

Date of Inspection: September 29, 2020

Location: ODX Evelyn Sharp Field - Ord, Nebraska

FAA Operations ASI: Tim Kray [REDACTED]

FAA Airworthiness ASI: Don Kendall [REDACTED]

A&P Mechanic: Nathan Maten [REDACTED]

Aircraft: N57607 Piper PA-36-285 SN: 36-7660006

Engine: Lycoming IO-720-A1B, NO. L 1315-54A

A post-accident examination of the subject engine was performed by the A&P mechanic and witnessed/documentated by the FAA inspectors. The following data was collected using the Piston Exam Checklist (100 Hour) that was provided by our NTSB point of contact. Pictures were taken throughout the engine inspection and will be provided with this report. If there is anything specific that was not captured in this report or by the pictures, please contact us or the mechanic.

NOTE: The engine was removed from the aircraft and placed on a pallet prior to this inspection.



Visual Documentation:

- All three propeller blades deformed.
- Right mag separated from the engine.
- Oil filter housing cracked.
- Exhaust damaged
- Engine mounts were cut to remove engine from the aircraft. Otherwise appeared normal.
- Oil cooler hanging from its hoses.
- Oil was present in the engine and appeared normal in quantity.
- Mechanic did not note anything abnormal or unexpected during the initial visual inspection.

Remove Items Prior to Rotating Crankshaft:

- Mechanic noted that the #6 top spark plug wire was secured finger tight only. The plug was intact and appeared normal.
- Plugs 1 – 8 removed and appeared normal. 1 – 4 clean, 5 – 8 dirty.
- Fuel pump was secure and appeared normal prior to being removed.
- Fuel pump removed. Fuel was present in expected areas, hoses tight, appeared functional by movement of the drive shaft. Internal drive on the engine side moved as expected with prop movement.
- Both mags P-leads appeared to have been separated from the mags by impact.
- Cylinder covers removed and all appeared normal.
- Vacuum pump – N/A
- Other than the #6 plug wire being only finger tight, the mechanic did not note anything abnormal or unexpected.

Internal Continuity:

- Borescope of all cylinders appeared normal.
- All piston and rocker movement appeared normal.
- All thumb compression checks were normal.
- Oil movement was apparent while turning the prop.
- Fuel pump gears move with prop.
- Mag drive cases intact.
- Mag timing was not possible to verify due to internal damage the mags sustained.
- Left mag mounting to the engine appeared intact.
- Right mag was separated from the engine.
- Right mag spark check was not possible due to damage.
- Left mag was rotated by hand drill and spark generation at a spark plug was verified.
- All bottom spark plugs were removed and appeared normal.
- The mechanic did not note anything abnormal or unexpected.

Induction/Exhaust System:

- Significant portion of the exhaust system sustained damage.
- Turbocharger – N/A
- The mechanic did not note anything abnormal or unexpected.

Accessories:

Ignition System/Magnetos:

- Impulse coupling – N/A
- Mag drive cases intact.
- Mag timing was not possible to verify due to internal damage sustained by the mags.
- Left mag mounting to the engine appeared intact.
- Right mag was separated from the engine.
- Right mag spark check was not possible due to damage.
- Left mag was rotated by hand drill and spark generation at a spark plug was verified.
- Mechanic noted that the #6 top spark plug wire was secured finger tight only. The plug was intact and appeared normal.
- All bottom spark plugs were removed and appeared normal.
- Plugs 1 – 8 removed and appeared normal. 1 – 4 clean, 5 – 8 dirty.
- The mechanic did not note anything abnormal or unexpected.

Fuel Injected Engines:

- All injectors appeared intact and clean.
- Throttle body appeared normal.
- The fuel screen was inspected and noted to have a small amount of contamination (fuzz) present. Mechanic stated that it was not a concerning amount.
- Stop to stop movement of the linkages, throttle plate and associated parts appeared normal.
- Fuel flow divider appeared intact and internal diaphragm was normal.
- Air filter, other than debris/damage from impact, appeared normal.
- The mechanic did not note anything abnormal or unexpected.

Miscellaneous Accessories/Systems:

- Propeller governor installation appeared secure, intact and normal. Gasket was clean/intact and shaft movement was normal.
- Oil filter was removed and cut open for inspection. Appeared normal.
- The mechanic did not note anything abnormal or unexpected.

Other checks:

- Differential compression results –
 1. Approximately 25 psi – Mechanic noted possibly leaking past the exhaust valve. Retested after “spiking” resulted in 70+psi.
 2. Approximately 50 psi
 3. Approximately 60+psi
 4. Approximately 60 psi
 5. Approximately 53-54 psi
 6. Approximately 48 psi
 7. Approximately 52 psi
 8. Approximately 54-55 psi
- The mechanic did not note anything abnormal or unexpected as these checks were performed on a cold engine.