

Ball Valve Instruction Manual



◆ Installation

Installation Preparation

1. Remove protective cap and packing material.
2. Before installing the valve, assure the specified pressure and temperature range is sufficient and piping line is installed properly.
3. The environment of installing valve should be suitable to the operation.
4. Make sure the piping system line is free of contaminants.
5. Do not carry the valve with getting the handle.

Connection of Taper Thread

1. Before assembly, make sure male and female threads are free of dirt and debris.
2. Teflon tape should be applied to male thread with 5 or 6 turns.
3. After wrapping the threads, make sure that the tape is properly fixed by pressing the tape with hands.
4. During installation, dirt and debris should not contaminate the threads.

Connection of Hy-Lok Tube Fitting

1. Insert prepared tubing into Hy-Lok fitting until tubing end is firmly seated on the body shoulder and make sure the nut is finger-tight.
2. Mark the nut at 9 o'clock position for identification of starting point.
3. Tighten the nut 1 1/4 turns with a wrench keeping the fitting body steady with a back-up wrench. After the nut is tightened 1 1/4 turn, the marking made at 9 o'clock position before, will now be at 12 o'clock position.

Connection of Socket Weld/Butt Weld End

1. Before assembly, make sure of removing dirt on the tube / pipe end and the valve end connection.
2. Removed the Flange(7) from the Body(1).
3. In case of Socket Welding - Insert the tube/pipe end to the end connection of valve keeping 1.5mm (0.06 in) gap with the body shoulder.
In case of Butt Welding - Insert the Backing Ring between tube / pipe end and valve end connection.
4. Weld the end connection in accordance with the welding procedure.
5. After welding, remove the slag on the weld bead.

Hy-Lok

◆ Operating

⚠ CAUTION

1. System design should ensure adequate space for proper valve actuation without obstruction.
2. The Valve should be operated manually by an authorized person or trained personnel to ensure proper valve operation.
3. Operate the Valve after complete installation in system.
4. Operate the Valve in accordance with the specified user's procedure.
5. Operate the Valve with the Handle. Actuating the valve with a spanner, pipe wrench, etc. is not recommended.

Open and Close the Valve

On-off Pattern(2-way)

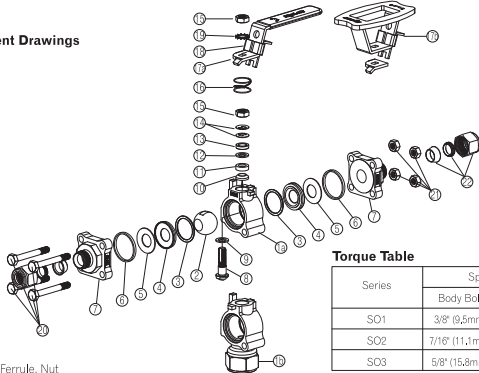
Turn the **Handle(17a)** 1/4 turns clockwise or counterclockwise to close or open.

Switching Pattern(3-way)

Turn the **Handle(17b)** 1/2 turns clockwise or counterclockwise to switch the valve.

General Arrangement Drawings

- 1a. Body (2way)
- 1b. Body (3way)
2. Ball
3. Support Ring
4. Seats
5. Seat Spring
6. Flange Seal
7. Flange
8. Stem
9. Stem Bearing
10. Lower Packing
11. Upper Packing
12. Packing Support
13. Gland
14. Stem Spring
15. Stem Nut
16. Grounding Spring
- 17a. Handle
- 17b. Handle (Oval)
18. Locking Device
19. Tooth Washer
20. Body Bolt
21. Body Nut
22. Front Ferrule, Back Ferrule, Nut



◆ Maintenance

⚠ CAUTION

1. Check to ensure operation is within a safe temperature range and is free from any power source. To properly check the valve the line should be fully depressurized and any fluids should be drained before attempting any maintenance.
2. The valve being removed should be operated at least once and left in the open position before removal.
3. The Valve should be operated manually by an authorized person or trained personnel to insure proper valve operation.

Replacement of part components

If no further adjustment of **Packing Gland(6)** is possible and stem leakage is still evident or seat leakage is suspected, the valve will need to be removed from the line in order for new seats/seals to be installed.

After removal of the valve, adopt the following procedure to remove, replace and reassemble the individual valve components.

Disassembly

1. Before disassembly, place the **Handle(17)** in the open position.
2. Remove the **Body Bolt(20)** and the **Nut(21)** by using the Spanner.
3. Remove the **Flange(7)**, **Flange Seal(6)**, **Seat Spring(5)**, **Seat(4)**, **Support Ring(3)**, **Ball(2)** from the **Body(1)**.
4. Loosen the **Upper Stem Nut(15)** and remove the **Tooth Washer(19)**, **Handle(17)**, and **Grounding Spring(16)**.
5. Loosen the **Lower Stem Nut(15)** and remove the **Stem Spring(14)**, **Gland(13)**, **Packing Support(12)**, **Upper Packing(11)**, and **Lower Packing(10)** from the **Body(1)**.
6. Remove the **Stem(8)** from the **Body(1)**.

Torque Table

Series	Spanner Size		Torque (N · m)	
	Body Bolt	Stem Nut	Body Bolt	Stem Nut
SO1	3/8" (9,5mm)	10	9	4
SO2	7/16" (11,1mm)	13	16	10
SO3	5/8" (15,8mm)	19	37	16

Leakage

1. Stem leakage

In case of stem leakage, tighten the **Stem Nut(15)** until the stem leakage stops. To Tighten the Lower **Stem Nut(15)**, the Upper **Stem Nut(15)**, **Tooth Washer(19)** and **Handle(17)** must be removed.

If leakage does not stop after tightening the lower the **Stem Nut(15)**, **Stem Spring(14)**, **Gland(13)**, **Packing Support(12)**, **Upper Packing(11)**, **Lower Packing(10)**, and **Stem(8)** should be removed, inspected, and replaced as necessary. In general, once removed all non-metallic components should be replaced.

2. External leakage

If leakage is observed between the **Body(1)** and **Flange(7)**, the **Body Bolts(20)** should be inspected for proper tightness and re-torqued as necessary following proper torque procedure. If leakage continues after re-tightening, **Flange Seal(6)** need to be replaced.

3. In-Line or "Across the Seat" leakage

If the valve leaks across the **Seat(4)**, ensure the valve is in the fully closed position. If the reason of leakage is **Seat(4)** damage, replace the **Seat(4)**.

Reassembly

1. Before valve reassembly, check if any damage and corrosion in all part components of the valve.
2. If the damage is minor, polish the part by sandpaper. If the damage is considerable, replace the part components.
3. Insert the **Stem(8)** into the **Body(1)**.
4. Insert the **Lower Packing(10)**, **Upper Packing(11)**, **Packing Support(12)**, **Gland(13)**, **Stem Spring(14)** in order and tighten the **Lower Stem Nut(15)**.
5. Insert the **Grounding Spring(16)**, **Handle(17)**, **Tooth Washer(19)** on the **Stem(8)** and tighten the **Upper Stem Nut(15)**.
6. Insert the **Ball(2)**, **Support Ring(3)**, **Seat(4)**, **Seat Spring(5)**, **Flange Seal(6)**, **Flange(7)** into the **Body(1)** by aligning.
7. Tighten the **Body Bolt(20)** and the **Nut(22)** by using the **Spanner**.

◆ Removal

⚠ CAUTION

The valve must be depressurized in the open position before removal.
Close the valve after fluids are fully drained.

1. Get permission to remove the valve.
2. To prevent damage to the seat, careful attention is needed when removing the valve.
3. After removal, clean the valve and cap the ends with plastic covers.