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Date: March 19, 2025

Subject: ERA25MA106, Pitch Trim Actuator Measurement

Contact: Bombardier Aerospace, Wichita, Kansas

The remainder of the pitch trim actuator was sent to Bombardier Aerospace in Wichita, Kansas for a bench measurement and disassembly. The following is a summary of that investigation.

The actuator and the primary actuator motor were secured in a box. The pitch trim actuator consists of a jackscrew assembly and two motors. The primary motor was recovered but the secondary motor was not present. The primary motor could not be tested at the facility and would not reveal information regarding the pitch trim positioning at the time of the accident, thus, the primary motor was not investigated.

The actuator as first viewed remained connected to the gear box, but the actuator was jammed from impact forces. Positions of the airplane structure remained attached to the mounting surfaces and were removed to facilitate the investigation. The jackscrew would turn but turning it did not change the extension of the assembly.

An attempt to check for free play in actuator extension was not possible because of the screw being jammed by impact damage.

The pitch trim assembly was installed into a test fixture and the calibration of the fixture was verified. According to the manufacturer, a fully extended (nose down pitch) measurement is 18.77 ± 0.030 inches. A fully retracted (nose up pitch) would measure 13.87 ± 0.030 inches. The pitch trim actuator measured at 17.3141 inches which is about 3° away from full nose down pitch attitude. A compression load and a tension load of about 100lbs was applied to the pitch trim assembly which revealed no sign of the internal threads of the jackscrew being stripped. The screw and screw dust cover were bent from impact forces which required destructive disassembly to

evaluate the screw thread condition. Once disassembled, the screw threads were found intact with no signs of overload and no stripped threads were observed. The actuator gear box was disassembled and there we no broken gear teeth or signs of overload or jamming.