102 SERIES
Ball Valve Instruction Manual

IM-CARD-102
Jun. 2012

◈ *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 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.

Panel Mounting

1. Prepare hole on the panel after checking that the Panel is not thicker than the allowed thickness according to the valve size in accordance with Table of Dimensions for Panel Mounting.
2. Loosen **the Handle Set Screw(18)** with a wrench, then lift up **the Handle(17)** from the valve.
3. Assemble valve to the Panel, tighten **the Panel Nut(16)** with a spanner wrench. Make sure of correct flow direction of the valve.
4. Assemble **the Handle(17)** and be sure that the handle direction comply to the ball flow direction and finally tighten **the Handle Set Screw(18)**.

Table of Dimensions for Panel Mounting

Series	Panel Hole DIA.	MAX. Panel Thickness
HB1	16.3 (0.641")	3.3 (0.130")
HB2	19.6 (0.771")	6.4 (0.252")
HB3	26.0 (1.024")	9.7 (0.382")

All dimensions in millimeters(inches)

Hy-Lok

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◈ *Operating*

⚠ CAUTION

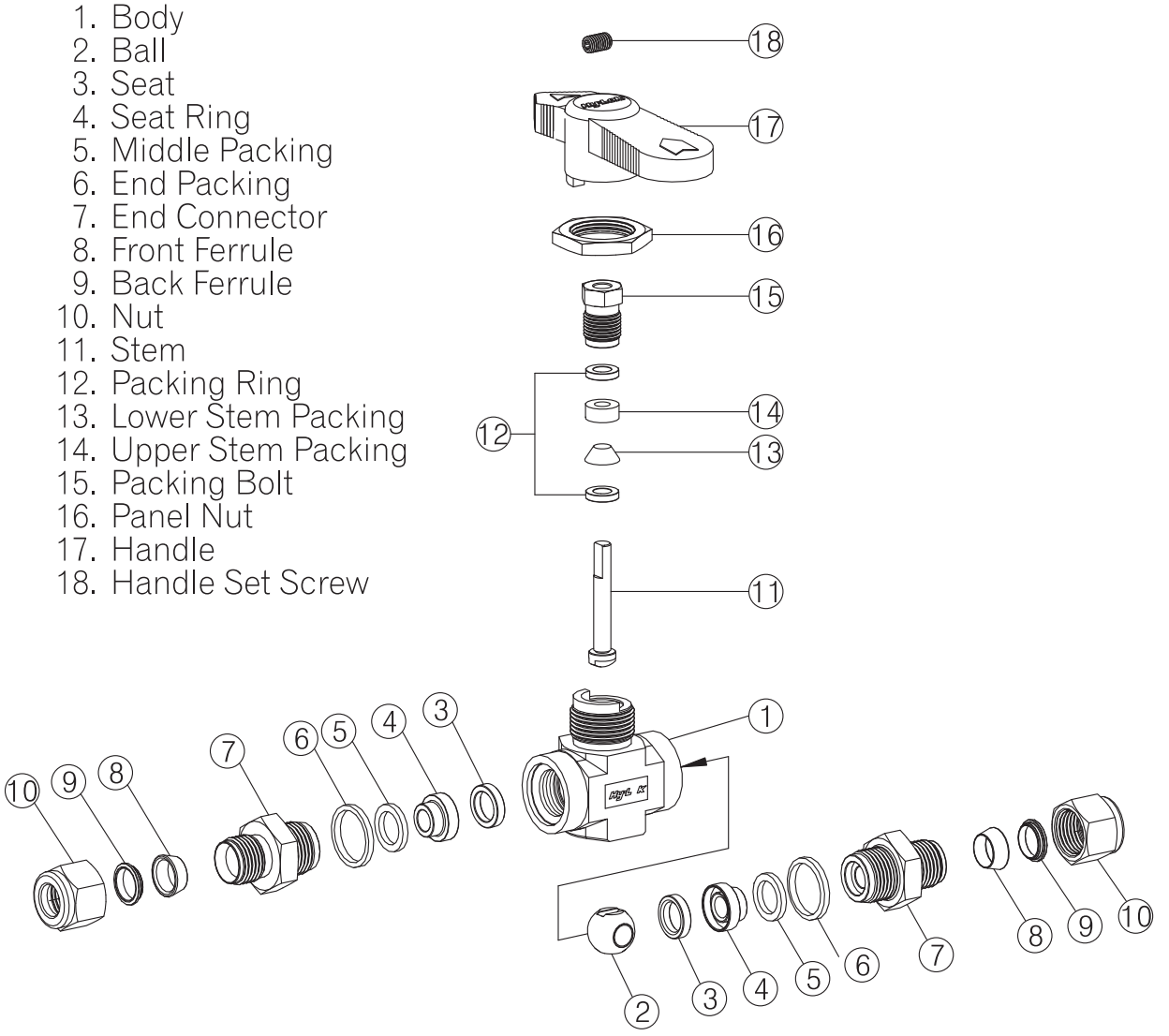
1. System design should ensure adequate space for proper valve actuation without obstruction.
2. The Valve should be operated manually by an authorized person or trained personnel to ensure proper valve operation.
3. Operate the Valve after complete installation in system.
4. Operate the Valve in accordance 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(17) 1/4 turns clockwise or counterclockwise to close or open.
Switching Pattern(3-way)
Turn the Handle(17) 1/2 turns clockwise or counterclockwise to switch the valve.

General Arrangement Drawings

1. Body
2. Ball
3. Seat
4. Seat Ring
5. Middle Packing
6. End Packing
7. End Connector
8. Front Ferrule
9. Back Ferrule
10. Nut
11. Stem
12. Packing Ring
13. Lower Stem Packing
14. Upper Stem Packing
15. Packing Bolt
16. Panel Nut
17. Handle
18. Handle Set Screw



◈ *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 remove 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 insure proper valve operation.

Replacement of part components

If stem 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. Remove the End Connector(7) by using the spanner.
2. Remove the Middle Packing(5), Seat Ring(4), Ball(2).
3. Remove the Seat(3) from the Seat Ring(4) and End Packing(6) from the End Connector(7).
4. Remove the Handle(17) after loosening the Handle Set Screw(18).
5. Remove the Packing Bolt(15) with a spanner wrench.
6. Lift up the Stem(11) from the Body(1).
7. Remove the Packing Ring(12), Upper Stem Packing(14), Lower Stem Packing(13) from the Stem(11).
8. Loosen the Panel Nut(16).

Torque Table

Series	Spanner Size		Body Material	Torque (N · m)	
	End Connector	Packing Bolt		End Connector	Packing Bolt
HB1	9/16" (14.2mm)	5/16" (8mm)	SS316	29.4	6.9
			BRASS		
HB2	13/16" (20.6mm)	7/16" (11.1mm)	SS316	49	11.8
			BRASS	39.2	
HB3	1 1/16" (27mm)	1/2" (12.7mm)	SS316	98	14.7
			BRASS	78.4	

Leakage

1. Stem leakage
   In case of stem leakage, tighten the Packing Bolt(15) after removing the Handle(17). If the leakage remains after tightening, remove the Packing Bolt(15), Packing Ring(12), Upper Stem Packing(14), Lower Stem Packing(13), Stem(11) and check for damage to the Stem(11) and Upper/Lower Stem Packing(14/13), replace damaged parts or component(s) as needed.
2. End Connection External leakage
   In case of leakage between Body(1) and End Connector(7), first ensure connection is tight. If the nut is not firmly tightened, further tighten the End Connector(7) with uniform torque.
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 damage, replace the Seat(3).

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. Place the End Packing(6) on the End Connector(7).
3. Insert the Seat(3) into the Seat Ring(4) and then assemble the Middle Packing(5) on the outside of Seat Ring(4).
4. Lubricate the Seat(3).
5. Place the Packing Ring(12), Lower Stem Packing(13), Upper Stem Packing(14), Packing Ring(12) on the Stem(11).
6. Insert the assembled Stem(11) into the Body(1).
7. Raise the Stem(11) and screw tightly the Packing Bolt(15) from the Body(1) by hand.
8. Insert the assembled Seat Ring(4) into one end of the Body(1) and then tighten the End Connector(7).
9. Place the Stem(11) with close position.
10. Place the Ball(2) with open position after inserting the Ball(2) into the Body(1) by aligning the Stem(11) key and Ball(2) slot.
11. Insert the assembled Seat Ring(4) into the other end of the Body(1) and then tighten the End Connector(7).
12. Assemble the Panel Nut(16) on the outer Body(1) thread.
13. Tighten the End Connector(7) according to Torque Table.
14. Tighten the Packing Bolt(15) according to Torque Table.
15. Tighten the Handle Set Screw(18) after assemble the Handle(17).

◈ *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.