

INSTALLATION AND OPERATING MANUAL FOR WAFER DISC CHECK VALVES

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
- Bolting should be tighten 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**).

INSTALLATION :

- 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)**

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INSPECTION AND MAINTENANCE :

A periodic inspection and maintenance schedule should be established for each check valve. The time frames given for the implementation of these schedules are to be used as a guide only in establishing routine inspection and maintenance schedules.

Exact time periods for performing these procedures cannot be provided due to the unknown nature of the service conditions each valve is in.

4.1.1 Periodic Inspection

A periodic inspection should be performed on each unit. The time frame should be adjusted depending on usage and service conditions. An infrequently used unit may have more time between inspections than a check valve in constant service.

A periodic inspection should include the following:

- a. Examine the check valve for cleanliness.
- b. If check valve is in service and under pressure:
 - (1) Examine the body to flange or end cap connection for leakage through the gasket. If leakage is found, tighten the bolt nuts evenly in a star pattern until the leakage stops. Do not exceed the maximum torque values. If the leakage persists, see section 4.2 "Troubleshooting".
 - (2) Inspect the exterior of the check valve for cleanliness. Remove any dirt, grime or oil from the body and flange.
- c. After the system is depressurized:

Inspect the check valve internally. Remove any dirt, grime or oil from the check valve.

4.1.2 Post Inspection

After completion of a periodic inspection, check valves that are providing satisfactory service require no further disassembly or inspection. Should a check valve be found which is not performing satisfactorily, see section 4.2 "Trouble-Shooting".

4.1.3 Maintenance

Other than periodic inspection, no routine maintenance is required. Routine replacement of parts, such as gasket and packing is not usually performed until required. Once in service, it may become apparent that these and other parts require repair or replacement due to usage and service conditions. A maintenance schedule should be developed taking these conditions into consideration. Parts can be replaced during a routine overhaul.

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4.2 TROUBLE SHOOTING :

The following chart will cover the various problems which are common to most check valves.
The information provided will aid in isolating and correcting these problems.

Problem	Probable cause	Solution
Leakage	Bolt nuts are loose	Tighten to values
	Gasket is damaged	Disassemble and install a new gasket
	Body flange face damaged	Repair and install a new gasket
Disc damaged	Internal components are damaged or worn	Inspect internal components and repair as required

4.3 DISASSEMBLY

WARNING

To prevent injury ensure that all pressure is removed from the valve both upstream and downstream before disassembly.

- a. Caution should be taken when loosening the bolting as pressure may still be present.
- b. Once assured there is no more pressure in the line, remove the check valve, taking care not to scratch it.
- c. Remove the screws, spring and disc from the check valve.

4.4 REASSEMBLY

- a. Thoroughly clean the check valve interior and all components. Remove all oil, grease or other foreign material. Clean the body and all bolting.
- b. Install the disc and spring carefully.
- c. Reassembly the screws.
- d. Install the bolting and tighten in a star pattern to evenly load the gasket to the torque values.