



INSTALLATION, OPERATION & MAINTENANCE MANUAL

SK SERIES





TABLE OF CONTENTS

1. DESCRIPTION.....	3
2. HANDLING.....	3
3. INSTALLATION.....	4
4. ACTUATORS.....	6
4.1. PNEUMATIC.....	6
5. MAINTENANCE.....	7
5.1. DISC REPLACEMENT (POS. 4).....	7
5.2. SEAL RING REPLACEMENT (POS. 3).....	7
5.3. SPARE PARTS:.....	7
6. STORAGE.....	8
7. ENVIRONMENTAL CONSIDERATIONS.....	8
8. PARTS LIST & DRAWINGS.....	9

MODEL

SK



1. DESCRIPTION

The SK model is a unidirectional valve with a stainless-steel cast body, metal seated and metal disc. Valve is full port when open. The disc rests protected outside the flow path in the fully open position which makes it suitable for severe high cycle service applications like junk trap and bulk handling processes in general.

Valve main features include a short Face to Face, 1/4 turn actuator, lever protection to prevent from trapping of solid parts and a metal seated design with improved tightness. As an option metal seat surfaces can be hardened with different treatments.

The SK series complies with the following European directives:

- **2006/42/EC**: Machinery Directive.

Where applicable it can also comply with the following additional directives:

- **2014/68/EU**: Pressure Equipment Directive. Some considerations:
 - o Dust or bulk handling (only solids) are not fluids and PED does not apply.
 - o Dust pneumatic transport (pressurized air+dust) might fall in this Directive.
 - o ORBINOX SA certifies all knife gates in catalogue as CATEGORY I, module A, for liquid fluids (PS<10)
 - o Always check with an Orbinox representative suitable category in the following cases because these valves might require specific considerations and higher rating:
 - When the fluid is GAS and PS $\geq 0,5$ bar
 - When the fluid is LIQUID and PS > 10bar.

2. HANDLING

The valves are packed according to the appropriate transport standards. If you receive the packing damaged, please inform the transport company in writing and contact you ORBINOX representative.



When handling an ORBINOX valve please pay attention to the following points:

- **Do NOT attach lifting gear directly to the valve actuator or gate guards.** They are not designed to bear the weight and could easily be damaged.
- **Do NOT lift the valve by the valve bore.** This can cause damage to the seating surfaces and seals.
- Check that selected lifting gear is rated to carry the weight of the valve.
- The valve can be handled using soft straps or slings.

MODEL

SK

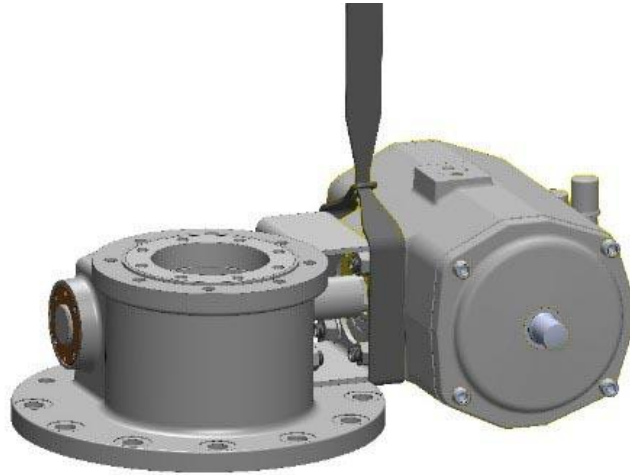


Fig. 1 Handling with soft straps at the actuator support

3. INSTALLATION



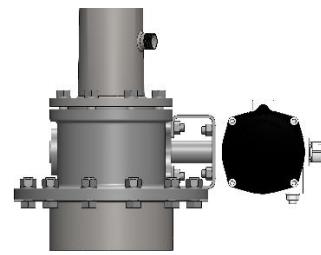
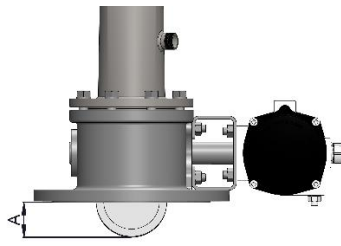
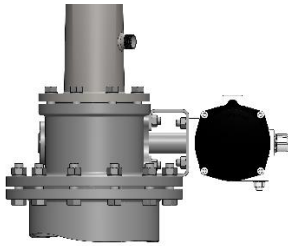
To avoid any personal injury or damage to property from the release of process fluid:

- Those in charge of handling and maintenance of the valve must be qualified and trained in valve operations.
- Use appropriate personal protection equipment (gloves, safety shoes, etc).
- Shut off all operating lines to the valve and place a warning sign.
- Isolate the valve completely from the process.
- Release process pressure.
- Drain the process fluid from the valve.
- The valve must be properly earthed.

Before installation, inspect the valve body and components for any damage that may have occurred during shipping or storage. Make sure the internal cavities within the valve body are clean. Inspect the pipeline and mating flanges, making sure the pipe is free of foreign material and that the flanges are clean.

The valve shall be always mounted in a vertical pipeline. In some cases, this valve can discharge directly (dead end service) For those direct discharge installations make sure there is enough space for the disc in open position (it protrudes from the lower flange). Optionally special pipe protection for the disc is available.

MODEL	SK
--------------	-----------



	A
DN125	75
DN200	135

Between flanges

Direct discharge

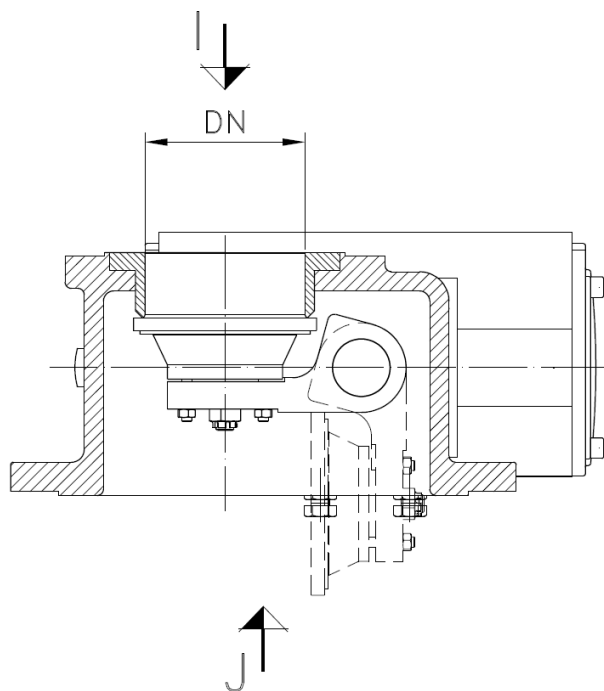
Direct discharge with optional pipe protection

Special care should be taken to maintain the correct distance between the flanges and to ensure that they are parallel to the valve body. Incorrect alignment of the valve can cause deformations, which can lead to difficulties in operation.

Make sure the valve is installed in the appropriate orientation. Valve always opens downwards. Top flange is always the smaller one.

The following table gives the maximum recommended torque values for the valve flange fixing bolts.

Bolt size	M16	M20
Torque (Nm)	70	140

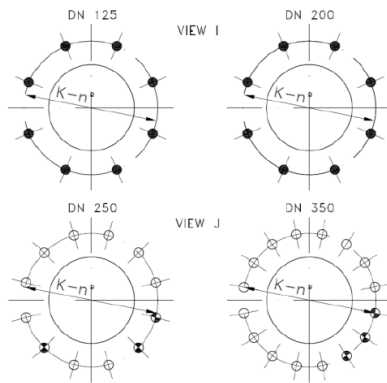


MODEL

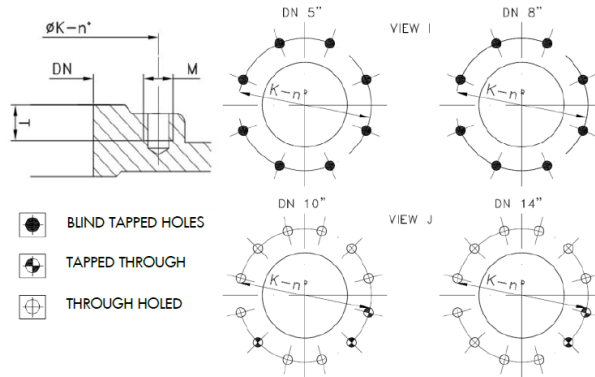
SK



EN 1092-2 PN10



ANSI B16.5 , class 150



DN	K	n°	M	T	◆	⊕	⊕
View I							
125	210	8	M-16	18	8	0	0
200	295	8	M-20	18	8	0	0
View J							
250	350	12	M-20	24	0	3	9
350	460	16	M-20	30	0	3	13

DN	K	n°	M	T	◆	⊕	⊕
View I							
5"	8 1/2"	8	3/4" UNC	18	8	0	0
8"	11 3/4"	8	3/4" UNC	18	8	0	0
View J							
10"	14 1/4"	12	7/8" UNC	24	0	3	9
14"	18 3/4"	12	1" UNC	30	0	2	10

Once the valve is installed, air and electric connections shall be connected. SK valves are normally supplied with no air instrumentation. Please check your specific order information to identify the final arrangement of these elements and how to install them.

Once the valve is finally installed, proceed with a functional test before pressurizing the valve to verify flanges and all electrical and or pneumatic connections have been properly made.

4. ACTUATORS

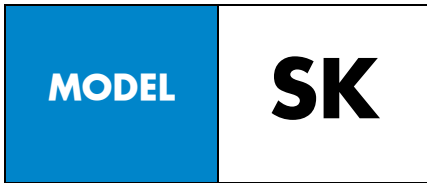
4.1. PNEUMATIC

SK valves are usually supplied with a 1/4 turn double acting pneumatic actuator. Pressure can vary between 3,5 bar and 8 bar. Unless otherwise specified the actuator has been sized with a minimum supply pressure of 6 bar.

It is essential for a good maintenance of the cylinder that air should be well dried, filtered and lubricated. Air quality shall fulfil the following requirements:

- ISO 8573-1 Grade 5:4:3 for regular process (ON / OFF services).
- ISO 8573-1 Grade 5:3:3 for regular process at low temperature (-20 °C).
- ISO 8573-1 Grade 3:4:3 for cylinders with positioners.
- ISO 8573-1 Grade 3:3:3 for cylinders with positioners at low temperature (-20 °C).

It is recommended to actuate the cylinder 3-4 times before the start up once it is installed in the pipeline.



5. MAINTENANCE

The valve must not undergo any modifications without a previous agreement with ORBINOX.

ORBINOX shall not be liable for any damages that may arise due to the use of non-original parts or components.



To avoid any personal injury or damage to property from the release of process fluid:

- Those in charge of handling and maintenance of the valve must be qualified and trained in valve operations.
- Use appropriate personal protection equipment (gloves, safety shoes, etc).
- Shut off all operating lines to the valve and place a warning sign.
- Isolate the valve completely from the process.
- Release process pressure.
- Drain the process fluid from the valve.

5.1. DISC REPLACEMENT (POS. 4)

- 1) To carry out this maintenance valve shall be taken out of the line
- 2) Remove pneumatic cylinder from its support (yoke, pos 5)
- 3) Remove the shaft bearings bolts and pull the bearings (pos 6).
- 4) Remove the shaft (pos 8).
- 5) Once the disc (pos 4) is free have it replaced with a new one.

NOTE: Disc and seal ring shall be changed together to guarantee proper tightness

5.2. SEAL RING REPLACEMENT (POS. 3)

- 1) To carry out this maintenance valve shall be taken out of the line
- 2) Remove B ring (pos. 2) bolts with an allen tool.
- 3) Remove seal ring (pos 3).
- 4) Check both rings and evaluate possible reuse or replacement. Have them clean should they be reusable.
- 5) Put the B ring back in place and fix the seal ring in position. Ring bolts shall be torque at approx. 10 Nm. Have them bolted following a crossed sequence.
- 6) Have the bolts torqued to a max 20 Nm.

NOTE: Disc and seal ring shall be changed together to guarantee proper tightness

5.3. SPARE PARTS:

QUANTITY	DESCRIPTION	POSITION
1	B ring	2
1	Seal ring	3
1	Disc	4
1	Pneumatic cylinder seal kit	-
2	Bearing	6
8	Bearing O-rings	-
2	Spool piece	7

MODEL

SK



6. STORAGE

- For long storage periods keep the valves indoors in a safe and dry place and protect it from any impact and or vibrations.
- Storing temperatures: -10 °C to +40 °C
- Valves must be stored in either full open or full closed position.
- For any component installed in the valves, electric motors, solenoid valves, etc, please refer to their own instruction manuals

7. ENVIRONMENTAL CONSIDERATIONS

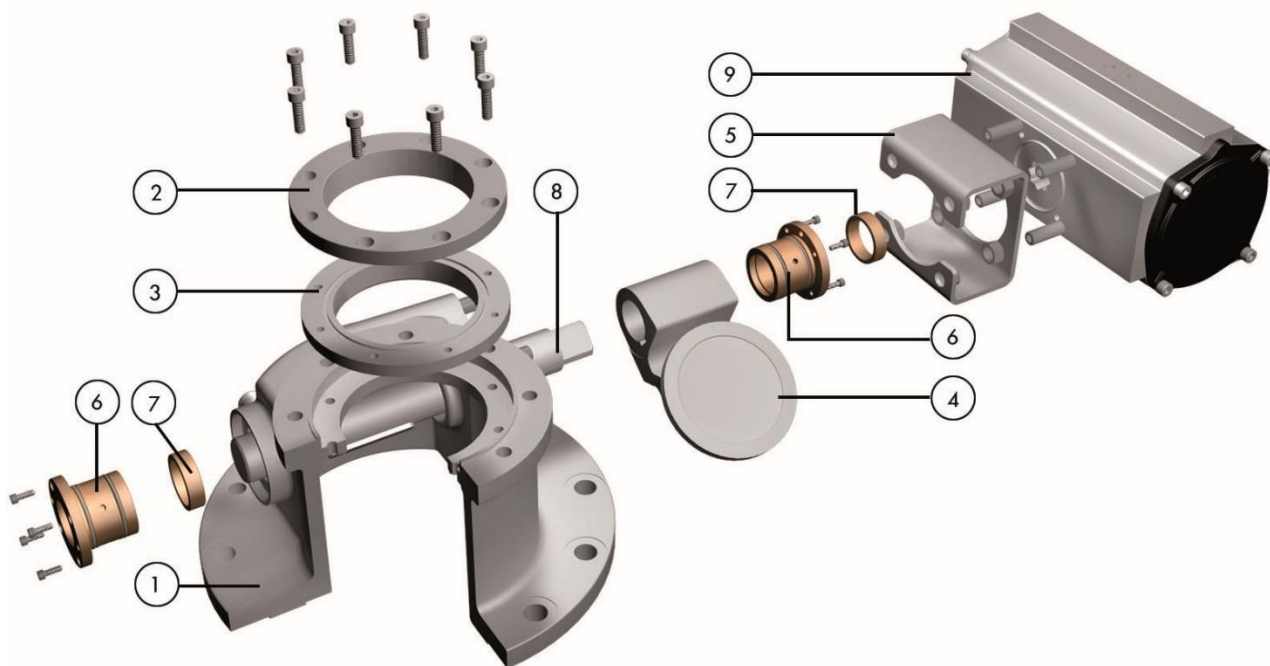
- The packaging is made from environmentally friendly materials. Dispose of the packaging through the available recycling channels in your community.
- The valve is designed and manufactured with materials that can be recycled by specialised recycling firms. Over 90% of this product is made of recyclable materials.
- Once the life of the product is expired, you have to consider a proper disposal of the product in order to prevent any negative impact on the environment and allows for the recycling of valuable commodities.
- Please follow the local environmental rules in your country for proper disposal

MODEL

SK



8. PARTS LIST & DRAWINGS



-
- | | |
|---|--------------------|
| 1 | BODY |
| 2 | B RING |
| 3 | METAL SEAT |
| 4 | DISC |
| 5 | YOKE |
| 6 | BEARING |
| 7 | SPOOL PIECE |
| 8 | SHAFT |
| 9 | PNEUMATIC ACTUATOR |
-