

PROCEDURE 6.100

AILERON PUSH/PULL TUBE INSTALLATION AND INITIAL RIGING

In this procedure...

The inboard and outboard aileron push/pull tubes will be cut to length. Rod ends and spacers will be drilled and riveted, and the push/pull tubes will be installed in the wing.

Material Supplied

<u>Part No.</u>	<u>Qty</u>	<u>Description</u>
111-24-058	2	Push / Pull Tube Inboard
111-24-005	2	Push / Pull Tube Outboard
111-24-056	4	Spacer
AN490HT11P	4	Rod End
CR313-4-04	8	Rivet, Cherry Max
AN316-5	4	Nut, Check
AN490-HT15P	4	Rod End
AN470AD4-12	8	Rivet
GMW-3M-570	4	Bearing, Rod End

Step 1. Attach Rod End and Spacer to Inboard Push / Pull Tube.

Install the spacer and rod end in the same manner described in Procedure 3.070 (Mid Aileron Push - Pull Tube Installation). **Note: Install the spacer and rod end, in only one end of the tube. Installation of the rod end in the other end will be done after the wings have been installed on the fuselage and the exact length of the push pull tube can be determined.**

Step 2. Attach rod end bearing to rod end.

The rod end bearing has a threaded shank, which the rod end attaches to. There is an inspection hole in the shank to allow for checking the minimum thread contact of the rod end. Screw a check nut (AN316-5) all the way onto the rod end (AN490HT11P). Screw a rod end bearing (GMW-3M-570) onto the rod end just until the shank reaches the inspection hole. Use a light behind the hole if necessary, to see the shank. Slowly screw the bearing in by hand until it gets tight, counting the number of turns. Now back it out ½ of the turns. This centers the shank in the available threaded area, allowing the most room for adjustment in either direction. Back the check nut out and tighten it to the bearing.

Step 3. Drill Clearance Holes in Ribs Q and J.

The inboard aileron push-pull tube runs parallel to the main spar. Measure from the main spar web forward to the center of the horn on the aileron torque tube. Use this measurement and measure forward from the main spar web along rib Q and mark a vertical line. Repeat this procedure on Rib J. Measure down from the upper wing skin along this line on Rib Q 3 3/16 inches and drill a 1 1/2" hole. Measure down from the upper wing skin along the vertical line on Rib J, 2 3/8 inches and drill another 1 1/2" hole. Insert the push-pull tube through these holes and install on the aileron torque tube. These are initial holes and will have to be enlarged to provide adequate clearance on final installation. Remove the push-pull tube from the torque tube and slide it as far in the wing bay as possible during wing installation on the fuselage. The inboard push pull tube cannot be installed after the wing is installed on the fuselage.

Step 4. Connect Inboard Aileron Push/Pull Tube and Stick Assembly.

After the wing has been installed and final alignments completed, complete the installation of the inboard aileron push/pull tube. Determine the location of where the tube will penetrate the fuselage side and drill a 1 1/2 " hole. This hole should align with the holes drilled in Ribs Q and J. Enlarge these holes so that the push pull tube does not rub on the sides when the tube is connected to the stick assembly and the torque tube.

Step 5. Determine the Final Length of the Push/Pull Tube.

Center the control stick in the vertical (Neutral) position. Position the aileron torque tube in the neutral position. This is accomplished by placing the forward horn of the aileron torque tube in the vertical position. Rotate the torque tube so that the center of the push pull tube-mounting hole moves inboard .65". Temporally install the push-pull tube onto the horn. Install the bearing on the rod end in the neutral setting and hold the rod end next to the inboard push/pull tube. Mark the tube for the correct length. Use a pipe cutter and cut the tube to length. Install the rod end and spacer in the tube as described earlier and rivet in place. Reinstall the Push/Pull Tube insuring that the stick control and aileron torque tube are in the neutral setting.

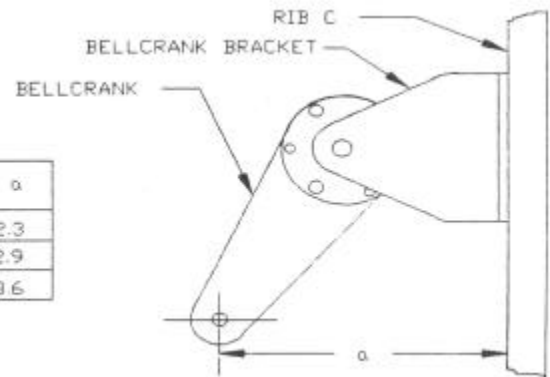
Step 6. Install the Rod End in the Outboard Push-Pull Tube.

The outboard push pull tube is cut to the correct length at the factory. Remove any coating in the ends of the tube and insert the rod ends. Install two AN470AD4-11 rivets. Install the rod end bearing using the same procedure described earlier.

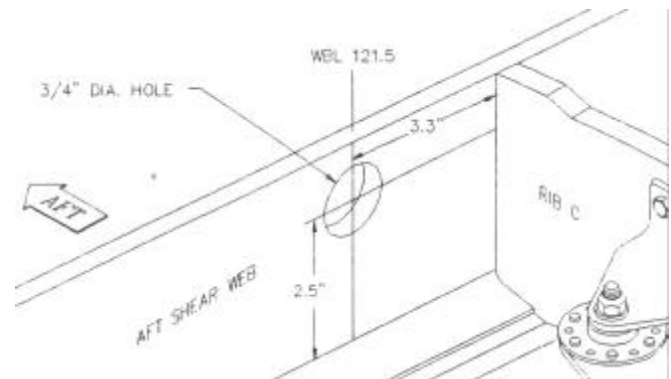
Step 6. Set Outboard Bellcrank in Neutral Position.

Set the outboard bellcrank in the position shown at the right and the control stick in the neutral position adjust the length of the mid push pull tube rod end bearing so that it aligns with the bolthole.

AILERON POSITION	α
DOWN	2.3
NEUTRAL	2.9
UP	3.6

**Step 7. Cut the hole for the Outboard Push/Pull Tube in the Aft Shear Web.**

Use a hole saw and cut a hole in the aft shear web for the outboard aileron push pull tube to exit and connect to the aileron bracket. The measurements at the right are nominal settings and should be check with actual placement of the aileron bracket.

**Step 8. Attach the Outboard Push Pull Tube to the Aileron.**

The outboard aileron push pull tube cannot be install on the aileron after the aileron is installed on the wing. Center one of the rod end bearings on the rod end and tighten down the check nut. Install that bearing in the aileron bracket. Use washers to shim out the spacing between the bearing and the bracket. Install the AN365-1032 nut and torque to 25 in/lb.

Step 9. Temporally install the Aileron and Push/Pull Tube and Check for Clearance.

Temporally install the aileron and connect the push pull tube. Move the aileron through it travels and make sure there is no rubbing and that the aileron travels freely. Aileron should have travel of 10° up and 20° down.