

INSTALLATION AND OPERATING MANUAL FOR FLANGED SWING CHECK VALVES

Wafer swing check valve for heating and water distribution.

Carbon steel body and disc with EPDM seat.

Wafer type with short length and with a removable hoisting eye for easy installation.

Certificate
3.1



RANGE :

Ref.	Body material	Gasket	Temperature	Max Pressure	DN
351	A216WCB	NBR	-10°C to +80°C	16 Bars	DN40 to DN300
364		EPDM	-10°C to + 110°C	16 bars up to DN300, 10 bars over	DN40 to DN600
365	A351 CF8M	FKM	-10°C to + 180°C		

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SPECIFICATIONS :

- Wafer swing check valve
- Vertical position with ascendant fluid or horizontal position (respect the flow direction indicated by the arrow)
- With removable hoisting eye
- Short length
- Economical solution
- Monobloc disc and stem for a better mechanical strength
- Integrated body gasket

USE :

- Heating, water distribution
- **Do not use with pulsatory speed**
- **Max Speed : 3 M. / Sec.**

FLOW COEFFICIENT Kvs (in m3/h) :

DN	40	50	65	80	100	125	150	200
Kvs (m3/h)	21.88	44.72	46.72	117.89	226.23	453.44	649.86	1322.6

DN	250	300	350	400	450	500	600
Kvs (m3/h)	2147.4	2993.2	4020.2	5430.7	6840	9080.8	13758.4

CONNECTION :

- Wafer swing check valves between flanges PN10/16 up to DN150, PN16 over
- Between flanges Class 150 PN20 possible from DN100 to 400

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General installation instructions

1. Storage

Before installation, please store the valves and fittings in a dry place to protect them from harsh weather conditions, wind and sand. Please leave the goods in their original packing and do not remove the flange or end protections. Please handle the products with care. Do not drop or drag them on the floor.



3. Deviations of pipes

Before installing the valves and fittings, please check the pipe dimensions with the equipment already in place. Please also verify the correct alignment of the upstream and downstream pipes. Do not count on the valves and fittings to make up for pipe deviations. This might result in sealing leakages, blockings or mechanical ruptures.



5. Mounting direction

A certain number of devices do not necessarily have a symmetrical functioning. It is essential to comply with the mounting direction indicated by the engraved or stamped arrow on the body and adapt it to the direction of the fluid flow.



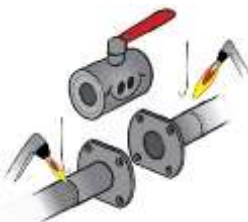
7. Support

For valves representing a significant weight in comparison with the pipes' solidity, it is essential to provide an additional support independently from the pipes. Likewise, the valves cannot serve as support for pipes since they have to be supported themselves. The failure to respect these rules can lead to leakages, blockages and breakages.



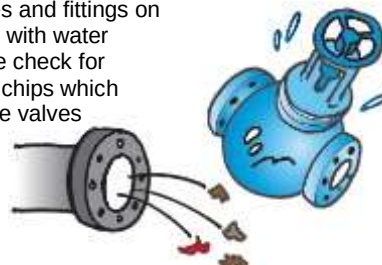
9. Welding of valves

When welding steel or stainless steel valves, make sure they are in the open position. Extreme care must be taken with small valves to cause no damage to the critical valve components, which may be close to the weld area. Great caution must be taken when welding soft-seated ball valves.



2. Cleaning of pipes

Before installing the valves and fittings on the pipes, clean the pipes with water or compressed air. Please check for welding spatters or metal chips which could possibly damage the valves sealing surface.



4. Expansion joints

For pipes carrying heat transfer fluids, please anticipate the compensation of dilatations with the help of adapted equipment (loops and/or expansion joints). Their absence may lead to mechanical ruptures and a blocking of the valves.



6. Slings

When installing the valves on the pipes, please use adapted lifting devices (bridge crane, forklift, hoist). It is necessary to align the valve correctly while installing it.



8. Tightening

For threaded and flanged valves and fittings, please use a suitable tightening torque. Insufficient tightening can result in leakages. Overtightening can lead to blocking the valve or mechanical ruptures. The coupling torques are indicated on every product manual.



10. Water hammers

A water hammer, by generating a sudden rise in pressure, can cause considerable damage: slotted valve closure member, deformed stem etc. The causes of water hammers are varied. The non-progressive start of a pump and the sudden closing of a valve are the most frequently found causes.



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GENERAL GUIDELINES :

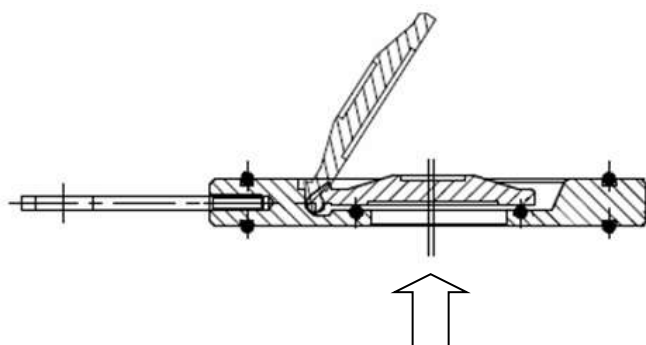
- Ensure that the check valves to be used are appropriate for the conditions of the installation (type of fluid, pressure and temperature).
- Be sure to have enough valves to be able to isolate the sections of piping as well as the appropriate equipment for maintenance and repair.
- Ensure that the valves to be installed are of correct strength to be able to support the capacity of their usage.

INSTALLATION INSTRUCTIONS :

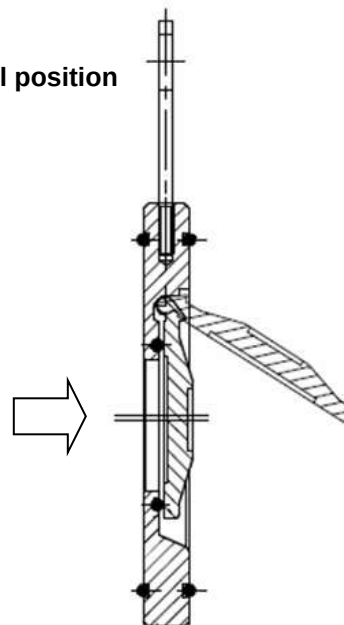
- **Before installing the check valves, clean and remove any objects from the pipes** (in particular bits of sealing and metal) which could obstruct and block the valves.
- Flanges faces must be clean and without damaged
- **Ensure that both connecting pipes either side of the check valve (upstream and downstream) are aligned** (if they're not, the valves may not work correctly).
- **Make sure that the two sections of the pipe (upstream and downstream) match, the check valve unit will not absorb any gaps. Any distortions in the pipes may affect the tightness of the connection, the working of the check valve and can even cause a rupture.** To be sure, place the kit in position to ensure the assembling will work.
- **If sections of piping do not have their final support in place, they should be temporarily fixed. This is to avoid unnecessary strain on the check valve.**
- Respect the flow direction indicated by the arrow
- Ensure there is enough space after the check valve so that the disc could be opened in total opening position
- As there are O ring gaskets on the body of the check valves, don't add flange gasket between the check valves and the flanges, these O rings will assure the tightness
- Bolting should be tightened in cross
- If there is a direction changing or if there's another material, it's better to take away the check valve so that it is outside the turbulence area (**between 3 and 5 times the ND before and after**).
- After a pump please refer to **FD CEN/TR 13932** to install the check valve :
 - If it is essential to keep priming the pump, a non-return check valve can be fitted to the suction pipe at a distance **L1 (straight length suction) > 10xD1 (diameter suction)**
The check valve is designed to meet the maximum flow rate in service
 - In other cases, the non-return check valve is mounted on the discharge pipe at a distance of **L2 (straight length at discharge) > 3xD2 (diameter at discharge)**

INSTALLATION POSITIONS :

Vertical position (ascendant fluid)



Horizontal position



COMMISSIONING :

- The pressurization must be gradual to avoid the creation of water hammer
- Pressure tests of the installation must be done with a perfectly clean pipe
- The pressure test must not exceed the valve specifications according to API 598

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MAINTENANCE :

- Check the good working of the check valve 1 time per year or more if the working conditions demand it

Default	Cause	Solution
Seat leakage	1. Debris or dirt on the seat 2. Damaged seat	1. Clean the seat 2. Replace the gaskets
Disc blocked	1. Debris or dirt on the stem of the disc 2. Damaged between disc and stem	1. Clean and remove the dirt 2. Disassemble and repair

GASKETS REPLACEMENT :

- Prepare a sharp tool as highlight in blue circle:



- Use a sharp tool to pry out the large and small O-ring



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- Replace and placing the new large and small O-ring into the slot



- Use the sharp tool again to draw the large and small O-ring into the slot nicely without broken it. Make sure both O-rings is perfectly sit into slot to avoid any leakage occur.



Remark:

Due to our O-ring groove is special machining to dovetail groove design, therefore glue is not required for O-ring replace because this dovetail groove design is to secure and prevent O-ring come out easily.

STANDARDS :

- Certificate 3.1 on request
- Designing according to API 594 and EN 16767
- Pressure tests according to API 598, table 6
- DIRECTIVE 2014/68/EU : For liquids and gas of Group 1
 - DN40-50 : Risk Category I, CE marking
 - DN65-200 : Risk Category II, CE 0035 marking
 - DN250-300 : Risk Category III, CE 0035 marking
 - DN350 : Risk Category II, CE 0035 marking
 - DN400-600 : Risk Category III, CE 0035 marking
- Length according to EN 558 series 97 (NF 29377)
- Between flanges according to EN 1092-1 PN10/16

ADVICE : Our opinion and our advice are not guaranteed and SFERACO shall not be liable for the consequences of damages. The customer must check the right choice of the products with the real service conditions.