

**4. Foreign Object Strike**

**CAUTION:** INSTRUCTIONS AND PROCEDURES IN THIS SECTION MAY INVOLVE PROPELLER CRITICAL PARTS. REFER TO THE INTRODUCTION CHAPTER OF THIS MANUAL FOR INFORMATION ABOUT PROPELLER CRITICAL PARTS. REFER TO THE ILLUSTRATED PARTS LIST CHAPTER OF THE APPLICABLE OVERHAUL MANUAL(S) FOR THE IDENTIFICATION OF SPECIFIC PROPELLER CRITICAL PARTS.

**A. General**

- (1) A foreign object strike can include a broad spectrum of damage, from a minor stone nick to severe ground impact damage.
  - (a) A conservative approach in evaluating the damage is required because there may be hidden damage that is not readily apparent during an on-wing, visual examination.
- (2) A foreign object strike is defined as:
  - (a) Any incident, whether or not the engine is operating, that requires repair to the propeller other than minor dressing of the blades.
    - 1 Examples of foreign object strike include situations where an aircraft is stationary and the landing gear collapses causing one or more blades to be significantly damaged, or where a hanger door (or other object) strikes the propeller blade.
    - 2 These cases should be handled as foreign object strikes because of potentially severe side loading on the propeller hub, blades, and retention bearings.
  - (b) Any incident during engine operation in which the propeller impacts a foreign object including the ground that causes a drop in revolutions per minute (RPM) and also requires structural repair of the propeller (incidents requiring only paint touch-up are not included).
  - (c) A sudden RPM drop while impacting water, tall grass, or similar yielding medium, where propeller blade damage is not normally incurred.

## B. Procedure

- (1) In the event of a foreign object strike, an inspection is required before further flight. If the inspection reveals one or more of the following indications listed, the propeller must be removed from the aircraft, disassembled, and overhauled in accordance with the applicable propeller and blade maintenance manuals.
  - (a) A loose blade in the hub.
  - (b) Any noticeable or suspected damage to the pitch change mechanism.
  - (c) A bent blade (out of track or angle).
  - (d) Any blade diameter reduction.
  - (e) A bent, cracked or failed engine shaft.
  - (f) A blade rotated in the clamp.
  - (g) Vibration during operation that was not present before the event.
- (2) If an overhaul is required, also perform the following:
  - (a) Make a visual inspection of all other components for evidence of damage caused by the foreign object strike or impact. If there is damage, thoroughly examine all the components in the load path.

**NOTE:** An example of the load path is from the blade to the fork to the pitch change rod.
  - (b) If an "F" knob "Y" shank aluminum blade is involved in a foreign object strike requiring disassembly as defined in this chapter, shot peen the pitch change knob before returning the blade to service.
  - (c) For the HD-E6C-3B propeller:
    - 1 If inspection results require propeller overhaul following a foreign object strike, overhaul is not required on the propeller hydraulic unit.
    - 2 Perform a thorough visual inspection on the pitch change rod taper and threads at the fork interface for evidence of severe abnormal loads or structural damage.
    - 3 If there is evidence of severe abnormal loads, disassemble and inspect the hydraulic unit in accordance with the search inspection criteria specified in Hartzell Manual 161 (61-10-61).

- (3) For composite blades:
  - (a) For blade inspection criteria, refer to Hartzell Composite Blade Maintenance Manual 135F (61-13-35).
  - (b) Perform a thorough visual and coin tap inspection of the exposed portion (de-ice boot or anti-icing boot removal is not required) of each blade including the metal erosion shield (leading edge).
  - (c) If the blade damage is beyond airworthy limits, repair the blade before further flight.
  - (d) If there is evidence on a blade or hub of impact between the blade shank and the hub, retire the hub in accordance with the Part Retirement Procedures chapter of this manual.
  - (e) If the blade damage is beyond major repair limits, return the blade to the factory for evaluation or retire the blade.
- (4) For aluminum blades:
  - (a) For blade repairs, diameter reduction criteria, procedures, and limits, refer to Hartzell Aluminum Blade Overhaul Manual 133C (61-13-33).
  - (b) If the blade damage is beyond the limits specified for repair, retire the blade.
  - (c) If there is evidence on a blade or hub of impact between the blade shank and the hub, retire the hub in accordance with the Part Retirement Procedures chapter of this manual.
  - (d) Shot peen the blade in accordance with Hartzell Aluminum Blade Overhaul Manual 133C (61-13-33).
- (5) For engine powered accessories (for example, governors, pumps, dampers, and propeller control units) manufactured by Hartzell, if the foreign object strike resulted in a sudden stop of the engine, disassemble and inspect the unit in accordance with the Sudden Stoppage section of this chapter.
- (6) Regardless of the degree of damage, make a log book entry to document the foreign object strike incident.