

## **Pre-Paint>Fuselage>Empennage>Fit horizontal stabiliser**

### **Objectives of this task:**

To fit the horizontal stabiliser to the fuselage and glass it in place. Note that the elevator hinges were fitted in the previous task *Pre-Paint>Fuselage>Empennage>Fit elevator*.

### **Materials required:**

Epoxy resin and flock

Glass fibre cloth and peel cloth in the bag labelled: “*Horizontal Stabiliser*”

### **Steps**

1. Level the aircraft
2. Fit the stabiliser
3. Glass the tailcone
4. Glass the stabiliser

### **Level the aircraft**



The aircraft should be fixed in a “wings level” attitude prior to fitting. Place a 3” block on the top of each front wing mounting lug and place a spirit level across the top of the cabin so that it rests on both blocks. Pack the main wheels as required to level the aircraft.



Clamp a straightedge (a 2 or 3 metre length of aluminium angle works well) across the back of the door frames at the height of the fuselage join line: ensure that the straightedge is level. This will be your main reference for aligning the horizontal stabiliser.



## Fit the stabiliser

There are 2 types of horizontal stabilisers, as the installation differs, first determine which one you have by locating the part identification sticker in the rear channel of the horizontal stabiliser and note the part number. If the part number is 2A069A0D you need to follow this set of instructions in total to the end. If the part number is 2A109A0D, it has integral internal reinforcing and you only follow these instructions up to "Glass the tailcone".

**Note:** It is important that you determine which horizontal stabiliser you have, and then follow the fitting instructions that apply to that horizontal stabiliser.

Prepare the stabiliser by taping up the inboard elevator hinges to prevent any resin getting into the hinge pins. From the previous task you will have a marked centreline on the stabiliser: test fit the stabiliser to the rear of the fuselage using the stabiliser centreline as a lateral location guide against the fuselage centreline.



Push the stabiliser fully forward into the rear of the fuselage and check that each end of the stabiliser is an equal distance back from the straightedge – use 2 tape measures as shown circled above, one each side, and carefully move the stabiliser until the measurements are exactly the same. Sight along the fuselage from the rear and confirm that the stabiliser is level and lined up with the straightedge. The chord line of the stabiliser is to be angled down 3 degrees at the leading edge. Make any adjustments necessary.

When the stabiliser is aligned correctly, secure the stabiliser to the fuselage with self-tapping screws, using 10 screws per side. These screws will be removed after the stabiliser has been finally fitted. Run a pencil line around the stabiliser along the fuselage join.

Remove the stabiliser from the fuselage and remove the peel cloth from the rear of the fuselage, then lightly sand all the surfaces to be joined – the pencil line on the stabiliser will act as a guide for where to sand and where to coat with resin.



Mix a batch of resin and divide into 2 parts. Coat all the surfaces to be joined. Add flock to one part of the resin and apply a layer to the rear of the fuselage then slide the stabiliser in to place, pushing it fully forward. Open the join and use a mixing stick to force flock into the sides and rear of the join, working from the inside of the empennage through the hole in the top, then smooth the flock along the outside. Fix the stabiliser in place with the self-tapping screws, do a final check of the alignment and leave overnight to cure.

Next day, remove the self-tapping screws that were used to temporarily fix the stabiliser in place. If they are difficult to remove heating each screw with a soldering iron will help.

Lightly sand the surface around the root of the join between the leading edge of the horizontal stabiliser and the fuselage, then mix a small batch of resin and coat the surfaces where the glass fibre cloth will be placed. Cut a small square of glass fibre cloth to cover the root of the join as shown below and brush it into place.



This completes the *Pre-Paint>Fuselage>Empennage>Fit horizontal stabiliser* task if you have Horizontal Stabiliser P/N 2A109A0D, if your P/N is 2A069A0D then continue.

## Glass the tailcone

In this step you will apply 3 layers of 320 x 200mm glass fibre cloth to the tailcone, starting at the top and wrapping the glass cloth behind the stabiliser and under the tailcone.



First cut a piece of foam 225mm long, 57mm high & 27mm deep and fit it to the rear of the stabiliser, tapering it towards the bottom as shown in the photo above left, and cut a thin strip of foam to fill the void under the stabiliser.

Mix a batch of resin and coat the tailcone and the foam blocks and flock them into place. Place the first sheet of glass fibre cloth centrally on the tailcone and brush it on, then down over the foam blocks, cut to clear the elevator stop and brush under the tailcone taking care to avoid any bubbles or gaps.



The second layer of glass cloth is placed offset to the right as shown above and brushed on in a similar manner, followed by the third layer, which is offset to the left by the same amount.

We recommend that this step be followed immediately by the next step *Glass the stabiliser* and then peel cloth be applied to all of the glassed surfaces, but if you would prefer to do each step independently with an overnight break between them then you will need to apply peel cloth over the glassed areas at the completion of this step and then remove it before doing the *Glass the stabiliser* step.

If you intend to do the next step on another day then apply peel cloth over all the glassed surfaces and brush on carefully to ensure a smooth finish.



## Glass the stabiliser



Start by lightly sanding all surfaces, then mix a batch of resin and coat the surfaces where the glass fibre cloth will be placed. Then lay a 100 x 700mm strip of glass fibre cloth around the stabiliser-to-fuselage join and brush into place.

Now take one of the 300 x 350mm pieces of glass fibre cloth and, starting at a point 50mm back from the leading edge of the stabiliser and covering the stabiliser-to-fuselage join, brush it onto and under the stabiliser. Place the second layer on top of the stabiliser and wrap it back under the leading edge by 50mm. Repeat this process so that you have 2 layers under and 2 layers on top of the stabiliser. Do the same thing on the other side of the stabiliser.

Apply peel cloth to all glassed surfaces and brush on carefully. Leave overnight to cure then remove the peel cloth and trim away excess glass fibre ends with a sharp knife.



This completes the *Pre-Paint>Fuselage>Empennage>Fit horizontal stabiliser* task.