

ICA\_020110

**INSTRUCTIONS FOR CONTINUED AIRWORTHINESS  
FOR  
HARTZELL HC-E2YR-2BTF/FC7693F(B)+1 PROPELLERS  
ON PIPER  
PA-(E)23-250 AZTEC AIRCRAFT**

**STC SA02874CH-D**

**LOG OF REVISIONS**

Revision	Revised Pages	Description of Revision	Date
IR	All	Initial Release	12/14/10

NOTE: All changes are indicated by a black vertical line along the left margin.

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**TABLE 1 – APPLICABLE MODELS**

(All eligible models use Lycoming (T)IO-540 engines rated 250 Hp @ 2575 RPM)

MODEL NUMBER	YEAR	SERIAL NUMBER	ELIGIBLE ENGINES
PA-(E)23-250C	'64-'68	27-2505 thru 27-3943	IO-540-C4B5
PA-(E)23-250D	'69-'70	27-3944 thru 27-4573	IO-540-C4B5, TIO-540-C1A
PA-(E)23-250E	'71-'75	27-4574 thru 27-4916, 27-7304917 thru 27-7554168	IO-540-C4B5, TIO-540-C1A
PA-23-250F	'76-'81	27-7654001 thru 27-8154030	IO-540-C4B5, TIO-540-C1A

NOTE: Aircraft with the IO-540-C1B5 engine with or without the AirResearch turbocharger installation are NOT eligible for this STC.

**GENERAL**

The subject STC approves replacement of the original Hartzell propeller and spinner models listed in airplane Type Certificate Data Sheet 1A10 with a newer-technology two-blade propeller model HC-E2YR-2BTF/FC7693F(B)+1 on PA-23-250 Aztec models C through F (1964 – 1981). The STC two-blade propeller incorporates counterweights in lieu of the high pressure aircharge feathering system used on propeller it replaces. The use of counterweights improves the maintainability and reliability of the propeller feathering system. A detailed description of propeller construction and function may be found in Hartzell Manual 115N that is supplied with each STC kit.

The information contained in these Instructions for Continued Airworthiness (ICA) supplements or supersedes the information provided in the Piper Aztec Service Manual (Part Number 753-564) only in those areas listed. When applicable, specific paragraph numbers from the Piper Service manual are referenced.

**Composite Spinner**

This STC utilizes a hybrid aluminum-composite spinner, model number 103409. The spinner uses a conventional aluminum aft bulkhead and a lightweight, composite single-piece spinner dome. The spinner dome is supported by a slip-fit, composite forward bulkhead that engages the propeller cylinder. A single row of flush screws attaches the dome to the aft bulkhead. Refer to Hartzell Manual 148 for maintenance requirements and procedures of the hybrid composite spinner.

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**Section 1 - Introduction**

1-10. ENGINES AND PROPELLERS. The propeller model used for this STC on the applicable aircraft models and serial numbers listed in Table 1 is HC-E2YR-2BTF.

**Section 2 – Handling and Servicing**

The following propeller restrictions apply when performing propeller functional/feathering checks during engine runs:

For aircraft with normally-aspirated IO-540-C1B5 engines:

“Propeller functional/feather checks must be completed above 1400 RPM”

For aircraft with turbocharged TIO-540-C1A engines:

“Propeller functional/feather checks must be completed above 1100 RPM”

**2-68. PROPELLER**

2-69. SERVICING PROPELLER. The HC-E2YR-2BTF propeller is equipped with counter-weights and together with feathering spring are the primary motive forces pushing the blades towards the feather position. Compared to the propellers it is replacing, the newer propeller uses a lower feathering aircharge. Accordingly, the maintenance information in the original Service Manual on chamber pressure does not apply to this STC propeller installation.

Section 6 of Propeller Owner's Manual 115N provides the proper aircharge servicing information and pressure values. Use the aircraft servicing information in Manual 115N for propellers “with counterweights and a “T” spring.”

2-91. LUBRICATION CHART. Refer to Section 6 of Propeller Owner's Manual 115N for lubrication intervals, procedures and approved lubricants to use on the STC propeller. Use Hartzell Manual 115N maintenance procedures designated for “R” flange and “-2” propellers.

**Section 3 – Inspection and Check**

3-4. INSPECTION REQUIREMENTS. Refer to Section 5 of Propeller Owner's Manual 115N for periodic inspection requirements, intervals and procedures. Use Hartzell Manual 115N maintenance procedures designated for “R” flange and “-2” propellers.

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**Airworthiness Limitations**

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

There are no life-limited components used in the STC installation.

Recommended Time-Between-Overhaul (TBO) limits for the STC propeller may be found in Hartzell Service Letter 61 (HC-SL-61-61Y is available at [www.hartzellprop.com](http://www.hartzellprop.com)).

**Section 8 – Power Plant (Normally Aspirated)**

8-21 REMOVAL OF PROPELLER. Refer to Chapter 3 of Hartzell Owner's Manual 115N for general propeller removal and installation information. Use procedures designated for "R" flange and "-2" propellers.

**PROPELLER SPECIFICATIONS**

Propeller Torque Limits .....See Propeller Owner's Manual 115N Section 3  
Feathering Aircharge .....See Propeller Owner's Manual 115N Section 6

8-22 CLEANING, INSPECTION, AND REPAIR OF PROPELLER. Refer to Section 5 and 6 of Hartzell Owner's Manual 115N for propeller inspection, check and maintenance practices. Use procedures designated for "R" flange and "-2" propellers.

Propeller overhaul must be accomplished by an approved Propeller Repair Station.

8-23 INSTALLATION OF PROPELLER. Refer to STC Installation Instructions INST\_020110 and Section 3 of Hartzell Owner's Manual 115N.

8-25 ADJUSTMENT OF LOW PITCH BLADE ANGLE STOP. The propeller comes from the factory with the low pitch stop adjusted for proper blade angle. If this setting has been disturbed or checking the low pitch angle is desired, refer to Section 3 and Section 6 of Hartzell Owner's Manual 115N for low pitch angle check and adjustment procedures.

8-26 BLADE TRACK. Refer to Section 5 of Hartzell Owner's Manual 115N for blade track inspection procedures and tolerances.

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**Section 8B – Power Plant (Lycoming-Turbocharged)**

8A-16. REMOVAL OF PROPELLER. Refer to Chapter 3 of Hartzell Owner's Manual 115N for general propeller removal and installation information. Use procedures designated for "R" flange and "-2" propellers.

**PROPELLER SPECIFICATIONS**

Propeller Torque Limits .....See Propeller Owner's Manual 115N Section 3  
Feathering Aircharge .....See Propeller Owner's Manual 115N Section 6

8A-17. CLEANING, INSPECTION, AND REPAIR OF PROPELLER. Refer to Section 5 and 6 of Hartzell Owner's Manual 115N for propeller inspection, check and maintenance practices. Use procedures designated for "R" flange and "-2" propellers.

Propeller overhaul must be accomplished by an approved Propeller Repair Station.

8A-18 INSTALLATION OF PROPELLER. Refer to STC Installation Instructions INST\_020110 and Section 3 of Hartzell Owner's Manual 115N.

8A-19 ADJUSTMENT OF LOW PITCH BLADE ANGLE STOP. The propeller comes from the factory with the low pitch stop adjusted for proper blade angle. If this setting has been disturbed or checking the low pitch angle is desired, refer to Section 3 and Section 6 of Hartzell Owner's Manual 115N for low pitch angle check and adjustment procedures.

8A-20 BLADE TRACK. Refer to Section 5 of Hartzell Owner's Manual 115N for blade track inspection procedures and tolerances.

**Section 14 Accessories and Utilities**

**14.20. PROPELLER DE-ICER SYSTEM.**

The propeller de-ice system installation service information is provided on the system installation drawing 103720 provided with the STC documents and in specific Hartzell service manuals. These manuals can be viewed and/or obtained via the internet on the Hartzell Propeller website ([www.hartzellprop.com](http://www.hartzellprop.com)). The following applicable manuals are located under "Ice Protection Manuals."

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**Section 14 Accessories and Utilities (continued)**

Manual 180 – Propeller Ice Protection System Manual  
Refer to “De-Ice Kits for Non-Counterweighted Compact  
Propellers” to see illustrated parts lists for 103719 de-ice kit.

Manual 181 – Propeller Ice Protection System Component Maintenance Manual

Manual 182 – Propeller Electrical De-Ice Boot Removal and Installation Manual.

14-21. DESCRIPTION AND PRINCIPLES OF OPERATION. The propeller de-ice system principles and procedures of operation with the STC propeller are unchanged. The propeller de-ice components from the propeller slip ring aft (engine and airframe mounted) remain the same. Only the propeller de-icer boot and propeller-mounted wiring harnesses are different; they are manufactured by Hartzell Propeller.

14-30. DE-ICER RESISTANCE CHECK. When performing the de-icer resistance check refer to Hartzell Manual 182 for resistance values of applicable de-icer boot. 14V systems use 103679 de-icer and 28V systems use 103680 de-icer.

14-54 & 55. BLADE DE-ICER REPLACEMENT and CEMENTING PROCEDURE. Refer to Hartzell Manual 182 for Hartzell de-icer installation and removal procedures.

**For Product Support contact:**

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