



## KEYSTONE GULF VALVES CHECK VALVES MODEL MB INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Before installation these instructions must be read fully and understood

### INTRODUCTION

The instructions included within this installation and operations manual are intended as a guideline only. As they do not cover every situation, this manual does not replace common sense and expertise of the person installing the valve and pipeline engineer(s). Proper valve selection is the foundation for successful installation and the End User is responsible for ordering the correct valves. Should you require assistance, please contact Emerson.

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The use of the term "PED" throughout this manual refer to the European Pressure Equipment Directive 97/23/EC. Please note that not all Emerson valve configurations comply with CE/PED/ASME standards.

The Keystone Model MB wafer check valve is a self-operating check valve designed to prevent the backflow of gas or liquid media. Initial opening of the discs begins when the upstream pressure exceeds the downstream pressure and the effective torque of the spring. This pressure is called the "cracking" pressure. Once the discs open, flow velocity determines the position and stability of the discs. If the flow velocity upstream of the check valve decreases and/or stops, the springs force the discs to a closed position.

If valve is resold or transferred, it is your responsibility to forward this instruction manual along with the product to the new owner or transferee.

### SPARE PARTS

#### WARNING

*Do not attempt to work on any valve under pressure, and depending on the service, valve surface temperature may be hot. Use proper protective equipment to protect against burns. Also, provide safe means in case of uncontrolled release of fluids.*

Any misuse, unauthorized modification, refurbishment by unqualified staff or use of non-Emerson parts invalidates the Warranty provided in the Terms and Conditions of Sale and invalidate the CE Mark if applicable..



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## INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

### INSTALLATION

1. Remove the valve from carton or packing skid. Prior to installation, inspect valve(s) for any damage and check valve(s) and nameplate(s) for proper identification and to be sure the valve is suitable for use in the application.
2. The protective rust proof coating on the internal parts of steel or cast iron valves should be removed by brushing out with any standard petroleum solvent (e.g. Varsol™, Kerosene), and air dry. Ensure internal parts operate freely.
3. Stainless Steel or Bronze valves need only to be wiped clean and installed.
4. In horizontal flow installation, the hinge pin must be vertical.
5. Ensure the sealing surfaces are free of dirt and insert the valve between two companion flanges of the same series as the valve and place gaskets on flange faces. The arrow on the valve or nameplate indicating direction of flow should coincide with line flow. Install studs through companion flanges and tighten, using standard industry practice.
6. In liquid service we recommend valve be installed at least five (5) pipe diameters downstream from a pump discharge and/or other pipefittings for maximum service life.

The following precautions should be taken to insure long service life of wafer check valves:

- Accurate sizing of wafer checks is crucial to ensure an acceptable pressure drop and a long service life.
- Flow velocities should be in the following ranges:

| Media  | Flow rate              |                         |
|--------|------------------------|-------------------------|
|        | Feet per second (ft/s) | Meters per second (m/s) |
| Liquid | 3 to 11                | 0.91 to 3.35            |
| Gas    | 20 to 250              | 6.1 to 76.2             |

- A minimum of 5 (five) pipe diameters should be maintained between the wafer check and likely causes of turbulence (i.e. pump discharge, reducers, elbows, and tees, etc.).
- Maximum operating pressure reduces as service temperature increases.
- It is the responsibility of the customer to ensure valve is suitable for all service conditions of the line, including but not limited to pressure, temperature, and media. The application is not to allow corrosion greater than 0.05 mm / year (0.002" / year). DO NOT use any valve in applications where either the pressure or temperature is higher than the allowable working values or service media is incompatible with materials of construction, which may cause chemical attacks.

### LIMITATIONS AND PRECAUTIONS



**WARNING**  
Any misuse, unauthorized modification, refurbishment by unqualified staff or use of non-Emerson parts invalidates the Warranty provided in the Terms and Conditions of Sale and invalidate the CE Mark if applicable.

Model MB dual disc wafer check valves are not recommended for the following service conditions:

- Pulsating flows.
- Service condition requiring a "Full Port" opening.
- Installation directly to a butterfly valve or other piping accessory that may interfere with the opening or closing of valve discs.
- Vertical flow DOWN without prior factory approval.
- The design of the Model MB dual disc wafer check valves has taken into account loadings appropriate to its intended use and other reasonably foreseeable operating conditions. Loadings caused by traffic, wind and earthquake have not been taken into account.
- Model MB dual disc wafer check valves are not to be installed in service conditions greater than Category III (Reference the PED).

# KEYSTONE GULF VALVES CHECK VALVES MODEL MB

## INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

### ASSEMBLY AND DISASSEMBLY

#### NOTE

For check valves with elastomer seats - the original elastomer seat is bonded and vulcanized to the valve body. Emerson does not recommend that the elastomer seat be replaced, except by Emerson. Emerson does not warrant nor shall Emerson be liable for special, indirect, incidental or consequential damages.

Eye protection is recommended when disassembling and assembling wafer check valves.

#### DISASSEMBLY

Disassembly of the wafer check valve is moderately simple using a hammer, allen-wrench, bronze round nose punch and Locktite thread sealant and the following instructions. Please use caution when removing the stop or hinge shaft. Preset spring(s) may cause serious injury when tension is released.

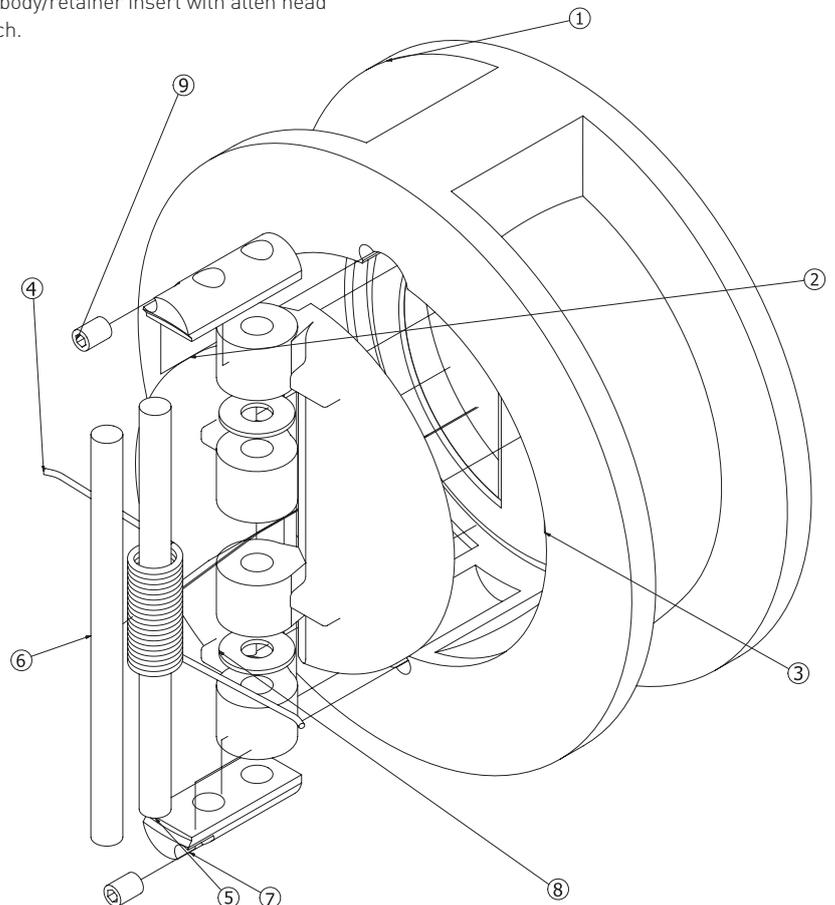
1. Lay the body down with downstream side facing upward.
2. Remove retainer insert set screws with allen-head wrench.
3. Place two 100 mm x 100 mm (4" x 4") boards on the flanges directly opposite of each other.
4. Carefully, without changing the distance between the two boards, set them on a hard surface.
5. Turn valve body and set the valve body on the two boards so that the upstream side is facing upward. Make sure that the discs hang down without any interference with the boards.
6. Remove the discs from the valve by placing a brass round nose punch on the left disc's hinge and gently tap on the punch with a hammer. Alternate this process between the left and right discs' hinge until the disc fall free from the valve body.
7. Mark the retainer insert and valve body to insure the inserts are replaced in the same area of the valve body.
8. Remove the retainer inserts from the hinge and stop pins.
9. While maintaining pressure on spring with hand, remove the hinge pin from the discs' hinge lugs, and spring. Release spring.

### ASSEMBLY

1. Lay the body down with downstream side facing upward.
2. Lay the discs on a hard surface with disc seating surface facing downward and the disc hinge lugs together.
3. Slide hinge pin through the disc's hinge lugs.
4. Rotate the forward spring leg clockwise, with spring legs pointing downward. Larger valves have two springs.
5. Place wound spring(s) between the discs on the center post.
6. While maintaining pressure on spring(s) with hand, insert hinge pin through the remaining spring(s), discs' hinge lugs, and thrust bushing. Release spring.
7. Attach the retainer inserts to the hinge and stop pin.
8. Insert discs assembly into valve body and alternately, tap the retainer inserts into the valve body.
9. Move the valve to a position so that the hinge pin is vertical.
10. Open and close the discs to make sure there is no interference between the valve seat and discs' movement.
11. Insert retainer insert into valve body slot - making sure that the retainer is inserted into the slot that it was removed from.
12. Screw retainer insert set screws into the valve body/retainer insert with allen head wrench.

### PARTS LIST

| Item | Description     |
|------|-----------------|
| 1    | Body            |
| 2    | Disc            |
| 3    | Seat            |
| 4    | Spring          |
| 5    | Hinge pin       |
| 6    | Stop pin        |
| 7    | Retainer insert |
| 8    | Bearing         |
| 9    | Set screw       |



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