

Valtek Tek-Check Check Valves

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 nonfactory 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 shipping container, position the lifting straps through the yoke legs to avoid damage to the tubing and mounted accessories.

WARNING: When lifting an actuator with lifting straps through the yoke legs, be aware that the center of gravity may be above the lifting point. Therefore, support must be given to prevent the actuator from rotating. Failure to do so can cause serious injury to personnel, damage to the valve or nearby equipment.

3. Contact your shipper immediately if there is shipping damage.
4. Should any problem arise, call your representative.

Installation

1. Before installing 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 (0.34 Bar) pressure difference across the valve. Smaller sized non-slam piston check valves (4-inch and smaller) can be mounted in vertical lines with the addition of a spring positioned behind the piston.
3. Double-check flow direction to be sure valve is installed correctly. Flow direction is shown by the arrow attached to the body flange. If flow arrow is not attached, refer to Figure 1 or 2 for proper flow direction.

CAUTION: Valve will not operated if installed incorrectly.

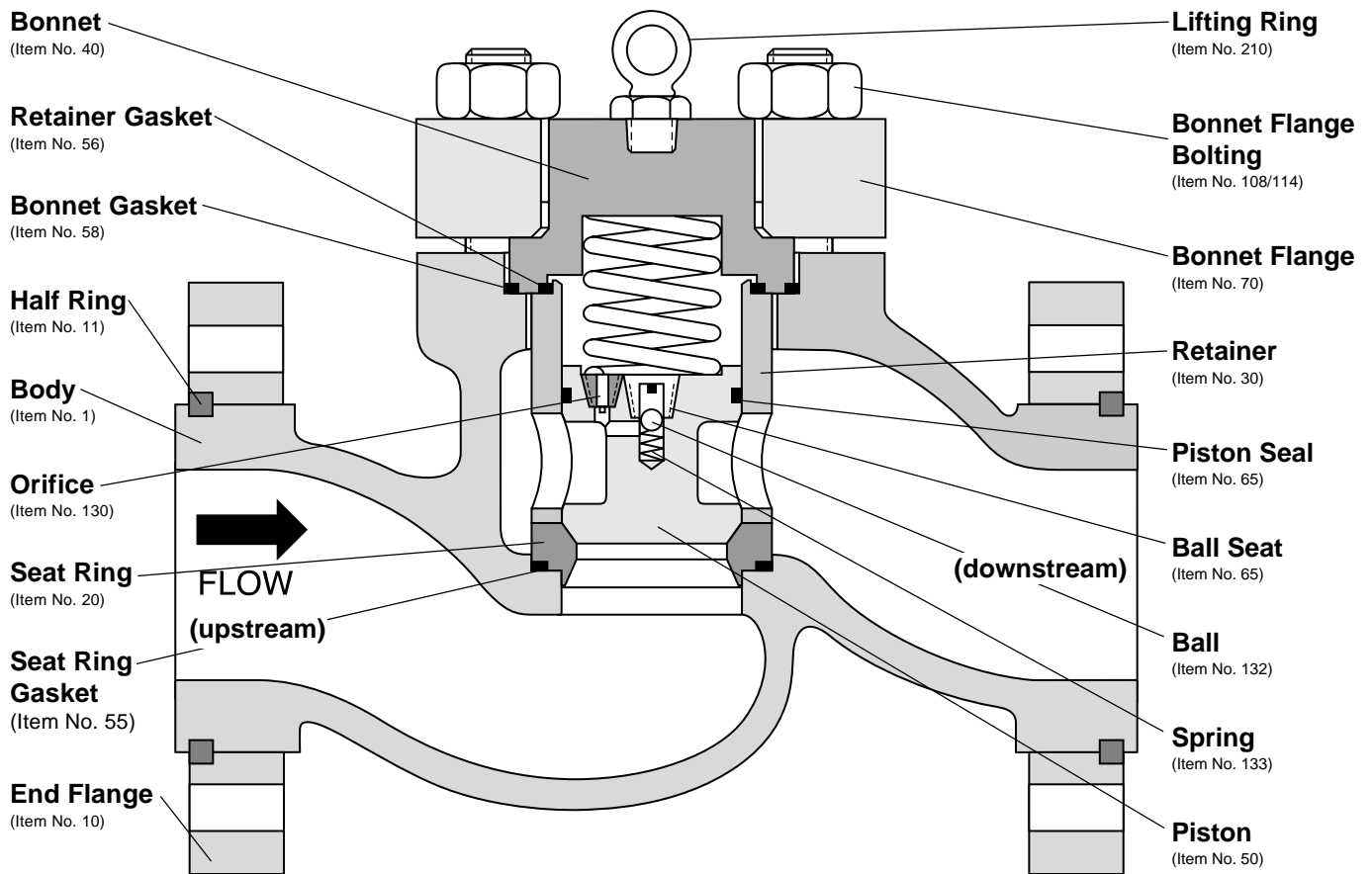


Figure 1: Non-slam Piston Check Valve

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

Quick-check

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

1. Pressurize line, both upstream and downstream, of the valve.
2. Drain off upstream pressure until valve closes. Most valves mounted in a horizontal pipeline should close when the upstream pressure is one psi (0.07 Bar) less than the downstream pressure.
3. Increasing the upstream pressure to five psi (0.34 Bar) more than the downstream pressure should open valve.
4. When valve is closed, check for noticeable leakage. If leakage exists, refer to the 'Troubleshooting' section.

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 bolting and lift bonnet flange and bonnet out of the valve. If the valve is installed in a vertical line, remove spring found between the piston and the bonnet.

WARNING: Bonnets on valve size 8-inch and larger are heavy and should be lifted with a hoist using the lifting ring attached to the top of the bonnet. Failure to do so can cause injury.

2. Lift piston, retainer, gaskets, and seat ring out of the body. Check for signs of galling and scoring between the piston and retainer. If galling exists, call your Flowserve representative.
3. Check piston seals for wear. Replace if necessary.
4. Check for dirt buildup in piston's ball check valve. Remove ball 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.

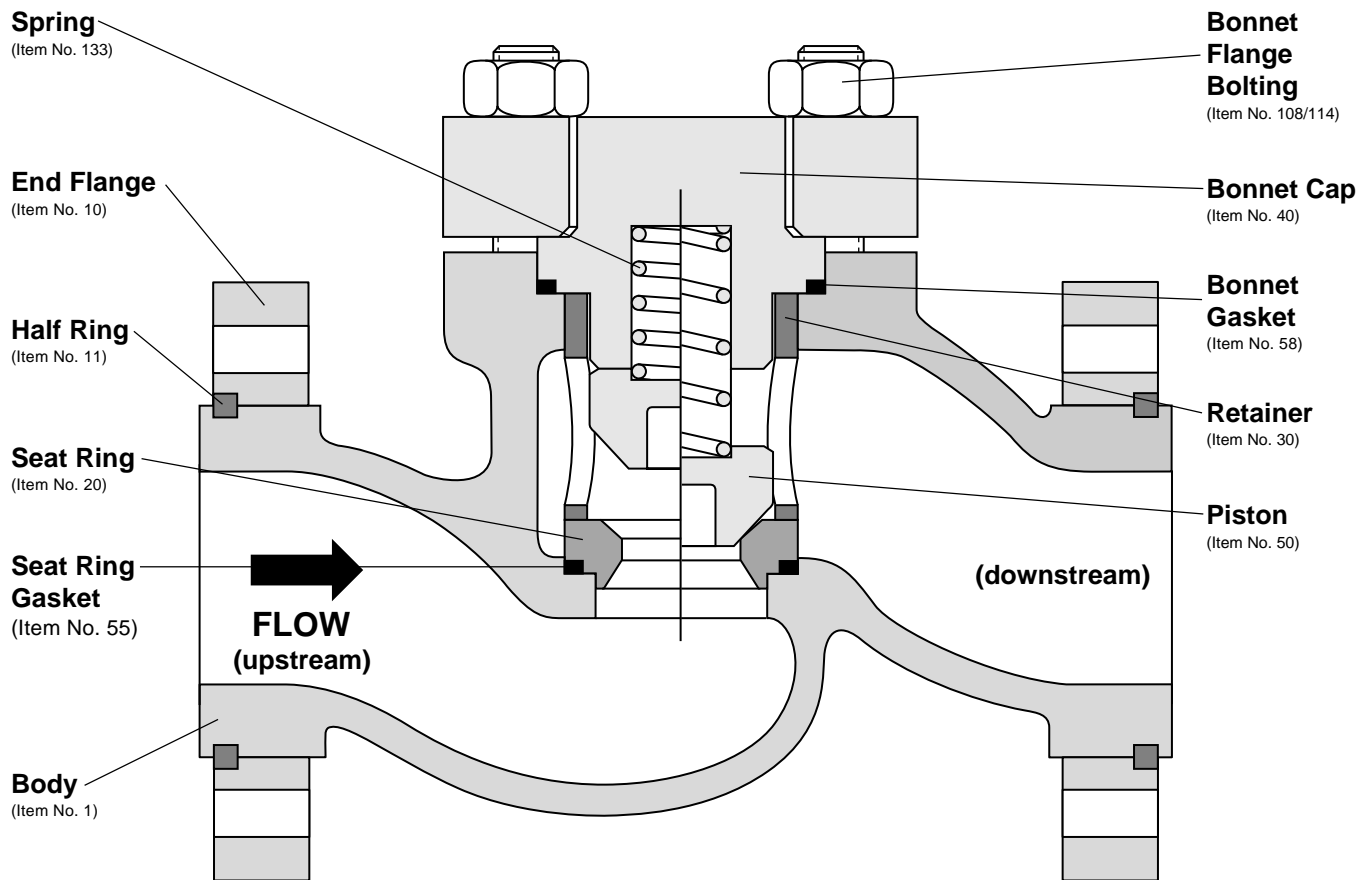


Figure 2: Piston Check Valve

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

5. With a hex key, remove the orifice, making sure the orifice bore is free of dirt.
6. Check vent passages in piston to make sure they are free of dirt and other foreign material. Clean with appropriate solvent if necessary.
7. Check seat ring and piston seating areas for damage. If seating surfaces need remachining, the angle on the seat ring is 33 degrees; the angle on the plug is 30 degrees. Remachine 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 should be replaced each time disassembly takes place.
2. Insert the seat ring and the retainer.
3. Reassemble ball check valve in piston. Insert spring and ball and crew seat into place until the seat is firmly seated metal-to-metal with the piston.

4. With a hex key, install the orifice in the piston.
5. Place seals on the piston groove and lower the piston squarely into 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 bonnet and sleeve gaskets.
7. Install bonnet and bonnet flange (and spring if mounted in vertical line).
8. To properly align seat ring and plug, bring body bolting to finger tightness. Remove lifting ring from top of bonnet, insert 1/4-inch diameter metal rod and tap several times with a hammer. This allows piston to self-center the seat ring and ensure tight shutoff.
9. Tighten one bonnet bolt 1/6 of a turn. Tighten opposite bolt 1/6 of a turn. Proceed until all bolts are tightened evenly and completely, seating the bonnet metal-to-metal in 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 '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 on 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.

GENERAL MAINTENANCE ON PISTON CHECK VALVES

Disassembly

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

1. Remove body bolting and lift bonnet cap out of valve.
2. Lift spring, piston, retainer, gaskets, and seat ring out of the body. Check for signs of galling and scoring between piston and retainer. If galling exists, call your Flowserve representative, or the factory.

3. Check the piston's vent passages for dirt buildup and other obstacles. Clean with appropriate industrial solvent if necessary.
4. Check seat ring and piston seating areas for damage. If remachining is attempted, care must be taken to match the original plug surface contour. The seat ring seating area can be remachined to a 33 degree angle; the plug angle is 30 degrees. Remachine **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 seat ring.
3. Install the retainer and piston.
4. Position the spring in top of the piston.
5. Replace bonnet gasket and bonnet cap.
6. Tighten one bonnet $\frac{1}{6}$ of a turn. Tighten opposite bolt $\frac{1}{6}$ of a turn. Proceed until all bolts are tightened evenly and completely, seating the bonnet metal-to-metal in the body. The bottoming of the bonnet cap 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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