

## THROUGH CONDUIT KNIFE GATE VALVE

The TH model knife gate is a bi-directional high pressure wafer valve designed for media with high consistency. The double seat design assures a non-clogging shut off on either normal or reverse flow. The valve is used in a wide range of demanding applications in industries such as:

- Pulp & Paper
- Wastewater Treatment Plants
- Chemical plants
- Power Plants
- Etc.

**Sizes:**

DN 200 to DN 1000  
Other size available upon request

**Design pressure:**

DN 200 to DN 1000 up to 20 bar  
Other design pressures available upon request

**Standard flange connection:**

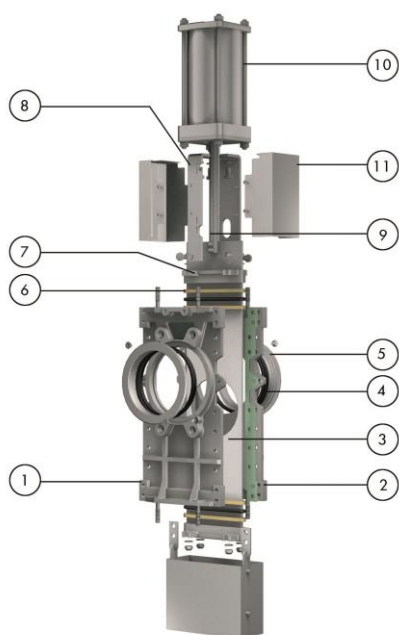
EN 1092 DIN PN 10/16/25 and ANSI B16.5 (class 150)  
Other flange connections available upon request

**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 / AISI 316
2- Body	CF8M / AISI 316
3- Gate	AISI 316
4- Seat	PTFE
5- "K" Ring	AISI 316
6- Packing	Dynapack (Graphite impregnated PTFE and Aramid yam combination with an elastomeric core) + (EPDM O-ring)
7- Gland Follower	CF8M / AISI 316
8- Yoke	AISI 304 (1.4301)
9- Piston Rod	AISI 304 (1.4301)
10- Cylinder	Aluminum
11- Gate guards	AISI 304 (1.4301)

## DESIGN FEATURES

### **BODY:**

Wafer style fabricated or cast two-part bolted stainless steel body, both internally machined, with reinforcing ribs in larger diameters for extra body strength. Internal high density polyethylene sliders (HMWPE) that ensure smoother gate traveling. Full port design to allow a greater flow capacity and to guarantee a minimal pressure drop.

### **SELF-CLEANING GATE:**

Stainless steel as standard. One piece through-going gate with o-port design. When closing, the gate cuts and moves a disc of material downwards, which is again returned to the flow when opening. Gate is polished on both sides to avoid jamming and to ensure a greater seal between the gate with both packing and seat. The thickness and/or the material of the gate can be changed on request for higher pressure requirement.

### **SEAT: (resilient)**

Unique resilient seat design for all sizes, that mechanically locks the seal in the internal of the valve body with a cast, easy to replace, stainless steel seat ring. PTFE as standard, also available in different materials such as EPDM, NBR, Viton, Polyurethane, etc.

### **PACKING:**

Long-life packing with several graphite impregnated PTFE and Aramid yarn combination with an elastomeric core, with an easy access packing gland ensuring a tight seal. Long-life braided packing is available in a wide range of materials.

### **STEM:**

The standard stainless steel stem offers a long corrosion resistant life. For rising stem handwheel actuators only, a stem protector is provided for additional protection against dust while the valve is in the open position.

### **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. Compact design makes it extremely robust even under the most severe conditions.

### **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

### 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

### Flush ports:

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

### 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)

## 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 & non-rising stem)  
 Chainwheel  
 Bevel Gear

### AUTOMATIC:

Electric (rising & non-rising stem)  
 Double Acting Pneumatic  
 Hydraulic

All actuators supplied by ORBINOX are interchangeable

## ACCESSORIES

Mechanical stops  
 Locking device (Fig.1)  
 Manual override  
 Solenoid valves  
 Positioners  
 Limit switches  
 Proximity switches  
 Floor stands  
 Stem Extensions

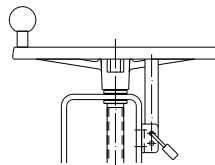
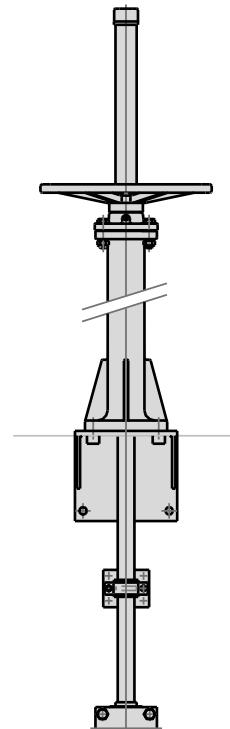


Fig.1



Wide range of extensions available

*For further information about fail safe systems and valve extensions, see EK catalogue*

For more detailed information, please contact our Technical Department

## TEMPERATURE CHART

### SEAT / SEALS

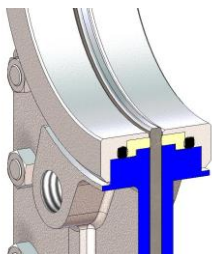
### PACKING

Material	Max.T(°C)	Applications	Material	Max.T(°C)	pH
Metal/Metal	>250	High temp./Low tightness	Dynapack (DP)	270	2-14
EPDM (E)	120	Acids and non mineral oils	Braided PTFE (TH)	260	0-14
NBR (N)	120	Resistance to petroleum products	Graphited (GR)	600	0-14
FKM-FPM (V)	200	Chemical service/High temp.	Ceramic fibre (FC)	1200	--
VMQ (S)	250	Food service/High temp.			
PTFE (T)	250	Corrosion resistance			

NOTE: all types include an elastomere O-ring (same material as seal)

More details and other materials under request

## SEAT TYPES

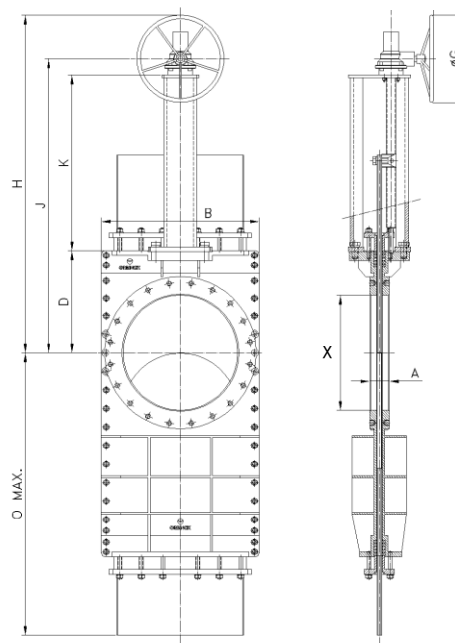


### TYPE "K" SEAT (PTFE)

- Replaceable resilient PTFE + O-ring seats
- Replaceable stainless steel rings

## BEVEL GEAR (non-rising stem)

- Consists of:
  - Stem
  - Yoke
  - Bevel Gear Actuator with Handwheel  
(Standard Ratio 4:1)
  
- Available from DN 300 to DN 1000
  
- Options (on request):
  - Locking Device
  - Chainwheel
  - Extension
  - Rising stem

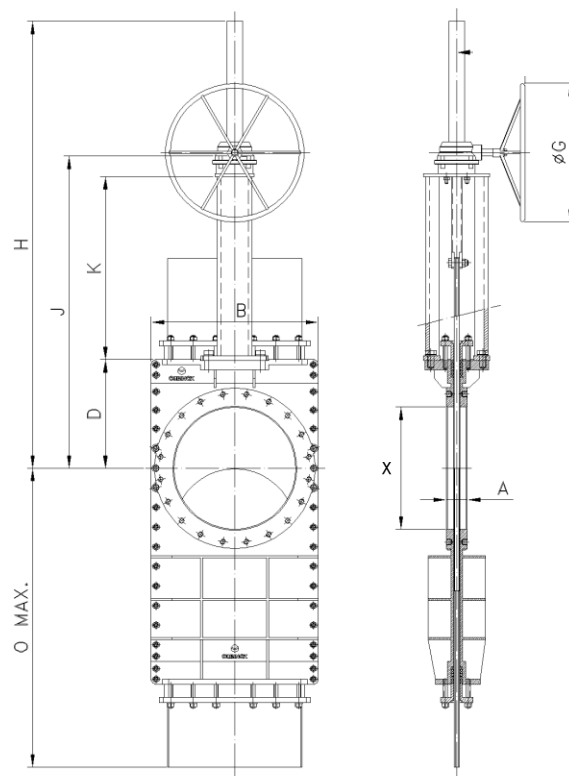


DN	X	A	B	D	J	K	ØG	H	O max.
300	302	78	410	280	810	420	310	822	905
350	332	78	473	300	900	490	410	897	1047
400	380	89	538	350	1000	540	410	997	1171
450	420	89	588	420	1125	595	550	1120	1301
500	490	114	740	490	1215	655	550	1210	1575
600	540	122	754	530	1395	755	550	1389	1711
700	665	128	860	650	1615	855	650	997	2005
800	760	128	964	740	1805	955	650	1120	2295
900	880	128	1070	845	2010	1055	650	1210	2585
1000	970	128	1180	955	2220	1155	650	1389	2875

NOTE: DN300-800 dimensions for 10 bar design pressure and PN10 flange drilling and DN900-1000 for 6 bar design pressure and PN10 flange drilling

**BEVEL GEAR (rising stem)**

- Consists of:
  - Stem
  - Yoke
  - Bevel Gear Actuator with Handwheel  
(Standard Ratio 4:1)
  
- Available from DN 300 to DN 1000
  
- Options (on request):
  - Locking Device
  - Chainwheel
  - Extension
  - Non-rising stem

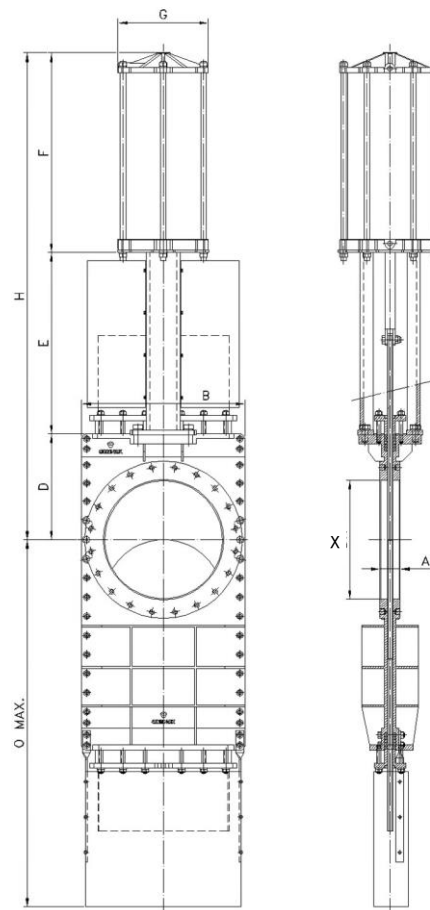


DN	X	A	B	D	J	K	ØG	H	O max.
300	302	78	410	280	810	420	310	1102	905
350	332	78	473	300	900	490	410	1286	1047
400	380	89	538	350	1000	540	410	1386	1171
450	420	89	588	420	1125	655	550	1583	1301
500	490	114	740	490	1395	755	550	1673	1575
600	540	122	754	530	1615	855	550	1963	1171
700	665	128	860	650	1615	855	650	2300	2005
800	760	128	964	740	1805	955	650	2640	2295
900	880	128	1070	845	2010	1055	650	2980	2585
1000	970	128	1180	955	2220	1155	650	3310	2875

NOTE: DN300-800 dimensions for 10 bar design pressure and PN10 flange drilling and DN900-1000 for 6 bar design pressure and PN10 flange drilling

**PNEUMATIC CYLINDER**

- The standard pneumatic actuator (double acting on-off cylinder) consists of:
  - $\varnothing \leq 300$ : Aluminum barrels
  - $\varnothing \geq 350$ : Composite barrels
  - Aluminum end covers
  - Stainless Steel (AISI 304) piston rod
  - Nitrile coated steel piston
  
- Available from DN 300 to DN 1000
  
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support
  
- Options (o request):
  - Gate guards for proximity switches (see pag. 3)
  - Hard anodized jacket and covers
  - Stainless Steel jacket and covers
  - Manual override
  - Fail Safe System
  - Limit switches
  
- Instrumentation (on request):
  - Positioners
  - Solenoid valves
  - Flow regulators
  - Air preparation units



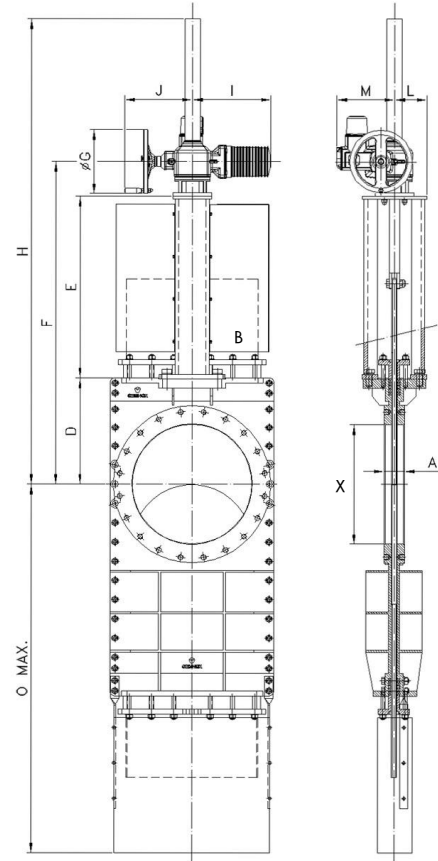
DN	X	A	B	D	O max.	E	F	G	H	Standard Cyl.	Connect.
300	302	78	410	280	905	414	478	220	1172	C200/320	3/8" G
350	332	78	473	300	1047	510	535	277	1344	C200/375	3/8" G
400	380	89	538	350	1171	560	585	277	1494	C250/425	3/8" G
450	420	89	588	420	1301	608	665	382	1693	C250/475	1/2" G
500	490	114	740	490	1575	754	715	382	1959	C300/525	1/2" G
600	540	122	754	530	1711	796	880	444	2206	C350/625	3/4" G
700	665	128	960	650	1820	855	980	444	2485	C350/725	3/4" G
800	760	128	964	740	1930	955	1080	444	2775	C350/825	3/4" G
900	880	128	1070	845	2040	1055	1180	444	3080	C400/925	3/4" G
1000	970	128	1180	955	2135	1155	1280	444	3390	C400/1025	3/4" G

NOTE: DN300-800 dimensions for 10 bar design pressure and PN10 flange drilling and DN900-1000 for 6 bar design pressure and PN10 flange drilling



**ELECTRIC ACTUATOR (rising stem)**

- Consists of:
  - Electric motor
  - Motor support yoke  
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 300 to DN 1000
- For valves installed in a horizontal position, we recommend U-type support plates and/or actuator support
- Wide range of types and brands available to meet customer's needs
- Option:
  - Non-rising stem



DN	X	A	B	D	E	F	ØG	H	O max.	I	J	L	M	Torque (Nm)
300	302	78	410	280	420	849	200	1434	905	282	256	62	247	60
350	332	78	473	300	490	930	200	1515	1047	282	256	65	247	60
400	380	89	538	350	540	1030	315	1615	1171	282	256	65	247	60
450	420	89	588	420	595	1193	315	1793	1301	385	325	65	285	120
500	490	114	740	490	655	1283	315	1883	1575	385	325	90	285	250
600	540	122	754	530	755	1443	315	2143	1711	385	325	90	285	250
700	665	128	860	630	855	1660	400	2300	1820	385	332	90	285	500
800	760	128	964	740	955	1850	500	2640	1930	510	355	115	310	500
900	880	128	1070	845	1055	2060	500	2980	2040	510	355	115	310	650
1000	970	128	1180	955	1155	2300	500	3310	2135	510	355	115	310	1000

NOTE: DN300-800 dimensions for 10 bar design pressure and PN10 flange drilling and DN900-1000 for 6 bar design pressure and PN10 flange drilling

FLANGE AND BOLTING DETAILS

EN 1092-2 PN10

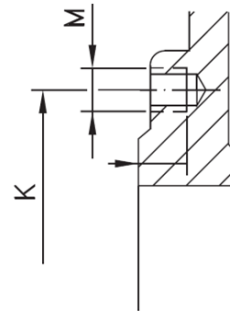
DN	K	n°	M
300	400	12	M-20
350	460	16	M-20
400	515	16	M-24
450	565	20	M-24
500	620	20	M-24
600	725	20	M-27
700	840	24	M-27
800	950	24	M-30
900	1050	28	M-30
1000	1160	28	M-33

EN 1092-2 PN16

DN	K	n°	M
300	410	12	M-24
350	470	16	M-24
400	525	16	M-27
450	585	20	M-27
500	650	20	M-30
600	770	20	M-33
700	840	24	M-33
800	950	24	M-36
900	1050	28	M-36
1000	1170	28	M-39

ANSI B16.5, class 150

DN	K	n°	M
12"	17"	12	7/8" - 9 UNC
14"	18 3/4"	12	1" - 8 UNC
16"	21 1/4"	16	1" - 8 UNC
18"	22 3/4"	16	1 1/8" - 7 UNC
20"	25"	20	1 1/8" - 7 UNC
24"	29 1/2"	20	1 1/4" - 7 UNC
28"	36 1/2"	28	1 1/2" - 6 UNC
32"	41 3/4"	28	1 1/2" - 6 UNC
36"	46"	32	1 1/2" - 6 UNC
40"	50 3/4"	36	1 1/2" - 6 UNC



BLIND TAPPED HOLES

NOTE: Other flange drillings available upon request