



SI 2010/2

SERVICE INFORMATION

to all distributors, owners

Fuel system optimization for use with fuels with ethanol content

INFORMATION / RECOMMENDATION

Please pay attention to the following safety definitions used in this service information:

WARNING! Disregarding the following instruction leads to severe deterioration of flight safety and hazardous situations, including such resulting in serious injury and loss of life.

CAUTION! Disregarding the following instruction leads to serious deterioration of flight safety, may cause serious damage to the aircraft and suspend warranty.

Applies to all Pipistrel aircraft.

Distributors are to translate this service information into their native language and forward it to all customers as soon as possible

Please see following page(s) for further details.

Fuel system optimization for use with fuels with ethanol content

One year ago Pipistrel published the service information letter SI2009/1 about Use of Fuels with Ethanol content. Together with Rotax, as the manufacturer of the engines installed on Pipistrel aircraft, we cleared the use of fuels which contain up to 10% ethanol.

Since then, we have been collecting owner's feedback from actual field use and based on this information, we are issuing this service information letter. The aim is to ensure reliable operation when using fuels with ethanol content in the future and share the knowledge on this topic the owners/users.

While Ethanol by itself has no direct effect on the performance of the engine (operating temperatures etc.), several abnormalities were observed in the fuel system of certain aircraft. This includes more rapid contamination/accumulation of water in the gascolator and malfunction of the gasket found inside the fast fuel connectors (cockpit fuel connectors).

From field use and our own tests we can conclude that the gaskets (seals) inside the fast fuel connectors sometimes react to the ethanol found in the fuel, when using non-Avgas fuels. The Viton/rubber gaskets (seals) swell and start blocking the flow of fuel through the connector, although the manufacturer of the fast fuel connector claims they are approved for all fuels. As the types of ethanol and its content percentage varies from fuel provider to fuel provider and from country to country, it is impossible to find a universal solution in form of replacing the gasket (seal) material in the fast fuel connectors. Therefore the following recommendation is issued:

It is recommended to eliminate the use of fast fuel connectors when using fuels with possible ethanol content (non-Avgas fuels) when practical.

We are aware that certain operators will continue to fly with the fast fuel installed, due to the nature of their operations (often assembling and disassembling the aircraft). The use of fast fuel connectors is still permitted, however Pipistrel cannot guarantee reliable operation of the fuel system when fuels with possible ethanol content are used. In this case, it is recommended to verify the fuel flow through the connector before each flight to ensure adequate fuel supply towards the engine. This can be done either with an auxiliary fuel pump (flow should be 1 liter per minute or more), or by running the engine on full power (on ground) for each reservoir. The engine must function on full power for 90 seconds or more – pay attention to the operation temperatures while performing this check.

When using fast fuel connectors, verify the fuel flow through the connector before each flight to ensure adequate fuel supply towards the engine.

In addition to the above information, the recommendations from the SI2009/1 still apply:

- When using fuel with ethanol content, use the freshest fuel possible.
- Check your fuel tanks for water before adding fresh fuel.

- Do not store fuel with ethanol content in cans for more than a couple of weeks, unless you live in a dry climate.
- Buy your fuel when you plan to use it.
- Perform fuel drains using the gascolator multiple times. If you find water when draining your gascolator, phase separation has probably occurred, and there is likely to be a significant amount of water/alcohol mix somewhere in your fuel system. Your engine will not run on this separated mix, so it should not be allowed to make its way to the engine.
- You must make a more complete investigation of your fuel system to look for water before attempting a takeoff. This holds true for gasoline with any percentage of alcohol/ethanol mixed in. When you have found water in your gascolator, you should consider draining a significant amount of fuel (at least 10 liters/2 gallons) from each tank through the gascolator; then check the drained fuel for water contamination. Continue draining fuel until all the water has been removed. The gascolator is at the lowest point in the fuel system, so the aircraft must be level for all the water to from the system pickups towards the gascolator.
- Fuel containing ethanol also suffers from an increased susceptibility to vapor lock, which occurs when fuel vaporizes in the fuel lines because of higher temperatures and/or reduced ambient pressure at higher altitudes. With Pipistrel aircraft, there is a special vapor bleed-back systems that help purge and return any vaporized fuel back to the fuel tank before it reaches the carburetors. However, if you live or fly in an area where conditions may be conducive to causing vapor lock and you use fuel containing ethanol, be aware that the possibility of vapour lock is increased.

Actions

Should you decide to replace your fast fuel connector(s) with a fixed fuel system attachment, Pipistrel has prepared a kit, containing all necessary parts for the job. The kit can be ordered under the *PN 1158053 (Retrofit kit f/ Fixed fuel connectors)* at a nominal fee of €34.50 EUR. The estimated man-hours for the replacement of the fast fuel connector with the fixed fuel system attachment is 2 hours.

WARNING: When replacing the fast fuel connectors, make sure that fuel does not drop onto the Lexan glass and/or windows, as this can cause optical degradations to the material!

Distributors

As a distributor you are kindly ask to assist your clients should they require/wish to replace their oil sensor.

Pipistrel d.o.o. Ajdovscina
Leon Breclj, Head of Service

THIS IS THE END OF THE SERVICE INFORMATION.