NATIONL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Aerospace Engineering Division
Washington, DC 20594

February 26, 2021

COMPONENT EXAMINATION SUMMARY REPORT

A. ACCIDENT INFORMATION

Place	:	Winder, GA
Date	:	October 18, 2020
Vehicle	:	Robinson R-22
NTSB No.	:	ERA21LA024
Investigator	:	R. Hicks

B. COMPONENTS EXAMINED

Belt Tension Actuator	PN: A051-1	SN: 5444
V-Belt	NA	NA

C. DETAILS OF THE EXAMINATION

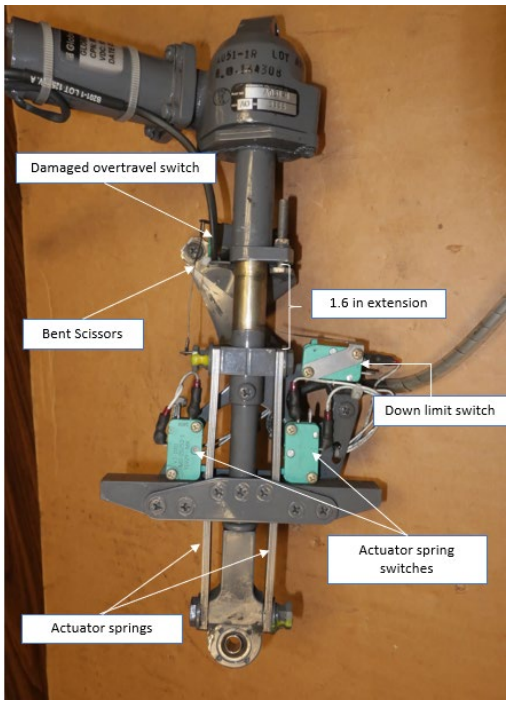

Photo 1 - Belt tension actuator

Photo 2 - V-belt

VISUAL EXAMINATIONS

Visual examination of the belt tension actuator (photo 1) showed that the scissors were deformed upward at a 90 ° angle. There was damage to the over travel switch at the terminal side. The over travel activation cable was connected at both ends. A witness mark was adjacent to the aft face of the upper sleeve, slightly above the overtravel switch. The actuator extension distance was 1.6 inches as measured between scissor mounts. There was a scuff mark around the lower mounting bearing. There was no visible damage to actuator springs, or damage to actuator spring switches. The electrical connectors were in place and the cannon plug connectors were undamaged with their pins all straight.

Visual examination of the v-belt portion (photo 2) showed that it was approximately a 24-inch length of one section of one vee of the v-belt. One end had a flat separation surface. The other end had ply separation and shredded strands. A layer of backing material was missing along the entire length. No noticeable glazing or burn on the friction surface. RHC engineers have not seen a vee section of the V-belt separated lengthwise from itself in this manner before. RHC engineers observed that the frayed end of the vee section is consistent with an overload condition.

FUNCTIONAL TEST OF THE BELT TENSION ACTUATOR

The bent scissors on the actuator assembly were straightened for the purposes of the test. The actuator was placed in a test rig and connected to a control and power source. The actuator was commanded to retract and it retracted fully to the down limit switch. The actuator was then run in the extension direction under a load and shut off when the actuator springs engaged the limit switches. The motor drew 1.8A (normal draw should be below 1.7A). Spring load activation and deactivation were measured as 1,224 lbs, and 988 lbs respectively, with a difference (delta) of 236 lbs. The specification limits for activation and deactivation are between 900 lbs – 1200 lbs, with a delta between 200 lbs – 300 lbs.

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