

MODEL**WG**

RUBBER SLEEVE KNIFE GATE VALVE

The WG 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 16"/400mm 10 bar (150 psi)
 DN 18"/450mm to 24"/600mm 6 bar (90 psi) or 10 bar (150 psi)⁽¹⁾
 DN 30"/750mm 5 bar (75 psi) or 10 bar (150 psi)⁽¹⁾
 DN 36"/900mm 5 bar (75 psi) or 10 bar (150 psi)⁽¹⁾

Higher pressures on request

⁽¹⁾ Duplex gate for 10 bar (150 psi)

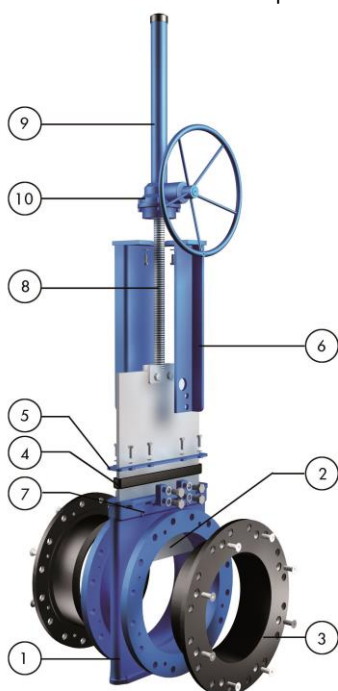
Standard Flange connection:

DIN EN 1092 PN 10 and ASME B16.5 (class 150)

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) / 0.7040 / GJS 400
2- Gate	AISI 304 (1.4301) / AISI 316 (1.4401)
3- Sleeves	Natural rubber / EPDM
4- Packing	EPDM
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 natural 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 WG-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.



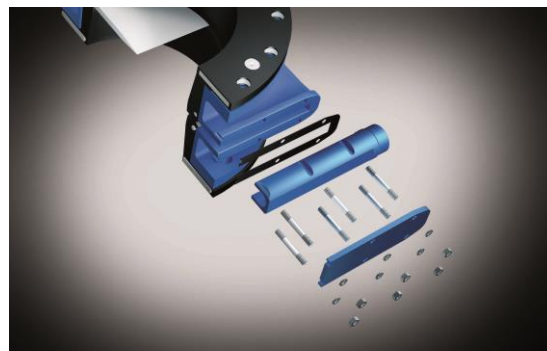
OTHER OPTIONS

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.



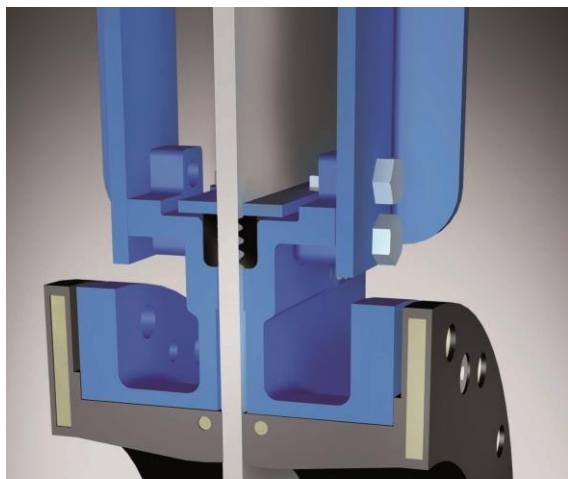
(Fig. 1) Flat plate



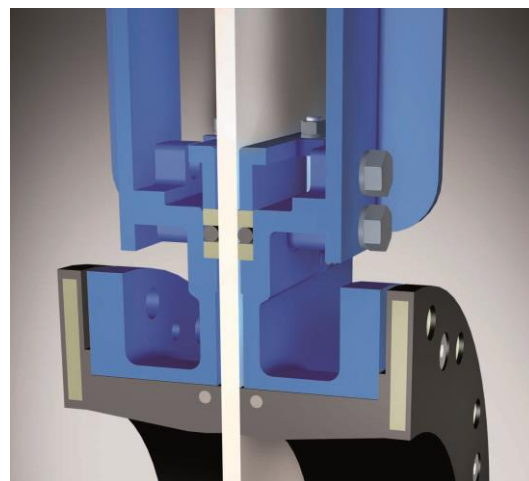
(Fig. 2) Tubular design

Conventional leak proof packing (Fig. 3 and 4):

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



(Fig. 3) Standard packing



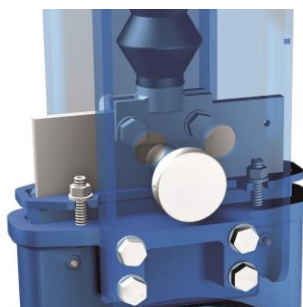
(Fig. 4) Optional: conventional leak proof packing

We recommend to contact our technical department

OTHER OPTIONS

Open-closed lockout system (Fig. 5):

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



(Fig. 5)

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. 6):

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



(Fig. 6)

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

WG

ACTUATOR TYPES

MANUAL:

- Handwheel (rising stem)
- Bevel Gear
- Others (on request)

AUTOMATIC:

- Electric (rising stem)
- Pneumatic (single & double-acting)
- Hydraulic



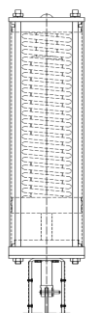
All actuators supplied by ORBINOX are interchangeable

FAIL SAFE SYSTEMS

Used on pneumatic actuated valves

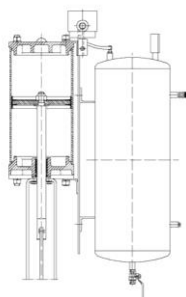
SINGLE ACTING (SPRING RETURN)

- Available from DN 50 to DN 200
- Supply pressure:
min. 5 bar - max. 10 bar
- Options:
 - Pneumatic or electric fail open
 - Pneumatic or electric fail close
 - Other options on request



DOUBLE ACTING WITH AIR TANK

- Available for all valve sizes
- Supply pressure:
min. 3.5 bar - max. 10 bar
- Options:
 - Pneumatic or electric fail open
 - Pneumatic or electric fail close
 - Other options on request



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

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

PACKINGS

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

SEAT

RUBBER SLEEVES

The closure of the WG 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



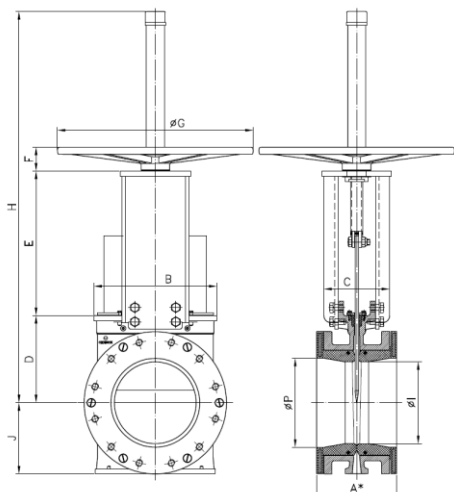
INTERMEDIATE



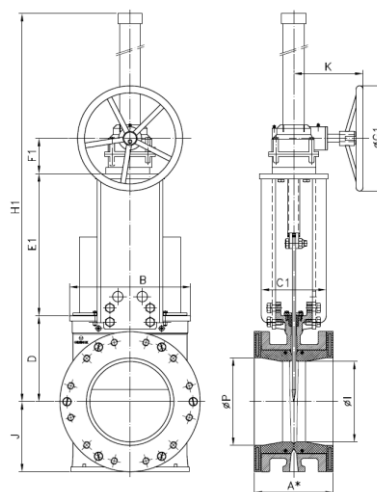
CLOSED

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 200 (larger sizes on request)
- Options (on request):
 - Open-closed lockout
 - Extensions and floor stands
 - PVC bellows
 - Splash guards
- Note: bevel gear is recommended for valve sizes DN>150 (full force on handwheel > 250 N)

- Recommended for valves larger than DN 150
- Consists of:
 - Stem and stem protector
 - Yoke
 - Bevel Gear Actuator with Handwheel
- Available from DN 200 to DN 900
- 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	179	100	-	124	177	-	47	-	225	-	495	-	96	-	72	62
100	-	175	183	171	107	-	140	193	-	67	-	310	-	645	-	115	-	100	85
150	-	178	183	238	107	-	175	259	-	67	-	310	-	745	-	141	-	148	137
200	FL0.4	184	192	295	165	165	205	326	315	70	109	410	300	945	1040	173	200	197	175
250	FL0.4	225,5	233	346	-	185	245	-	389	-	84	-	300	-	1060	204	200	250	230
300	FL0.4	257	264	395	-	250	280	-	446	-	84	-	300	-	1460	244	200	292	273
350	FL0.4	257	264	450	-	250	325	-	501	-	84	-	450	-	1530	268	220	337	318
400	FL0.4	279,5	287	511	-	270	350	-	558	-	84	-	450	-	1640	300	220	375	356
450	FL0.4	311	319	564	-	290	420	-	625	-	84	-	450	-	1750	320	220	425	378
500	FL1.6	359	367	623	-	290	462	-	686	-	102	-	650	-	1930	359	288	470	420
600	FL1.6	371,5	380	730	-	290	510	-	780	-	102	-	650	-	2425	422	288	585	539
750	FL1.6	395,5	405	911	-	320	600	-	985	-	102	-	650	-	2730	532	288	737	680
900	FL1.6	470	480	1084	-	320	700	-	1165	-	102	-	650	-	3010	633	288	889	810

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 600

• Supply Pressure: 6 bar

• Reinforced design of support plates is standard starting from DN 200

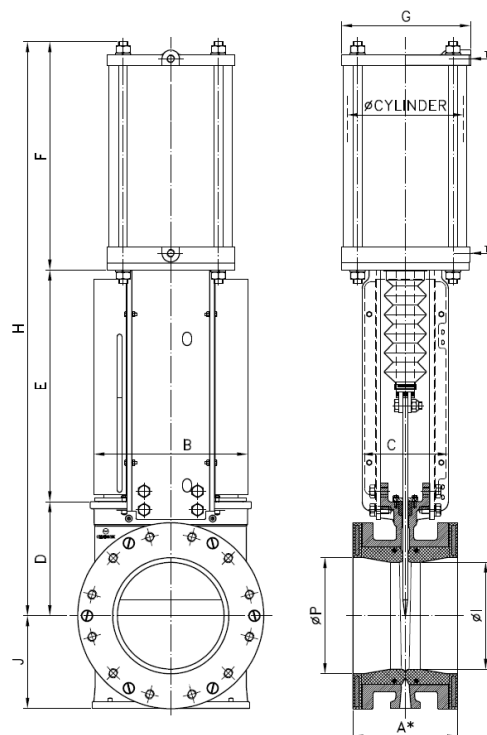
• Options (on request):

- 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



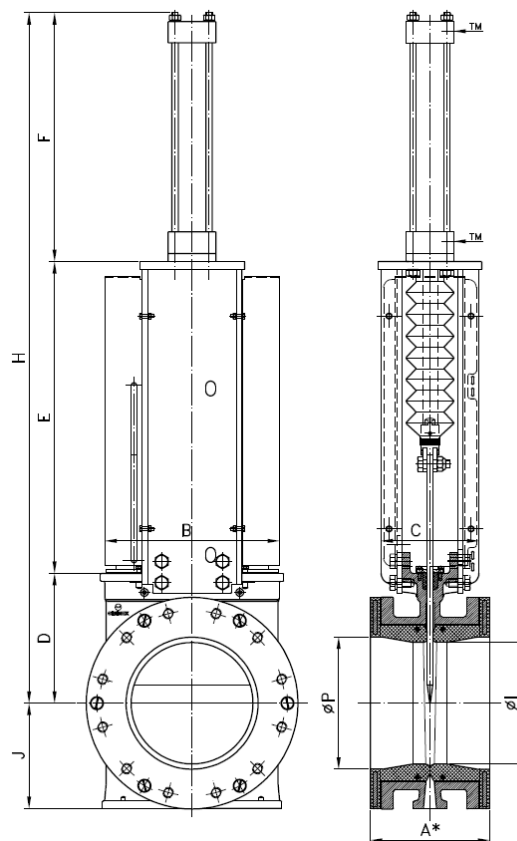
DN	ØCYL	TM (BSP)	A1*	A2*	B	C	D	E	F	G	H	J	ØP	ØI
80	C125/110	1/4"	175	183	179	100	124	257	240	140	621	96	72	62
100	C125/130	1/4"	175	183	171	107	140	270	258	140	668	115	100	85
150	C160/185	1/4"	178	183	238	107	175	395	323	175	893	141	148	137
200	C200/240	3/8"	184	192	291	165	205	464	398	220	1067	173	197	175
250	C250/290	3/8"	225,5	233	346	185	245	505	470	277	1220	204	250	230
300	C300/345	1/2"	257	264	398	250	280	650	538	335	1474	244	292	273
350	C350/395	3/4"	257	264	450	290	325	712	650	444	1687	268	337	318
400	C350/450	3/4"	279,5	287	511	290	350	769	705	444	1824	300	375	356
450	C400/500	3/4"	311	319	564	290	420	838	767	515	2025	320	425	378
500	C400/560	3/4"	359	367	623	290	462	897	839	515	2198	359	470	420
600	C400/655	3/4"	371,5	380	730	290	510	990	921	515	2420	422	585	539

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



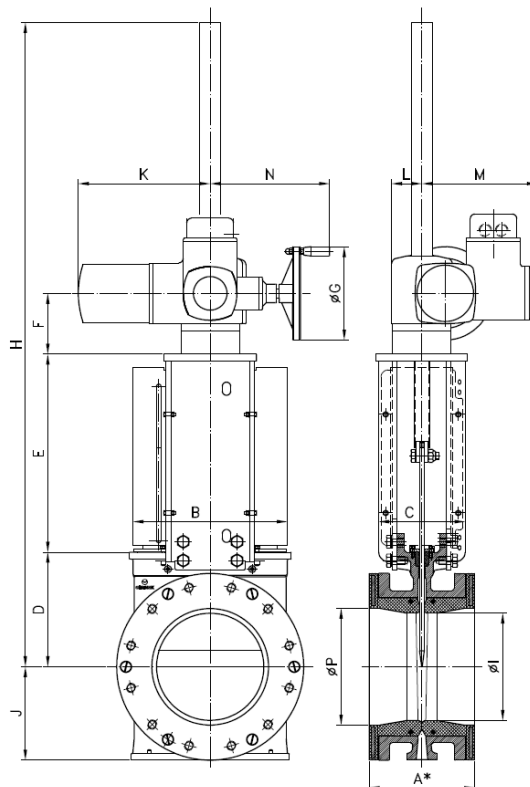
DN	ØCYL.	TM (BSP)	A1*	A2*	B	C	D	E	F	H	J	ØP	ØI
80	C32/110	1/4"	175	183	179	100	124	257	253	634	96	72	62
100	C32/130	1/4"	175	183	171	107	140	270	273	683	115	100	85
150	C40/185	3/8"	178	183	238	107	175	395	355	925	141	148	137
200	C50/240	1/2"	184	192	291	165	205	464	413	1082	173	197	175
250	C63/290	1/2"	225,5	233	346	185	245	505	468	1218	204	250	230
300	C80/345	3/4"	257	264	398	250	280	656	544	1480	244	292	273
350	C80/395	3/4"	257	264	450	290	325	712	594	1631	268	337	318
400	C80/450	3/4"	279,5	287	511	290	350	769	649	1768	300	375	356
450	C100/500	3/4"	311	319	564	290	420	838	710	1968	320	425	378
500	C100/560	3/4"	359	367	623	290	462	897	771	2130	359	470	420
600	C125/653	1"	371,5	380	730	290	510	989	853	2352	422	585	539
750	C100/815	3/4"	395,5	405	911	320	600	1247	1117	2964	532	737	680
900	C125/975	1"	470	480	1084	320	700	1447	1422	3569	633	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	J	K	L	M	N	ØP	ØI
80	175	183	179	100	124	185	143	160	662	96	265	62	238	249	72	62
100	175	183	171	107	140	195	143	160	688	115	265	62	238	249	100	85
150	178	183	238	107	175	260	143	160	1158	141	265	62	238	249	148	137
200	184	192	291	165	205	330	155	200	1272	173	283	65	248	254	197	175
250	225,5	233	346	185	245	405	155	200	1387	204	283	65	248	254	250	230
300	257	264	398	250	280	462	155	200	1454	244	283	65	248	254	292	273
350	257	264	450	290	325	520	158	315	1602	268	389	90	286	336	337	318
400	279,5	287	511	290	350	580	158	315	1690	300	389	90	286	336	375	356
450	311	319	564	290	420	645	158	409	1822	320	389	90	286	336	425	378
500	359	367	623	290	462	705	158	400	1925	359	389	90	286	339	470	420
600	371,5	380	730	290	510	804	158	500	2120	422	430	115	303	365	585	539
750	395,5	405	911	320	600	967	190	500	2880	532	430	115	303	365	737	680
900	470	480	1084	320	700	1170	190	500	3180	633	430	115	303	365	889	810

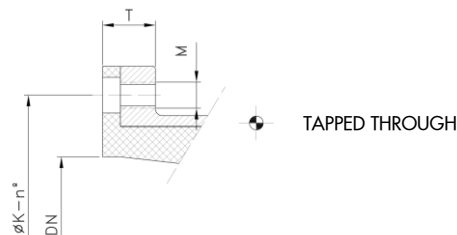
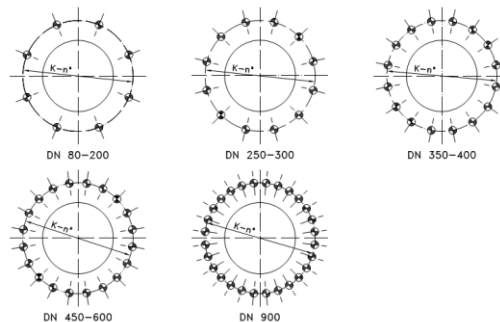
A1*: installed face to face

A2*: minimum required dimension for installation

FLANGE AND BOLTING DETAILS

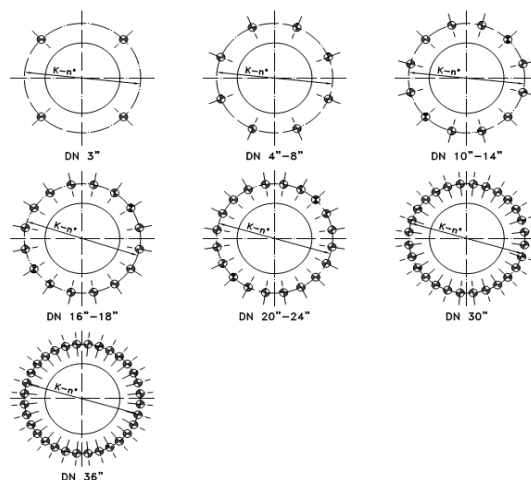
EN 1092 PN10

DN	K	n°	M	T	⌀
80	160	8	M-16	39	8
100	180	8	M-16	39	8
150	240	8	M-20	41	8
200	295	8	M-20	41	8
250	350	12	M-20	46	12
300	400	12	M-20	52	12
350	460	16	M-20	57	16
400	515	16	M-24	61	16
450	565	20	M-24	61	20
500	620	20	M-24	67	20
600	725	20	M-27	72	20
900	1050	28	M-30	122	28



ASME B16.5, class 150(*)

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



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