

SNOW ENGINEERING CO.
WICHITA FALLS, TEXAS

ENGINEERING

REPORT
ORDER



NUMBER

178

MODEL

ALL

SERIAL

ALL

PAGE

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OF

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TITLE

SERVICE LETTER #178
(FAA APPROVED)

BY

CHK'D

DATE

04-08-99

* Reissued 3/15/02
Reissued 3/23/09

SUBJECT

Imbalance of fuel in fuel tanks.

MODELS

All

SUMMARY

This Service Letter is to provide guidance to the Owner/Operator in preventing and/or minimizing the imbalance of the fuel level between the left and right main fuel tanks, which could lead to fuel starvation if one tank goes dry.

The fuel imbalance can result from migration of fuel from one tank to the other, or uneven fuel flow to the header tank. This can be caused by a number of different things. The following is a list of the potential sources:

1. Fueling one tank only and expecting the other tank to reach the same level prior to takeoff.
2. Rudder trim being off in either direction, causing a slight slip or skid during flight.
3. Flying the aircraft in a slip or skid condition.
4. Always turning in one direction during the spraying operation. This is sometimes referred to as "race tracking".
5. For planes having the single fuel receiver, operators are encouraged to frequently monitor the fuel quantity in each tank and to leave the selector switch on the low tank when the $\frac{1}{2}$ tank fuel level is reached.

Later Air Tractors incorporate two fuel receivers on the upper instrument panel so that the contents of each tank can be determined at a glance. Operators may order a retrofit kit to convert planes with the single fuel receiver to the dual receiver configuration.

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6. The fuel tank vent system could have blockage due to buildup of contaminants by nature or the flight environment. Insects can be the source of this problem. Check the fuel vent system on a routine basis for uninterrupted air flow to the tank.
7. A stopped up or partially blocked wing finger strainer can cause a reduced flow. The finger strainer should be checked periodically for contaminants that enter the tank during refueling.
8. Parking the aircraft on an uneven or slanted surface for an extended period of time prior to takeoff.
9. The fuel cap o-rings can become degraded, which will lead to fuel venting or loss of fuel in flight. This is due to the fact that the fuel tank vent induces positive pressure to the tank, and the low pressure on the top of the wing in flight tends to draw the fuel out. The fuel cap can be tightened by adjustment of the castellated nut. If the venting persists, replace either the internal or external o-ring, or both. The external o-ring should be inspected periodically for cracking or "set" in the material.
10. On applicable turbine engine models, equipped with the FCU (Fuel Control Unit) air purge line, the line should be inspected for both condition and proper routing.

Air Tractor Service Letter #128 provides additional information on the incorporation of a firewall restrictor orifice to reduce the flow rate of fuel discharged from the FCU. Service Letter #128 is reissued with this one.

The above listed sources of fuel imbalance are the most common that Owner/Operators have encountered. There may be others unique to that particular Operator that Air Tractor, Inc. is not aware of.

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Air Tractor has enlarged the header tank on later models of the AT-402 and AT-502 series, changing from a 3-inch diameter tube to a 4-inch diameter tube. The purpose of this change was to allow longer periods of uncoordinated flight or flight at extreme pitch angles during a low fuel condition. Operators with the smaller header tank may order a retrofit kit from the Factory if desired.

In addition, Air Tractor has developed a low fuel warning system for the turbine models. This incorporates a level float switch in each tank. When the fuel tank level reaches a minimum safe level, a red panel warning light will illuminate, warning the pilot to land as soon as practical. A retrofit kit is available from the Factory if desired.

Contact the Customer Service Department at Air Tractor for your specific question, or to obtain more detailed information on the operation of your airplane.