SCI Series SC101

1-Piece 316 Stainless Steel Ball Valve

Installation, Operation and Maintenance Instructions

Figure 1 – SCI Series SC101 One-Piece 316 Stainless Steel Ball Valve

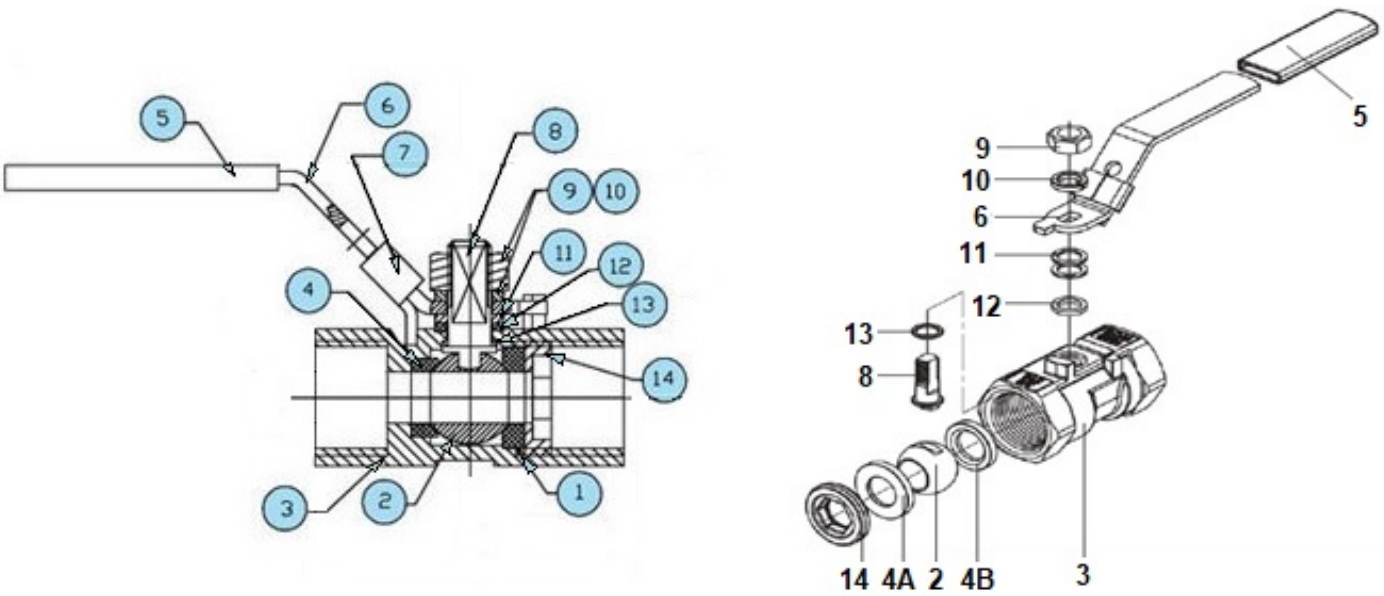

Table 1 – Series SC101 List of Materials (See Figure 1 for items illustrated)

Item No.	Part Description	Material
1	Body Joint Gasket	PTFE
2	Ball	ASTM A351 Gr CF8M (316 SS)
3	Body	ASTM A351 Gr CF8M (316 SS)
4A 4B	Seat A (outer) Seat B (inner)	RTFE*
5	Handle Cover	Plastic
6	Handle	304 Stainless Steel
7	Locking Device	304 Stainless Steel
8	Stem	ASTM A276 Ty 316
9	Stem Nut	304 Stainless Steel
10	Spring Washer	304 Stainless Steel
11	Gland Washer(s)	304 Stainless Steel
12	Stem Packing	PTFE
13	Thrust Washer	PTFE
14	Seat Retainer	ASTM A351 Gr CF8M

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 body (3) for ease of fit-up and to seal the threads. However, it is recommended to install the valve with the handle (6) above the flow axis (in horizontal pipe) for optimum access and operation of the valve by the user.

These one-piece ball valves are bi-directional and may be installed for flow in either direction. But during installation, it is recommended that the valve be installed with the ball in the open position to prevent any possible damage to the internals. After installation, cycle the valve several times before placing it into service.

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 (6) for manual operation. The valve body (3) also contains travel stops at fully open and fully closed positions, and these soft seated ball valves perform best with the ball either fully open or fully closed in accordance with the pressure/temperature limits provided in the valve datasheet literature. Consult the factory regarding characteristics of the media or pressure drop for applications other than fully open or closed.

To open the valve, lift the latch/lock mechanism (7) slider up and turn the handle (6) counterclockwise.

To close the valve, lift the latch/lock mechanism (7) slider up and turn the handle (6) clockwise.

The visual indication of the ball position (open or shut) is shown by the handle position:

- When the handle is parallel with the axis of the piping, the valve ball is open.
- When the handle is perpendicular to the pipe, the valve ball is closed.

Also, the flats on the valve stem (8) are also indicative of the valve position: 1) stem flats parallel to the pipe axis means the valve is open, and 2) the stem flats perpendicular to pipe axis means the valve is closed.

Any media that might solidify, crystallize, or polymerize should not be allowed to stand in the ball valve cavities. In the event this happens, DO NOT force the valve in either direction, but disassemble and clean the internals of the valve before resuming service.

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

It is recommended that the following steps be taken for safe removal of the valve from the line, or any subsequent disassembly.

- Relive the pressure in the pipeline.
- Place the valve in the half-open position to relieve pressure and flush the line to remove any hazardous material from the valve.
- All personnel involved in removal and/or disassembly of the valve should wear protective clothing and eyewear such as safety glasses or face shields, gloves, aprons, and safety shoes.

⚠ **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.

⚠ **WARNING** – Ball valves can trap fluids under pressure inside the ball cavity when closed. If the valve has been used to control hazardous media, it must be depressurized and decontaminated before any disassembly or loosening or adjustment of the stem nut (9) or seat retainer (14).

Stem Packing (12) Adjustment:

If leakage is evident from the stem packing (12) area, tighten the stem nut (9) about 1/8 of a turn. If the leakage persists, repeat the tightening sequence again. If the leakage cannot be corrected by tightening the stem nut (9), replacement of the stem packing (12) may be necessary.

Seat (4A&B), Body Joint Gasket (1) and Stem Packing (12) Replacement:

Remove the stem nut (9), spring washer (10), handle (6) and gland washer(s) (11) from the body (3).

Using the handle (6) if necessary, turn the ball to the closed position, then remove the seat retainer (14) using the appropriate size hex key. Remove the seats (4A & B) and the ball (2) from the stem (8) with a rolling motion away from the tang on the stem. Handle the ball (2) 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 (8) to slide it down through the stem packing (12) and remove the stem from inside the body (3) bore. Remove the thrust washer (13) from the stem (8) or the body bore (3) if it is retained there. Remove the stem packing (12) using a packing hook or sharp object to catch and pull up the packing. **Use caution** not to scratch or nick the inside of the packing body / cavity inside the body (3) which may cause additional leakage.

ASC recommends that all soft elastomer parts – including seats (4A&B), body gasket (1), packing (12) and thrust washer (13) be replaced with new parts if available in a kit (contact sales). If seal kits are not available, a new valve assembly with all new parts would be required.

Valve Reassembly:

Make sure all the valve components are clean and undamaged before assembly.

Install the inner seat (4B) into the body – with the concave side out toward the ball (2).

Install the thrust washer (13) onto the stem (8) and slide it down to its shoulder. Insert the stem (8) into the valve body (3) and upwards through the team bore until the shoulder is seated in the body.

Slide the stem packing or rings (12) over the top of the stem (8) and into the packing bore in the body (3). Take care not to damage or scratch or gouge the stem packing on the threads of the stem (8). Install the packing gland washer (11), handle (6), spring washer (10) and stem nut (9) and tighten loosely (initially).

Place the stem in the "closed" position and install the ball carefully into the body (3) cavity by rolling the stem (8) tang into the ball (2) slot.

Install the outer seat (4A) and body seal (1) in the body (3) and install the seat retainer (14) and thread it into the body against the seats and seal. Tighten the seat retainer (14) snug against the shoulder inside the body but do not over-tighten it. Only tighten the seat retainer to ensure the valve is leak-tight when subsequently pressurized. Table 2 can be used as a guide for the expected maximum torque to seat or unseat the valve with the valve pressurized to 7 barg (100psig).

⚠ **CAUTION** – Over-tightening the seat retainer (14) may create excessive torque on the inner and outer seats (4A&B) on the ball (2) and create excessive torque for the valve to operate.

Tighten the stem nut (9) so the stem packing (12) is firmly seated, and the handle is secure – but DO NOT OVER-TIGHTEN the stem nut. Table 2 can be used as a guide for the expected maximum torque to seat or unseat the valve with the valve pressurized to 7 barg (100psig).

⚠ **CAUTION** – Over-tightening the stem nut (9) will create excessive torque on the stem and decrease the life of the stem (8) and packing (12). Only tighten the stem nut to ensure the valve and packing are leak tight.

If possible, pressurize the valve and check its leak tightness at operating pressure (as a minimum) before reinstalling the valve in the line.

Table 2 – Series SC101 Ball Valve Assembly Expected Seating Torques (See Figure 1 for items illustrated)

Valve Size - Metric (Inch)	Expected Seating Torque, in N-m	Expected Seating Torque, in inch-lbf
DN8 (1/4")	3 N-m	26.6 in-Lbf
DN10 (3/8")	4 N-m	35.4 in-Lbf
DN15 (1/2")	5 N-m	44.3 in-Lbf
DN20 (3/4")	6 N-m	53.1 in-Lbf
DN25 (1")	10 N-m	88.5 in-Lbf
DN32 (1-1/4")	13 N-m	115.1 in-Lbf
DN40 (1-1/2")	19 N-m	168.1 in-Lbf
DN50 (2")	25 N-m	221.3 in-Lbf

Reference Torque values with the valve pressurized to 7 barg (100 psig), after 24 hours at a temperature of 25℃ (77℉).