

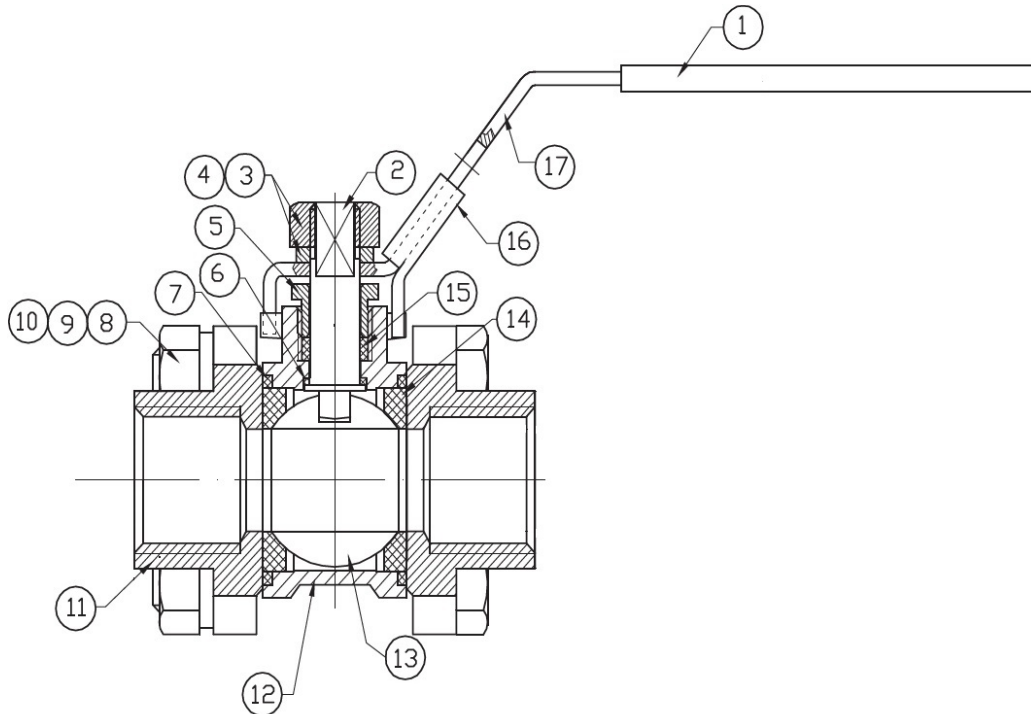
# SCI Series SC301

## 3-Piece 316 Stainless Steel Ball Valve

### Installation, Operation and Maintenance Instructions



**Figure 1** – SCI Series SC301 3-Piece 316 Stainless Steel Ball Valve



**Table 1** – Series SCI301 List of Materials (See Figure 1 for items illustrated)

Item No.	Part Description	Material
1	Handle Sleeve	Plastic
2	Stem	ASTM A276 Type 316
3	Handle Washer	304 Stainless Steel
4	Handle Nut	304 Stainless Steel
5	Packing Nut	304 Stainless Steel
6	Thrust Washer	PTFE
7	Body Seal	PTFE
8	Body Bolt	304 Stainless Steel
9	Body Washer	304 Stainless Steel
10	Body Nut	304 Stainless Steel
11	End Cap	ASTM A351 Gr CF8M (316 SS)
12	Body	ASTM A351 Gr CF8M (316 SS)
13	Ball	ASTM A351 Gr CF8M (316 SS)
14	Seat	RTFE*
15	Stem Packing	PTFE
16	Locking Device	304 Stainless Steel
17	Handle	304 Stainless Steel

Note: \*RTFE = Reinforced PTFE

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

These valves may be installed in the pipeline in any orientation or position using good piping practice. For threaded-end valves, use a suitable joint compound or PTFE tape on pipe threads of the end caps (11) for ease of fit-up and to seal the threads. However, it is recommended to install the valve with the handle (17) above the flow axis (in horizontal pipe) for optimum access and operation of the valve by the user.

### **Welding-End Valves:**

Socket welding end valves must be partially disassembled to prevent heat damage during welding to the soft elastomer seats (14) and seals (7) in the valve. Prior to disassembly, the valve may be temporarily fitted in line, and the end caps (11) tack-welded to the piping for alignment purposes.

With the valve in the open position, remove the body nuts (10) and lock washers (9) and the body bolts (8). Carefully lift out the center section, making sure that the seats (14) and seals (7) are held in position.

**⚠ CAUTION** – The center body section should only be lifted and removed from between the body end caps (11) with the ball (13) in the OPEN position. Failure to do so may result in the ball surface being scratched or nicked which will also damage the seats and affect the ability of the valve to seal / shut-off when closed.

Place the body center section in a clean area where it will not be damaged and complete the welding of the end caps (11) to the piping.

When the welds are cool to the touch, install the new seats (14) and seals (7) supplied with the valve and reinstall the center section between the body end caps (11). Take care that the seats are in place and have not been damaged. **Install the new body seals (14) which were shipped with the valve. Do not re-use old body seals (14).**

Reinstall the body bolting (8), washers (9) and nuts (10), and tighten following the “Valve Reassembly” instructions. A light application of thread lubricant (Never-Seez or equivalent) on bolt threads is recommended.


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

These are quarter-turn (90° rotation) ball valves which are typically fitted with a latching lever handle (17) for manual operation. The valve body (12) also contains travel stops at the full open and closed positions.

To open the valve, lift the latch/lock mechanism (16) slider up and turn the handle (17) counterclockwise.

To close the valve, lift the latch/lock mechanism (16) slider up and turn the handle (17) clockwise.

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

 **DANGER** – Do not attempt to perform maintenance on valves in pressurized lines. Doing so may result in severe injury or death if there is an uncontrolled release of system pressure.

### **Stem Packing (15) Adjustment:**


If leakage is evident from the stem packing (15) area, tighten the packing nut (5) beneath the handle (17) about 1/8 of a turn. If the leakage persists, repeat the tightening sequence again. If the leakage cannot be corrected by tightening the packing nut (5), replacement of the stem packing (15) may be necessary.

### **Seat (14), Body Seal (7) and Stem Packing (14) Replacement:**

Turn the valve to the open position and remove the handle nut (4), washer (3) and the handle (17). Loosen and remove the packing nut (5) from the valve body (12).

Loosen and remove the body bolts (8), washers (9) and body nuts (10) and remove the center body section assembly, placing it on a suitable work surface. Remove the seats (14) and body seals (7) from the body (12).

Using the handle (17) if necessary, turn the ball to the closed position, and remove the ball (13) from the body (12) with a rolling motion away from the tang on the stem (2). Handle the ball (13) with care to avoid damaging its surface.

 **CAUTION** – Damaging the ball surface by dropping, denting, or scratching the ball surface will make it difficult for the ball or seats to shutoff leading to excessive leakage through the valve.

Push downwards on the top of the stem (2) to slide it down through the stem packing or rings (15) and remove the stem (2) from inside the body (12) bore. Remove the thrust washer (6) from the stem (2) or the body bore (12) if it is retained there. Remove the stem packing (15) or rings using a packing hook or sharp object to catch and pull the packing. **Use caution** not to scratch or nick the inside of the packing body / cavity inside the body (12) which may cause additional leakage.

ASC recommends that all soft elastomer parts – including seats (14), seals (7) and packing (15) be replaced with new parts if available in a kit (contact sales). If kits are not available, a new valve assembly with these parts will be required to replace the damaged parts.

### **Valve Reassembly:**

Make sure all the valve components are clean and undamaged before assembly. A light application of thread lubricant (e.g., Never-Seez or equivalent) on the bolt (8) and packing nut (5) threads is recommended.

Install the thrust washer (6) on the stem (2) and slide it down to its shoulder. Insert the stem (2) into the valve body (12) and upwards through its stem bore until the shoulder is seated in the bore.

Slide the stem packing or rings (15) over the top of the stem (2) and into the packing bore in the body (12). Take care not to damage or scratch or gouge the stem packing on the threads of the stem (2). Install the packing nut (5) and tighten finger tight (initially).

Place the stem in the “closed” position and install the ball carefully into the body (12) cavity by rolling the stem (2) tang into the ball (13) slot.

Install the seats (14) and body seals (7) in the body on each end, making sure the concave face of the seal fits against the ball, and press the body seal (7) edges into the grooves in the body (12) faces.

Turn the ball (13) to the open position and replace the entire body section assembly in between the end caps (11) in the pipeline. Slide the body bolts (8) through the end caps (11) and body guide holes and secure with the lock washers (9) and body nuts (10). Tighten snugly.

Tighten the packing nut (5) to the torque value given in Table 2 below, using a cross or star pattern to tighten evenly. Then replace the handle (17), lock washer (3) and handle nut (4) – torquing these until the handle is secure.

**Table 2** – Series SC301 Ball Valve Assembly Torques (See Figure 1 for items illustrated)

Valve Size	Packing Nut (5) Torque, in inch-lbs	Body Bolt (8) Torque, in inch-lbs
1/4" – 3/8"	35	50
1/2"	35	110
3/4" – 1"	80	115
1-1/4" – 1-1/2"	115	120
2"	115	125
2-1/2"	250	350
3" – 4"	350	460