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**AIRWORTHINESS  
CAUTION  
REPAIRS TO PROPELLER BLADES**

1. MAINTENANCE OF AIRCRAFT METAL PROPELLER BLADES AND BLADE TIP MARKINGS
  - 1.1. Investigations into metal propeller blade tip failures in the United States of America (USA) have indicated that in most cases such failures have been due to fatigue - type failures, initiated by nicks, cuts, scratches and stone bruises, not promptly removed by blending out and polishing according to approved methods.
  - 1.2. Investigations into recent failures of metal propeller blades in the South African Republic have shown these to be due to fatigue cracks initiated by damage to the blades coupled with poor workmanship in repairing such damage. As the failure of a propeller blade in flight can have serious consequences, it is important that blades be maintained in good and sound condition at all times, in order to minimize the chances of such an occurrence.
  - 1.3. Nicks, dents, cuts, etc., should be considered potential stress raisers from which fatigue cracks may start and this type of damage should receive attention as soon as possible after it occurs. Most propeller manufacturers prescribe the treatment to be given to blade surface defects and specify the limits for repairable defects. Chapter 12 of the United States of America, Federal Aviation Administration's Advisory Circular No. AC 43 13-1A also gives in some detail acceptable means of repairing damage to propeller blades and limitations relevant to repairable damage.
  - 1.4. Repairs to blades which have been damaged beyond limits specified in the manufacturer's repair manuals or, for American propellers, in Advisory Circular No. AC 43.13-1A may well result in blade failures and should not be attempted. Repeated blade straightening or pitch setting operations should also be avoided. Sensenich Propeller Service Memo No 86-1 contains useful information to this effect. Reconditioning must be recorded as per individual manufacturer's requirements.
  - 1.5. All failures of metal propeller blades should be reported to this Authority.
  - 1.6. The recommended overhaul time of a propeller is based on a number of factors, namely:
    - 1.6.1. the engine to which the propeller is fitted, this determines the pattern of vibrations or harmful harmonics the propeller absorbs;
    - 1.6.2. the practices employed for maintaining a propeller whilst in service;

1.6.3.as propeller blades are constantly subjected to natural corrosion and erosion during use, propellers must therefore be maintained as recommended by the various manufacturers;

1.6.4.operating time, and

1.6.5.Calendar time in service which may affect the life of seals.

## 2. GROUND HANDLING OF PROPELLERS

2.1. All propellers, especially wooden propellers, are susceptible to damage from improper handling. The practice of pushing or pulling on the propeller blade to move an aircraft should be avoided.

## 3. PROPELLER AND TAIL ROTOR MARKINGS

3.1. As airmen and others have been killed and some seriously injured by whirling propellers as well as helicopter tail rotors, it is imperative that these be conspicuously marked with suitable warning strips.

3.2. Manufacturer's usually paint a warning strip of approximately 200 mm on propeller tips and on both sides of tail rotor tips with contrasting colours. These marks should be maintained during the entire service life of propellers and tail rotors.

### 3.3. PRECAUTIONS TO BE OBSERVED WHEN MARKING PROPELLER AND TAIL ROTOR TIPS

3.3.1.Maintenance personnel should consult the aircraft manufacturer in cases where no specific information is available.

3.3.2.Open the drain holes in the metal tipping of wooden propellers after tips have been painted.

3.3.3.Restoration of painted surfaces and repeated applications of paint should be carefully controlled to ensure that excessive and uneven build-up of paint causing unbalance does not occur.