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TO ALL EXEC, EXEC 90 AND EXEC 162F BUILDERS

TAIL ROTOR BELT ADVISORY BULLETIN A-20

History: During 1993 RotorWay International conducted extensive testing of tail rotor belts to discover the reasons for premature failure. Test results showed that the failure of a belt could only be induced by incorrect tension. It was also felt the amount and frequency of adjustments on belts (prior to 1/94) was excessive and the search for a belt requiring less maintenance was initiated. An aramid fiber backed belt was found and tested that would resist excessive stretch and reduce maintenance. These belts were introduced 1/25/94 with the recommendation that if you should decide to change to the aramid fiber backed belt, you should also install the later style T/R idler pulley bearings. All T/R belts purchased and all aircraft delivered after 1/25/94 have the new aramid fiber backed belts.

No bulletin has been issued regarding this change; however RotorWay recommends that when using these new belts, the proper tension should be changed from the old 1" deflection per 10 lbs. of pull to a new 1 1/4" deflection per 10 lbs. of pull.

Update: In October 1994 during hover, a failure on an aramid fiber belt was reported and investigated (the aircraft was landed safely and no injuries were incurred). Through use of RotorWay's test fixture we were able to simulate the failure. The failure was achieved by over tension which created excessive heat, and under tension causing excessive slippage. Both situations created excessive heat (above 200° F) which destroys the belt. It is important to note that the center two T/R idler pulleys will operate at higher temperatures than the front and rear T/R drive pulleys. In all cases the belt that failed was the center belt.

Action: RotorWay is continuing testing and developing a new simplified method and procedure for checking the belt tension prior to each flight.

IN THE INTERIM, WE MUST EXPRESS THE IMPORTANCE OF MONITORING YOUR BELT TENSION PRIOR TO EVERY FLIGHT USING THE EXISTING METHOD WITH THE SPRING SCALE AND RULER. IF OPERATING THE ARAMID FIBER BACKED BELTS, UTILIZE THE 1 1/4" DEFLECTION PER 10 LBS. IT IS ALSO NECESSARY TO PERFORM A VISUAL INSPECTION OF ALL THREE BELTS FOR ANY DAMAGE OR EXCESSIVE WEAR EACH TIME A T/R BELT TENSION ADJUSTMENT IS MADE. IT IS IMPORTANT TO NOTE THAT WE HAVE NOT BEEN ABLE TO CREATE A BELT FAILURE IF THE PROPER TENSION IS MAINTAINED.

When RotorWay finalizes the results of these tests, we will provide you with an update of the test results and any changes in operational procedures.