

HARTZELL PROPELLER INC.
SERVICE BULLETIN
TRANSMITTAL SHEET
HC-SB-61-181A

Blades - Blade Corrosion Inspection and Repair

April 1, 2014

This page transmits a revision to Service Bulletin HC-SB-61-181A.

- Original SB 181, dated Mar 12/93
- SB 181A, dated Sep 12/94
- HC-SB-61-181A, Revision 1, dated Sep 02/03
- Revision 2, dated Apr 30/10
- Revision 3, dated Jun 15/10
- Revision 4, dated Oct 27/10
- Revision 5, dated Sep 03/13
- Revision 6, dated Apr 01/14

Propeller assemblies that have previously complied with this Service Bulletin 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 6 is issued to change the following:

- Revision 6 adds the HC-E5N-3A/HE8492 and HC-E5N-3AL/LE8492 propellers installed on Piaggio P-180 aircraft to the Effectivity.
- Revision 6 revised the inspection interval from 150 hours to 200 hours.
- EASA Airworthiness Directive 2014-0013 was issued to reference this Service Bulletin.

This Service Bulletin is reissued in its entirety.

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1. Planning Information

A. Effectivity

- (1) HC-E5N-3(A)/HE8218 and HC-E5N-3(A)L/LE8218 propellers installed on Piaggio P-180 aircraft are affected by this Service Bulletin.
- (2) HC-B3TN-3DL/LT10282()-9.5R propellers installed on Piaggio P-166 DL3 aircraft are affected by this Service Bulletin.
- (3) HC-E5N-3A/HE8492 and HC-E5N-3AL/LE8492 propellers installed on Piaggio P-180 aircraft are affected by this Service Bulletin.

WARNING: DO NOT USE OBSOLETE OR OUTDATED INFORMATION. PERFORM ALL INSPECTIONS OR WORK IN ACCORDANCE WITH THE MOST RECENT REVISION OF THIS SERVICE BULLETIN. INFORMATION CONTAINED IN THIS SERVICE BULLETIN MAY BE SIGNIFICANTLY CHANGED FROM EARLIER REVISIONS. FAILURE TO COMPLY WITH THIS SERVICE BULLETIN 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 BULLETIN INDEX FOR THE MOST RECENT REVISION LEVEL OF THIS SERVICE BULLETIN.

B. Concurrent Requirements

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

C. Reason

- (1) As a result of the pusher configuration, propeller blades on affected aircraft are exposed to hot exhaust gasses, which makes them susceptible to erosion and corrosion.
- (2) Corrosion pitting in highly stressed areas of propeller blade shanks is highly undesirable; therefore, additional inspections and corrosion preventative measures are required.
- (3) EASA Airworthiness Directive 2014-0013 was issued to reference this Service Bulletin.

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D. Description

- (1) This document provides Instructions for Continued Airworthiness (ICA).
- (2) This Service Bulletin provides a procedure for blade cleaning.
- (3) This Service Bulletin provides an inspection procedure for paint erosion and blade corrosion.
- (4) This Service Bulletin provides a procedure for paint restoration and repair of light or moderate corrosion by qualified personnel.
- (5) This Service Bulletin provides the corrective action required by an authorized propeller service facility for repair of severe corrosion.
- (6) Hartzell Propeller Inc. has reviewed data provided from previously performed inspections and has changed the compliance interval for blade cleaning.
- (7) Revision 4 removed the OMA SUD Skycar as an affected installation. Refer to Hartzell Propeller Inc. Service Bulletin HC-SB-61-325 for inspection and repair instructions for the OMA SUD Skycar installation.
- (8) Revision 5 adds Split Decision SC as an alternate cleaner and adds AkzoNobel as an alternate wash primer.

E. Compliance

CAUTION: MORE FREQUENT INTERVALS MAY NEED TO BE ESTABLISHED IF SERVICE EXPERIENCE INDICATES THAT SEVERE CORROSION IS FOUND DURING INSPECTIONS.

- (1) Within three (3) days of any flight, perform blade cleaning in accordance with Paragraph 3.A.

NOTE: It is recommended to perform cleaning after the last flight of each day. This is a recommendation and is not mandatory.

- (2) At intervals not to exceed 200 hours of operation, 12 calendar months, or at annual inspection, whichever occurs first, perform Blade Corrosion/Paint Inspection in accordance with Paragraph 3.B in the Accomplishment Instructions of this Service Bulletin.
 - (a) For scheduling purposes, the inspection interval has a maximum 10% additional non-cumulative flight hour tolerance.
 - (b) For example, the initial 200 hour inspection is overflowed to 220 hours, and then inspected at this time. The next inspection must be accomplished 180 flight hours from previous inspection.

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F. Approval

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

G. Manpower

- (1) The inspections required are outside the routine requirements, additional man-hours are required as specified:

<u>Inspection</u>	<u>Man-Hours</u>
(a) Blade Cleaning, Paragraph 3.A	0.5 per propeller
(b) Inspection, Paragraph 3.B	1.0 per propeller
(c) Paint Restoration and Repair of Light Corrosion, Paragraph 3.C	2.0 per blade
(d) Severe Corrosion Paragraph 3.D	8.0 per propeller
(2) If performed in conjunction with an overhaul	no additional man-hours are required.

H. Weight and Balance

- (1) Not changed

I. Electrical Load Data

- (1) Not changed

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J. References

- (1) FAA Advisory Circulars AC 20-37E
- (2) FAA Advisory Circulars AC 43.4A
- (3) FAA Advisory Circulars AC 43.13-1B
- (4) Hartzell Propeller Inc. Service Bulletin HC-SB-61-325
- (5) Hartzell Propeller Inc. Steel Hub Turbine Propeller Maintenance Manual 118F (61-10-18)
- (6) Hartzell Propeller Inc. Propeller Aluminum Blade Overhaul Manual 133C (61-13-33)
- (7) Hartzell Propeller Inc. Five Blade Lightweight Turbine Propeller Overhaul Manual 158A (61-10-58)
- (8) Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02)

K. Other Publications Affected

- (1) Hartzell Propeller Inc. Owner's Manual 139 (61-00-39)
- (2) Hartzell Propeller Inc. Owner's Manual 149 (61-00-49)

2. Material Information

NOTE: All CM numbers or materials in this Service Bulletin refer to the consumable Materials chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).

A. Paint kits:

- (1) Kit A-2742-2 Flat Black (quart) or A-2742-3 Flat Black (gallon) includes catalyst, accelerator, wash primer reducer, wash primer, acid diluent, polane reducer, and paint.

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- (2) Kit A-2742-10 White (quart) includes catalyst, accelerator, reducer, and paint.

NOTE: Kit A-2742-8 Gloss Black (quart) or A-2742-9 Gloss Black (gallon) are no longer approved for use and are no longer available.

- (3) Kit A-2742 Flat Black (quart) or A-2742-1 Gray (gallon) includes catalyst, accelerator, wash primer reducer, wash primer, acid diluent, polane reducer, and paint.

B. Paint Types and Mixes:

NOTE Sherwin-Williams Polane® paints are commonly stocked by propeller repair stations. Gloss black, which was previously applied to the Piaggio propeller, is no longer approved by Hartzell Propeller Inc.

(1) Washer Primer

- (a) Mixture Number 3, Washer Primer

- 1 4 parts Wash Primer, CM24, ASG/Randolph Paints MIL-C-8514
- 2 4 parts T54 Wash Primer Reducer, CM25, Randolph Paints
- 3 1 part Acid Diluent, CM26, Randolph Paints P/N 120AC-1

- (b) AksoNobel 40-P1-2-CF Washer Primer - Alternate

- 1 100 parts Wash Primer, AksoNobel 40-P1-2 CF base
- 2 40 parts AksoNobel 40-P1-2 CF hardener
- 3 100 part Activator, AksoNobel 40-P1-2 CFA

(2) Mixture Number 4, Polane Gray

- (a) 6 parts Polane® Gray, CM34, Sherwin-Williams P/N F63TXB9920-4311
- (b) 1 part Polane® Catalyst, CM30, Sherwin-Williams P/N V66V29
- (c) 3 parts Polane® Reducer, CM32, Sherwin-Williams P/N R7K69

(3) Mixture Number 5, Flat Black

- (a) 6 parts Polane® Black, CM33, Sherwin-Williams P/N F63TXB9629-4311
- (b) 1 part Polane® Catalyst, CM30, Sherwin-Williams P/N V66V29
- (c) 3 parts Polane® Reducer, CM32, Sherwin-Williams P/N R7K69

NOTE: The use of Gloss Black Polane® paint is no longer approved by Hartzell Propeller Inc.

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- (4) Mixture Number 6, White (tip stripe)
 - (a) 6 parts Polane® White, CM36, Sherwin-Williams
P/N F63TXW9627-4311
 - (b) 1 part Polane® Catalyst, CM30, Sherwin-Williams P/N V66V29
 - (c) 3 parts Polane® Reducer, CM32, Sherwin-Williams P/N R7K69

C. Solvent/Cleaner

- (1) Quick Dry Stoddard Solvent
- (2) Methyl-Propyl-Ketone (MPK)
- (3) Methyl-Ethyl-Ketone (MEK)
- (4) Contax HP, 90393
- (5) Acetone
- (6) #700 lacquer thinner
- (7) Jet Fuel
- (8) Simple Green
- (9) Split Decision SC 1:20 (5%) or less
- (10) Equivalent solvent/cleaner approved by Hartzell Propeller Inc.

3. Accomplishment Instructions

CAUTION 1: DO NOT CLEAN THE BLADES WITH CAUSTIC OR ACIDIC SOAP SOLUTIONS. IRREPARABLE CORROSION OF PROPELLER COMPONENTS MAY OCCUR.

CAUTION 2: WHEN CLEANING THE BLADES, DO NOT PERMIT SOAP OR SOLVENT SOLUTIONS TO RUN OR SPLASH INTO THE HUB AREA.

A. Blade Cleaning:

- (1) Blade cleaning may be performed by the pilot or non-maintenance personnel.
- (2) Within 3 days of any flight, use a cloth dampened with a solvent/cleaner to wipe down each propeller blade to remove engine exhaust residue.
- (3) If there is visual evidence of corrosion or bare metal exposed as a result of paint erosion, personnel should contact maintenance personnel for inspection repair at the next scheduled inspection is recommended.

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B. Inspection for paint erosion and blade corrosion during inspections:

- (1) Use a solvent/cleaner to thoroughly clean blade shanks in areas exposed to engine exhaust. Thoroughly remove all foreign matter/exhaust residue.
- (2) Make a visual inspection of paint condition and corrosion indications.
- (3) Paint must be in good condition in the area exposed to exhaust gases. Repair and repainting is required if:
 - (a) Any of the underlying aluminum blade is exposed.
 - (b) There are any indications of corrosion, such as pitting or pinpoint "blisters" or "spiders".
- (4) All corrosion indications require repair and subsequent repainting.

NOTE: See FAA Advisory Circular AC 43.4A (or subsequent revision) for additional information concerning corrosion. This circular provides definitions, repair procedures, safety precautions, etc.

C. Field paint restoration and repair of light or moderate corrosion by qualified personnel:

NOTE: To minimize effects upon propeller balance, it is desirable to remove equal amounts of material from all blades and to apply paint equally to all blades.

- (1) Repair of Light/Moderate Corrosion:
 - (a) Use fine (320 grit or finer) sandpaper to sand the area sufficiently to expose all areas of corrosion.
 - (b) Rework as necessary to remove corrosion pits.
 - 1 Perform filing, sanding, and polishing to remove localized pits in the same manner as routine repair of small nicks and gouges. (Ref. FAA Advisory Circulars AC 43.13-1B and AC 20-37E.)

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- 2 If corrosion covers a large area such that metal removal beyond 0.005 inch (0.12 mm) depth over 3.0 square inches (19.35 square cm) is required, or if there are numerous localized corrosion pits deeper than 0.010 inch (0.25 mm), disassembly and repair by an certified propeller repair station is required.

NOTE: Qualified personnel must make the determination if repairs can be made locally or must be sent to a propeller repair station. Hartzell Propeller Inc. recommends that in "borderline" or questionable situations it is preferable to send the propeller to a certified propeller repair station with the appropriate rating.

- (c) Perform a penetrant inspection in accordance with the Penetrant Inspection chapter of Hartzell Propeller Inc. Standard Practice Manual 202A (61-01-02) to make sure that all corrosion has been removed.

(2) Paint Restoration:

WARNING: FOLLOW PAINT MANUFACTURER'S RECOMMENDATIONS FOR SAFE HANDLING AND PROPER PROTECTION DURING APPLICATION OF PAINTS. SKIN CONTACT AND BREATHING OF VAPORS OR SPRAY MIST CAN BE HAZARDOUS.

- (a) Using fine 240 grit abrasive aluminum oxide, sand the edges of the damaged paint feather the edges.
- (b) Clean the repaired area with T54 Reducer, CM25 or isopropyl alcohol. These cleaners will leave no residue.
- (c) Apply a layer of chemical conversion coating to the exposed metal areas in accordance with the Chromic Acid Anodizing chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).
- (d) Apply masking material to the areas adjacent to the repair area to avoid overspraying.
- (e) Refer to the Material Information section of this Service Bulletin for approved paint type and mixes. Paint the blade in accordance with the Paint Touch Up section in the Paint and Finish chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).

NOTE: The use of gloss black Polane paint is no longer approved.

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- (f) After completion of paint restoration, dynamic balance is recommended. Dynamic balance is especially desirable if propeller vibration has had a noticeable change.
- D. Action required by a certified propeller repair station with the appropriate rating for repair of severe corrosion:

NOTE: Repair of severe corrosion may require a complete "overhaul" of the blade.

- (1) Disassemble the propeller in accordance with the applicable Hartzell Propeller Inc. propeller overhaul manual.
 - (2) Repair and refinish blade in accordance with Hartzell Propeller Inc. Aluminum Blade Overhaul Manual 133C (61-13-33).
 - (a) Complete corrosion removal is required. Blade may be reworked to minimum width and thickness limits in accordance with Hartzell Propeller Inc. Aluminum Blade Overhaul Manual 133C (61-13-33).
 - (b) After rework, perform a penetrant inspection in accordance with the Penetrant Inspection chapter of Hartzell Propeller Inc. Standard Practice Manual 202A (61-01-02).
 - (c) Apply a layer of chemical conversion coating to exposed metal to prevent corrosion (anodize is preferable to chemical conversion coating) in accordance with the Chromic Acid Anodizing chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).
 - (d) Refer to the Material Information section of this Service Bulletin for approved paint type and mixes. Repaint the blades in accordance with the Paint and Finish chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).
 - (e) Balance the propeller assembly in accordance with the Static and Dynamic Balance chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).
 - (3) Assemble the propeller in accordance with the applicable Hartzell Propeller Inc. propeller overhaul manual.
- E. Make an entry in the propeller logbook noting compliance with this Service Bulletin and the next inspection interval requirement.

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