

Report of Findings

Date of accident: October 5 2019
Location of accident: Garden Ridge, TX
Aircraft registration: N701BJ
Aircraft type: Zenith CH701
Engine type and S/N: Rotax 912UL S/N 4400510
NTSB file number: CEN20LA005
Date of Report: 10/18/2019
File number: 2019-055

Original Accident Location: Garden Ridge, TX

Preliminary engine inspection

Inspection carried out at: Owners hanger, Kitty Hawk Flying Field Texas

Date of inspection: 10/18/2019

Persons in attendance

Oversight by NTSB/FAA personnel:

FAA – Michael Smith – Aviation Safety Inspector

Additional attendees:

- Owner/Pilot

ENGINE

Rotax Engine Model Number: 912 UL

Rotax engine serial number: 4400510

Production Date: 17.10.1995

OVERVIEW:

- See NTSB Preliminary Report

Initial condition of Engine as presented prior to detailed inspection

- Engine still attached to engine mount and firewall of aircraft
- Engine cowling still attached
- 2/4 Carburetor choke lever detached at control valve on carburetor. It appears the retaining nut had backed off, resulting in the lever falling off the attachment point.
- Fuel system had a fuel pressure regulator installed
- Inlet fuel line to fuel pump cracked
- Exhaust pipe loose where it attached to #3 cylinder head
- Water bottle used for coolant overflow tank

Detailed Engine Inspection

Spark Plugs & Spark plug Caps

#1 Top Spark Plug- NGK DCPR7E Removed and examined. Electrode appeared in normal used condition.

#2 Top Spark Plug- NGK DCPR7E Removed and examined. Electrode appeared in normal used condition.

#3 Top Spark Plug- NGK DCPR7E Removed and examined. Electrode appeared in normal used condition.

#4 Top Spark Plug- NGK DCPR7E Removed and examined. Electrode appeared in normal used condition.

#1 Bottom Spark Plug- NGK DCPR7E Removed and examined. Electrode appeared wet but in normal used condition.

#2 Bottom Spark Plug- NGK DCPR7E Removed and examined. Electrode appeared wet but in normal used condition.

#3 Bottom Spark Plug- NGK DCPR7E Removed and examined. Electrode appeared wet but in normal used condition.

#4 Bottom Spark Plug- NGK DCPR7E Removed and examined. Electrode appeared in normal used condition.

Ignition System

- The ignition system was externally examined for condition and modifications. No anomalies were seen. The ignition system was tested during engine test run and no anomalies were noted as the ignition system operated normally.

Fuel System including carb inspection and fuel lines

- The fuel system including the carburetors were examined for condition. The fuel feed line to the mechanical fuel pump was badly cracked. The float bowls were removed and inspected. Some debris was found in the 2/4 carburetor, however the main jet was clear of any obstructions. The 2/4 Carburetor choke lever was not attached and it appeared the retaining nut had fallen off.
- Fuel system was not designed as per the Rotax instructions. No fuel return line was installed.

Lubrication system

- The lubrication system was externally examined for condition and conformity. No anomalies were seen.
- The oil cooler was slightly damaged from impact and was breached. The oil cooler was bypassed for test run purposes.

Cylinder and cylinder head

- The cylinder heads were examined for condition. No anomalies were seen

Push rod & valve train

- The engine was rotated by hand and continuity was established.

Cooling system

- The coolant system was externally inspected. No anomalies or breaches were seen. The expansion bottle was found to be full of what appeared to be coolant. The inlet hose to the coolant radiator had a small leak and the hose clamp was tightened for test run purposes.

Air Filter system

- A K&N air filter was found installed with dirty grey pleats

Exhaust system

- The exhaust system had a heat wrap installed. The exhaust pipe that attached to the #3 cylinder head was loose with the attachment bolts backed off.

Gearbox

- During the continuity and compression check the propeller blades were rotated by hand. No unusual noises or binding was observed during this procedure.

Crankcase and crankshaft

- During the continuity and compression check the engine was rotated by hand. No unusual noises or binding was observed during this procedure

Engine Maintenance and Journey Log

- Not provided for review

Engine Test Run

After an initial inspection, it was determined the engine was in good enough condition to be test ran.

The damaged propeller was removed from the engine and a new propeller was installed for test run purposes. The aircraft was then repositioned outside the hanger and tied down with the use of a rope and a van as an anchor point.

The engine was then turned over with the use of the engine's electric starter. After a few rotations the engine started and ran at idle. The throttle was then advanced to around 3500 rpm and then to 4000 RPM. All engine parameters appeared normal and after several minutes, the engine was shut down.

No anomalies were noted during the engine test run.