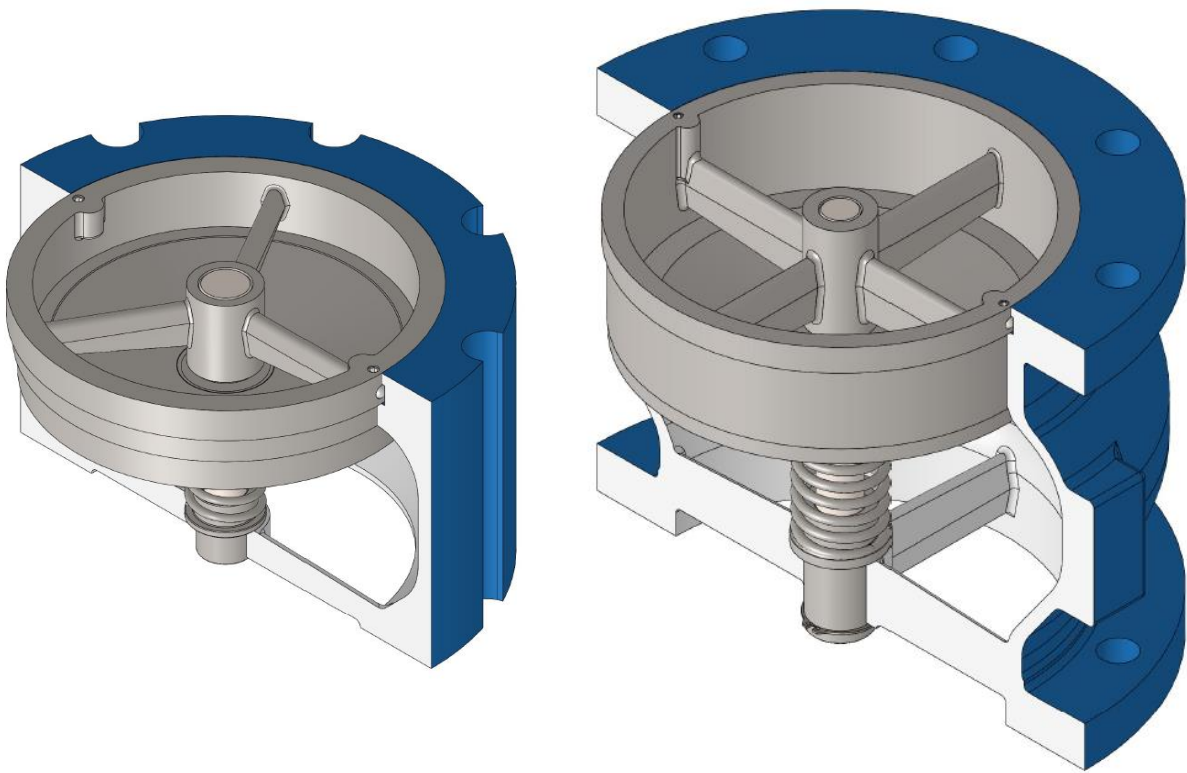


APCO CSC-300A WAFER & CSC-600A GLOBE STYLE SILENT CHECK VALVES



Instruction **D12045**
March 2023

Instructions

These instructions are for use by personnel who are responsible for the installation, operation and maintenance of DeZURIK valves, actuators or accessories.

Safety Messages

All safety messages in the instructions are identified by a general warning sign and the signal word CAUTION, WARNING or DANGER. These messages indicate procedures to avoid injury or death.

Safety label(s) on the product indicate hazards that can cause injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).

▲WARNING

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your DeZURIK product has been packaged to provide protection during shipment; however, items can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Replaceable wear parts are listed on the assembly drawing. These parts can be stocked to minimize downtime. Order parts from your local DeZURIK sales representative or directly from DeZURIK. When ordering parts please provide the following information:

If the valve has a data plate: please include the 7-digit part number with either 4-digit revision number (example: 9999999R000) or 8-digit serial number (example: S1900001) whichever is applicable. The data plate will be attached to the valve assembly. Also, include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

If there isn't any data plate visible on the valve: please include valve model number, part name, and item number from the assembly drawing. You may contact your local DeZURIK Representative to help you identify your valve.

DeZURIK Service

DeZURIK service personnel are available to maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services. For more information, contact your local DeZURIK sales representative or visit our website at DeZURIK.com.

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Description

A silent check valve consists of a valve body, seat, plug, spring, and bushing. The center guided, spring-loaded plug moves away from the seat to allow flow in the forward direction. The plug is designed to open at approximately ¼ to ½ psi (2-3 kPa), which means when a pump is shut down a silent check valve will completely close while there is still positive head on the inlet side. Because of this, reverse flow, which is a major cause of water hammer, is prevented.

Handling and Storage

▲WARNING

DO NOT fasten lifting devices through the seat (A02/S02) opening in the body or the plug (A03/S03). Lifting this valve this way is unsafe as the seat retaining screws (A07/S07) and ball (A06/S06) are not designed carry the weight of the valve. Lifting the valve improperly may damage it. Lift the valve with slings, chains or cables fastened around the valve body, or fastened to bolts or rods through bolt holes in the flanges.

If installation will be delayed, refer to **Form 1454 – Recommended Long & Short-Term Storage Procedures**.

Installation

The APCO CSC Silent Check Valve may be installed in a horizontal or vertical position (with the flow upward).

- Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the pipeline.
- A full-face flange and a full-face flange gasket must be used for the Silent Check Valve installation. The full-face flange is necessary to hold the valve seat firmly during operation. See Table A for maximum flange ID. The full-face flange gasket is necessary to seal any potential leak path between the valve body and valve seat. Flexible couplings should not be used with Silent Check Valves.

Table A: Mating Flange ID

Valve Size	Maximum Mating Flange ID	Valve Size	Maximum Mating Flange ID
3" (80mm)	3-3/8" (86mm)	16" (400mm)	16-1/2" (419mm)
4" (100mm)	4-3/4" (121mm)	18" (450mm)	18-3/4" (476mm)
6" (150mm)	6-1/2" (165mm)	20" (500mm)	20-5/8" (524mm)
8" (200mm)	8-1/2" (216mm)	24" (600mm)	24-3/4" (629mm)
10" (250mm)	10-3/4" (273mm)	30" (750mm)	29-1/2" (749mm)
12" (300mm)	12-7/8" (327mm)	36" (900mm)	36" (914mm)
14" (350mm)	14-3/4" (375mm)	42" (1100mm)	42" (1067mm)

- Prepare pipe ends and install valves in accordance with the pipe manufacturer's instructions for the joint used.

NOTICE

Do not deflect the pipe-valve joint. Minimize bending stresses in the valve end connection with pipe loading.

If excessive seat leakage occurs during start-up, recheck the installation and eliminate any distortion to the valve body.

- Ensure the valve and pipeline flanges are concentric to ensure proper flange sealing and seat leakage control.
- Tighten the flange bolts or studs in a crisscross pattern and minimum of four stages.

Fusion Bonded Epoxy Coated Valves

NOTICE

Valves with fusion bonded epoxy coated exterior paint require flat washers to be installed under the flange nuts when installing the valve to the pipeline flange to prevent the coating from cracking or chipping.

Maintenance

It is suggested that these valves, which do not require routine scheduled maintenance, be included as part of the normal facility equipment inspections for any malfunction while under normal usage conditions.

Disassembly Procedure

For part identification, see Figures 1 or 2 for CSC-300A wafer style valves and Figures 3 or 4 for CSC-600A globe style valves.

NOTICE

These valves may open or close without warning due to flow changes from pumps starting and stopping. Servicing these valves while the pipeline is under pressure can cause personal injury or equipment damage.

Relieve pipeline pressure and lockout the pumps before servicing the valve.

1. Relieve the pressure in the pipeline.
2. Remove valve from line.
3. Lay valve down with inlet face upward.
4. Remove the seat
 - a. **For valve sizes 1-2.5" (25-65 mm) with threaded seat:**

Unthread seat (A02) from body (A01). The body may need to be secured to be able to break the seat loose.
 - b. **For valve sizes 3-30" (80-750 mm):**

Using a 1/8" hex wrench/key, remove seat retaining screws (A07/S07) which hold seat retaining ball (A06/S06) in place. Rapidly push down and release plug (A03/S03) a few times to shake loose seat retaining ball from ball groove and knock out seat (A02/S02).
 - c. **For 36-42" valves (900-1100 mm):**

36-42" (900-1100 mm) valves do not have a seat retaining ball, simply remove the socket head cap screws holding in the seat.
5. Remove plug (A03/S03), spring (A04/S04), bushing retaining ring (S11, if applicable), and bushing (A05/S05) from body (A01/S01).
6. For 30-42" (750-1100 mm) valves, the plug's seating surface is a bolted-on ring that can be replaced. To remove plug ring (S12), remove the retaining screws (S14) holding the plug ring (S12) and seal (S13) in place.

Assembly Procedure

1. With the inlet facing upwards, install the bushing (A05/S05), bushing retaining ring (S11, if applicable), spring (A04/S04), and plug (A03/S03) into body (A01/S01).
2. Install the seat
 - a. **For valve sizes 1-2.5" (25-65 mm) with threaded seat:**

Ensure threads on body (A01) and seat (A02) are clean and free of debris. Thread seat (A02) into body (A01).
 - b. **For valve sizes 3-30" (80-750 mm):**

Install seat retaining balls (A06/S06) into the outside diameter of the seat (A02/S02). Hold the seat (A02/S02) flush with the flange face and install seat retaining screws (A07/S07).
 - c. **For 36-42" (900-1100 mm) valves:**

Install seat (S02) into the body and install the seat retaining screws (S07).
3. With seat (A02/S02) securely held in place, install valve in line making sure the flow arrow on the body is pointing in the direction of flow.

Note: Full face gasket on the inlet side of the valve (seat side) must be used to completely cover the gap between the seat and the body to provide a leak-free and pressure tight joint.

Installing or Replacing the Resilient Seat O-Ring

Removing the O-ring from the groove is very difficult to do without damaging the O-ring. Do not remove the O-ring unless you need to replace it and have a new one on hand to install.

Installing the O-ring is easiest when it is done in two stages, first by hand, then by rolling a round tool to press the O-ring completely into the groove.

1. Ensure the O-ring groove is free of debris and place the O-ring over the groove.
2. Press the O-ring into groove by hand.
3. Roll a round tool along the O-ring to seat the O-ring uniformly into the groove.

Operation

Once installed, CSC 300A and CSC 600A Silent Check Valves operate automatically.

Drawings

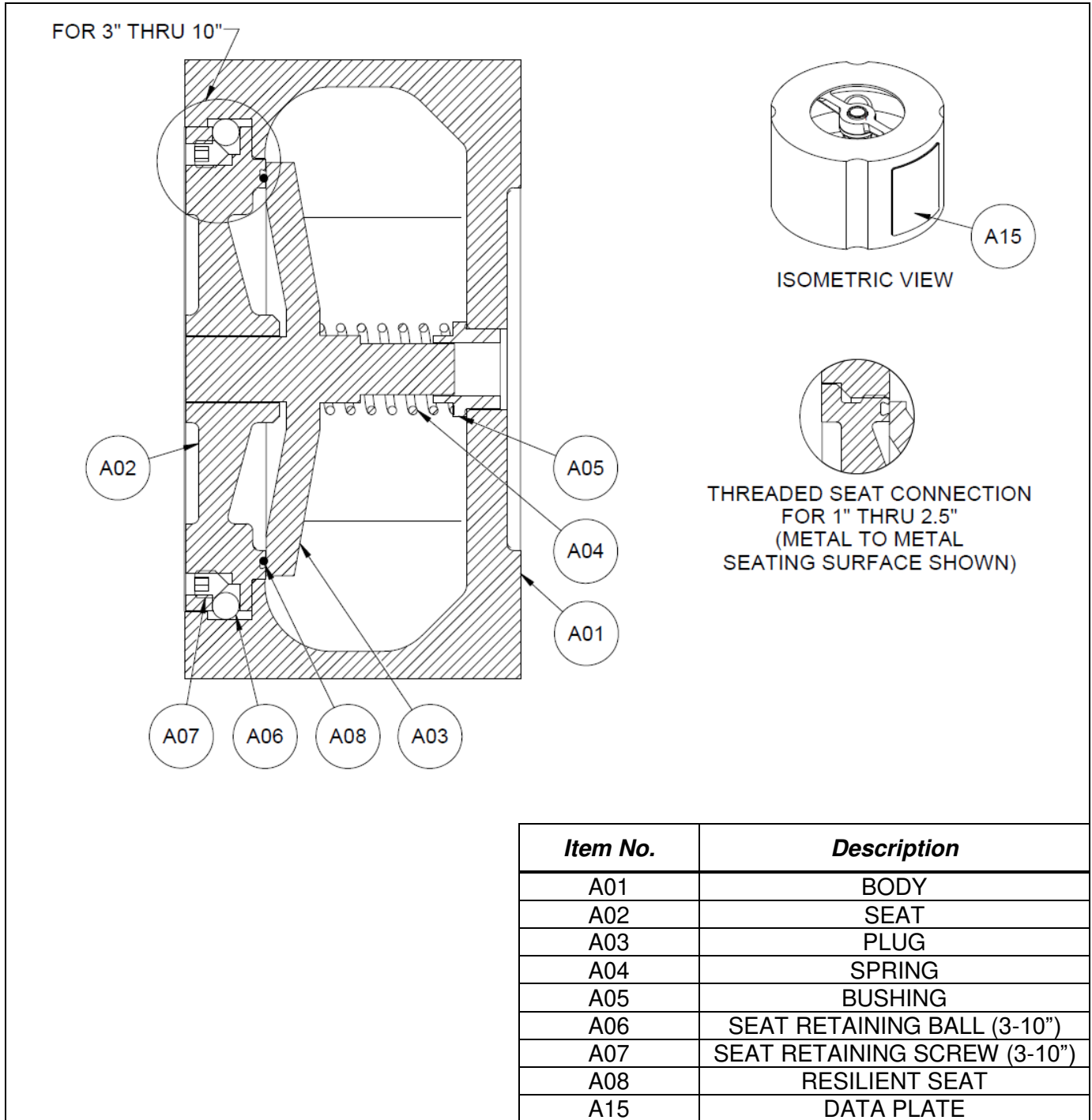


Figure 1: CSC-300A Wafer Style Silent Check Valve (2D Cross Section)

Drawings (Continued)

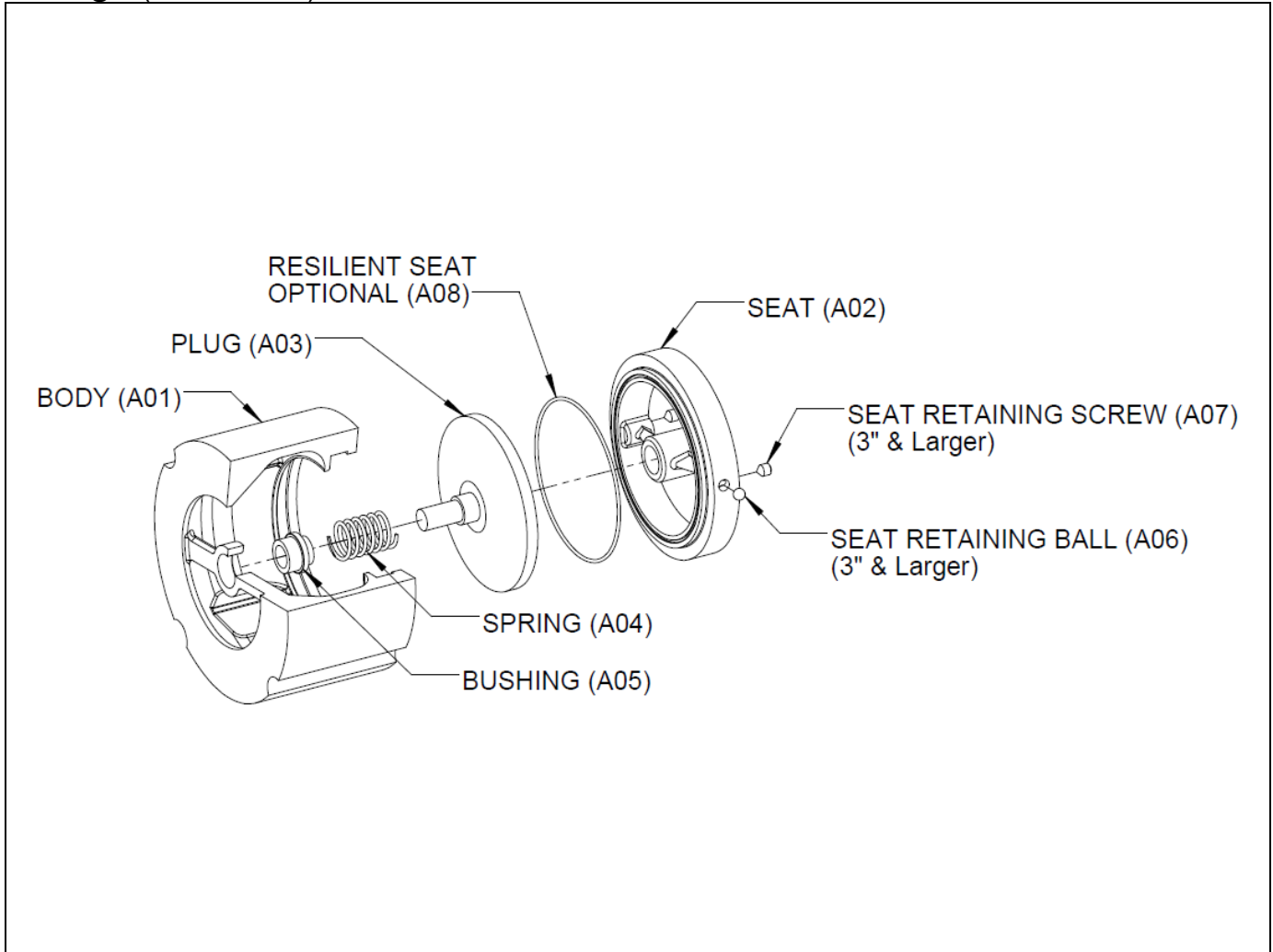


Figure 2: CSC-300A Globe Style Silent Check Valve (Exploded View, 3" & Larger)

Drawings (Continued)

The CSC-600A Globe Style Silent Check Valve will come equipped with one of two bushings: a standalone bushing or a bushing with a bushing retaining ring.

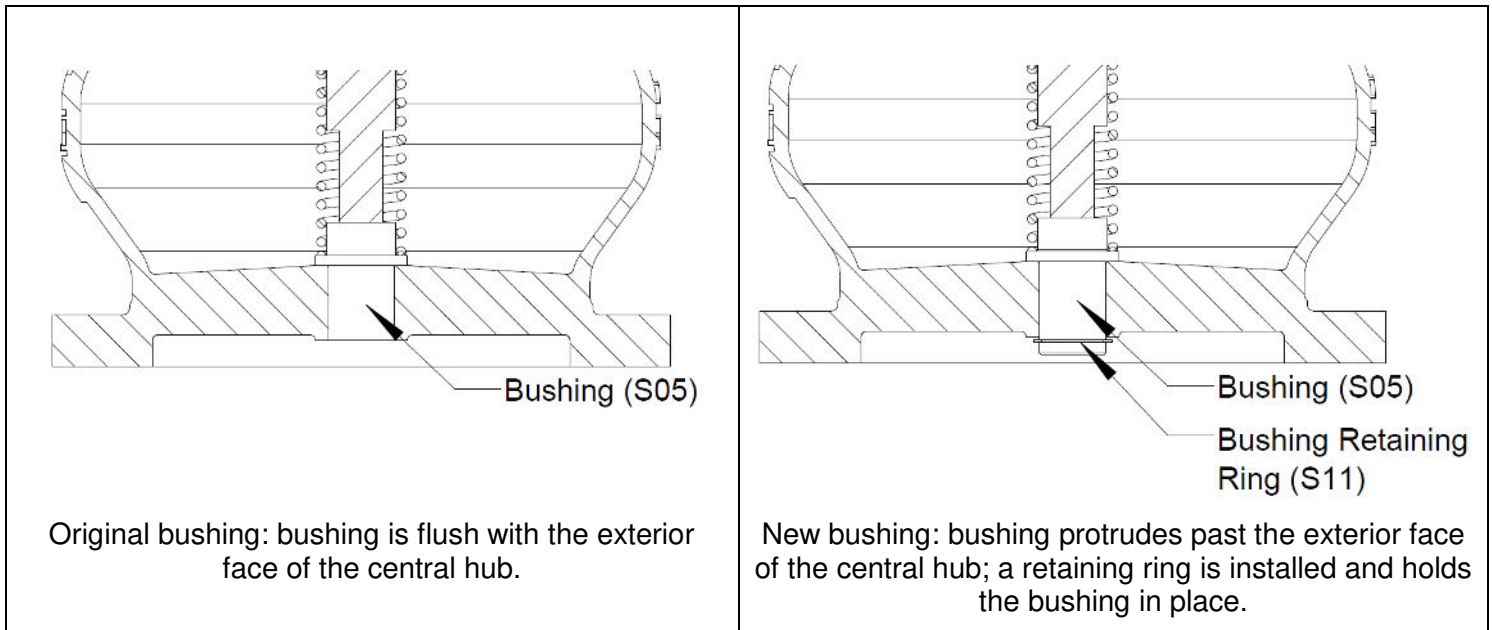


Figure 3: CSC-600A Bushing Types

Drawings (Continued)

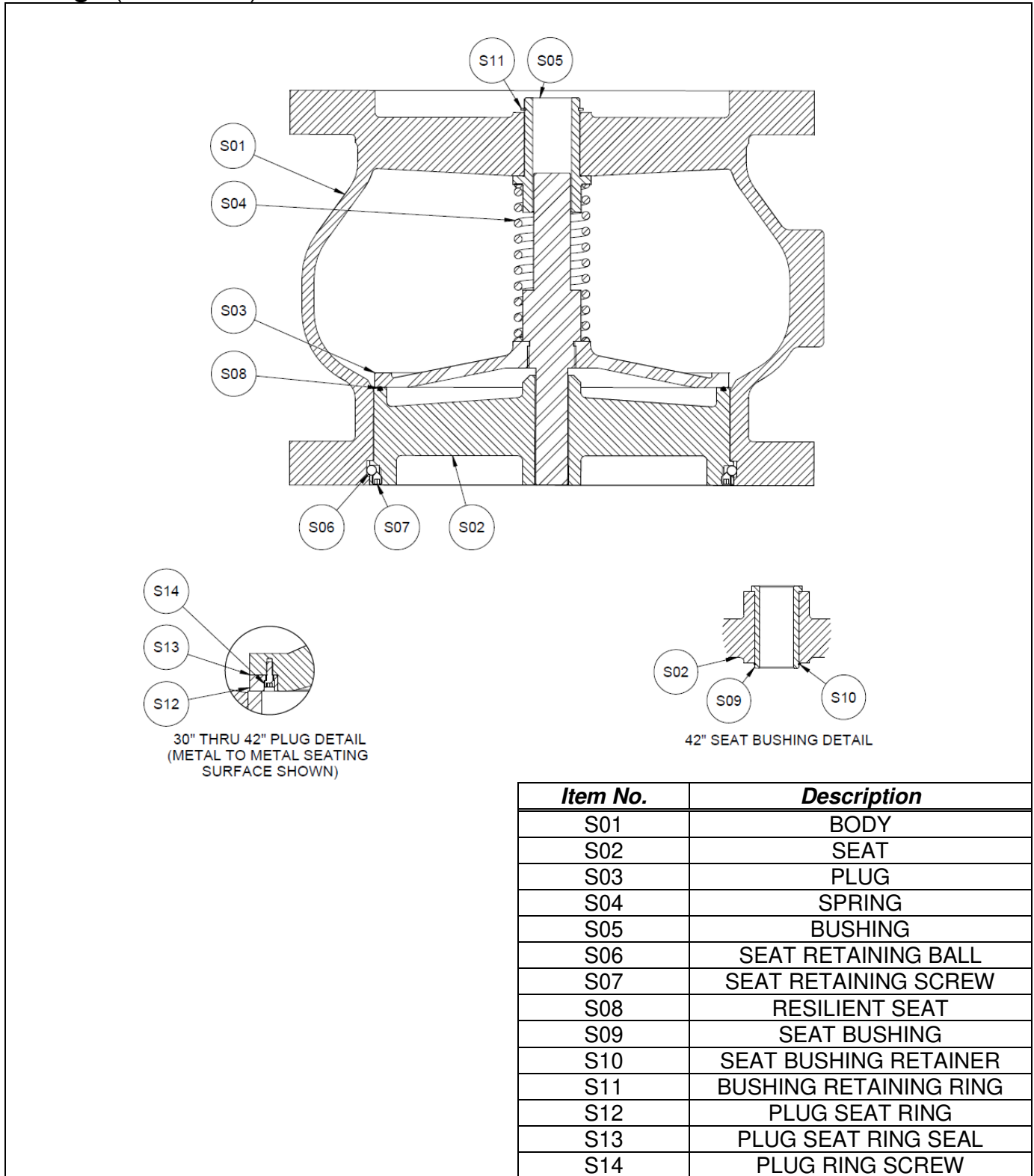


Figure 4: CSC-600A Globe Style Silent Check Valve (2D Cross Section)

Drawings (Continued)

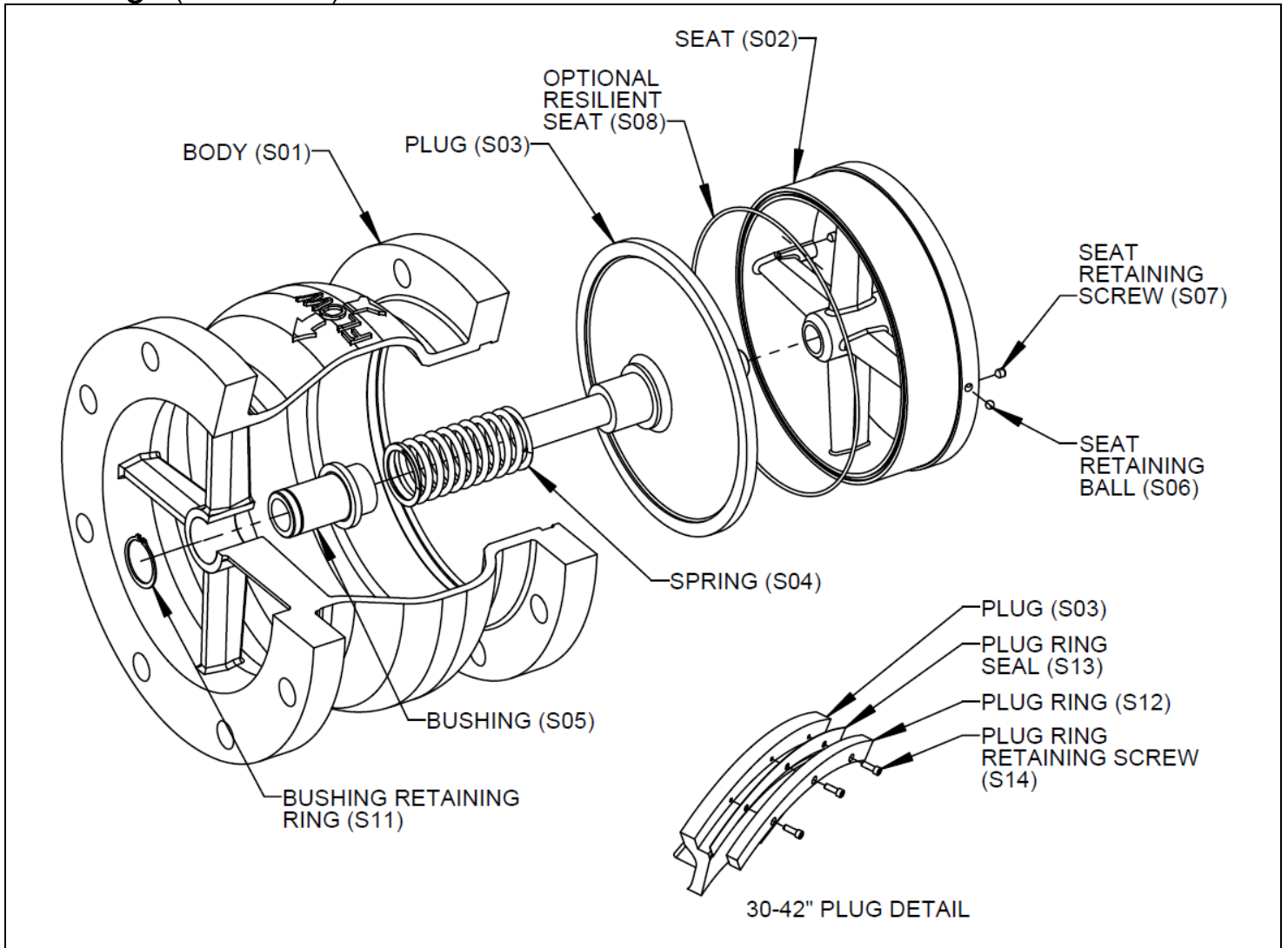


Figure 5: CSC-600A Globe Style Silent Check Valve (Exploded View)

Troubleshooting

<i>Condition</i>	<i>Possible Cause</i>	<i>Corrective Action</i>
Valve will not close.	Plug stem may be worn and may have come out of the guide.	Replace Plug.
Valve leaks excessively from one side of the plug to the other.	Full-face flange or full-face gasket NOT used.	Install valve using a full-face flange and gasket.
	Foreign matter or mineral deposits may be caught between plug and seat.	Remove foreign matter or deposits.
	Seat is worn or damaged.	Repair or replace seat ring.
Valve will not open.	Improper installation.	Flow arrow on valve body should be pointing in direction of flow.
Valve leaks at flange joint.	Loose flange bolting.	Tighten flange bolting.
	Blown flange gasket.	Replace flange gasket.
	Misalignment or damage to field piping and supports.	Adjust misalignment or repair piping or supports.
	Damaged flange face/s or improper flange connections.	Repair flange, replace valve body or adjust flange connections.

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