

HARTZELL PROPELLER INC. SERVICE LETTER

TRANSMITTAL SHEET

SERVICE LETTER HC-SL-61-61

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

August 15, 2002

This page transmits Revision X to Service Letter HC-SL-61-61, dated May 09/69.

- Revision A, dated April 15/76
- Revision B, dated September 10/76
- Revision C, dated November 28/77
- Revision D, dated February 23/78
- Revision E, dated March 26/79
- Revision F, dated August 31/79
- Revision G, dated August 20/80
- Revision H, dated October 19/81
- Revision J, dated May 13/83
- Revision K, dated January 28/86
- Revision L, dated August 18/86
- Revision M, dated May 01/87
- Revision N, dated May 13/88
- Revision P, dated August 05/88
- Revision Q, dated March 12/90
- Revision R, dated February 28/92
- Revision S, dated December 10/93
- Revision T, dated April 4/97
- Revision U, dated March 20/98
- Revision V, dated March 9/01
- Revision W, dated July 15/02
- Revision X, dated August 15/02

Propeller assemblies that have previously complied with this Service Letter are not affected.

FAA approval has been obtained on technical data in this publication that affects type design.

Changes are shown by a change bar in the left margin of the revised pages.

Some of these changes which do not affect technical content may not be highlighted in this transmittal sheet.

This revision is issued to change the following:

- Modified TBO extension requirements.

This Service Letter is reissued in its entirety.

HARTZELL PROPELLER INC. **SERVICE LETTER**

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

1. Planning Information

A. Effectivity

All Hartzell Propellers, Governors and Propeller Damper Assemblies.

B. Concurrent Requirements

None

C. Reason

Federal Aviation Regulations require publication of overhaul periods and service life limits for propellers and governors.

D. Description

This Service Letter provides overhaul periods and service life limits for propellers, governors, and propeller damper assemblies.

E. Compliance

(1) In the U.S.A., the Federal Aviation Administration (FAA) considers compliance with life limited items to be mandatory. Other TBO specifications may be mandatory depending on the type of operation (FAR 91 vs. FAR 135) or if addressed in airworthiness directives.

(2) Compliance with this service letter is considered mandatory except when non-compliance is specifically allowed by the FAA (or foreign equivalent).

F. Approval

FAA approval has been obtained on technical data in this publication that affects type design.

G. Manpower

None

H. Weight and Balance

Not Changed

I. Electrical Load Data

Not Changed

HARTZELL PROPELLER INC. SERVICE LETTER

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

J. References

Hartzell Service Bulletin 152E.
Hartzell Manual 202A (ATA 61-01-02), Standard Practices
Hartzell Manual 113B, (ATA 61-10-13) Compact Non-Feathering (-1) and Aerobatic (-4) Propeller Overhaul and Maintenance.
Hartzell Manual 117D, (ATA 61-10-17) Compact Constant Speed and Feathering Propeller Overhaul and Maintenance.
Hartzell Manual 118F, (ATA 61-10-18) Steel Hub Turbine Propeller Maintenance Manual.
Hartzell Manual 132, (ATA 61-10-33) Five Blade Turbine Engine Propeller Overhaul.
Hartzell Manual 141, Four Blade Lightweight Turbine Propeller Overhaul Manual.
Hartzell Manual 142, Three and Four Blade Lightweight Turbine Propeller Repair, Overhaul, Parts Manual.
Hartzell Manual 143, Four Blade Lightweight Turbine Propeller Overhaul Manual.
Hartzell Manual 158A, Propeller Maintenance Manual for Five and Six Blade Lightweight Turbine Propellers.
Hartzell Manual 161, (ATA 61-10-61) Maintenance Manual for HD-E6C-3() () Propeller.

K. Other Publications Affected

Hartzell Service Letter 61V (superseded by this Service Letter).
Hartzell Service Bulletin 110C (obsoleted by this Service Letter).

2. Accomplishment Instructions

A. Factors Involved in Establishing Overhaul Periods

- (1) The engine to which the propeller is applied determines the pattern of vibration or stress the propeller must absorb.
- (2) The practices employed maintaining a propeller while in service are also limiting factors if they are not carried out per recommended procedures.
- (3) The calendar time which affects the life of seals directly or indirectly exposed to the elements, and other parts subject to corrosion, are also limiting factors.
- (4) Propellers are constantly subjected to natural corrosion and erosion from use and environmental exposure.

HARTZELL PROPELLER INC. SERVICE LETTER

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

B. Overhaul Categories

- (1) Category I Reciprocating Engine Propellers
- (2) Category II Turbine Engine Propellers
- (3) Category III Governors
- (4) Category IV Life Limited Installations
- (5) Category V Propeller Damper Assemblies
- (6) Category VI Calendar Limits and Long Term Storage

C. Continued Airworthiness

- (1) If propeller flight time or calendar time in service are unknown, the propeller should be overhauled to confirm its airworthiness.

NOTE: Propeller logbook entries are required to indicate Time Since Overhaul (TSO) and Time Since New (TSN). The information is used as the basis for subsequent overhauls as well as the basis for life limited parts and for compliance with Airworthiness Directives. For propellers that have been rebuilt with parts from other propellers, consideration of TSN of the hub and each blade should be made.

- (2) In order to achieve TBO, propellers must be maintained in accordance with Hartzell Propeller Inc. applicable publications.
- (3) Propellers exposed to impact damage, lightning strikes or overspeed **must** be inspected in accordance with the Special Inspections chapter of Hartzell Standard Practices Manual 202A (dated March 1993 or subsequent revision) prior to return to service.
- (4) Propellers must comply with all applicable FAA Airworthiness Directives, some of which may affect overhaul periods.
- (5) Some propellers may require overhaul prior to the specified TBO limits. Propellers subjected to abnormal use or environmental exposure, particularly seaplanes and agricultural aircraft, often require premature overhaul when abnormal damage or corrosion is evident.

HARTZELL PROPELLER INC. SERVICE LETTER

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

D. TBO Extension

The TBO specifications in this document are mandatory for many operators. Because of this, Hartzell frequently receives individual requests for extension of published TBO limits. In all cases, actual **approval must be obtained from the operator's FAA (or foreign equivalent) controlling authority**. Any statement by Hartzell does not, in itself, constitute approval. TBO extensions, if allowed, may be either permanent or temporary in nature:

- (1) Permanent - Fleet operators often desire a permanent TBO extension. Such extensions must result from a program of approved sampling and are normally incremental in nature. For example, a 3000 hour TBO may be increased to 3300 after evaluating the results of several 3000 hour overhauls, further extension requires evaluation of several 3300 hour overhauls, etc. The sampling program should be established through coordination with the government agency, the operator, the propeller overhaul facility, and Hartzell Propeller Inc. All TBO extensions must be FAA (or foreign equivalent) approved and documented in the operator's approved maintenance or operational publications.
- (2) Temporary - Hartzell considers that "temporary" or "one time only" extensions of 100 hours or three months (beyond published limits) to be acceptable in cases where a more flexible overhaul schedule will avoid grounding of aircraft. Approval must be obtained from the operator's FAA (or foreign equivalent) controlling authority and should be limited to a specific aircraft. Such extensions should not be construed to allow a permanent TBO extension or allow an operator to routinely deviate from published TBO limits.

2. Overhaul Periods

A. CATEGORY I - Reciprocating Engine Propellers

All Hartzell propellers installed on piston engine aircraft are to be overhauled within the flight hour/calendar month periods (whichever occurs first) listed below:

<u>Propeller Model and application</u>	<u>Flight Hours/Calendar Months</u>
--	-------------------------------------

All Aluminium Hub Propellers ()HC-()(2,3,4)(Y)()-() or HC-(D,E)(3,4,5)()-():

Agricultural Aircraft (see note 2)	2000/36
Acrobatic (aerobatic) Aircraft (see note 3)	1000/note 1
Franklin engine applications	1500/note 1
All Other two blade applications	note 4/note 1
All Other three and four blade applications	note 5/note 1

HARTZELL PROPELLER INC.

SERVICE LETTER

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

Steel Hub - R,Z,W,P Shank Propellers HC-()(2,3)(R,Z,W,P)()-():

Agricultural Aircraft (see note 2)	2000/36
Acrobatic (aerobatic) Aircraft (see notes 3, 7)	1000/60
Jacobs R-755 engine applications (see note 7)	1000/60
All Others (see note 7)	2000/60

Steel Hub - X and V Shank Propellers ()HC-()(2,3)(X,V)()-() (see note 6):

Agricultural Aircraft (see note 2)	1000/36
Acrobatic (aerobatic) Aircraft (see notes 3, 7)	1000/60
All Others (see note 7)	1000/60

All Other Steel Hub Propellers ()HC-()(2,3,4)(MV)()-() or

HC-()(3,4,5)(M,T)()-() (see note 6):

Agricultural Aircraft (see note 2)	2000/36
Acrobatic (aerobatic) Aircraft (see notes 3, 7)	1000/60
All Others (see note 7)	2000/60

NOTE 1: Y shank propellers manufactured or overhauled since October 1991 are required to have the hub internal surface painted for additional corrosion protection. Overhaul calendar limit for these propellers is 72 months. Calendar limit remains 60 months for propellers manufactured or overhauled prior to October 1991 until hub internal painting has been applied during overhaul.

NOTE 2: Agricultural aircraft are defined as aircraft used as aerial applicators which expose the propeller to a relatively severe chemical/corrosive environment. Once used on agricultural aircraft, the 36 month overhaul limit is to be maintained until overhaul is performed, even if the propeller is later installed on other category airplanes.

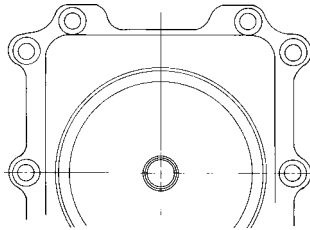
NOTE 3: Acrobatic (aerobatic) aircraft are defined as certificated acrobatic category aircraft or other aircraft routinely exposed to maneuvers beyond those specified for utility category aircraft as defined in 14 CFR 23.3. Once a propeller is used on an aerobatic aircraft, the specified overhaul times for an aerobatic propeller are to be maintained until overhaul is performed, even if the propeller is later installed on other category airplanes.

NOTE 4: Two blade, Y shank propellers manufactured after April 1997 use an improved hub "fillet radius" and are identified with a suffix letter "B" in the serial number, see Figure 1 on page 6. Overhaul limit for these propellers is 2400 hours. Overhaul limit for earlier models is 2000 hours of operation.

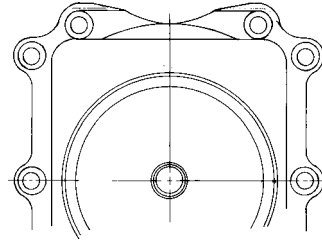
HARTZELL PROPELLER INC. SERVICE LETTER

Propellers

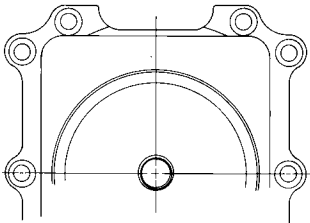
Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies



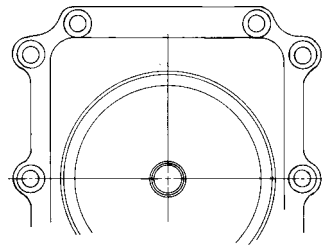
Two blade hubs made 1983 and prior, TBO flight hour limit is 2000 hours.



Two blade hubs made 1983 thru 1991, TBO flight hour limit is 2000 hours.

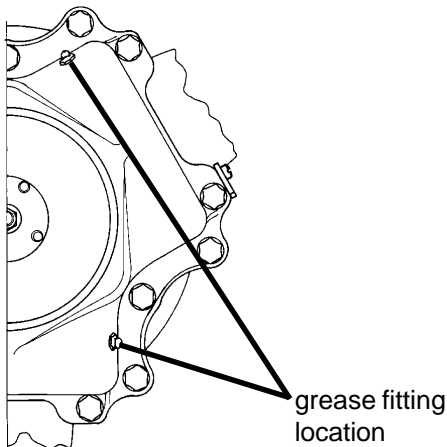


Two blade hubs made December 1991 thru April 1997, have the suffix "A" in the serial number, TBO flight hour limit is 2000 hours.

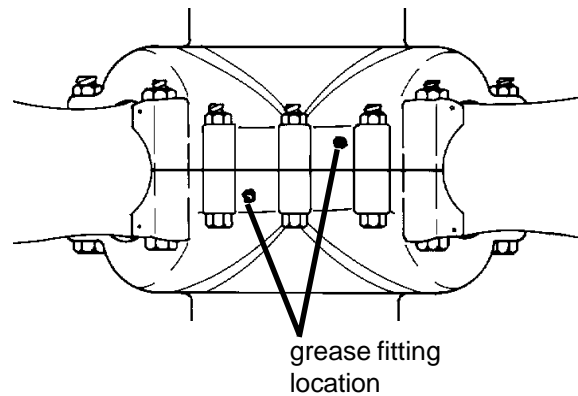


Two blade hubs made since April 1997, have the suffix "B" in the serial number, TBO flight hour limit is 2400 hours.

Two Blade Y Shank "Compact" Hubs



Three blade hubs made prior to 1983, TBO flight hour limit is 2000 hours.



Three blade hubs made after 1983, TBO flight hour limit is 2400 hours.

Three Blade Y Shank "Compact" Hubs

Figure 1. Y Shank "Compact" Hub Production Changes

HARTZELL PROPELLER INC.

SERVICE LETTER

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

- NOTE 5: Three blade, Y shank propeller hubs manufactured after 1983 use a different grease fitting location, see Figure 1 on page 6. Overhaul limit for these propellers is 2400 hours. Overhaul limit for pre-1983 models is 2000 hours of operation. Overhaul limit for four blade, Y shank propellers is 2400 hours of operation.
- NOTE 6: HC-(1,D)2X20-(7,8) and HC-(1,D)2(M)V20-(7,8) Hartzell Hydro-Selective propellers require replacement of rubber diaphragm (P/N B119-2) at intervals not to exceed 24 months or 250 hours of operation whichever occurs first. (These propellers utilize a non-rotating piston and cylinder attached to the engine.)
- NOTE 7: All hard alloy blades must be overhauled every 36 calendar months. Hard alloy blades are identified by the letter "H" immediately following the blade design number, e.g., (V)(L)8433HB or (V)(L) 8433H. Hard alloy blades are also stamped with "76 alloy" on the blade butt.

HARTZELL PROPELLER INC.

SERVICE LETTER

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

B. CATEGORY II - Turbine Engine Propellers

All Hartzell propellers installed on turbine engine aircraft are to be overhauled within the flight hour/calendar month periods (whichever occurs first) listed below:

<u>Propeller Model and application</u>	<u>Flight Hours/Calendar Months</u>
HD-E6C-3()	(see note 1)
HC-A6A-3()	(see note 6)
HC-(D,E)4(A,N,P)-() propellers:	
Agricultural (See Note 4)	3500/36
Utility or acrobatic (aerobatic)(See Note 3)	3500/Note 2
All Others	4000/Note 2
All Other Aluminum Hub Propellers	
Agricultural (see Note 4)	3000/36
All Others	3000/Note 2
Steel Hub Propellers	
Agricultural (See note 4)	3000/36
All Others (See Note 5)	3000/60

NOTE 1: Information regarding the overhaul intervals of the HD-E6C-3() propeller and systems is published in Hartzell Manual 161 (ATA 61-10-61).

NOTE 2: Propellers manufactured or overhauled since October 1991 are required to have the hub internal surface painted for additional corrosion protection. Overhaul calendar limit for these propellers is 72 months. Calendar limit remains 60 months for propellers manufactured or overhauled prior to October 1991 until hub internal painting has been applied during overhaul.

NOTE 3: Acrobatic (aerobatic) aircraft are defined as certificated acrobatic category aircraft or other aircraft routinely exposed to maneuvers beyond those specified for utility category aircraft as defined in 14 CFR 23.3. Once a propeller is used on an aerobatic aircraft, the specified overhaul times for an aerobatic propeller are to be maintained until overhaul is performed, even if the propeller is later installed on other category airplanes.

NOTE 4: Agricultural aircraft are defined as aircraft used as aerial applicators which expose the propeller to a relatively severe chemical/corrosive environment. Once used on agricultural aircraft, the 36 month overhaul limit is to be maintained until overhaul is performed, even if the propeller is later installed on other category airplanes.

HARTZELL PROPELLER INC.

SERVICE LETTER

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

NOTE 5: All hard alloy blades must be overhauled every 36 calendar months. Hard alloy blades are identified by the letter "H" immediately following the blade design number, e.g., (L)T10178H(B). Hard alloy blades are also stamped with "76 alloy" on the blade butt.

NOTE 6: Overhaul intervals for the HC-A6A-3() propeller are provided in Hartzell Service Bulletin 152E.

C. CATEGORY III - Governors

Hartzell propeller governors are to be overhauled at the same time as engine overhaul, but not to exceed 2000 hours of operation (there is no calendar limit applicable to governors).

D. CATEGORY IV - Life Limited Installations

The following data summarizes all current information concerning Hartzell life limited parts, propeller assemblies, and propeller blades.

In recent years, life limits have been published in the Airworthiness Limitations section of the appropriate Hartzell propeller maintenance manual. In the following summary, where applicable, the manual is referenced for details concerning life limit information (this will avoid redundant sources of information and prevent the possibility of having conflicting published data if both the manual and this Service Letter were to have different revision dates). Life limit data is provided in the following summary for data that has not yet been incorporated into manuals.

NOTE 1: Blade life limits have been deleted for all applications using M10876() blades.

NOTE 2: Blade models shown are life limited only on the specified applications. They are not life limited on other installations. However, **time accumulated toward life limit accrues when first operated on aircraft/engine/propeller combinations listed and continues regardless of subsequent installations (which may or may not be life limited)**. If a subsequent application is also life limited, the most conservative life limit is applicable.

NOTE 3: Previously, blades to be installed on life limited installations were to have the letter "L" stamped on the butt of the blade. This is no longer a requirement. Operators and propeller repair stations are reminded that propeller logbooks are required to contain the status (total time in service) of life limited parts, ref. FAR 91.417, 121.380, & 135.439.

HARTZELL PROPELLER INC. SERVICE LETTER

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

Aerostar PA60- 600,601(P),602P with Machen conversion with Lycoming (T)IO-540 series and HC-C4YR-2(L)/F(J)C6660(B,K) see Hartzell Manual 117D revision 4 or subsequent for blade life limits.

Antonov AN-38 with Allied Signal TPE331-14GR and HC-B5MA-5A/M11276NK-3 propeller - see Hartzell Manual 132A revision 3 or subsequent for blade life limits.

Aviat S2B with Lycoming AEIO-540-D4A5 and HC-C3YR-1A/7690C propeller - see Hartzell Manual 113B revision 17 or subsequent for blade life limits.

Aviat S2S and S2B with Lycoming AEIO-540-D4A5 and HC-C2YR-4CF/FC8477A-4 propeller - See Hartzell Manual 113B revision 20 or subsequent for life limits.

CASA 212 with Allied Signal TPE331-5-251C and HC-B4TN-5CL/LT10282+4 propeller - see Hartzell Manual 118F revision 4 or subsequent for blade life limits.

Dornier 328 propeller system - see Hartzell Manual 161 revision 24 or subsequent for life limits.

Embraer EMB-312 with P & W PT6A-25C and HC-B3TN-3(C,D)/T10178(B,K)-8R propeller - see Hartzell Manual 118F revision 4 or subsequent for blade life limits.

Fairchild Swearingen SA226TC Metro IIA with Allied Signal TPE331-10UA-501G or 511G and HC-B3TN-5()/T10282()() propeller - see Hartzell Manual 118F revision 4 or subsequent for blade life limits.

Grumman S-2 Marsh conversion with Allied Signal TPE331-14A-801Z and HC-E5B-5/E12902K propeller, - see Hartzell Manual 158A revision 1 or subsequent for blade life limits.

Mitsubishi MU-2B-26A, -36A, -40, -60 & other MU-2s with affected propeller with Allied Signal TPE-331-(5,10)-() and HC-B4TN-5/LT10282N(S)(B,K)-5.3R propeller - per AD 95-01-02 blades are limited to 10,000 hours.

Mooney M-20L with Porsche PFM and BHC-J2YF-1C/B7421 propeller - see Hartzell Manual 113B revision 17 or subsequent for blade life limits.

NDN-1T Firecracker with P & W PT6A-25A and HC-B3TN-3(B,C)/T10173(B,K)-17 propeller - see Hartzell Manual 118F revision 4 or subsequent for blade life limits.

Piaggio P-180 Avanti with P & W PT6A-66 and HC-E5N-3()/()E8218 propeller, depending on engine nacelle and exhaust stack usage, for some propellers the blades and hub are life limited, for other propellers only the blades are life limited - see Hartzell Manual 158A revision 1 or subsequent for life limits.

Pilatus PC-7 with P & W PT6A-25,-25A and HC-B3TN-2()/T10173C()-8 propeller - see Hartzell Manual 118F revision 4 or subsequent for blade life limits.

Pilatus PC-7 modified by Sierra industries with P & W PT6A-25C and HC-B3TN-2()/T10178(N)-8R propeller- see Hartzell Manual 118F revision 4 or subsequent for blade life limits.

Pilatus PC-7 mk II with P & W PT6A-25C and HC-D4N-2(D,E)/D9512A() propeller - see Hartzell Manual 142 revision 2 or subsequent for blade life limits.

Pilatus PC-9 with expanded flight envelope with P & W PT6A-62B and HC-D4N-2(AA,G)/D9512AE(B,K) propeller - see Hartzell Manual 142 revision 2 or subsequent for blade life limits.

Pilatus PC-9 with P & W PT6A-62 and HC-D4N-2(A,F)/D9512A(B,K) propeller - see Hartzell Manual 142 revision 4 or subsequent for blade life limits.

HARTZELL PROPELLER INC.

SERVICE LETTER

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

Raytheon 1900D Airliner with P & W PT6A-67D and HC-E4A-3(A,I,J)/E10950(P)(C)(B,K) propeller - see Hartzell Manual 143A revision 5 or subsequent for Airworthiness Limitations.

Raytheon T34C,T34C-1 with P & W PT6A-25(R) and HC-B3TN-3()/T10173-11R propeller - see Hartzell Manual 118F revision 4 or subsequent for blade life limits.

Raytheon Model 3000 with P&W PT6A-68 and HC-E4A-2(A)/E9612(K) propeller – see Hartzell Manual 142 revision 6 or subsequent for blade and hub life limits.

Samsung Aerospace KTX-1 with P&W PT6A-62 and HC-E4N-2/E9512CB-1 propeller – see Hartzell Manual 142 revision 4 or subsequent for blade and hub life limits.

Shorts SD3-60-300 with HC-A6A-3A propellers in compliance with SB 168, D-4905 Pitch Change Rod is life limited to 37,000 hours. (If SB 168 is not performed, other component parts are life limited. Refer to Hartzell Service Bulletin 152E or subsequent for details)

Shorts S312T Mk 1 Tucano with Allied Signal TPE331-12B and HC-D4N-5(C,E)/D9327() propeller - Hartzell Manual 141 revision 3 or subsequent for blade life limits

Socata TB-30 with Lycoming AEIO-540-L1BD5 and HC-C2YR-4CF/FC8475-6 propeller - see Hartzell Manual 113B revision 24 or subsequent for blade and hub life limits.

Twin Commander 500 modified by Merlyn Products Inc. with TIO-540-J2B() and HC-C4YR-2/FC6660() propeller - see Hartzell Manual 117D revision 3 or subsequent for blade life limits.

E. CATEGORY V - Propeller Damper Assemblies

All Hartzell propeller damper assemblies are to be overhauled at 2400 hours of operation or 72 calendar months, whichever occurs first.

NOTE: A propeller damper assembly is installed between the engine flange and the propeller mounting flange on various installations using Lycoming 360 series engines.

F. CATEGORY VI - Calendar Limits and Long Term Storage

1. Calendar Limits

(a) The effects of exposure to the environment over a period of time create a need for propeller overhaul regardless of flight time. Corrosion can create hidden defects in critical blade retention components. Therefore, a 60 or 72 calendar month limit between overhauls is specified in Categories I and II.

(b) Start date for calendar limit is when the propeller is first installed on an engine. Calendar limit is not interrupted by subsequent removal and/or storage.

NOTE: Start date for calendar limit should not be confused with overhaul date or warranty start date (which, with certain exceptions, is normally the date of sale to the first retail customer).

HARTZELL PROPELLER INC. **SERVICE LETTER**

Propellers

Propeller - Overhaul Periods and Service Life Limits for Hartzell Propellers, Governors, and Propeller Damper Assemblies

- (c) Experience has shown that special care, such as keeping an aircraft hangared, is not sufficient to allow extension of the calendar limit.
- 2. Long Term Storage
 - (a) Propellers (with 0 hours since new or overhaul) that have been in long term storage have additional inspection requirements prior to installation. These requirements are, generally, 1) if shelf life is two years or less a visual inspection is required before installation, 2) if shelf life exceeds two years the propeller must be disassembled and inspected for internal corrosion and seals and lubricants must be replaced before installation. Details of these requirements are published in Hartzell Standard Practices Manual 202A.