



MEMORANDUM FOR RECORD

Todd Gunther
Air Safety Investigator
Eastern Region

Date: October 13, 2020
Subject: Engine Examination
NTSB Case Number: ERA20LA341

On this date the engine from N562TU was examined.

Persons in Attendance:

- Inspector Steven O'Rourke (FAA)
- Mr. Jordan Paskevich (Rotech Flight Safety)

Oversight was provided by Inspector O'Rourke

Engine:

Rotax Engine Model Number: Rotax 912ULS

Rotax engine serial number: 9569181

Summary of Examination:

Spark Plugs & Spark plug Caps

- Spark plugs were not removed from the engine.
- Spark plug caps were physically examined, and no anomalies found.

Ignition System

- Ignition system not tested only physically examined. No anomalies found.

Fuel System

- Fuel lines inspected for condition, routing, and proper type. No anomalies found.

- Fuel pump was physically examined but not tested. No anomalies found.
- The tops of the 1/3 and 2/4 carburetors were removed and the piston slides examined. Some aluminum FOD was found in the body of the 1/3 carburetor next to the diffuser. Oil was found in the body of the carburetor.
- Aircraft was equipped with an electric fuel pump. The fuel pump was not function tested only physically examined. No anomalies found.

Lubrication System

- Oil cooler installed upside down
- Oil thermostat installed in the oil system
- Proper Rotax Oil filter installed
- Oil lines were in good condition with fire sleeve protection
- Oil cooler was undamaged
- Oil tank was undamaged
- Oil system was not breached
- Oil was found in oil tank
- Oil pump was inspected, and no anomalies found

Cylinder and Cylinder head

- #1 Cylinder valve cover was removed to expose the #1 valvetrain. The #1 exhaust valve spring retainer was found broken and the exhaust valve had fallen into the #1 combustion chamber. Engine oil was found contained within the valve cover (Normal)
- #1 & #3 intake manifold was removed. A buildup of metallic material was found contained in the #1 intake of the cylinder head. The stem of the #1 exhaust valve was still in place; however, the head of the exhaust valve was no longer attached.
- #1 Cylinder head was removed and substantial damage to the cylinder head, piston and valves was discovered. The #1 exhaust valve head was found imbedded into the intake valve.
- #1 intake valve was substantially damaged from the impact of the #1 exhaust valve head.
- #1 Piston was substantially damaged with a large hole. This was from impact with the #1 exhaust valve.
- #1 cylinder was found damaged.
- #1 Piston was removed from the connecting rod. The connecting rod was found damaged (bent and twisted)
- #3 valve cover was removed to expose the #3 valvetrain. No anomalies seen and engine oil was found contained within the valve cover (Normal)
- #3 Cylinder head was removed and a buildup of FOD was found contained in the #3 combustion chamber. The #3 piston was damaged from this FOD.
- #3 Cylinder head was damaged from FOD, and multiple impact marking were seen.
- # 2/4 intake manifold removed
- # 2 valve cover was removed. No anomalies found and engine oil was found contained within the valve cover (Normal)

Cooling System

- The cooling system was not breached or damaged. Coolant was found contained within the cooling system.

Gearbox

- The gearbox was removed from the engine and inspected. No anomalies found.

Crankcase and Crankshaft

- The engine was disassembled, and the crankcase and crankshaft were examined, and no anomalies found.