

**MODEL****HG**

## RUBBER SLEEVE KNIFE GATE VALVE

The HG model knife gate is a bi-directional full flanged valve equipped with two metal reinforced rubber sleeves designed for use in the handling of abrasive slurries, mainly in industries such as:

- Mining
- Chemical plants
- etc.
- Power plants
- Wastewater treatment

### Sizes:

DN 3"/80mm to DN 36"/900mm (larger DN on request)

### Working pressure:

DN 3"/80mm to DN 36"/900mm 20 bar (300 psi)  
Higher pressures and/or diameters on request

### Standard Flange connection:

ASME B 16.5 (class 300)

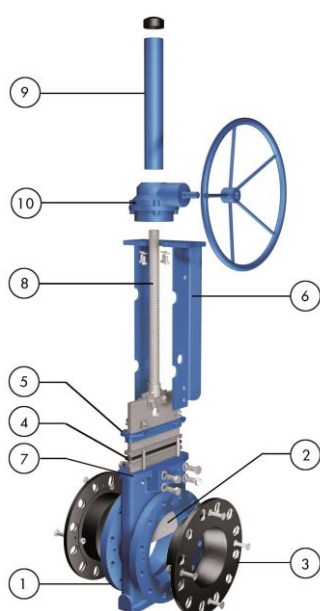
EN 1092 PN 25

Others available

### Directives:

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

All ORBINOX valves are tested prior to shipping



### STANDARD PARTS LIST

Part:	Materials:
1- Body	Ductile iron A536 (60-40-18) / Carbon Steel S275JR
2- Gate	AISI 304 (1.4301) + Chrome / Duplex 2205 + Chrome
3- Sleeves	Natural rubber / EPDM
4- Packing	PTFE Impreg. Synth. Fibre (with a EPDM O-Ring)
5- Gland Follower	A570 GR.40 / 1.0044 Epoxy coated
6- Yoke	A570 GR.40 / 1.0044 Epoxy coated
7- Grease Nipple	Zinc coated carbon-steel
8- Stem	Stainless Steel
9- Stem protector	A570 GR.40 / 1.0044 Epoxy coated
10- Bevel Gear	-

## DESIGN FEATURES

### BODY:

Full flange style cast monoblock, for installation between flanges, with reinforced ribs in larger diameters, providing the body with extra strength. Internal body design allows the gate to be fully guided. The grease nipples allow the gate to be lubricated, thus enhancing its capacity to slide between the sleeves. Additionally, the design allows draining through the lower part, where a cover or a bottom splash guard can be installed. Some leakage will occur from the bottom of the valve during operation, this allows solids to be flushed from body cavity and will ensure the full stroke of the valve.

### GATE:

Made of stainless steel, polished on both sides, and of rectangular shape, the gate is machined to an edge. As well as reducing friction and damage to the seats, this design allows to cut perfectly through the fluid. The gate material can be changed upon request, thus allowing greater working pressures.

### RUBBER SLEEVES:

The seat is made up of two highly resistant, long-lasting sleeves, made of rubber with a metal core. Its solid sleeve design allows for maximum flexibility during gate travel, minimising the effort necessary for operation. In the open position, the two sleeves are in permanent contact with each other, assuring full bore flow. There are no seat cavities which may cause material build-up, and the fluid does not come into contact with the metallic parts of the valve. This design allows for easy replacement of damaged sleeves. See available materials on page HG-6.

### PACKING:

Made of EPDM, it eliminates possible leaks to the exterior as well as minimising the maintenance needs of traditional packings. In combination with the grease nipples, it guarantees an optimal functioning of the gate.

### STEM:

Made of stainless steel, which provides a high resistance to corrosion and a long life. In rising stem valves the stem protector protects the stem against dirt build up.

### ACTUATORS:

All actuators supplied by ORBINOX are interchangeable, and are supplied with a standard mounting kit for installation purposes on site

### YOKE or ACTUATOR SUPPORT:

Made of steel (stainless steel available on request) and EPOXY coated. Reinforced design is standard and its robust design provides it with great rigidity, withstanding the most adverse operating conditions.

### EPOXY COATING:

The epoxy coating on all ORBINOX cast iron and carbon steel components is electrostatically applied making them corrosion resistant with a high quality surface finish.

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.



## OTHER OPTIONS

### Bottom splash guard (Fig. 1 and 2):

There are two types of splash guards that can be installed on the lower part of the valve body. They permit either periodic or continuous removal of solids that may accumulate during operation of the valve. They shall always be connected to a drain line.



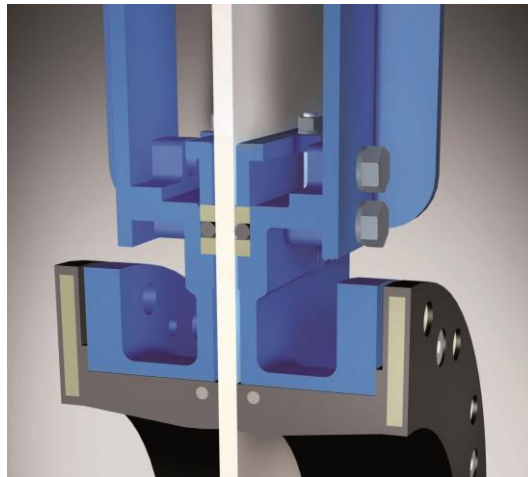
(Fig. 1) Flat plate



(Fig. 2) Tubular design

### Conventional leak proof packing (Fig. 3 y 4):

The HG can use conventional leak proof packing and packing gland follower which guarantee full tightness at maximum design pressure.

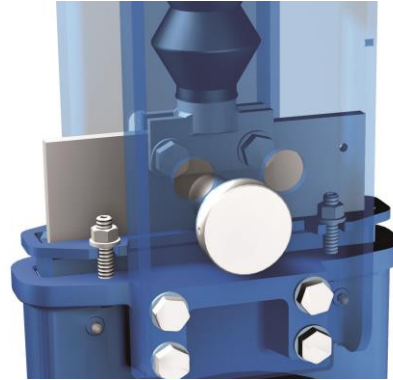


(Fig. 3) Conventional leak proof packing

## OTHER OPTIONS

### Open-closed lockout system (Fig. 4):

The standard valve is ready to install a lockout pin for emergency or maintenance situations.



(Fig. 4)

### Other materials of construction:

Other materials may be used, such as carbon steel, different stainless steels (AISI 316, AISI 317, 2205, ...), 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)

### Flush ports (Fig. 5):

Allows flushing out of solids trapped within the body cavity and the sleeves. This option can be used in conjunction with splash guards



(Fig. 5)

### Gate coatings:

Gates can be provided with different coatings to improve wear and corrosion resistance, non-adherence properties, etc.

We recommend to contact our technical department

**MODEL**

**HG**

## ACTUATOR TYPES

### MANUAL:

Handwheel (rising stem)

Bevel Gear

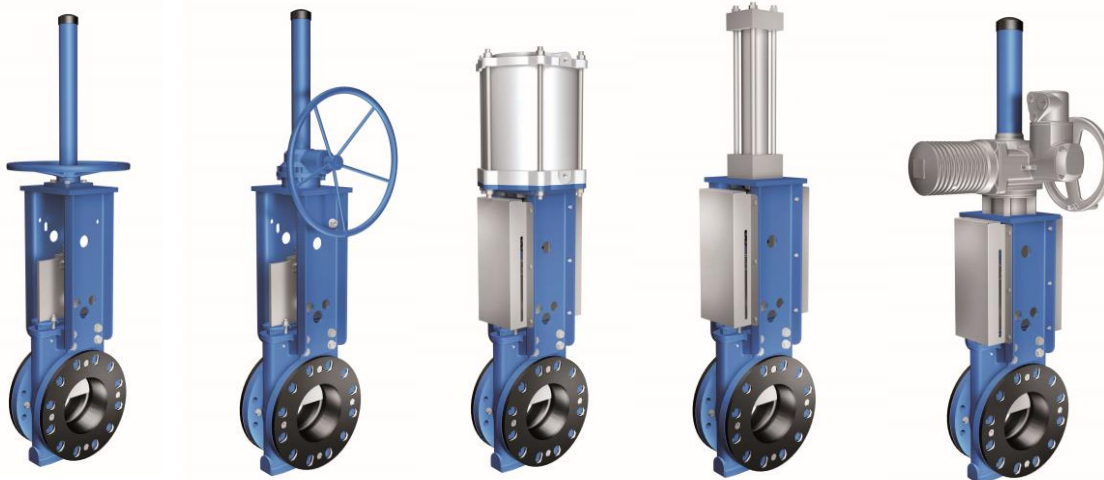
Others (on request)

### AUTOMATIC:

Electric (rising stem)

Pneumatic (single & double-acting)

Hydraulic



All actuators supplied by ORBINOX are interchangeable

## FAIL SAFE SYSTEMS

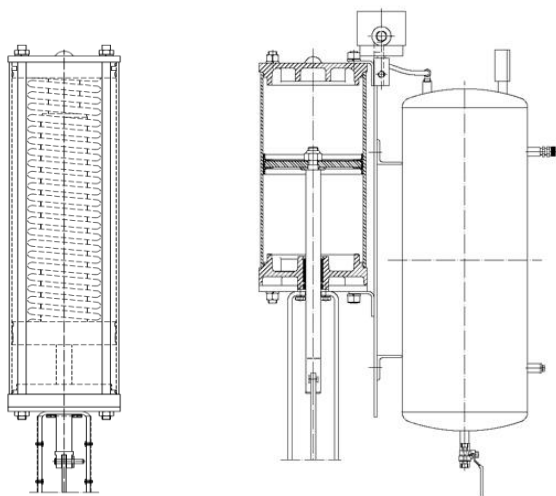
Used on pneumatic actuated valves

Different pneumatic solutions available

Fail open/ Fail close

DN<200 Single acting spring return cylinder

DN =>200 Air tank



## ACCESSORIES

Open-closed lockout

Mechanical stops

Manual override actuators

Solenoid valves

Positioners

Limit switches

Proximity switches

Floor stand

Stem extensions

*For further information, please see EX catalogue*

We recommend to contact our technical department

## TEMPERATURE CHART

### SEAT / SLEEVES

Material	Min/Max T.(°C)	Applications
Natural rubber	-30/75	General
EPDM	-30/120	Acids/Non-mineral oils
Neoprene	-30/90	Oils/Solvents
Chlorobutyl	-30/125	High temperatures
NBR	-30/120	Hydrocarbons/Oils/Greases

### PACKINGS

Material	Max.T. (°C)
EPDM	120
PTFE impregn. synth. fiber (ST)	250

All are reinforced with a metal core. For other temperatures and applications, contact our technical department

## SEAT

### RUBBER SLEEVES

The closure of the HG valve is achieved by its two characteristic high resistance elastomer sleeves, which improve the tight seal both in the adjustment with the flanges and in the closure. These sleeves have a metal core which provides them with a great resistance to demanding working conditions and pressures.



OPEN



INTERMEDIATE

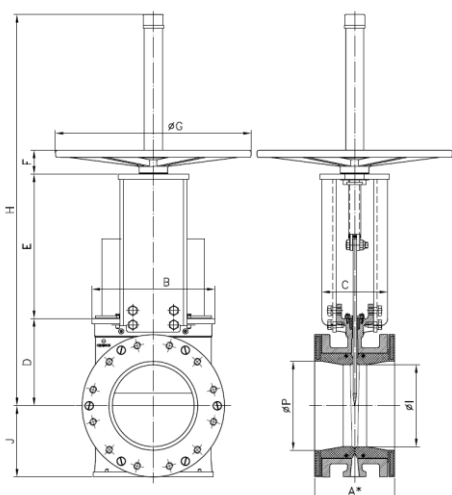


CLOSED

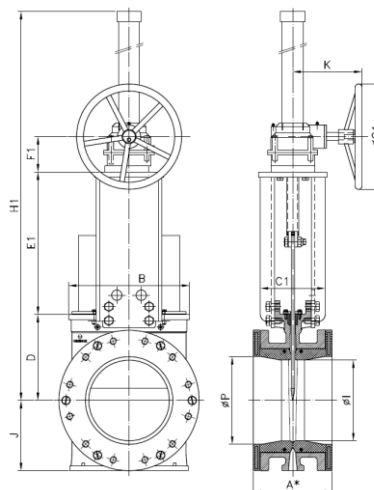


**HAND OPERATED (rising stem)**

HANDWHEEL



GEAR



- Consists of:
  - Epoxy coated cast iron handwheel
  - Yoke
  - Stem and stem nut
  - Stem protector
- Available from DN 80 to DN 100
- Options (on request):
  - Open-closed lockout
  - Extensions and floor stands
  - PVC bellows
  - Splash guards
- Note: bevel gear is recommended for valve sizes DN>100 (full force on handwheel > 250 N)

- Recommended for valves larger than DN 100
- Consists of:
  - Stem and stem protector
  - Yoke
  - Bevel Gear Actuator with Handwheel
- Available from DN 150
- Options (on request):
  - Chainwheel
  - Open-closed lockout
  - Extensions and floor stands
  - PVC bellows
  - Splash guards

DN	GEAR	A1*	A2*	B	C	C1	D	E	E1	F	F1	ØG	ØG1	H	H1	J	K	ØP	ØI
80	-	175	183	175	100	-	124	175	-	67	-	225	-	545	-	90	-	72	62
100	-	175	183	170	100	-	140	200	-	67	-	310	-	620	-	100	-	100	85
150	FL 0.4	178	186	230	-	165	175	-	263	-	84	-	300	-	900	130	263	148	137
200	FL 0.4	184	192	280	-	165	205	-	322	-	84	-	300	-	990	160	263	197	175
250	FL 0.4	225,5	233	335	-	185	245	-	397	-	84	-	300	-	1510	200	263	250	230
300	FL 0.4	257	264	390	-	266	280	-	441	-	84	-	450	-	1590	232	263	292	273
350	FL 0.4	257	264	440	-	270	325	-	508	-	84	-	450	-	1700	258	263	337	318
400	FL 0.4	279,5	287	505	-	270	350	-	567	-	84	-	450	-	1780	292	263	375	356
450	FL 1.6	311	319	560	-	270	420	-	631	-	102	-	650	-	2175	318	263	425	378
500	FL 1.6	359	367	620	-	270	462	-	700	-	102	-	650	-	2305	345	263	470	420
600	FL 1.6	371,5	380	730	-	270	510	-	805	-	102	-	650	-	2520	400	263	585	539

A1\*: installed face to face

A2\*: minimum required dimension for installation

**PNEUMATIC ACTUATOR**

• The standard pneumatic actuator (double acting on-off cylinder) consists of:

- $\varnothing \leq 300$ : Aluminum barrels
- $\varnothing \geq 350$ : Composite barrels
- Aluminum end caps
- Stainless Steel (AISI 304) piston rod
- Nitrile coated steel piston
- PVC bellows

• Available from DN 80 to DN 400

• Supply Pressure: 6 bar

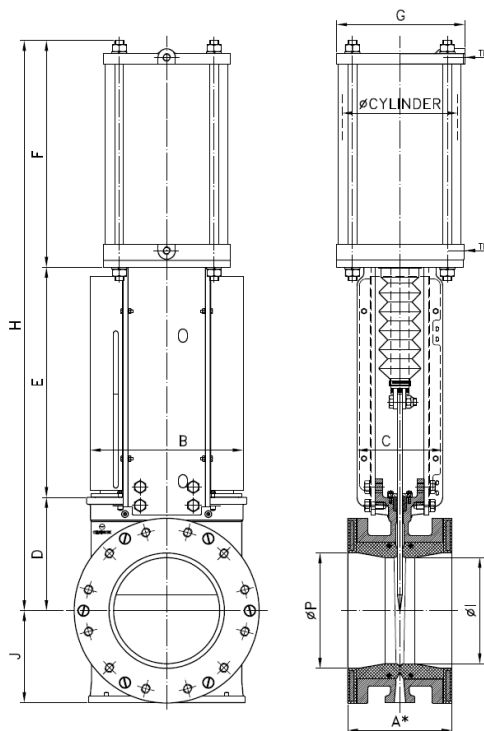
• Options (on request):

- Hard anodized barrel and covers
- Stainless steel barrel and covers on request
- Open-closed lockout
- Manual override actuator
- Fail-safe systems
- Splash guards

• Instrumentation (on request):

- Positioners
- Flow regulators
- Solenoid valves
- Air preparation unit
- Limit/proximity switches

• Note: in order to guarantee the correct functioning of the pneumatic cylinder for the catalogue pressures, a supply pressure of 6 bar is required. For lower pressures, we recommend to contact our technical department



DN	ØCYL	TM (BSPA1*	A2*	B	C	D	E	F	G	H	J	ØP	ØI	
80	C125/114	1/4"	175	183	175	100	134	267	279	175	680	107	72	62
100	C160/140	1/4"	175	183	170	165	160	318	323	220	801	129	100	85
150	C200/200	3/8"	178	186	230	185	225	434	400	277	1059	162	148	137
200	C250/252	3/8"	184	192	320	266	275	501	478	382	1254	192	197	175
250	C300/313	1/2"	225,5	233	335	270	310	560	559	444	1429	225	250	230
300	C350/359	3/4"	257	264	390	270	350	702	645	444	1697	263	292	273
350	C400/418	3/4"	257	264	440	270	390	808	730	515	1928	295	337	318
400	C400/465	3/4"	279,5	287	505	270	425	855	750	515	2000	328	375	356

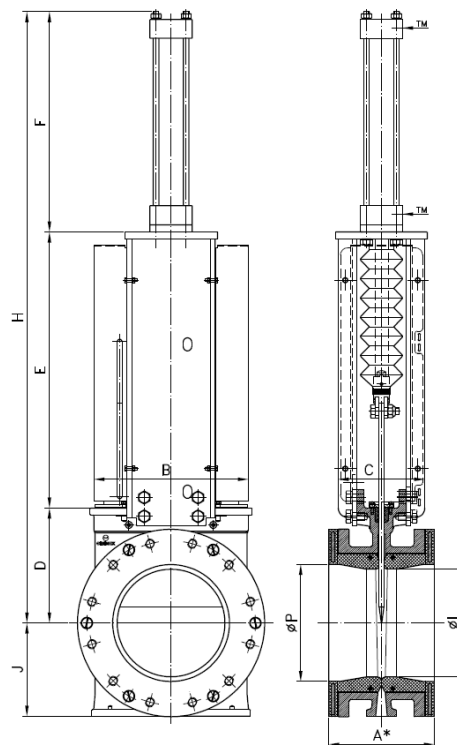
A1\*: installed face to face

A2\*: minimum required dimension for installation



**HYDRAULIC ACTUATOR**

- The hydraulic actuator consists of a double acting cylinder in accordance with ISO 6020/2
- Available from DN 80 to DN 900 with PVC bellows
- Hydraulic pressure: 100 bar
- Maximum hydraulic pressure: 160 bar
- Options:
  - Pressure indicators: mechanical and inductive
  - Open-closed lockout
  - Position transducers
  - Hydraulic groups
  - Electrical cabinets
  - Splash guards
  - Limit/proximity switches



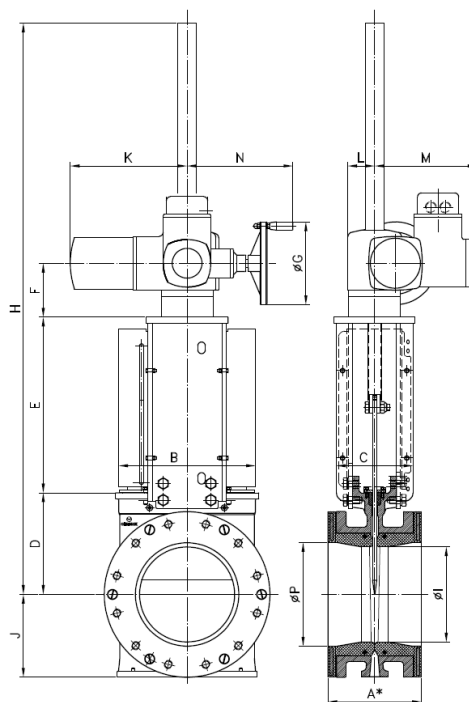
DN	ØCYL.	TM (BSP)	A1*	A2*	B	C	D	E	F	H	J	ØP	ØI
80	C32/114	1/4"	175	183	175	100	124	283	230	637	90	72	62
100	C40/140	3/8"	175	183	170	100	140	305	248	693	100	100	85
150	C63/200	1/2"	178	186	230	165	175	379	338	883	130	148	137
200	C80/252	3/4"	184	192	280	185	205	427	405	1037	160	197	175
250	C100/313	3/4"	225,5	233	335	266	245	580	484	1309	200	250	230
300	C125/359	1"	257	264	390	270	280	639	557	1480	232	292	273
350	C125/418	1"	257	264	440	270	325	703	599	1627	258	337	318
400	C125/465	1"	279,5	287	505	270	350	779	649	1778	292	375	356
450	C160/520	1"	311	319	560	270	420	836	710	1966	318	425	378
500	C160/600	1"	359	367	620	270	462	952	790	2188	345	470	420
600	C200/712	1 1/4"	371,5	380	730	270	510	1175	940	2594	400	585	539
750	C250/825	1"	395,5	405	930	320	605	1273	1109	2987	515	737	680
800	C250/907	1"	470	480	1040	480	690	1443	1168	3266	575	788	719
900	C320/1003	1"	470	480	1143	485	760	1526	1335	3566	620	889	810

A1\*: installed face to face

A2\*: minimum required dimension for installation

**ELECTRIC ACTUATOR (rising stem)**

- Automatic actuator which consists of:
  - Electric motor
  - Motor support yoke flange (standardised flanges as per ISO 5210/DIN 3338)
- The standard electric motor is equipped with:
  - Manual emergency handwheel
  - Limit switches (open/closed)
  - Torque switches
- Available from DN 80 to DN 900
- Wide range of types and brands available to meet customer requirements
- Options: (on request)
  - Open-closed lockout
  - Splash guards



DN	A1*	A2*	B	C	D	E	F	ØG	H	K	J	L	M	N	ØP	ØI
80	175	183	175	100	124	175	442	160	1000	265	90	62	238	249	72	62
100	175	183	170	100	140	198	481	160	1035	265	100	62	238	249	100	85
150	178	186	230	100	175	265	583	160	1135	265	130	62	238	249	148	137
200	184	192	280	165	205	322	682	200	1245	282	150	65	238	254	197	175
250	225,5	233	335	185	245	415	790	200	1378	282	200	65	248	254	250	230
300	257	264	390	266	280	472	882	200	1470	282	232	65	248	254	292	273
350	257	264	440	270	325	555	1055	315	1657	385	258	91	286	336	337	318
400	279,5	287	505	270	350	605	1130	315	1732	385	292	91	286	336	375	356
450	311	319	560	270	420	677	1272	315	1974	385	318	91	286	336	425	378
500	359	367	620	270	462	742	1379	400	2481	385	345	91	286	339	470	420
600	371,5	380	730	270	510	843	1528	400	2630	385	400	91	286	339	585	539
750	395,5	405	930	320	605	1115	1930	500	3053	510	515	117	303	365	737	680
800	470	480	1040	480	690	1220	2085	500	3208	510	575	117	303	365	788	719
900	470	480	1143	485	760	1370	2285	500	3408	510	620	117	303	365	889	810

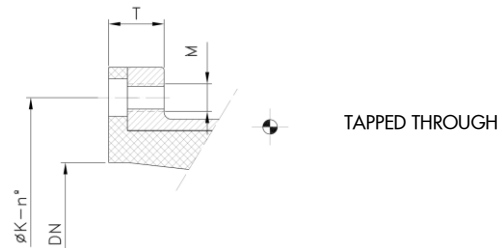
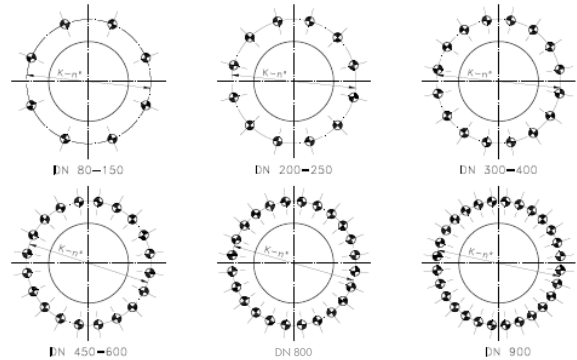
A1\*: installed face to face

A2\*: minimum required dimension for installation

**FLANGE AND BOLTING DETAILS**

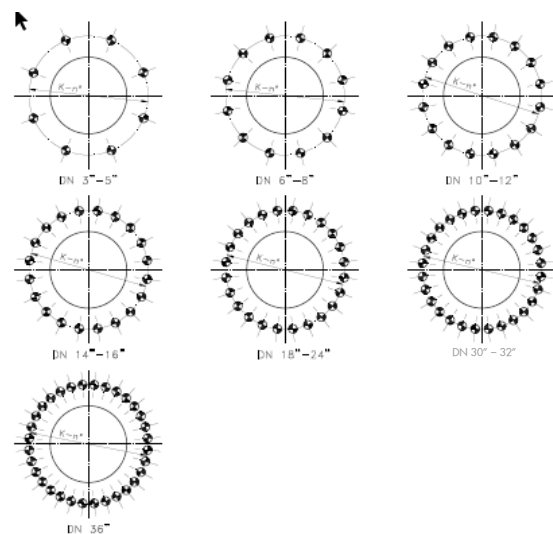
**EN 1092-2 PN25**

DN	K	n°	M	T	⌀
80	160	8	M-16	39	8
100	190	8	M-20	39	8
150	250	8	M-24	42	8
200	310	12	M-24	45	12
250	370	12	M-27	47	12
300	430	16	M-27	52	16
350	490	16	M-30	57	16
400	550	16	M-33	61	16
450	600	20	M-33	63	20
500	660	20	M-33	67	20
600	770	20	M-36	72	20
800	990	24	M-45	80	24
900	1090	28	M-45	84	28



**ASME B16.5, class 300(\*)**

DN	K	n°	M	T	⌀
3"	6 5/8"	8	3/4" - 10 UNC	1 1/2"	8
4"	7 7/8"	8	3/4" - 10 UNC	1 1/2"	8
6"	10 5/8"	12	3/4" - 10 UNC	1 1/2"	12
8"	13"	12	7/8" - 9 UNC	1 3/4"	12
10"	15 1/4"	16	1" - 8 UNC	1 3/4"	16
12"	17 3/4"	16	1 1/8" - 7 UNC	2"	16
14"	20 1/4"	20	1 1/8" - 7 UNC	2 1/4"	20
16"	22 1/2"	20	1 1/4" - 7 UNC	2 1/4"	20
18"	24 3/4"	24	1 1/4" - 7 UNC	2 1/2"	24
20"	27"	24	1 1/4" - 7 UNC	2 1/2"	24
24"	32"	24	1 1/2" - 6 UNC	2 3/4"	24
30"	39 1/4"	28	1 3/4" - 5 UNC	4"	28
32"	41 1/2"	28	1 7/8" - 8 UN	3"	28
36"	46"	32	2" - 4.5 UNC	3 1/4"	32



(\*) From DN 30", acc. to ASME B16.47 "series A"(class 300)