# **KTM** RICHARDS FIGURE R711/R713 BALL VALVES

## REPAIR AND MAINTENANCE INSTRUCTIONS

Complete assembly and disassembly instructions for ASME 150 and 300 flanged ball valves:
- R711 DN 50 - 200 reduced bore fire safe
- R713 DN 50 - 200 reduced bore fire safe

### MAINTENANCE

The only routine maintenance required is periodical checks and adjustment to the stem assembly. Adjustment to the other gland nut is recommended after the first 5000 and 10000 cycles; and every 10000 cycles thereafter to compensate for the bedding of thrust and gland seal and ensure leak free operation. When tightening the gland nut, do not exceed recommended torques. See table overleaf. After reaching recommended gland nut torque, back off to nearest flat on nut. Bend the lock washer over the nut in this position. When fitting actuators to valves follow the "mounting instructions" supplied with the mounting kit.

### DISASSEMBLY INSTRUCTIONS

1. Remove the valve from the pipeline by undoing the flange bolts and discard the old flange gaskets. Ensure that there is no hazardous matter in the valve. If this is a possibility, the valve needs to be decontaminated prior to disassembly.
2. Turn the ball to the closed position and holding the valve body (001) firmly, withdraw the body insert (002) using a suitable tool to engage with the drive slots in the insert. The insert is unscrewed by rotating in an anticlockwise direction. Completely remove the insert together with the body insert seal (003) and seat/seat assembly (101).
3. The ball (100) can now be removed. This may necessitate turning the valve handle so that the ball can be gently tapped with a soft object so as not to dent the face of the ball. Care should be taken that the ball does not fall from the valve, thus causing damage.
4. The other seat/seat assembly (101) can then be removed from the body. Care should be taken when doing this not to damage the fire safe edges on fire safe valves.
5. The handle (300) can now be removed;
   a) On valve sizes up to and including DN 50 this entails undoing the nut (301) and removing the wrench (300).
   b) On sizes DN 80 and above, the wrench retainer bolt (301) needs to be removed whereupon the wrench head (303) can be removed.
6. Straighten out the lock washer (258) (DN 50 valve only) and remove the gland nuts (207).
7. Remove the stem spring (206) and gland (213) or stem seal follower (223) from the stem and push the complete stem through into the body of the valve from where it may be withdrawn.
8. The stem seals (201) and (202), auxiliary stem seal (235) and stem thrust washer (204) can then be removed from the valve body both internally and externally from the stem bore taking care not to damage the machined faces.
9. The components should be cleaned and checked for wear and damage. If replacement parts are required other than the seat and stem seal kit, refer to Emerson Valves & Controls sales offices for part numbers and availability.

### SAFETY PRECAUTIONS

*Whenever a valve is being installed or removed from the pipeline:*

1. Use properly qualified personnel for installation, maintenance and/or removal from the pipeline.
2. Use appropriate protective equipment/ clothing normally used to work with the process where the valve is to be installed/ removed, such as safety glasses, shoes and industrial gloves.
3. Ensure the valve pressure/temperature limitations marked on the nameplate are suitable for the service conditions prior to valve installation.

**NOTE:** These ratings must not be exceeded.

4. For valves running at non-ambient conditions, appropriate protection should be worn.
5. Before valve installation and removal ensure the valve and line are not pressurized and any hazardous medium is drained away.
6. Slowly cycle the valve several times to relieve the cavity area and leave in the open position.
7. Double-seated valves on liquid service, which may be subjected to rapidly increasing temperatures in the 'closed' position, will need a positive means of relieving excessive cavity pressures. For further information, contact your local Emerson sales office.
8. The R700 Series valve range is not recommended for dead end service unless a blanking flanged is used.
9. The normal shelf life of the R700 series soft seal repair kits is 5 years under clean, dry, ambient conditions without UV exposure prior to installation.
10. Tighten all pipeline flange bolting as per the nominated flange standards working diagonally opposite in sequence.

## ASSEMBLY INSTRUCTIONS

1. Check that all components are clean and that there is no damage that will affect the performance of the rebuilt valve. On fire safe valves, specific care should be taken in inspecting the fire safe lip to ensure that it is free from nicks or other imperfections.
2. Cantilever seat assembly: Place seat (101) in each seat pocket body (001) and body insert (002)

2.1 Cantilever O-ring seat assembly: Place O-ring (110) followed by seat (101) in each seat pocket body (001) and body insert (002)).

2.2 Energized seat assembly: Place a seat spring (104) into each seat pocket (body (001) and body insert (002)), followed by a preassembled energized seat assembly with care, making certain that O-ring (106) is not damaged when pushing seat assembly down into seat pockets.

3. Place the primary stem seal (201) and fire safe stem seal (202) onto the base of the stem (200). Insert the stem (200) into the valve body (001) from inside the bore of the valve.
4. Whilst holding the stem in position, fit auxiliary stem seal (235), followed by weather seal (251), followed by stem seal follower (223), followed by stop plate (205).
5. Fit the stem spring (206).
6. Fit the lock washer (258) (DN 50 valve only). Lubricate thread with anti-seize compound and screw down the stem nut (207) hand tight.
7. Ensure that the stem (200) is in the closed position and slip the ball (100) into position in the valve body (001). Note; For DN 50 valve ensure that the anti-static device (532) is in position as the ball is inserted.
8. Place the other seat/seat assembly into position and fit the body insert seal (003) into the body cavity.
9. Lubricate the thread on the body insert with copper-based grease.
10. Screw in the body insert (002) and tighten down to recommended torque - refer table or until the insert is level with the flange face, but no more than 0.25 mm below.
11. For DN 50 valves, tighten down the stem nut (207) to recommended gland torque and back off until the flat lines up with the tab on the lock washer (258). Bend up the lock washer to lock the nut in this position.
12. For DN 80 and larger valves, tension stem until the stem spring is fully compressed, then back off a quarter of a turn and lock into position with upper stem nut.
13. Refit wrench assembly.
14. Check the valve for operation, it should be smooth and firm during the cyclic operation. If possible, perform a pressure test on the bench to ensure that the valve has been correctly reassembled.

**TORQUE VALUES (Nm)**

| Valve size DN | Gland torque (Nm)* | Body insert torque (Nm) |
|---|---|---|
| 50 | 40 | 400 |
| 80 | - | 600 |
| 100 | - | 700 |
| 150 | - | 900 |
| 200 | - | 1300 |

**NOTE:**

* Tighten to correct torque and back off to nearest flat on nut