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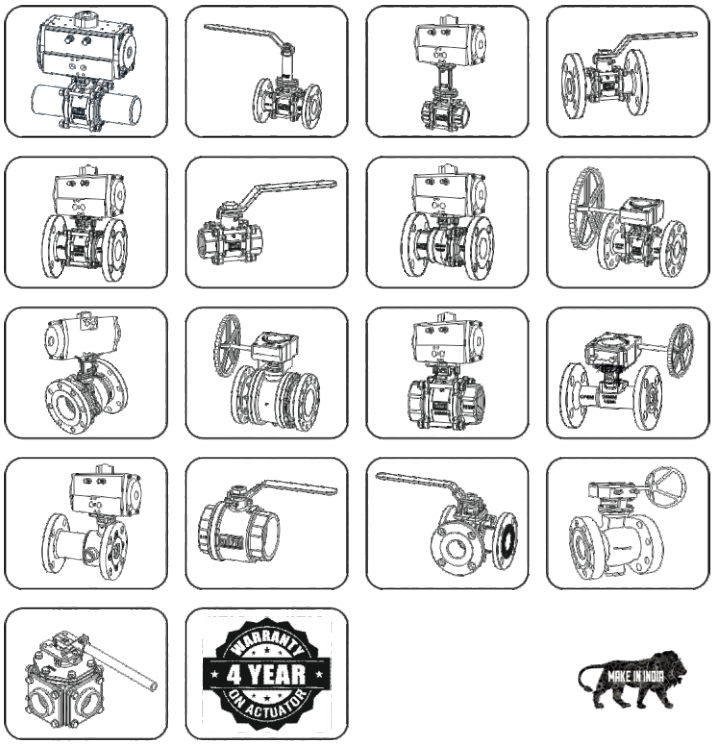
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aira Make Ball Valves



IOM No: AEA-IOM-2WBLV-0024-R1

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Warning! – aira Ball valves should never be installed where service conditions could exceed the valve ratings. Failure to heed warning may result in personal injury and/or property damage.

1. PRECAUTIONS

- **Safety first!** For your safety, take the following precautions before removing the valve from the line, or before any disassembly:
  - Be sure you know what fluid is in the line. If there is any doubt, double-check with the proper supervisor.
  - Wear any protective clothing and equipment normally required to avoid injury from the particular fluid in the line
  - Depressurize the line and drain the system fluid.
  - **DO NOT** pressurizes the valve without an actuator mounted on it. **DO NOT** removes an actuator from a valve under pressure.
  - Before you install a valve in, or remove it from the line, cycle the valve fully closed. The valve must be removed from the line in the closed position.

2. TRANSPORTATION, RECEIVING AND STORAGE

- Valve is being packed in Boxes or pallets while shipping to the customer, care should be Taken store them in a suitable place. We recommended storing the valves indoors in a dry and Dust free atmosphere while unpacking the valves Check that the valves and any other accessories have not been damaged during transportation

CAUTION: PLACING THE VALVES DIRECTLY ON THE GROUND OR ON A CONCRETE FLOOR SHOULD BE AVOIDED!

All wrapping and protection on valve should **NOT** be removed until the valve is ready for installation.

- Valves have preferred direction as per flow, for which arrow is shown on valve body as indication.
- When handing the valve either by hand or by mechanical means, special care should be taken not to damage the lever or gear operator. Lifting the valve casually may damage the valve components.

3. TOOL REQUIREMENT FOR LIFTING

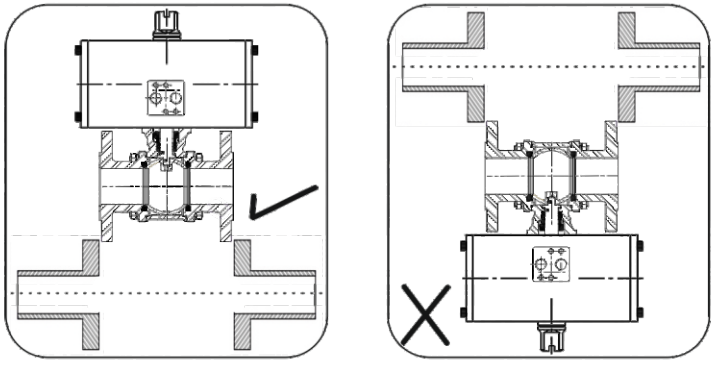
- There are no special tools required for installation and maintenance that are not commercially available. Any lifting devices used to move the valve into a desired position shall be of sufficient size to support the weight of the valve and gear box assembly. Nylon slings secured around the valve bearing areas are recommended to reduce the possibility of mechanical damage occurring to the valve body and gear box. The assembly should never be lifted by the gear box.

4. INSTALLATION

- **Read** the **PRECAUTIONS** section carefully before installing the valve in line.
- When removing the valve from storage a careful check should be made to ensure that the valve has not been damage during the storage period. If for some unforeseen circumstances that the valves were soiled during transportation, the user must clean the valve prior to installation. The user may clean the valve by water, steam or pressurized air.
- Valve should be checked for identification purpose and ensure that characteristics of valve matches to those specified for piping specifications. For the line where that is to be mounted. Nameplate gives the necessary information.
- Make sure the pipeline and pipe flange faces are clean. Any foreign material such as pipe scale, metal chips, welding slag, welding rods, etc., can obstruct ball movement or damage the ball or seat.
- Valve Port open or close position is indicated on the notch plate for lever operated valves or on the top of the gear operator for gear operator operated valves.
- The 2 way ball valve must be centred between flanges.
- When you are sure about that valve Installing in centre then secure the valve between flanges. Compress the flange gasket **EVENLY** by tightening the fasteners in an alternating sequence **(Refer to figure (A)).**

NOTE: DO NOT fully tighten the flange fasteners initially.

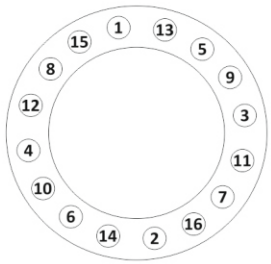
Figure [A] - FINAL ALIGNING AND TIGHTENING OF FLANGE BOLTS



Correct Installation

Incorrect Installation

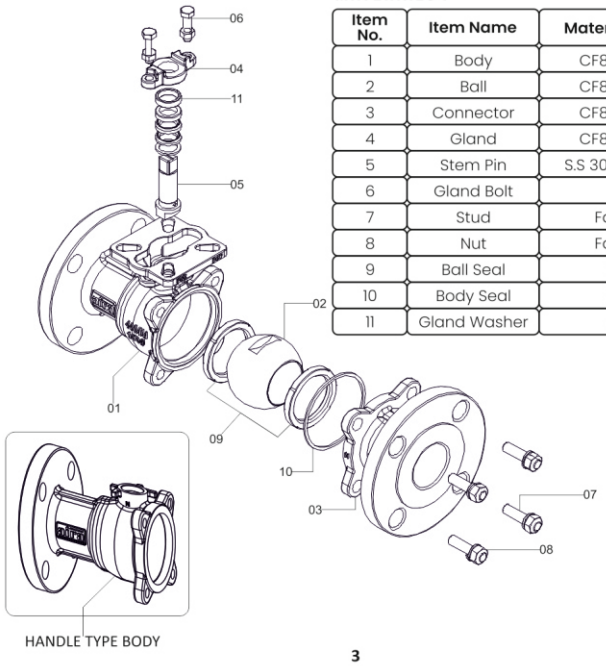
Figure [b]
Bolt Tightening



CORRECT
Sequence for
Tightening / Untightening

MATERIALS :

Item No.	Item Name	Material Name
1	Body	CF8 / CF8M
2	Ball	CF8 / CF8M
3	Connector	CF8 / CF8M
4	Gland	CF8 / CF8M
5	Stem Pin	S.S 304 / S.S 316
6	Gland Bolt	S.S
7	Stud	Fastner
8	Nut	Fastner
9	Ball Seal	PTFE
10	Body Seal	PTFE
11	Gland Washer	PTFE



HANDLE TYPE BODY

5. MAINTENANCE

5.1 ROUTINE MAINTENANCE

- User should determine the maintenance frequency depending on specific application. If there is any leakage find from stem sealing side then user should be tightening (Gland / Lock nut) it will compress seal set that will stop leakage.
- The however should not be tightened down too severely, since this will shorten the life of the seals. Overhauling the valve consists of seat & seals bearing replacement.
- If there is any internal Damage find it is time to replace seat and gasket of valve.
- Follow the disassembly and assembly instructions when overhauling the valve. All precautions should be taken as specified.

5.2 VALVE REMOVAL AND BENCH MAINTENANCE

- Read the PRECAUTIONS carefully.
- Valve must be fully closed before taking it out of the pipeline.

5.2.1 SEAT REPLACEMENT

1. After removal of the valve from the line, place it on a bench in a vice or suitable working space and cycle the valve open.
2. Ball valve can trap fluids in ball cavity when it is in the closed position. If the valve has been used in hazardous media, it must be decontaminated before disassembly.
3. Remove the handle nut of stem and take the handle away from the stem (for handle operated valve).
4. Remove the actuator / gear box from valve (for actuator/gear operated valve).
5. Remove gland & lock nut and then remove stem seal set from top of valve.
6. Remove top cover from valve by loosen stud and nut.
7. Remove the connector fitting stud & nut from the valve and separated connectors.
8. Then remove body seat and ball seat. And separate the ball from valve. And remove stem seal set from bottom of valve.
9. Clean the valve.
10. Carefully clean and polish the ball. It should be free of all grooves and scratches.
11. If the ball is slightly damaged it may be possible to smooth the sealing surface with crocus cloth, a fine stone, or the equivalent. If deep scratches are present replace the ball or return the valve to the manufacturer for service.
12. Install the new ball seal and reassemble the connector by tightening the fasteners in an alternating sequence. **(Refer to figure (B)) Do not** tighten the fasteners completely initially.
13. Using the operating device, open and close the valve at least 3 times to adjust the seat to the proper position.
14. When manufacturer replace ball seal that time torque of valve will be more than previous opening torque of valve.
15. Cycle the valve fully closed, and compress the seat. Seat compression is accomplished when the valve is installed between flanges and the flange bolts are tightened.

5.2.2 SHAFT PACKING REPLACEMENT

1. Remove the actuator/Gear box.
2. Follow From Seat Replacement 5.2.1 Point Number 1 To 10.
3. Take off the gland by removing the gland fitting bolts & nuts.
3. Remove the old shaft packing with a packing tool.
4. Replace the old packing with new packing.

NOTE: Keep the packing rings stacked in the same order as removed from kit.

6. GEAR OPERATOR MOUNTING/SETTING PROCEDURE

1. Mount gear operator (Item 1) on top of Ball valve with bolts and washers provided with each assembly.
2. Loosen the stop screws and locking nuts (Item 2, 3 & 4) approximately three to four turns on both sides of the gear operator.
3. Rotate hand wheel to the full open position and tighten the "open" stop screw (Item 4). Now tighten the locking nut (Item 2).
4. Rotate hand wheel to the full closed position and tighten the "Closed" stop screw (Item 3). Now tighten the locking nut (Item 2).
5. Open disc to 20% then back to closed position. Re-adjust stop screw and nut (Item 3) if necessary. You have now properly adjusted both the "Open" and "Closed" stop positions.

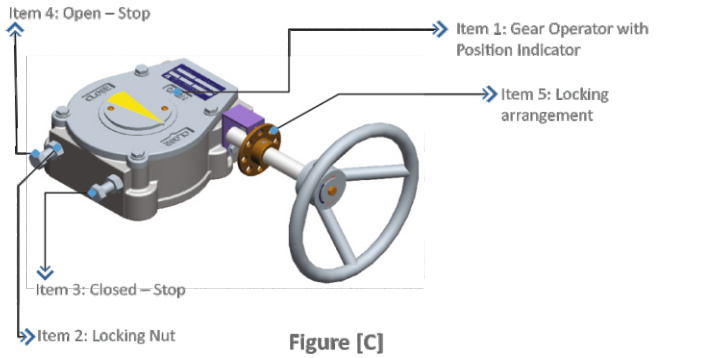


Figure [C]

7. TROUBLESHOOTING

SYMPTOM of TROUBLE	POSSIBLE CAUSE	SUGGESTION
VALVE LEAKING		
Internal leaking through a SEAT	1. Valve not fully closed.	1. Cycle a valve and fully close.
	2. Wrong Gear/actuator setting.	2. Adjust Gear / actuator setting. (refer to the maintenance manual)
	3. Loosened connector fitting fastners	3. Open the valve and Re-tighten the cap.
	4. Foreign material jammed on seats.	4. Open the valve and flush internal if a seat gets damaged by the foreign material, seat replacement be followed.
	5. Damaged seat or worn seat.	5. Replace a seat.
Internal leaking through a BODY	1. Loosened connector fitting fasteners.	1. Open the valve and Re-tighten the fasteners.
	2. Ball edge is worn or damage.	2. Consults manufacturer for potential application problem.
Leakage through body and flange fitting	1. Loosened flange fitting studs & nuts.	1. Tighten body & flange fitting studs & nuts.
	2. Uneven installation of valve in line.	2. Refer to installation procedure for correct installation of valve.
	3. Damaged raised face or damaged gasket.	3. Replace gasket or check for damaged raised face.
INSTALLATION		
Gear box interference with piping		1. Change an orientation of gear box.
		2. Install a valve with horizontally or inclining perpendicular direction to the pipe.
OPERATION		
Valve not fully close/open	1. Offed alignment of gear with valve shaft.	1. Disassemble the gear box from a valve and re-align the valve and gear box having both valve and gear box at full closed position.
	2. Offed open/close setting.	2. Adjust close/open adjustment bolts of the gear box.
Shaft jammed	1. ball shaft damaged by galling/ rust and foreign material.	3. Field repairing and/or replacement may not be possible. please contact manufacture.
Noise through packing	1. Over tightened packing.	1. Loosen the gland nut and cycle the valve and Re-tighten the gland nuts.
	2. Hardened packing.	2. Replace shaft Packing.
Valve won't rotate	1. Gear box has failed.	1. Repair or replace.
	2. Valve packed with debris.	2. Flush or clean valve to remove debris (check for damaged seats.)
	3. Shaft key has sheared.	3. Determine cause of shearing and replace.