



## Quadrant Valve & Actuator Engineering Specification

Number: IOM- 3      Date: 1/10/2001

Title: 3-Piece NPT & CxC IOM, for: M1-NP&NS

### I. Initial Inspection

- A. Remove valve from packaging; remove thread protectors and discard.
- B. Inspect pipe threads for any damage caused in shipment or handling.
- C. Confirm Valve Size is correct for installation.

### II. Installation- NPT Ends

- A. Confirm Male NPT threads on piping to be assembled to valve meet gauging specifications of ASME B1.20.1 (NPT) or B1.20.3 (NPTF).
- B. Thread sealant/lubricant is required to establish a bubble-tight seal between piping threads and valve threads. It will not be possible to establish a leak-free seal without thread sealant.
- C. Hand-engage piping to each side of valve, and hand tighten.
- D. On M1-NP&NS: Attach an adjustable wrench (NOT a pipe wrench) to the flats provided on the valve tailpiece having the NPT thread being engaged. Do not hold the body or opposite tailpiece while torquing pipe into tailpiece.  
**CAUTION: Valve will be permanently damaged or destroyed if tailpiece is rotated relative to body, or body is rotated relative to tailpiece!!**
- E. Tighten piping into valve thread using reasonable torque to seal - **DO NOT OVER-TORQUE.**
- F. Use same method to install piping into alternate valve NPT port.

### III. Installation- Solder Ends

- A. Remove Body Bolts (#15), Body Nuts (#13) and Spring Washers (#14), remove Solder-end Tailpieces (#2).
- B. Prepare, clean and flux copper tubing and tailpieces.
- C. Solder tubing into tailpieces and allow to cool.
- D. Clean flux, solder and debris from tailpieces and reinstall to body with body bolts, nuts and spring washers. Hand tighten bolts & nuts.
- E. Torque body bolts and nuts to torque shown below, using a cross pattern sequence.

### III. Operation:

- A. After Installation, confirm handle has adequate clearance by rotating 90 degrees from open to closed position and back to open.
- B. All Quadrant ball valves are designed for on-off operation only. DO NOT attempt to "throttle" with Quadrant ball valves, unless they are specifically designed for and tagged "FOR THROTTLING SERVICE".

- C. If application is in STEAM PIPING, be cautious when operating valve- handle will be HOT!

**IV. Initial Pressurization of System**

- A. Upon initial pressurization of piping system, check all connections for leaks and correct if required.
- B. Once system reaches “Steady State” conditions of operating pressure and operating temperature, it will be necessary to make initial stem packing adjustment. Tighten Part #5, “Stem Packing Nut” to 20-25 in-lbs on ¼”-3/4” sizes, and 35-40 in-lbs on 1”-2” sizes.

**V. Maintenance**

- A. Quadrant Ball Valves require no maintenance other than periodic stem packing adjustment in applications where many cycles of on-off operation occur on a weekly basis.
- B. In high-cycle applications, check stem packing area regularly to confirm there is no leakage from stem packing. If leakage occurs, follow step #IV-B to correct.

**VI. Repair & Reconditioning- M1-NP & M1-NS**

- A. Depressurize line, drain fluid, remove valve body assembly by removing (4) body bolts (#15), nuts (#13) and spring washers (#14).
- B. Remove Body Seals (#8) and Seats (#6) from Body Assembly.
- C. Move handle to full closed position, remove ball (#3) from end of valve body.
- D. Put valve body in a vise with protective jaw covers- DO NOT DAMAGE BODY SEAL SURFACES!
- E. Remove Handle (#10).
- F. Remove Packing Nut (#5).
- G. Push Stem (#4) down into body cavity.
- H. Remove Packing (#7) with packing hook- DO NOT DAMAGE PACKING BORE SURFACE!

**Re-assembly:**

- A. Install new Packing (#7)
- B. Install new Thrust Washer (#9) and insert stem into body cavity and up through Packing. Push up until Thrust Washer contacts body. Align stem flats with body bore.
- C. Install Packing Nut (#5). Torque To 30 in-lbs.
- D. Inspect ball for damage. If no defects on spherical surface, align stem slot with stem flats and push into body cavity.
- E. Install new Seats (#6) and Body Seals (#8).
- F. Re-install Body Assembly into piping. Use caution not to damage or drop Body Seals (#8). Install 4 Body Bolts (#15), washers and nuts. Hand Tighten.
- G. Torque Body Bolts/Nuts evenly using a cross pattern sequence. Torque to values shown below.

SIZE	BODY BOLT TORQUE	SIZE	BODY BOLT TORQUE
¼”-1/2”	60 in-lbs	1-1/4”	250 in-lbs
3/4”	120 in-lbs	1-1/2”	250 in-lbs
1”	120 in-lbs	2”	300 in-lbs