

two-piece ball valve with brazed tube ends

The "Apollo"[®] 77 series ball valves with type L copper tube brazed to the valve provides reliable flow shut-off for critical applications. The valve may be installed in vertical or horizontal pipe runs without regard to flow direction or stem orientation. The copper tube extensions provide added protection of the valve seats and seals during installation into the piping system by soldering or brazing.

caution: unlike a simple fitting, such as a tee or elbow, a ball valve contains polymer seats and seals which can be damaged if exposed to high temperatures during soldering or brazing. Care must be taken to protect the valve body with insulation during installation.

Valves shall be installed per the applicable portions of the ASME B31 codes and standards. Special considerations shall be taken with respect to pipe line expansions and contractions and the media expansion and contractions within the piping system. The recommendations provided below describe best practices to be followed in order to protect the valve from heat damage during installation, and ensure a long and trouble-free service life:

1. heat management

- direct flame only to the copper tube extension and mating tube
note: do not apply flame to the valve body or threaded area
- apply heat gradually until brazing or soldering temperature is reached, avoiding overheating
- work efficiently; prolonged heating increases the chance of conduction (heat transfer) into the valve body

2. acceptable gases

| gas type | notes |
|----------------------------------|--|
| air / acetylene | most common for copper brazing and soldering in HVAC and plumbing |
| oxy / acetylene | acceptable but must be used carefully - flame is much hotter and can overheat quickly |
| air / propane or air / propylene | lower flame temperature; acceptable for small diameters but slower for large bore tubing |

MAPP: gas is generally discontinued but propylene-based substitutes are common and acceptable

3. insulation / heat protection methods

- wrap valve body, stem, and threaded connections with wet rags, heat-block paste/gel, or ceramic fiber insulation blankets to absorb excess heat
- maintain the wet barrier throughout brazing/soldering - replace or remoisten as needed
- commercial "heat-block" compounds (often clay-based) can be packed around the valve body and removed after brazing

4. recommended torch tip

| gas type | torch tips |
|-----------------|--|
| air / acetylene | use a swirl or "B" size tip appropriate for the tube diameter (e.g., #3 or #4 tip for ½-1¼" copper; larger tips for bigger diameters) or the torch manufacturers guideline |
| oxy / acetylene | use a small neutral flame with a tip matched to tubing size (avoid oversized tips that deliver excessive heat), or the torch manufacturers guideline |

caution: flame should not be applied anywhere close to the valve body

5. verification

- if overheating of the valve body (not to exceed 350°F) confirmation is required, a temperature-indicating crayon (350 °F Tempilstik) can be applied near the valve threads (retainer) during or immediately after the brazing and soldering process.
- cycle the valve once cooled to confirm smooth operation and pressure test the valve and joint(s) prior to commissioning the piping service

operation

The valve handle is marked showing proper rotation direction for "ON" and "OFF" positions. Rotation is clockwise for "OFF" (closed) and counterclockwise for "ON" (open). The latch lock lever provides resistance to accidental actuation when used with a #3 lock (0.28" shackle size).

regular maintenance

Normal stem packing wear can be compensated for by adjusting the packing gland nut. The handle may need to be removed for easy access to the packing gland nut with a standard adjustable wrench. Our "Apollo"[®] wrench part number H371400 is available if handle removal is not an option. Tighten the packing gland nut or gland plate fasteners clockwise in 1/8 turn increments until observed leakage stops.