

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
- Power plants
- Wastewater treatment plants
- etc.

Sizes (mm)

DN 50 to DN 1000
Larger diameters on request

Working pressure and temperatures

DN 50 to 400: 10 bar
DN 450 to 600: 6 bar or 10 bar ¹
DN 650 to 1000: 5 bar or 10 bar
Higher pressures and/or diameters on request
¹ Duplex gate for 10 bar

GJS 400: -10°C / 80°C
CF8M: -20°C / 80°C

Standard flange drilling

EN 1092 PN10
ASME B16.5 (class 150)
AS 2129 Table D & E
Other flange drillings available on request

Directives

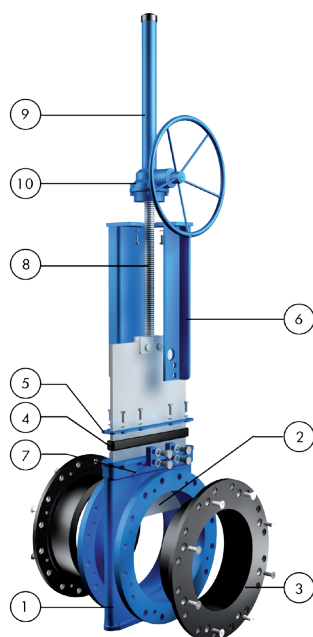
For EU Directives and other Certificates please see the document: Directives & Certificates Compliance - Knife Gate Valves –Catalogues and Datasheets

Testing

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



STANDARD PARTS LIST



Part	Materials
1 Body	Ductile iron A536 (60-40-18) / 0.7040 / EN-GJS400
2 Gate	AISI 304 / AISI 316
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

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

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

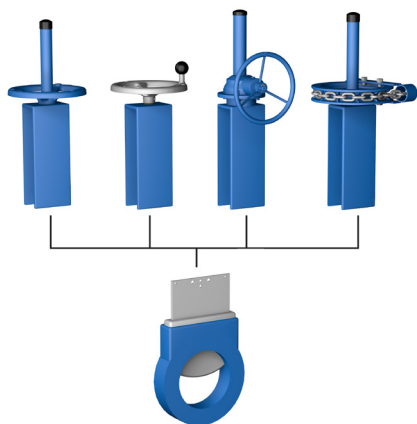
Gate safety protection

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

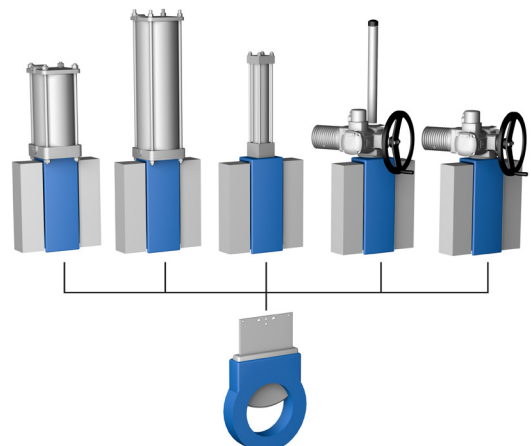
Actuators

ORBINOX offers a complete range of actuator solutions, including manual, pneumatic, electric and hydraulic actuators

Manual RS Manual NRS Bevel Gear Chainwheel



Pneumatic Double Acting Pneumatic Single Acting Hydraulic Electric RS Electric NRS



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.



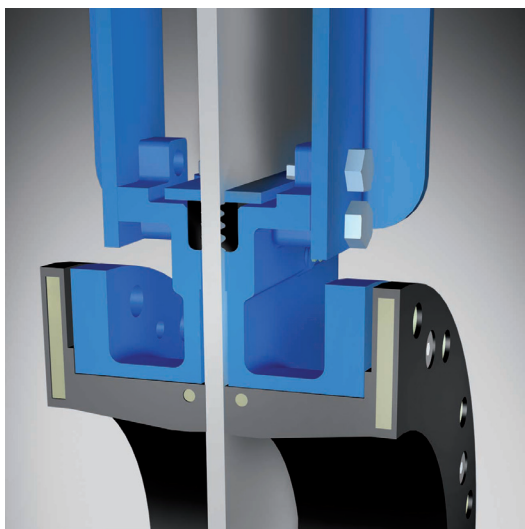
(Fig. 1) Flat plate



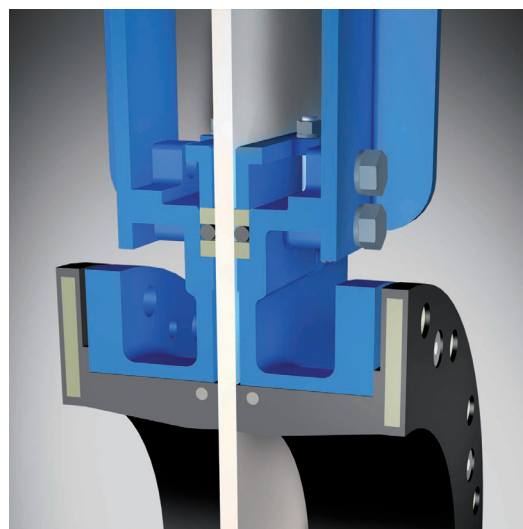
(Fig. 2) Tubular design

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

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...)

OTHER OPTIONS

Open-closed lockout system (Fig. 5)

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

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

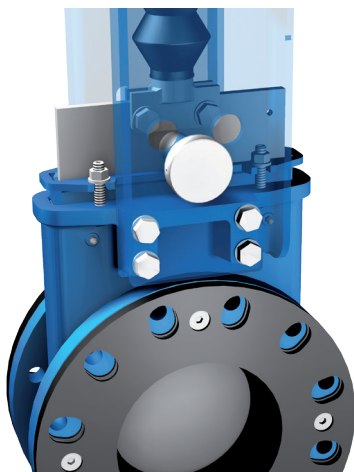


Fig.5



Fig.6

Actuator manual override (Fig. 7)

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

Stem extensions and floor stand (Fig. 8)

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



Fig.7



Fig.8

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
Natural rubber (NR)	75	General
EPDM (E)	120	Acids and non mineral oils.
Chlorobutyl	125	High temperatures
NBR (N)	90	Hydrocarbons/Oils/Greases
FKM-FPM (V)	150	Hot temperatures, hot oil, many chemicals

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

Operating conditions at very low temperatures may differ from the absolute minimum temperature conditions supported by these rubber grades. Please contact our technical department for more information

PACKING TYPES

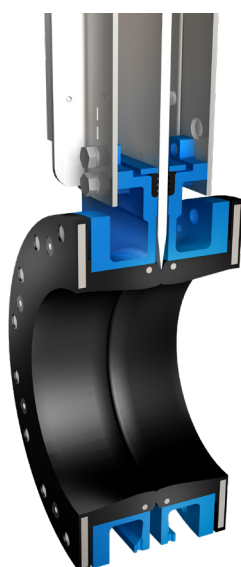
Material	Max.T. (°C)
EPDM (E)	120
PTFE impregn. synth. fiber (ST)	250

SEAT CONFIGURATIONS/DESIGNS

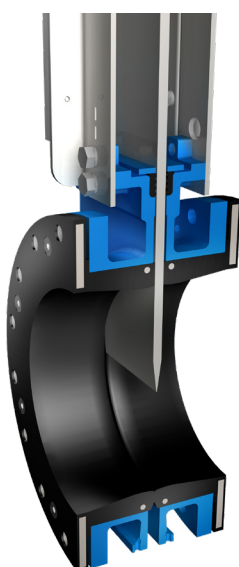
Type	Features
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Rubber sleeves

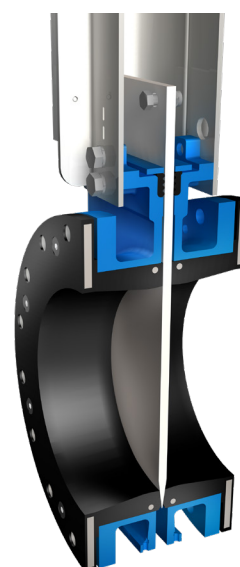
The closure of the WG valve is achieved by its two characteristic high resistance elastomer sleeves, which improve the tight seal both in the adjustment with the flanges and in the closure. These sleeves have a metal core which provides them with a great resistance to demanding working conditions and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



OPEN



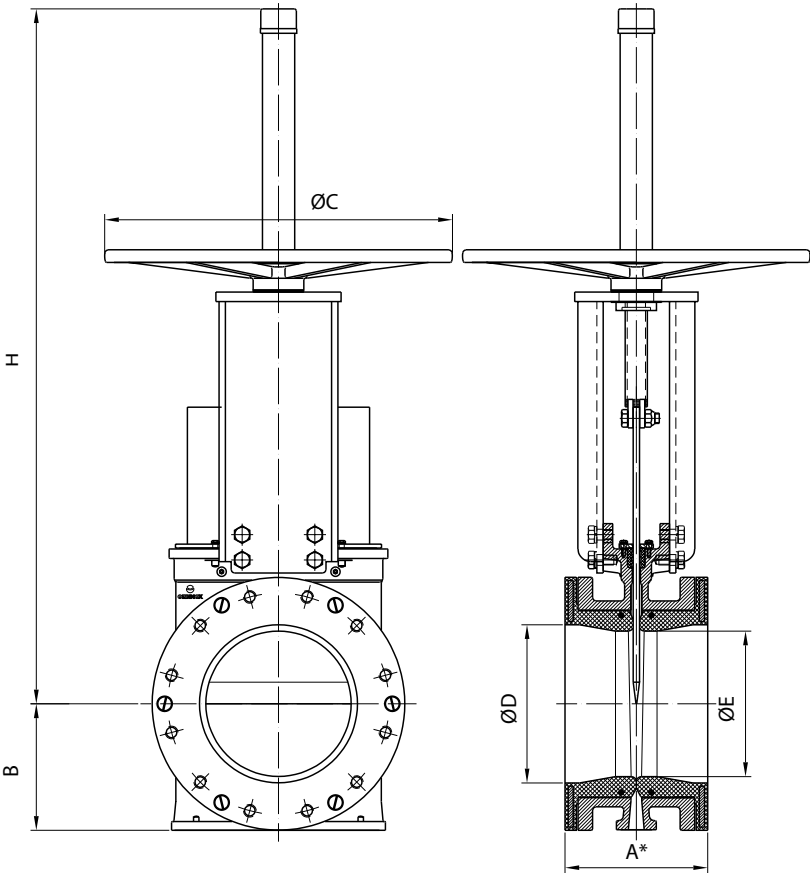
INTERMEDIATE



CLOSED

HANDWHEEL RISING STEM

Standard manual actuator, available from DN 50 to DN 200 (larger diameters on request) and recommended with gearbox from DN 200 and above

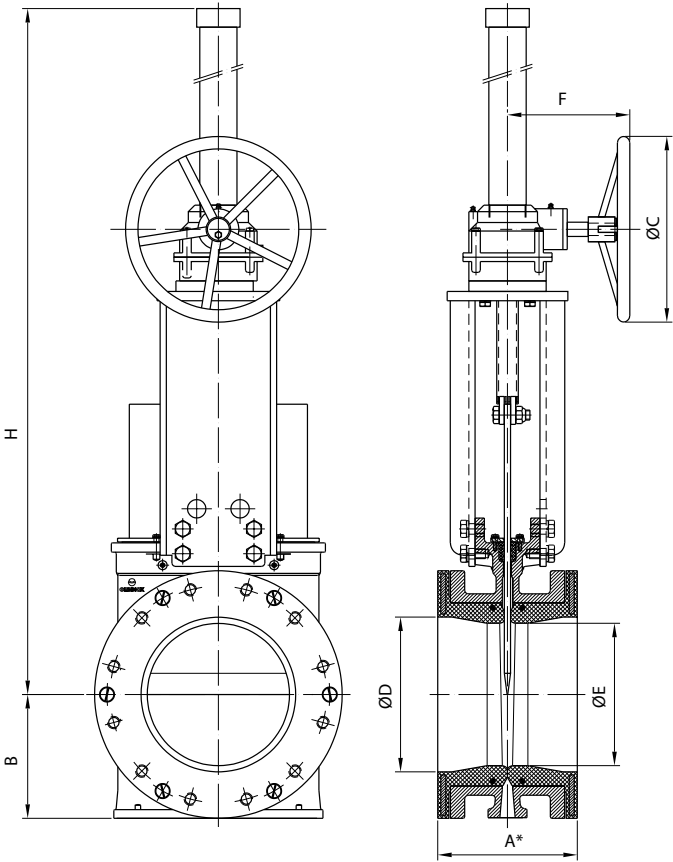


DN	A1 *	A2 *	B	ØC	H	ØD	ØE	Weight (Kg.)
50	165	172	85	225	460	50	45	20
65	175	183	96	225	495	72	62	23
80	175	183	96	225	495	72	62	23
100	175	183	115	310	645	100	85	31
125	178	183	130	310	715	121	110	40
150	178	183	141	310	745	148	137	43
200	184	192	173	410	945	197	175	67

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

GEAR

Recommended for valves larger than DN 200



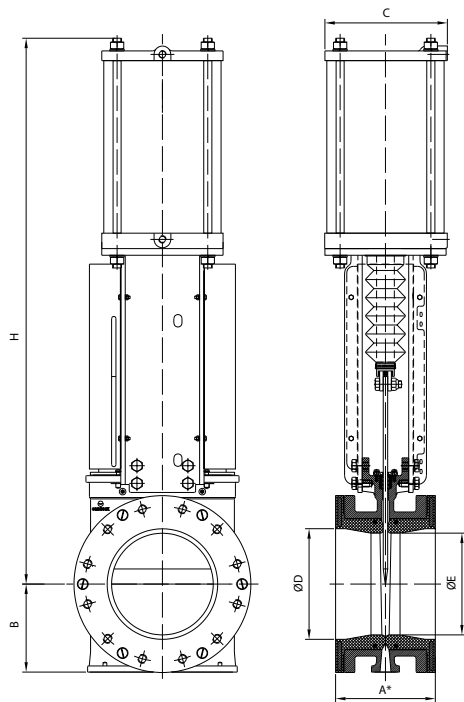
DN	A1 *	A2 *	B	ØC	F	H	ØD	ØE	Weight (Kg.)
200	184	192	173	300	200	1040	197	175	83
250	225,5	233	204	300	200	1060	250	230	113
300	257	264	244	300	200	1460	292	273	165
350	257	264	268	450	220	1530	337	318	222
400	279,5	287	300	450	220	1640	375	356	275
450	311	319	320	450	220	1750	425	378	332
500	359	367	359	650	288	1930	470	420	444
600	371,5	380	422	650	288	2425	585	539	-
650	378	388	475	650	288	2615	635	597	-
700	378	388	475	650	288	2615	635	597	-
750	395,5	405	532	650	288	2730	737	680	-
800	470	480	560	650	288	2880	788	719	-
850	470	480	560	650	288	2880	788	719	-
900	470	480	633	650	288	3010	889	810	-
1000	536	546	672	1000	465	3200	990	920	-

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

PNEUMATIC CYLINDER

With a double-acting pneumatic cylinder as standard, it is available in sizes from DN 50 to DN 600. 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



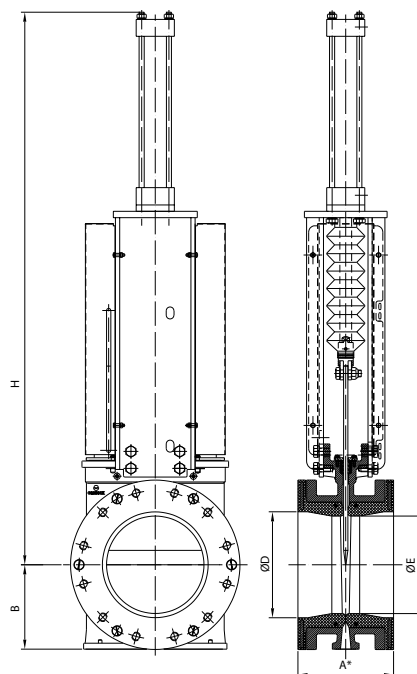
DN	A1 *	A2 *	B	C	H	ØD	ØE	Connect.	Weight (Kg)
50	165	172	85	115	531	50	45	1/4" G	23
65	175	183	96	115	621	72	62	1/4" G	26
80	175	183	96	140	621	72	62	1/4" G	28
100	175	183	115	140	668	100	85	1/4" G	33
125	178	183	130	175	832	121	110	1/4" G	48
150	178	183	141	175	893	148	137	1/4" G	52
200	184	192	173	220	1067	197	175	3/8" G	83
250	225,5	233	204	277	1220	250	230	3/8" G	130
300	257	264	244	335	1400	292	273	1/2" G	213
350	257	264	268	444	1560	337	318	3/4" G	285
400	279,5	287	300	444	1700	375	356	3/4" G	339
450	311	319	320	515	1930	425	378	3/4" G	431
500	359	367	359	515	2095	470	420	3/4" G	533
600	371,5	380	422	515	2340	585	539	3/4" G	-

A1 *: installed face to face A2 *: minimum required dimension for installation ¹ Duplex gate for 10 bar

HYDRAULIC ACTUATOR

Standard hydraulic actuator consists of a double acting cylinder in accordance with ISO 6020/2 , available from DN 50 to DN 1000 with PVC bellows. Open-closed lockout, pressure indicators (mechanical and inductive), position transducers, hydraulic groups and electrical cabinets are optional.

Hydraulic pressure: 100 bar and maximum hydraulic pressure: 160 bar



DN	A1 *	A2 *	B	H	ØD	ØE	Connect.
50	165	172	85	555	50	45	1/4" G
65	175	183	96	634	72	62	1/4" G
80	175	183	96	634	72	62	1/4" G
100	175	183	115	683	100	85	1/4" G
125	178	183	130	837	121	110	1/4" G
150	178	183	141	925	148	137	3/8" G
200	184	192	173	1082	197	175	1/2" G
250	225,5	233	204	1218	250	230	1/2" G
300	257	264	244	1480	292	273	3/4" G
350	257	264	268	1631	337	318	3/4" G
400	279,5	287	300	1768	375	356	3/4" G
450	311	319	320	1968	425	378	3/4" G
500	359	367	359	2130	470	420	3/4" G
600	371,5	380	422	2352	585	539	1" G
650	378	388	475	2651	635	597	3/4" G
700	378	388	475	2651	635	597	3/4" G
750	395,5	405	532	2964	737	680	3/4" G
800	470	480	560	2970	788	719	1" G
850	470	480	560	2970	788	719	1" G
900	470	480	633	3569	889	810	1" G
1000	536	546	672	3400	990	920	1" G

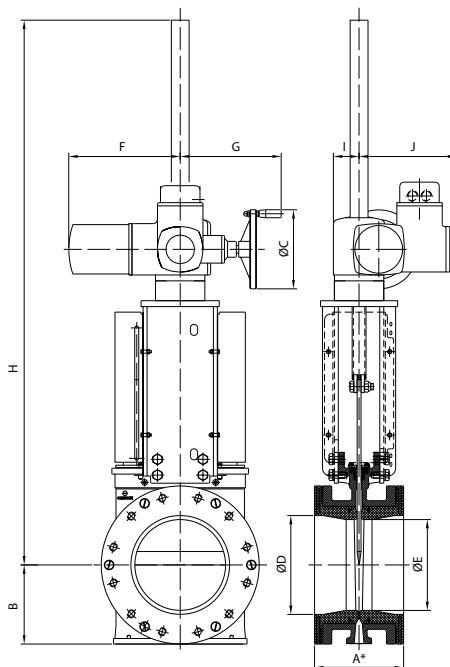
A1 *: installed face to face A2 *: minimum required dimension for installation

ELECTRIC ACTUATOR RISING STEM

Designed with a yoke flange for the actuator according to ISO 5210 / DIN 3338 as standard, it is available from DN 50 to DN 1000, both for rising stem and non-rising stem configurations and with manual overrides.

Knife gate valves with a wide range of electric actuator brands available


For valves installed in a horizontal position, actuator supports to plant structure is recommended



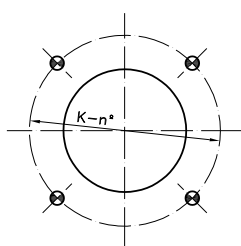
DN	A1 *	A2 *	B	ØC	H	F	G	I	J	ØD	ØE
50	165	172	85	160	618	265	249	62	238	50	45
65	175	183	96	160	662	265	249	62	238	72	62
80	175	183	96	160	662	265	249	62	238	72	62
100	175	183	115	160	688	265	249	62	238	100	85
125	178	183	130	160	1115	265	249	62	238	121	110
150	178	183	141	160	1158	265	249	62	238	148	137
200	184	192	173	200	1272	283	254	65	248	197	175
250	225,5	233	204	200	1387	283	254	65	248	250	230
300	257	264	244	200	1454	283	254	65	248	292	273
350	257	264	268	315	1602	389	336	90	286	337	318
400	279,5	287	300	315	1690	389	336	90	286	375	356
450	311	319	320	409	1822	389	336	90	286	425	378
500	359	367	359	400	1925	389	339	90	286	470	420
600	371,5	380	422	500	2120	430	365	115	303	585	539
650	378	388	475	400	2770	389	339	90	286	635	597
700	378	388	475	400	2770	389	339	90	286	635	597
750	395,5	405	532	500	2880	430	365	115	303	737	680
800	470	480	560	500	3035	430	365	115	303	788	719
850	470	480	560	500	3035	430	365	115	303	788	719
900	470	480	633	500	3180	430	365	115	303	889	810
1000	536	546	672	500	3300	430	365	115	303	990	920

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

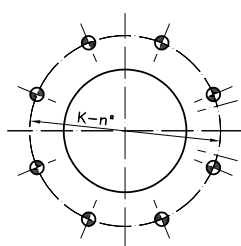
FLANGE AND BOLTING DETAILS EN-1092 PN10

DN	K	n°	M	T	
50	125	4	M-16	36	4
65*	145	4	M-16	39	4
80	160	8	M-16	39	8
100	180	8	M-16	39	8
125	210	8	M-16	41	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
700	840	24	M-27	73	24
800	950	24	M-30	82	24
900	1050	28	M-30	91	28
1000	1380	28	M-33	91	28

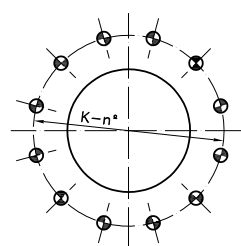
* Flange drilling of DN 65 PN10/16 according to EN-1092 allow 4 or 8 drills. ORBINOX designs of DN 65 PN10/16 have 4 drills



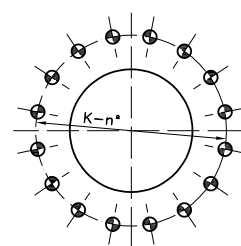
DN 50-65



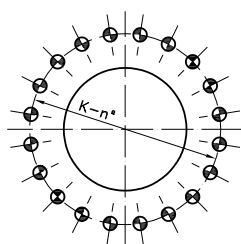
DN 80-200



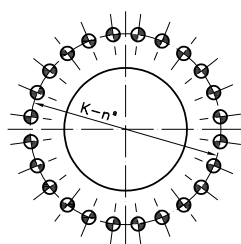
DN 250-300



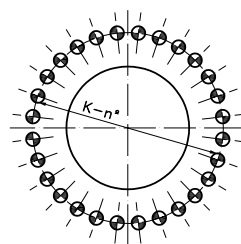
DN 350-400



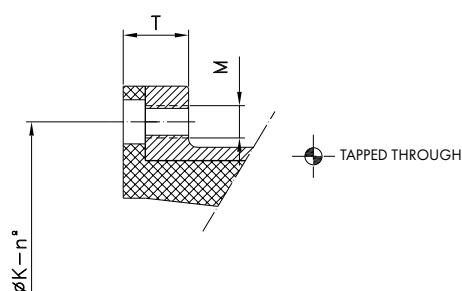
DN 450-600




DN 700-800



DN 900-1000



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

DN	K	n°	M	T	
2"	4 3/4"	4	5/8" - 11 UNC	1 1/4"	4
2 1/2"	5 1/2"	4	5/8" - 11 UNC	1 1/2"	4
3"	6"	4	5/8" - 11 UNC	1 1/2"	4
4"	7 1/2"	8	5/8" - 11 UNC	1 1/2"	8
5"	8 1/2"	8	3/4" - 10 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
26"	31 3/4"	24	1 1/4" - 7 UNC	2 3/4"	24
28"	34"	28	1 1/4" - 7 UNC	2 3/4"	28
30"	36"	28	1 1/4" - 7 UNC	3"	28
32"	38 1/2"	28	1 1/2" - 6 UNC	3 1/4"	28
34"	40 1/2"	32	1 1/2" - 6 UNC	3 1/4"	32
36"	42 3/4"	32	1 1/2" - 6 UNC	3 1/2"	32
40"	47 1/4"	36	1 1/2" - 6 UNC	3 1/2"	36

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

