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Date: May 5, 2022 & July 12, 2022

Subject: CEN22LA186

Contact: Terry Bryant, FAA

FAA Inspector Terry Bryant provided the following observations during an examination of the engine on N4303P:

On 05/05/2022 traveled to Huntingburg Indiana to perform an inspection on engine from N4303P. The aircraft was on a trailer with the wings removed. The way the aircraft fuselage was situated on the trailer, we were able to turn the prop for a $\frac{3}{4}$ turn.

Items noted:

- Throttle and Mixture cables worked properly and hit their respective stops.
- Air intake and filter were unobstructed
- Fuel did not show any contamination nor contain water
- Main fuel screen was clean and unobstructed
- Last chance screen was clean and unobstructed
- Fuel pump provided suction and there did not appear to be any issue with the pump valves with a visual inspection
- The fuel pump actuating finger was actuating
- Fuel was noted at the fuel distribution valve (spider)

- The boost pump was not checked. The wings/fuel tanks were disconnected. Pilot and passenger both stated that the boost pump did not affect the engine speed when turned on
- The top spark plugs were removed, and appeared normal
- Compression could not be checked due to the prop turning only a $\frac{3}{4}$ -turn
- Mags were not checked as the engine was running - idle.
- The engine appears to have been running at touch down as there is impact damage to all three tips (pilot does not remember if the engine was running)

The passenger that was in the aircraft at the time of the incident is also a pilot. When the engine lost power and the pilot made determination where they would land, the passenger began running the check list. That is he selected boost pump on, alternate air, mixture full rich. All which did not provide power. When they attempted to increase throttle, the engine was begin to stall. The engine would stay running only at idle.

On 07-06-2022 traveled to Sullivan, Indiana to accomplish an attempt to run the engine of N4303P.

The engine was checked and prepped for the run including a check of the exhaust system to verify that it was clear. A fuel can with fresh fuel was connected to the fuel system as the wings of the aircraft were removed from the aircraft. Items noted from the run:

First run:

- The engine would run up to 1400 RPM but any attempt to go higher would kill the engine.
- The engine would run at full mixture and any attempt to lean the engine would kill it.
- Running the engine on the mechanical fuel pump or the boost pump did not make any difference.
- Engine would idle at 600 RPM.
- When running at 1400 RPM, and as the throttle is retarded the engine attempts to increase in RPM but then drops off.

Second run:

In my previous notes to Jason, in a conversation with a Lycoming accident investigator, he stated that he would check the fuel nozzles and then the fuel servo.

- Fuel nozzles were removed from the engine, and they were inspected for obstruction and ultra-sonic cleaned for 30 minutes. No obstruction was noted before or after cleaning.
- Containers were placed at the ends of the fuel lines with the nozzles removed and the boost pump was run for 5 seconds. The containers were visually checked, and it appeared that equal amounts of fuel was supplied to each fuel nozzle.
- The engine was started and we were able to get 1500 rpm on this run, but no higher
- Leaning the mixture would cause the engine to fall off.
- A mag check was performed with normal results.
- The propeller was loaded and the engine dropped from 1500 rpm to 1300 rpm. It would not accelerate further.
- It appears that the next item to check should be the fuel servo.

The mechanic noted that the fuel servo and the spider were overhauled at the same time as the engine at 2011.1 hours March 2002. Current time on the engine is 4383.3. I do not know what the overhaul times for the fuel servo.

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