

Pre-Paint>Fuselage>Prepare the fuselage

Objectives of this task:

Once the *Fit ventral fin and trim horn* task has been completed the fuselage can be turned upright and the remaining penetrations made. This allows the bulk (but not all) of the mess to be made early in the build.

In the factory we place the fuselage in a jig at this stage, however you can achieve much the same result by placing a sawhorse or a similar platform or trestle under the cabin and a higher trestle under the empennage. Cover both of these items with some padding to minimise scratching the fuselage.

Large holes should be started with a pilot hole first to accurately place the hole and then be drilled out with a hole saw.

Slots should have each end drilled out first and then mark and use a jigsaw to join the holes.

Rectangular holes should have a hole drilled at each corner and then be marked and cut from hole to hole with a jigsaw. This practise will ensure accurate cuts with no sharply angular corners or irregular edges.

Tools and materials required:

Orbital sander and hand sanding blocks

Power drill with bits, 30mm and 2¼” hole saws

Jigsaw

Epoxy resin and flock

Q-Cell filler

5-minute Araldite

Sand the fuselage

Start by using your orbital sander to take any rough edges away: the moulding process can leave sharp edges and the occasional few glass fibre prickles, so take a bit of time now and remove all of these potential hand hazards before starting work. Fibreglass cuts are painful and you can do a lot to avoid them by careful preparation at this early point in the build.

Think of it as an investment in your comfortable building future.

Run your orbital sander lightly across every internal surface: around the door frames, seats, console, windows, etc and anywhere else that looks even slightly rough. There is no need to sand heavily; just a light scuff is all that is required. Use a few hand sanding blocks for any hard-to-get-at places.

Remove peel cloth

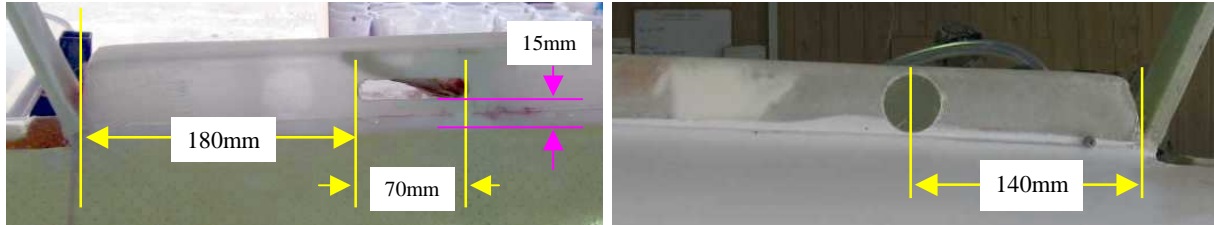
Remove the peel cloth from the vertical fin stub and around the rear of the empennage generally, including around the horizontal stabiliser opening.

Lightly sand around the edges of the areas under the peel cloth to remove any peel cloth threads that remain.



Vertical fin stub

The rudder cable passes from the empennage and through the fin stub as does the static line, VHF antenna cabling and strobe wiring (if you elect to have a tail strobe). All these items require access into and through the fin stub.

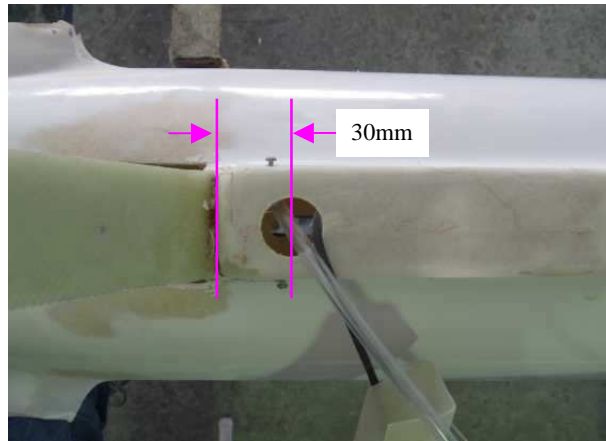


Start by marking and cutting the rudder cable slot on the right-hand side of the fin stub: measuring from the rear of the stub the slot starts at 180mm and is 70mm wide.

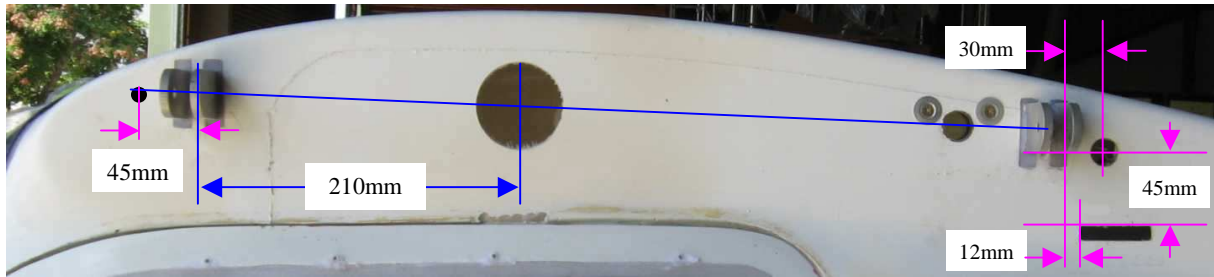
The bottom of the slot is located 15mm up from the base of the fin stub. Drill each end of the slot to 15mm and jigsaw the slot out, and then sand any rough edges away. Refer to the photo above left for detail.

The 30mm access hole on the left-hand side of the fin stub has its centre located at 140mm from the rear of the stub. Refer to the photo above right for detail.

The 30mm access hole in the top of the fin stub has its centre located at 30mm from the rear of the stub. Refer to the photo at right.

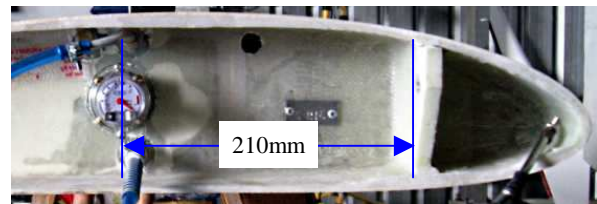


Cabin top penetrations



Mark a centreline between the bolt holes in the front and rear wing attach lugs: this will be the height of the centre of the fuel gauge opening.

Now double check the measurement marked “210mm” in the photos above and at right: measure in the wing root from the front wing lug back to the centre of the gauge as shown at right, then measure on the fuselage from the **inside** (not the outside) of the inner front wing attach lug (see photo above) the exact same distance (which should be *very* close to 210mm) then mark and drill the pilot hole for the fuel gauge opening. Recheck your measurements and then use a 2¼” hole saw to cut the gauge hole: drill a pilot hole first.



Measure forward 45mm from the front wing attach lug and drill a 10mm hole for the stall warning tube on the left side of the fuselage only.

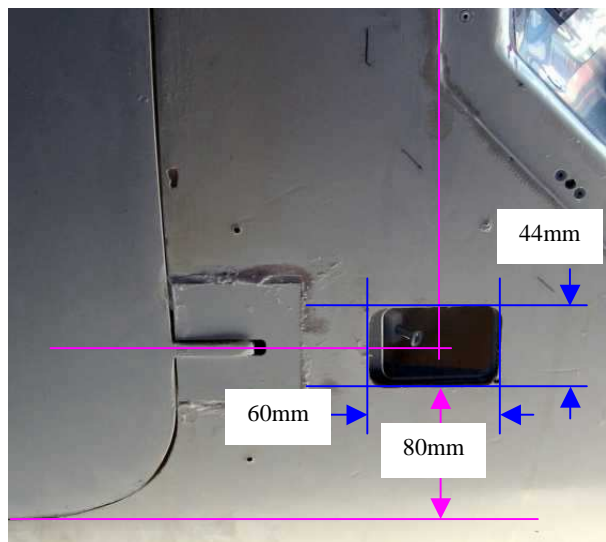
To mark the fuel system connector slot, draw a line down 12mm from the back of the rearmost wing lug and another line 45mm below the bottom of the rearmost wing lug, and then mark the slot at 50mm wide and 10mm high. Drill both ends to 10mm and use a jigsaw to cut between the holes. File the top and bottom of the slot to a smooth and square finish.

Cabin air vents

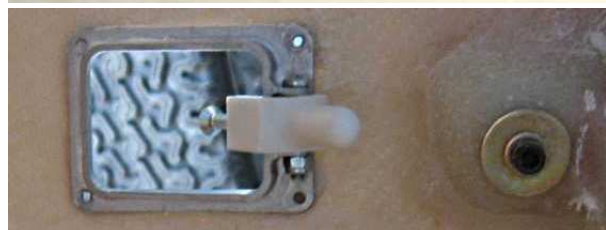
Cut a 60 x 44mm opening on each side of the lower forward fuselage.

The bottom of the opening should be 80mm above the bottom of the door opening and the fore and aft location should be centred on a vertical line drawn down from the rear of the upper cowl joggle, all as shown at right:

Corners of the opening should be rounded to suit the vent door – the door should fit towards the front of opening with a 3mm gap at the rear to allow for the hinge action.

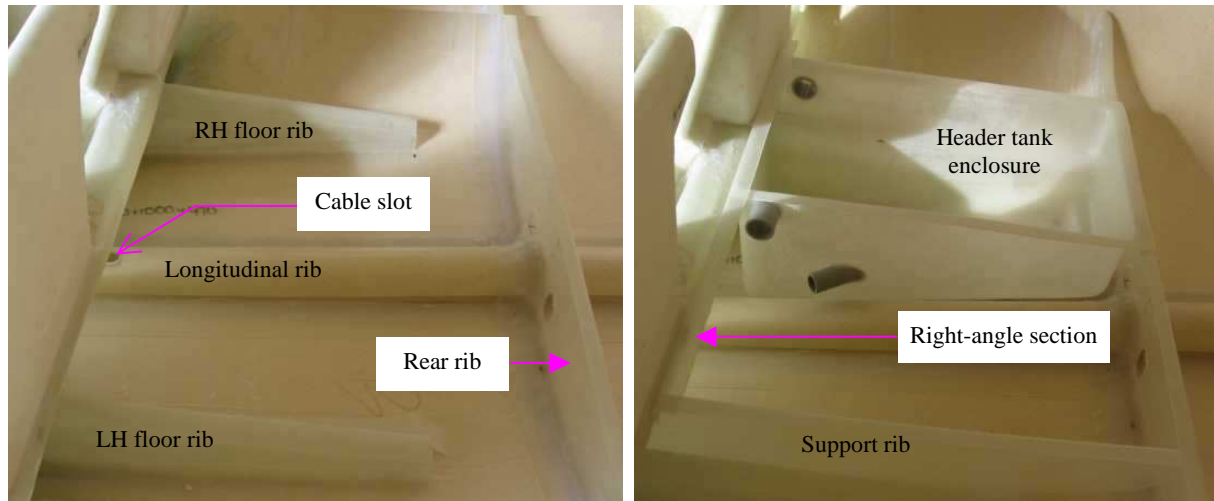


The air vent door surround can be flocked into place inside the fuselage as shown at right, with the hinge arm positioned at the rear of each hole and using the door to aid the positioning.



Fit the header tank enclosure

The fuel header tank sits behind the right-hand seat in a sealable enclosure and an additional rib is fitted to the left-hand floor rib so that the lid that seals the enclosure also functions as a luggage shelf behind the seats.

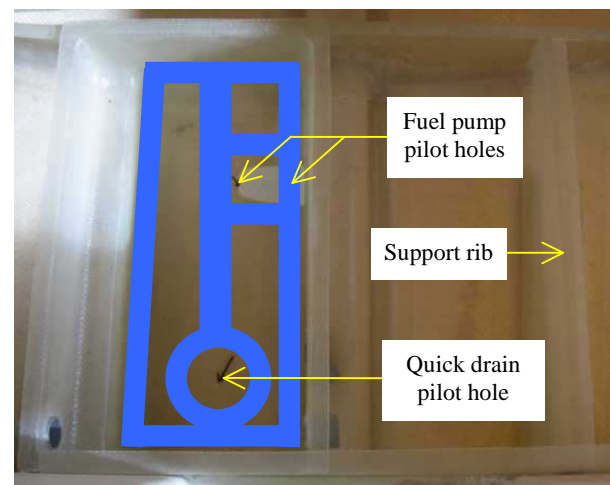


Place the header tank enclosure on the floor behind the right-hand seat so that it fits snugly between the longitudinal rib and the right-hand floor rib as shown above right and check that the rear lip of the enclosure sits down on the rear rib. Drill the 3 pilot holes in the enclosure (arrowed below right) at 3/32" through the fuselage floor and then remove the enclosure.

The drain from the enclosure will be through the quick-drain fitting hole.

Mix a batch of resin, stir in Q-Cell to make a firm mix and apply the Q-Cell to the cabin floor as shown in blue at right, including a circle with a clear centre of about 1½" around the quick drain hole. Apply the Q-Cell thicker towards the rear.

Refit the enclosure and secure with 3 x 8G self-tapping screws and washers: tighten the quick drain (front) screw so that the enclosure sits firmly against the floor but only tighten the rear screws enough to bed the enclosure firmly into the Q-Cell mix.



Cut the front of the support rib off so that it runs straight down from the rear of the seat to the floor, then pre-fit it inside the left-hand floor rib and make sure that the top of the support rib is level with rear rib and the cross beam behind the seats. Araldite a length of split tube along the front edge of the rib to protect fuel lines and cabling that will later pass in front of it.

Mix some resin and flock and fit the support rib into place and then fit the long right-angle section of glass fibre to the cross beam behind the seats as shown top right and above. Make sure that the top front of the enclosure is sealed and leave to cure overnight.

Next day trim the ends of the right-angle section to size, remove the 8G screws (heat if required) then drill the quick drain hole out to 1 1/8" and the fuel pump holes to 3/16".

Use TLR rivets to fix the tie-down lugs to the floor ribs as shown on the drawing overleaf.

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DIMENSIONS IN MILLIMETRES

DO NOT SCALE

PROJECTION

LIMITS +/ - 1.0

MATERIAL AS DESCRIBED

DRAWN DS

APPR.

SCALE VAR 1 15/2/05

ISS. DATE 18/1/06

DM 3

DM 2

DM 1

ISS. DATE 15/4/05

DM 3

DM 2

DM 1

ISS. DATE 15/2/05

AVTECH P/L

HINKLER AIRPORT

BUNDBERG

J160 FUSELAGE - VLA HEADER TANK ENCLOSURE STRUCTURAL DETAILS, SHEET 1 OF 1

DWG. NO. 1A057A0D-3

SECTION VIEW A-A

SECTION VIEW B-B

7 ANGLE ATTACHED LEVEL WITH OTHER ENCLOSURE'S SIDE USE 5 MINUTE ARALDITE.

Q-CELL BED TO GLUE ENCLOSURE

SEW POSITIONS TO HOLD ENCLOSURE LID/LUGGAGE SHELF DOWN.

DRILL 1/4" VEN" HOLES THRU LOWER FUSELAGE. 1 IN EACH LOWER CORNER OF ENCLOSURE.

ENCLOSURE LID/LUGGAGE SHELF HELD DOWN BY 8G SELF TAPPERS

SEAL LID ON TO ENCLOSURE USING 10MM WIDE TESLA ADHESIVE FOAM

HEADER TANK COVER/LUGGAGE SHELF.

TIE DOWN LUG

160

160

7

ATTACH USING TLR RIVET THROUGH FLOOR RIB

REAR HEADER TANK ENCLOSURE RIB

SECTION VIEW A-A

SECTION VIEW B-B

JOIN LUGGAGE SHELF SUPPORT END TO OTHER SIDES AND CROSS BEAMING 2 LAYERS 50MM AT 312 FIBREGLASS TAPE. WHERE POSSIBLE USE 1 LAYER EACH SIDE.

FOAM

TIE DOWN LUG P/No. 4009094

AREA TO BE SEALED SEAL AROUND HOLES WITH Q-CELLS

Q-CELLS

1

2

3

4

5

6

PARTS LIST

QTY

PART No.	DESCRIPTION	Qty
1	1A057K00 J160 HEADER TANK ENCLOSURE	1
2	1A057H1D J160 HEADER TANK ENCLOSURE SIDE SUPPORT	1
3	1A057J00 J160 HEADER TANK ENCLOSURE LID	1
4	10MM WIDE TESLA TAPE SEAL	4
5	PH0119N RIVET TLR 3/16 .18-.45 GRIP	4
6	4009094 LUG - FUEL TANK STRAP FRONT	4
7	1A057L0D J160 LUGGAGE SHELF SUPPORT ANGLE	1

5 MINUTE ARALDITE ANGLE PART 7 ACROSS SEAT BACK FOR LID SUPPORT.

ENCLOSURE LID/LUGGAGE SHELF HELD DOWN BY 8G SELF TAPPERS

NOTE:

1. "FLOCK" REFERS TO COTTON FIBRE FLOCK MIXED WITH RESIN TO A GUEY CONSISTENCY. TYPICAL FLOCK FILLET RADIUS R6.

2. "Q-CELLS" REFERS TO Q-CELL FILLER MIXED WITH RESIN TO A GUEY CONSISTENCY. TYPICAL Q-CELL FILLET RADIUS R6.

3. ALL RESIN TO BE LC3600 EPOXY UNLESS SPECIFIED OTHERWISE.

4. ALL MATERIALS TO PSUED-07.

This completes the *Pre-Paint > Fuselage > Prepare the fuselage* task.