Tech Topics:

Most of my contributions to the MMM Newsletter address engine components which exhibit the ravages and decline of age. I find that I too suffer from a similar decline, however, while addressing the former, I find remedial satisfaction that takes both the psychological and physical pain away from the latter. Now, if you are under fifty and are reading this introduction, the merit of this contribution is as an aid to garner the skills in preparation for advancing age. If you are over fifty, the merit is to forge new neuroplasticity for problem solving. Either way, you can't loose by at least a peripheral scan of the following.

The Lowly Water Intake:

When the factory designed the cooling of the cylinder blocks on the P/N/K/L/Q engines, they incorporated a brass casting that bolted to a side plate fastened to the side of the block. Soldered into this casting was a steel tube onto which a hose connected either to the radiator or to a water pump if the engine was so equipped. The use of brass was a prudent design, however, the selection of steel to carry the coolant was less than prudent. This tube, over time, badly corrodes especially at the end where the hose is attached and owners have often shortened the tube to allow the hose to purchase on less corroded material. At some point, there is a risk of failure and one has to address it. On occasion, one might find a replacement, either in copper or steel that has been silver brazed into the brass casting. Either scenario can be a challenge to address: it will be nearly impossible to remove the tube if it is silver brazed or hard and sloppy to remove if soldered. In each and any case, the casting must be prepared for a new tube.

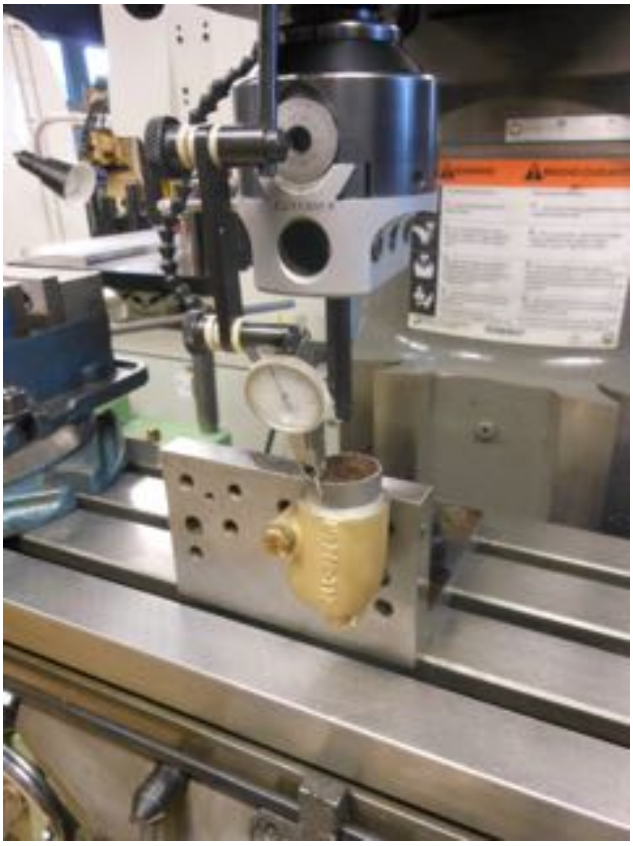
Corroded and soldered tubes Silver brazed

copper tube.

A reasonable approach to resolving the issue is to bore the tubes out leaving a clean bore to accept a new tube. If one were to select a steel tube, it would be to repeat the less than prudent efforts by the factory. Copper tubing (1.375" diameter OD) would be a better selection: it tins and solders easily, resists corrosion and is readily available at a plumbing supply.

The first step in this approach is to surface on a platten grinder the

flange of the brass casting, or if done by hand, on plate glass with 180 wet dry sandpaper. The casting can then be securely mounted to an angle plate on a vertical mill where much of the tube extension can be cut off and the center line of the tube indicated for boring.

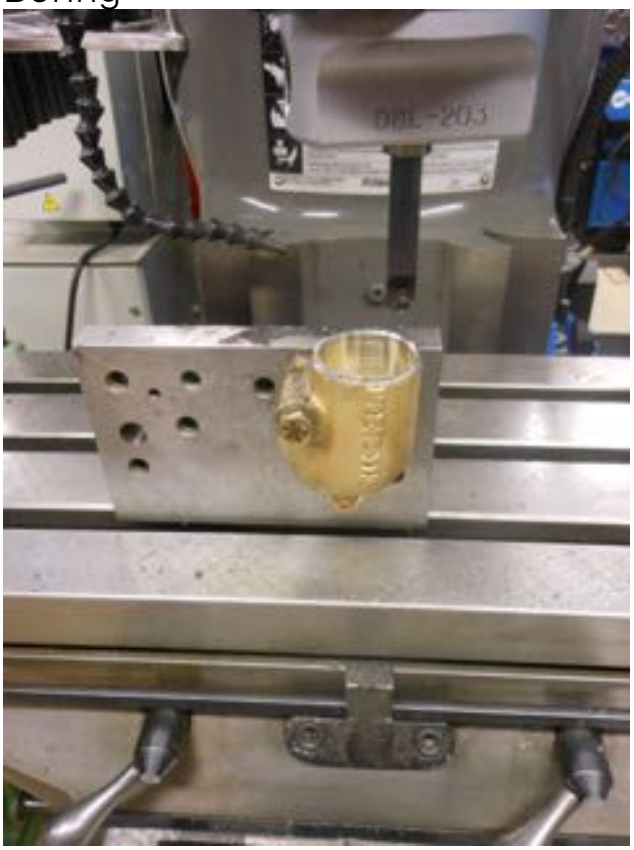


The following photo shows the extent of years of corrosion seen on most MMM water intakes.

The tube can then be bored out removing all evidence of past

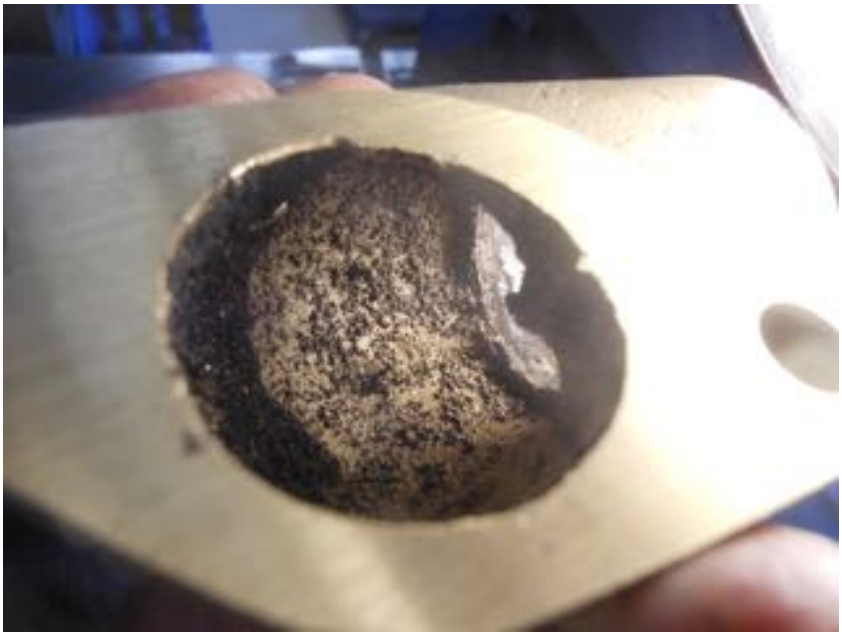
corrosion and old solder. Some clearance should be provided for the solder to wick into the seam when soldering. Additionally, it is wise to chamfer the top of the bore which provides a terrace to puddle the solder and secure a water tight seal.

Boring

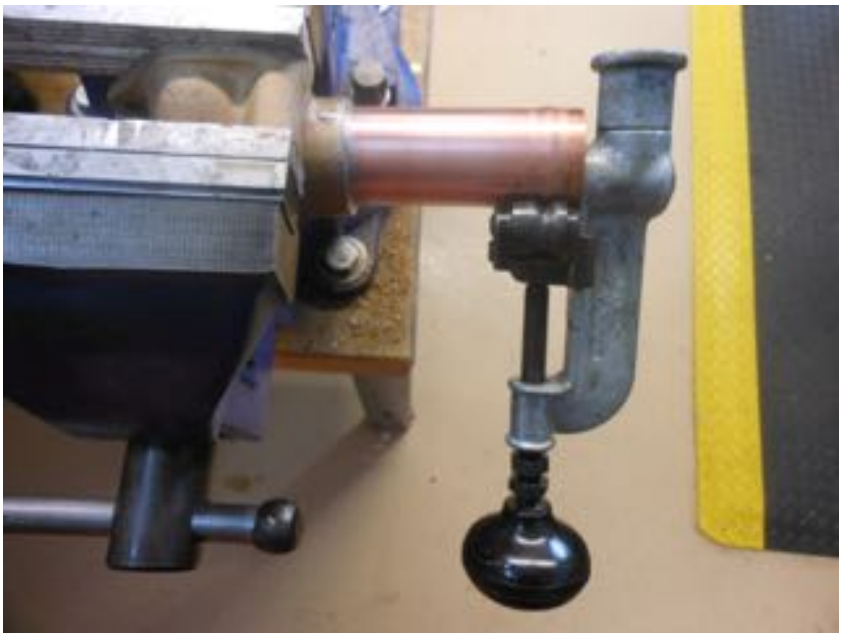


Chamfering

With the tube removed, you may be startled by residual bronze debris left from sand casting by the foundry. This obstructs coolant flow and is now accessible to remove by grinding and polishing.



Copper tubing can then be cut at approximately 4 1/4" as a replacement tube and trial fit to the bore. With a quick scotchbrite to the tube and application of past flux, the tube is ready to be installed and soldered with 50/50 solder. Once the assembly has cooled and washed of residual flux, it is wise to run a bead around the end of the tube. This last step aids in creating a water tight seal when the hose is assembled to the tube as well as acts as a strengthening rib to resist the tube from warping out of round.



So the finished job should look neat and trim and if you've made it reading through this entire article, you are either equipped to enter advanced age more prepared, or if you are already there, you have forged new neuropathways to improve your mental health.

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