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Issue 1

Service Letter

Subject:

Uneven fuel feed from wing tanks.

Reports from some GA8 Airvan operators have shown that uneven fuel burn may occur in service.

This Service Letter is intended to provide a guide to identifying the cause of uneven fuel burn and instructions for correcting the problem.

Applicability:

All GA8 aircraft.

Background:

The Fuel management system Gippsland Aeronautics has designed for the Airvan, when setup correctly, will feed fuel evenly from both wing tanks throughout a flight. By using a pair of float valves in the sump tank, fuel feed from each tank can be regulated. Fuel from each tank is supplied to the sump tank via crossed over feed lines, i.e. the left wing tank feeds fuel to the right float valve in the sump tank and vice versa; the purpose of this design feature is to ensure that if a wing heavy condition exists due to more fuel in one tank than the other fuel will be used from the lower (heavy) wing as shown.

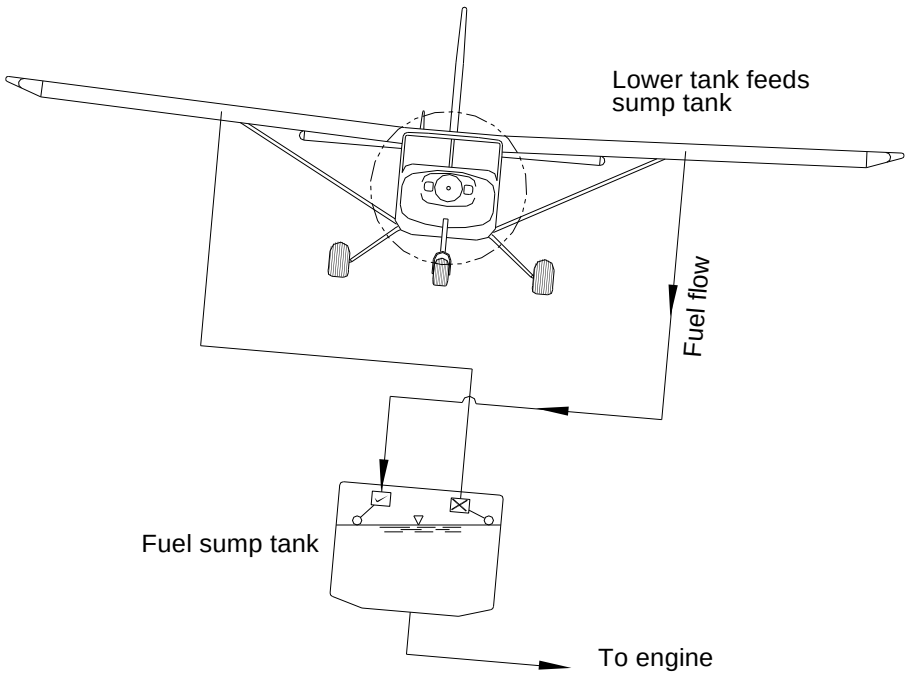

Figure 1

Flying with the (heavy) wing low will cause the fuel level in the sump tank to be such that fuel will feed from the lower (heavy) wing. Trying to feed from a full tank by holding it high, has the opposite and undesirable effect in the Airvan.

The fuel system in each Airvan is carefully calibrated and set during manufacture to feed fuel evenly. If an uneven fuel feed becomes evident it is in most cases caused by an event in the aircraft's recent history, such as refuelling from drums which may have introduced contamination to partially restrict the fuel strainers, thus reducing flow from one wing. Maintenance around the sump tank may have caused minor adjustments to the lateral level of the collector tank and caused a change in the feed rates from each fuel tank. The Sump tank is located under the floor just forward of the Co-Pilot seat.

Weight and Balance:

Nil change.

Recommendations:

It is important that maintenance personnel take time to ensure they have a full understanding of the fuel system and its various components. They should also ensure that all precautions and maintenance practices are carried out in accordance with the GA8 Service manual.

If the fuel imbalance becomes 100 litres (26 US Gal) or more between wing tanks an investigation as to the cause should be conducted.

Instructions:

1. Using the following chart as a guide inspect and service the fuel system as required.

The fuel system should be serviced IAW the GA8 Service manual Chapter 28 before further troubleshooting.

To identify the cause of uneven fuel feeding investigate the following areas in this order.

a) Flight, aircraft rigging, instruments and piloting,

b) Feed, vents lines, fuel lines and strainers,

c) Flow, sump tank level and float valves,

2. Actions to take

Possible Cause	Possible Remedy
a) Flight	
Aircraft is not flying straight and level "hands off".	Use LH wing cam (SL-GA8-2004-02) to adjust wing low condition or Rudder Tab (SB-GA8-2005-22) for yaw correction.
Aircraft flown out of balance.	Check Turn Coordinator is level in the instrument panel when the aircraft is level.
Indication only of fuel imbalance.	Fuel sender or gauge problem, calibrate system IAW Service Manual Chapter 28-40-00.

Possible Cause	Possible Remedy
b) Feed	
Blockage in the vent system of one tank.	Check and clean IAW Service Manual Chapter 28-10-40
Restriction / blockage of both tank outlets in one tank.	Clean finger filters IAW GA8 Service Manual Chapter 28-20-00.
Restriction / Blockage between the tank outlets and Fuel strainer.	Check plumbing for obstructions to Fuel flow.
Dirty fuel strainer gauze.	Clean strainer Gauze IAW Service Manual Chapter 28-20-00.
c) Flow	
Uneven flow through the sump tank float valves.	Adjust lateral level of the tank to achieve flow within Service Manual Limits. See instructions below for lateral adjustment of sump tank.
Sump tank float problem.	Remove top panel from the sump tank and inspect floats for freedom of movement or sunken/stuck float IAW Service Manual Chapter 28-40-00.

Sump Tank Lateral adjustment.

Lateral adjustment by rocking of the sump tank can be achieved to cause minor changes

to the rate of fuel used from one tank in comparison to the other.

Generally small corrections to the lateral level of the tank are sufficient to alleviate most cases of uneven fuel burn.

The flow of fuel from each wing into the sump tank is regulated by individual float valves in the sump tank.

The fuel lines from each wing tank cross over prior to entering the sump tank.

(The right wing tank supplies the left float valve and the left wing tank supplies the right float valve).

As a result of this cross over the fuel flow into the sump tank should be biased toward the wing tank which remains the fullest or is using the least amount of fuel during flight.

NOTE:

Prior to any adjustment of the lateral level of the sump tank to correct uneven fuel usage, ensure that the turn coordinator is level in the instrument panel when the aircraft is level on the ground and that the aircraft is rigged so that the aircraft will fly straight and level in yaw and roll without the need for control input, ensure that no fault or problem with the fuel delivery or venting system exists that could cause uneven fuel usage.

Adjustment to the lateral level of the fuel sump tank can be carried out as follows:

1. With the Co Pilot seat and the floor panels that cover the strainer valves and sump tank removed, turn off both service valves at the fuel strainers and drain all of the fuel from the sump tank.

2. Loosen the fuel lines at the sump tank fittings.

   The tank is held in its lateral position by washers fitted to the top of the tank (shown in Figure 2), these washers bear against the bottom of the cover panel.

NOTE:

If the sump tank does not have AN970-3 washers installed as shown in Figure 2 they can be installed by counter sinking 4 x AN970-3 washers to suit the heads of MS24694S50 screws, these screws are then used to retain the washers.

3. By adjusting the position of these washers from side to side the lateral level of the tank can be adjusted.

4. Removing washers from the left side of the tank will cause the tank to rock to the right; removing washers from the right side will cause the tank to rock left.

5. Washers can be removed from one side only or removed and added to the existing washers on the other side as required to achieve the desired amount of lateral movement.
The collector tank should be rocked or biased towards the tank that remains fullest or is having the least amount of fuel used from it.

6. The tank should be rocked in the required direction and held in this position whilst re- tightening the fuel fittings.

7. Place a small amount of PR1422, Pro Seal or equivalent around the base of the washer and screw for final assembly.

8. Turn on both service valves and ensure that the strainer hold down plates are correctly installed and lock wired.

9. Check for any evidence of leakage.

10. Install floor panels.

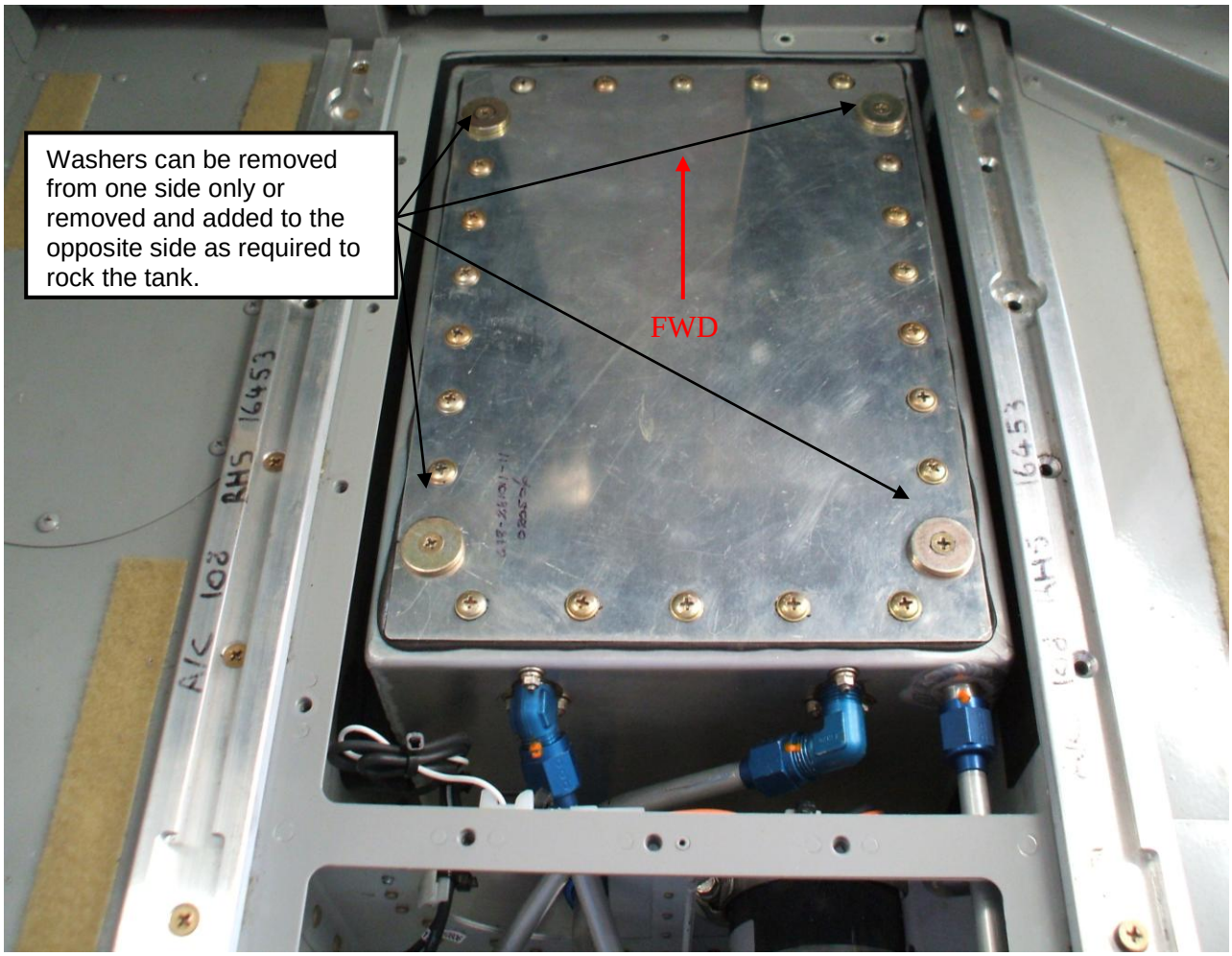

Figure 2