

PROCEDURE 5.010

Aileron Assembly

In this procedure...

The left and right aileron will be assembled; push-pull tube bracket and counterweight arm will be installed.

Materials Supplied

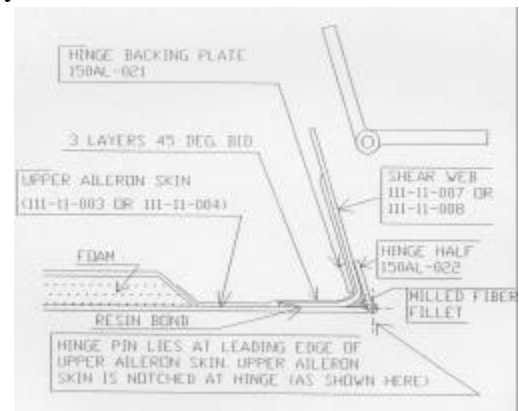
<u>Part Number</u>	<u>Description</u>	<u>Quantity</u>
111-11-003	Aileron Skin Left Upper	1
111-11-004	Aileron Skin Left Lower	1
111-11-005	Aileron Skin Right Upper	1
111-11-006	Aileron Skin Right Lower	1
111-11-007	Aileron Spar	2
111-12-024	Aileron Rib 1	2
111-12-025	Aileron Rib 2	2
111-12-026	Aileron Rib 3	2
111-14-013	Hinge, Control Surface 10"	4
111-14-015	Hinge Backing Plate 10"	4
111-14-014	Hinge Pocket 10"	4
111-24-008	Aileron Bracket, Push Pull Tube	2
111-24-009	Backing Plate, Aileron Bracket	2
111-24-006	Aileron Counter Weight Arm	2
111-24-012	Backing Plate Counter Weight Arm	2
AN3-11A	Bolt, Aileron Counterweight Arm	4
K2000-3	Anchor Nut, Counter Weight Arm	4
AN960-10	Washer, Counter Weight Arm	8
AD426-3-4	Rivet	50
AN3-5A	Bolt, Bracket Push Pull Tube	4
AN365-1032	Nut	4
AN960-10	Washer	5

Step 1. Trim Aileron Skin

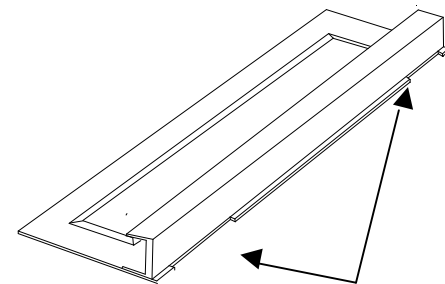
Sand the leading edge of the upper aileron skin down to the end of part (EOP) line. This line needs to be straight so use a long sanding board. Place the upper aileron skin on a flat workbench that is at least 3" larger than the aileron skin.

Step 2. Position the aileron spar on the upper skin.

The left and right aileron spars are identical. There is a slight taper in the spar so measure the width of the aileron spar at the ends. The wide end of the spar goes to the inboard end of the aileron. (Note. There is slightly more than a 1/16" difference so it may be difficult to determine. Place the aileron spar on the upper aileron skin with the flanges on the spar facing aft. The front face of the spar should be 3/16" aft of the aileron skin front EOP. Clamp the spar in position. To check for correct positioning place a hinge half on the forward edge of the spar, with the pin edge resting on the aileron skin. The center of the pinhole should be directly over the EOP. Once the correct location has been determined use a milled fiber mixture and bonds the spar in place.

**Step 3. Install aileron hinges.**

Once the aileron spar bond has cured, cut out the notches for final hinge placement. Measure 1 1/4" in from each end of the aileron skin. Make sure you measure from the EOP line. Place the outer ends of the hinge at this mark and mark the inner end of the hinge. This should be 10". Carefully cut out the front edge of the wing skin, back to the spar face. Make sure this line is very straight. It is on the top of the aileron and will be very visible. Place the aileron hinge in the notched area. Make sure the hinge is resting level on the table and fits flush with the front face of the spar. Drill the two outboard rivet holes using a #40 drill bit and install a Cleco. Locate rivet holes centered on the hinge flange and centered over each pin receptacle. See drawing at right. Rivets are spaced 1" apart. Counter sink holes and install rivets. Counter sunk rivets are provided in kit. Round head rivets can be used. Make sure that the backing plate is installed on aft side of spar.



Cut notch here.

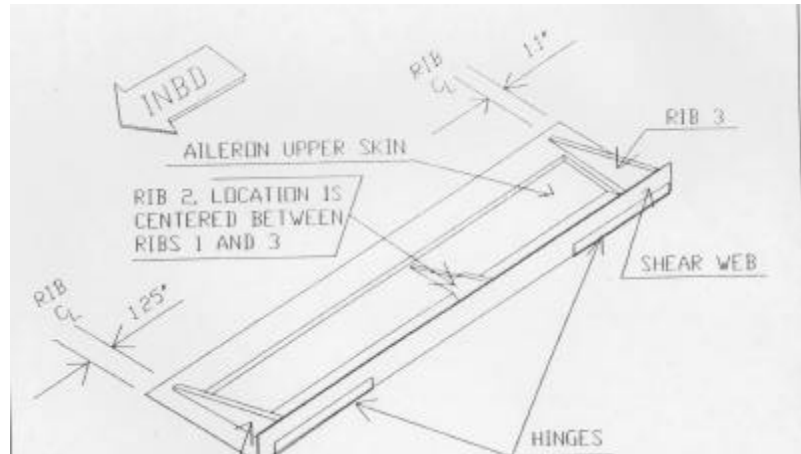


Step 4. Place laminates on aft side of spar.

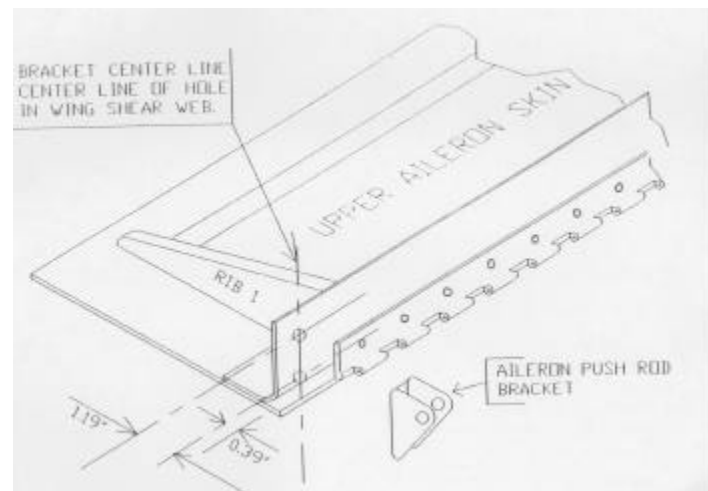
After hinges have been riveted to the spar, sand and clear the aft face of the spar and 2" of the forward area of aileron skin. Laminate 3 layers of 7781 on the backside of the spar and the aileron skin. This laminate goes the entire length of the aileron and laps 1 1/2" up on the aileron spar and 1 1/2" on to the aileron skin.

Step 5. Position aileron ribs.

Sand and fit the aileron ribs. Position the ribs per the drawing at the right. Use a small amount of hot glue to hold ribs in position. Q cell radius and laminate in position using 2 layers of 1 1/2" tape on each side of the center rib and inner surfaces on each end rib.

**Step 6. Install aileron push-pull tube bracket.**

Position and drill the holes for the aileron push pull tube bracket per the drawing at the right. Rest the narrow end of hinge centerline on both ailerons. Temporally install the bracket and measure the distance between the bracket hole and the hinge centerline. The bracket will have to be removed after the aileron is closed out so that final laminates are installed in aileron end.



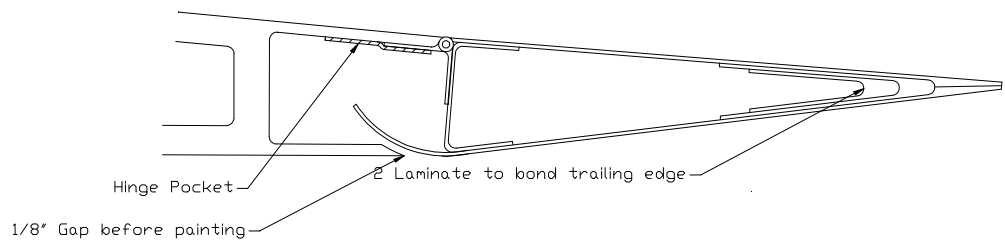
Step 7. Install aileron counterweight arm backing plate.

Drill the two-counterweight arm mounting boltholes per the dimensions shown in the drawing to the right. Position the backing plate as shown in the photo below. Hold the backing plate in position and match drill the boltholes. Install the anchor nuts. Reposition the backing plate; install bolts to insure proper alignment and pop rivet backing plate to ribs.

**Step 8. Prepare aileron for close out.**

Remove the aileron from the table and hold it in position along the trailing edge of the wing. Check to make sure that the thickness of the aileron is correct and fits the trailing edge of the wing as illustrated below. Once this is assured place the aileron back on the table.

Place the bottom skin on the aileron and insure there are no high spots on the ribs, and that the skin fits properly on the spar. Sand the bonding areas on the skins where they contact the ribs, the spar and the trailing edge. Clean with acetone. Lay a



piece of 2" wide duct tape, the length

of the aileron, on the bench. Place the upper skin on the bench with the duct tape covering half the duct tape. Place the trailing edge of the lower skin against the trailing edge of the upper skin and press against the duct tape. Cut a 2" wide tape of 7781 cloth the length of the aileron. Laminate the two plies of tape over the trailing edges of the two skins with the tape centered on the EOP. Place Milled Fiber on the ribs and spar and carefully fold the lower skin onto the upper skin. Make sure of proper alignment and apply moderate weight on the skin to hold in position until cured.

Laminate 3 plies on the forward face of the spar and onto the forward part of the lower skin.

Laminate 3 plies of cloth across the entire face of the end ribs and onto the upper and lower aileron skin.

