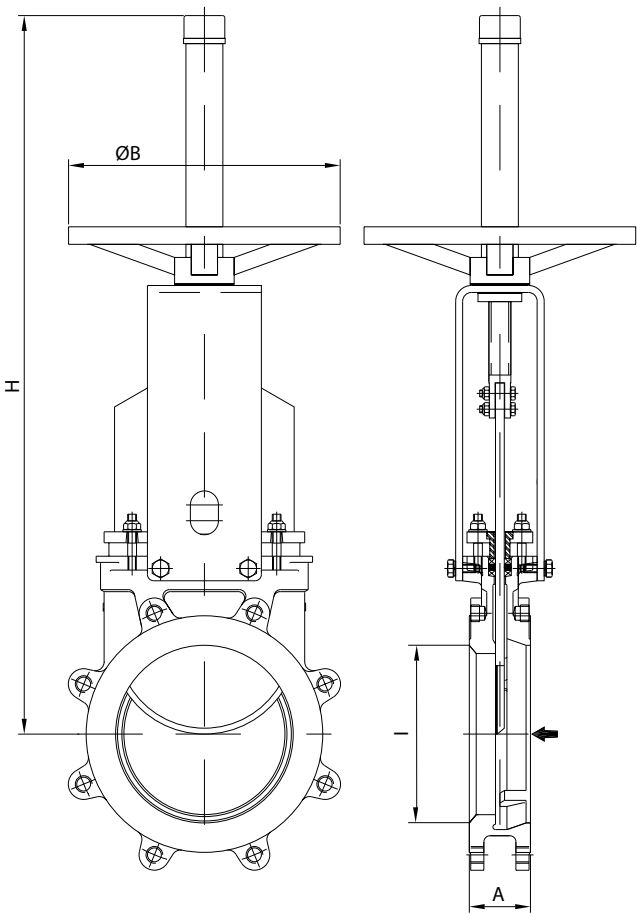
OTHER SEAT FEATURES

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	

Note: Tightness tests according to MSS-SP-151

HANDWHEEL

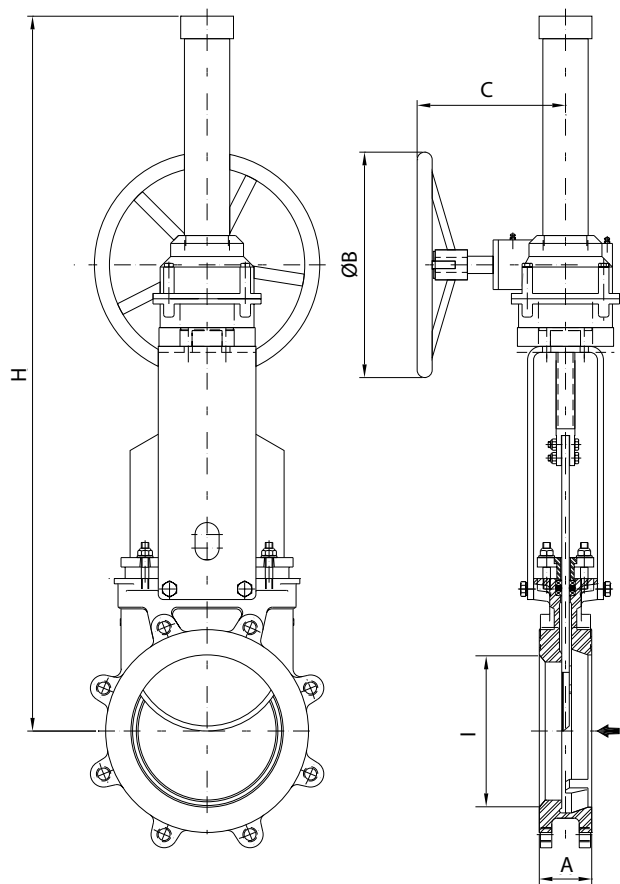
Standard manual actuator, available from DN 50 to DN 600, both for rising stem and non-rising stem configurations. Recommended with gear-box from DN 300 and above



DN (mm/in)	I	A	ØB	H	Weight (Kg)
50/2	50	48	225	420	9
80/3	80	51	225	470	12
100/4	97	51	225	519	14
125/5	117	57	225	613	16
150/6	140	57	225	642	19
200/8	184	70	310	820	36
250/10	230	70	310	986	46
300/12	275	76	410	1071	65
350/14	305	76	410	1245	91
400/16	351,6	89	410	1325	117
450/18	390	89	550	1510	152
500/20	435	114	550	1617	206
600/24	522	114	550	1883	285

BEVEL GEAR

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

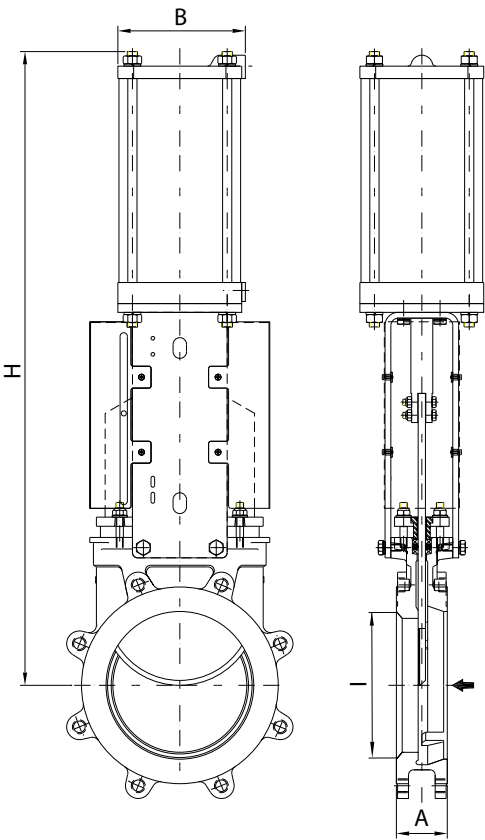


DN (mm/in)	I	A	ØB	C	H	Weight (Kg)
200/8	184	70	300	200	992	52
250/10	230	70	300	200	1060	64
300/12	275	76	300	200	1143	79
350/14	305	76	450	270	1489	105
400/16	351,6	89	450	270	1570	134
450/18	390	89	450	270	1615	164
500/20	435	114	450	280	1810	248
600/24	522	114	650	290	1879	327
750/30	670	117	650	413	2650	-
900/36	810	117	650	442	3135	-

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 (mm/in)	I	A	B	H	Connect.	Weight (Kg)
50/2	50	48	115	412	1/4 "G	9
80/3	80	51	115	492	1/4 "G	12
100/4	97	51	115	557	1/4 "G	14
125/5	117	57	140	644	1/4 "G	20
150/6	140	57	140	698	1/4 "G	24
200/8	184	70	175	870	1/4 "G	43
250/10	230	70	220	1006	3/8" G	58
300/12	275	76	220	1141	3/8" G	77
350/14	305	76	277	1320	3/8" G	120
400/16	351,6	89	277	1424	3/8" G	148
450/18	390	89	382	1647	1/2" G	214
500/20	435	114	382	1791	1/2" G	270
600/24	522	114	382	2028	1/2" G	355
750/30	670	117	444	2549	3/4" G	645
900/36	810	117	515	3077	3/4" G	780

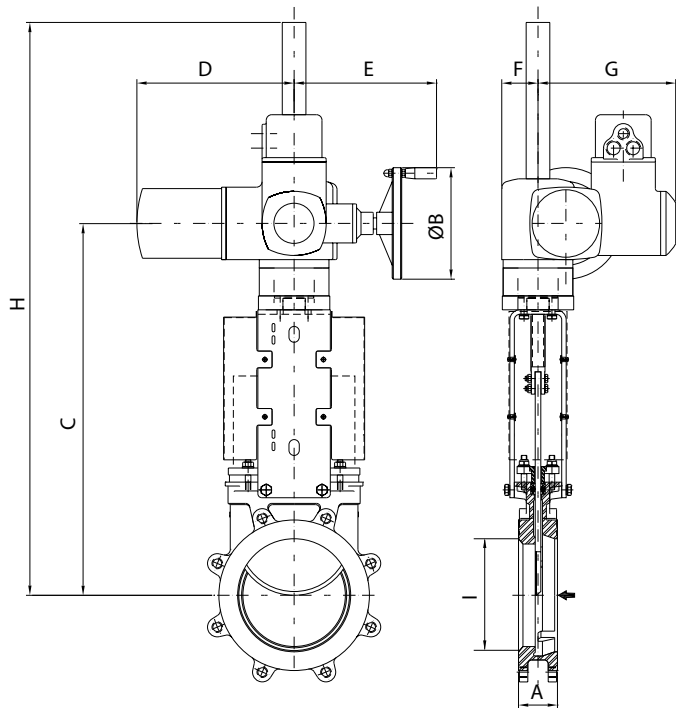
Note: pneumatic cylinder sizing for sizes DN 300mm/ 12in and above are based on EX pressure ratings

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



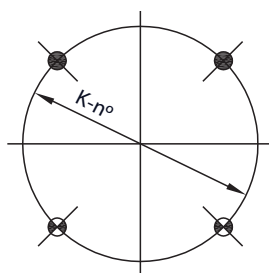
DN (mm/in)	I	A	C	ØB	H	D	E	F	G	Torque (Nm)	Weight (Kg)
50/2	50	48	377	160	454	265	249	62	238	10	67
80/3	80	51	424	160	501	265	249	62	238	10	69
100/4	97	51	469	160	546	265	249	62	238	10	71
125/5	117	57	516	160	593	265	249	62	238	15	74
150/6	140	57	545	160	1122	265	249	62	238	20	77
200/8	184	70	667	160	1255	265	249	62	238	30	93
250/10	230	70	733	160	1321	265	249	62	238	45	-
300/12	275	76	793	200	1381	283	254	65	248	40	90
350/14	305	76	875	200	1463	283	254	65	248	70	-
400/16	351,6	89	955	315	1543	389	336	91	286	90	-
450/18	390	89	1142	315	1870	389	336	91	286	110	-
500/20	435	114	1222	400	1950	389	339	91	286	95	-
600/24	522	114	1444	400	2172	389	339	91	286	140	358
750/30	670	117	1779	500	2832	430	365	117	303	140	-
900/36	810	117	2035	500	3080	430	365	117	303	220	-

Note: torque values for sizes DN 300mm/12in and above are calculated based on EX pressure ratings. For full differential pressure, check with ORBINOX representative

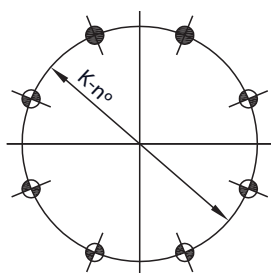
FLANGE AND BOLTING DETAILS ASME B16.5, CLASS 150 *

DN	K	n°	M	T	
2"	4 3/4"	4	5/8" - 11 UNC	7/16"	2 - 2
3"	6"	4	5/8" - 11 UNC	11/32"	2 - 2
4"	7 1/2"	8	5/8" - 11 UNC	11/32"	2 - 6
5"	8 1/2"	8	3/4" - 10 UNC	3/8"	2 - 6
6"	9 1/2"	8	3/4" - 10 UNC	3/8"	2 - 6
8"	11 3/4" 3/4"	8	3/4" - 10 UNC	15/32"	2 - 6
10"	14 1/4"	12	7/8" - 9 UNC	15/32"	4 - 8
12"	17"	12	7/8" - 9 UNC	15/32"	4 - 8
14"	18 3/4"	12	1" - 8 UNC	19/32"	4 - 8
16"	21 1/4"	16	1" - 8 UNC	19/32"	4 - 12
18"	22 3/4"	16	1 1/8" - 7 UNC	19/32"	6 - 10
20"	25"	20	1 1/8" - 7 UNC	7/8"	6 - 14
24"	29 1/2"	20	1 1/4" - 7 UNC	7/8"	6 - 14
30"	36"	28	1 1/4" - 7 UNC	1 1/8"	10 - 18
36"	42 3/4"	32	1 1/2" - 6 UNC	1 1/4"	10 - 18

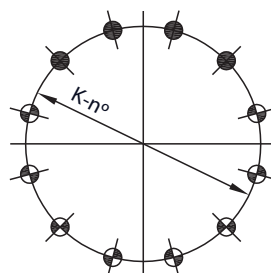
* From NPS 24, acc. to ASME B16.47 Series A (class 150)



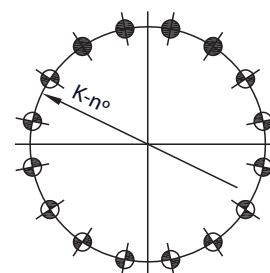
DN 2" - 3"



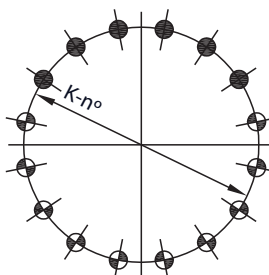
DN 4" - 8"



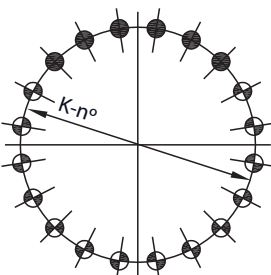
DN 10" - 14"



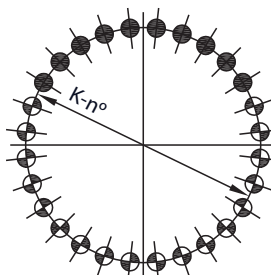
DN 16"



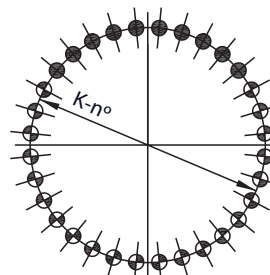
DN 18"



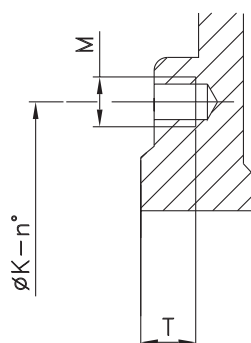
DN 20" - 24"



DN 30"



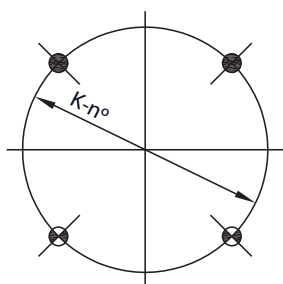
DN 36"



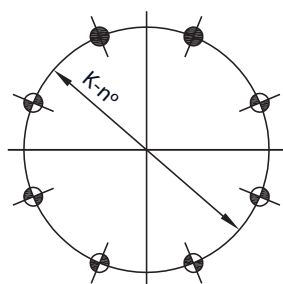
-  BLIND TAPPED HOLES
-  TAPPED THROUGH

FLANGE AND BOLTING DETAILS EN-1092 PN10

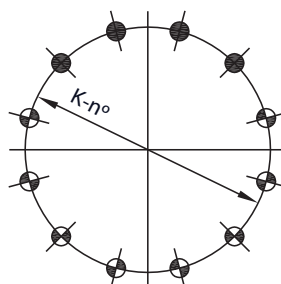
DN	K	n°	M	T	
50	125	4	M-16	11	2 - 2
80	160	8	M-16	9	2 - 6
100	180	8	M-16	9	2 - 6
125	210	8	M-16	10	2 - 6
150	240	8	M-20	10	2 - 6
200	295	8	M-20	12	2 - 6
250	350	12	M-20	12	4 - 8
300	400	12	M-20	12	4 - 8
350	460	16	M-20	15	06-10
400	515	16	M-24	15	04-12
450	565	20	M-24	15	6- 14
500	620	20	M-24	22	6- 14
600	725	20	M-27	22	6- 14
900	1050	28	M-30	32	10 - 18



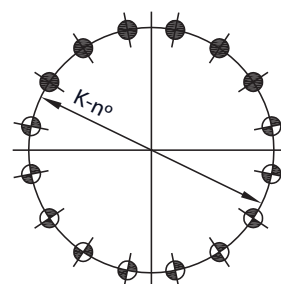
DN 50-65



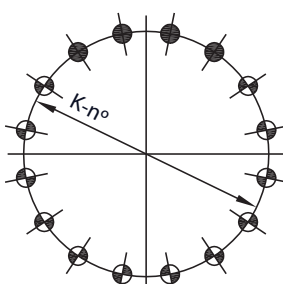
DN 80-200



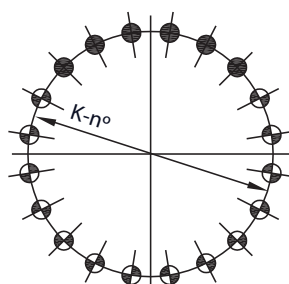
DN 250-300



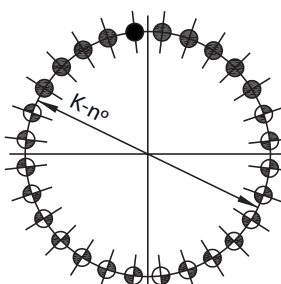
DN 350



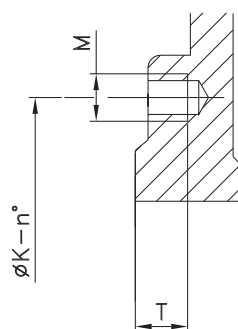
DN 400



DN 450-600



DN 900


 BLIND TAPPED HOLES

 TAPPED THROUGH