Fuel Flow Option - Installation and Calibration of the FloScan Turbine Flow Sensor for Model 2000/4000/6000

Installation

Important! Follow these instructions!

Turbulence in the fuel line caused by valves or sharp elbows mounted close to the flow sensors inlet or outlet will cause erratic readings and reduces accuracy. The sensor should be installed with at least 5 inches of straight or gently curving fuel line before and 1-2 inches after the sensor and the first valve, elbow, or other turbulence producing device. A gascolator or filter should be installed upstream of the flow sensor to filter out debris which could affect sensor operation. The vapor venting design of the sensor requires that it be positioned with the electrical wires pointing up.

The sensor should be retained with two 1/4" bolts through the mounting hole provided. Fuel line connections are made via the 1/4" FPT threaded inlet and outlet. Do not exceed a torque of 15 ft-lbs (180 inch-lbs) or 2 full turns past hnad tight, whichever occurs first. Be sure to install the sensor such that the fuel enters the port on the sensor marked "IN".

For dual fuel flow sesnor versions of the EIS, a second flow sensor is installed in the fuel line which returns fuel from the engine, back to the tank.

The flow sensor has been designed so that should the internal rotor become blocked, fuel will continue to flow without a significant increase in pressure drop across the sensor.

After completion of your fuel system, be sure to verify adequate fuel flow according to current regulatory requirements. (Typically a minimum flow rate of 125-150% of full throttle fuel flow is typically required.) The FloScan model 201B sensor will cause a pressure drop of 0.13 psi at 10 gallons/hour, 0.3 psi at 15 gallons per hour, 1.2 psi at 30 gallons/hour, and reaches 4.8 psi at 60 gallons/hour.

Wiring

The three wires commecting to flow sensor to the EIS are color-coded. Two of the wires from the flow sensor connect to inputs of the EIS. These are the red and white wires. Connect the flow sensor's red wire to the instrument's +12V Fuel Flow Power. Connect the flow sensor's white wire to the instrument's Fuel Flow input. The black (ground) wire should be connected to any convienent source of ground. 20 or 22 gauge stranded wire should be used for these connections. No fuse is required. A connector of your choice can be used if desired.

Calibration

Calibration can be performed according to the following procedure to increase the accuracy of the system for your particular installation. Calibration is a controlled via the FloCal entry on the configuration set pages. These pages are accessed by pressing and holding the center and right button for 3 seconds. The right button is used to advance to the FloCal entry.

The nominal entry for the FloCal entry is 200 when used with a FloScan 201B sensor, or 380 when used with the Flow Technology sensor. This setting should be used until initially.

After your fuel system has been verified to be functional and free of any leaks, the following procedure can be used to maximize the accuracy of the fuel flow function.

Starting with the aircraft filled to capacity (or some other accurately repeatable quantity), enter this amount into the EIS fuel quantity setting. Each time a fuel is added to the aircraft, use a log as shown in the example below.

At the completion of the calibration period, fill the aircraft to capacity (or whatever quantity you started with). Use the log to calculate the actual total quantity of fuel used during the calibration period, and the total fuel recorded as used by the totalizer (by adding up the column "Totalizer Change"). In this example the fuel flow system is reading slightly high. Now compute the new FloCal setting by taking the current setting (in this case, 200) multiplying by the actual fuel used (46.4) and dividing the result by the sum of the totalizer changes (47.4). Reset the FloCal to this value, in this example 196. Calibration is complete, but this log may be continued until you have achieved the desired accuracy.

Pulsation Dampener

A pulsation dampener may be required if the fuel flow readings are erratic, or if they read higher when an electric fuel pump is turned on. This is mostly likely when the fuel system is composed of mostly metal fuel lines, and there is no trapped air in the system. A pulsation dampener can be fashioned by installing a tee in the fuel line between the electric fuel pump, and the flow sensor, and connecting a 1 or 2 foot piece of tubing to this tee, oriented vertically up. Cap the end of this tubing to trap air in this line. Most often no provision is required for a pulsation dampener, as the fuel line leading to the fuel pressure sensor traps air and performs this function.

Starting Fuel Onboard 20.0 Starting Totalizer 20.0

Fuel Added	Totalizer Reading	Totalizer Change	Totalizer Set to:	
8.5	11.3	8.7	20.0	tank filled
5.4	10.5	9.5	15.9	partial fueling
9.0	10.3	5.6	20.0	tank filled
5.3	14.3	5.7	20.0	tank filled
2.9	5.3	14.7	8.2	partial fueling
15.3	5.0	3.2	20.0	tank filled

Ending Fuel Onboard 20.0

Total Fuel Added 46.4 Sum of Totalizer Changes 47.4