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Central Region

**Date:** October 2, 2023

**Subject:** CEN23LA261, Quad City Challenger, Rotax 582 Engine Exam

**Contact:** Jordan Paskevich, Chief Accident Investigator, Rotech Flight Safety Inc.

On September 6, 2023, an engine exam was performed on the unregistered Quad City Challenger at the owner's residence. Mr. Paskevich arrived at the residence a few minutes ahead of the NTSB investigators. He observed the owner installing oil injection lines onto the engine. The owner clarified that he had accidentally dislodged one of the injection lines and was presently in the process of reinstalling it. Both the PTO (Power Take-Off) and MAG (Magnet) oil injection lines appeared to be in pristine, unused condition and were lacking securing clamps. An inspection of the remaining lines, including the fuel, primer, and vent lines, revealed that they were in an aged and hardened state. Additionally, a broken piece of old, brittle oil injection line was found sitting near the oil injection pump.

The engine was found to be in good overall physical condition; however, the exterior of the engine was covered in an oil coating, particularly concentrated near the PTO piston cylinder head. Additionally, a blue oil coating was also evident on the side of the airplane consistent with the color of injected oil.

The exhaust Y-pipe was removed to expose the pistons, cylinders, and combustion chambers. The MAG piston, cylinder, and combustion chamber appeared to be in normal condition with no anomalies found. On the PTO side, however, the piston exhibited vertical scoring on all four corners, and metal transfer marks were observed on the corresponding locations of the cylinder walls. The transfer of metal was indicative of a piston seizure.