DESCRIPTION & MAINTENANCE INSTRUCTIONS

INSTALLATION & MAINTENANCE OF PROPELLERS

(This EO replaces EO 15-30-2 dated 20 Aug 56)

PROPELLER HANDLING

1 Propellers are easily thrown out of track if subjected to rough handling. During removal from packing cases and whenever it is necessary to lift them, the hold is to be applied at the thicker section and not at the blade tips. Bumping on the floor or any other action subjecting the tips to possible damage is to be avoided.

2 The rear cone is to be considered as an integral part of the propeller hub and is to accompany the propeller at all times.

3 No attempt is to be made to straighten the bent blades of a damaged propeller to facilitate crating. In such instances the barrel halves may be disassembled and a special crate built to accommodate the propeller blades and parts.

4 When shipping a propeller, it is essential that all parts of the installation, i. e. cones, retaining nut, distributor valve lock and snap rings etc. accompany the propeller.

5 When Hamilton Standard propellers are returned for overhaul they are to be shipped complete with slinger ring, bracket, and nozzle assembly.

INSTALLATION

6 Detailed installation procedures for counterweight and hydromatic type propellers will be found in relevant EOs. Propeller blade angle settings are listed in EO 15-30-2A.

Treatment of Rear Cones

7 Even though the retaining nut is tightened to the correct torque, a light coating of oil or grease will prevent direct contact between the rear cone seat and the propeller. Since this film may break down and permit relative movement, galling of the mating surfaces will occur and possible damage may result. For this reason, rear cones of the propellers are to be wiped clean and dry before installation.

Blade Root Packings

8 If a hydromatic type propeller has been standing idle for a considerable length of time, either in storage or on an aircraft, the tension of the blade root packings around the blade shank tends to squeeze out any lubricating oil or grease and the packings may stick to the blade shank. If a propeller in this condition is placed in operation, the rotation of the blades may tear or distort the blade packings causing excessive oil leakage. Therefore before a propeller is placed in operation, the blade root packings are to be loosened as detailed in EO 15-30AB-2C, Section 3, para. 3 (d).

9 During installation and before flight, the counterweight adjusting screw stops on counterweight propellers and the stop rings on hydromatic propellers are to be checked for correction high and low blade angle settings by checking the blade angle at the blade reference station with a bubble protractor.

MAINTENANCE

10 Field maintenance is to be carried out as detailed in relevant aircraft maintenance schedules.

RECORDS

11 A record of receipts, transfers, installations, hour run, repairs and replacement parts and reasons for propeller removal is to be maintained in the appropriate log book, Form L14-8.

BLADE TORQUE

12 Blade frictional torque is a measure of the tightness of the blades in the hub assembly. Its purpose is to minimize the shifting of the blades in the hub while balancing the propeller. As the balancing operation would be hindered

by excessive shifting of the blades, torque limits have been established which are sufficient to keep the blades from moving appreciably during balancing but not high enough to affect the operation of the propeller. Since the only purpose of torque is to facilitate balance, the allowable blade torque tolerance is fairly large and ranges from thirty-five to ninety foot pounds with the blade packings installed. It is almost impossible to turn the blades by hand when the torque is in the vicinity of the upper range. Blade torque normally decreases with operational time due to wear on various parts and a propeller should not be condemned for low blade torque unless the blades are loose radially in the hub.

GEAR PRELOAD

13 Gear preload means that the blade gear segments and the rotating cam gear are set together in the propeller under a given load and that they operate at all times with this force applied. This being the case, wear on the gear teeth is normal and considerable wear tolerance is permissible between overhauls. Where this wear is not sufficient to warrant the replacement of the parts at overhaul, a new gear preloading is determined which allows for the wear on the mating gears. It will thus be possible to receive a serviceable propeller direct from overhaul with worn gear teeth.

RETAINING NUT TORQUE

14 The applicable installation wrench for the propeller is used to start the retaining nut. Finish tightening the retaining nut using the correct torquing kit in conjunction with the installation wrench. After the minimum torque requirement has been met the application of additional torque should be limited to that required for alignment of the retaining nut for locking purposes. No attempt is to be made to reach the maximum value. If the nut is turned too far it should be loosened at least one turn and then retightened to proper alignment.

SAE Shaft Size	Torque Range (Foot Pounds)
20, 30, 40	750-1100
50	1000-1600
60	1500-2200
60 (see Note)	2000-2200

NOTE

A torque loading of 2000 to 2200 ft. lbs. is to be used on the Aero products (25A/337) propellers installed on the C119G aircraft.

RETIGHTENING PISTON GASKET NUT (COUNTERWEIGHT PROPELLERS)

15 After installation of propeller or replacement of piston gaskets, the piston gasket nut is to be retightened after 5 to 10 hours flying time.

CHECKING OF RETAINING NUT

16 The checking of the propeller retaining nut following the first flight after installation is not required.

BLADE TRACK "DURAL BLADES"

17 For propellers having a nominal diameter of fourteen feet or less, the blades shall track within 1/8 inch. For propellers having a nominal diameter greater than fourteen feet, the blades shall track within 3/16 inch.

BLADE TRACK "STEEL BLADES"

18 Steel blade track is limited only by its effect upon dynamic balance of the propeller and consequently a greater tolerance is permitted. However, because of this increased range, a steel blade may be bent and still remain within track tolerance. Therefore measurement of track cannot be used as a means of determining whether a steel blade is bent or not. Evidence of blade bend damage should be considered only in accordance with instructions outlined in EO 15-30AD-2A, and checking for blade track is to be carried out at overhaul.

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

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