
AIRWORTHINESS DIRECTIVE

On the effective date specified below, and for the reasons set out in the background section, the CASA delegate whose signature appears below revokes Airworthiness Directive (AD) AD/PHZL/74 Amdt 1 and issues the following AD under subregulation 39.001(1) of CASR 1998. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct the unsafe condition) be taken in relation to the aircraft or aeronautical product mentioned in the applicability section: (a) in the circumstances mentioned in the requirement section; and (b) in accordance with the instructions set out in the requirement section; and (c) at the time mentioned in the compliance section.

Propellers - Variable Pitch - Hartzell

**AD/PHZL/74
Amdt 2**

Two Blade ‘Y’ Shank Aluminium Hub

6/2012

- Applicability:
1. HC- 2Y()- propellers (also known as Y-shank propellers) that have a hub serial number with “A”, “E”, or no suffix, and installed on or previously installed on:
 - a. Piper PA-32 series aircraft with Textron Lycoming 540 series engines that are rated at 300HP or higher; or
 - b. Pilatus Britten Norman or Britten Norman BN-2 series aircraft (also known as Islander or Trislander) with Textron Lycoming 540 series engines; or
 - c. Any aircraft certified in the aerobatic category; or
 - d. Any aircraft routinely exposed to aerobatic manoeuvres; or
 - e. Any aircraft that has been used for agricultural operations whilst the applicable propeller was installed.

*Note 1: This AD **does not** apply to propellers with the suffix letter “B” at the end of the hub serial number.*

Note 2: Incorporation of a “B” suffix hub will provide terminating action for this Directive.

2. HC- 2Y()- propellers S/N’s listed in Table 1:

Table 1. HC- 2Y()- propellers with the following S/N’s

DN3607A	DN3609A	DN3613A	DN3615A
DN3628A	DN3630A	DN3641A	DN3940A
DN3944A	DN3949A	DN3962A	

Propellers - Variable Pitch - Hartzell

AD/PHZL/74 Amdt 2 (continued)

- Requirement:
1. Eddy Current Inspection:
 - a. **No Suffix:** For propeller hubs without any serial number suffix carry out an Eddy Current Inspection (ECI) of the propeller hub fillet radius for cracks in accordance with Hartzell SB HC-SB-61-227 Revision 5 dated September 28, 2006 or later FAA approved revision.
 - b. If no cracks are found then permanently mark the end of the hub serial number with the suffix “E” in accordance with Hartzell SB HC-SB-61-227 Revision 5 dated September 28, 2006 or later FAA approved revision.
 - c. **E Suffix:** For propeller hubs with serial number suffix “E” carry out repetitive Eddy Current Inspections (ECI) of the propeller hub fillet radius for cracks in accordance with Hartzell SB HC-SB-61-227 Revision 5 dated September 28, 2006 or later FAA approved revision.
 - d. **Table 1:** For propeller hubs with a serial number hub listed in Table 1 carry out initial and repetitive ECI as per Hartzell SB HC-SB-61-227 Revision 5 dated September 28, 2006 or later FAA approved revision.
 - e. Propeller hubs that are cracked are to be replaced prior to further flight.
 2. Hub Replacement:
 - a. **A Suffix:** “A” suffix hubs not listed by serial number in Table 1 shall be removed from service in accordance with Hartzell SB HC-SB-61-227 Revision 5 dated September 28, 2006 or later FAA approved revision.
 - b. **Table 1:** All hubs listed by serial number in Table 1 shall be removed from service in accordance with Hartzell SB HC-SB-61-227 Revision 5 dated September 28, 2006 or later FAA approved revision.

Propeller hubs removed from service as a result of this Directive shall have the hub serial number and type certificate number permanently removed.

Previous credit is allowed for inspections, rework, and replacements that were done using the preceding revisions of Hartzell Propeller Inc. SB No. HC-SB-61-227, before the effective date of this AD.

Note 3: FAA AD 2001-23-08 Amdt 39-12505 refers.

Later revisions to Hartzell Propeller Inc. SB No. HC-SB-61-227, Revision 2, dated May 8, 2000, approved by the United States Federal Aviation Administration (FAA) as an Alternative Method of Compliance (AMOC) to FAA 2001-23-08 Amdt 39-12505, are considered acceptable for compliance with the equivalent Requirements of this AD.

Propellers - Variable Pitch - Hartzell

AD/PHZL/74 Amdt 2 (continued)

- Compliance:
1. Eddy Current Inspection:
 - a. **No Suffix:** Unless previously carried out; within 50 propeller hours Time In Service (TIS) from the effective date of this Directive.
 - b. **E Suffix:** At intervals not to exceed 100 propeller hours TIS from the last ECI.
 - c. **Table 1:** Unless previously carried out within 50 propeller hours TIS, and thereafter at **intervals** not to exceed 100 hours from the last ECI.
 2. Hub Replacement:
 - a. **A Suffix:** Propellers with the suffix “A” at the end of the hub serial number excluding those S/N’s listed in **Table 1** of applicability, are to be replaced as follows:
 - i. PA-32 and BN-2 series aircraft; at next propeller overhaul but no later than 2000 hours propeller TIS or 31 December 2005, whichever comes first.
 - ii. Aircraft certified in the aerobatic category or aircraft routinely exposed to aerobatic manoeuvres; at next propeller overhaul but not to exceed 1000 propeller hours TIS or 31 December 2005, whichever comes first. For propeller hubs exceeding 1000 hours time in service as of the original effective date of this Directive, remove from service within 15 propeller hours TIS.
 - iii. Agricultural aircraft; at next propeller overhaul, but not to exceed 2000 hours propeller TIS or 31 December 2005, whichever comes first.
 - b. **Table 1:** At next propeller overhaul but not to exceed 1000 hours propeller TIS or 31 December 2005, whichever comes first. For propeller hubs exceeding 1000 hours TIS as of the original effective date of this Directive, remove from service within 15 hours propeller TIS.

Note 4: Installation of the “B” serial number suffix hub will require spinner bulkhead modification per Hartzell Manual 113B or Hartzell Manual 117D dependant on propeller type.

This Amendment becomes effective on 13 March 2012.

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AD/PHZL/74 Amdt 2 (continued)

Background: There have been incidents of hub cracks in Hartzell two blade "compact" aluminum hub propellers. Existing methods using visual inspection has proven to be unsuccessful in detecting cracks. There have now been cases of blade separation. ECI is now considered the only reliable method for detecting cracks. Cracks typically initiate at the same point on the hub. The cracks originate in the hub at a point adjacent to the blade called the "fillet radius". As the cracks propagate toward the centre of the hub, their progression accelerates and results in failure of one hub half, which can then potentially, progress to blade separation.

The original issue of this Airworthiness Directive became effective on 16 May 2002.

Amendment 1 introduced a change to include aircraft that can be routinely exposed to aerobatic maneuvers.

Amendment 2 harmonizes the repetitive inspection interval with the latest revision of the manufacturers service bulletin which is approved as an AMOC with FAA AD 2001-23-08.



Mike Higgins
Delegate of the Civil Aviation Safety Authority

9 March 2012