FLOWKS

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Floating & Trunnion Ball Valve Installation, Operation & Maintenance Manual

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1. Introduction

The purpose of this manual is to ensure that the valves supplied are properly stored, installed, operated and maintained. Proper practices regarding installation and maintenance of the product will aid in standard trouble free performance.

2. Valve Markings

Valve specifications are marked on the body and/or the name plate. Tag plate is available on request. To identify all parts of the valve, refer to the assembly drawing of each purchase order.

3. Valve Transportation & Reception

3.1-While unpacking the valve, confirm that the valve and any accessories were not damaged during transportation.

3.2-If the valve or any of its accessories were damaged or lost during transportation, inform FLOWKS immediately.

3.3-Do not place the valve directly on the ground or concrete floor! PLACE THE VALVE ON A WOODEN PALLET FOR INSPECTION.

3.4-Lever and gear-operated valves are delivered with the ball in the full open position. Valves are shipped with flange cover, which is designed to protect the flange face serrations and prevent the entry of foreign debris during transportation.

3.5-For safety purposes, pneumatic actuated valves are shipped with ball in closed position with end caps protecting serrations and preventing the entry of foreign debris during transportation. Special care must be taken to avoid damage to the surface of the ball.

3.6-Do not remove the end caps or flange cover from the valve until it is ready for installation. If the flange covers are removed for examination, immediately reinstall the covers after the inspection.

4. Valve Storage

FLOWKS recommends storing the valves indoors, in a dry, dust free atmosphere.

If the valves are to be stored for an extended period of time, the following procedures and steps are to be followed.

4.1-Spray the inside of the valve with anti-rust oil or equal.

4.2-Inject grease into the secondary seat ports and sealant injection area.

4.3-Spray anti-rust oil or equal on the flange facing of each end connection.

4.4-Install plastic or plywood flange cover on each flange. Tape the edges of the cover with duct-tape to provide an air tight seal.

4.5-The valve should be operated monthly to ensure lubricated areas have lubricant distributed accordingly. The valve stem should be left in a different position each month. When stroking the valve, use filtered dehydrated and lubricated air to operate the actuator.

4.6-All gear operators are to have grease injected in all fittings monthly.

4.7-For valves with actuators, the actuator should have all fluid ports or connections plugged to prevent ingress of water or dust. Coupling parts must be protected with grease or protective oil.

4.8-Valve should be stored in a dry, weatherproof building (preferably climate controlled).

4.9-Place an approved lifting device securely around the valve body or use lifting hooks while handling the valve. Special care should be taken not to damage the lever/gearbox/actuator.

4.10-When handling the valve or valve package, remember, valves are very heavy! Make sure the workers are protected well when move the valves.

5. Installation

5.1-Before installing a new valve, confirm that the specification of the valve matches those of the intended installation area. The name plate will provide the necessary information.

5.2-When removing the valve from storage, inspect it for damage.

5.3-Before installing the valve, remove the flange cover and end-caps to ensure the serrations on flange face are not damaged and the bore is clean. Clean the valve with approved solutions if necessary.

5.4-Prior to installation, ensure the pipeline is clean. Pipeline debris, scaling, etc. will damage the soft seat inserts of the valve and cause seat leakage during commissioning.

5.5-During commissioning and pipeline flushing, the valve must remain in the full-open position to prevent damage to internal parts.

Note: *To prevent damage to the valve, FLOWKS recommends first installing a spool piece instead of the valve while flushing the pipeline. If a spool piece is not an option, install strainers at critical locations upstream from the location to remove foreign debris. It is pertinent that the valve remains in the full-open position during flushing.*

5.6-Ball valves are designed for bidirectional flow unless the ball is prepared for cavity relief. For a ball with a cavity relief hole, ensure that the installation of the valve is correct with respect to the flow direction arrow marked on valve.

5.7-Ball valves can be mounted in a horizontal (with stem upwards only) or vertical position depending on pipeline routing. Ball valves cannot be installed with the actuator on the underneath side because dirt in the pipeline may enter the body cavity and damage the gland packing.

5.8-It may be necessary to firmly support the pipeline in order to protect the valve from excess stress and to reduce the pipeline vibrations. To facilitate servicing, it is recommended that the valve be supported on the body, using approved support devices. Do not fasten supports to flange bolting or actuator.

5.9-It may be necessary to adequately support valve actuator in order to protect the valve and/or actuator from improper weight distribution and excess stress.

5.10-Do not use flange bolts to correct misalignments.

5.11-During tightening operation, ensure that piping stresses are not transferred to the valve.

5.12-Over-tightening flange studs can cause damage and/or leakage at the flanges or body-to-body end joints.

6. Valve Operation

6.1-For lever operated valves, the lever is either assembled with the valve or shipped separatedly, depending on the size of the valve or hand lever.

6.2-For gear operated valves, the gearbox open/close adjustment has been made prior to dispatch and must not be disturbed. Rotation of hand wheel in the clockwise direction closes the valve. Counter clockwise rotation opens the valve (looking from the hand wheel end.) The internal details/construction of gearbox may vary as per manufacturer's standard.

6.3-Do not apply extra leverage (using pipe/bar), when the end stops or the gearbox reaches it's final setting point.

6.4-FLOWKS ball valves always close in a clockwise direction. The ball should always be rotated through 90° to the fully opened or fully closed position.

6.5-Keeping the valve at any intermediate position should always be avoided, as high velocity through the narrow opening will produce erosion of seats, ball and the body.

7. Maintenance

Guidelines for routine user maintenance are as follows.

7.1-Check the tightness of nuts/bolts between the body/body adapter, the bracket/stem housing, and the body/trunnion.

7.2-Ensure that the performance of the valve is satisfactory.

7.3-Ensure the electrical continuity of the valve.

7.4-Ensure that no leakage is being observed from the valve.

7.5-Frequent observation is recommended under extreme application/condition.

7.6-To remove debris from the sealant system, periodically flush the sealant ports with an approved valve cleaning solution.

7.7-Mounting studs/nuts of the worm gearbox may be checked for tightness and retightened if necessary.

7.8-Before and after pigging, grease should be injected to all seats to prevent debris build-

up.

7.9-In order to avoid failure during operation, all valves in a process plant should be periodically inspected thoroughly for wear on the ball, seats, seals, or body. If wear is discovered, FLOWKS recommends replacing seats, seals, gaskets, and packing with approved parts. Check the electrical continuity of the valve and pipeline.

7.10-The type of process, fluids involved, working conditions, and location of the valve in the process plant, will determine the frequency of the inspection/maintenance.

7.11-Preventive maintenance is essential as the failure due to lack of maintenance may cause an emergency shutdown of the plant.

7.12-Before removing the valve from the pipe, it is important to mark the relative position of the valve flange with respect to pipeline flange and the flow of direction of the valve.

7.13-Once a valve is repaired, it should undergo a complete set of tests to make sure that the valve is adequate for the original working conditions. Hydrostatic/pneumatic shell/seat tests should be carried out as per the specifications relevant to the valve.