

INFORMATION SAFETY NOTICE!

Incorporation of the mandatory fuel return line of ROTAX Engine Type 912 (Series)

MANDATORY

The purpose of this Information Safety Notice is to inform **ROTAX** operators and owners about the mandatory fuel return line that is required to be incorporated into the aircraft's fuel system design.

As per the **ROTAX** installation manual, a Mandatory "restricted" fuel return line is to be incorporated within the aircraft's fuel system. The purpose of the fuel return line is to bleed off any vapors that may form within the fuel system that could cause vapor lock, resulting in a possible loss of engine power.

Please reference the latest **ROTAX** installation manual and check with the manufacturer of the aircraft to verify a fuel return line has been incorporated within the design of the aircraft's fuel system.

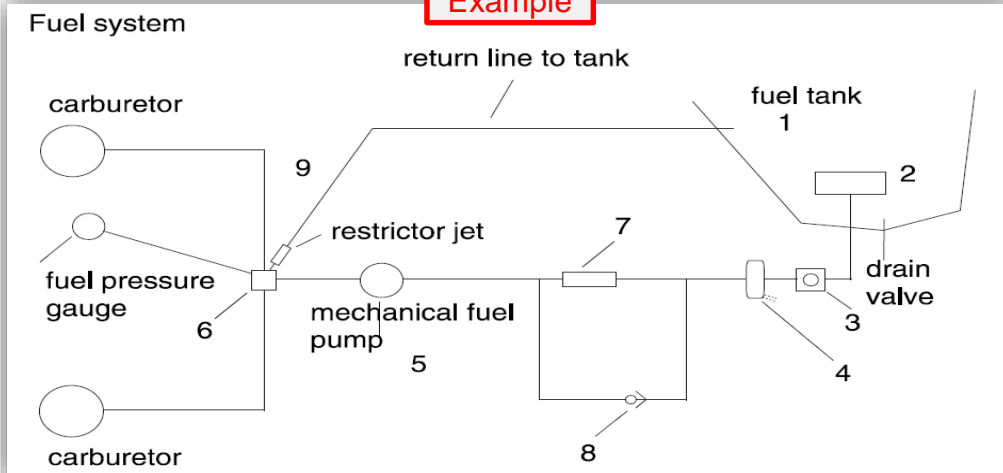
The latest Rotax Installation Manual can be found at www.FlyRotax.com OR www.rotax-owner.com

Return line

Via the return line (5) surplus fuel flows back to the fuel tank and suction side of fuel system.

NOTE: The return line prevents malfunctions caused by the formation of vapor lock.

Example



Additional Information

What is this Information Safety Notice about and how does it affect me?

Field reports have indicated a potential for fuel system vapor lock leading to loss of engine power or stoppage due to one or more of the following variables.

- Fuel system design
- Engine cowling design
- Fuel quality
- Seasonal adjustment on fuel
- High ambient temperatures

Owners and operators need to consider all of the above and understand how they may contribute to fuel system vapour formation.

Fuel System Design

Fuel system design is one factor in managing the formation of vapour in the fuel system due to heat soak. Fuel system components in close proximity to engine heat sources should be adequately protected from heat soak. Fuel line routing, heat shielding, fire sleeve etc. all influence fuel system temperatures.

Example



Fire Shield Sleeve

Offers thermal and physical protection

- Silicone layer can be cleaned and protects against abrasion
- Helps to prevent vapor lock, protects wires from melting
- Reduces and dissipates heat

Engine Cowling Design

Engine cowling design is another factor which can greatly influence heat soak on engine fuel system components. Tightly cowled engines can run much hotter under-cowl temps than more open cowl designs during certain conditions such as taxiing and climb.

Owners and operators need to understand their aircraft's temperature limitations and respect them. Rotax defines maximum component operational temperatures in the respective engine installation manual.



Example

Modifications made to the top engine cowl in order to provide adequate airflow over heat sensitive components.



Fuel Quality

Fuel quality can play a large influence on the formation of vapour. Inadequate storage, handling and contamination can all affect fuel quality. Always respect the minimum fuel requirements as outlined by Rotax, maintain good storage practices and source the best quality fuel possible.



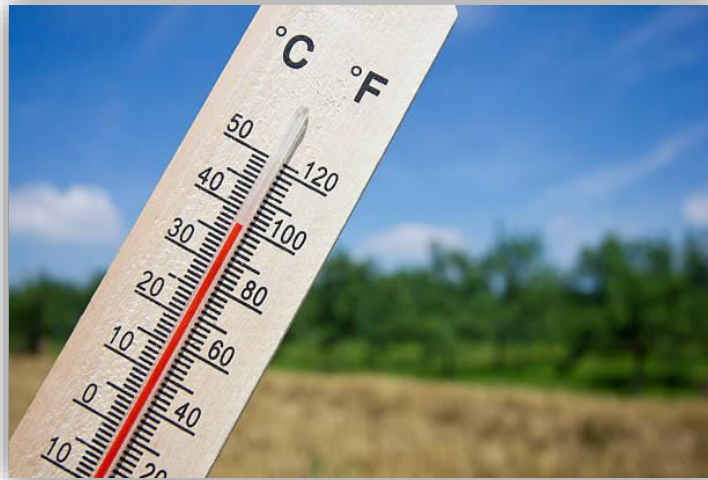
Seasonal Adjustments

Seasonal adjustment of fuel by manufacturers for high summer temperatures and low winter temperatures may affect the fuel vaporization rates. This can have consequences when using winter grade fuel in hot summer months. **Always use seasonally correct fuel.**



High Ambient Temperatures

High outside ambient temperatures may increase under-cowl operating temperatures and therefore increase the fuel system heat soak. Owners and operators may need to adjust performance expectations when operating in such conditions.



How Does This Affect Me?

In consideration of the above variables, Rotax has updated the engine installation manual to mandate the use of a fuel return line. Such a design helps to vent off the formation of fuel vapours, increasing the safety margin. Owners and operators are urged to consider all the aforementioned and review their fuel system design with their respective aircraft manufacturers.



Supplementary Information

For supplementary information regarding the above subject, you can review the following videos regarding aircraft fuel system and engine cowling design on www.Rotax-Owner.com in the Builder Series section.

NOTE: Although this video series is for the fuel injected engine, it is still relevant to the carbureted 912 series engines with respect to fuel vapor formation and cooling systems.

Rotax Builder Series - 912iS CH750 #6



Rotax Builder Series – 912iS CH750 #7



Rotax Builder Series – 912iS CH750 #8



Rotax Builder Series – 912iS CH750 #9

