

Model VG

RUBBER SLEEVE KNIFE GATE VALVE

The VG model knife gate is a bi-directional wafer valve equipped with two metal reinforced rubber sleeves, designed for applications with abrasive slurries. The VG slurry knife gate valve is mainly used in industries such as:

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

Sizes

DN 50 to DN 900
Larger diameters on request

Working pressure and temperatures

DN 50 to DN 400 : 10 bar
DN 450 to DN 600: 6 bar or 10 bar ¹
DN 700 to DN 900: 5 bar or 10 bar ¹
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)
Other flange drillings available on request

Directives

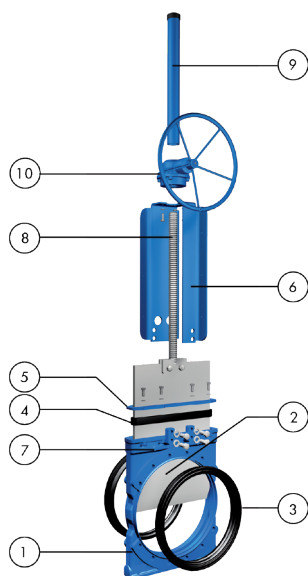
For EU Directives and other Certificates please see the document: Directives & Certificates Compliance - Knife Gate Valves –Catalogues and Datasheets

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

Wafer 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. It is equipped with two machined lateral mouths where the sleeves fit perfectly. 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 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. The patented sleeve design allows for maximum flexibility during gate travel, minimising the effort necessary for its 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 it with a high resistance to corrosion and a long life. In rising stem valves the stem protector also protects the spindle against dirt

Yoke or actuator support

Made of steel (stainless steel available on request) and Epoxy coated. Its robust design provides it with great rigidity, withstanding the most adverse operating conditions. Reinforced design is standard starting from DN 200

Epoxy coating

The Epoxy coating on all ORBINOX cast iron and carbon steel 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

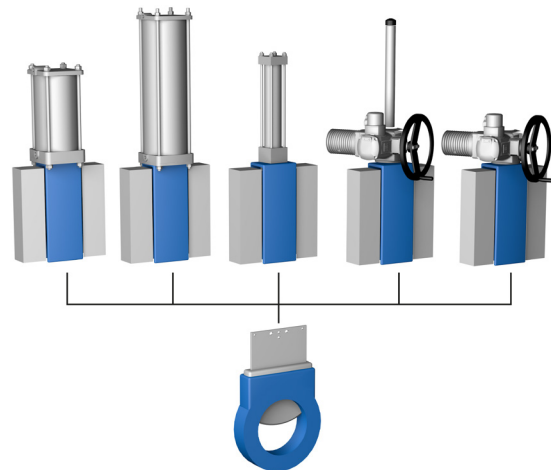
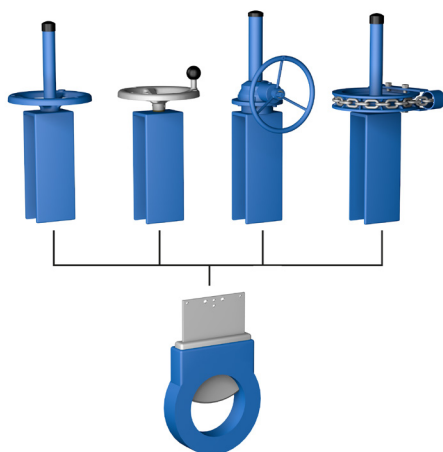
ORBINOX automated valves are provided with gate guards in accordance with EU Safety Standards. The design feature prevents any objects from being caught accidentally while the gate is moving

Actuators

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

Manual RS Manual NRS Bevel Gear Chainwheel

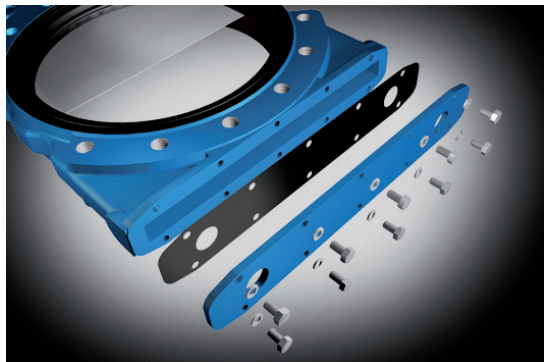
Pneumatic Double Acting Pneumatic Single Acting Hydraulic Electric RS Electric NRS



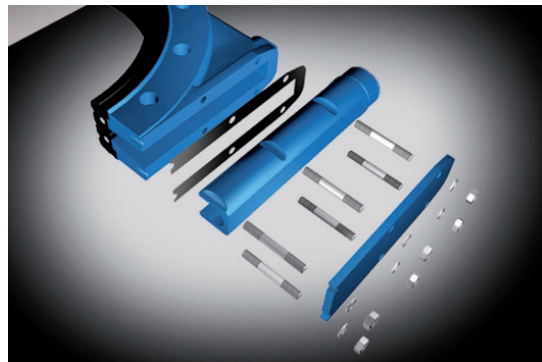
OTHER OPTIONS

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.



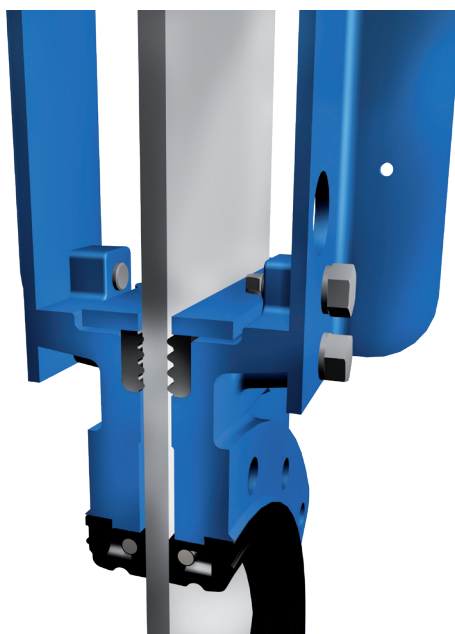
(Fig. 1) Flat plate



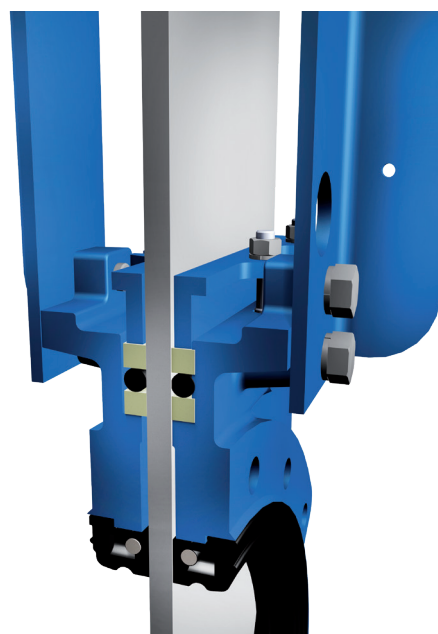
(Fig. 2) Tubular design

Conventional leak proof packing (Fig. 3 and 4)

The VG 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

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)

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

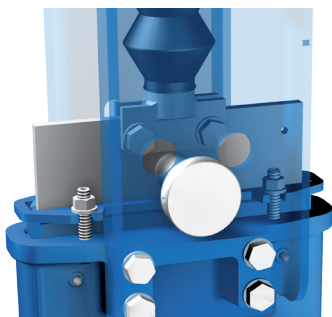


Fig. 5

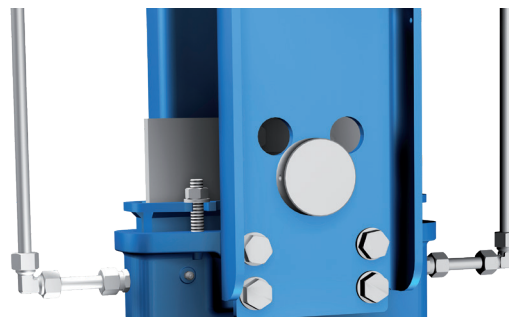


Fig. 6

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	75	General
EPDM (E)	120	Acids and non mineral oils
Neoprene	90	Oils/Solvents
Chlorobutyl	125	High temperatures
NBR (N)	120	Hydrocarbons/Oils/Greases

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

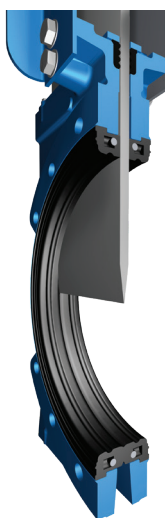
Type	Features
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Rubber sleeves

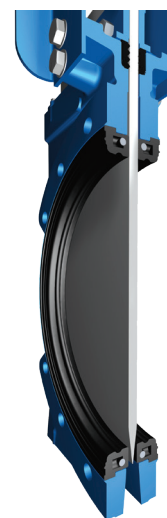
The closure of the VG valve is achieved by its two characteristic high resistance elastomer sleeves, which improve the tight seal both in the adjustment with the flanges and in the closure. These sleeves have a metal core which provides them with a great resistance to demanding working conditions and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



OPEN



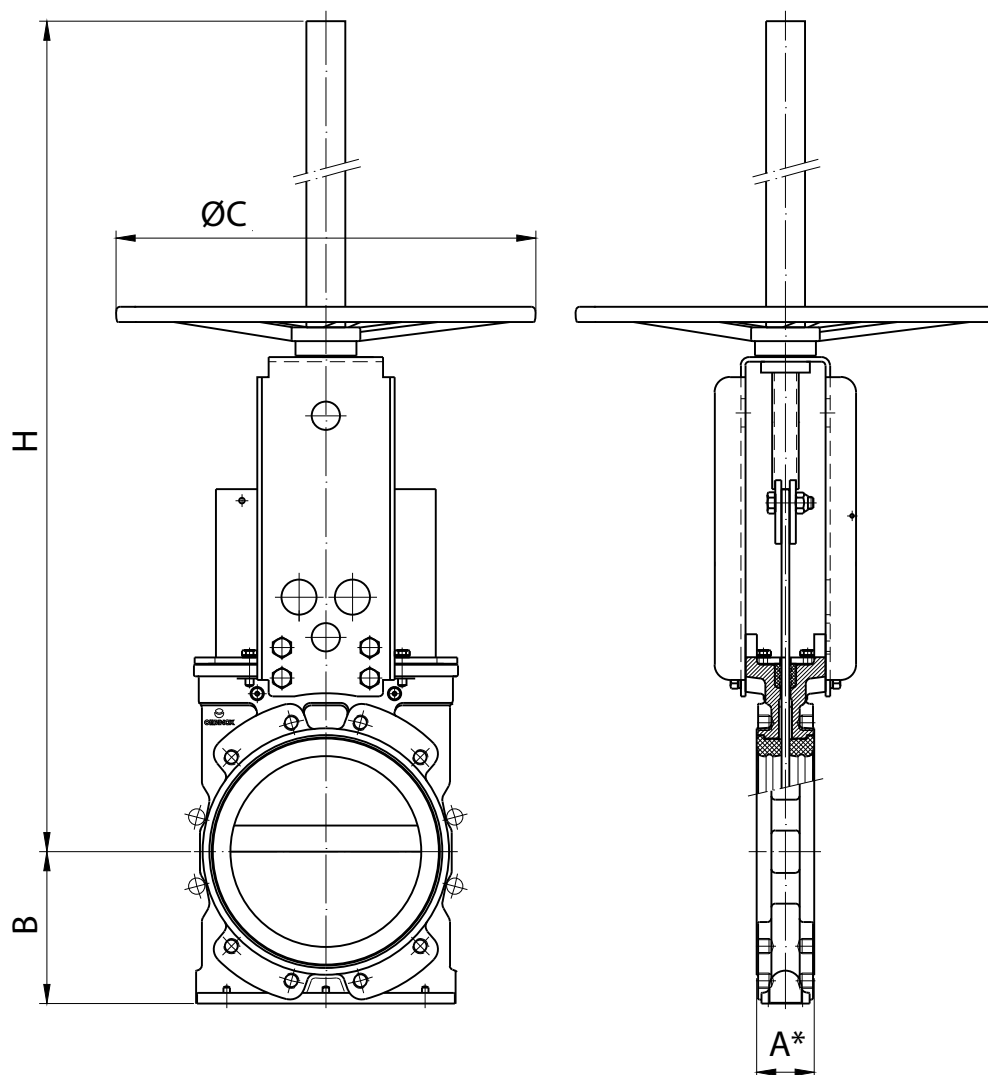
INTERMEDIATE



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

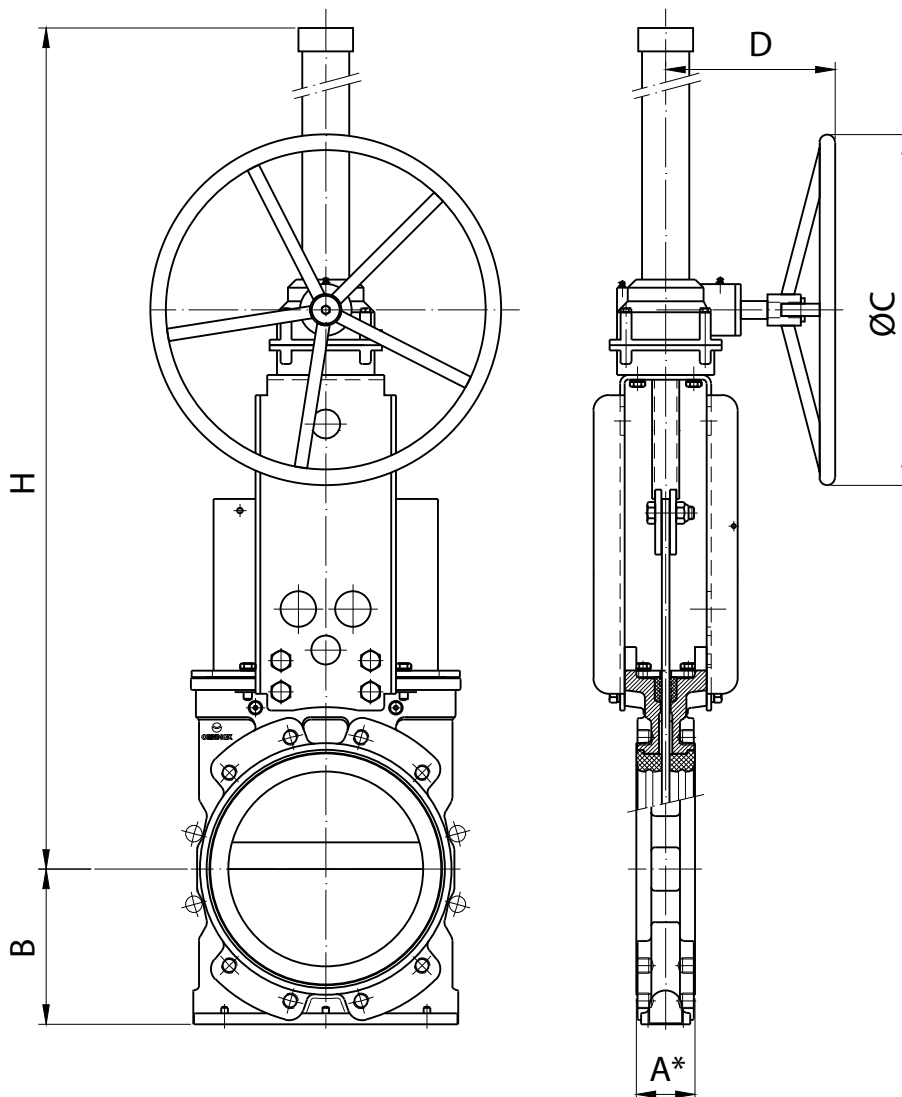


DN	A1 *	A2 *	B	ØC	H	Weight (Kg.)
50	54	60	63	225	445	9
65	54	60	70	225	470	10
80	57	63	90	225	495	12
100	57	63	100	310	645	17
125	63,5	69	122	310	700	20
150	63,5	69	129	310	745	23
200	76	83	164	410	945	40

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

GEAR RISING STEM

Manual actuator recommended for valves larger than DN 200



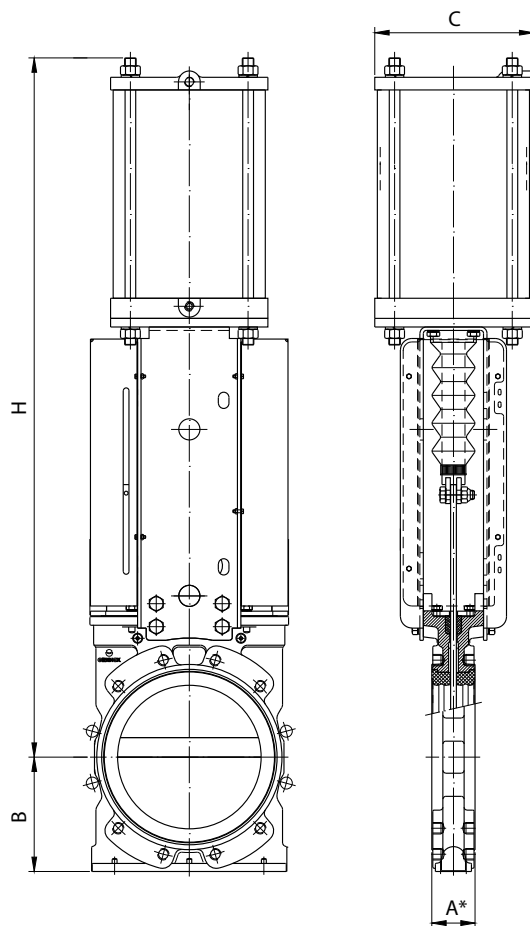
DN	A1 *	A2 *	B	ØC	H	D	Weight (Kg.)
200	76	83	164	300	1040	200	54
250	76	83	199	300	1060	200	72
300	82,5	90	231	300	1460	200	92
350	82,5	90	257	450	1530	220	123
400	95	102	291	450	1640	220	156
450	95,5	103	317	450	1750	220	200
500	121	129	345	650	1930	288	260
600	121	129	413	650	2150	288	344
700	181	190	475	650	2615	288	-
750	187	195	500	650	2730	288	-
800	206	214	550	650	2880	288	-
900	225,5	234	620	650	3010	288	-

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



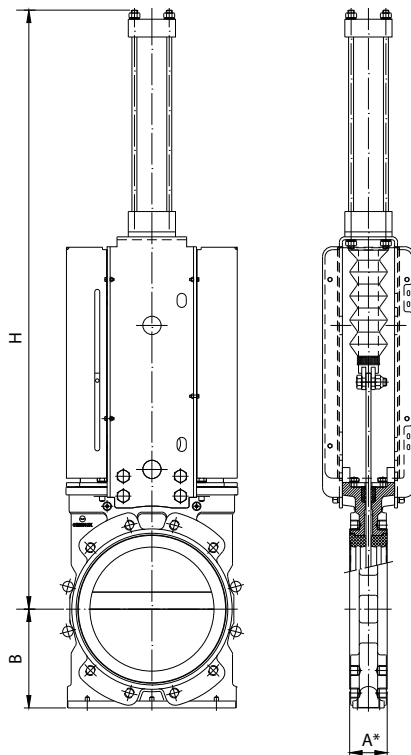
DN	A1 *	A2 *	B	C	H	Connect.	Weight (Kg.)
50	54	60	63	115	516	1/4" G	10
65	54	60	70	115	550	1/4" G	11
80	57	63	90	140	621	1/4" G	17
100	57	63	100	140	668	1/4" G	19
125	63,5	69	122	175	817	1/4" G	29
150	63,5	69	129	175	893	1/4" G	32
200	76	83	164	220	1067	3/8" G	53
250	76	83	199	277	1220	3/8" G	89
300	82,5	90	231	335	1473	1/2" G	144
350	82,5	90	257	444	1687	3/4" G	183
400	95	102	291	444	1824	3/4" G	216
450	95,5	103	317	515	2025	3/4" G	291
500	121	129	345	515	2198	3/4" G	341
600	121	129	413	515	2420	3/4" G	429

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

HYDRAULIC ACTUATOR

Standard hydraulic actuator consists of a double acting cylinder in accordance with ISO 6020/2 , available from DN 50 to DN 900 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	Connect.
50	54	60	63	539	1/4" G
65	54	60	70	574	1/4" G
80	57	63	90	634	1/4" G
100	57	63	100	683	1/4" G
125	63,5	69	122	822	1/4" G
150	63,5	69	129	925	3/8" G
200	76	83	164	1082	1/2" G
250	76	83	199	1218	1/2" G
300	82,5	90	231	1480	3/4" G
350	82,5	90	257	1631	3/4" G
400	95	102	291	1768	3/4" G
450	95,5	103	317	1968	3/4" G
500	121	129	345	2130	3/4" G
600	121	129	413	2352	1" G
700	181	190	475	2651	3/4" G
750	187	195	500	2781	3/4" G
800	206	214	550	2970	1" G
900	225,5	234	620	3230	1" G

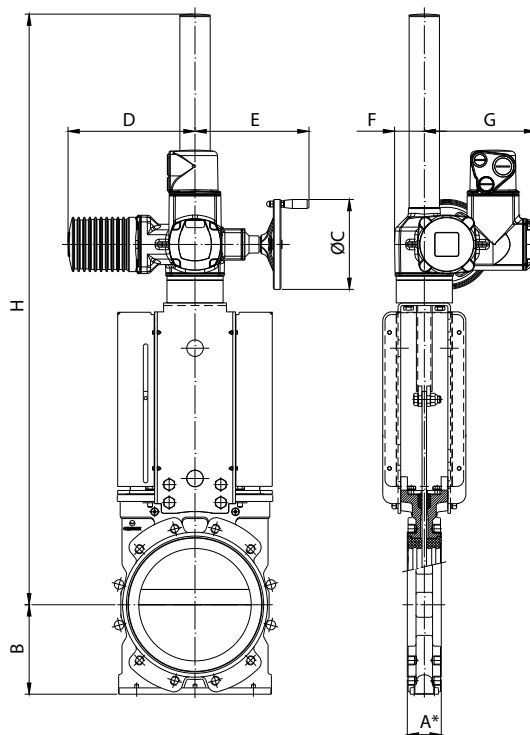
A1* : installed face to face A2* : minimum required dimension for installation

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.

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



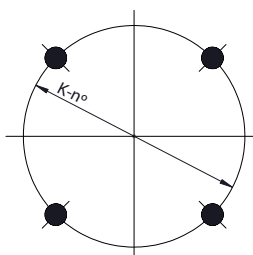
DN	A1 *	A2 *	B	ØC	H	D	E	F	G	Weight (Kg.)
50	54	60	63	160	603	265	249	62	238	65
65	54	60	70	160	628	265	249	62	238	66
80	57	63	90	160	662	265	249	62	238	68
100	57	63	100	160	688	265	249	62	238	71
125	63,5	69	122	160	1100	265	249	62	238	75
150	63,5	69	129	160	1158	265	249	62	238	79
200	76	83	164	200	1272	283	254	65	248	63
250	76	83	199	200	1387	283	254	65	248	83
300	82,5	90	231	200	1454	283	254	65	248	103
350	82,5	90	257	315	1602	389	336	90	286	156
400	95	102	291	315	1690	389	336	90	286	188
450	95,5	103	317	409	1822	389	336	90	286	239
500	121	129	345	400	1925	389	339	90	286	298
600	121	129	413	500	2120	430	365	115	303	384
700	181	190	475	400	2770	389	339	90	286	-
750	187	195	500	500	2880	430	365	115	303	-
800	206	214	550	500	3035	430	365	115	303	-
900	225,5	234	620	500	3180	430	365	115	303	-

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

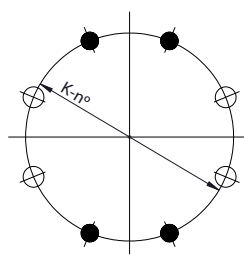
FLANGE AND BOLTING DETAILS EN-1092 PN10

DN	K	n°	M	T	 
50	125	4	M-16	10	4 - 0
65*	145	4	M-16	12	4 - 0
80	160	8	M-16	12	4 - 4
100	180	8	M-16	12	4 - 4
125	210	8	M-16	14	4 - 4
150	240	8	M-20	14	4 - 4
200	295	8	M-20	16	4 - 4
250	350	12	M-20	16	8 - 4
300	400	12	M-20	20	8 - 4
350	460	16	M-20	20	12 - 4
400	515	16	M-24	20	12 - 4
450	565	20	M-24	20	16 - 4
500	620	20	M-24	25	16 - 4
600	725	20	M-27	24	16 - 4

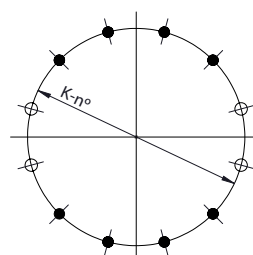
* Flange drilling of DN 65 PN10/16 according to EN-1092 allow 4 or 8 drills. ORBINOX designs of DN 65 PN10/16 have 4 drills



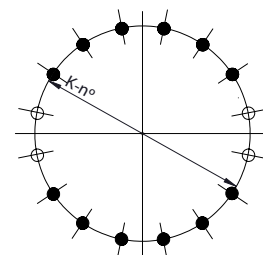
DN 50-65



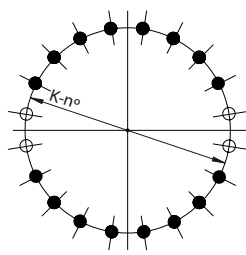
DN 80-200



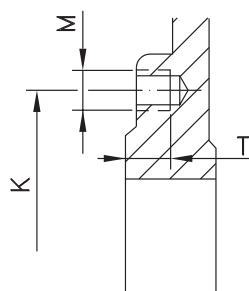
DN 250-300



DN 350-400



DN 450-600





BLIND TAPPED HOLES



THROUGHGOING BOLTS

FLANGE AND BOLTING DETAILS ASME B16.5, CLASS 150

DN	K	n°	M	T	 
2"	4 3/4"	4	5/8" - 11 UNC	3/8"	4 - 0
2 1/2"	5 1/2"	4	5/8" - 11 UNC	1/2"	4 - 0
3"	6"	4	5/8" - 11 UNC	1/2"	4 - 0
4"	7 1/2"	8	5/8" - 11 UNC	1/2"	4 - 4
5"	8 1/2"	8	3/4" - 10 UNC	9/16"	4 - 4
6"	9 1/2"	8	3/4" - 10 UNC	9/16"	4 - 4
8"	11 3/4"	8	3/4" - 10 UNC	5/8"	4 - 4
10"	14 1/4"	12	7/8" - 9 UNC	5/8"	8 - 4
12"	17"	12	7/8" - 9 UNC	3/4"	8 - 4
14"	18 3/4"	12	1" - 8 UNC	3/4"	8 - 4
16"	21 1/4"	16	1" - 8 UNC	3/4"	12 - 4
18"	22 3/4"	16	1 1/8" - 7 UNC	3/4"	12 - 4
20"	25"	20	1 1/8" - 7 UNC	15/16"	16 - 4
24"	29 1/2"	20	1 1/4" - 7 UNC	15/16"	16 - 4

