

5. Sudden Stoppage**A. General**

- (1) When there is a propeller sudden stoppage because of an event such as a catastrophic engine failure or seizure, remove the propeller and any engine driven/powering accessory.
- (2) If the sudden stoppage is because of a foreign object strike, follow the steps in the Foreign Object Strike section of this chapter.

B. Procedure

- (1) In the event of a propeller sudden stoppage, make the following inspections before further flight.
 - (a) Disassemble and make a visual inspection of the propeller and engine driven/powering accessories in accordance with the applicable maintenance manual.
 - (b) Make a visual inspection of the hub.
 - (c) Make a visual inspection of each blade.
 - 1 For composite blades:
 - a For blade inspection criteria, refer to Hartzell Composite Blade Maintenance Manual 135F (61-13-35).
 - b Make a thorough visual and coin tap inspection of the exposed portion (de-ice boot or anti-ice feed shoe removal is not required) of each blade, including the metal erosion shield (leading edge).
 - c If the blade damage is beyond airworthy limits, scrap or repair the blade, as necessary, before further flight.
 - d If the blade damage is beyond major repair limits, return the blade to the factory for evaluation or retire the blade.
 - 2 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 For an "F" knob "Y" shank aluminum blade, shot peen the pitch change knob before returning the blade to service.
 - c If the blade damage is beyond the limits specified for repair, retire the blade.

- (d) For engine powered accessories (for example, governors, pumps, dampers, and propeller control units) manufactured by Hartzell, disassemble and inspect the unit in accordance with the applicable maintenance manual.
 - (e) Make a visual inspection of inertia sensitive parts of propellers, such as pitch change fork, pitch change rod, blade bearings, and blade clamps.
 - (f) Make a visual inspection of inertia sensitive parts of governors, such as gear pump, flyweights, and drive shaft.
 - (g) Make a visual inspection of inertia sensitive parts of synchrophasers, such as pulse generator, strobe sensor, magnet and counterweight.
 - (h) Make a visual inspection of inertia sensitive parts of vibration dampers.
- (2) If visual inspection reveals any damage related to sudden stoppage, overhaul the propeller or engine driven/powered accessory in accordance with the applicable maintenance manual.
 - (3) Replace attaching fasteners for propellers and governors.
 - (4) Regardless of the degree of damage, make a log book entry to document the sudden stoppage

6. Fire Damage or Heat Damage

WARNING: EXPOSING ALUMINUM BLADES AND ALUMINUM HUBS TO HIGH TEMPERATURES MAY LEAD TO FAILURE THAT CAN CAUSE PERSONAL INJURY AND DEATH. ALUMINUM BLADES AND HUBS ARE MANUFACTURED FROM HEAT TREATED FORGINGS THAT MUST NOT BE ANNEALED AND RE-HEAT TREATED. EXPOSURE TO HIGH TEMPERATURES CAN ALSO DESTROY THE FATIGUE LIFE BENEFITS OBTAINED FROM SHOT PEENING AND COMPRESSIVE ROLLING.

A. General

- (1) On rare occasions propellers or engine mounted accessories may be exposed to fire or heat damage such as an engine fire.
- (2) In the event of such an incident, an inspection is required before further flight.

B. Aluminum Parts Criteria

- (1) If there is any indication or suspicion that aluminum propeller parts have been exposed to temperatures in excess of 200° F (93° C), the parts must be assumed to be unairworthy, unless it can be proven that there have been no adverse affects from the incident.
 - (a) Aluminum propeller parts that have been exposed to high temperatures under controlled conditions (for example, during the overhaul process) may remain serviceable if the maximum temperature did not exceed 250° F (121° C).
 - (b) Aluminum propeller parts that have compressive stress layers (shot peened, rolled) must be re-shot peened or re-rolled in accordance with the applicable overhaul manual. This requires complete disassembly and inspection of the propeller in accordance with the appropriate propeller and blade overhaul manuals.
- (2) Aluminum blades and hubs require a Brinell hardness test in the areas that may have been exposed to heat.
 - (a) For an aluminum blade used on a turbine engine, the minimum permitted Brinell hardness number (HB) is:
 - 1 80 HB within 1.00 inch (25.4 mm) of the tip
 - 2 90 HB between 1.00 inch (25.4 mm) and 2.00 inches (50.8 mm) from the tip of the blade
 - 3 100 HB in all areas not listed in 6.B(2)(a)1 and 6.B(2)(a)2
 - (b) For an aluminum blade not used on a turbine engine, the minimum permitted Brinell hardness number is 100 HB.
 - (c) The minimum permitted Brinell hardness number for an aluminum hub is 125 HB.

- (3) Any aluminum part that has been welded or annealed is unairworthy. This does not apply to certain spinner repairs that have been done in accordance with approved technical data.

C. Steel Parts Criteria

- (1) If there is any indication or suspicion that steel propeller parts have been exposed to high temperatures (in excess of 450° F [218° C]), the parts must be assumed to be unairworthy, unless it can be proven there have been no adverse affects from the incident.
- (2) Steel propeller parts that have been exposed to high temperatures under controlled conditions (for example, during the overhaul process) may remain serviceable, if the maximum temperature did not exceed 450° F (218° C).
- (3) Steel propeller parts that have compressive stress layers (shot peened, rolled) must be re-shot peened or re-rolled according to the applicable overhaul manual. This requires complete disassembly and inspection of the propeller in accordance with the appropriate propeller and blade overhaul manuals.

D. Composite Parts Criteria

- (1) A composite blade that has been exposed to fire or heat damage must be retired in accordance with the Part Retirement Procedures chapter of this manual.

E. Engine-Mounted Accessories Criteria

- (1) If there is any indication or suspicion that an engine mounted accessory (for example, governor, pump, and propeller control unit) manufactured by Hartzell, has been exposed to high temperatures (in excess of 200° F [93° C]), the accessory must be assumed to be unairworthy unless it can be proven that there have been no adverse affects from the incident.
- (2) An engine-mounted accessory that has been exposed to high temperatures under controlled conditions (for example, during a Hartzell approved overhaul process) may remain serviceable.
- (3) Disassemble the unit and inspect it. Refer to the applicable maintenance manual for inspection criteria.
- (4) If inspection reveals any damage, overhaul the engine mounted accessory. Refer to the applicable maintenance manual for overhaul instructions.