

105 SERIES

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.

Connection of Taper Thread

1. Before assembly, make sure of removing dirt on male and female threads.
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 the installation, dirt should not be contained.

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.

⚠ CAUTION

105 Series Ball Valve shall not be used for CNG System.

Hy-Lok

◆ **Operation**

⚠ CAUTION

1. To operate the valve, the enough space secured and free from any potential obstruction that may interrupt the operation.
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 handle. (Spanner, pipe wrench etc. are not permitted)

Open and Close the Valve

On-off Pattern(2-way)

Turn the **Handle(9)** 1/4 turns clockwise or counterclockwise to close or open.

Switching Pattern(3-way)

Turn the **Handle(9)** clockwise or counterclockwise to switch the valve.

Side Entry Type - 1/4 turns

Bottom Entry Type - 1/2 turns

◆ **Maintenance**

⚠ CAUTION

1. The line shall be fully depressurized before attempting any maintenance and any fluids shall be drained. Check that Valve condition is within a safe temperature range and free from a power source.
2. The valve being removed should be operated at least once and left in the open position before removal.
3. Before disassembling the valve, ensure that the valve has been decontaminated correctly from any harmful gases or fluids and within a safe temperature range for handling.
4. The Valve should be operated manually by an authorized person or trained personnel to ensure proper valve operation.

Replacement of part components

Stem leakage is usually suspected by seat leakage, therefore the valve will need to be removed from the line in order for new seats/seals to be fitted.

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

Leakage

1. Stem leakage

In case of stem leakage, tighten the **Locking Nut(11)**. If the leakage remains after tightening, remove the **Locking Nut(11)**, **Spring Washer(10)**, **Handle(9)**, **Packing Gland(8)**, **End Connector(5)**, **Ball(2)** and ensure the damage of **Stem(6)** and **Outer/Inner Stem Packing(7)**. If damage, replace the damaged part component(s).

2. End Connection External leakage

In case of leakage between **Body(1)** and **End Connector(5)**, ensure firstly tightening condition of it. If the **End Connector(5)** is not firmly tightened, further tighten the **End Connector(5)** with the uniform torque. If the leakage remains after tightening, replace the **End Packing(4)**.

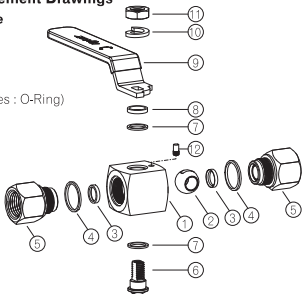
3. In-Line leakage

If the leakage happens inside of valve, ensure whether the valve is in fully closed condition. If the reason of leakage is **Seat(3)** or **Ball(2)** damage, replace the **Seat(3)** or **Ball(2)**.

General Arrangement Drawings

► Standard Type

1. Body
2. Ball
3. Seat
4. End Packing
(H2B, H3B series : O-Ring)
5. End Connector
6. Stem
7. Stem Packing
8. Packing Gland
9. Handle
10. Spring Washer
11. Locking Nut
12. Stop Pin



Disassembly

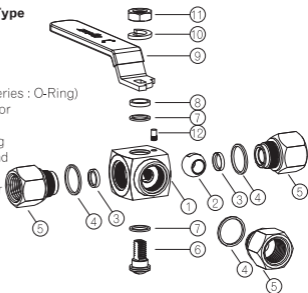
1. Remove the End Connector(5) by using the Spanner.
2. Remove the Ball(2).
3. Remove the Seat(3) and End Packing(4) from the End Connector(5). - H1B Series
Remove the Seat(3) and O-Ring(4) from the End Connector(5). - H2B, H3B Series
4. Loosen the Locking Nut(11) and remove the Spring Washer(10), Handle(9) and Packing Gland(8).
5. Remove the Stem(6) from the Body(1).
6. Remove the Stem Packing(7) from the Body(1).

Reassembly

1. Before valve reassembly, check if any damage and corrosion in all part components of the valve. If the damage is considerable, replace the part component.
2. Insert the lubricated Seat(3) into the End Connector(5) (Check to direction of Seat).
3. Place the End Packing(4) on the End Connector(5) (Check to direction of End Packing).- H1B Series
Place the O-Ring(4) on the End Connector(5). - H2B, H3B Series
4. Put the inner Stem Packing(7) on the Stem(6).
5. Assemble the Stem(6) into the Body(1).
6. Place the Stem(6) with close position.
7. Place the Ball(2) with open position after inserting the Ball(2) into the Body(1) by aligning the Stem(6) key and Ball(2) slot.
8. Tighten the End Connector(5) into the Body(1).
9. Insert the Stem Packing(7) into the assembled Body(1).
10. Put the Packing Gland(8) on the Stem(6).
11. Assemble the Handle(9) to the Stem(6).
12. Place the Spring Washer(10) on the Handle(9) and then tighten the Locking Nut(11).
13. Tighten the End Connector(5) according to Torque Table.
14. Tighten the Locking Nut(11) according to Torque Table.

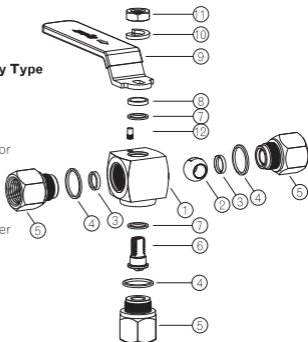
► Side Entry Type

1. Body
2. Ball
3. Seat
4. End Packing
(H2B, H3B series : O-Ring)
5. End Connector
6. Stem
7. Stem Packing
8. Packing Gland
9. Handle
10. Spring Washer
11. Locking Nut
12. Stop Pin



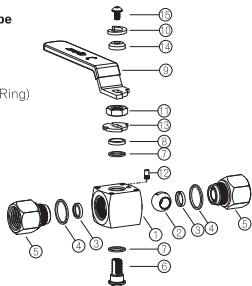
► Bottom Entry Type

1. Body
2. Ball
3. Seat
4. End Packing
5. End Connector
6. Stem
7. Stem Packing
8. Packing Gland
9. Handle
10. Spring Washer
11. Locking Nut
12. Stop Pin



► Panel Mounting Type

1. Body
2. Ball
3. Seat
4. End Packing
(H2B, H3B series : O-Ring)
5. End Connector
6. Stem
7. Stem Packing
8. Packing Gland
9. Handle
10. Spring Washer
11. Locking Nut
12. Stop Pin
13. Locking Device
14. Washer
15. Bolt



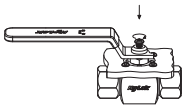
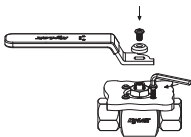
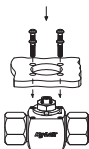
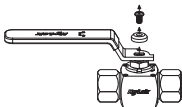
Disassembly

1. Remove the End Connector(5) by using the Spanner.
2. Remove the Ball(2).
3. Remove the Seat(3) and End Packing(4) from the End Connector(5). - H1B Series
Remove the Seat(3) and O-Ring(4) from the End Connector(5). - H2B, H3B Series
4. Loosen the Bolt(15) and remove the Spring Washer(10) and Washer(14).
5. Lift up the Handle(9) and remove the Locking Nut(11), Locking Device(13) and Packing Gland(8).
6. Remove the Stem(6) from the Body(1).
7. Remove the Stem Packing(7) from the Body(1).

Reassembly

1. Before valve reassembly, check if any damage and corrosion in all part components of the valve. If the damage is considerable, replace the part component.
2. Insert the lubricated Seat(3) into the End connector(5) (Check to direction of Seat).
3. Place the End Packing(4) on the End Connector(5). (Check to direction of End Packing). - H1B Series
Place the O-Ring(4) on the End Connector(5). - H2B, H3B Series
4. Put the inner Stem Packing(7) on the Stem(6).
5. Assemble the Stem(6) into the Body(1).
6. Place the Stem(6) with close position.
7. Place the Ball(2) with open position after inserting the Ball(2) into the Body(1) by aligning the Stem(6) key and Ball(2) slot.
8. Tighten the End Connector(5) into the Body(1).
9. Insert the Stem Packing(7) into the assembled Body(1).
10. Put the Packing Gland(8) and Locking Device(13) on the Stem(6).
11. Tighten the Locking Nut(11) on the Stem(6).
12. Assemble the Handle(9) to the Stem(6).
13. Place the Washer(14) and Spring Washer(10) on the Handle(9) and then tighten the Bolt(15).
14. Tighten the End Connector(5) according to Torque Table.
15. Tighten the Locking Nut(10) according to Torque Table.

Panel Mounting



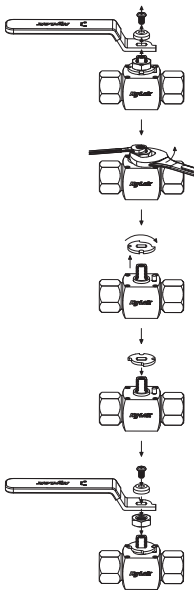
1. Be sure that the Panel is not thicker than the allowed thickness.
2. Prepare central hole and four drills on the panel according to the valve size in accordance with the panel mounting detail below.
3. Loosen the Bolt(15) by a screwdriver, remove the Washer(14) and then the Handle(9) from valves.
4. Assemble valves to the panel with 4-Bolts(15) tighten the Bolts(15) by a wrench. Be sure of the right flow direction of the valves.
5. Assemble the Handles(9), Washer(14) and Bolt(15) and be sure that the Handle(11) direction comply to the Ball(2) flow direction and finally tighten the Bolt(15).

Table of Dimensions for Panel Mounting

(unit : mm)

	Series	Bore of Ball	d	D	L x L
	H1B	10.0	5.0	30.0	26.0 x 26.0
	H2B	12.7	5.0	38.0	34.0 x 34.0
	H3B	19.0	5.0	38.0	44.0 x 44.0

Locking Device



1. Turn the **Handle(9)** in the desirable locked-up position.
2. Take out the **Handle(9)** by loosening the **Bolt(15)** and removing the **Washer(14)**.
3. Hold the **Stem(6)** by a wrench and remove the **Locking Nut(11)** by another wrench.
4. Remove the **Locking Device** from the **Stem**, then ,re-allocate it back so as the locking slot is catching the **Stop Pin** ,in order to stop the handle from turning.
5. Reassemble the **Locking Nuts(11)** by applying a moderate tightening torque and assemble the **Handle(9)**, **Washer(14)** and then the **Bolt(15)**.

Torque Table

Series	Spanner Size		Body Material	Torque (N·m)			
	End Connector	Locking Nut		End Connector			Locking Nut
				PVDF	PCTFE	PEEK	
H1B	25.4mm 26.9mm 28.5mm	17mm	SS316	117.6	117.6	117.6	12.7
H2B	33.3mm	19mm		137.2	137.2	176.4	16.7
H3B	41.0mm 46.0mm	19mm		137.2	156.8	176.4	16.7

◆ Removal

CAUTION

The valve shall be depressurized with the open position before removal. And close the valve after fluids are fully drained.

1. To prevent the damage of seat, high attention is needed when removing the valve.
2. For preventing the damage of the seat, awfully attention is needed when remove the valve.
3. After removal, clean the valve and cap the ends with plastic covers.