

Section 75-CA-1 Flaperon Controls



This manual has been prepared for assembly of the Flaperon Controls. This photo assembly manual is intended as a supplement to the drawings. If there is any discrepancy between this manual and the drawings, the drawings supersede this manual. For more information on building standards and allowable tolerances see "Construction Standards for Zenair Light Aircraft" available from Zenith Aircraft Co.



P/N: 75C1-4
Mixer Bearing

P/N: 75C1-5
Mixer Bearing
Support

P/N: 75C1-6
Control Mixer

Cleco the Mixer Bearings to the Mixer Bearing Supports. Slide the Control Mixer into the Bearings. There is a top and bottom side to the Mixer Bearing and Support. See drawing 75-CA-1. The tabs on the Control Mixer will not hit the bolts on the support.



Remove the Baggage Floor from the Rear Fuselage. Slide the Mixer assembly into position in the Rear Fuselage. Cleco the Mixer Bearing Supports to the Side Skins. Wait to expand the holes until the vertical L Angle is installed on the aft rivet line of the Mixer Bearing Supports.



Cut an L angle 303mm long. Position the L Angle against the tab on the Longeron and against the inside of the Bearing Support. Clamp the L Angle to the Bearing Support. With a #40 drill bit, back drill through the Skin into the L Angle and Cleco. Expand the holes with a #20 drill bit and Cleco.



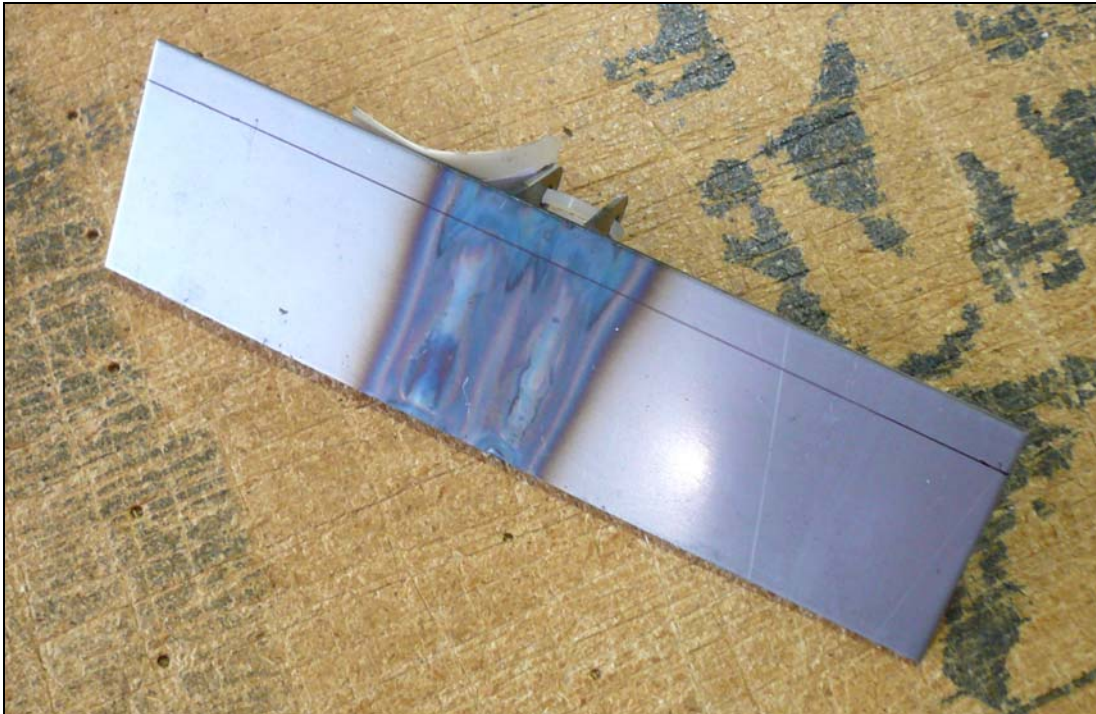
P/N: 75C1-2
Linear Actuator

Use a 1/4" drill bit to open the mounting hole and the actuator hole on the Flap Actuator.



P/N: 75C1-3
Linear Actuator
Control Rod

Install the Linear Actuator Control Rod on the Linear Actuator. Install the Jam Nut along with the Rod End on the end of the Linear Actuator Control Rod.

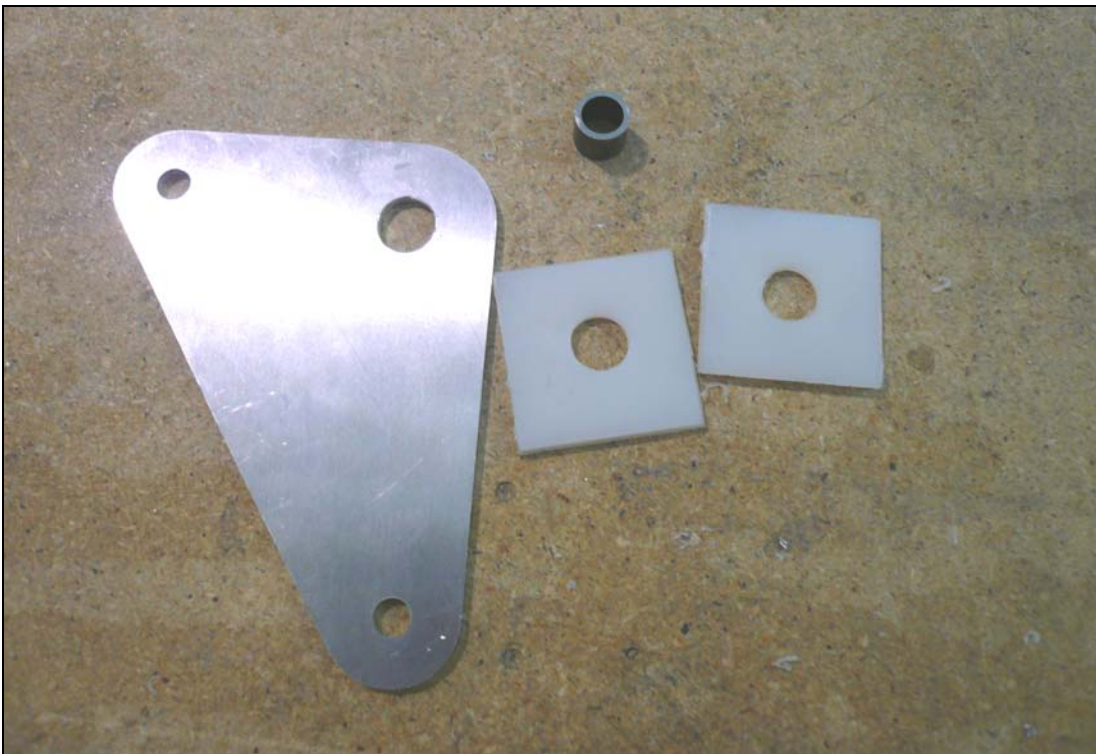


P/N: 75C1-1
Linear Actuator
Mount

Draw a line 10mm from the aft edge (the edge towards the Linear Actuator mounting hole).



Bolt the Rod End on the Actuator Rod to the Mixer. Then position the Actuator Mount so the line is visible through the predrilled holes in the Bottom Skin. With a #40 drill bit, back drill through the Skin into the Mount and Cleco. With a #20 drill bit, expand the holes and Cleco. Adjust the Rod End so the arms of the Mixer are above level the same angle as when the Flaps are deployed. Use a 9 volt battery to actuate the Flap Actuator to check the angle.



P/N: 75C1-7
Flaperon Bellcrank

P/N: 75C1-8
Flaperon Bellcrank
Bearing

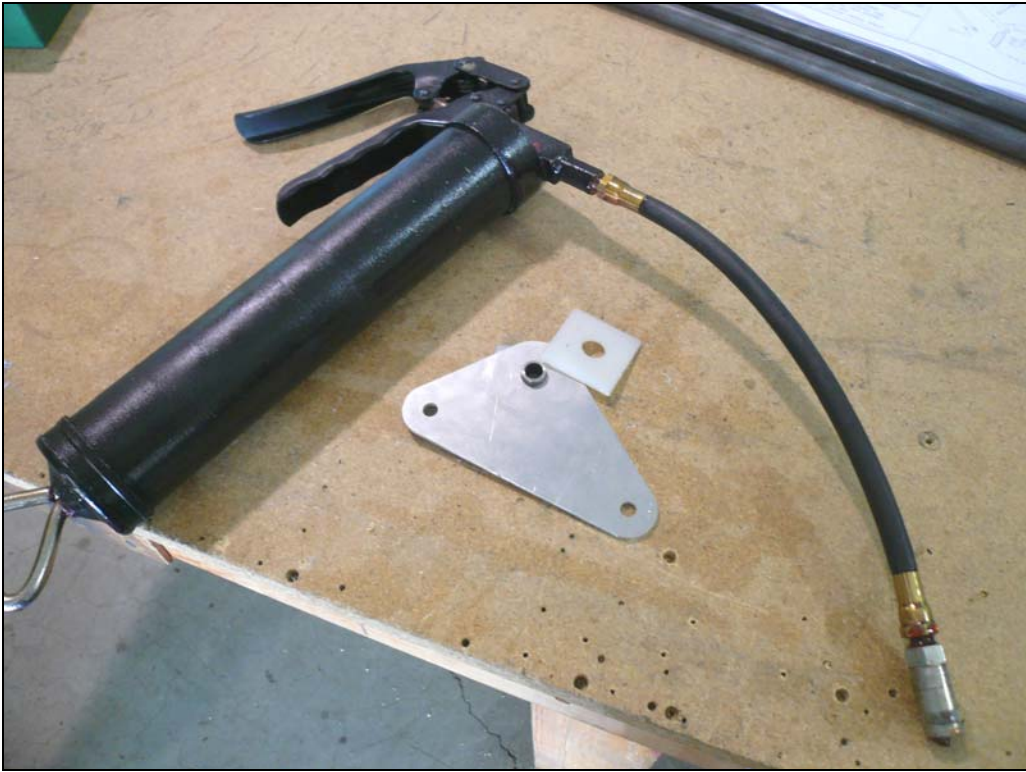
P/N: 75C1-9
Flaperon Bellcrank
Bushing



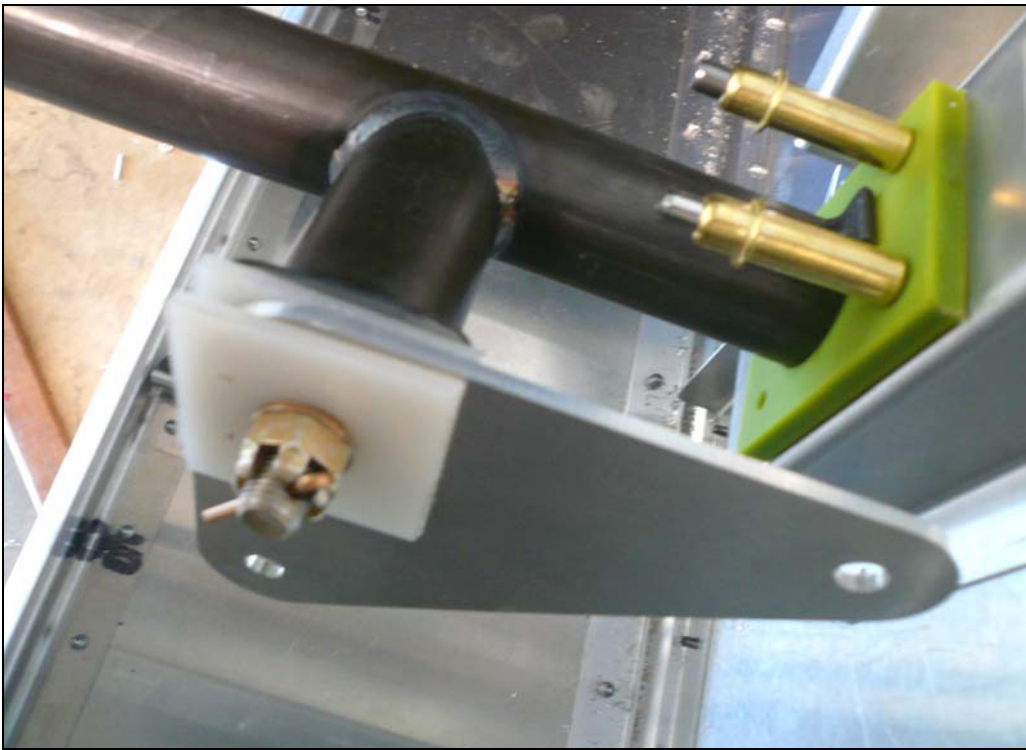
Mark the center of the Flaperon Bellcrank Bearings. With a #40 drill bit, drill a hole in the center of the Bearing. Expand the hole up to 1/2" in steps. It is helpful to clamp the Bearing in a vise to prevent it from spinning while drilling the holes.



Use a 1/2" drill bit to expand the mounting hole in the Flaperon Bellcrank. See drawing 75-C-1 or 75-CA-1 for the specific hole if in question.



The Flaperon Bushing should turn freely in the Bellcrank, make sure the hole is large enough for it to turn but not be too loose. Grease the outside of the Bushing and the faces of the Bearings that contact the Bellcrank.

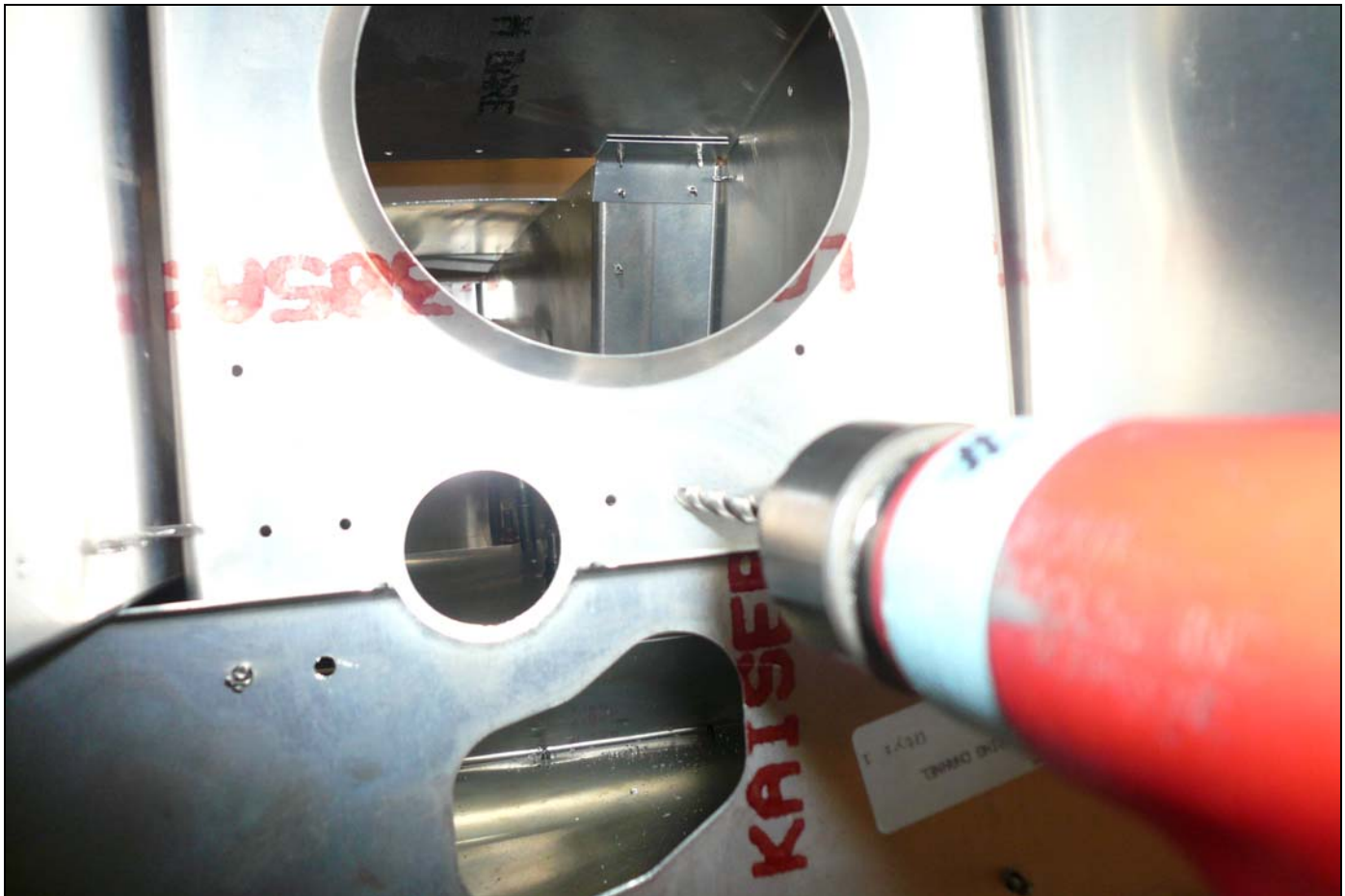


Slide the Bushing on the stud of the Mixer. Put grease on the plate on the Mixer and install the first Bearing, followed by the Bellcrank and second Bearing. Tighten the Castle Nut on the Stud and secure with a Cotter Pin. Do this on both sides of the Mixer.



P/N: 75C2-3
Rear Torque Tube
Bearing

P/N: 75C2-4
Rear Torque Tube
Bearing Doubler

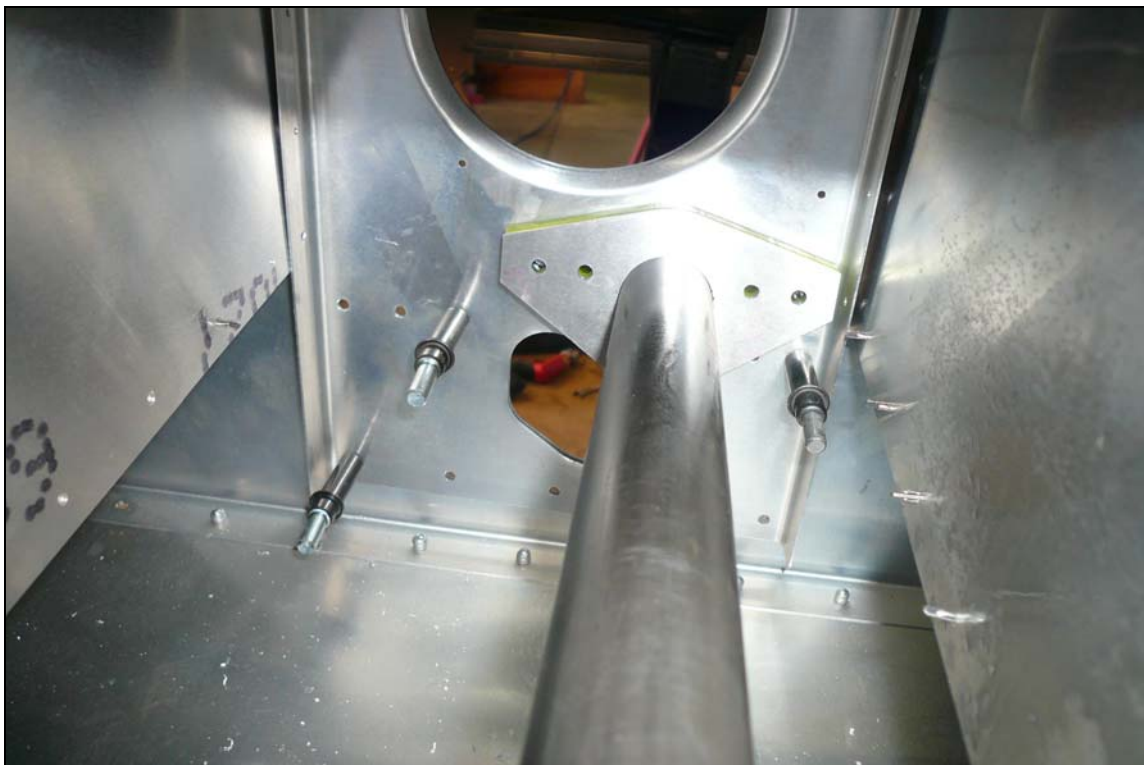


Use a #12 drill bit to expand the holes in the Torque Tube Bearing Support for the Torque Tube Bearing.



P/N: 75C2-5
Torque Tube

P/N: 75C2-9
Stop Ring



Cleco the Torque Tube Bearing and Bearing Doubler to the Bearing Support. The Bearing is sandwiched between the Bearing Support and the Bearing Doubler. Remove the Stop Ring from the end of the Torque Tube and slide the Torque Tube through the Torque Tube Bearing until the 15mm x 20mm plate is against the Bearing Support.



P/N: 75C4-4
Front Torque Tube
Bearing Rudder
Fairlead

P/N: 75C3-1
Front torque Tube
Bearing

Clamp the Fairlead inside the flanges of the Bearing so the Fairlead is flush at the top. Back drill through the Bearing into the Fairlead with a #40 drill bit and Cleco.

Note: At the top of the Bearing the flange measures 27mm.



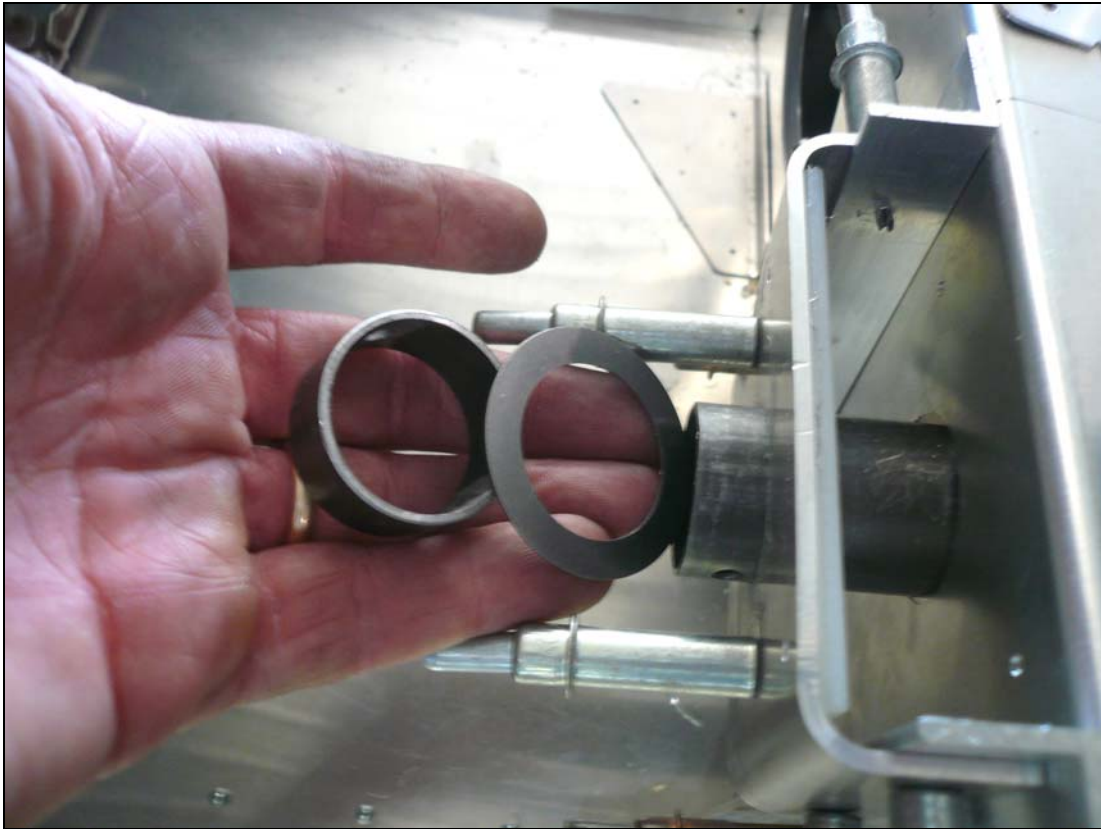
Mark and drill a hole at least 1-1/8" diameter for the Torque Tube to pass through the Fairlead. The Fairlead does not need to contact the Torque Tube.



Mark a line 10mm from the edge of the flanges on the Bearing. Mark the bolt hole locations 13mm from the top and bottom. Slide the Bearing on the end of the Torque Tube. Clamp the Bearing to the Torque Tube Bearing Support such that the Torque Tube doesn't make contact with the Seat Front Channel.



With a #40 drill bit, drill the bolt holes. Expand the holes with a #12 drill bit and Cleco.



P/N: 3088A417
Stainless Steel Shim

Install the Stainless Steel Shim and Stop Ring on the end of the Torque Tube.



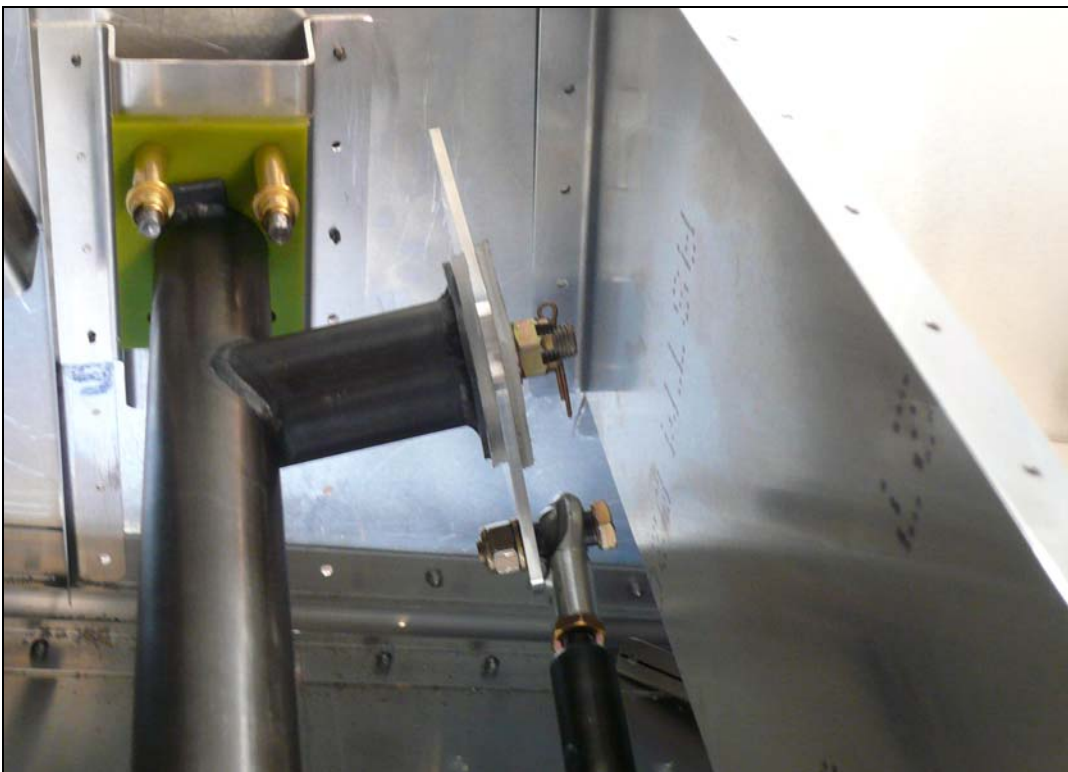
P/N: 75C2-1
Horizontal Flaperon
Control Rod

P/N: 75C2-2
Control Rod Bushing

Thread the Jam Nut on the end of the Control Rod then thread on the Rod End.



Install the Bolt on the Torque Tube. Slide the first Rod Bushing on the bolt, followed by the Control Rod and a second Bushing. Tighten the nut and properly torque the nut on the bolt.



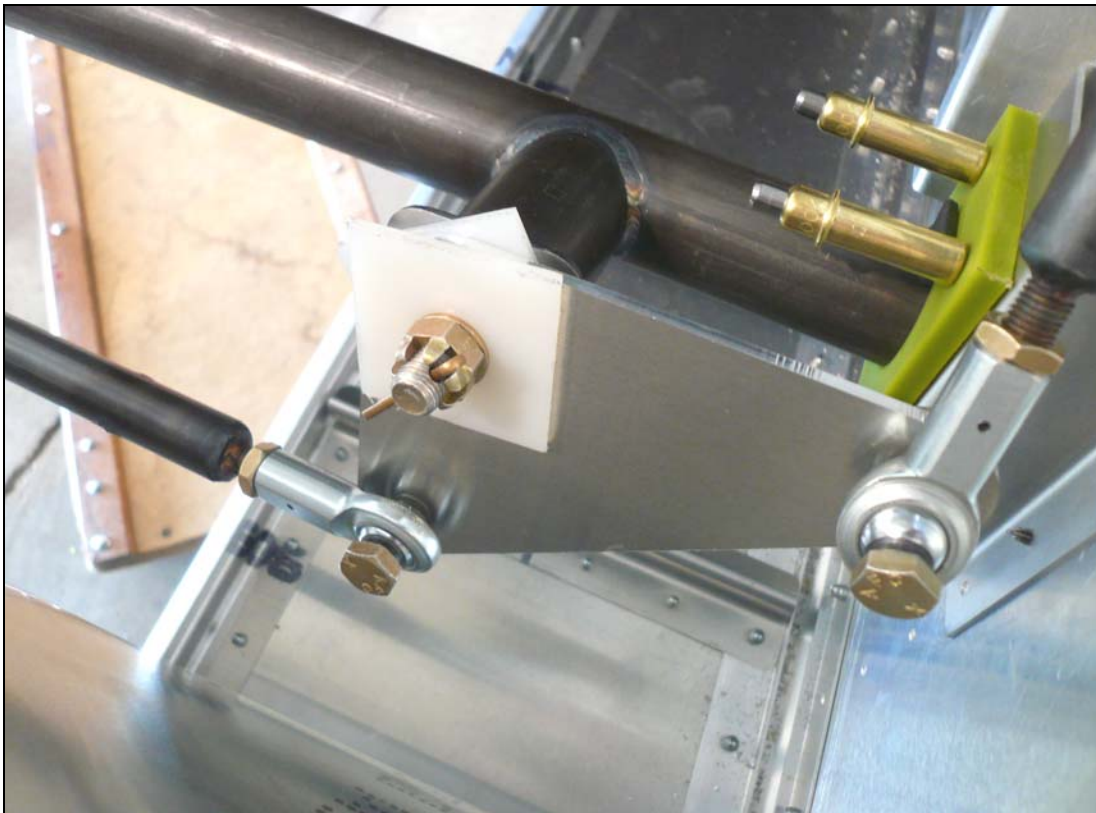
Install a Bushing on the bolt, followed by the Control Rod End and an additional Bushing. Then install the assembly on the Bellcrank attached to the Mixer. Adjust the Rod End so the top of the Bellcrank is parallel to the cross tube of the Mixer. Wait to torque the nut on the bolt until the Wings are installed in case some adjustment is required to properly set the Flaperon Neutral Position.



P/N: 75C1-10
Vertical Flaperon
Control Rod

P/N: 75C2-2
Control Rod Bushing

Thread the Jam Nut on the end of the Control Rod followed by the Rod End.



Slide one Bushing on the Bolt, followed by the Rod End on the Control Rod with a second Bushing after it. Install the assembly on the Bellcrank on the Mixer. Don't torque the nut until after the Wings are installed to make adjustments for the Neutral Position of the Flaperons.