



# SERVICE BULLETIN 176E

March 3, 2003

**TO:** FAA-Approved Propeller Repair Stations, Aircraft Manufacturers, Owners & Operators

**SUBJECT:** Necessary Actions Following Object Strike of Stationary Propeller, Blade Strike of Rotating Propeller, Bird Strike, or Sudden Engine Stoppage

**MODELS AFFECTED:** All McCauley Propellers

**SERVICE MANUALS AFFECTED:** 730720, 720415, 710930, 780630, 701115, 761001, 810915, 790901, 860201, 810301, 880415, 890119, MPC1100-[X], CMM1100-[X]

This service information is to be added to the appropriate McCauley Service Manual until the next manual revision is issued.

Service Bulletin 176E replaces Service Bulletin 176D dated June 21, 1999. This service bulletin updates inspection criteria that increases the likelihood of overhaul requirement following "strike"-type events. Lines in the margins indicate changes.

## Criteria for scrapping hubs following object, blade, or bird strike:

A hub must be declared unairworthy and scrapped if any blade in the propeller assembly is bent beyond repair limits within the first 85% of total blade station radius (Refer to Figure 1 and 2). A hub may be returned to service, pending normal overhaul inspection, if any blade in the propeller assembly is bent beyond repair limits outboard of the 85% blade station radius.

### A. Object Strike of Stationary Propeller:

"Object Strike" is defined as any impact of a non-rotating propeller by a substantial moving object, such as any personnel vehicle, aircraft tug, ground power unit, or similar. Please note that the above definition is intended for use as an example only. Determination as to whether or not an object strike actually occurred is ultimately the responsibility of the aircraft operator.

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TO OBTAIN SATISFACTORY RESULTS, PROCEDURES SPECIFIED IN THIS SERVICE INFORMATION MUST BE ACCOMPLISHED IN ACCORDANCE WITH ACCEPTED METHODS AND PREVAILING GOVERNMENT REGULATIONS. MCCAULEY PROPELLER SYSTEMS CANNOT BE RESPONSIBLE FOR THE QUALITY OF WORK PERFORMED IN ACCOMPLISHING THIS SERVICE INFORMATION.

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### Procedures on Propellers Following Object Strike:

The following inspections must be performed on any propeller experiencing an object strike:

1. Inspect all blades for damage such as scrapes, gouges, etc. caused by the impact. Any damage beyond normal field repair limits (defined in other McCauley service information) is cause for propeller removal and repair as defined below.
2. Check blade track per the appropriate McCauley Service Manual and verify that all blades measure within 0.0625 inch (1.6mm) of each other on piston propellers, 0.1875 inch (4.7mm) of each other on C1101 through C1104 models, and 0.170 inch (4.3mm) of each other on turbine propellers. This is a one time check.
3. Check blade twist. All blades in a propeller should have the same amount of "rotational play". If the difference in rotational play between two blades is beyond 1.0 degree, uneven internal wear or damage is the possible cause. (For example, rotational movement of No. 1 blade measures 1.2 degrees and No. 2 blade measures 2.3 degrees. This would be considered excessive since the difference is more than 1.0 degree.) This check must be performed every 10 hours for the next 20 hours. If no change is seen after 20 hours, inspections may be discontinued.

If the blades do not meet the above criteria, the propeller must be disassembled, and the retention and actuating systems inspected and repaired by an FAA-approved propeller repairman per the applicable McCauley Service Manual.

### **B. Blade Strike of Rotating Propeller:**

"Blade Strike", sometimes referred to as "Ground Strike" is defined as any impact or suspected impact of the rotating propeller upon such items as, but not limited to, the ground, tow bars, landing lights, carts, snow banks, hedges, etc. Please note that the above definition is intended for use as an example only. Determination as to whether or not a blade strike actually occurred is ultimately the responsibility of the aircraft operator.

**CAUTION:** INTERNAL DAMAGE CAN OCCUR WITHOUT EVIDENCE OF GROSS EXTERNAL DAMAGE.

### Procedures Following Blade Strike of Rotating Propeller:

Any McCauley propeller experiencing a Blade Strike must be removed from the aircraft and completely overhauled by an FAA approved propeller repair station in accordance with the applicable overhaul manual. When dye checking hub during overhaul, closely inspect hub for cracks.

A hub must be declared unairworthy and scrapped if any blade in the propeller assembly is bent beyond repair limits as defined.

### **C. Bird Strike:**

"Bird Strike" can be defined as the impact of any bird into the rotating propeller, causing damage.

#### Procedures on Propellers Following Bird Strike:

Any McCauley propeller experiencing a bird strike must be inspected per the following criteria:

1. Inspect all blades for damage such as scrapes, gouges, etc. caused by the impact. Any damage beyond normal field repair limits (defined in other McCauley service information) is cause for propeller removal and repair as defined below.
2. Check blade track per the appropriate McCauley Service Manual and verify that all blades measure within 1/16 inch of each other on piston propellers, 0.1875 inch (4.7mm) of each other on C1101 through C1104 models, and 0.170 inch of each other on turbine propellers. This is a one time check.
3. Check blade twist. All blades in a propeller should have the same amount of "rotational play". If the difference in rotational play between two blades is beyond 1.0 degree, uneven internal wear or damage is the possible cause. (For example, rotational movement of No. 1 blade measures 1.2 degrees and No. 2 blade measures 2.3 degrees. This would be considered excessive since the difference is more than 1.0 degree.) This check must be performed every 10 hours for the next 20 hours. If no change is seen after 20 hours, inspections may be discontinued.

4. If blades do not meet the above criteria, the propeller must be removed from the aircraft and completely overhauled by an FAA approved propeller repairman per the applicable McCauley Service Manual. When dye checking hub during overhaul, closely inspect hub for cracks.

#### **D. Sudden Engine Stoppage:**

"Sudden Stoppage" is defined as any propeller experiencing a sudden decrease in RPM. This is commonly due to engine failure or seizure. Please note, determination as to whether or not sudden engine stoppage has occurred is ultimately the responsibility of the aircraft operator. McCauley recommends consulting engine manufacturer's data to determine criteria for sudden engine stoppage.

Procedures on Propellers Following Sudden Stoppage:

Any McCauley propeller experiencing a sudden stoppage must be removed from the aircraft and completely overhauled by an FAA approved propeller repair station in accordance with the applicable overhaul manual. When dye checking hub during overhaul, closely inspect hub for cracks.

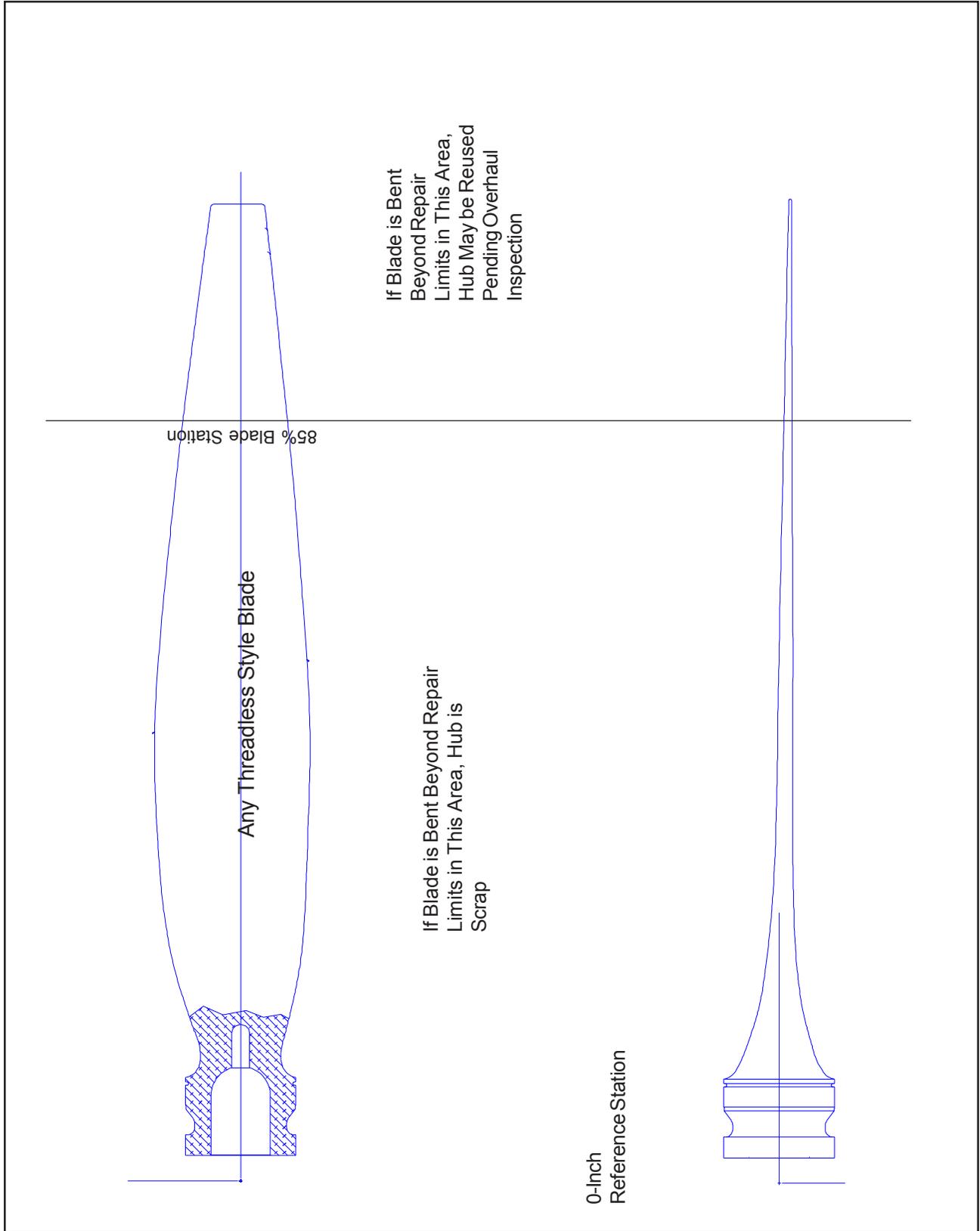


Figure 1

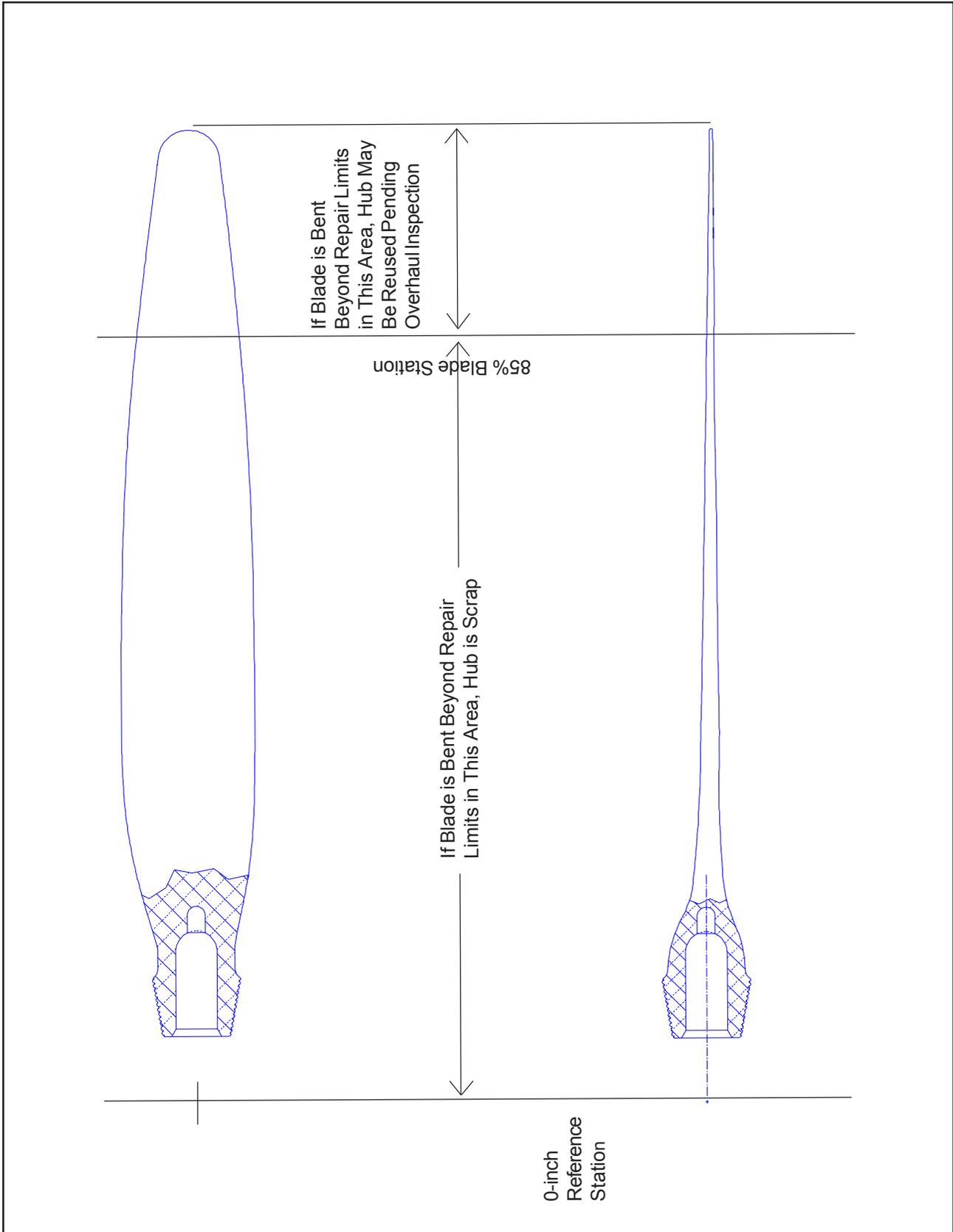


Figure 2