

HARTZELL PROPELLER INC.
SERVICE LETTER
TRANSMITTAL SHEET
HM-SL-001

**Overhaul Periods and Life Limits for Hartzell Propeller Inc.
Non-Aviation (Maritime) Components - Propellers and Governors**

April 18, 2016

This page transmits a revision to Service Letter HM-SL-001.

- Original, dated Sep 03/13
- Revision 1, dated Aug 01/14
- Revision 2, dated Apr 18/16

Propeller assemblies that have previously complied with this Service Letter are affected. Changes are shown by a change bar in the left margin of the revised pages. Some of these changes that do not affect technical content may not be highlighted in this transmittal sheet.

Revision 2 is issued to change the following:

- Revise the section, "References"
- Increase the Time Before Overhaul (TBO) for Aluminum Hub Propellers on Hovercraft in the section, "Overhaul Periods"
- Added the section, "Hartzell Propeller Inc. Contact Information"

This Service Letter is reissued in its entirety.

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1. Planning Information

A. Effectivity

- (1) All Hartzell Propeller Inc. Maritime (Non-Aviation) Propellers and Governors, regardless of installation, are affected by this Service Letter.

WARNING: DO NOT USE OBSOLETE OR OUTDATED INFORMATION. PERFORM ALL INSPECTIONS OR WORK IN ACCORDANCE WITH THE MOST RECENT REVISION OF THIS SERVICE LETTER. INFORMATION CONTAINED IN THIS SERVICE LETTER MAY BE SIGNIFICANTLY CHANGED FROM EARLIER REVISIONS. FAILURE TO COMPLY WITH THIS SERVICE LETTER OR THE USE OF OBSOLETE INFORMATION MAY CREATE AN UNSAFE CONDITION THAT MAY RESULT IN DEATH, SERIOUS BODILY INJURY, AND/OR SUBSTANTIAL PROPERTY DAMAGE. REFER TO THE SERVICE LETTER INDEX FOR THE MOST RECENT REVISION LEVEL OF THIS SERVICE LETTER.

B. Concurrent Requirements

- (1) Additional service documents may apply to the components/propellers affected by this Service Letter. Compliance with additional service documents may be necessary in conjunction with the completion of the Accomplishment Instructions in this Service Letter. Refer to the Hartzell Propeller Inc. website at www.hartzellprop.com for a cross-reference of service documents.

C. Reason

- (1) Hartzell Propeller Inc. requires publication of overhaul periods and service life limits for propellers and governors.

D. Description

- (1) This Service Letter provides overhaul periods and service life limits for propellers and governors installed on Maritime (Non-Aviation) craft.

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E. Compliance

WARNING: TO MAINTAIN THE SAFETY OF PROPELLERS AND PROPELLER CONTROL SYSTEMS, IT IS ESSENTIAL THAT THEY BE OVERHAULED AT THE INTERVALS SPECIFIED IN THIS SERVICE LETTER AND THAT THE OVERHAULS BE PROPERLY PERFORMED IN ACCORDANCE WITH THE MANUFACTURER'S SERVICE DOCUMENTS. SERVICE EXPERIENCE HAS SHOWN THAT PROPELLERS THAT ARE NEGLECTED, NOT OVERHAULED, OR OVERHAULED IMPROPERLY CAN RESULT IN A COMPONENT FAILURE THAT COULD RESULT IN DEATH, SERIOUS BODILY INJURY, AND/OR SUBSTANTIAL PROPERTY DAMAGE.

- (1) Hartzell Propeller Inc. propellers must be overhauled at the intervals specified in Section 3, Overhaul Periods, Paragraph A.
- (2) Hartzell Propeller Inc. governors must be overhauled at the intervals specified in Section 3, Overhaul Periods, Paragraph B.
- (3) Life limited components must be retired from service in accordance with the Operational Limitations section of the applicable Hartzell Propeller Inc. owner's manual.

F. Approval

- (1) This technical document has been approved by Hartzell Propeller Inc.

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G. References

- (1) Hartzell Propeller Inc. Operation, Maintenance Manual, and Logbook for Propeller System HM-5V1-A1000-A and HM-6V1-A1000-A Manual 300 - Available on the Hartzell Propeller Inc. website at www.hartzellprop.com.
- (2) Hartzell Propeller Inc. Propeller Owner's Manual and Logbook Manual 340 - Available on the Hartzell Propeller Inc. website at www.hartzellprop.com.
- (3) Hartzell Propeller Inc. Propeller Owner's Manual and Logbook Manual 350 - Available on the Hartzell Propeller Inc. website at www.hartzellprop.com.
- (4) Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02), Volumes 1 through 11 (Volume 7, Consumable Materials Packaging and Storage is available on the Hartzell Propeller Inc. website at www.hartzellprop.com).

H. Other Publications Affected

- (1) None

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) Hartzell Propeller Inc. determines the overhaul periods on the assumption that the propeller is being maintained in accordance with the applicable Hartzell Propeller Inc. publications.
- (3) The calendar time, which affects the life of seals directly or indirectly exposed to the elements and other parts subject to corrosion, is also a limiting factor.
- (4) Propellers are constantly subjected to natural corrosion and erosion from use and environmental exposure.

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B. Continued Serviceable Operation

- (1) If propeller operational time or calendar time in service are unknown, the propeller should be overhauled to confirm its continued safe operation.

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. For propellers that have been assembled with parts from other propellers, consideration of TSN of the hub and each blade should be made.

- (2) Propellers must be maintained in accordance with the applicable Hartzell Propeller Inc. publications.
- (3) Propellers exposed to impact damage, lightning strikes or overspeed **must** be inspected in accordance with the Special Inspections chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02) before return to service.
- (4) Propellers must comply with all directives issued by an applicable authority that may affect overhaul periods.
- (5) Some propellers may require overhaul before the specified TBO limits. Propellers subjected to abnormal use or environmental exposure often require premature overhaul when abnormal damage or corrosion is evident.

C. Defining Propeller Assembly Time Since New

- (1) Craft operators are required to track propeller assembly Time Since New (TSN) and Time Since Overhaul (TSO). Such tracking is simple as long as the propeller assembly contains original components.
- (2) Propellers are often assembled using components with differing individual TSN. Because of this, maintaining separate TSN and TSO histories for a replacement hub, blade, or life-limited component (hereafter referred to as primary components) is required in order to establish propeller assembly TSN, and should be tracked in the propeller logbook.

NOTE: For the purposes of tracking TSN, hub, blades, and life limited parts are collectively considered primary components.

- (3) Propeller components other than the primary components do not require time tracking unless specifically required in Hartzell Propeller Inc. service publications; however, tracking the total time of non-primary components, when possible, may prove useful if future service action is based on such data.

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- (4) The TSN for the propeller assembly is specified as equal to the highest TSN primary component installed in the propeller assembly.
- (a) When a propeller is assembled with primary components of different TSN's, the TSN for the propeller assembly is considered equal to the TSN of the highest time primary component installed in the propeller assembly.
- (b) Only the TSN of primary components must be used to establish propeller assembly TSN, when individual component TSN are different.
- Example: A propeller is assembled using a hub with 5,206 hours TSN, one blade with 7,438 hours TSN, and three blades with 3,438 hours TSN. The TSN for this propeller assembly is considered 7,438 hours based on the blade (highest time primary component).
- (5) The TSN of a propeller assembly can actually be reduced as components are changed.
- (a) It is possible to reduce the overall TSN of a propeller assembly if the highest TSN primary component is replaced with a lower TSN primary component.
- Example: A propeller assembly contains a hub with 5,206 hours TSN, one blade with 7,438 hours TSN, and three blades with 3,438 hours TSN. The TSN of this propeller assembly is considered 7,438 hours (TSN of the highest time primary component). If the highest time blade (7,438 hours TSN) is replaced with a new blade (0 hours TSN), the propeller assembly TSN becomes 5,206 hours TSN, based on the hub time (5,206 hours TSN), as it is now the highest time primary component.
- (6) A propeller assembly is considered TSN "unknown" if it contains a primary component(s) with unknown TSN.
- (a) If a propeller assembly contains a primary component(s) with unknown TSN, the propeller assembly TSN is unknown as long as the primary component(s) with unknown TSN remain installed. The TSN for the known component(s) however should be tracked in the propeller logbook.
- Example: A propeller assembly contains a hub with 5,206 hours TSN, one blade with 7,438 hours TSN, and three blades with 3,438 hours TSN. The TSN of this propeller assembly is 7,438 hours (highest time primary component). One of these blades is replaced with a TSN "unknown" blade. The entire propeller assembly is now considered TSN "unknown" as long as that blade remains in the propeller assembly.

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- (7) When a component undergoes an overhaul, TSO is returned to zero.

NOTE: The TSN of a used component can never be returned to zero.

- (8) The TSN of a propeller assembly may be considered “zero” if certain components are changed.
- (a) If all primary components in a propeller assembly are replaced with primary components with zero TSN, the TSN for the propeller assembly may be specified as “Zero”.
 - (b) The release paperwork and logbook entries must also state the propeller is “Repaired” or “Overhauled” (as applicable), and confirm the installation date and the serial numbers of the new primary components.
 - (c) The TSN for the new primary component(s) should continue to be tracked in the propeller logbook.

D. Calendar Limits

- (1) 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 calendar month limit between overhauls is specified.
- (2) Start date for calendar limit is when the propeller is first installed and run 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.

- (3) Experience has shown that special care, such as keeping a craft hangared, is not sufficient to allow extension of the calendar limit.

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E. TBO Extension

- (1) Hartzell Propeller Inc. frequently receives individual requests for extension of published TBO limits. In all cases, actual **approval must be obtained from the operator's applicable certification authority**. Any statement by Hartzell Propeller Inc. does not, in itself, constitute approval. TBO extensions, if allowed, may be either permanent or temporary in nature:
 - (a) *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 1500 hours TBO may be increased to 2000 hours after evaluating the results of several 1500 hours overhauls, further extension requires evaluation of several 2000 hours overhauls, etc. The sampling program should be established through coordination with the **applicable certification authority**, the operator, the propeller repair station, and Hartzell Propeller Inc. All TBO extensions must be approved by the **applicable certification authority** and documented in the operator's approved maintenance or operational publications.
 - (b) *Temporary* - Hartzell Propeller Inc. 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 the craft. Approval must be obtained from the operator's **applicable certification authority** and should be limited to a specific propeller. Such extensions should not be construed to allow a permanent TBO extension or allow an operator to routinely deviate from published TBO limits.

F. Long Term Storage

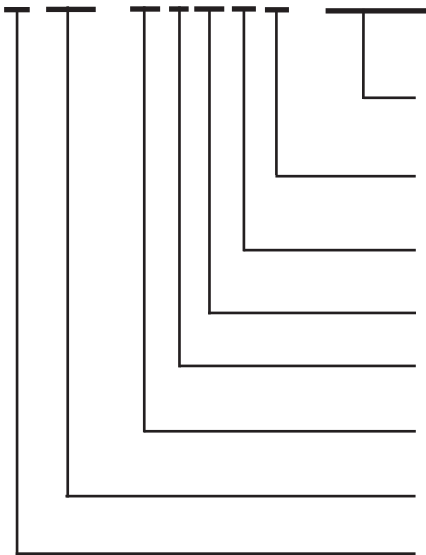
- (1) Propellers (with 0 hour time in service, since new, or overhaul) that have been in long term storage have additional inspection requirements before installation. Details of these requirements are published in the Packaging and Storage chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).
- (2) Propellers with time in service that were placed in long term storage without first being overhauled have additional inspection requirements before return to service. Details of these requirements are published in the Packaging and Storage chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).

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ALUMINUM HUB, COMPACT SERIES

P HM - J 3 Y 1 F - () () ()

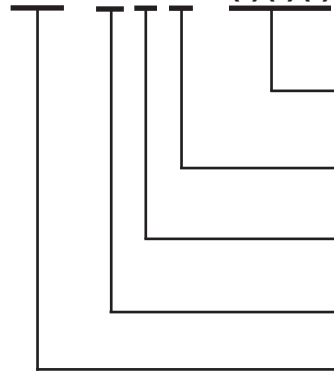


- SPECIFIC DESIGN FEATURES -**
WILL BE A NUMBER THAT MAY BE FOLLOWED BY ANY COMBINATION OF LETTERS
- MOUNTING FLANGE OR SHAFT -**
MAY BE D, F, K, L, N, R
- “1” WHEN USED INDICATES A UNIQUE STRUCTURE, ONLY COMPATIBLE WITH CERTAIN BLADE MODELS, LIGHTWEIGHT COMPACT HUB UNIT DESIGN**
- BLADE SHANK - Y**
- NUMBER OF BLADES -**
MAY BE 2, 3, 4
- BASIC HUB DESIGN -**
MAY BE C, E, F, G, H, I, J, L, M
- HM - HARTZELL MARITIME**
- DOWEL LOCATION -**
MAY BE BLANK, B, C, D, E, P

**Model Designation: Aluminum Hub Propellers on WIG Craft
 Compact Series
 Figure 1**

ALUMINUM HUB, LIGHTWEIGHT TURBINE SERIES

HM - D 4 N - () () ()

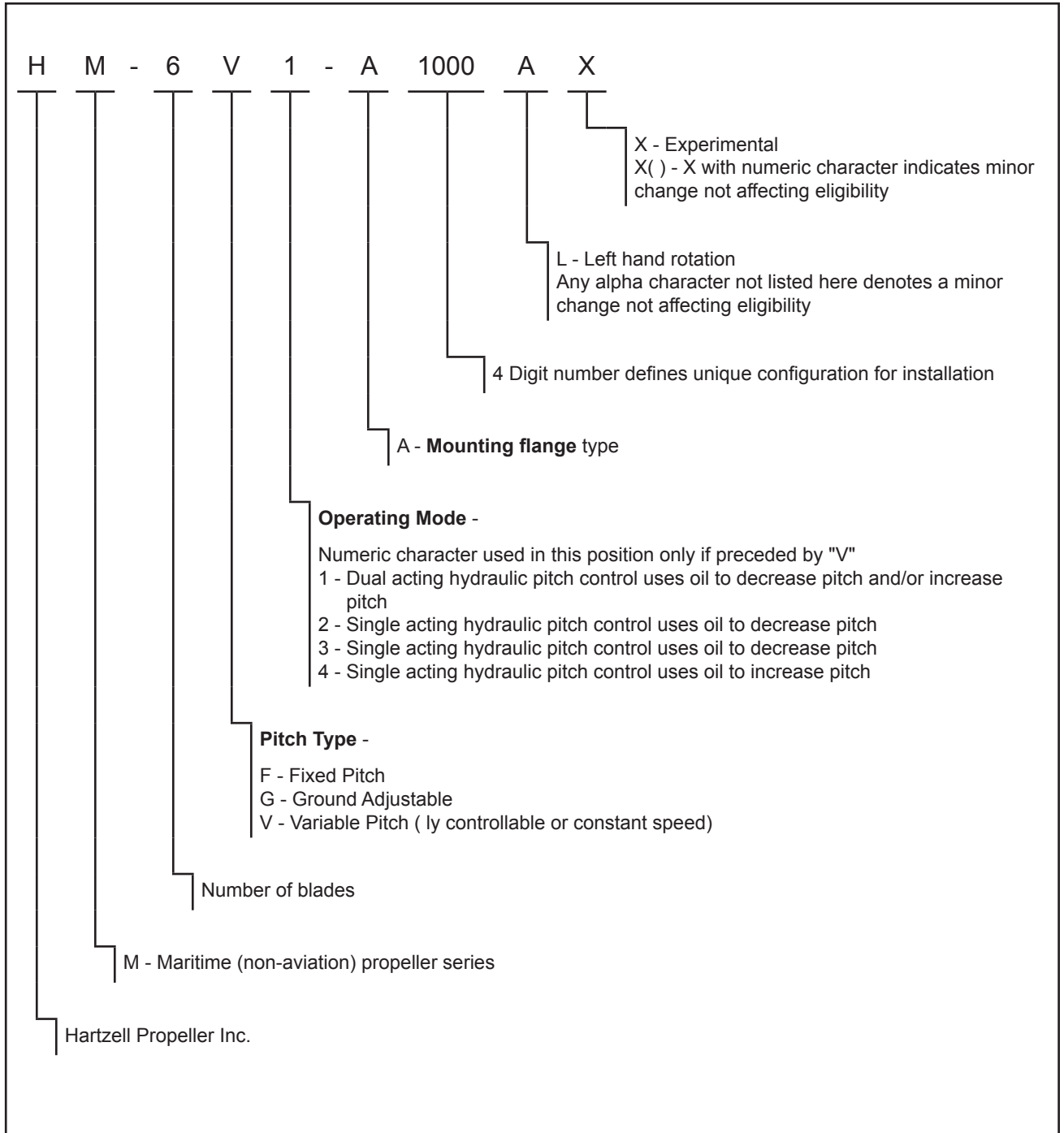


- SPECIFIC DESIGN FEATURES -**
WILL BE A NUMBER THAT MAY BE FOLLOWED BY ANY COMBINATION OF LETTERS
- MOUNTING FLANGE OR SHAFT -**
MAY BE A, B, C, F, N, P, W
- NO. OF BLADES -**
MAY BE 3, 4, 5, 6
- BASIC HUB DESIGN -**
MAY BE A, D, E
- HM - HARTZELL MARITIME**

**Model Designation: Aluminum Hub Propellers on WIG Craft
 Lightweight Turbine Series
 Figure 2**

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**Model Designation: Aluminum Hub Propellers on Hovercraft
 Figure 3**

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3. Overhaul Periods

- A. To determine the applicable overhaul period, the propeller model number and engine must be known. The propeller model can be found stamped on the side of the propeller hub and in the propeller logbook. Overhaul Periods are specified by craft type [Hovercraft or Wing-In-Ground-Effect Craft Propellers (WIG)].

Aluminum Hub Propellers on WIG Craft - Compact Series

Model numbers as shown in Figure 1

<u>Propeller Model and Application</u>	<u>Flight Hours/Calendar Months</u>
All 3 Bladed propellers	2400/24

Aluminum Hub Propellers on WIG Craft - Lightweight Turbine Series

Model numbers as shown in Figure 2

<u>Propeller Model and Application</u>	<u>Flight Hours/Calendar Months</u>
All 4 Bladed propellers	2400/24

Aluminum Hub Propellers on Hovercraft

Model numbers as shown in Figure 3

<u>Propeller Model and Application</u>	<u>Flight Hours/Calendar Months</u>
All 5 Bladed propellers	2000/36
All 6 Bladed propellers	1000/36

B. Governors

- (1) Hartzell Propeller Inc. propeller governors are to be overhauled at the same time as engine or propeller overhaul, but not to exceed 2400 hours of operation (there is no calendar limit applicable to governors).

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4. Life Limits

A. Refer to the Operational Limitations section of the applicable Hartzell Propeller Inc. propeller owner's manual for information about specific life limits on blades, parts, and propeller assemblies.

- (1) Life limits for blade models are application specific. They may not be life limited on other installations. However, **time accumulated toward life limit accrues when first operated on a life limited application 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.

5. Hartzell Propeller Inc. Contact Information

Hartzell Propeller Inc.
Attn: Product Support
One Propeller Place
Piqua, Ohio 45356-2634 USA
Phone: (001) 937.778.4379
Fax: (001) 937.778.4215
E-mail: techsupport@hartzellprop.com

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