

## SQUARE PORT KNIFE GATE VALVE

The BC model knife gate is a fabricated square or rectangular port low-pressure valve for highly solid loaded fluids or solids, mainly used in bulk handling and silo outlet applications in industries such as:

- Chemical plants
- Power plants
- Food and Beverage
- Wastewater treatment plants
- Mining
- Etc.

**Sizes:**

From 150 x 150 to 600 x 600  
(other dimensions on request)

**Working pressure:**

Fabricated valves:  
150 x 150 to 600 x 600     1 kg/cm<sup>2</sup>  
Cast bodies available for higher pressure

**Standard flange connection:**

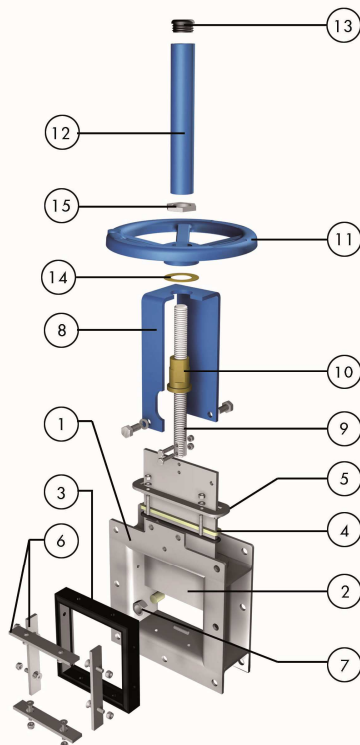
Please refer to the table on page BC-8  
Other flange connections available on request

**Directives:**

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



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



### STANDARD PARTS LIST

Part:	Material:	
1- Body	Carbon Steel	AISI 316
2- Gate	AISI 304	AISI 316
3- Seat	Metal/Metal or EPDM	
4- Packing	ST	
5- Gland Follower	Carbon Steel	AISI 316
6- Seal retainer plate	Carbon Steel	AISI 316
7- Slider support	Carbon Steel or AISI-316 + Nylon or PTFE	
8- Yoke	Carbon Steel - Epoxy coated	
9- Stem	AISI 430	
10- Stem nut	Brass	
11- Friction washer	Brass	
12- Handwheel	GJS400 (GGG40)	
13- Stem protector	Epoxy-coated Carbon Steel	
14- Cap	Plastic	
15- Nut	Zinc plated Carbon Steel	

## DESIGN FEATURES

### **BODY:**

Fabricated design. Internal gate wedges and guides for tighter shut off. Square or rectangular port design for higher flow capacity and minimal pressure drop. Internal design avoids any build up of solids that would prevent valve from closing.

### **GATE:**

Stainless steel gate as standard. Gate is polished on both sides to avoid jamming and seat damage.

### **PACKING:**

Long-life packing with several layers of braided fibre plus an EPDM o-ring (resilient valves), 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 whilst 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 EPOXY coated steel (stainless 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 valve bodies and 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 trapped accidentally while the gate is moving.



## OTHER OPTIONS

### FLUSH PORTS:

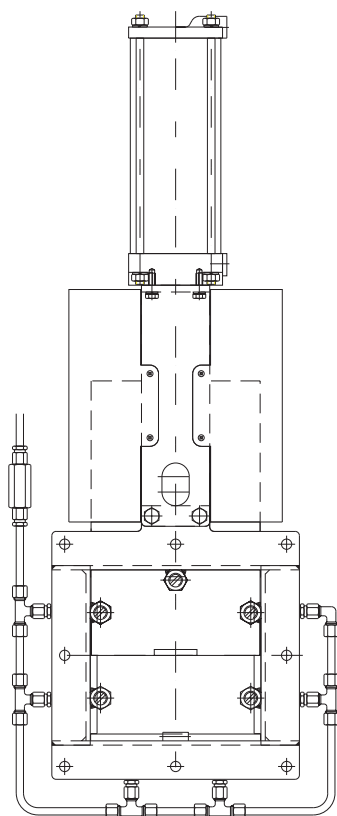
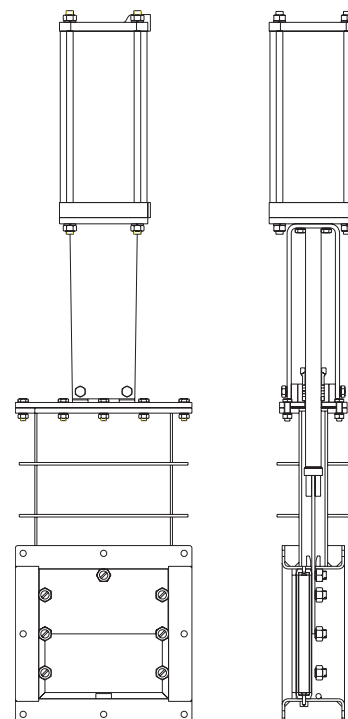
- Allow for cleaning of solids trapped within the body cavities that can obstruct the flow or prevent the valve from closing
- Purging can be made with air, steam, liquids, etc. depending on the process

### SPECIAL DESIGNS:

- ORBINOX designs, produces and delivers special fabricated valves for special process conditions (big sizes, high pressures, material of construction, etc.)

### CAST BODIES:

- Standard material: GG25 and CF8M. Special alloys such as 254SMO, Hastelloys, ... also available upon request



## ATEX



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

- Hand operated BC 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

## ACTUATOR TYPES

### MANUAL:

Handwheel (rising stem & non-rising stem)  
 Chainwheel  
 Lever  
 Bevel Gear (rising stem & non-rising stem)  
 Others (square nut...)

### AUTOMATIC:

Electric (rising & non-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)

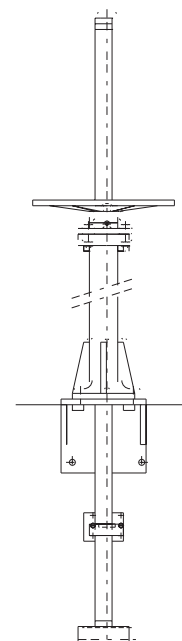
- Available from DN 50 to DN 200
- Supply pressure: min. 5 kg/cm<sup>2</sup> - max. 10 kg/cm<sup>2</sup>
- Options:
  - Fail open
  - Fail close

### SINGLE ACTING (VOLUME TANK)

- Available for all sizes
- Standard for valves sizes DN>200
- Options:
  - Pneumatic Failsafe
  - Pneumatic or Electric failsafe

## ACCESSORIES

Mechanical stops  
 Locking device  
 Manual override  
 Solenoid valves  
 Positioners  
 Limit switches  
 Proximity switches  
 Floor stands  
 Stem extensions



Wide range of valve extensions available

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

We recommend to contact our technical department

## TEMPERATURE CHART

### SEAT / SEALS

### PACKING

Material	Max.Temp.(°C)	Applications
Metal/Metal	>250	High temp. / Low tightness
EPDM (E)	120	Acids and non mineral oils
Nitrile (N)	120	Resistance to petroleum products
Viton (V)	200	Chemical service / High temp.
Silicone (S)	250	Food service / High temp.
PTFE (T)	250	Corrosion resistance

More details and other materials under request

Material	Max.Temp.(°C)	pH
Dry cotton (AS)	50	6-8
PTFE impregn. synth. fibre (ST)	240	2-13
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

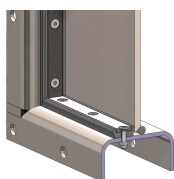
## SEAT TYPES



### METAL / METAL

For applications with:

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

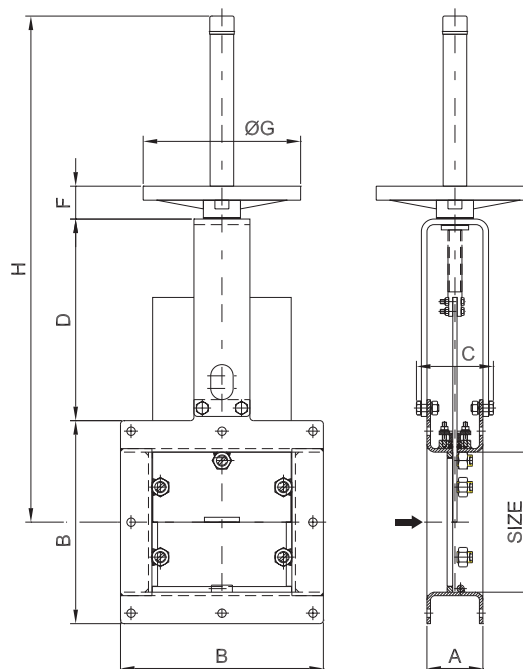


### RESILIENT

- Temperature limitations according to seat material selected. Review the above chart or contact our technical department for more information
- Replaceable seal retainer plates

**HANDWHEEL (rising stem)**

- Standard manual actuator
- Consists of:
  - Handwheel: Epoxy coated Cast Iron
  - Yoke
  - Stem
  - Stem nut
  - Stem protector
- Available from 150 x 150 to 600 x 600
- Options:
  - Locking Device
  - Extensions and floor stands



SIZE	A	B	C	D	ØG	F	H	Weight (kg.)
150 x 150	80	240	110	219	225	47	580	23
200 x 200	80	290	115	288	310	67	740	27
250 x 250	80	340	115	338	310	67	915	32
300 x 300	80	390	115	388	310	67	990	38
350 x 350	100	450	137	444	410	68	1165	58
400 x 400	100	500	137	494	410	68	1240	66
450 x 450	100	550	137	544	410	68	1390	75
500 x 500	100	600	137	594	410	68	1575	85
600 x 600	100	700	137	694	410	68	1725	110

**PNEUMATIC CYLINDER**

• The standard pneumatic actuator (double acting on-off cylinder) consists of:

- DN $\leq$ 250: Aluminum barrels
- DN $\geq$ 300: Composite barrels
- Aluminum end covers
- Stainless steel (AISI 304) piston rod
- Nitrile coated steel piston

• Available from 150 x 150 to 600 x 600

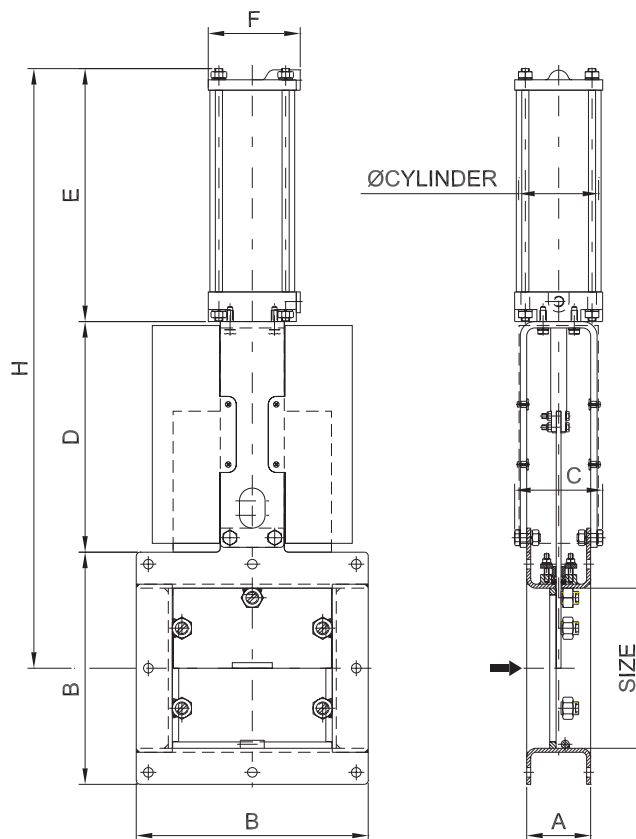
• Supply pressure: min. 3,5 kg/cm<sup>2</sup> - max. 10 kg/cm<sup>2</sup>.  
Actuator designed with 6 kg/cm<sup>2</sup> air supply

• Options (on request):

- Hard anodized barrel and covers
- Stainless Steel barrel and covers
- Over/Undersized cylinder
- Manual override
- Fail safe systems
- Limit switches

• Instrumentation (on request):

- Positioners
- Solenoid valves
- Flow regulators
- Air preparation units



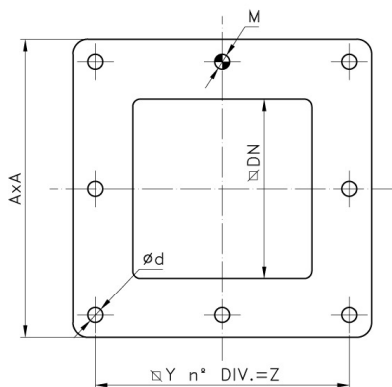
SIZE	A	B	C	D	E	F	H	Weight (kg.)	Standard Cyl.	Connect.
150 x 150	80	240	110	219	266	115	605	25	C100/150	1/4" G
200 x 200	80	290	115	288	317	115	750	30	C100/200	1/4" G
250 x 250	80	340	115	338	367	115	875	35	C100/250	1/4" G
300 x 300	80	390	115	388	417	115	1000	42	C100/300	1/4" G
350 x 350	100	450	137	444	485	140	1154	63	C125/355	1/4" G
400 x 400	100	500	137	494	535	140	1279	72	C125/405	1/4" G
450 x 450	100	550	137	544	585	140	1404	80	C125/455	1/4" G
500 x 500	100	600	137	594	650	175	1544	98	C160/510	1/4" G
600 x 600	100	700	137	694	750	175	1794	125	C160/610	1/4" G

Note: for higher real working pressure (cast bodies), contact our technical department in order to properly oversize the actuator

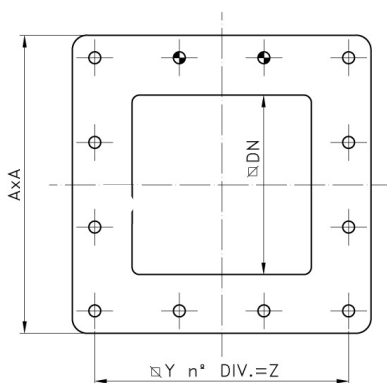
**FLANGE AND BOLTING DETAILS**

DN	A x A	n° divis. to Y	M	d	T	⊕ ⊕
150 x 150	240 x 240	2 div.to 105=210	M-10	12	10	7 - 1
200 x 200	290 x 290	2 div.to 130=260	M-10	12	10	7 - 1
250 x 250	340 x 340	2 div.to 155=310	M-10	12	10	7 - 1
300 x 300	390 x 390	3 div.to 120=360	M-10	12	10	10 - 2
350 x 350	450 x 450	3 div.to 140=420	M-12	14	10	10 - 2
400 x 400	500 x 500	4 div.to 117,5=470	M-12	14	10	13 - 3
450 x 450	550 x 550	4 div.to 130=520	M-12	14	10	13 - 3
500 x 500	600 x 600	4 div.to 142,5=570	M-12	14	10	13 - 3
600 x 600	700 x 700	4 div.to 167,5=670	M-12	14	10	13 - 3

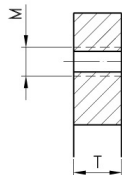
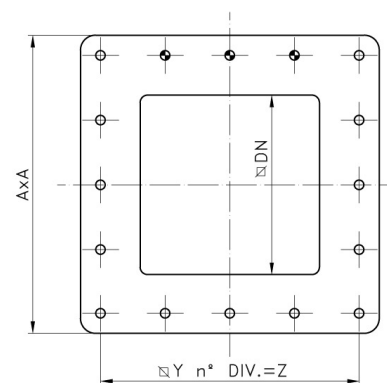
150x150 to 250x250





300x300 to 350x350



400x400 to 600x600



-  TAPPED THROUGH
-  THROUGH HOLES