

Done in Washington, DC, this 6th day of January 1995.

**Lonnie J. King,**

*Acting Administrator, Animal and Plant Health Inspection Service.*

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. 94-ANE-59; Amendment 39-9113; AD 95-01-02]

#### **Airworthiness Directives; Hartzell Model HC-B4 Series Propellers Installed on Mitsubishi MU-2 Series Aircraft**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule; request for comments.

**SUMMARY:** This amendment supersedes three existing airworthiness directives (AD), applicable to Hartzell Model HC-B4TN-5(D,G,J)L/LT10282(B,K)-5.3R and HC-B4TN-5(D,G,J)L/LT10282N(B,K)-5.3R propellers installed on Mitsubishi MU-2 series aircraft. These AD's currently require replacement of existing LT10282(B,K)-5.3R propeller blades with LT10282N(B,K)-5.3R improved "N" configuration propeller blades, and repetitive inspection and rework when required of the inner hub arm bore. This amendment requires new repair limits, shot peening procedures, and retirement at 10,000 hours time in service for the "N" configuration blades. Additionally, this action requires replacement of existing propeller hubs with new improved fatigue strength steel hubs and requires inspection, and specified rework as necessary, of the new steel hubs at a repetitive interval of 3,000 hours time in service. This amendment is prompted by a determination that the current hub design and blade repair limits do not adequately protect against initiation of fatigue cracks in the propeller hub arm bore and do not prevent the resonant speed of the propeller from shifting into the permitted ground idle operating range. The actions specified by this AD are intended to prevent initiation of fatigue cracks in propeller assemblies and subsequent progression to propeller failure, with departure of the blade, or hub arm and blade, that may result in loss of aircraft control.

**DATES:** Effective January 27, 1995.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the **Federal Register** as of January 27, 1995.

Comments for inclusion in the Rules Docket must be received on or before March 13, 1995.

**ADDRESSES:** Submit comments in triplicate to the Federal Aviation Administration (FAA), New England Region, Office of the Assistant Chief Counsel, Attention: Rules Docket No. 94-ANE-59, 12 New England Executive Park, Burlington, MA 01803-5299.

The service information referenced in this AD may be obtained from Hartzell Propeller Inc., One Propeller Place, Piqua, OH 45356-2634; telephone (513) 778-4200, fax (513) 778-4391. This information may be examined at the FAA, New England Region, Office of the Assistant Chief Counsel, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

**FOR FURTHER INFORMATION CONTACT:** Tomaso DiPaolo, Aerospace Engineer, Chicago Aircraft Certification Office, FAA, Small Airplane Directorate, 2300 East Devon Avenue, Room 232, Des Plaines, IL 60018; telephone (708) 294-7031, fax (708) 294-7834.

**SUPPLEMENTARY INFORMATION:** Airworthiness directive (AD) 93-01-09, Amendment 39-8463, effective April 20, 1993, applicable to Hartzell Model HC-B4TN-5(D,G,J)L/LT10282(B,K)-5.3R propellers installed on Mitsubishi MU-2 series aircraft was published in the **Federal Register** on March 26, 1993 (58 FR 16347). That action was prompted by three reports of propeller blades separating during flight. The manufacturer's investigation of the failed blades revealed that fatigue cracks could initiate at the radius end of the blade bearing bore. That condition, if not corrected, can result in fatigue cracks initiating and progressing to failure resulting in departure of the blade and possible loss of aircraft control.

That AD requires initial and repetitive inspections for fatigue cracks at the blade bearing bore. All affected propeller blades showing evidence of cracks or propeller blades not meeting acceptable rework criteria are required to be replaced with serviceable blades prior to further flight. Additionally, as a terminating action to the repetitive inspections, AD 93-01-09 requires replacement of existing LT10282(B,K)-5.3R propeller blades with LT10282N(B,K)-5.3R improved "N" configuration propeller blades at the next overhaul, or within 15 months of

the effective date of that AD (July 31, 1994), whichever occurs first. Propeller blades modified to the "N" configuration have design improvements in the blade bearing bore that reduce the susceptibility to corrosion and localized stresses. The modified blades also have additional thickness added to the blade inboard stations to reduce operating stresses. The FAA determined that long term continued operational safety would be better assured by actual modification of the propeller to remove the source of the problem rather than continuing with repetitive inspections.

On April 28, 1993, the FAA issued priority letter AD 93-09-04, applicable to both Hartzell Model HC-B4TN-5(D,G,J)L/LT10282(B,K)-5.3R and Model HC-B4TN-5(D,G,J)L/LT10282N(B,K)-5.3R propellers installed on Mitsubishi Model MU-2B-60 aircraft. That AD was published in the **Federal Register** on July 22, 1993 (58 FR 39139). That AD action was prompted by two reports of propeller hub arm assembly fatigue failures and subsequent hub arm and blade separation from aircraft in flight. Preliminary data indicated that fatigue cracks can originate in the propeller hub arm assembly.

That AD requires initial and repetitive removals from service of affected propeller hub assemblies for inspection and specified rework procedures before returning to service. That AD was an interim action until more data became available on the cause of propeller hub arm assembly failures.

On June 10, 1993, the FAA issued priority letter AD 93-12-01, also applicable to both Hartzell Model HC-B4TN-5(D,G,J)L/LT10282(B,K)-5.3R and Model HC-B4TN-5(D,G,J)L/LT10282N(B,K)-5.3R propellers installed on MU-2B-26A, -36A, and -40 aircraft. That AD was published in the **Federal Register** on September 29, 1993 (58 FR 50840). That action was prompted by a report of a hub assembly with a crack indication in the hub arm that was found during the inspection and rework required by AD 93-09-04. In addition, although not stated in AD 93-12-01, the FAA based AD 93-12-01 on flight strain survey investigations. Airworthiness Directive 93-12-01 cites the same safety concerns and requirements as AD 93-09-04 and was also an interim action until more data became available on the cause of propeller hub arm assembly failures.

Since the issuance of AD 93-09-04 and AD 93-12-01, the FAA determined that fretting can cause a fatigue crack to initiate in the propeller hub arms of the affected propellers. The fatigue crack