MODEL WG

ORBINOX
VALVE SOLUTIONS IN MORE THAN 70 COUNTRIES

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 kg/cm² (150 psi)
DN 18"/450mm to 24"/600mm 6 kg/cm² (90 psi) or 10 kg/cm² (150 psi)
DN 28"/700mm to 36"/900mm 5 kg/cm² (75 psi) or 10 kg/cm² (150 psi)
Higher pressures and/or diameters on request

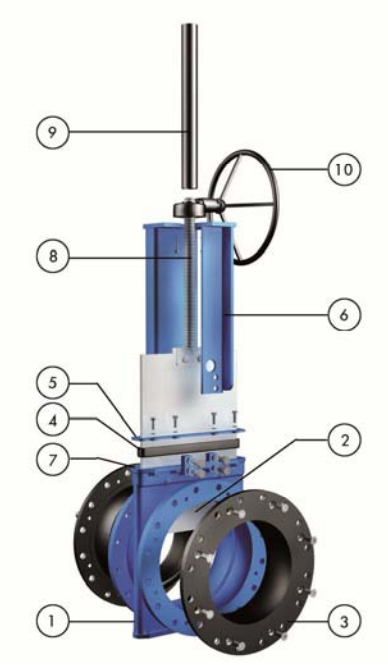
Standard Flange connection:

DIN PN 10 and ANSI B16.5 (class 150)

Directives:

2006/42/CE (MACHINES)
97/23/CE (PED) Fluid: Group 1(b), 2 (Cat. I, mod. A)
94/9/CE (ATEX)

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	AISI 430 /1.4016
9- Stem protector	A570 GR.40 / 1.0044 Epoxy coated
10- Bevel Gear*	-

*On request

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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.

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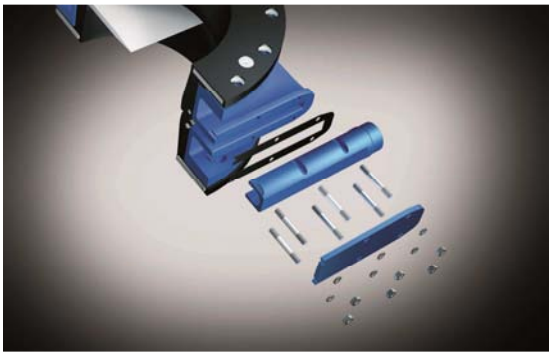
OTHER OPTIONS

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.

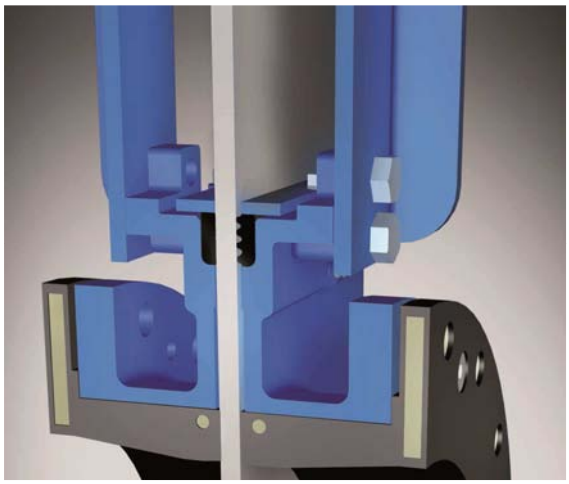
(Fig. 1) Flat plate



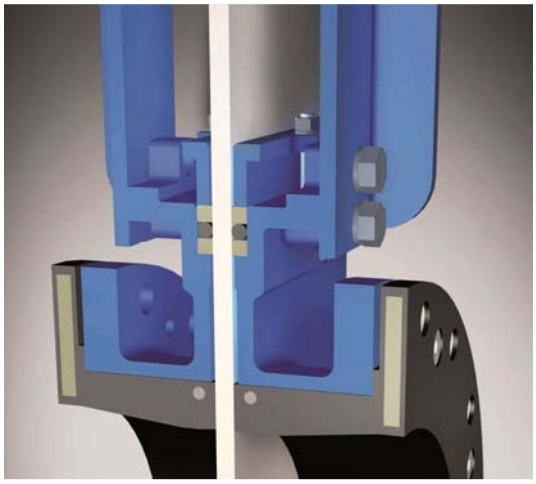
(Fig. 2) Tubular design

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:

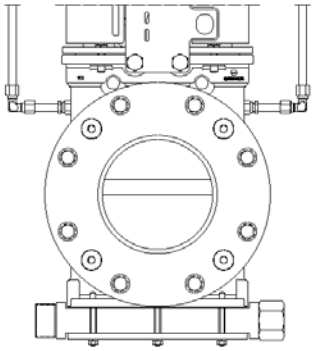
Other materials may be used, such as carbon steel, different stainless steels (AISI 316, AISI 317, 2205, ...), special alloys (254SMO, Hastelloys, …), etc.

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

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ACTUATOR TYPES

MANUAL:
Handwheel (rising stem)
Bevel Gear
Others (on request)

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

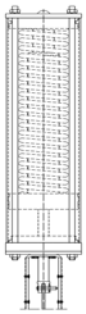
All actuators supplied by ORBINOX are interchangeable

FAIL SAFE SYSTEMS

Used on pneumatic actuated valves

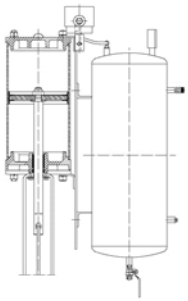
SINGLE ACTING (SPRING RETURN)

- Available from DN 50 to DN 300
- 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

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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
Nitrile	-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)	240

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

ATEX

Please contact an ORBINOX representative for info and availability. Some considerations:

- Hand operated WG valves have been subjected to an ignition risk assessment according to DIN EN 13463: 1-5 and they are out the scope of application of ATEX Directive. Therefore hand operated valves are suitable for ALL ATEX zones.
- Electrically, pneumatically and hydraulically operated valves must be subjected to a conformity assessment of their own and also of the whole unit valve-actuator to get EC Type Approval to Directive 94/9.

MODEL WG

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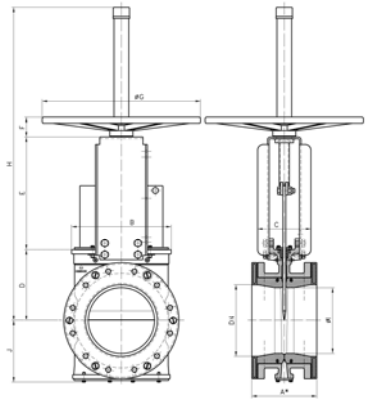
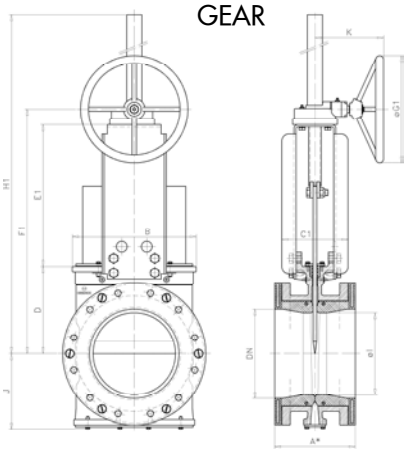
HAND OPERATED (rising stem)

HANDWHEEL



- 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)

GEAR



- 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 600
- 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	ØI
80	-	175	183	175	100	-	124	175	-	67	-	225	-	545	-	90	-	70
100	-	175	183	170	100	-	140	200	-	67	-	310	-	620	-	100	-	85
125	-	178	186	195	100	-	150	240	-	67	-	310	-	700	-	123	-	110
150	-	178	186	230	100	-	175	265	-	67	-	310	-	755	-	130	-	135
200	RKO.15	184	192	280	165	165	205	325	322	66	572	410	300	935	990	160	200	180
250	RKO.35	225,5	233	335	-	185	245	-	397	-	688	-	300	-	1510	200	263	230
300	RKO.35	257	264	390	-	266	280	-	441	-	767	-	450	-	1590	232	263	280
350	RKO.35	257	264	440	-	270	325	-	508	-	879	-	450	-	1700	258	263	330
400	RKO.35	279,5	287	505	-	270	350	-	567	-	963	-	450	-	1780	292	263	380
450	FL1.6	311	319	560	-	270	420	-	631	-	1155	-	450	-	2175	318	263	400
500	FL1.6	359	367	620	-	270	462	-	700	-	1265	-	650	-	2305	345	263	450
600	FL1.6	371,5	380	730	-	270	510	-	805	-	1420	-	650	-	2520	400	263	550

A1*: installed face to face
A2*: minimum required dimension for installation

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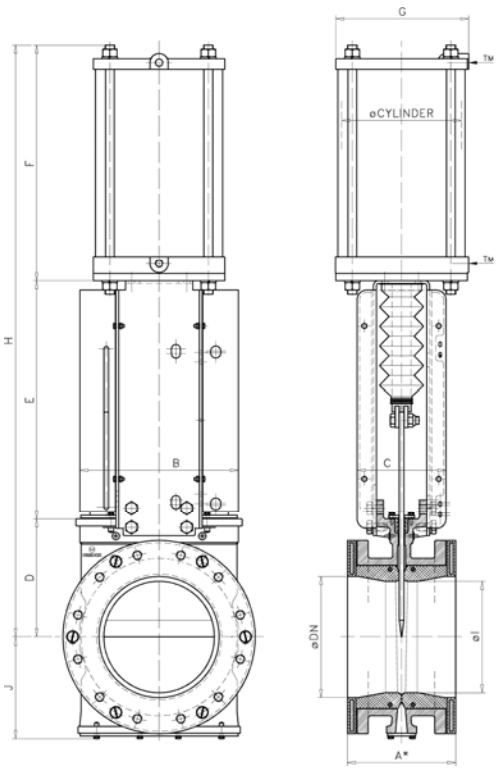
PNEUMATIC ACTUATOR

- The standard pneumatic actuator (double acting on-off cylinder) consists of:
  - DN≤250: Aluminum barrels
  - DN≥300: 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 kg/cm²
- 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	ØI
80	C125/121	¼"	175	183	175	100	124	175	260	140	559	90	70
100	C125/140	¼"	175	183	170	100	140	198	280	140	618	100	85
125	C160/168	¼"	178	186	195	100	150	240	320	175	710	123	110
150	C160/194	¼"	178	186	230	100	175	265	345	175	785	130	135
200	C200/252	3/8"	184	192	280	165	205	322	420	220	947	160	180
250	C250/317	3/8"	225,5	233	335	185	245	415	505	277	1165	200	230
300	C300/376	¾"	257	264	390	266	280	472	580	382	1332	232	280
350	C350/440	¾"	257	264	440	270	325	555	710	444	1590	258	330
400	C350/490	¾"	279,5	287	505	270	350	605	760	444	1715	292	380
450	C400/542	¾"	311	319	560	270	420	677	830	515	1927	318	400
500	C400/606	¾"	359	367	620	270	462	742	890	515	2094	345	450
600	C400/712	¾"	371,5	380	730	270	510	843	1010	515	2363	400	550

A1*: installed face to face
A2*: minimum required dimension for installation

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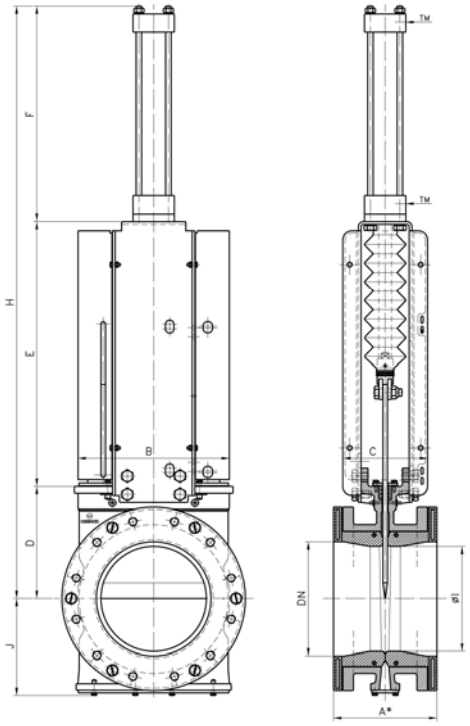
HYDRAULIC ACTUATOR

- 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 kg/cm²
- Maximum hydraulic pressure: 160 kg/cm²
- 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	ØI
80	C32/121	¼"	175	183	175	100	124	283	230	637	90	70
100	C32/140	¼"	175	183	170	100	140	305	248	693	100	85
125	C32/168	¼"	178	186	195	100	150	350	306	806	123	110
150	C40/194	¼"	178	186	230	100	175	370	338	883	130	135
200	C50/252	3/8"	184	192	280	165	205	427	405	1037	160	180
250	C63/317	3/8"	225,5	233	335	185	245	580	484	1309	200	230
300	C80/376	¾"	257	264	390	266	280	639	557	1480	232	280
350	C80/440	¾"	257	264	440	270	325	703	599	1627	258	330
400	C100/490	¾"	279,5	287	505	270	350	779	649	1778	292	380
450	C100/542	¾"	311	319	560	270	420	836	710	1966	318	400
500	C125/950	¾"	359	367	620	270	462	952	790	2188	345	450
600	C125/712	¾"	371,5	380	730	270	510	1175	940	2594	400	550
700	C100/825	¾"	373	383	860	320	575	1224	1077	2876	490	650
750	C100/825	¾"	395,5	405	930	320	605	1273	1109	2987	515	680
800	C125/950	1"	420	430	990	320	655	1443	1168	3266	565	710
900	C125/1060	1"	470	480	1095	320	705	1526	1335	3566	615	810

A1*: installed face to face
A2*: minimum required dimension for installation

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ELECTRIC ACTUATOR (rising stem)

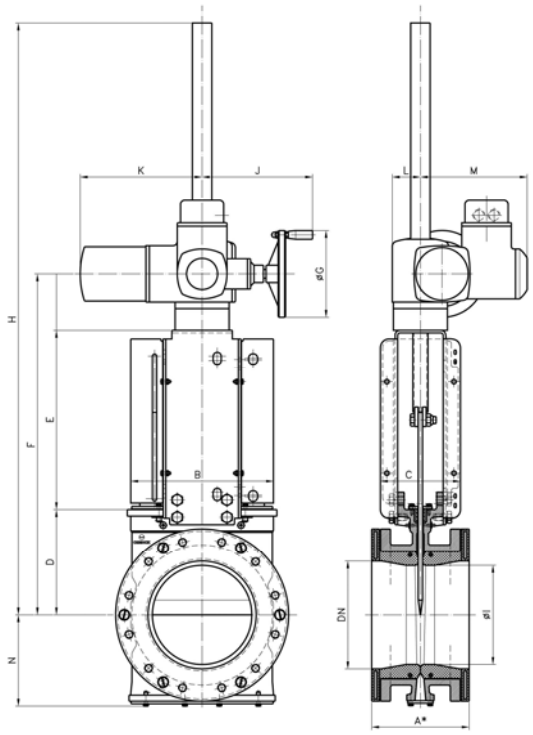
- Automatic actuator which consists of:
  - Electric motor
  - Motor support yoke flange
    (standardised flanges as per ISO 5210/DIN 3338)

- 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	ØI	TORQUE (Nm)
80	175	183	175	100	124	175	442	160	1000	265	249	62	238	90	70	20
100	175	183	170	100	140	198	481	160	1035	265	249	62	238	100	85	30
125	178	186	195	100	150	240	533	160	1085	265	249	62	238	123	110	35
150	178	186	230	100	175	265	583	160	1135	265	249	62	238	130	135	40
200	184	192	280	165	205	322	682	200	1245	282	254	65	238	150	180	50
250	225,5	233	335	185	245	415	790	200	1378	282	254	65	248	200	230	70
300	257	264	390	266	280	472	882	200	1470	282	254	65	248	232	280	110
350	257	264	440	270	325	555	1055	315	1657	385	336	91	286	258	330	120
400	279,5	287	505	270	350	605	1130	315	1732	385	336	91	286	292	380	160
450	311	319	560	270	420	677	1272	315	1974	385	336	91	286	318	400	200
500	359	367	620	270	462	742	1379	400	2481	385	339	91	286	345	450	300
600	371,5	380	730	270	510	843	1528	400	2630	385	339	91	286	400	550	350
700	373	383	860	320	575	980	1730	400	2832	385	339	91	286	490	650	450
750	395,5	405	930	320	605	1115	1930	500	3053	510	365	117	303	515	680	550
800	420	430	990	320	655	1220	2085	500	3208	510	365	117	303	565	710	600
900	470	480	1095	320	705	1370	2285	500	3408	510	365	117	303	615	810	750

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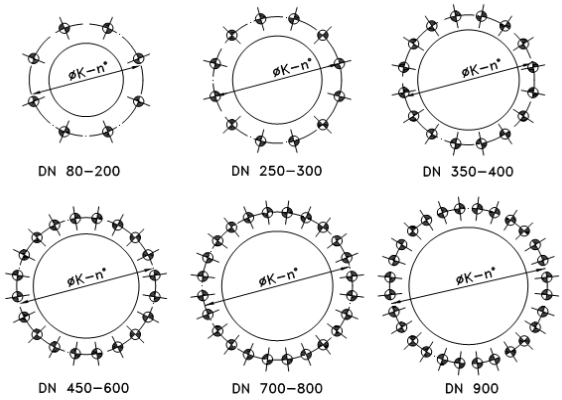
FLANGE AND BOLTING DETAILS

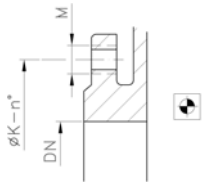
EN 1092-2 PN10

DN	K	nº	M	⌖
80	160	8	M-16	8
100	180	8	M-16	8
125	210	8	M-16	8
150	240	8	M-20	8
200	295	8	M-20	8
250	350	12	M-20	12
300	400	12	M-20	12
350	460	16	M-20	16
400	515	16	M-24	16
450	565	20	M-24	20
500	620	20	M-24	20
600	725	20	M-27	20
700	840	24	M-27	24
800	950	24	M-30	24
900	1050	28	M-30	28

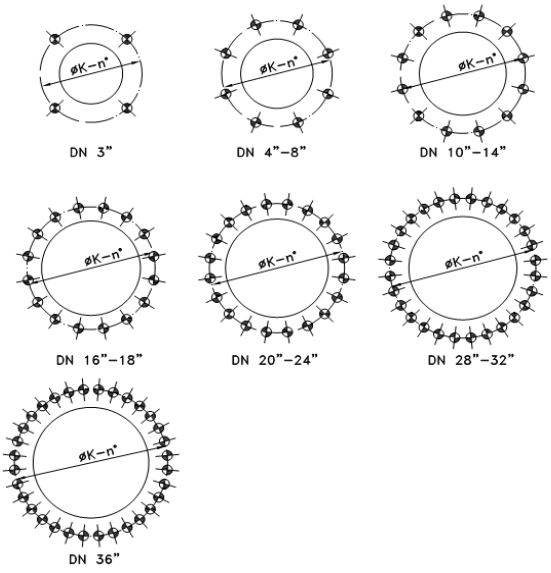


ANSI B16.5, class 150(*)

DN	K	nº	M	⌖
3″	6″	4	5/8″ UNC	4
4″	7 ½″	8	5/8″ UNC	8
5″	8 ½″	8	3/4″ UNC	8
6″	9 ½″	8	3/4″ UNC	8
8″	11 ¾″	8	3/4″ UNC	8
10″	14 ¼″	12	7/8″ UNC	12
12″	17″	12	7/8″ UNC	12
14″	18 ¾″	12	1″ UNC	12
16″	21 ¼″	16	1″ UNC	16
18″	22 ¾″	16	1 1/8″ UNC	16
20″	25″	20	1 1/8″ UNC	20
24″	29 ½″	20	1 1/4″ UNC	20
28″	34″	28	1 1/4″ UNC	28
30″	36″	28	1 1/4″ UNC	28
32″	38 ½″	28	1 1/4″ UNC	28
36″	42 3/4″	32	1 1/4″ UNC	32



TAPPED THROUGH



(*) From DN 28″, acc. to ANSI B16.47 "series A"(class 150)