



Pre-Paint>Fuselage> Interior>Fuel system

Issue Revision Table

Issue	Date:	Change(s):	Issued by:
1			
2			
3	Oct 2022	Adopt "Section Only" Manual System, Add Issue Revision Table and model applicability. More detail in Fit the fuel pump section Add Cyberbond SM40 as alternative to Loctite 577 Edit Blue fuel line to Red fuel line Update finger filter photo Update fuel tap photo	AS AS SW SW SW SW
4	June 2023	Update for header tank with low fuel sender.	DM

Model Applicability

Aircraft Model	J-160	J-170	J-230	J-430
Document Applicability			Yes	Yes

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Pre-Paint>Fuselage>Interior>Fuel system

Objectives of this task:

To fit the parts of the fuel system from the header tank to the firewall fitting.

Note that the fuel lines from the wing tanks to the header tank will be sized slightly over-length and stored for later connection in the *Post-Paint>Wings>Fit wings* task.

This task is broken down into the following steps:

1. Fit the fuel header tank, fuel filter, **fuel flow sender, low fuel sender**, electric fuel pump and all connecting fuel lines and seal, size the fuel lines from the wing tanks to the header tank and store.
2. Install the fuel tap to the console, fit the fuel line from the electric fuel pump to the fuel tap and fit the fuel line from the fuel tap to the firewall fitting and seal.

Materials required:

Fuel header tank

Card # 11J 'Fuel Components Kit'

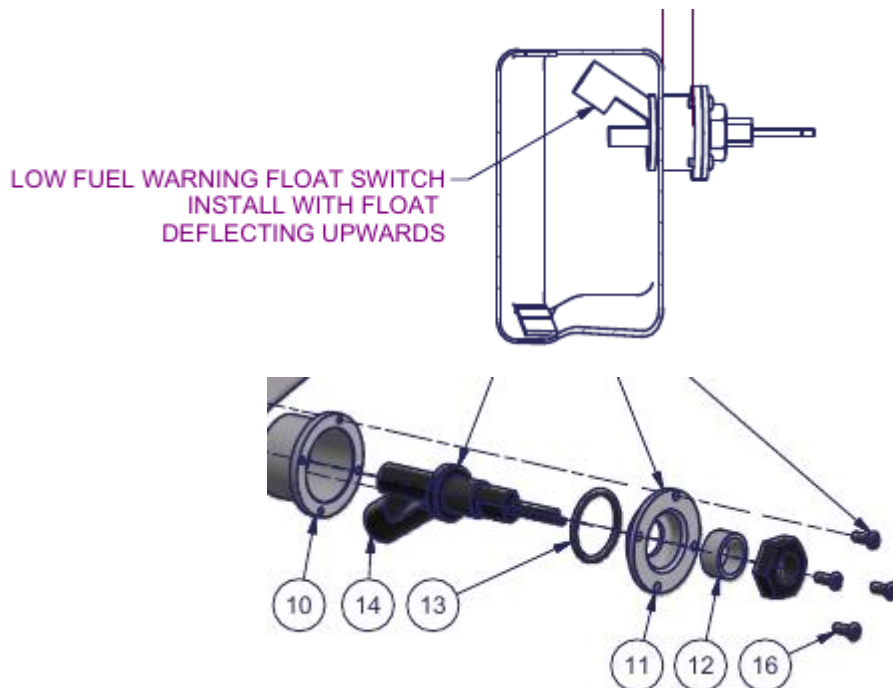
Red fuel line, Black fuel line and clear fuel line sheathing

Lock wire

Epoxy Resin and Flock, 5-minute Araldite

Fit low fuel sender to header tank option

If low fuel warning is being used the low fuel sender should be fitted to the header tank before installation. If not used, the port should be blanked of with the supplied plate.



Parts: 10 – Boss on header tank, 14 – Float switch, 13 – Oring, 11 – Mount plate, 12 – Float switch spacer, 16 – Screws 8-32.

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Be careful tightening the nut on the float switch, as it is a plastic nut.

Fit the fuel header tank

Position the fuel header tank under the rear cabin step with the quick drain fitting centred in the hole in the fuselage (use a short length of plastic tubing around the quick drain fitting to keep it centred during the header tank fitting operation) and oriented as shown on drawing 4A408AOD (this drawing is shown full size on the next page of this task).

Cut four positioning brackets from fibreglass angle and glue a rubber pad to one face of each bracket. Mark the location for each bracket and then flock the brackets to the fuselage in two stages: locate the front and outside brackets first, flock them into place and let them cure then put the header tank in place and then flock the remaining two brackets into place taking care that the header tank is firmly positioned between the brackets.

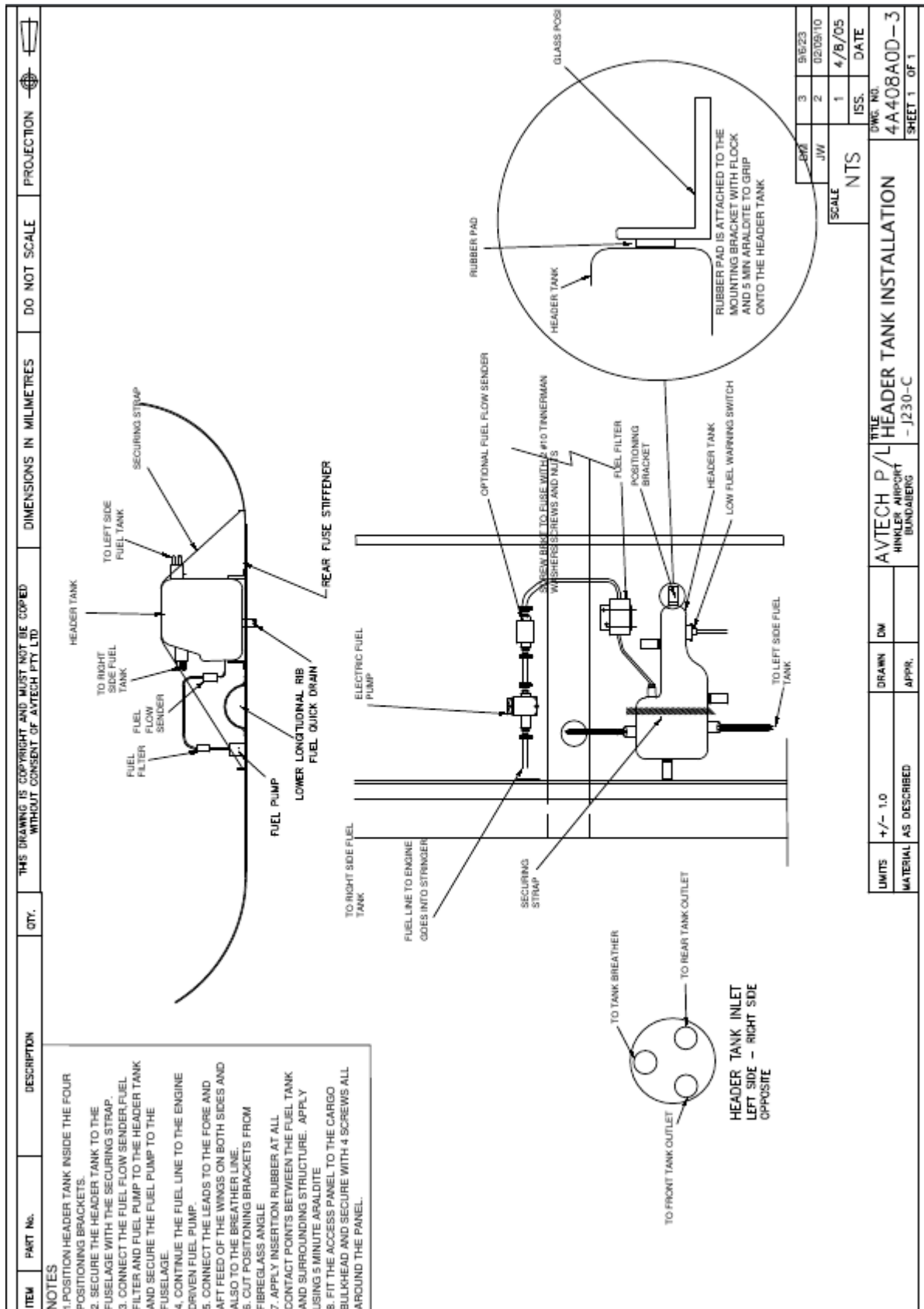


Brackets and rubber pad looking rearwards

When all of the flock has cured, remove the header tank and attach the header tank securing strap brackets to the fuselage using flock and countersunk screws. The left-hand bracket should be positioned about 150mm to the left of the header tank and the right-hand bracket should be positioned about 50mm to the right of the longitudinal rib. Each strap bracket is held in place with countersunk screws and Tinnerman washers with Nyloc nuts on the bracket. Tighten the nuts to safety.

The securing strap should pass over the widest part of the header tank – refer to the drawing on the next page for detail.

Using 5 minute Araldite, glue a rubber pad to the fuselage under the header tank taking care that no part of the header tank can rub directly against the fibreglass of the fuselage or the mounting brackets.





Fit the fuel pump

Mount the electric fuel pump to the fuselage on the right of the longitudinal rib as shown on the drawing on the previous page, using countersunk M4 screws and Tinnerman washers going through fuselage skin with nylock nuts and a washer on the inside. Tighten the nuts to safety.

The flow arrow on the pump should point towards the front of the aircraft as shown at right.



Fit finger filter

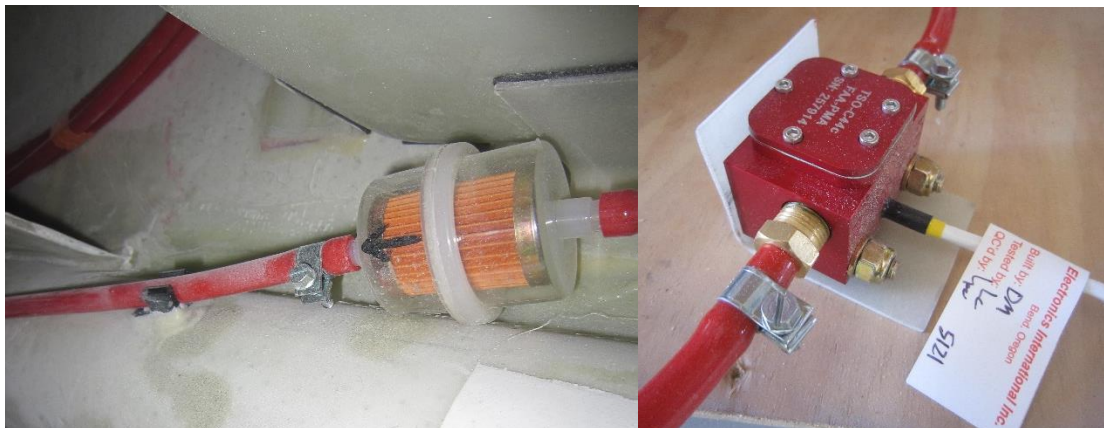
Using the supplied O-ring in the groove behind the nut and a small drop of Loctite 577 Sealant or Cyberbond SM40 on the threads, fit the finger filter to the header tank outlet and tighten firmly.



Fit the fuel filter

Fit the fuel filter in place, taking care to orient the fuel flow line in the direction of flow, which is away from the header tank and towards the electric fuel pump.

Araldite a fuel line clip on the top of the lower longitudinal rib to secure the fuel line from the fuel filter to the electric fuel pump as shown below right.



Cut a short length of red fuel line and connect the header tank to the filter, then cut a longer length and connect the filter to the fuel flow sender (if used) or directly to the fuel pump. Secure each connection with hose clamps.

Fit fuel flow sender

The fuel flow sender should be fitted to its fibreglass mount bracket before the bracket is glue to the aircraft. Once bolted to the bracket, glue the bracket to the fuselage skin in line with the fuel pump as shown in the pictures above. Use epoxy and flock for the glue. Ensure that the flow direction is correct. Connect fuel line to filter and pump.



Size the fuel lines

Route one fuel line per side in from the upper conduit, above the side windows as shown above and through the rear bulkhead conduit and then down to the header tank.

Route each fuel line around the front of the opening in the rear cabin step and leave enough length to connect to the header tank fittings, leave 500mm of free length outside of the upper fuselage. Remove the fuel lines and use each one as a measure to cut two more fuel lines of each length for each side. Label the lines as “Left” or “Right” (the shorter lines will be the “Left” set) and coil and store in a bag for later use.

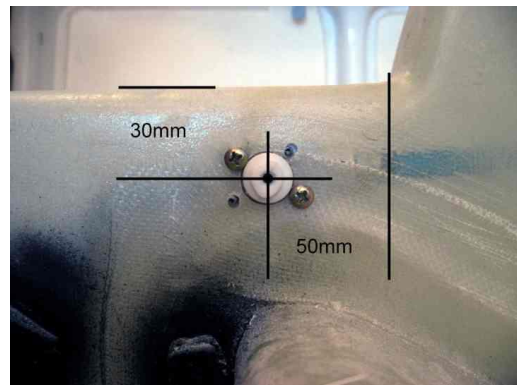
Fit the fuel tap and main fuel line

Remove the lever from the fuel tap and set it aside.

Mark a position on the left-hand side of the centre console 50mm in front of the base of the armrest and 30mm below the forward section of the console as shown at right:

Drill a 16mm hole at that position.

Working through the access hole in the right-hand side of the console, hold the fuel tap in position against the inside of the left-hand side of the console and mark the positions for the alignment pin and screw holes, which will be visible through the fibreglass, then remove the fuel tap and drill the holes. Pre-fit the fuel tap with the two screws and then remove the tap and set it aside.



Cut a length of red fuel hose of sufficient length to reach from the fuel tap to a position about 300mm aft of the electric fuel pump (under the rear cabin step), and a length of black fuel hose of sufficient length to reach from the fuel tap down along the floor and back up to the firewall fitting plus 100mm.



Fit both fuel hoses to the fuel tap and secure with the supplied hose clips, first making sure that the flow



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arrow on the face of the fuel tap is facing towards the black fuel line.

Place a length of fuel line sheathing over the black fuel line and secure with lock wire to the boss on the fuel tap as shown at right.



Fit the fuel line and tap assembly: cover the ends of both fuel lines to prevent foreign objects from entering by using masking tape over the ends and then insert the red fuel line end into the console through the access hole in the right-hand side and feed the red fuel line down and back towards the rear of the fuselage and into the lower longitudinal rib along the rear floor.

Keep feeding the fuel line back until it can be seen in the hole in the lower longitudinal rib near the electric fuel pump under the rear cabin step, then, using a length of wire with a hook in one end, lift the fuel line out of the lower longitudinal rib and run it past the electric fuel pump. Keep feeding the fuel line back until the end of the black fuel line can be inserted into the access hole in the console and then feed the black fuel line down and forwards until it can be lifted out of the hole in the forward section of the lower console behind the rudder pedals.

Using a length of wire with a hook in one end, reach down into the console and lift the fuel line assembly and move the fuel tap into position. Mount the fuel tap and secure to the console with the two screws. Cut the end of the red fuel line to the correct length and connect it to the electric fuel pump with a supplied hose clip.

Cut the black fuel line and sheath to length to reach the firewall fitting. Cover the open end of the fuel line to prevent dust or dirt from entering the fuel system. The fuel line will be connected to the firewall fitting after the upholstery has been fitted.

Final check

At this stage you should have connected the fuel filter, the electric fuel pump, the fuel tap in the console and the black fuel hose (which is now trimmed to length for the firewall fitting and sealed) and sized the red fuel lines from the upper fuselage conduits through to the fuel header tank and stored the lines for later fitting.

Check that all the flow arrows on the fuel filter, the electric fuel pump and the fuel tap are pointing in the correct direction, which is away from the header tank and towards the engine.

Check that the fuel lines are routed smoothly with absolutely no kinks and that there are no rough edges anywhere nearby that could rub against the fuel lines, and then check that the open ends of the fuel lines and the header tank input fittings are all covered so that no foreign objects can enter.

This completes the *Pre-Paint>Fuselage>Interior>Fuel system* task.