

PROCEDURE 4.070

FUSELAGE ASSEMBLY UPPER TO LOWER

In this procedure...

The upper and lower fuselages will be mated together. The firewall, and bulkheads will be bonded to the upper fuselage.

SUPPLIED MATERIAL

<u>Part Number</u>	<u>Description</u>	<u>Quantity</u>
212-11-001	Upper Fuselage Assembly	1

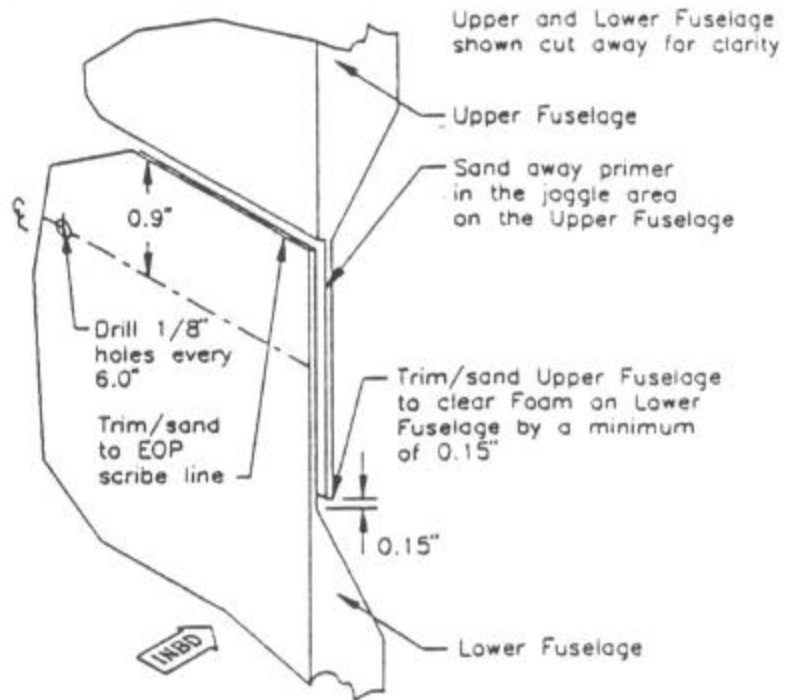
Step 1**Prepare and Align Fuselage Parts for Bonding.**

Sand the primer off the joggle area of the upper fuselage using 80 grit sandpaper. Do not sand into the glass.

Place the upper fuselage onto the lower fuselage and set the fore and aft alignment by aligning the firewall joggle. Hot glue wooden blocks onto the inside of the lower fuselage if needed to prevent the upper fuselage from sliding down past the joggle lip.

Trim and align the Firewall, and bulkheads to the upper fuselage. Sand and trim the fuselage halves until the upper joggle rests fully on the lower fuselage EOP. Be sure to check for clearance between the upper fuselage EOP and the lower fuselage foam

bevel. Drill 1/8" diameter holes in the center of the overlap of the upper/lower fuselage joggle every 6 inches along the entire length of both sides of the fuselage, inserting 1/8" Clecos in every fourth hole.



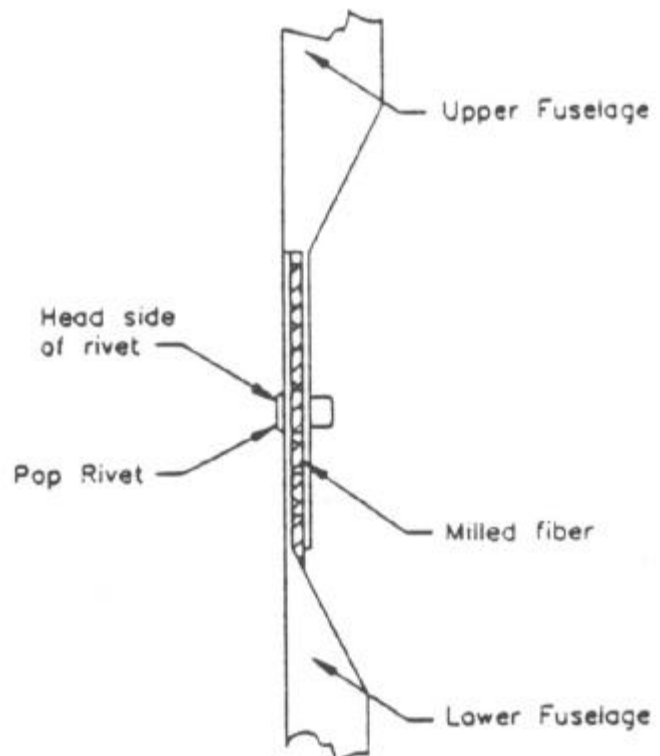
Step 2 Position and Secure the Upper to the Lower Fuselage.

Remove the Clecos and lift the upper fuselage skin off the lower fuselage skin. Place 2" X 4"s or other suitable supports across the lower fuselage and rest the upper fuselage on the supports. Prepare the lower fuselage bond area by wiping with acetone, then sanding with 80/100 grit sandpaper. The bond area extends full length along the inside of the left side of the lower fuselage from the scribe line down to 0.15" above the edge of the lower fuselage foam. Do not bond the upper and lower fuselage on the right side aft of the joggle area approximately 6" aft of bulkhead 162. After the fuselage is bonded the right side of the vertical stabilizer will be removed.

Step 3 Bond the Fuselage Joggle.

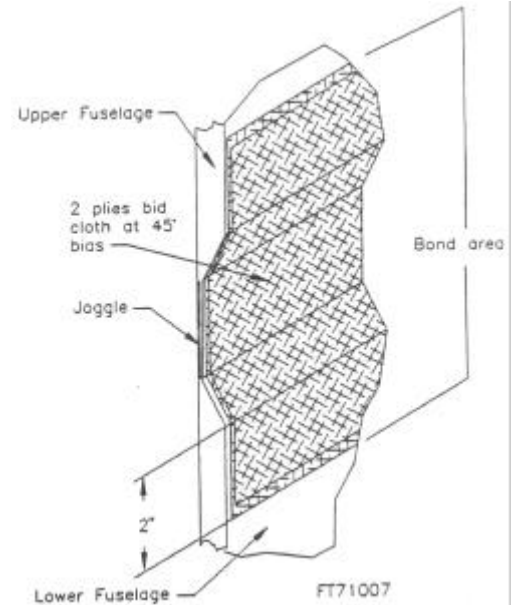
Approximately 400 grams of slow resin is required to wet out the bonded area. First you will wet the bond area with resin, then you will fill the bond area with milled fiber, so you should prepare the milled fiber mixture prior to wetting the bond area. Wet the bond areas with resin and set the upper fuselage on the lower fuselage. Hold the two fuselage halves together with several Clecos. Mix 1800 grams of milled fiber paste, using 800 grams of slow resin catalyzed at 1% and 1000 grams of milled fiber. Mix very well.

Starting at the firewall and working toward the empennage, carefully pry the lower fuselage skin away from the upper skin and work milled fiber into the cap using a small putty knife. Insure that the bond area is entirely filled. After proceeding about 18 inches anchor the two fuselage halves together with aluminum rivets in the first two holes, and proceed. After bonding, wipe off any excess milled fiber. Complete the process for both sides of the fuselage. After curing for at least 12 hours, remove the pop rivets. First, drill or punch out the center of the rivets from the head side, then drill off the head using a 1/8" drill bit. Finally, punch out the remaining rivet body. The holes will be filled during paint preparation.

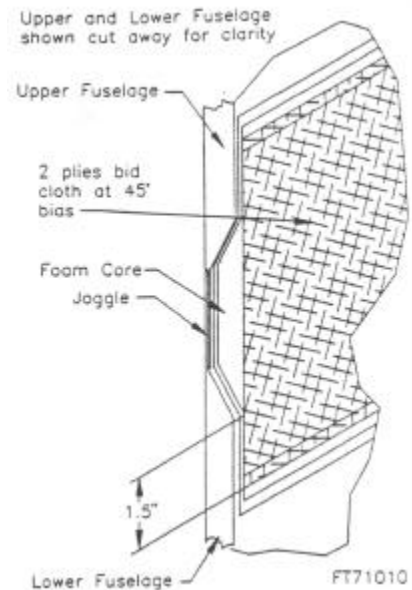


Step 4 Internal Joggle Laminations.

Clean the entire bond area with acetone and sand with 80/100-grit paper. Lay up two plies of BID on a 45-degree bias covering the areas shown for the entire length of the fuselage section, both sides. Overlapping the seams by approximately 1". Let the lay-ups cure, and sand before next step.

**Step 5 Install the Foam Core and Laminate in Place.**

Remove the fuselage from the fixture and lay it on its side on a padded surface. Block up the forward and aft ends so the fuselage is stable. Use a two-part foam mixture and fill the trough in the bonded area with foam. To start with use a small amount of foam and experiment on the amount you need to pour in the trough to have the trough filled when the foam expands. Fill the trough the entire length of the fuselage. Use a long-board with 80 grit sandpaper to sand the foam level with the foam on the upper and lower fuselage halves. Fill in any voids in the foam. **(Note: This Step can be delayed until the tail section of the aircraft is complete, to avoid moving fuselage off fixture and having to re-align it.)**

**Step 8. Laminate Bid Over the Foam Core**

After complete cure, cover the entire exposed face of the foam bonded to the fuselage junction with thin slurry of Q-Cell. After the Q-Cell cures, lay up two layers of BID on a 45-degree bias over the entire foam area and extending onto the fuselage skin for 1.5 inches top and bottom. Repeat steps 7 and 8 to the other side.

Step 9. Laminate Bulkheads, and Firewall to the Upper Fuselage.

Fillet all sides with Q-Cell where they contact the upper fuselage. Fill any gaps greater than 1/8" with Q-Cell. Laminate to the upper fuselage with two plies of 45-degree bias, 3" wide BID.