

BRONZE QUARTER-TURN (TWO-PIECE) BALL VALVE INSTALLATION, OPERATION, & MAINTENANCE GUIDE



INSTALLATION

Special considerations must be taken with respect to pipe line expansions and contractions and the media expansion and contractions within the piping system. Standard Apollo ball valves are bi-directional. They may be installed in either vertical or horizontal pipe runs without regard to flow direction or stem orientation. Lead free (LF) models are available for potable water service.

Threaded End Valves

Mating pipe connections should be accurately threaded, clean and free of foreign material or metal shavings. Two to four wraps of PTFE pipe tape (or pipe dope for larger sizes, but not both) should be applied to the male threads. Two wrenches must be used when making up pipe joints to these valves. Apply one flat-faced wrench on the valve hex closest to the pipe joint being tightened and use a pipe wrench on the pipe to prevent transmitting torque through the valve body joint. Typical wrench make-up is 1-1/2 turns after installing the pipe hand-tight. Do not overtighten the valve onto the pipe, as this can damage or distort the valve. Do not reverse-rotate after tightening as this can damage the body/retainer seal.

Solder End (Sweat) Valves

Refer to [ASTM B828 "Standard Practice for Making Capillary Joints by Soldering of Copper Tube and Fittings"](#). Preheat for soldering by concentrating the heat on the tube first, then the valve solder cup, always directing the heat away from body joint. See figure 1. The extent of this preheating depends on the size of tube. After preheating direct the heat on the valve cup area (avoiding the body joint) to aid capillary action in drawing the molten filler metal into the cup. See figure 2.



Figure 1 - Preheat tubing



Figure 2 – Heat valve cup area and apply solder

- Horizontal mounting – start applying the filler metal at the bottom of the joint then upward allowing bottoming portion to dam up upper portion.
- Valves should only be soldered in either the fully closed position or fully open position.
- Allow completed joints to cool naturally. Quenching with water will cause unnecessary stress on the joint.
- It is recommended to wrap the valve body with a wet rag or employ other heat absorbing techniques to avoid damaging valve seats and thread sealant.
- Tightening of the stem packing after soldering may be required.
- A soldering video with helpful suggestions can be viewed here: <https://www.youtube.com/watch?v=91P3WouFLnY>

Caution: Apollo EZ Solder™ Lead Free Valves can be soldered exactly as Non Lead Free. The Apollo Lead Free alloys do not contain silicon and therefore DO NOT REQUIRE EXTRA HEAT. Excessive heat input will damage the body seal resulting in leaks at the valve body joint. In extreme cases, seats and stem packing may also be damaged. Soft Solder that melts at <500°F should be used. Not suitable for brazing.

OPERATION

The valve handle is marked showing proper rotation direction for “ON” and “OFF” positions. Standard rotation is clockwise for “OFF” (closed) and counterclockwise for “ON” (open).

MAINTENANCE

Normal stem packing wear can be compensated for by tightening the packing gland nut. There are two nuts on the stem. The top nut retains the lever. The bottom nut (packing nut or screw) controls the packing gland. The top nut and the lever may need to be removed for easy access to the packing nut. Tighten the packing nut clockwise in 1/8 turn increments until observed leakage stops. (Packing wrench part number H371400 is available to ease this operation.) Reinstall the handle and handle nut after adjustment.

For seat and seal repair please order the appropriate kit shown at <http://www.apollovalves.com/products/kits>. For repair of seats and seals follow the steps below:

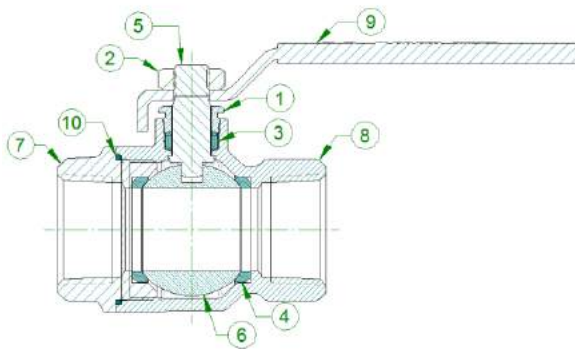
Disassembly

- 1) Remove valve from service.
- 2) Operate the valve fully open to fully closed to assure there are no trapped fluids or pressure in the body cavity. Leave the valve in the closed position.
- 3) Remove the handle nut, handle and packing nut or gland screw. Set aside for reuse.
- 4) Install pipe plugs in the body and retainer ports of NPT valves to prevent collapsing those areas during disassembly.
- 5) Remove the retainer from the body and PTFE body seal if applicable. It may be necessary to heat the body joint above 450°F to breakdown the sealant used to secure the valve halves.
- 6) Remove the ball and stem from the body cavity.
- 7) Remove the stem packing(s) and seats from the body and retainer then discard.

Re-Assembly

- 1) Make sure internal portion of the valve is clean before installing new components.
- 2) Fit stem into body from the retainer end and position the stem with the handle flats perpendicular to the flow axis.
- 3) Install packing over stem and fit into body recess.
- 4) Install packing gland and nut or gland screw over stem and onto packing.
- 5) Secure the stem, thread packing nut/screw on stem hand tight, then wrench tight 1 turn.
- 6) Install the handle and handle retaining hardware.
- 7) Apply NSF approved lubricant to body seat and fit into the seat pocket of the body.
- 8) Install the ball in the closed position.
- 9) Apply NSF approved lubricant to retainer seat and fit into the seat pocket of the retainer.
- 10) Install body seal on retainer, if applicable.
- 11) Apply an adequate amount of thread locking compound (Loctite® 680 or equal) to the retainer threads so that it covers no less than two complete threads opposite of the retainer shoulder.
- 12) With the ball in the closed position, thread the retainer into the body and tighten securely.
- 13) Cycle the valve to the open position and verify proper operation and alignment of handle.
- 14) Final adjustment of packing nut/screw may be required after applying pressure.

Parts Illustration



No.	Description
1	PACKING GLAND
2	STEM NUT
3	PACKING
4	SEAT
5	STEM
6	BALL
7	RETAINER
8	BODY
9	HANDLE
10	BODY SEAL

FOR NON-LEAD FREE VALVES: It is illegal to use this product in the United States for potable water services (water intended for human consumption).

FOR LEAD FREE VALVES: This product complies with U.S. Safe Drinking Water Act (SDWA). Suitable for potable water applications intended for human consumption.

Amendment Register

Date	ECN	Revision	Page	Description	Initiator	Reviewed
7/15/2015	M15204	F	1-2	Updated solder information and updated format	TH	GDG
10/12/15	M15396	G	2	Corrected formatting, added Prop 65 lead note Updated part illustration	CAN	GDG
7/16/18	M15396	H	1-2	Updated NPT thread instructions & SDWA warning	DRP	WGH