

**MODEL****BC****SERIES 90**

## SQUARE PORT KNIFE GATE VALVE

The **BC (SER.90)** model knife gate is a square 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
- Wastewater treatment Plants
- Power plants
- Mining
- Food and Beverage
- etc.

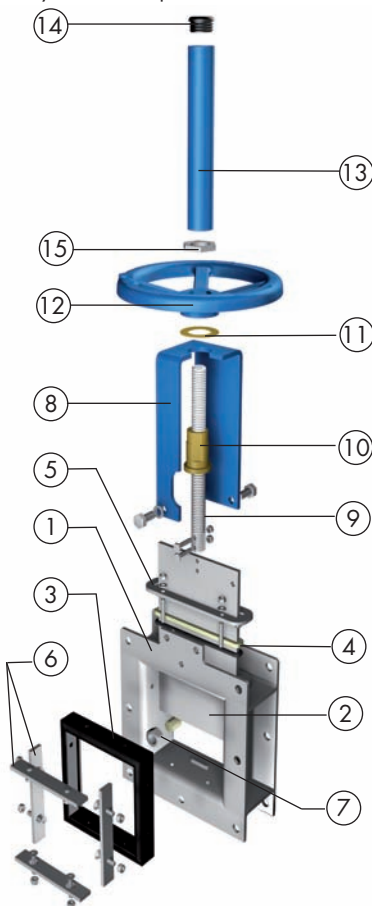
**Sizes:** From 6" x 6" (150 x 150mm) to 24" x 24" (600 x 600mm)  
(other dimensions on request)

**Working pressure:** Fabricated valve  
6" x 6" to 24" x 24"  
(150 x 150mm to 600 x 600mm): 15 psi (1 kg/cm<sup>2</sup>)  
For higher pressure: Casted bodies (on request)

**Standard flange connection:** please refer to the table on page BC-8.  
Other flange connections available on request.

**Directives:** DIR 2006/42/EC (MACHINES)  
DIR 97/23/EC (PED) Fluid: Group 1(b), 2 (Cat. I, mod. A)  
DIR 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:		
1- Body	Carbon Steel	AISI 316
2- Gate	AISI 304	AISI 316
3- Seat	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	$\phi \leq 12,20"/310\text{mm}$ : Ductile Iron/ $\phi > 14"/410\text{mm}$ : GJL 250 (GG25)	
13- Stem protector	Epoxy-coated Carbon Steel	
14- Cap	Plastic	
15- Nut	Zinc plated Carbon Steel	



Reserves the right to change specifications without notice

ORBINOX CANADA, ORBINOX USA, ORBINOX BRAZIL, ORBINOX SPAIN, ORBINOX UK, ORBINOX FRANCE, ORBINOX GERMANY, ORBINOX INDIA, ORBINOX CHINA, ORBINOX S.E.A.

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BC(SER.90)-1

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## 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 to allow for installation 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.

\* IN EUROPE ONLY



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## OTHER OPTIONS

### FLUSH PORTS:

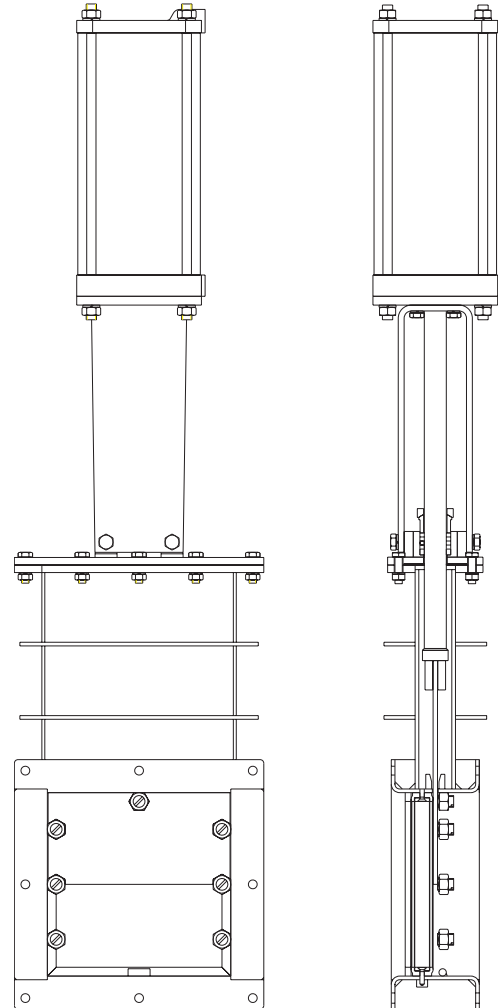
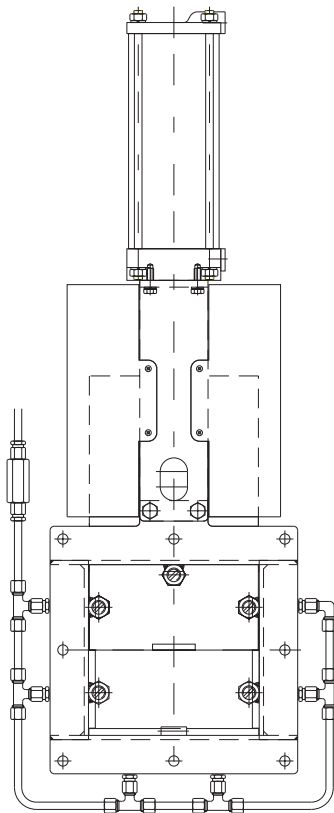
- Allow for cleaning of solids trapped within the body cavities that can obstruct the flow or prevent the valve from closing.
- Purging can be made with air, steam, liquids, etc. depending on the process.

### SPECIAL DESIGNS:

- **ORBINOX** is equipped for in house fabrication of special valves. Depending on the design, diameter, pressures, material of construction, etc.

### CASTED BODIES:

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



## ATEX



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

- Hand operated BC(SER.90) 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.
- Electrical, pneumatical and hydraulically operated valves must be subjected to a conformity assesment of their own and also of the whole unit valve-actuator to get EC Type Approval to Directive 94/9.

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## ACTUATOR TYPES

### Manual:

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

### Automatic:

Electric  
Double Acting Pneumatic  
Single Acting Pneumatic  
Hydraulic

All actuators supplied by ORBINOX are interchangeable.

## FAIL SAFE SYSTEMS

Used on pneumatic actuated valves.

### SINGLE ACTING / VOLUME TANK

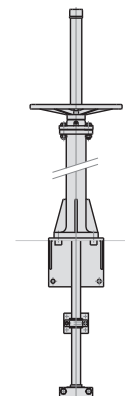
Available for all sizes.

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(SER.10) chapter.*

We recommend consultation with our technical department.

**MODEL****BC****SERIES 90****TEMPERATURE CHART**

SEAT / SEALS				PACKING				
Material	Max.Temp.(F°)	(°C)	Applications	Material	Max. Temp.	(F°)	(°C)	pH
Metal/Metal	>482	>250	High temp. Low tightness.	Dry cotton (AS)		122	50	6 - 8
EPDM (E)	248	120	Acids and non mineral oils.	PTFE impregn. synth. fibre (ST)		464	240	2 - 13
Nitrile (N)	248	120	Resistance to petroleum products.	Braided PTFE (TH)		500	260	0 - 14
Viton (V)	392	200	General chemical service. High temperature.	Graphited (GR)		1112	600	0 - 14
Silicone (S)	482	250	Food service. / High temperature.	Ceramic fibre (FC)		2192	1200	—
PTFE (T)	482	250	Corrosion resistance.	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:

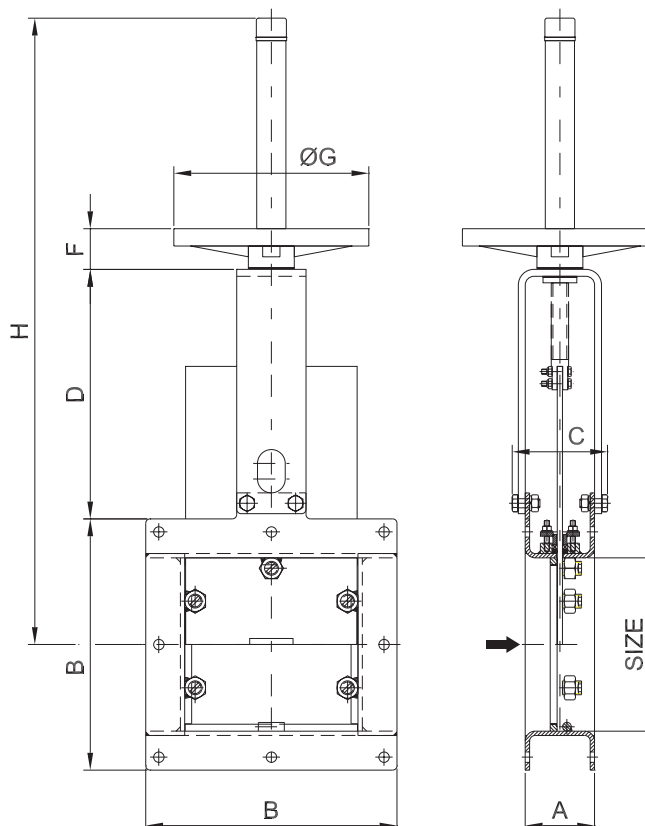
- High temperature
- High density media application
- When full tightness is not required

**RESILIENT**

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

**MODEL****BC****SERIES 90****HANDWHEEL (rising stem)**

- Standard handwheel actuator.
- Consists of:
  - Handwheel: Epoxy coated Cast Iron
  - Stem
  - Stem nut
  - Stem protector
- Available from 6" x 6" to 24" x 24"  
(150 x 150mm to 600 x 600mm)
- Options:
  - Locking Device
  - Extensions

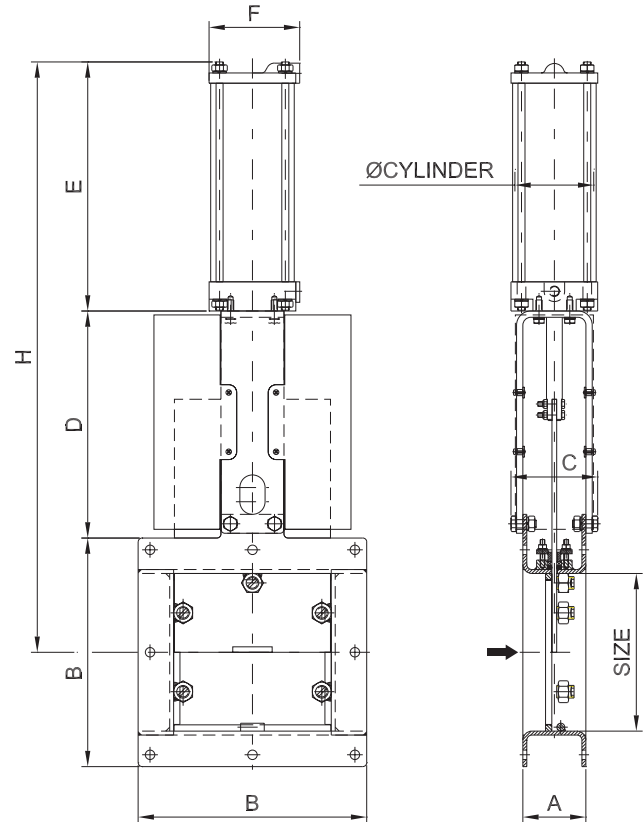


SIZE("/mm)	A	B	C	D	ØG	F	H	Weight (lbs./kg.)
6" x 6"/150 x 150	3,14/80	9,44/240	4,33/110	8,62/219	8,86/225	1,85/47	22,83/580	51/23
8" x 8"/200 x 200	3,14/80	11,42/290	4,52/115	11,33/288	12,20/310	2,64/67	29,13/740	60/27
10" x 10"/250 x 250	3,14/80	13,38/340	4,52/115	13,31/338	12,20/310	2,64/67	36,02/915	71/32
12" x 12"/300 x 300	3,14/80	15,35/390	4,52/115	15,27/388	12,20/310	2,64/67	38,97/990	84/38
14" x 14"/350 x 350	3,94/100	17,72/450	5,39/137	17,48/444	16,14/410	2,67/68	45,87/1165	128/58
16" x 16"/400 x 400	3,94/100	19,68/500	5,39/137	19,44/494	16,14/410	2,67/68	48,82/1240	146/66
18" x 18"/450 x 450	3,94/100	21,65/550	5,39/137	21,42/544	16,14/410	2,67/68	54,72/1390	166/75
20" x 20"/500 x 500	3,94/100	23,62/600	5,39/137	23,38/594	16,14/410	2,67/68	62,00/1575	188/85
24" x 24"/600 x 600	3,94/100	27,55/700	5,39/137	27,32/694	16,14/410	2,67/68	67,91/1725	243/110

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## PNEUMATIC CYLINDER

- The standard pneumatic actuator (double acting on-off cylinder) consists of:
  - DN 50-250: Aluminum barrels
  - DN  $\geq$  300: Composite barrels
  - Stainless steel (AISI 304) piston rod
  - Nitrile coated steel piston
- Available from 6" x 6" to 24" x 24"  
(150 x 150 to 600 x 600)
- Supply Pressure: minimum 50psi/(3.5 kg/cm<sup>2</sup>) - maximum 150psi/(10 kg/cm<sup>2</sup>)  
Actuator designed with 90psi/(6 kg/cm<sup>2</sup>) air supply
- Options:
  - Hard anodized jacket and covers
  - Over / Undersized cylinder
  - Stainless Steel jacket and covers
  - Manual override
  - Fail safe systems
  - Travel stops
- Instrumentation (on request):
  - Positioners
  - Solenoid valves
  - Flow regulators
  - Air preparation units



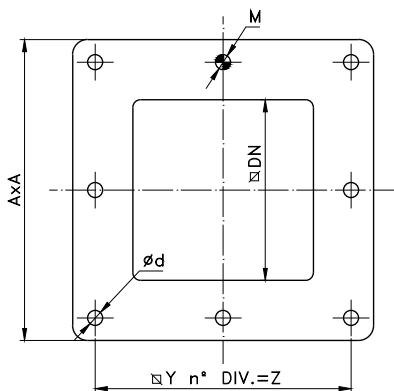
SIZE("/mm)	A	B	C	D	E	F	H	Weight (lbs./kg.)	Standard Cyl.	TM
6" x 6"/150 x 150	3,14/80	9,44/240	4,33/110	8,62/219	10,47/266	4,52/115	23,81/605	55/25	C4"-6"/(100-150)	1/4" G
8" x 8"/200 x 200	3,14/80	11,42/290	4,52/115	11,33/288	12,48/317	4,52/115	29,52/750	66/30	C4"-8"/(100-200)	1/4" G
10" x 10"/250 x 250	3,14/80	13,38/340	4,52/115	13,31/338	14,44/367	4,52/115	34,44/875	77/35	C4"-10"/(100-250)	1/4" G
12" x 12"/300 x 300	3,14/80	15,35/390	4,52/115	15,27/388	16,41/417	4,52/115	39,37/1000	92/42	C4"-12"/(100-300)	1/4" G
14" x 14"/350 x 350	3,94/100	17,72/450	5,39/137	17,48/444	19,09/485	5,51/140	45,43/1154	138/63	C5"-14"/(125-355)	1/4" G
16" x 16"/400 x 400	3,94/100	19,68/500	5,39/137	19,44/494	21,06/535	5,51/140	50,35/1279	158/72	C5"-16"/(125-405)	1/4" G
18" x 18"/450 x 450	3,94/100	21,65/550	5,39/137	21,42/544	23,03/585	5,51/140	55,27/1404	176/80	C5"-18"/(125-455)	1/4" G
20" x 20"/500 x 500	3,94/100	23,62/600	5,39/137	23,38/594	25,59/650	6,89/175	60,78/1544	216/98	C6.5"-20"/(160-510)	1/4" G
24" x 24"/600 x 600	3,94/100	27,55/700	5,39/137	27,32/694	29,52/750	6,89/175	70,62/1794	275/125	C6.5"-24"/(160-610)	1/4" G

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

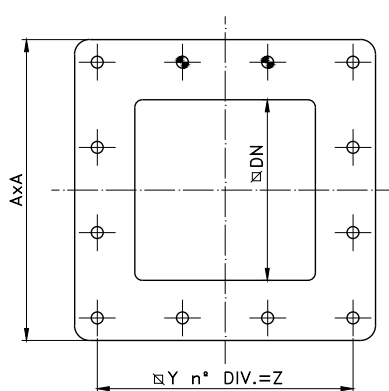
**MODEL****BC****SERIES 90****FLANGE AND BOLTING DETAILS**

DN(" / mm)	A x A(" / mm)	n° divis. to Y = Z	d	T		
6" x 6" / (150 x 150)	9,5" x 9,5" / (240 x 240)	2 div. to 4,15" (105mm) = 8,30" (210 mm)	0,48" / 12	0,59" / 15	7	1
8" x 8" / (200 x 200)	11,5" x 11,5" / (290 x 290)	2 div. to 5,15" (130mm) = 10,25" (260mm)	0,48" / 12	0,59" / 15	7	1
10" x 10" / (250 x 250)	13,5" x 13,5" / (340 x 340)	2 div. to 6,10" (155mm) = 12,20" (310mm)	0,48" / 12	0,59" / 15	7	1
12" x 12" / (300 x 300)	15,5" x 15,5" / (390 x 390)	3 div. to 4,80" (120mm) = 14,20" (360mm)	0,48" / 12	0,59" / 15	10	2
14" x 14" / (350 x 350)	18" x 18" / (450 x 450)	3 div. to 5,52" (140mm) = 16,55" (420mm)	0,55" / 14	0,59" / 15	10	2
16" x 16" / (400 x 400)	20" x 20" / (500 x 500)	4 div. to 4,65" (117,5mm) = 18,50" (470mm)	0,55" / 14	0,59" / 15	13	3
18" x 18" / (450 x 450)	22" x 22" / (550 x 550)	4 div. to 5,12" (130mm) = 20,50" (520mm)	0,55" / 14	0,59" / 15	13	3
20" x 20" / (500 x 500)	24" x 24" / (600 x 600)	4 div. to 5,62" (142,5mm) = 22,50" (570mm)	0,55" / 14	0,59" / 15	13	3
24" x 24" / (600 x 600)	28" x 28" / (700 x 700)	4 div. to 6,60" (167,5mm) = 26,38" (670mm)	0,55" / 14	0,59" / 15	13	3

6" x 6" to 10" x 10"  
(150 x 150 mm to 250 x 250 mm)



12" x 12" to 14" x 14"  
(300 x 300 mm to 350 x 350 mm)



16" x 16" to 24" x 24"  
(400 x 400 mm to 600 x 600 mm)

