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HARTZELL**MANUAL REVISION TRANSMITTAL****Manual 149 (61-00-49)****Propeller Owner's Manual and Logbook****REVISION 20 dated December 2014**

Attached is a copy of Revision 20 to Hartzell Manual 149.

Page Control Chart for Revision 20:

Remove**Insert**Page No.Page No.**COVER/INSIDE COVER****COVER/INSIDE COVER****REVISION HIGHLIGHTS****REVISIONS HIGHLIGHTS**

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NOTE 1: When the manual revision has been inserted in the manual, record the information required on the Record of Revisions page in this manual.

NOTE 2: Pages distributed in this revision may include pages from previous revisions if they are on the opposite side of revised page. This is done as a convenience to those users who wish to print a two-sided copy of the new revision.

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Manual No. 149

61-00-49

Revision 20

December 2014

Propeller Owner's Manual and Logbook

Models: HC-(D,E)4()-2()

HC-(D,E)4()-3()

HC-(D,E)4()-5()

HC-D3F-7()

HC-E5N-3()

Lightweight Turbine Propellers with Aluminum Blades

Hartzell Propeller Inc.

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Piqua, OH 45356-2634 U.S.A.

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REVISION HIGHLIGHTS

Revision 20, dated December 2014, incorporates the following:

- COVER:
 - Revised to match the manual revision
- REVISION HIGHLIGHTS:
 - Revised to match the manual revision
- AIRWORTHINESS LIMITATIONS
 - Revised to add additional exhaust stubs for Piaggio P-180
- LIST OF EFFECTIVE PAGES:
 - Revised to match the manual revision

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REVISION HIGHLIGHTS**1. Introduction****A. General**

This is a list of current revisions that have been issued against this manual. Please compare it to the RECORD OF REVISIONS page to ensure that all revisions have been added to the manual.

B. Components

- (1) Revision No. indicates the revisions incorporated in this manual.
- (2) Issue Date is the date of the revision.
- (3) Comments indicates the level of the revision.
 - (a) New Issue is a new manual distribution. The manual is distributed in its entirety. All the page revision dates are the same and no change bars are used.
 - (b) Reissue is a revision to an existing manual that includes major content and/or major format changes. The manual is distributed in its entirety. All the page revision dates are the same and no change bars are used.
 - (c) Major Revision is a revision to an existing manual that includes major content or minor content changes over a large portion of the manual. The manual is distributed in its entirety. All the page revision dates are the same, but change bars are used to indicate the changes incorporated in the latest revision of the manual.
 - (d) Minor Revision is a revision to an existing manual that includes minor content changes to the manual. Only the revised pages of the manual are distributed. Each page retains the date and the change bars associated with the last revision to that page.

<u>Revision No.</u>	<u>Issue Date</u>	<u>Comments</u>
Revision 8	Nov/99	Reissue
Revision 9	July/03	Minor Revision
Revision 10	Sep/07	Minor Revision
Revision 11	Nov/09	Minor Revision
Revision 12	Apr/11	Minor Revision
Revision 13	Aug/12	Minor Revision
Revision 14	Nov/12	Minor Revision
Revision 15	Feb/13	Minor Revision
Revision 16	May/13	Minor Revision
Revision 17	Mar/14	Minor Revision
Revision 18	Apr/14	Minor Revision
Revision 19	May/14	Minor Revision
Revision 20	Dec/14	Minor Revision

AIRWORTHINESS LIMITATIONS

The Airworthiness Limitations section is FAA approved and specifies maintenance required under 14 CFR §§ 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

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Rev. No.	Description of Revision
11	Added airworthiness limitation information from Hartzell Propeller Inc. Overhaul Manual 141 (61-10-41), Hartzell Propeller Inc. Overhaul Manual 142 (61-10-42), and Hartzell Propeller Inc. Overhaul Manual 158A (61-10-58). Added hub unit limits and revised blade life limits for propeller model HC-D4N-5(C,E)/D9327K. Removed hub life limit and inspection for propeller model HC-E4W-5L/JE10305(B).
14	Added a hub unit life limit and a blade life limit for propeller model HC-E4A-2/E9673S
16	Added a blade life limit for propeller model HC-E4N-2D/E9512G(B)-1, removed the inspection requirement for propeller model HC-E4W-5L/JE10305(B)
18	Added a blade life limit and a hub unit life limit for propeller model HC-E5N-3A(L)/(H,L)E8492
20	Added additional Engine Exhaust Stubs for the HC-E5N-3(A)/HE8218 and the HC-E5N-3(A)/LE8218 propellers installed on the Piaggio P180.

AIRWORTHINESS LIMITATIONS**1. Replacement Time (Life Limits)**

- A. The FAA establishes specific life limits for certain component parts, as well as the entire propeller. Such limits require replacement of the identified parts after a specified number of hours of use.
- B. The following data summarizes all current information concerning Hartzell Propeller Inc. life limited parts as related to propeller models affected by this manual. These parts 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).

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AIRWORTHINESS LIMITATIONS

- (1) The following list specifies life limits for blades only. Associated hub parts are not affected. Blade models shown are life limited only on the specified applications.

PROPELLER MODELS ON FAA TYPE CERTIFIED AIRCRAFT	
Aircraft/Engine/Propeller	Blade Life Limit
Aircraft: Hawker Beechcraft Model 3000 (US Military T-6A) Engine: Pratt & Whitney Model PT6A-68 Propeller: HC-E4A-2(A)/E9612(K)	19,497 hours
Aircraft: Hawker Beechcraft Model 3000 (US Military T-6A) Engine: Pratt & Whitney Model PT6A-68 Propeller: HC-E4A-2(A)/E9612(K)	19,497 hours
Aircraft: Hawker Beechcraft Model AT-6 Engine: Pratt & Whitney Model PT6A-68D Propeller: HC-E4A-2/E9673S	7,400 hours
Aircraft: Shorts Model T Mk 1 Tucano Engine: Honeywell (Garrett) Model TPE331-12B Propeller: HC-D4N-5(C,E)/D9327K	41,300 hours

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AIRWORTHINESS LIMITATIONS

PROPELLER MODELS ON FAA TYPE CERTIFIED AIRCRAFT, CONTINUED																	
Aircraft/Engine/Propeller	Blade Life Limit																
Aircraft: Piaggio P-180 Avanti that uses nacelles 80-336005-801 /80-336006-801 and exhaust stub 80-336013-801 Engine: Pratt & Whitney Model PT6A-66 Propeller: HC-E5N-3(A) (L)/(H,L)E8218	1,500 hours (For complete life limit criteria, refer to paragraph 2 in this section.)																
Aircraft: Piaggio P-180 Avanti that uses nacelles 80-336213-801 /80-336214-801 and exhaust stub 80-336013-801 Engine: Pratt & Whitney Model PT6A-66 Propeller: HC-E5N-3(A) (L)/(H,L)E8218	3,000 hours (For complete life limit criteria, refer to paragraph 2 in this section.)																
Aircraft: Piaggio P-180 Avanti that uses the following: <table border="0"> <tr> <td><u>L/H Aft Nacelle/R/H Aft Nacelle</u></td><td><u>Exhaust Stub</u></td></tr> <tr> <td>80-336213-803/80-336214-803</td><td>80-336013-803 or</td></tr> <tr> <td></td><td>80-336091-801</td></tr> <tr> <td>80-336213-805/80-336214-805</td><td>80-337984-801</td></tr> <tr> <td>80-336250-801/80-336251-801</td><td>80-336013-803 or</td></tr> <tr> <td></td><td>80-336091-801</td></tr> <tr> <td>80-336250-803/80-336251-803</td><td>80-336013-803 or</td></tr> <tr> <td></td><td>80-336091-801</td></tr> </table> Engine: Pratt & Whitney Model PT6A-66(B) Propeller: HC-E5N-3(A) (L)/(H,L)E8218	<u>L/H Aft Nacelle/R/H Aft Nacelle</u>	<u>Exhaust Stub</u>	80-336213-803/80-336214-803	80-336013-803 or		80-336091-801	80-336213-805/80-336214-805	80-337984-801	80-336250-801/80-336251-801	80-336013-803 or		80-336091-801	80-336250-803/80-336251-803	80-336013-803 or		80-336091-801	9,000 hours (For complete life limit criteria, refer to paragraph 2 in this section.)
<u>L/H Aft Nacelle/R/H Aft Nacelle</u>	<u>Exhaust Stub</u>																
80-336213-803/80-336214-803	80-336013-803 or																
	80-336091-801																
80-336213-805/80-336214-805	80-337984-801																
80-336250-801/80-336251-801	80-336013-803 or																
	80-336091-801																
80-336250-803/80-336251-803	80-336013-803 or																
	80-336091-801																
Aircraft: Piaggio Aero Industries P-180 that uses rear nacelle 81-336033-801 and engine exhaust duct 81-336035-801 Engine: Pratt & Whitney Model PT6A-66B Propeller: HC-E5N-3A(L)/(H,L)E8492	9,000 hours																

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for
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AIRWORTHINESS LIMITATIONS

PROPELLER MODELS ON AIRCRAFT WITHOUT AN FAA TYPE CERTIFICATE	
Aircraft/Engine/Propeller	Blade Life Limit
Aircraft: Pilatus Model PC-9 Engine: Pratt & Whitney Model PT6A-62B Propeller: HC-D4N-2AA/D9512AE(K)	9,000 hours
Aircraft: Pilatus Model PC-9 Engine: Pratt & Whitney Model PT6A-62B Propeller: HC-D4N-2G/D9512AE(K)	9,000 hours
Aircraft: Pilatus Model PC7 MK II Engine: Pratt & Whitney Model PT6A-25C Propeller: HC-D4N-2D/D9512A(K)	11,500 hours
Aircraft: Pilatus Model PC7 MK II Engine: Pratt & Whitney Model PT6A-25C Propeller: HC-D4N-2E/D9512A(K)	11,500 hours
Aircraft: Pilatus Model PC-9 Engine: Pratt & Whitney Model PT6A-62 Propeller: HC-D4N-2A/D9512A(B,K)	11,500 hours
Aircraft: Pilatus Model PC-9 Engine: Pratt & Whitney Model PT6A-62 Propeller: HC-D4N-2F/D9512A(B,K)	11,500 hours

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AIRWORTHINESS LIMITATIONS

PROPELLER MODELS ON AIRCRAFT WITHOUT AN FAA TYPE CERTIFICATE, CONTINUED	
Aircraft/Engine/Propeller	Blade Life Limit
Aircraft: Korea Aerospace Industries Engine: Pratt & Whitney Model PT6A-62 Propeller: HC-E4N-2/E9512CB-1	7,100 hours
Aircraft: Korea Aerospace Industries KO-1 Engine: Pratt & Whitney Model PT6A-62 Propeller: HC-E4N-2B/E9512DB-1	7,600 hours
Aircraft: Korea Aerospace Industries KT-1C and KT-1T Engine: Pratt & Whitney Model PT6A-62 Propeller: HC-E4N-2C/E9512CB-1	7,100 hours
Aircraft: Korea Aerospace Industries KT-1P Engine: Pratt & Whitney Model PT6A-62 Propeller: HC-E4N-2D/E9512G(B)-1	7,100 hours
Aircraft: EADS-PZL Warszawa Okecie PZL-130TCII Engine: Pratt & Whitney Model PT6A-25C Propeller: HC-D4N-2DA/D9512AF	32,500 hours

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AIRWORTHINESS LIMITATIONS

- (2) The following list specifies life limits for propeller hubs only. Hubs listed are life limited only on the specified applications.

PROPELLER MODELS ON FAA TYPE CERTIFIED AIRCRAFT	
Aircraft/Engine/Propeller	Hub Unit Life Limit
Aircraft: Hawker Beechcraft Model 3000 (US Military T-6A) Engine: Pratt & Whitney Model PT6A-68 Propeller: HC-E4A-2(A)/E9612(K)	19,497 hours
Aircraft: Hawker Beechcraft Model 3000 IAUP (US Military T-6B) Engine: Pratt & Whitney Model PT6A-68 Propeller: HC-E4A-2(A)/E9612(K)	19,497 hours
Aircraft: Hawker Beechcraft Model AT-6 Engine: Pratt & Whitney Model PT6A-68D Propeller: HC-E4A-2/E9673S	19,497 hours
Aircraft: Shorts Model T Mk 1 Tucano Engine: Honeywell (Garrett) Model TPE331-12B Propeller: HC-D4N-5(C,E)/D9327K	59,600 hours

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AIRWORTHINESS LIMITATIONS

PROPELLER MODELS ON FAA TYPE CERTIFIED AIRCRAFT, CONTINUED	
Aircraft/Engine/Propeller	Hub Life Limit
<p>Aircraft: Piaggio P-180 Avanti that uses nacelles 80-336005-801 /80-336006-801 and exhaust stub 80-336013-801</p> <p>Engine: Pratt & Whitney Model PT6A-66</p> <p>Propeller: HC-E5N-3(A) (L)/(H,L)E8218</p>	<p>1,500 hours</p> <p>(For complete life limit criteria, refer to paragraph 2 in this section.)</p>
<p>Aircraft: Piaggio P-180 Avanti that uses nacelles 80-336213-801 /80-336214-801 and exhaust stub 80-336013-801</p> <p>Engine: Pratt & Whitney Model PT6A-66</p> <p>Propeller: HC-E5N-3(A) (L)/(H,L)E8218</p>	<p>3,000 hours</p> <p>(For complete life limit criteria, refer to paragraph 2 in this section.)</p>
<p>Aircraft: Piaggio P-180 Avanti that uses the following: <u>L/H Aft Nacelle/R/H Aft Nacelle Exhaust Stub</u> 80-336213-803/80-336214-803 80-336013-803 or 80-336091-801 80-336213-805/80-336214-805 80-337984-801 80-336250-801/80-336251-801 80-336013-803 or 80-336091-801 80-336250-803/80-336251-803 80-336013-803 or 80-336091-801</p> <p>Engine: Pratt & Whitney Model PT6A-66</p> <p>Propeller: HC-E5N-3(A) (L)/(H,L)E8218</p>	<p>18,000 hours</p> <p>(For complete life limit criteria, refer to paragraph 2 in this section.)</p>
<p>Aircraft: Piaggio Aero Industries P-180 that uses rear nacelle 81-336033-801 and engine exhaust duct 81-336035-801</p> <p>Engine: Pratt & Whitney Model PT6A-66B</p> <p>Propeller: HC-E5N-3A(L)/(H,L)E8492</p>	<p>14,800 hours</p>

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AIRWORTHINESS LIMITATIONS

PROPELLER MODELS ON AIRCRAFT WITHOUT AN FAA TYPE CERTIFICATE	
Aircraft/Engine/Propeller	Hub Life Limit
Aircraft: EADS-PZL Warszawa Okecie PZL-130TCII Engine: Pratt & Whitney Model PT6A-25C Propeller: HC-D4N-2DA/D9512AF	5,500 hours

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AIRWORTHINESS LIMITATIONS**2. HC-E5N-3(A)(L)/(H,L)E8218**

- A. Propeller hub and blades of HC-E5N-3() (), for Piaggio P-180 aircraft with Pratt & Whitney PT6A-66 engines, are life limited at 1500 hours and must be retired from service if they have ever been installed on an aircraft with nacelle p/n 80-336005-801 and 80-336006-801 and exhaust stub p/n 80-336013-801 before incorporation of Piaggio Service Bulletin SB-80-0022.
- B. Propeller hub and blades of HC-E5N-3() (), for Piaggio P-180 aircraft with Pratt & Whitney PT6A-66 engines, are life limited at 3000 hours and must be retired from service if they have ever been installed on an aircraft with nacelle p/n 80-336213-801 and 80-336214-801 and exhaust stub p/n 80-336013-801 before incorporation of Piaggio Service Bulletin SB-80-0022.
- C. Propeller hub of HC-E5N-3() (), for Piaggio P-180 aircraft with Pratt & Whitney PT6A-66(B) engines, is life limited at 18,000 hours and must be retired from service if it has been installed on an aircraft since new with:
- 1) Nacelle p/n 80-336213-803 and 80-336214-803 and exhaust stub p/n 80-336013-803 or 80-336091-801; or
 - 2) Nacelle p/n 80-336213-805 and 80-336214-805 and exhaust stub p/n 80-337984-801; or
 - 3) Nacelle p/n 80-336250-801 and 80-336251-801 and exhaust stub p/n 80-336013-803 or 80-336091-801; or
 - 4) Nacelle p/n 80-336250-803 and 80-336251-803 and exhaust stub p/n 80-336013-803 or 80-336091-801; or
 - 5) Incorporates Piaggio Service Bulletin SB-80-0022 since new.

Any propeller that was operated on an aircraft before incorporation of SB-80-0022 is not eligible for the 18,000 hour hub service life.

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AIRWORTHINESS LIMITATIONS

- D. Propeller blades of HC-E5N-3() (), for Piaggio P-180 aircraft with Pratt & Whitney PT6A-66(B) engines, are life limited at 9000 hours and must be retired from service if they have been installed on an aircraft since new with:

- 1) Nacelle p/n 80-336213-803 and 80-336214-803 and exhaust stub p/n 80-336013-803 or 80-336091-801; or
- 2) Nacelle p/n 80-336213-805 and 80-336214-805 and exhaust stub p/n 80-337984-801; or
- 3) Nacelle p/n 80-336250-801 and 80-336251-801 and exhaust stub p/n 80-336013-803 or 80-336091-801; or
- 4) Nacelle p/n 80-336250-803 and 80-336251-803 and exhaust stub p/n 80-336013-803 or 80-336091-801; or
- 5) Incorporates Piaggio Service Bulletin SB-80-0022 since new.

Any propeller that was operated on an aircraft before incorporation of SB-80-0022 is not eligible for the 9000 hour blade service life.

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AIRWORTHINESS LIMITATIONS**3. Periodic Inspections**

- A. For propeller model HC-E5N-3(A)(L)/(H,L)E8218 used on Piaggio P-180 aircraft with Pratt & Whitney PT6A-66 engines:
- (1) Beginning with an inspection at 1500 hours time in service, propeller blades that have part numbers HE8218 and LE8218, must be inspected for corrosion/paint every 24 months or 600 hours of operation, whichever occurs first, in accordance with Hartzell Propeller Inc. Service Bulletin HC-SB-61-181A.
- B. For propeller model HC-E5N-3A(L)/(H,L)E8492 used on Piaggio P-180 aircraft with Pratt & Whitney PT6A-66 engines:
- (1) Propeller blade corrosion/paint inspections must be performed at regular intervals as specified in Hartzell Propeller Inc. Service Bulletin HC-SB-61-181A.

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Inspection and Check	5-32 thru 5-34	Rev. 13	Aug/12
Inspection and Check	5-35 and 5-36	Rev. 10	Sep/07
Inspection and Check	5-37 and 5-38	Rev. 13	Aug/12
Inspection and Check	5-39 and 5-40	Rev. 10	Sep/07
Inspection and Check	5-41 and 5-42	Rev. 13	Aug/12
Maintenance Practices	6-1	Rev. 16	May/13
Maintenance Practices	6-2 and 6-3	Rev. 13	Aug/12
Maintenance Practices	6-4	Rev. 10	Sep/07
Maintenance Practices	6-5 thru 6-9	Rev. 13	Aug/12
Maintenance Practices	6-10	Rev. 19	May/14
Maintenance Practices	6-11 thru 6-16	Rev. 13	Aug/12
Maintenance Practices	6-17	Rev. 10	Sep/07
Maintenance Practices	6-18 thru 6-20	Rev. 13	Aug/12
Maintenance Practices	6-21 and 6-22	Rev. 16	May/13
Anti-ice and De-ice Systems	7-1 thru 7-8	Rev. 16	May/13
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