

Bushing Removal and Installation Tool

By Steve Mestler

(Use the following information at your own risk. Not responsible for misuse of information)

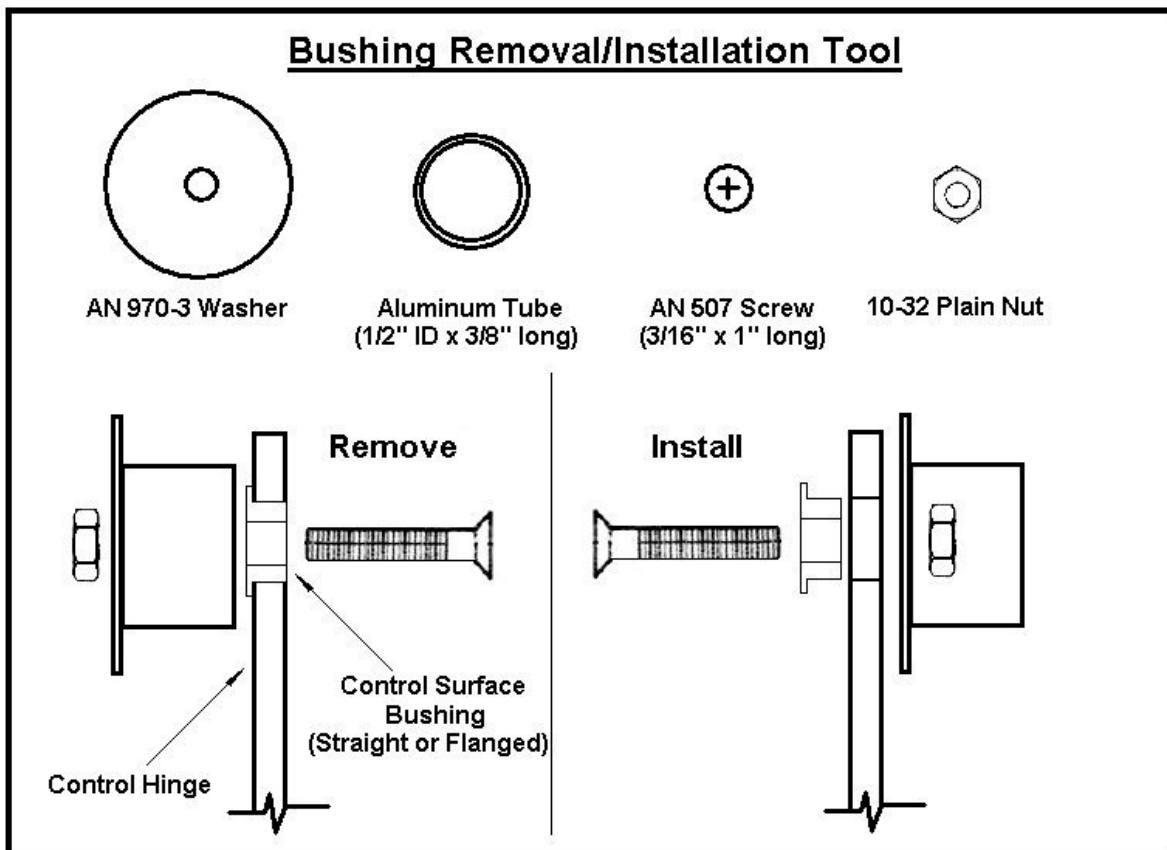
During my last annual inspection I found a few worn out bushings in the ailerons and flap hinges. In order to change them I had to remove the old ones and push in the new ones. The biggest problem was to get the press-fit bushings out. There may be other ways (I'm sure) to remove and install the bushings but this little tool is cheap to make and works great!

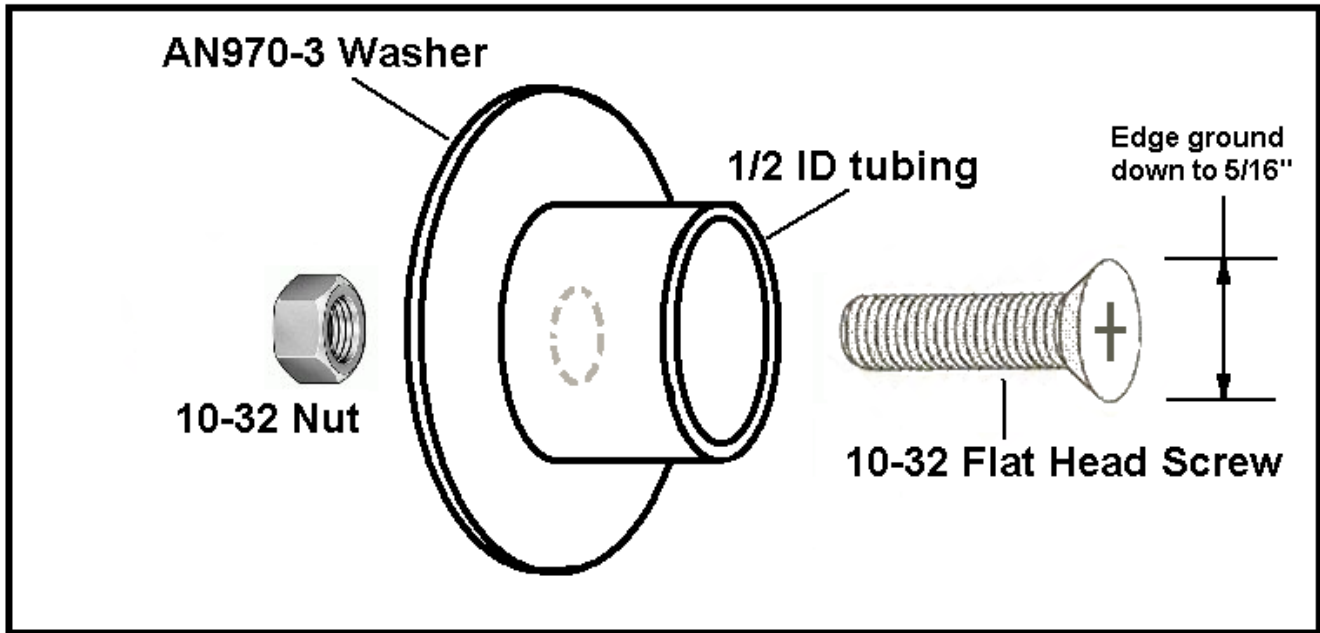
Cut a 3/8" to half-inch length of 1/2" or greater ID aluminum tubing and epoxy it to a AN970-3 steel washer. Make sure it is centered on the washer. I used J-B Weld but any epoxy would work. If you are good at welding you could even use steel tubing and weld or braze it to the washer.

Use a #10 flat head screw for the driving force behind the bushing puller. Grind the head of the screw around the circumference to a dimension smaller than the outside diameter of the bushing (about 5/16"). A flat head screw is used because it centers itself automatically in the center of the bushing. A plain #10 (10-32) nut is used as the "pry bar" in the tool.

To remove the bushing, just assemble the tool as illustrated below (left illustration) and turn the nut slowly. Be sure the head of the screw is smaller than the bushing O.D. so that it will go through the bushing hole. Use caution that no bending or jamming is taking place as you go! If it doesn't look right, it probably isn't. Back out the nut and start over.

To install the bushing, use the tool as shown on the right-hand side of the illustration below. Again using caution not to install the bushing crooked. Be sure the bushing is chamfered so it easier to give it a straight start into the bushing hole. Another way to install the bushing is to use a small 2" C-clamp and just press it into place. Again, use caution and keep the bushing square.





All hinge bushings on the Seabee are 1/4" inside diameter (I.D.) and 3/8" outside diameter (O.D.) plus or minus a little bit (.001 or .002). Some are straight bushings and some are flanged bushings. This tool removes both kinds.

To make the straight bushings I used a piece of 4130 steel tubing, 3/8" OD x 0.245 ID, (Aircraft Spruce part #: 03-01500) and drilled it out with a letter "D" drill and reamed it to 0.249 ID. This allows for a tight, wobble-free hinge point. If the bushing doesn't fit tightly put some heavy duty Lock-Tite around the bushing to hold it in place. It won't go anywhere once it is installed in the hinge and the Lock-Tite hardens over time. Some have recommended staking the bushing in place but this deforms the hinge material. I'm not a big fan of staking. A larger bushing could also be turned to fit the bushing hole which would probably be a better option.