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**Technical Bulletin: Compression connection when used with solid brass cones.**

Compression connections that use tapered sleeves with compression nuts as per SAE J512 (Figure 1a) are used extensively in the plumbing industry.

These connections were designed and developed for use with annealed copper tube for general applications. Dahl Brothers' compression connections are based on this standard.

Many suppliers of components to the plumbing trade have developed components to mate with the standard SAE J512 connector. Some manufacturers' mating parts include a solid brass cone design (Figure 1b) to mate with the connector. The over tightening of connections using the solid brass cone design has resulted in some stress failures or stress corrosion cracking (SCC) failures of the connector.

The contact between a tapered sleeve and connector is limited to a line contact, which requires little force to deform and seal. The contact between the solid cone and the connector is a surface contact, which requires more force to deform and seal.

Unlike the tapered sleeve, the solid brass cone does not collapse as it is forced into the connector and consequently, the connector is expanded (Figure 1b). This can and does result in significantly higher tensile stresses being induced into the connector when the connection is being made. The higher stresses may not cause immediate failure of the connector but they make the connector more susceptible to stress corrosion cracking (SCC).

Extreme care should be taken when making solid brass cone connections with SAE J512 connectors to avoid the risk of SCC. **Pipe sealant should not be used since it reduces the friction between the mating surfaces and thus allows the cone to penetrate deeper and expand the connector more and sets up higher tensile stresses for a given tightening torque.** Tightening torque should not exceed the typical torque required to seal a standard compression connection. A torque of 6 ft-lbs is more than sufficient to seal the standard connection.

Dahl recommends the use of mating components that utilize static elastomeric seals such as o-rings or cones.

