

WAFER STYLE KNIFE GATE VALVE

The HK model knife gate is an uni-directional wafer valve designed for general industrial service applications. The design of the body and seat assures non clogging shut off on suspended solids in industries such as:

- Pulp and Paper
- Wastewater treatment plants
- Food and Beverage
- Mining
- Power plants
- Chemical plants
- Bulk handling
- etc.

Sizes: DN 150 to DN 300

Working pressure:	ON SEATING		OFF SEATING ⁽¹⁾				
	DN 150 to DN 300	10 bar	DN 150 to DN 200	3,5 bar	DN 250	3 bar	DN 300

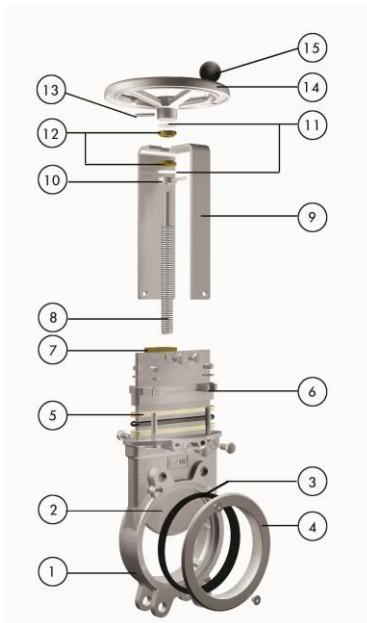
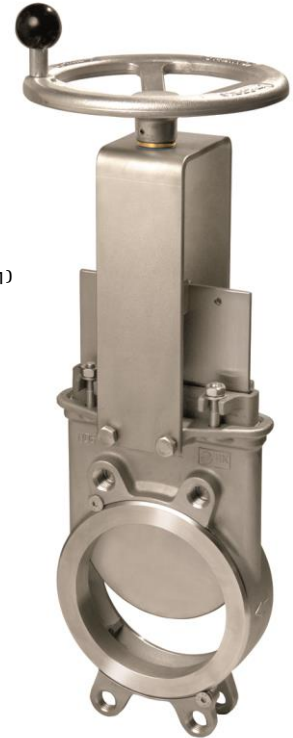
(1) Only resilient seats, CF8M (1.4408) bodies and PN10 flanges

Standard flange connection:

DIN PN 10		
Other flange connections available on request		
ANSI B16.5 (class 150)	DIN PN 6	DIN PN 16
DIN PN 25	BS "D" and "E"	ANSI 125

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

All valves are tested prior to shipping in accordance with the standard developed by the Quality Control Department at ORBINOX.



STANDARD PARTS LIST

Part:	Stainless Steel:
1- Body	CF8M (1.4408)
2- Gate	AISI 316 (1.4401)
3- Seat	EPDM
4- "K" Ring	CF8M (1.4408)
5- Packing	Dynapack (Graphite impregnated PTFE and Aramid yarn combination with an elastomeric core)+ (EPDM O-ring)
6- Gland Follower	CF8M (1.4408)
7- Stem nut	Brass
8- Stem	Stainless Steel
9- Yoke	AISI 304 (1.4301)
10- Axial fixing bush	AISI 304 (1.4301)
11- Friction washer	PET + solid lubricant
12- Bushing	Bronze
13- Spring Pin	AISI 420 (1.4021) (ISO 8752)
14- Handwheel	Ø≤310: Aluminium (AlSi12); Ø≥410 GJS400 (GGG40)
15- Knob	Black bakelite

DESIGN FEATURES

BODY:

Wafer style cast stainless steel monoblock with raised face, with reinforced ribs in larger diameters for extra body strength. Internal cast-in gate wedges and guides allows for tighter shut-off.

Full port design for greater flow capacity and minimal pressure drop. Internal design avoids any build up of solids that would prevent valve from closing.

GATE:

Stainless steel gate. Gate is polished on both sides to avoid jamming and seat damage. Bottom of the gate edge is machined to a bevel to cut through solids for a tighter seal in the closed position. The thickness and/or material of the gate can be changed on request for higher pressure requirements.

SEAT: (resilient)

Unique design that mechanically locks the seal in the internal of the valve body with a cast, easy to replace, stainless steel seat ring. Standard EPDM also available in different materials such as PTFE, etc.(Fig.1)

PACKING:

Long-life packing with several graphite impregnated PTFE / Aramid yarn combination with an elastomeric core, plus an EPDM O-ring, with an easy access packing gland ensuring a tight seal.

Long-life packing is available in a wide range of materials.

STEM:

The standard stainless Steel stem offers a long corrosion resistant life. Standard configuration is non-rising stem. For those pneumatic actuated valves, stem linkage is provided by means of a stainless steel coupling and a pin (Fig. 2).

ACTUATORS:

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

YOKE or ACTUATOR SUPPORT:

Made of stainless steel (EPOXY coated steel available on request). Compact design makes it extremely robust even under the most severe conditions.

EPOXY COATING:

The epoxy coating on all ORBINOX cast iron and carbon steel components is electrostatically applied making the valves 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.

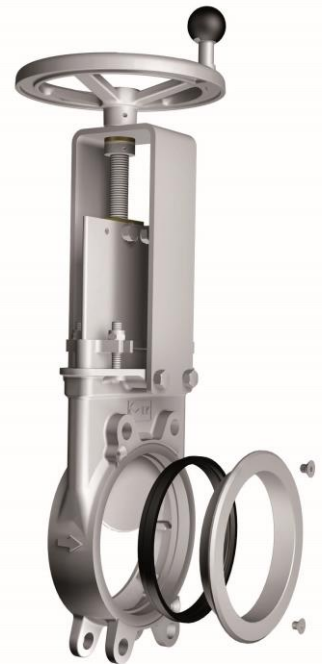


Fig.1



Fig.2

OTHER OPTIONS

Gate guards for actuators with proximity switches:

It has been made a special design which allows horizontal and parallel mounting of the proximity switches including protection to them.

Bonnet (Fig.1):

Assures tight sealing to atmosphere for using with hazardous gas or fluids.
Reduces packing maintenance.

Flush ports:

Allow for cleaning of solids trapped within the body cavities that can obstruct the flow or prevent the valve from closing. Depending on the process, purging can be made with air, steam, liquids, etc.

Other materials of construction:

Special alloys such as AISI 317 (1.4449), 254SMO (1.4547), Hastelloys, etc.

Fabricated valves:

ORBINOX designs, produces and delivers special fabricated valves for special process conditions (big sizes and/or high pressures).

V-port (Fig.2):

60 degree and pentagonal port design. Selection depends on the desired fluid control type.

Double packing:

Alternative solution to bonnet



Fig.1



Fig.2

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, galvanizing...) and against adherence (polishing, PTFE...).

We recommend to contact our technical department.

ACTUATOR TYPES

MANUAL:

- Handwheel (rising stem)
- Handwheel (non-rising stem)
- Chainwheel
- Lever
- Bevel Gear
- Other (square nut)

AUTOMATIC:

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



All actuators supplied by ORBINOX are interchangeable.



Standard Handwheel (Non Rising Stem)



Electric



Pneumatic



Chainwheel



Handwheel (Rising Stem)



Single-acting cylinder



Bevel Gear



Lever

ACCESSORIES:

- Mechanical Stops
- Actuator manual override
- Positioners
- Proximity Switches
- Stem extensions

- Gate block (Fig.1)
- Solenoid valves
- Limit Switches
- Floor stands



Fig.1

Please consult our technical department.

TEMPERATURE CHART

SEAT / SEALS

Material	Max.T (°C)	Applications
EPDM (E)	120	Acids and non mineral oils.
NBR (N)	120	Resistance to petroleum products.
FKM-FPM (V)	200	Chemical service / High temp.
VMQ (S)	250	Food service / High temp.
PTFE (T)	250	Corrosion resistance
Polyurethane	90	Abrasion resistance

PACKING

Material	Max.T (°C)	pH
Dynapack (DP)	270	2-14
Braided PTFE (TH)	260	0-14
Graphited (GR)	600	0-14
Ceramic fibre (FC)	1200	--

NOTE: all types include an elastomere O-ring (same material as seal), excluding TH, GR and FC.

More details and other materials under request.

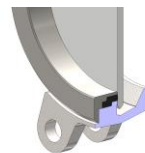
SEAT TYPES



METAL/METAL

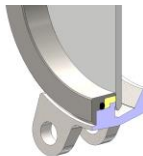
For applications with:

- High temperature
- High density media application
- When full tightness is not required



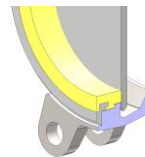
TYPE "K" SEAT (EPDM)

- Standard replaceable resilient EPDM seat
- Replaceable stainless steel ring



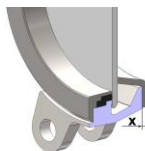
TYPE "K" SEAT (PTFE)

- Replaceable resilient PTFE + O-ring seat
- Replaceable stainless steel ring



POLYURETHANE

- Replaceable polyurethane seat ring

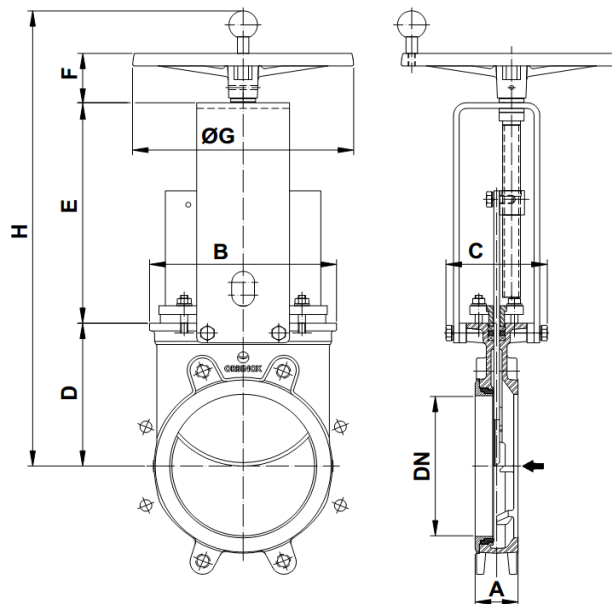


DEFLECTION CONE "C"

- Deflects the media away from any valve internal exposed parts (gate guides, seat, .)
- Material: AISI 316 (1.4401), CA15, Ni-Hard, etc.
- Face-to-face dimension increases:
DN 50 to DN 250 X = 9mm
DN 300 X = 12mm
Larger diameters on request

HANDWHEEL (non- rising stem)

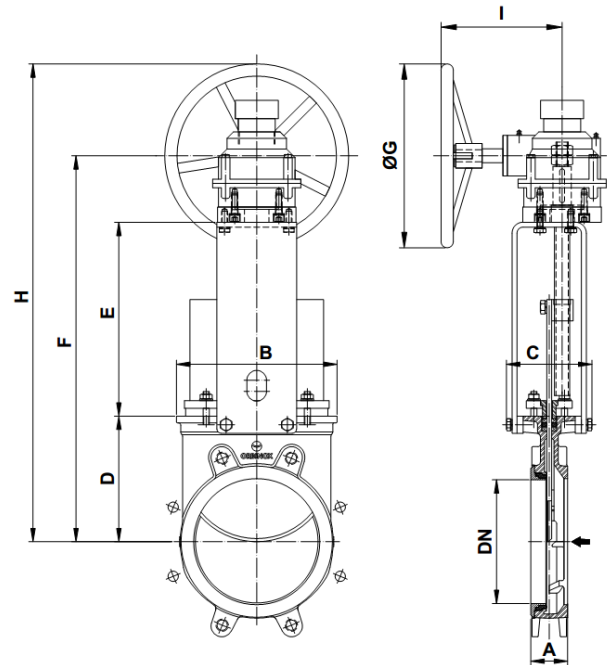
- Standard handwheel actuator
 - DN 150-300: Aluminium handwheel
- Recommended for installation where space is limited
- Consists of:
 - Handwheel with knob
 - Stem
 - Yoke bushing
 - Stem nut fixed to the gate
- Available from DN 150 to DN 300
- Options:
 - Locking Device
 - Extension
 - Square Nut Drive



DN	A	B	C	D	E	F	ØG	H	Weight (kg.)
150	60	216	125	180	252	63	225	556	20
200	60	273	142	235	317	73	310	686	32
250	69	328	142	280	372	73	310	786	46
300	78	391	142	335	422	73	310	891	62

GEAR

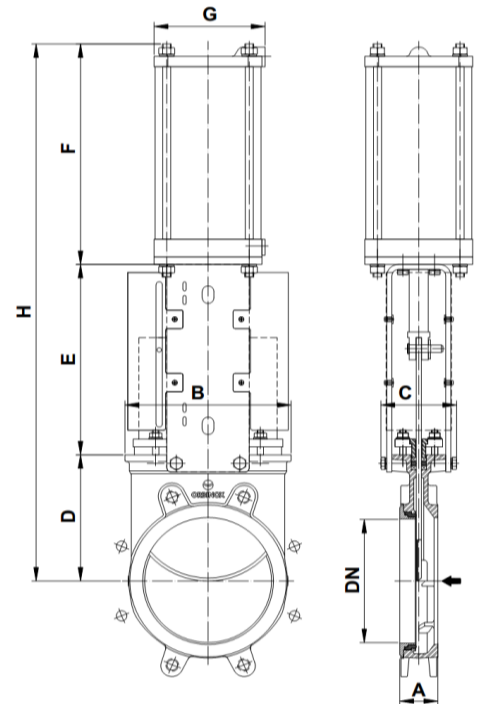
- Consists of:
 - Stem
 - Stem protector
 - Bevel Gear Actuator with Handwheel
(Standard Ratio 4:1)
- Available from DN 150 to DN 300
- Options:
 - Locking device
 - Extension
 - Chainwheel



DN	A	B	C	D	E	F	ØG	H	I
200	60	273	142	235	305	615	300	765	200
250	69	328	142	280	360	715	300	865	200
300	78	391	142	335	410	825	300	975	200

PNEUMATIC CYLINDER

- The standard pneumatic actuator (double acting on-off cylinder) consists on:
 - $\varnothing \leq 300$: Aluminum barrels
 - Aluminum covers
 - Stainless steel (AISI 304) piston rod
 - Nitrile coated steel piston
- Available from DN 150 to DN 300
- Supply Pressure: min. 3.5 bar - max. 10 bar. Actuator designed with 6 bar air supply.
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support.
- Options:
 - Gate guards for proximity switches
 - Hard anodized barrel and covers
 - Stainless steel barrel and covers
 - Over/Undersized cylinder
 - Manual override
 - Fail safe system
 - Limit switches
- Instrumentation (on request):
 - Positioners
 - Flow regulators
 - Solenoid valves
 - Air preparation units

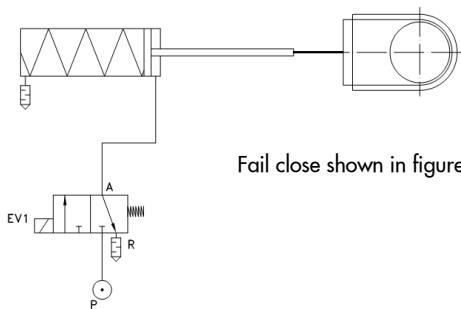


DN	A	B	C	D	E	F	G	H	Weight (kg.)	Standard Cyl.	Connect.
150	60	216	125	180	237	296	140	713	27	C125/168	1/4" G
200	60	273	142	235	309	358	175	902	46	C160/220	1/4" G
250	69	328	142	280	364	428	220	1072	69	C200/270	3/8" G
300	78	391	142	335	414	478	220	1227	86	C200/320	3/8" G

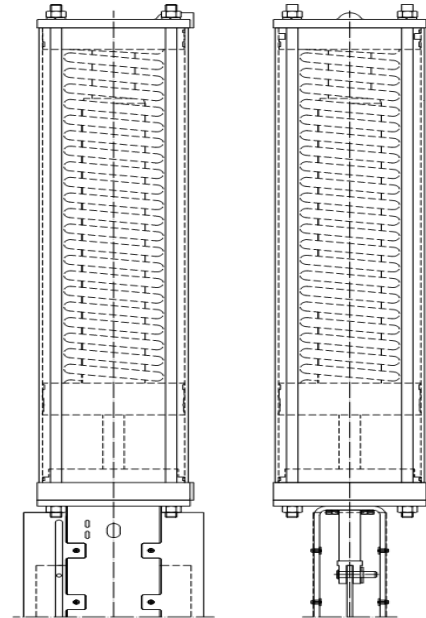
FAIL SAFE SYSTEM

SINGLE ACTING (SPRING RETURN)

- This actuator (single acting cylinder) consists of:
 - Aluminum barrel and covers
 - Steel spring
 - Stainless Steel (AISI 304) piston rod
 - Nitrile coated steel piston
- Available from DN 150 to DN 300
- Supply pressure: min. 5 bar - max. 10 bar
- Options:
 - Fail open
 - Fail close

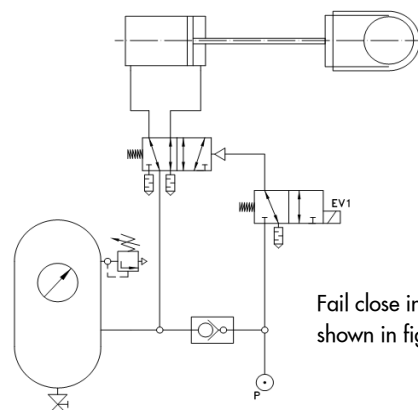
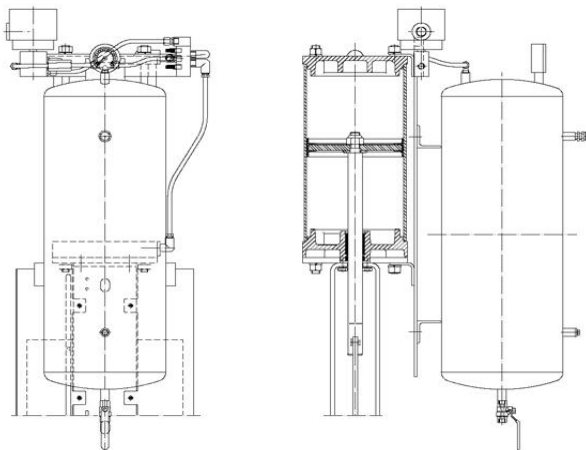


Fail close shown in figure



DOUBLE ACTING WITH AIR TANK

- Fail safe systems consists of: double acting pneumatic cylinder, air tank and all the necessary elements according to the available options (solenoid valve, spool valve,...)
- Different solution available (pressure switches,...)
- Available for all diameters
- Supply Pressure: min. 3.5 bar - max.10 bar



Fail close in power failure shown in figure

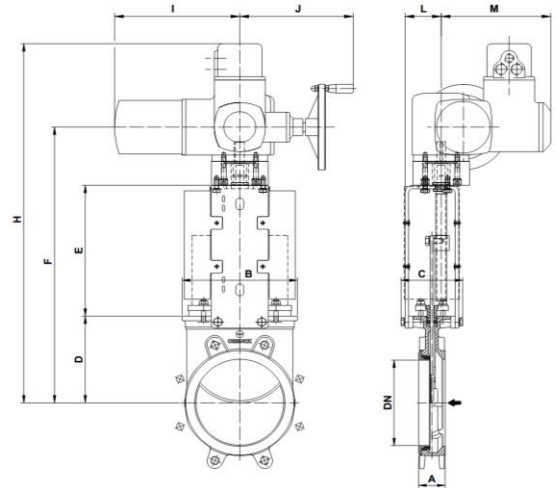
ELECTRIC ACTUATOR (non- rising stem)

- Consists of:
 - Electric actuator
 - Motor support yoke flange acc. to ISO 5210 / DIN 3338

- The standard electric motor is equipped with:
 - Manual emergency operation
 - Limit switches (open/closed)
 - Torque switches

- Available from DN 150 to DN 300

- Wide range of types and marks available to meet customer's needs.

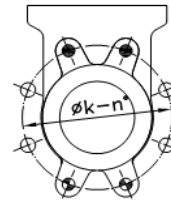


DN	A	B	C	D	E	F	ØG	H	I	J	L	M	Stem Ø x pitch	Torque (Nm)
150	60	216	125	180	237	560	160	735	265	249	72	238	20 x 3	20
200	60	273	142	235	309	669	160	844	265	249	82	238	25 x 4	30
250	69	328	142	280	364	799	160	974	265	249	82	238	25 x 4	45
300	78	391	142	335	414	904	160	1079	265	249	82	238	25 x 4	40

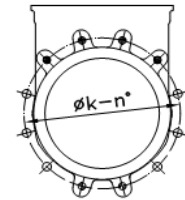
FLANGE AND BOLTING DETAILS

EN 1092-2 PN10

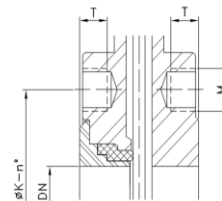
DN	K	n°	M	T	⊙ ⊕ ⊕
150	240	8	M-20	14	2 - 2 - 4
200	295	8	M-20	14	2 - 2 - 4
250	350	12	M-20	18	4 - 2 - 6
300	400	12	M-20	18	4 - 2 - 6






DN 150-200



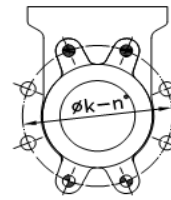
DN 250-300



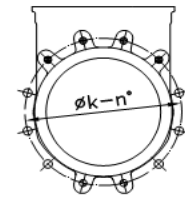
-  BLIND TAPPED HOLES
-  TAPPED THROUGH
-  THROUGH HOLED

AISI B16.5, class 150 (*)

DN	K	n°	M	T	⊙ ⊕ ⊕
6"	9 1/2"	8	3/4" - 10 UNC	1/2"	2 - 2 - 4
8"	11 3/4"	8	3/4" - 10 UNC	1/2"	2 - 2 - 4
10"	14 1/4"	12	7/8" - 9 UNC	18/32"	4 - 2 - 6
12"	17"	12	7/8" - 9 UNC	18/32"	4 - 2 - 6



DN 6"-8"



DN 10"-12"