



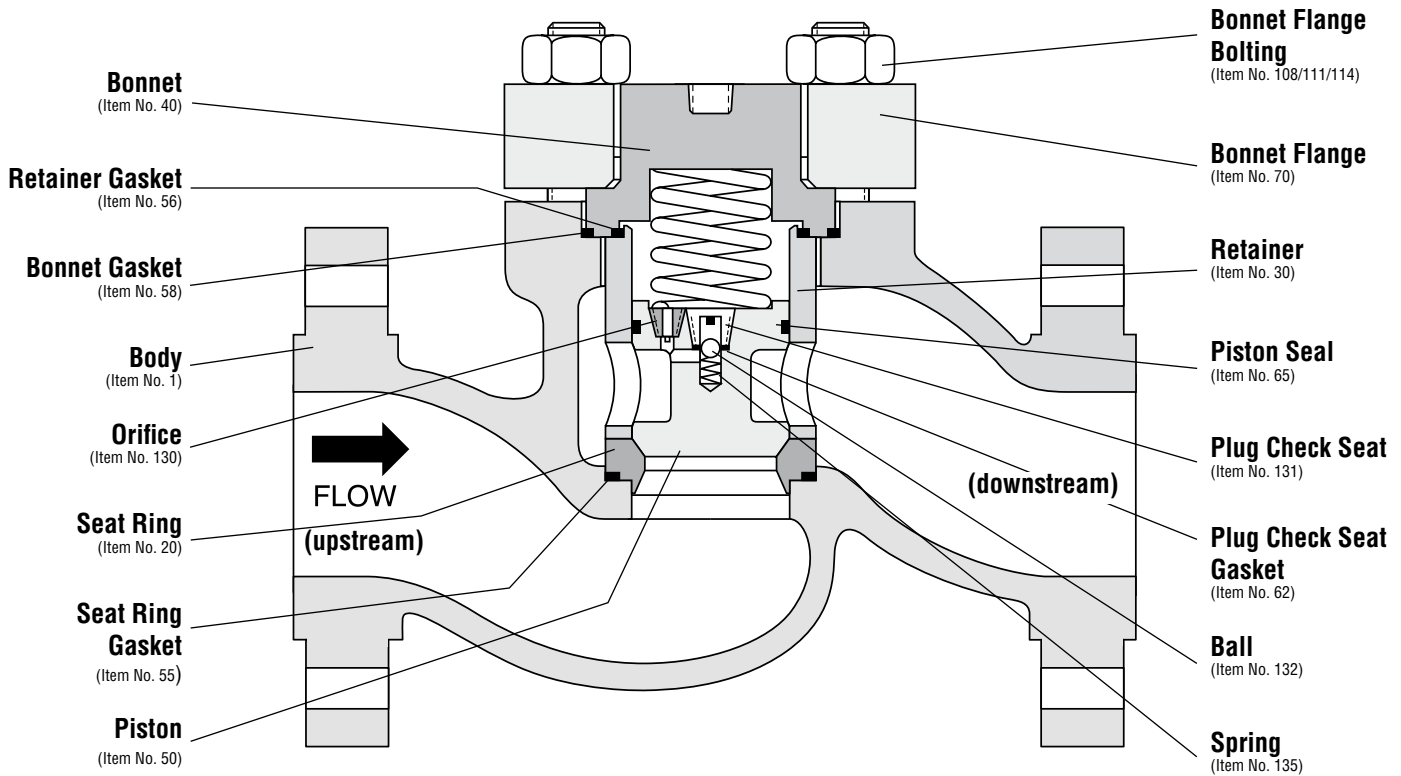
# *USER INSTRUCTIONS*

## **Valtek® Tek-Check Check Valves**

FCD VLENIM0019-05 06/09

*Installation  
Operation  
Maintenance*





**Figure 1: Non-slam Piston Check Valve**

*NOTE: Item numbers correspond directly to valve's bill of material. Refer to it for specific part numbers.*

## GENERAL INSTRUCTIONS

Valtek® Tek-Check is a high performance piston check valve featuring piston and non-slam piston designs. Many features have been incorporated into the design to maintain maximum interchangeability with other Flowserve™ valves.

The following instructions are designed to assist in unpacking, installing and performing maintenance as required on Tek-Check valves. Product users and maintenance personnel should thoroughly review this bulletin prior to performing any maintenance on the valve.

**To avoid possible injury to personnel or damage to valve parts, WARNING and CAUTION notes must be strictly adhered to. Modifying this product, substituting non-factory parts, or inferior parts, or using maintenance procedures other than outlined could drastically affect performance and be hazardous to personnel and equipment.**

## Unpacking

1. While unpacking the valve, check the packing list against materials received. Lists describing valve and accessories are in each shipping container.
2. When lifting the valve from the shipping container, attach straps to lifting lugs, if provided, or position straps around the valve body, behind the end flanges.
3. Contact your shipper immediately if there is shipping damage.
4. Should any problem arise, call your representative.

## Installation

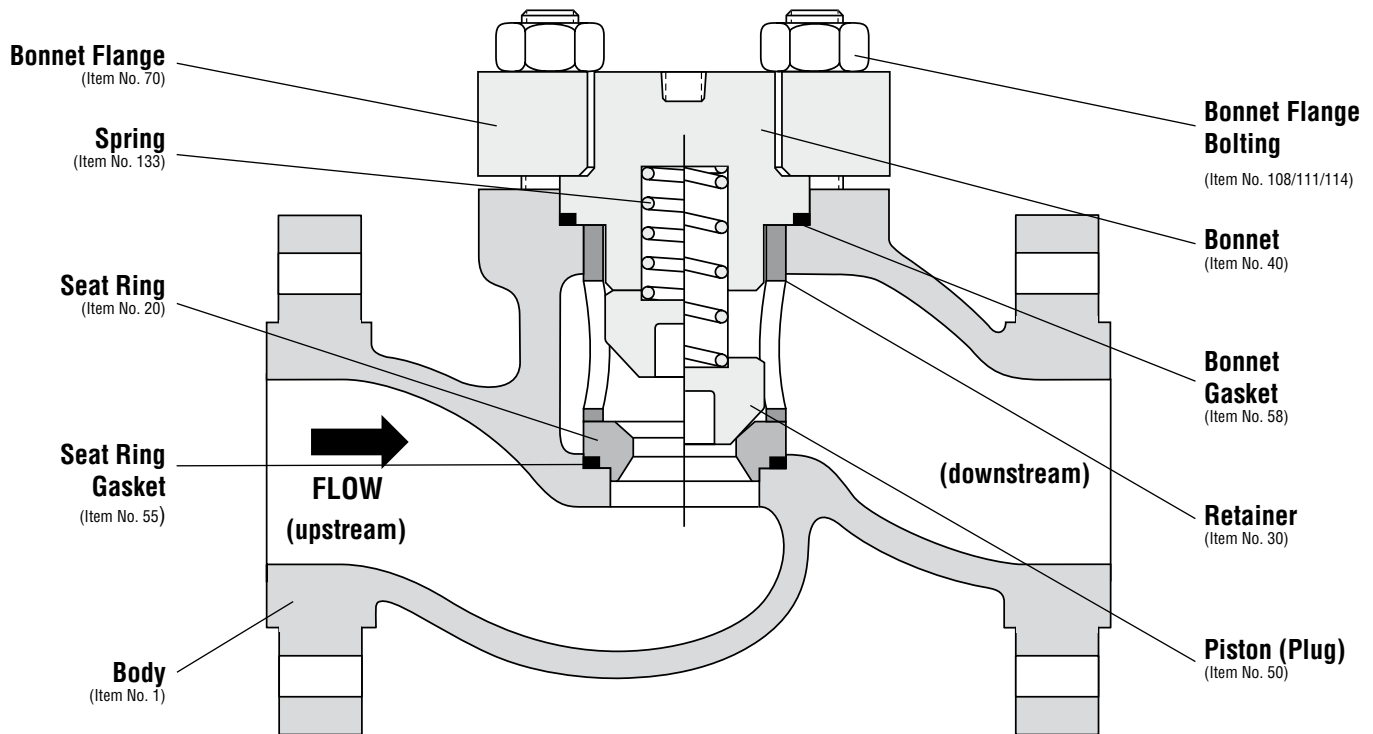
1. Before installing the valve, clean the line of dirt, scale, welding chips, and other foreign material.
2. Valtek Tek-Check valves are designed to open with as little as five psi (35 kPa) pressure difference across the valve.
3. Double-check flow direction to be sure the valve is installed correctly. Flow direction is shown by the arrow attached to the bonnet flange. If flow arrow is not attached, refer to Figure 1 or 2 for proper flow direction (flow direction is always under the plug).

**CAUTION: Valve will not operate if installed incorrectly.**

## Quick-check

After the valve is installed in the line, check for correct operation as follows:

1. Pressurize the line, both upstream and downstream of the valve.
2. Drain off the upstream pressure until the valve closes. Most valves mounted in a horizontal pipeline should close when the upstream pressure is one psi (7 kPa) less than the downstream pressure.
3. Increasing the upstream pressure to five psi (35 kPa) more than the downstream pressure should open the valve.
4. When the valve is closed, check for noticeable leakage. If leakage exists, refer to 'Troubleshooting' section.



**Figure 2: Piston Check Valve**

*NOTE: Item numbers correspond directly to valve's bill of material. Refer to it for specific part numbers.*

## GENERAL MAINTENANCE ON NON-SLAM PISTON CHECK VALVES

### Disassembly

To disassemble the non-slam piston check valve, refer to Figure 1 and proceed as follows:

**WARNING: Drain all the fluids from the valve and depressurize the line to atmospheric pressure. Failure to do so can cause serious injury.**

1. Remove bonnet flange nuts and lift the bonnet flange and bonnet from the valve.  
**WARNING: Bonnets on valve size 8-inch and larger are heavy and should be lifted with a hoist using a lifting ring attached to the top of the bonnet. Failure to do so can cause injury.**
2. Lift spring, piston, retainer, gaskets, and seat ring out of the body. Check for signs of galling and scoring between the piston and the retainer. If galling exists, call your Flowserve representative.
3. Check for dirt buildup in piston's plug check seat. Remove plug check seat using a screwdriver. A slot is provided in the top of the seat for easy removal. Remove ball and spring. Check spring for breakage and dirt. Replace broken or damaged parts.
4. With a hex key, remove the orifice, making sure the orifice bore is free of dirt.
5. Check vent passages in the piston to make sure they are free of dirt and other foreign material. Clean with appropriate solvent if necessary.

6. Check seat ring and piston seating areas for damage. If seating surfaces need re-machining, the angle on the seat ring is 33 degrees; the angle on the plug is 30 degrees. Re-machine surfaces of **both** parts if required.

### Reassembly

To reassemble the non-slam piston check valve, refer to Figure 1 and proceed as follows:

1. Replace seat ring gasket.  
**NOTE: Gaskets and piston seals should be replaced each time disassembly takes place.**
2. Insert the seat ring and the retainer. Ensure the seat ring is seated properly by rotating it in place.
3. Reassemble piston: Insert the spring and ball into the piston. Apply removable Loctite to the plug check seat threads then install into the piston by screwing into place until firmly seated.
4. Apply Loctite to orifice threads, then, with a hex key, install the orifice into the piston.
5. Place seals on the piston groove and lower the piston squarely into the retainer. The piston should be able to move inside the retainer. If strong resistance is felt, remove the piston and seals and reassemble.
6. Replace both bonnet and retainer gaskets.
7. Install the spring, bonnet and bonnet flange.
8. To properly align the seat ring and the piston, bring body bolting to finger tightness. Tap the bonnet several times with a soft hammer. This allows the piston to self-center the seat ring and ensure tight shutoff.



9. Tighten one bonnet nut 1/4 of a turn. Tighten opposite nut 1/4 of a turn. Proceed until all nuts are tightened evenly and completely seating the bonnet metal-to-metal in the body. The bottoming of the bonnet in the body can easily be felt through the wrench.

**CAUTION: Insufficient tightening of the bolting causes poor gasket compression and can result in leakage.**

### Troubleshooting

If difficulty is suspected with the non-slam piston check valve, do the following:

1. Check for the proper full-stroke operation as indicated in the 'Quick-check' section.
2. Check for leaks through the gaskets. The gaskets should be replaced whenever the valve is disassembled.
3. The seat ring may be out of alignment with the piston. Check step 8 in 'Reassembly' section on page 3 for proper procedure for aligning the seat ring and piston.
4. Make sure the valve is properly installed in the line with correct flow direction.
5. If the piston sticks, disassemble the valve and clean thoroughly. Check for ease of movement of the piston inside the retainer. If a problem persists, contact your Flowserve representative.

### GENERAL MAINTENANCE ON PISTON CHECK VALVES

#### Disassembly

To disassemble the piston check valve, refer to Figure 2 and proceed as follows:

1. Remove bonnet flange nuts and lift the bonnet flange and bonnet from the valve.
2. Lift the spring, piston, retainer, gaskets, and seat ring out of the body. Check for signs of galling and scoring between the piston and the retainer. If galling exists, call your Flowserve representative.
3. Check the piston's vent passages for dirt buildup and other obstacles. Clean with appropriate industrial solvent if necessary.
4. Check the seat ring and piston seating areas for damage. If re-machining is attempted, care must be taken to match the original plug surface contour. The seat ring seating area can be re-machined to a 33 degree angle; the piston angle is 30 degrees. Re-machine surfaces of **both** parts if required.

#### Reassembly

To reassemble the piston check valve, refer to Figure 2 and proceed as follows:

1. Replace the seat ring gasket.  
*NOTE: Gaskets should be replaced each time disassembly takes place.*
2. Insert the seat ring.
3. Install the retainer and piston.
4. Position the spring on top of the piston.
5. Replace the bonnet gasket, the bonnet and the bonnet flange.
6. Tighten one bonnet nut 1/4 of a turn. Tighten opposite nut 1/4 of a turn. Proceed until all nuts are tightened evenly and completely seating the bonnet metal-to-metal in the body. The bottoming of the bonnet in the body can be easily felt through the wrench.

**CAUTION: Insufficient tightening of the bolting causes poor gasket compression and can result in leakage.**

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