

Instructions for Upgrading the F1 Rocket Elevator Trim Tab Control Arm

(Note: not applicable to Mk3 trim tabs)

Introduction

The F1 Trim tab control arm is made from two pieces of rolled material; a short front (thin) bracket and a long rear (thick) bracket. Standard construction calls for these two brackets to be riveted back to back in one place in the vertical plane and onto the trim tab aluminum skin with flush rivets in 6 places. The stock trim tab motor control rod is secured to the vertical trim tab control arm with a nylon clevis and clevis pin, which is secured to the clevis with a cotter key. (FIG. #1)



FIG. 1



FIG. 2

Step 1

Drill out the rivets holding the front (short) bracket to the aluminum skin and remove the bracket. (FIG. #2). Keep this piece; you will need it in step #3.

Step 2

Verify that you have drilled the correct sized hole in the vertical arm of the trim tab for the clevis pin; #30 is too large and #31 is a little too small. The preferred solution is to weld the hole closed so that the arm can be re-drilled to fit the STOCK clevis pin properly.

DO NOT REMOVE THE LONG BRACKET from the trim tab - leave it in place and weld the #30 clevis pin hole closed (do NOT fill the hole in the center of the arm which is used to secure the two brackets together!); sand the control arm smooth on both sides of the weld.

Step 3

Cleco the OLD SHORT forward bracket FIRMLY into its former position and carefully mark the clevis hole onto the LONG bracket. Remove the short bracket and drill a #31 hole in the extrusion at the mark.

NOTE: A #31 hole will be TOO SMALL for the stock clevis pin and will be enlarged slightly at the END of step #4.

Step 4

Firmly clamp a 1" x 1" x .063 piece of aircraft grade extrusion (with the curved web where the legs intersect!) next to the LONG bracket and along the aft and side trim tab skin. (Use 3 Cleco clamps). The extrusion should overlap the aft end and right side of the tab. Use a Sharpie pen to trace the LONG bracket vertical arm onto the vertical side of the extrusion. Trace the trim tab aft and side skins locations onto the bottom of the extrusion. Remove the extrusion and cut just OUTSIDE the lines you marked; checking the fit frequently against the LONG bracket.

When you have a good fit, securely clamp the extrusion into place, especially along the tab skins or it will have a tendency to rock up and down a little. Transfer the three "old" short bracket holes from the trim tab skin onto the bottom of the extrusion and drill to #40. Re-secure the extrusion into place and drill the holes up to #30, matching the old attach holes, Cleco as you go. Check the fit and edges of the two brackets, final trim and polish as required.

The ultimate goal is to be able to add one *additional* rivet between the forward (wide) end of the short bracket and the rear "C" spar. It may have to be inboard OR outboard of the single hole that already exists. I had to go inboard on mine; there wasn't enough room outboard. Drill a #30 hole for the extra rivet at the "C" spar location. (FIG. #3,)



FIG. #3

Carefully squeeze (3) #4 std. (dome) rivets into place along the extrusion and trim tab skin. Drill #30 through the bracket attach hole (NOT THE CLEVIS HOLE!!) on the LONG bracket vertical arm through the extrusion and Cleco. Squeeze (1) #4 std. dome rivet at the vertical arm to secure the two brackets together. (FIG. #4)



FIG. #4

Drill a #31 hole at the clevis pin location from the LONG bracket vertical arm into the extrusion. The #31 hole will be slightly smaller than required, so carefully use the #31 drill to carefully enlarge the hole enough to allow the STOCK clevis pin to fit snugly. (FIG #5)



FIG. #5

Step 5

Carefully drill out the most forward (closest to the vertical arm) of the (4) flush rivets holding the LONG bracket in place. Drill the hole up to #30 and squeeze a Cherry Max dome rivet into place. Continue aft, drilling and replacing the remaining (3) #3 flush rivets ONE AT A TIME using #4 Cherry Max dome rivets.



FIG. #6

NOTE: All steps should follow standard practices for deburring and priming, as required.