# *VSI Waterworks*

# 2″ - 36″ AWWA C508 SWING CHECK VALVES

## INSTALLATION, OPERATION AND MAINTENANCE MANUAL


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## TABLE OF CONTENTS

## INSTRUCTIONS:

These instructions are for the AWWA C508 Swing Check Valves and who will be responsible for the installation, operation and maintenance of the valves.

## SAFETY MESSAGES:

All Safety messages in this manual are flagged with an exclamation symbol and the word Danger, Caution or Warning. These messages indicate procedures that must be followed exactly to avoid equipment damage, personal injury or death.

## WARNING!

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emissions of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline material, also handle valves that have been removed from service with suitable protection from any potential pipeline material in the valve.

## INSPECTION:

Your AWWA C508 Swing Check Valve has been packaged to provide protection during shipping. However, it is still possible to be damaged during shipping. Please inspect the unit for damage upon arrival and file a claim if damage is apparent.

## PARTS:

Order parts from your Valve Solutions Inc. sales representative. Please include the serial number, located on the valve tag, when ordering parts.

## WARNING!

Read all applicable instructions and directions prior to any maintenance, installation or troubleshooting.

## SECTION 1 - GENERAL

The AWWA C508 Swing Check valve has been in use in the waterworks industry for over a century. They are designed to prevent the backflow of water by automatically closing upon flow reversal. A majority of swing check valves are provided with and assisted closure feature such as a counterweight or spring. Acessories such as cushioning systems or limit witches may also be in use. VSI Waterworks recomends closely following install conditions and check valve application guidlines outlined in sections 3.6 and 5 of MSS SP-92-2021. These valves are designed to be used at the rated working pressure. If you are seeking a valve for low pressure usage, please contact Valve Solutions Inc. to discuss this application.

## SECTION 2 - INSPECTION

Your Series CVI Swing Check Valve has been packaged to provide protection during shipment; however, it can be damaged during transport. Carefully inspect the valve for damage upon arrival. If damage is apparent, file a claim with the carrier service and report the damages to your VSI Waterworks Representative.

## WARNING!

Valves are a significant component of any piping system. Failure due to faulty installation, improper operation or maintenance in such systems could result in damage, down time, and costly repairs. Many problems can be traced to improper installation, operation or maintenance procedures.

## SECTION 3 - UNLOADING

Inspect valves upon receipt for any damage that may have occurred during shipping, as well as conformance with quantity, configuration and description from the shipping order. When removing valves from the shipping containers, be careful not to lift the valves using slings or chain around the operating shaft, actuator, or thru the waterway. Instead, lift the valves with eye bolts or rods thru the flange holes.

## SECTION 3 - STORAGE

The valves should be stored on a pallet or “skid” in a clean, dry warehouse. If the valves must be stored outside, the following should apply:

3.1: Valves must be kept off the ground high enough to avoid standing water.

3.2: Cover the valves with a water repellent cover (not included with the valve), to prevent dirt and water from compromising the valve body or seat.

## SECTION 4 - INSPECTION PRIOR TO INSTALLATION

Make sure flange faces, body seats, and disc seats are clean. If hardware is loose, tighten firmly. Open and close the valve to make sure it operates properly and that the valve seats fully. Close the valve before installing.

## SECTION 5 - INSTALLATION

5.1: AWWA C508 Swing Check Valves end flanges are designed and drilled to ANSI/ASME B16.1 class 125 or ANSI/AWWA C110/A21.10 unless explicitly outlined by the purchaser’s specifications. Gas-

kets will be required to be installed between the valve and the mating flanges.

5.2: AWWA C508 Swing Check Valves operate only in one direction, use the flow direction indicator on the valve to make sure that it is installed in the direction of water flow. Fail to do so will cause the valve not to operate, and block all water flow.

5.3: Use section 3.6 of MSS SP-92-2021 to guide in the best practices of selecting and locating check valves.

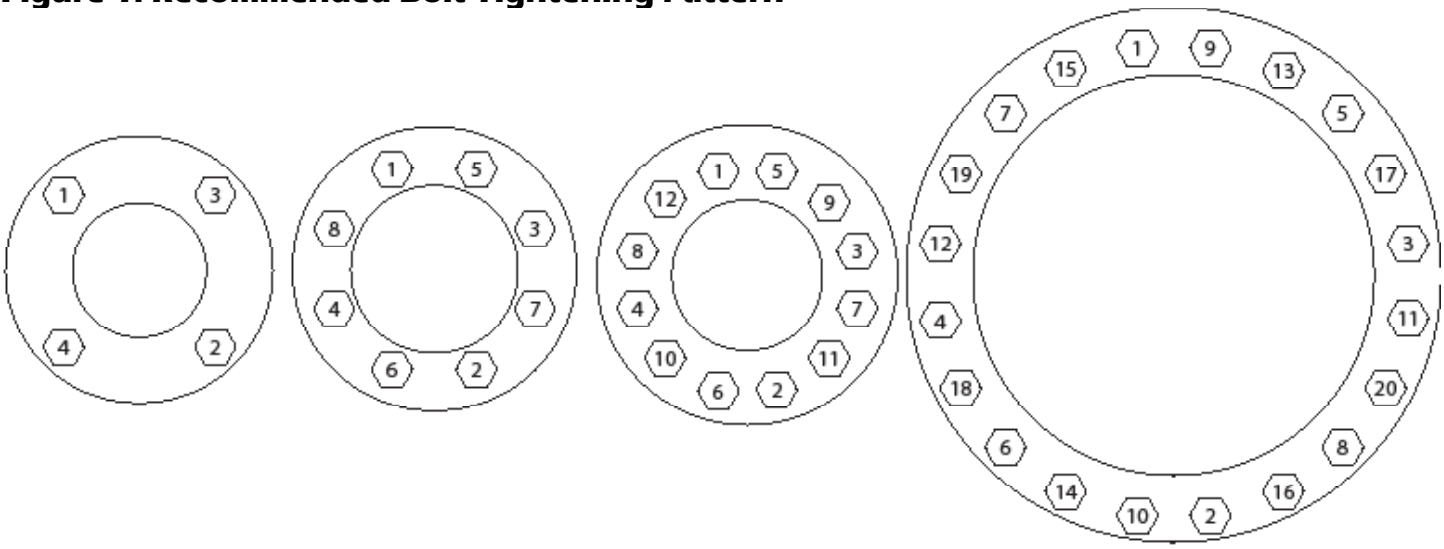
5.4: Before installation, remove any foreign materials such as oil, grease, and dirt from the pipeline.

5.5: Prepare pipe ends and install the Swing Check Valves in accordance with the pipe manufacture;s instructions for the joint being used.

5.6: For proper sealing, ensure that the valve and the pipeline flanges are concentric to ensure proper flange sealing and seat leaking control.

5.7: Tighten the flange bolts in a crisscross pattern, see figure 1 below.

**Figure 1: Recommended Bolt Tightening Pattern**




## SECTION 6 - MAINTENANCE

### Sec. 6.1: Series CVI Swing Check Valves

Requires no routine maintenance or lubrication is not required.

### Sec. 6.2: Series CVI Swing Check Valves with Pneumatic Air Cylinders/Oil Cushioning Cylinders

A periodic, every 6 months, lubrication of the piston rod and pins to keep the valve in good operating condition. If repainting of the valve is required, the piston rod should be fully masked to prevent paint to get on the cylinder rod.

6.2.1: Apply WD-40 or equivalent evenly and liberally on the exposed piston rod.

6.2.2: If surface rust are present on the piston rod, use a steel wool pad coarse grade 3 and WD-40 to remove surface rust. After doing so, wipe the piston rod using a clean rag and reapply WD-40.

6.2.3: For oil cushioning systems; if oil is needed in oil canister, use only Biodegradable Food Grade Hydraulic Fluid only.

1. Remove the check valve fitting from the oil canister.
2. Fill canister half-way with approve hydraulic fluid.
3. Apply new thread seal tape (PTFE tape or Plumber's tape) on the check valve fitting.
4. Carefully to not over tighten the check valve fitting on the oil canister.

6.2.4: For Speed Control Adjustment:

1. To Increasing Cushioning: Turn the adjustment screw of the needle valve clockwise to increase cushioning speed.
2. To Decrease Cushioning: Turn the adjustment screw of the needle valve counter-clockwise to decrease cushioning speed.
3. To close the disc at a faster rate, move the counterweight away from the pivot shaft.
4. To close the disc at a slower rate, move the counterweight towards the pivot shaft.

## SECTION 7 - TROUBLESHOOTING

| SYMPTOM | PROBLEM | SOLUTION |
|---|---|---|
| Valve shaft seal leaks. | Seal is worn. | Replace seal. |
| Valve leaks excessively from one side of the valve | Object caught between the disc and the seat. | Open valve to remove object. |
| | Disc seat is worn or damaged. | Replace disc seat. |
| Valve leaks at flange point. | Loose flange bolts. | Tighten flange bolts. |
| | Misalignment or damage to piping and supports. | Adjust misalignment or repair piping or supports. |
| | Damaged flange face/s or improper flange connections. | Repair flange face/s, replace valve, or adjust flange connections. |
| Valve leaks at cover. | Leaking from top cover. | Tighten cover. |
| | Leaking from top cover gasket. | Replace gasket. |
| Water hammering. | Valve is closing too quickly. | Adjust actuator. |
| Valve does not fully close. | Object in between seat and disc. | Open valve to remove object. |
| Rust on piston rod. | Surface rust on piston rod. | Apply WD-40 or equivalent using a steel wool to clean surface rust. |
| Check Valve slams when closing | Needle Valve needs adjustments | Adjust the Needle Valve in 1/2 turn increments in the clockwise direction. |
| | Slamming continues after needle valve adjustments | Move the counterweight towards the pivot shaft. |