DWG. #8, using common household aluminum foil to seal the gaps at the rib ends and around the rear baffle plate. The elevator is stood on end, either the root or tip, and half of the lead is melted and poured into the forward rib portion. Once the lead has solidified, the elevator is stood on the other end, and the opposite side of the tip rib is poured full. The 1/4 x 20 bolts shown are used to help hold the lead weights in place when solidified. They are threaded into the tooling hole and a similar hole drilled to 7/32" in the rib. This obviously is done before the lead is poured in. It is a good idea to pour in slightly more lead than necessary and then the excess can be drilled out at final balancing. Final balancing is done with the elevators fitted to the stab. and in a level attitude. The elevator is in 100% balance when it is level with the stabilizer. Level is easily determined by lining up the elevator counterbalance arm with the stab. through adding or removing weight. Final balance will be affected by the weight of the paint on the elevator, but this will be within limits unless excessively heavy paint is used.

Construction of the <u>LEFT</u> elevator will be nearly identical to the <u>RIGHT</u> with the exception of the trim tab installation. This requires that the skin be marked and trimmed differently. The portion of the skin removed from the trim tab area will be re-used for the trim tab skin. Thus, it must be cut out in the full 19-1/4 inch length as shown in SK-20 so that enough material is available for bending the end tabs, etc. Construction of the trim tab skin and assembly is shown on DWG. 8. The full size trim tab skin layout is given on DWG. #8. This can be cut out, or a tracing can be made, to use as a pattern to mark the trim tab skin for trimming and bending. Two tabs are bent on each end of the skin which form end ribs when the trim tab trailing edge skin is bent to its final angle. Refer to DWG. #3 for more detail on trim tab construction. Construction of the trim tab should not be completed until after the elevator is built.

Construction of the left elevator also differs in that there is a special rib (E-608) used in place of a skin stiffener on the lower skin at the root. This is to

provide added skin stiffness for anchoring the trim cable housing. Because of this, the lower skin must be riveted to the spar/ribs assy. before the top so that access is available for riveting rib E-608 to the skin. During the course of fitting and drilling the skin to the skeletal structure, the hole for the trim cable egress through the elevator bottom skin should be marked and cut out. Since the trim cable and anchor is not supplied with the empenage kit (it is supplied with the fuselage kit), this detail cannot be completed. However, all holes for the trim cable routing can be made and the elevator skinning can be done. Note that the trim cable runs through the lower elevator skin, through the elevator spar, the elevator leading edge skin, the stabilizer rear spar, the stabilizer root rib, and through the center of the forward spar center section. (see DWG. #9) Because of the travel of the elevator, there is a slot cut in its leading edge rather than just a hole.

The trim tab notch cut out of the elevator skin causes it to be more flexible and more difficult to keep in alignment during construction. For this reason, the trim mounting spar (E-606) has a greater span than the trim tab, in an effort to keep the elevator skin straight. Also because of this cut-out, shimming for alignment during the final drilling is a bit different. A shim of .032 (1/32") thickness must be placed under the outer end of the trim cut out as well as a .062 (1/16") thick shim under the outboard tip of the elevator spar.

Trim tab construction should be done after the elevator is completed, or at least after it is all clecoed together. By measuring the gap in the elevator trailing edge for the trim tab, dimensions of the trim tab skin can be checked for conformity. If not, then the trim skin can have its ends redrawn to shorten or lengthen as required. The shapes and fits of these parts makes working strictly to dimension a bit risky. This is particularly true of drilling the final row of rivet holes on the trim tab spar because it determines the straightness or twist of the tab, and of positioning the piano hinge on the leading edge. When riveting the trim

tab spar, the bottom row are to be done first so that the top skin can be lifted up for bucking access. Then the top row are clecoed together with the piano hinge segment and riveted. Finally, the pop rivets are used to hold the end tabs/ribs together. Simultaneous with this, the trim control horn is riveted on. Remember to use the MD-42-BS Pop rivets because their strength is greater than that of the aluminum LP4-3 rivets. The hole in the trim tab horn should be drilled with a #12 drill so that the AN3-4 bolt fits with a minimum clearance.

Rudder construction is very similar to that of the elevators, but perhaps simpler. Differences are primarily the control arm R-605, the re-enforcement R-610, and the flanges for rudder bottom attachment. A full size assembly detail of the R-605 is shown on DWG. #8. Note the position of the root rib R-603 and the .032 shim between the R-605 and the spar R-602. Also note that the R-606 reinforcing plate is mounted on the forward side of the spar whereas the center and top bearing reinforcing plates are on the aft side of the spar web. Holes can first be drilled in R-605 and it can then be used as a drill guide for drilling in assembly with the spar and reinforcing plate. The re-enforcement channel R-610 is shown on DWG. #9. It is trimmed and fitted in place and drilled for 1/8" rivets. Because of restricted access, it is attached to the rudder bottom rib with blind CS4-4 rivets which also serve as skin attach rivets in this area. Attachment of R-610 to the R-605 rudder horn uses AN rivets and will require a narrow bucking bar. To provide a flange for attaching the fiberglass rudder bottom R-611, aluminum flange strips must be riveted in as shown in detail A-A′ on DWG. #4.

Marking of the rudder skin, installing the stiffener angles, and the skeletal structure is much the same as with the elevators. When drilling the final row of rivets on the spar, a different thickness shim under the spar will be required than for the elevator. Refer to SK-8 for this.