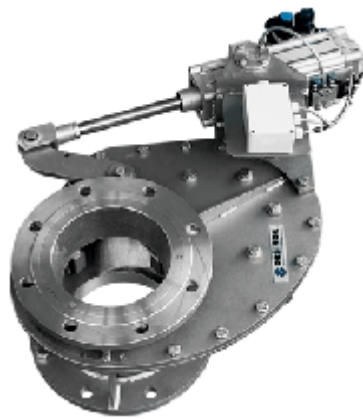




INSTALLATION, OPERATION & MAINTENANCE MANUAL

SG SERIES



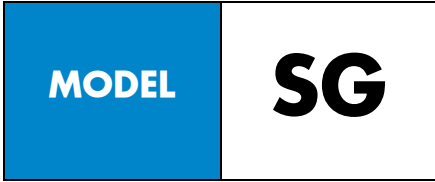


TABLE OF CONTENTS

| | | |
|------|-----------------------------------|----|
| 1. | DESCRIPTION..... | 3 |
| 2. | HANDLING..... | 3 |
| 3. | INSTALLATION..... | 4 |
| 4. | ACTUATORS..... | 6 |
| 4.1. | HANDWHEEL..... | 6 |
| 4.2. | LEVER..... | 6 |
| 4.3. | PNEUMATIC..... | 6 |
| 4.4. | ELECTRIC ACTUATOR..... | 7 |
| 5. | MAINTENANCE..... | 7 |
| 5.1. | SEAL MAINTENANCE..... | 8 |
| 6. | STORAGE..... | 9 |
| 7. | ENVIRONMENTAL CONSIDERATIONS..... | 9 |
| 8. | PARTS LIST & DRAWINGS..... | 10 |

1. DESCRIPTION

The SG series gate valve is unidirectional flanges type valve designed for general industry service applications (specially, but not only, for dust handling applications). The design of body, seat and obturator assures non-clogging shut-off with solids.


The SG series complies with the following European directives:

- 2006/42/EC: Machinery Directive.

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

- 2014/68/EU: Pressure Equipment Directive.
- 2014/34/EU: Potentially Explosive Atmospheres (ATEX).



The SG valve may comply with the directive regarding equipment and protective systems for their use in explosive atmospheres. In these cases, the logotype  shall appear on the identification label of the valve. This label shows the exact classification of the zone where the valve can be used. The user will be liable for its use in any other zone.

This directive only applies in the following atmospheric conditions:

- $0,8 \text{ bar} \leq P \leq 1,2 \text{ bar}$.
- $-20 \text{ °C} \leq T \leq 60 \text{ °C}$.

Any increase in temperature due to frictional warmth is negligible, since the relative speed of the moving parts is extremely low.

The risk analysis associated to this directive does not take into account the fluid that goes through the valve, even when such fluid produces an explosive atmosphere. The user must take into account the risks that the fluid generates, such as:

- Heating of the valve surface.
- Generation of electrostatic charges caused by displacement of the fluid.
- Shock waves caused by the installation (water hammer), internal crashes generated by the pellets or the risks due to foreign bodies susceptible of being present in the installation.

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 to the valve actuators 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 eyebolts, soft straps or slings.
- Eyebolts: make sure the eyebolts have the same thread as the boltholes and they are all well

secured. Ideally when using lifting gear to move an ORBINOX valve, it should be supported by two or more eyebolts screwed into the tapped fixing holes in the valve body.

- Soft straps: with the valve in the closed position, the straps should be placed between the gland area and the bore such that the valve is balanced.

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.



These instructions must be observed when installing an ORBINOX valve in an ATEX zone:

- Make sure the valve is ATEX marked according the requested zone and it includes all anti-static devices.
- Check continuity between the valve body and the pipe (test in accordance with EN 12266-2 Test F21 Annex B, §B.2.2.2 and §B.2.3.1).
- The above check must be done every time the valve has been removed from the line, serviced and put back to the line.
- According to **EN 13463-1 (15)**, during installation and maintenance operations, use hand tools (**non-electric**) with Working Allowance.
- The valve has two points of earth (PE) in the flange to connect it to earth.

SERIES

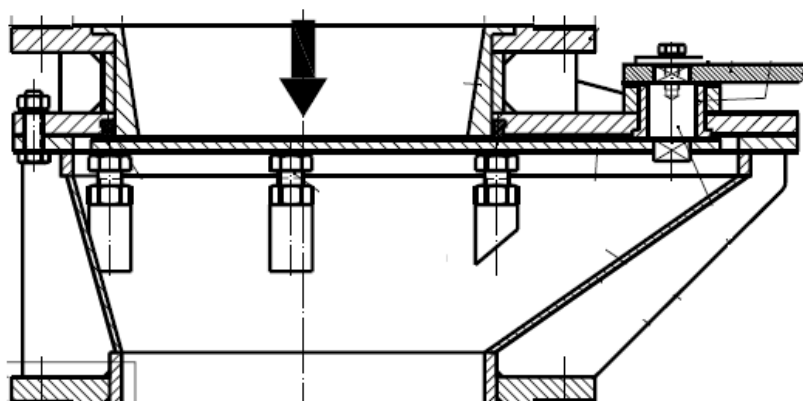
SG



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 is unidirectional. It should be installed with pressure exerted against the seat. The words "SEAT SIDE" are marked on the valve body to indicate the position of the valve seat. Installation and the correct orientation with respect to the direction of the flow is the responsibility of the user.

FLOW



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.

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

| DN | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 |
|--------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Torque (N·m) | 60 | 60 | 60 | 60 | 70 | 70 | 70 | 110 | 110 | 150 | 150 |

SERIES

SG



The valve can be mounted in any position regarding the pipe. However, it is advisable to place it horizontally in vertical if the installation allows it.

Once the valve is installed, test that the flanges have been fastened correctly and that all electrical and/or pneumatic connections have been properly made.



The operation of automated valves is limited only with fitted gate covers to fulfil 2006/42/EC (Machinery Directive).

First, operate the valve with no flow in the pipeline. Then test operation and valve seal with flow. Once performance has been tested, the valve can be put into operation.

4. ACTUATORS



The operation of automated valves is limited only with fitted gate covers to fulfil 2006/42/EC (Machinery Directive).



- Allowed actuators for ATEX zones: Hand wheel, Chain wheel, Bevel Gear, Lever, Pneumatic Double Acting, Hydraulic and Electrical motor.
- Make sure that the actuator is marked according for the requested zone.
- Maximum rotating speed is 10 rpm.

4.1. HANDWHEEL

Turn the hand wheel anticlockwise to open the valve. Turn the hand wheel clockwise to close the valve.

4.2. LEVER

To operate the valve with this device, first loosen the locking clamp. Then either open or close the valve by moving the lever in the desired direction. Finally, fix the position of the lever with the locking clamp.

4.3. PNEUMATIC

Valves are usually supplied with a double acting pneumatic actuator although, upon request, we can supply single-acting actuators (be cation about limitations of single acting actuators in ATEX zones). In either case the feed pressure can vary between 3,5 bar and 8 bar. Unless otherwise specified the actuator has been sized with a 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.

4.4. ELECTRIC ACTUATOR

Depending on the type or brand of the electric actuator, specific instructions (i.e. a manufacturer's manual) will be supplied.

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.
- The valve must be properly earthed.



These instructions must be observed when installing an ORBINOX valve in an ATEX zone:

- The maintenance personnel must be made fully aware of the risks of explosion, and it is advisable that they receive specific training regarding ATEX.
- According to EN 13463-1 (15), during installation and maintenance operations, use hand tools (non-electric) with Working Allowance.
- Periodicity of check and evaluation of valve electrical conductivity must be determined by end user according to valve working conditions. In any case, once the valve is put into operation, the packing area must be revised after the valve has been stroked 100 times or after 3 months of operation, whatever happens first. After this preliminary check, new checking periods must be determined by end user based on the results of this first check
- Clean the valve periodically to prevent dust accumulation. Do not sweep or dump the dust. Always use a vacuum cleaner system.
- Do not apply any new coating to the valve. Should it require new coating, please contact our closest representative.
- Allowed seals: EPDM, VITON, NITRILE, GRAPHITE, SILICONE, PTFE and METAL (no seal).
- Any other materials but those above are not allowed to be used in ATEX zones.
- In order to keep the ATEX approval, always use original spares from ORBINOX.
- Washer DIN 6798A (This washer guarantees continuity among carbon steel parts, coated in epoxy, yoke and body and stainless-steel guards for coating thicknesses up to 200 microns)



- Make sure the valve is ATEX marked according the requested zone and it includes all anti-static devices.
- It is mandatory to check continuity between the valve body, the pipe, the gate, supports and guards (test in accordance with EN 12266-2 Test F21 Annex B, §B.2.2.2 and §B.2.3.1). This check must be done after any maintenance operation.



Maximum fluid temperatures:

| Atmosphere | |
|---|--|
| Gas / Air, Steam / Air, Mist / Air | Dust / Air |
| 80% of minimum fluid ignition temperature minus 10 K. | 2/3 of minimum dust cloud ignition temperature minus 85 K. |

Note: these maximum fluid temperatures apply to all categories. The differences between categories are the consideration of foreseeable malfunction cases and rare malfunctions cases

Maximum seal temperatures:

| EPDM | FPM / FKM | NBR | GRAPHITE | PTFE |
|--------|-----------|--------|----------|--------|
| 120 °C | 200 °C | 120 °C | 250 °C | 250 °C |

Note: Most of the times seals maximum temperature capacity is the key limitation factor when evaluating valve maximum working temperatures. In ATEX zones these temperatures must be compared to those above related to limitation of fluids temperatures.

Always consider the most restrictive as maximum valve working temperature.

5.1. SEAL MAINTENANCE

The life of the seal will depend on the working conditions of the valve such as: pressure, temperature, abrasion, chemical action, number of operations, etc...

For reference numbers see §**Error! No se encuentra el origen de la referencia.** §**Error! No se encuentra el origen de la referencia.**

1. Remove the valve from the pipeline.
2. Release the actuator (11) from the lever (8).
3. Release the lever (8) from the shaft (4).
4. Disassemble the counter body (2) and the slide (3).
5. Extract the seal retainer (5).
6. Remove the worn seal (6) and clean the seal housing.
7. Once the new seal (6) is cut according to size, insert it into the seat housing.
8. Put again the seal retainer by hammering gently around the edge.
9. Reassemble the valve.

SERIES

SG



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 instructions manuals

7. ENVIRONMENTAL CONSIDERATIONS

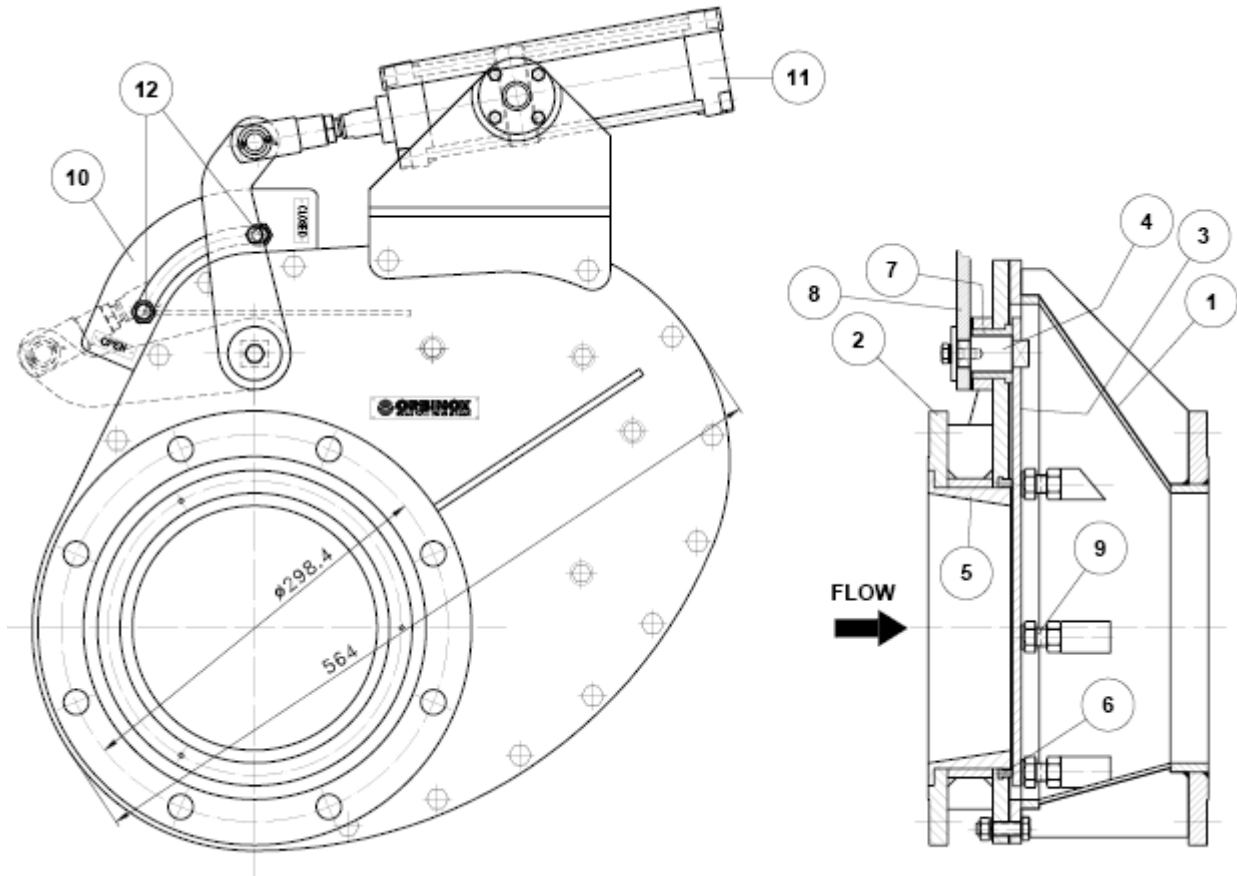
- The packaging is made from environmentally friendly materials. Dispose of the packaging through the available recycling channels.
- The valve is designed and manufactured with materials that can be recycled by specialised recycling firms. Once the life of the product is expired, you have to consider 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

SERIES

SG



8. PARTS LIST & DRAWINGS



| ITEM | DESCRIPTION |
|------|-------------------------------|
| 1 | BODY |
| 2 | COUNTER BODY |
| 3 | SLIDE |
| 4 | SHAFT |
| 5 | SEAL RETAINER |
| 6 | SEAL |
| 7 | GUIDE BUSH |
| 8 | LEVER |
| 9 | SLIDER |
| 10 | POSITION INDICATOR |
| 11 | ACTUATOR - PNEUMATIC CYLINDER |
| 12 | PROXIMITY SWITCHES |