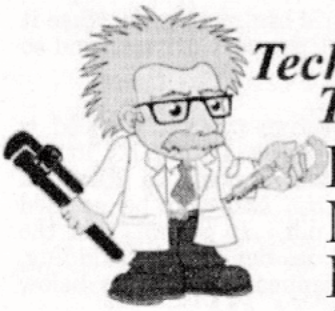


Tech-Tips

How to Make A Leakproof Sweat Joint

by Lee Carroll

Several months ago we discussed flare fittings and compression fittings. There is one other method of joining parts that is sometimes (although not often) used in cars and trucks. It is called 'Sweating.'

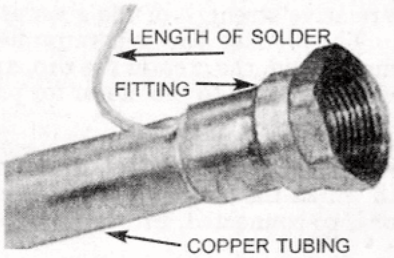
Sweating, as opposed to welding, brazing, or silver soldering, uses low heat similar to soldering. Welding and brazing actually melt the metal and then use molten metal (wire or rods) to join the two surfaces. Soldering just fills the gap with soft solder. It is not nearly as strong or durable as a weld. Normally sweating a joint or fitting is done on rigid tubing, but it can be used just as easily on soft tubing - copper, etc. It is a handy technique to know, and when not used on a vehicle can be utilized for plumbing at home.

As you know from soldering, the two sections to be joined must be heated enough so that the parts, not the soldering gun, melt the solder. Sweating is similar, but in most cases a propane torch (not an acetylene) torch is used to heat the parts. Sweating works best on similar metals: copper to copper, copper to brass, etc. It can be used, but it is more difficult, to join brass and steel, and very difficult between brass and stainless steel.

Sweating is generally used to permanently attach a fitting to pipe or tubing. There are two words that must always be remembered when sweating (and soldering): CLEAN and DRY. Do not ever try to sweat a fuel line while it is in place in the car. A torch plus gas fumes equals BOOM! Be sure that the heat is contained around the target when sweating. Wet rags placed behind the target or a piece of wood placed behind it will keep the heat of the torch from melting or igniting something behind the target.

Clean the inside of the fitting and the outside of the tubing to bright and shiny with a wire brush, abrasive paper or steel wool. No tarnish should remain or the sweat might not take. Be sure that there is no fluid in the line. That will draw off the heat and prevent a good sweat joint. That is particularly true when sweating a water line at home.

Put a dab of solder flux on the tube and in the fitting. This will help clean any remaining oil or dirt. Place the fitting onto the tube, and with a propane torch heat both parts until, when touched with a length of solder, the heated metal itself melts the solder. Place the length of solder at the joint of the two parts. If the metal is hot enough, the solder will be sucked into the joint. Remove the heat and the solder will bond to both surfaces providing a leak-proof joint.



Warning: for plumbing in the home, be sure to use lead-free solder.

S.K.

Editor's Note: Recently, working on the master cylinder of one of my cars, I broke the copper supply line leading from the fluid reservoir to the master cylinder. Rather than try to fabricate an entire new line, I center drilled out a piece of brass rod to the outside diameter of the supply line tubing. I cut the broken tubing ends so that they were square, cleaned them thoroughly and fitted them into the brass rod. The rod acted like a joint. I sweated both pieces of the tubing into the brass rod and had a clean, leakproof repair.