

## **T-DRILL CODES AND COMPLIANCES**

**ASME B31.9** – 2011 Building Services Piping – Section 930.2 Mechanically Formed Extruded Outlets

**ASME B31.5** – 2010 Refrigeration Piping and Heat Transfer Components Section 504.3.1 (h) Mechanically Formed Tee Connections in Copper Materials (types K, L, M)

**ASPE** Plumbing Engineer Design Handbook – Vol. 4, Chapter 2 - 2008 – Mechanically Formed Tee Fittings for Copper Tube

**ASTM F 2014-00** – 2006 Standard Specification for Non-reinforced Extruded Tee Connections for Piping Applications

**California Plumbing Code** – 2010 – 606.1.3 Mechanically Formed Tee Fitting

**California Mechanical Code** – 2010 – 1201.2.1.4.2.1 Mechanically Formed Tee Fitting

**National Plumbing Code of Canada** – 2010 Section 2.3.3.2 (1) Extracted Tees

**EPCOT Plumbing Code** – 2009 Section 605.15.5 Mechanically Formed Tee Connections

**IAPMO PS 85-95** – Tools for Mechanically Formed Tee Connections

**IAPMO** – File # 1935 Since 1979

**International Plumbing Code** – 2012 Section 605.5.1 Mechanically Formed Tee Fittings

**International Mechanical Code** – 2012 Section 1203.3.8 Mechanically Formed Tee Fittings

**NFPA 13** – 2010 Fire Sprinkler Systems

**NFPA 99** – 2010 – Health Care Facilities Section 5.1.10.3.2 Mechanically formed, drilled and extruded tee-branch

**MasterSpec** (AIA) Basic 15060

**National Standard Plumbing Code** – 2012 Section 4.2.8.3 Mechanically Formed Tee Branches

### **Unified Facilities Guide Specification**

Division 22 – Plumbing, Section 22 00 00, part 3.1.3.6.c Copper Tube Extracted Joint

Section 22 00 07, Plumbing Healthcare Facilities, part 3.5.6.c Mechanically Extracted Joint

Division 23 – HVAC, Section 23 52 00 Heating Boilers, part 3.3.6.6 Copper Tube Extracted Joint

Section 23 57 10.00 10 Forced Hot Water Heating, part 2.2.10 Extracted Brazed Tee

Section 23 57 10.00 10 Forced Hot Water Heating, part 3.5.9 Mechanical Tee Joint

Section 23 70.0300 10 Heating and Utility Systems, part 3.2.1.5 Copper Tube Extracted Joint

**Uniform Plumbing Code** - 2012 – Section 605.3.3.1 Mechanically Formed Tee Fittings

**Uniform Mechanical Code** - 2012 – Section 1201.3.2.5 Mechanically Formed Tee Fittings

**UniSpec II** - SECTION 15100 - BUILDING SERVICES PIPING - DOMESTIC WATER 2.1.A.3.C

### **Veterans Administration**

Facility Water Distribution 2011 Section 22 11 00, part 2.2.B.4 Mechanically Formed Tee Connection

HVAC Hydronic Piping 2010 Section 23 21 13, part 2.4.A.3 Mechanically Formed Tee Connection

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## **SUGGESTED SPECIFICATION**

### **ASME B31.9 CODE FOR PRESSURE PIPING, Section 930.2 Mechanically Formed Extruded Outlets in Copper Tube**

The approval is subject to the following additional conditions:

1. Mechanically formed extruded outlets shall be perpendicular to the axis of the run tube (header). They shall be formed by drilling a pilot hole and drawing out the tube surface to form a collar having a height of not less than three times the thickness of the branch wall.
2. Branch tubes shall not restrict the flow in the run tube. To ensure this by conforming the branch tube to the shape of the inner curve of the run tube, a dimple / depth stop shall be formed in the branch tube to ensure that penetration into the collar is of the correct depth. For inspection purposes, a second dimple shall be placed 0.25 inch above the first dimple. Dimples shall be aligned with the tube run.
3. Branches can be formed up to the run tube size as shown in ASTM F 2144. Forming procedures shall be in accordance with the tool manufacturer's recommendations.
4. Joints shall be made with the use of approved brazing alloys BCup2 thru BCup5 (0-15% silver content). brazed with a filler that has a melting point above 540 deg Centigrade ( 1000 deg F). **Soft soldered joints are not** allowed.
5. K, L, M and DWV copper types allowed.
6. Soft and Hard copper allowed.
7. Each model used for making branch connections shall be permanently marked with manufacturer's name and appropriate model number.
8. Mechanically formed extruded outlets can (but not limited to) be used on commercial and residential buildings.
9. Fitter / Plumber shall be trained and certified to operate the equipment.

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