SCI Series 67CVO Grooved Ductile Iron Swing-Check Valve with Bonnet

Installation, Operation and Maintenance Instructions

Figure 1 – SCI Series 67CVO Grooved Ductile Iron Swing Check Valve Assembly Drawing

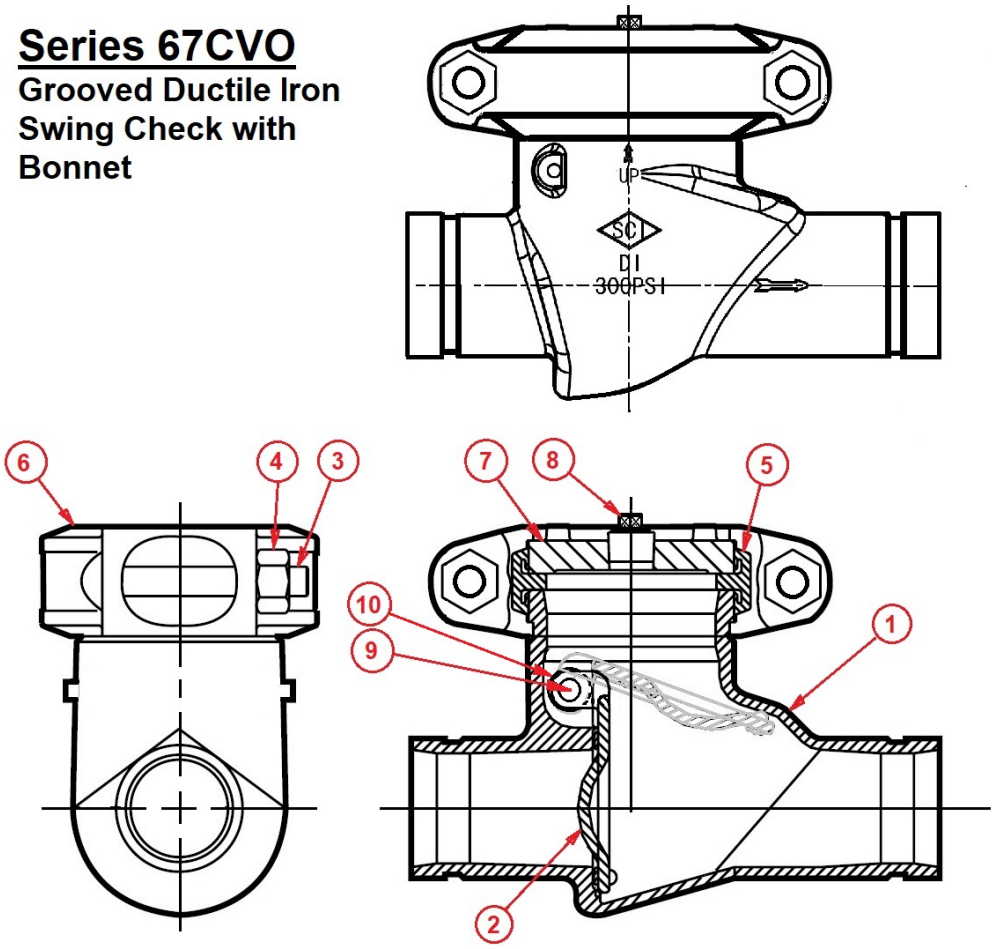

Table 1 – SCI Series 67CVO List of Materials (See Figure 1 for items illustrated)

Item No.	Part Description	Material
1	Valve Body	Ductile Iron, ASTM A536 Gr 65-45-12
2	Disc	316 Stainless Steel
3	Bonnet Bolt	ASTM A183, Grade 2 Carbon Steel Zinc Electroplated
4	Bonnet Nut	ASTM A563, Grade A or B, or SAE J995, Gr 2 Carbon Steel
5	Bonnet Gasket	Grade T Nitrile Rubber
6	Bonnet Housing	Ductile Iron, ASTM A536 Gr 65-45-12
7	Bonnet Cap	Ductile Iron, ASTM A536 Gr 65-45-12
8	Cap Plug	Carbon Steel, Zinc Plated
9	Hinge Pin	316 Stainless Steel
10	Bushings (2)	Stainless Steel / Elastomer

Valve Installation [See Figure 1 and Table 1 for part numbers listed in parentheses ( )]

These valves should be installed in a horizontal pipeline with the body vertical (with bonnet (6) above flow axis) using good pipe installation practice. These valves SHOULD NOT be installed in vertical piping.

These valves are equipped with grooved connections to AWWA C-606 to attach to adjacent pipe with the same connections. Refer to the installation instructions for grooved couplings for details of installing the valve in the piping system.

These valves also have a removable bonnet (6) and cap (7) for access and service while the valve is installed in-line. This bonnet also consists of a grooved connection (AWWA C-606) whose instructions should be used when removing or replacing the bonnet cap (7), housing (6) and gasket (5).

Valve Operation [See Figure 1 and Table 1 for part numbers listed in parentheses ( )]

The operation of a swing check valve is automatic – no operator action is required.

The swing check valves are designed to permit flow in only one direction and stop flow in the reverse direction.

A flow arrow on the side of the valve body indicates the desired direction of fluid flow (free flow).

Valve Maintenance [See Figure 1 and Table 1 for part numbers listed in parentheses ( )]

Safety Precautions Prior to Performing Maintenance:

⚠ **WARNING** – Do not attempt to perform maintenance on these valves in pressurized lines. Doing so may result in severe injury or burns due to hot fluids if there is an uncontrolled release of system pressure.

Before removing a valve from the pipeline, determine which media may be flowing through the valve. The media may be corrosive, toxic, flammable or contaminated. When there is evidence of hazardous fluids having flowed through the valve, additional precautions should be taken to avoid contact with these fluids and additional precautions should be taken when handling the valves during removal. Review the Safety Data Sheet (SDS) for any hazardous flowing fluids for any additional precautions. As a minimum, the following additional precautions should be taken.

1. Always wear OSHA-approved Safety Eyewear or face shields.
2. Always wear protective gloves and overalls or a chemical-resistant apron.
3. Wear protective footwear (e.g., safety shoes).
4. Wear protective headgear as required for the work area (e.g., hard hat – if required).
5. Ensure that running water is easily accessible (e.g., to rinse fluids from hands or valve / parts).
6. Have a suitable fire extinguisher ready if working with flammable media.

Check pipeline gauges to ensure that no pressure exists on either the upstream or downstream sides of the valve before performing any maintenance.

Valve Maintenance – continued:

In normal service, no preventive maintenance is required to be performed on these valves.

These valves do not require lubrication or adjustment while in service.

Should the valve disc (2), or its seat in the body (1) become worn over time – such that its performance (leakage) is unacceptable – the valve should normally be replaced.

However, should only minor work need to be performed on the valve internals (e.g., removal of an internal obstruction or debris) the following steps should be performed:

Disassembly of the valve internals:

D1. Loosen and remove the bonnet bolts (3) and nuts (4) and remove the bonnet housing (6) halves to get access to the cap (7) and gasket (5).

⚠ CAUTION: if there is any suspected back pressure in the system, the small cap plug (8) should be removed FIRST before loosening the bonnet bolts (3) and nuts (4). See safety precautions on the previous page.

Remove the bonnet cap (7) and gasket (5) and set aside for further inspection. Normally, the bonnet gasket (5) should be discarded and replaced with a new one (if available).

D2. Unscrew the hinge pin (9) which is screwed into the valve body (1). Note: the thread that secures the hinge pin (9) may have sealant or tape to secure it to the body (1) and provide a pressure-tight joint. Use the same tape or sealant during reassembly or one which is equivalent and compatible with system fluid.

D3. The disc assembly (2) and bushings (10) and should come loose and be removed by pulling them up and out through the bonnet area. Set the parts aside for inspection.

D4. Remove any internal obstructions inside the valve that may be blocking the disc (2) and inspect the seal surfaces (in the body) or the disc itself for any obvious damage or material that adheres to either surface. Note: extensive damage to the seat surfaces or the disc (2) may warrant replacement of the entire valve – since replacement of the disc (2) or refurbishment of the seat areas may be too costly.

D5. Inspect the condition of the rubber seal area adjacent to the disc (2) to see if it is damaged. If the coating on the disc (2) appears to be the only thing damaged, a replacement disc would be needed from the factory. However, if the seal area in the body (1) has excessive damage – it may not be feasible to repair it – and the entire body (1) and valve may need to be replaced.

Reassembly of the valve after repair or refurbishment:

R1. Place the disc (2) and bushings (10) back into the body (1) and secure in place with the hinge pin (9). Note: if thread sealants had been used on the original hinge pin (9), use the same or equivalent thread locking compound to secure the hinge pin into the body (1). Use the same torque on the hinge pin (2) as was necessary to remove it – or at least snug plus ¼ turn.

R2. Replace the bonnet gasket (5) and cap (7) and place the bonnet (coupling) housing (6) halves around the cap and gasket and assemble the bonnet bolts (3) and nuts (4) finger tight initially. Using the Cooplok coupling (or similar) instructions as a guide, tighten the bolts (3) and nuts (4) evenly until the recommended torque is reached.

R3. If the valve has been removed from the pipeline and the bonnet (6) and cap (7) have been removed, it is recommended to re-test the valve to a minimum of 330psig (110% of rating) with water, or 80 to 100psig air pressure to ensure the bonnet housing (6), cap (7) and gasket (5) have been properly installed. If the valve is installed in the pipeline, it is recommended to perform this test to the maximum system pressure possible and to ensure the valve shuts off in the reverse flow direction.