

AkroTech Aviation G-200

Fast Build Manual For the G-200 Aerobatic Aircraft

Part # FMAN1.4
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PLEASE NOTE:

This manual is presented in preliminary draft form for the convenience of builders of pre-production and early production kits of the G-200. As the final assembly details of the G-200 kit evolve, it is anticipated that some of the procedures and instructions included in this manual will later be superseded by more current information. Please use this manual with this caution in mind.

Should the users of this draft version have any thoughts or suggestions concerning this manual, we at AkroTech Aviation would welcome them. Please do not hesitate to let us know how this manual might be improved.

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Task F-6 Fabricate The Left Internal Bonding Flange

Brief task description:

In this task you will make a flange for bonding the left vertical fin skin to the stabilizer. This procedure is necessary only for the left fin skin since this side will not be accessible once the right fin skin is in place. The flange is made using fiberglass cloth saturated with resin. You may wish to refer to the General Information Section of this manual and review the section labeled "Wet Lay-ups" at this time. Follow steps A-F to make the bonding flange.

Step A Cut out stabilizer opening in left fin skin

Use spray adhesive to mount template 10 on the inner surface of the left fin skin. Cut out the stabilizer opening along the solid line using a bandsaw or jigsaw. Carefully fit the left fin skin around the stabilizer and trim if necessary. Remove the template when finished and clean the surface with acetone. Place release tape on the inboard skin of the fin around the stabilizer opening. This tape should extend 3 inches from the stabilizer hole in every direction.

Step B Temporarily mount the left fin skin in position

Slide the fin skin over the stabilizer to the fuselage and the rudder post. Clamp this skin in position along the rudder post using spring clamps. Drill and Cleco the fin to the recessed edge along the top edge of the lower fuselage and to the rudder post every three inches.

Step C Temporarily mount the upper fuselage on the lower fuselage

Clamp the upper fuselage into the pre molded joggle in the lower fuse. Drill several holes through the upper and lower fuselage where they overlap and install Clecos. The upper fuse will provide a reference for the forward edge of the fin skin thus ensuring proper alignment of the fin skin.

Step D Install The Upper Banjo

Position the upper banjo on the stabilizer so it sits directly above the lower banjo. Align the upper banjo so that its face is plumb (vertical) and its flange lays flat against the left fin skin. With the upper banjo held in position, drill two holes for Clecos through the lower flange and into the top layer of the stabilizer skin. Install Clecos in these holes. Now drill two more holes through the left flange and into the inside layer of the left fin skin (it is not necessary to drill all the way through the fin skin).

Prepare the upper banjo for bonding to the stabilizer. Mix structural adhesive and coat the bottom of the upper banjo and the corresponding area of the stabilizer with the adhesive.

(Note: do not place any structural adhesive on the sides of the upper banjo) Install the upper banjo with Clecos and let cure completely.

Step E Fabricate the left bonding flange for the stabilizer

Cut three strips of fiberglass cloth approximately 4 inches by 30 inches on the bias. Cut out two pieces of polyethylene plastic film about 5 inches by 35 inches and lay these out on your work table. Mix epoxy resin according to the directions outlined in the General Information Section of this manual. Lay the fiberglass strips out on the plastic and wet them out one at a time. Remove all air bubbles and excess resin from the lay-up. Position the other piece of plastic on top of the lay-up and smooth it out. You should now have a sandwich consisting of a layer of plastic, the fiberglass lay-up, and another layer of plastic. Use scissors to cut out a strip 3 inches wide by 30 inches long from this sandwich. From this strip cut off a piece long enough to fit around the inboard juncture of the left fin skin and the stabilizer from the rudder post to the upper banjo. Cut another piece long enough to run around the leading edge of the stabilizer from the upper banjo to the lower banjo. Cut one more strip to fit between the lower banjo and the rudder post. Mix a small batch of micro and make a small fillet along the juncture between the stab and the fin skin. Now remove the plastic from one side of each strip and place it into its appropriate position at the junction of the fin skin and the stab. The fiberglass should extend 1 1/2 inches onto both the stabilizer and the inboard side of the fin. Carefully remove the top layer of plastic from the fiberglass lay-up and use a brush to remove all air bubbles. Let the resin cure completely.

Step F Remove the fin skin from the stab

Remove the Clecos from the fin skin. Carefully remove the fin skin from the stab. The clear tape applied to the fin skin should have prevented the fiberglass from adhering to the surface. If you find the fin skin difficult to remove, slide a butter knife between the fin skin and the stabilizer to separate them. Slide the fin off the stabilizer and remove the release tape from the fin skin.

Task F-7 Permanently Install Right Fin Skin

Step A Cut out stabilizer opening in right fin skin

Use spray adhesive to mount template 11 on the outer surface of the right fin skin. Cut out the stabilizer opening along the solid line. Carefully fit the right fin skin around the stabilizer and trim if necessary. Remove the paper template when finished and clean the surface with acetone.

Step B Temporarily mount the right fin skin in position

Slide the right fin skin over the stabilizer to the fuselage and the rudder post. Clamp this skin in position along the rudder post using spring clamps. Drill and Cleco the fin to the recessed edge along the top of the lower fuselage, to the rudder post flange, and to the upper fuselage every three inches. Drill two holes for Clecos through the upper banjo flange and into the inside layer of the fin skin. Remove the Clecos and the right fin skin.

Step C Permanently mount the right fin skin

Prepare the inboard surface of the right fin skin for bonding where it intersects the upper and lower banjo, rudder post, and fuselage. Mix structural adhesive and add enough structural filler to achieve "catsup" consistency. Coat all mating surfaces with the adhesive. Use Clecos to mount the right fin skin and remove all excess structural adhesive.

Step D Fabricate the right internal fiberglass reinforcement

In this task you will fabricate an internal reinforcement much like the one made for the left fin skin with the exception that this reinforcement will be permanently mounted to both the stabilizer and the fin skin (Do **not** place clear tape on the fin). Prepare the stabilizer and the right fin where they mate for bonding. Refer to Task F ??? above to prepare and install the fiberglass strips for the right internal reinforcement.