INST_030314

STC SA03466CH

INSTRUCTIONS FOR INSTALLATION
OF A
HARTZELL HC-E5A-3A/NC10245B PROPELLER
ON PILATUS PC-12 SERIES AIRCRAFT

LOG OF REVISIONS

Revision	Revised Page(s)	Description of Revision	Engineer	Date
New	All	Original Release	T. Parker	5/20/2015
A	3	Note 2 added to reference P&WC Service Bulletin 14514. Document reissued in its entirety.	D. Glaser	3/18/2016
B	1	Updated Hartzell Propeller Inc to Hartzell Propeller LLC	B. Landess	8/29/2024
		Updated STC ODA Administrator name		
	3	Added additional clarification to Note 2 for airplanes requiring modification using P&WC Service Bulletin 14515.		
C	13	Updated CAUTION note to reference Hartzell Propeller Manual 180 for de-ice system operation without engine running.	B. Landess	3/4/2026

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

FAA Approved _____

Digitally signed by Bo R. Landess
Date: 2026.03.04
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Date <u>See electronic signature</u>

Bo R. Landess
STC ODA administrator
Hartzell STC ODA-100082-CE

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Please read these instructions and the Instructions for Continued Airworthiness before starting installation. If you have any questions regarding installation of this STC, please contact Hartzell Propeller at:

Phone: (937) 778-4376 or
1-800-942-7767

E-mail: techsupport@hartzellprop.com

APPLICABLE MODELS AND SERIAL NUMBERS

All Pilatus PC-12 configurations listed below:

Aircraft Config.	Aircraft Serial Number Range	Max TOGW (lbs)	Engine	Max Cont Power HP @ RPM
PC-12	101-320	9039	PT6A-67B	1000 @ 1700
PC-12/45	322-683	9921	PT6A-67B	1000 @ 1700
PC-12/47	684-888	10450	PT6A-67B	1000 @ 1700
PC-12/47E	545, 1001 to 1575	10450	PT6A-67P	1200 @ 1700

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NOTES: 1) These instructions require that the aircraft be in the type-certificated configuration for the four-blade Hartzell HC-E4A-3D/E10477K propeller. If any other propeller has been installed, the aircraft must be returned to the original type-certificated propeller configuration before installing this STC.

2) For airplanes with Pratt & Whitney PT6A-67B engines: If this STC is being installed in conjunction with the installation of an engine, the engine should be built to Build Specification BS1362. Alternatively, the engine can be modified in accordance with Pratt & Whitney Canada Service Bulletin 14515.

For airplanes with Pratt & Whitney PT6A-67P engines: If this STC is being installed in conjunction with the installation of an engine, the engine should be built to Build Specification BS1361. Alternatively, the engine can be modified in accordance with Pratt & Whitney Canada Service Bulletin 14514.

3) Approximately 8 man-hours of labor are required for field-installation of this STC kit when replacing an existing Hartzell HC-E4A-3D/E10477K propeller.

REQUIRED DOCUMENTS:

1) Hartzell Propeller Owner's Manual 147
2) PC-12 Aircraft Maintenance Manual applicable to aircraft model and serial number (Document No. 02049 or Document No. 02300).
3) Hartzell Drawing 105934, 105940, 105942, and 106103 (latest revisions)
4) Pratt & Whitney PT6A-67B Maintenance Manual (for PC-12, PC-12/45, PC-12/47))
   Or Pratt & Whitney PT6A-67P Maintenance Manual (for PC-12/47E)

A)   Propeller Installation

1.   When replacing the HC-E4A-3D/E10477(S)K propeller, remove original spinner and propeller per Chapter 61 – Propeller – Removal/Installation of the applicable PC-12 Aircraft Maintenance Manual (Document No. 02049 or Document No. 02300).

   NOTE: Step 1 is omitted when installing this STC on new-production aircraft.

2.   Unpack and inspect the new HC-E5A-3A/NC10245B propeller per Chapter 3 of Hartzell Propeller Owner's Manual 147.

3.   Verify/inspect spinner bulkhead and propeller mounted de-ice components are properly installed and secured on the new propeller per Hartzell Drawing 105942.

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Propeller Installation (continued)

4. Install the engine-mounted propeller de-ice brush block, Metal Oxide Varistor (MOV) module and associated bracket on the engine gearbox by following the steps below.

   a) Remove existing de-ice brush block bracket and attached parts from the engine gearbox as shown in Figure 1. Note the position of cable ties that secure the wires near the brush block and MOV.

   b) Disconnect existing brush block wires from brush block and MOV module. Label aircraft wire terminals for later reinstallation per list below (refer to PC-12 Electrical Schematic 30-60-00 to confirm terminal letter and wire number match if needed):

      1) C Wire (GND) attached to inboard brush block
      2) B Wire (inboard boot sector) attached to middle brush block
      3) A Wire (outboard boot sector) attached to outboard brush block

   NOTE: Some aircraft may not come from the factory equipped with an MOV module.

   c) Temporarily position MOV mounting plate (P/N 105070) and brush block shim (P/N 1H1157) on brush block bracket with two B-6637-53 Pan Head screws as shown in Figure 2. Install a B-3837-N832 CRES flat washer under the head of each bolt.

   d) Temporarily install P/N 3H2042-1 modular brush block assembly onto bracket using a B-3837-N832 washer and B-6655-08 nut on each bolt as shown in Figure 3. Do not torque at this time.

   e) Install 105915 brush block bracket in the place of the removed bracket as shown in Figure 4. Torque nuts holding the bracket to engine gearbox using standard torque values provided in the Pratt & Whitney Maintenance Manual.

   f) Attach short wire harness connecting MOV module assembly (P/N 4H3076-3) to de-ice brush block as shown in Figure 5 (shown without MOV module in this view). Simultaneously attach the aircraft wires to the brush block module as follows:

      1) Connect MOV Wire A and aircraft wire A to Terminal A on the de-ice brush
      2) Connect MOV Wire B and aircraft wire B to Terminal B on the de-ice brush block.
      3) Connect aircraft wire C (ground) to Terminal C on the de-ice brush block

   g) Install MOV module onto the MOV mounting plate as shown in Figure 6 using the following procedure:

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1) Install one B-6637-52 pan head screw in the aft hole with a B-3837-N832 flat washer under both the head and nut.
2) Install one B-6637-52 pan head screw through the front hole with a B-3855-31 external tooth lock washer under the head.
3) On the front MOV mounting screw, as shown in Figure 7, install a B-3855-31 external tooth lock washer, followed by the aircraft grounding cable, then a B-3837-N832 flat washer and B-6655-08 nut.
4) Torque front and aft fasteners to 22-25 in-lbs.

h) The completed brush block and MOV installation is shown in Figure 8. Temporarily tie-back the brushes in the brush block with string to avoid damage during propeller installation.

5. Install new propeller on the aircraft in accordance with applicable Pilatus PC-12 Aircraft Maintenance Manual Chapter 61 and Hartzell Propeller Owner's Manual 147.

6. Remove string holding brushes and check for proper brush to de-ice slip ring alignment. Refer to Hartzell Manual 181, Chapter 7 for slip ring to brush block alignment procedure. Install or remove additional 1H1157 shims as needed to line-up the brush block assembly with the slip ring. When aligned, torque brush block assembly attachment hardware to 22-25 in-lbs.

7. Install the spinner dome on the propeller per spinner installation procedures provided in Chapter 3 of Hartzell Propeller Owner's Manual 147.

   NOTE: The 105820( ) spinner assembly consists of the following components:
   a) 105818( ) Dome
   b) 105819( ) Rear Bulkhead
   c) 105907 Forward Bulkhead
   d) B-5486 Spacer(s)
   e) A-1020 Fiber Washers
   f) B-3845-8 10-32 Truss Head Screws

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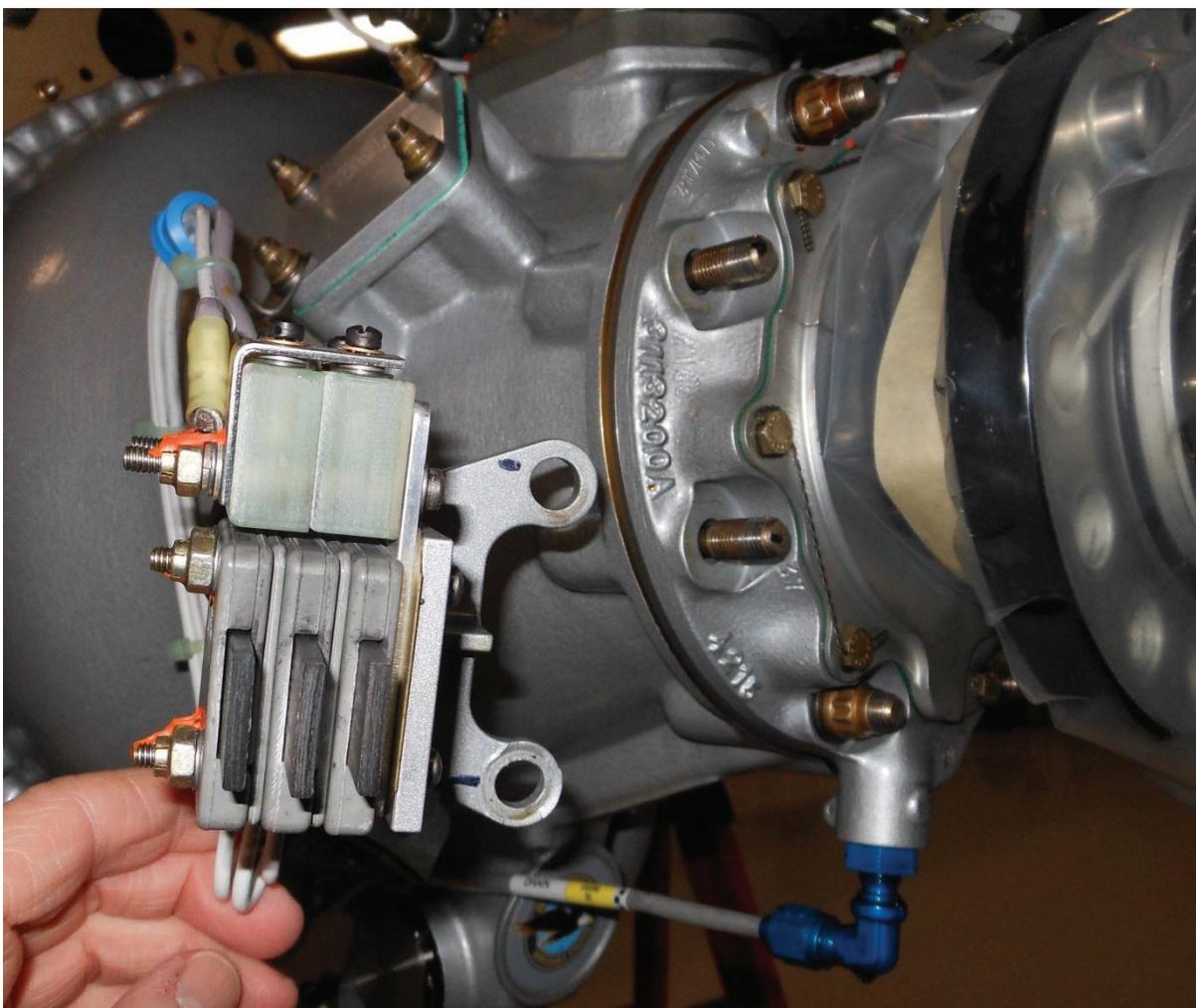**ON PILATUS PC-12 SERIES AIRCRAFT**

<u>Figure 1</u>
Remove existing brush block bracket with brush block and MOV

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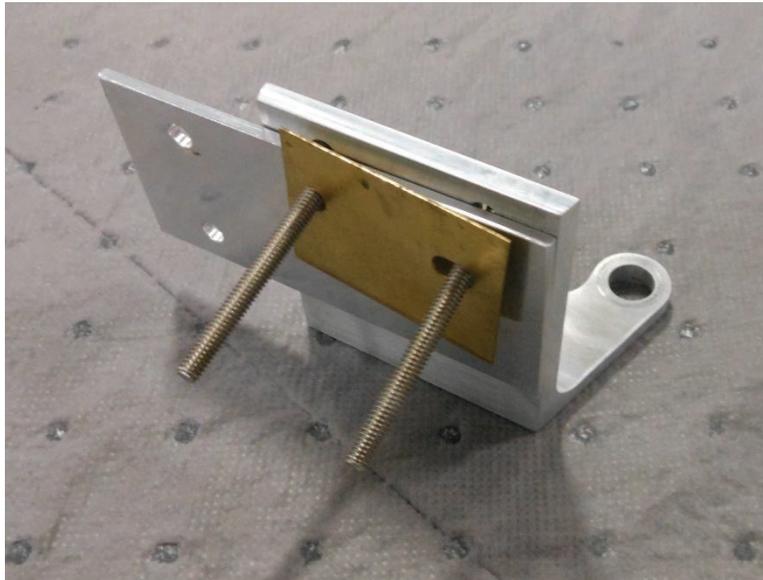ON PILATUS PC-12 SERIES AIRCRAFT**

<u>Figure 2</u>
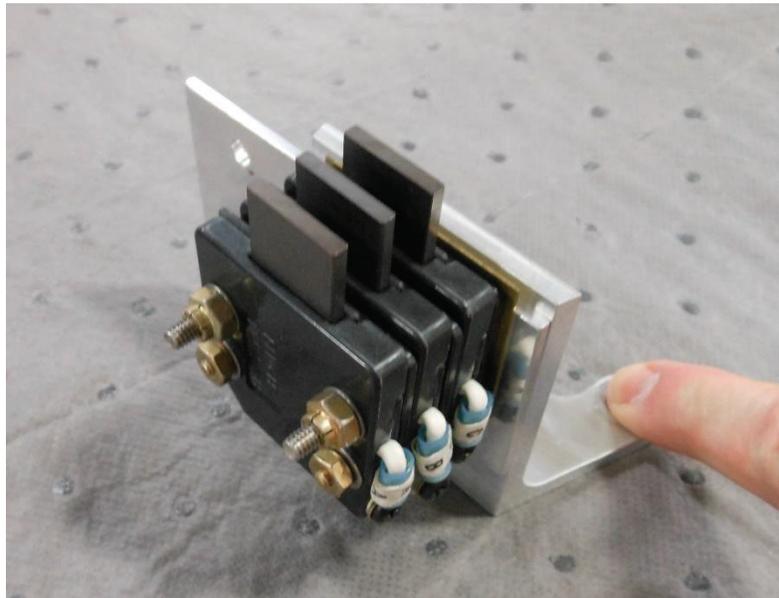Position MOV mounting plate and shim on new brush block bracket

<u>Figure 3</u>
Install brush block on new bracket (do not torque at this time)

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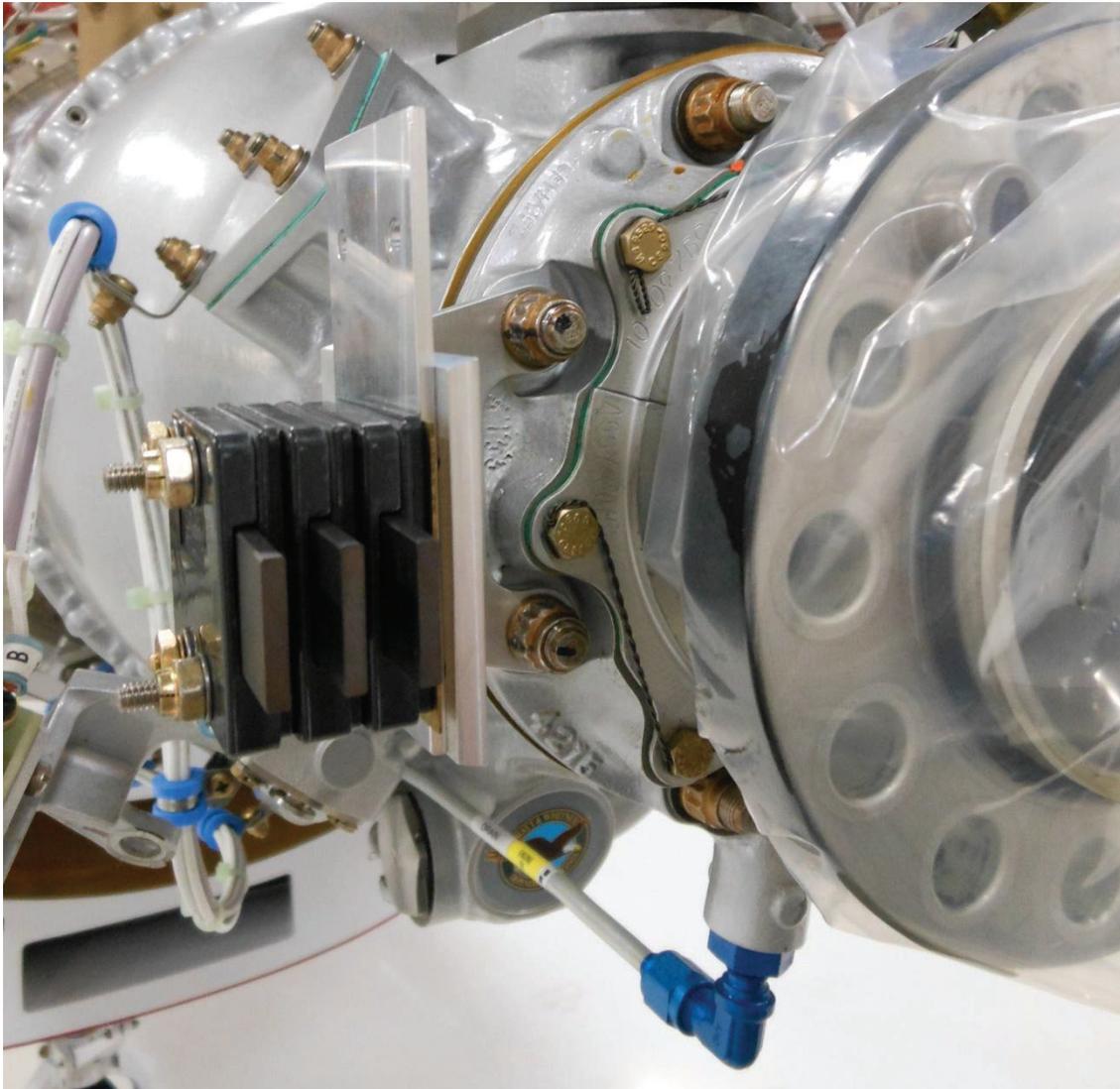ON PILATUS PC-12 SERIES AIRCRAFT

Figure 4
Install new bracket on engine gearbox studs and torque to PWC specifications

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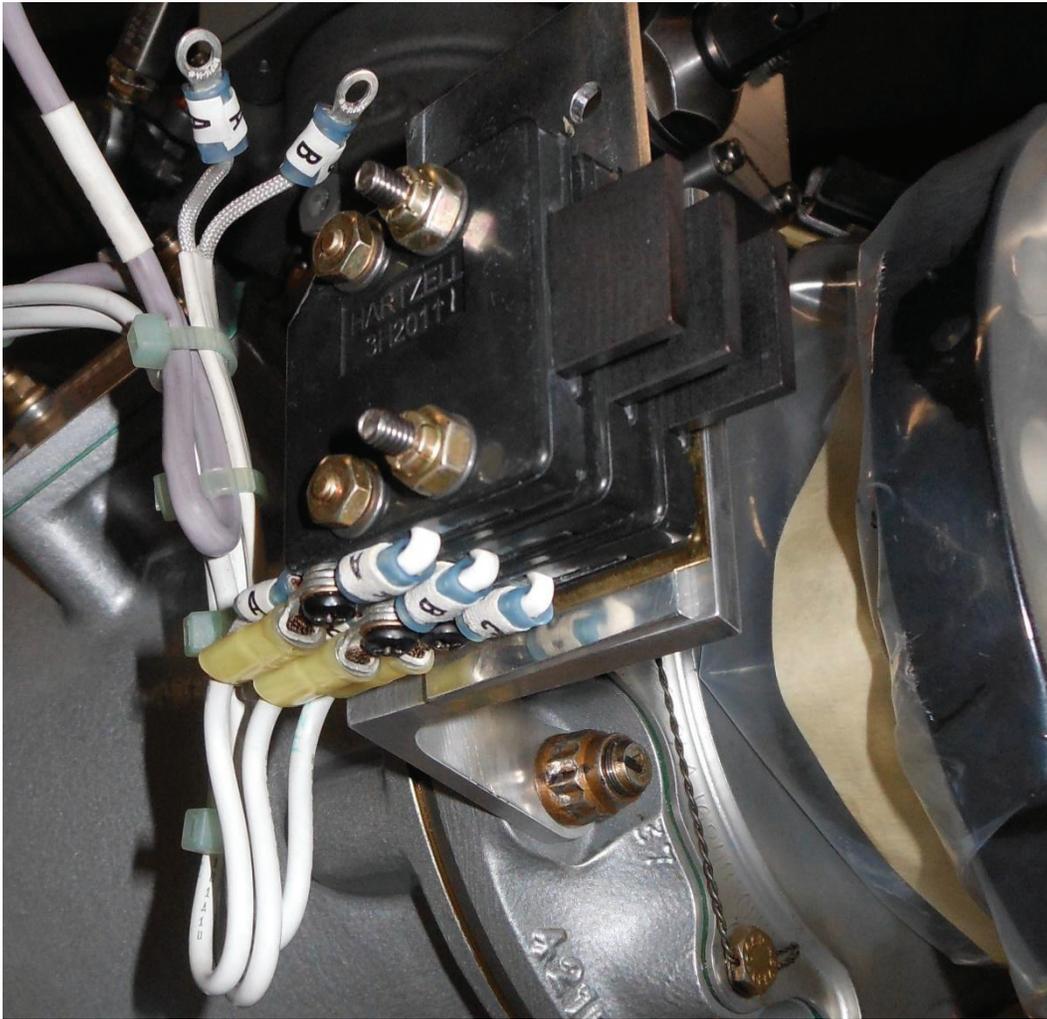ON PILATUS PC-12 SERIES AIRCRAFT**

Figure 5
Attach aircraft harness wires and MOV wires to brush block

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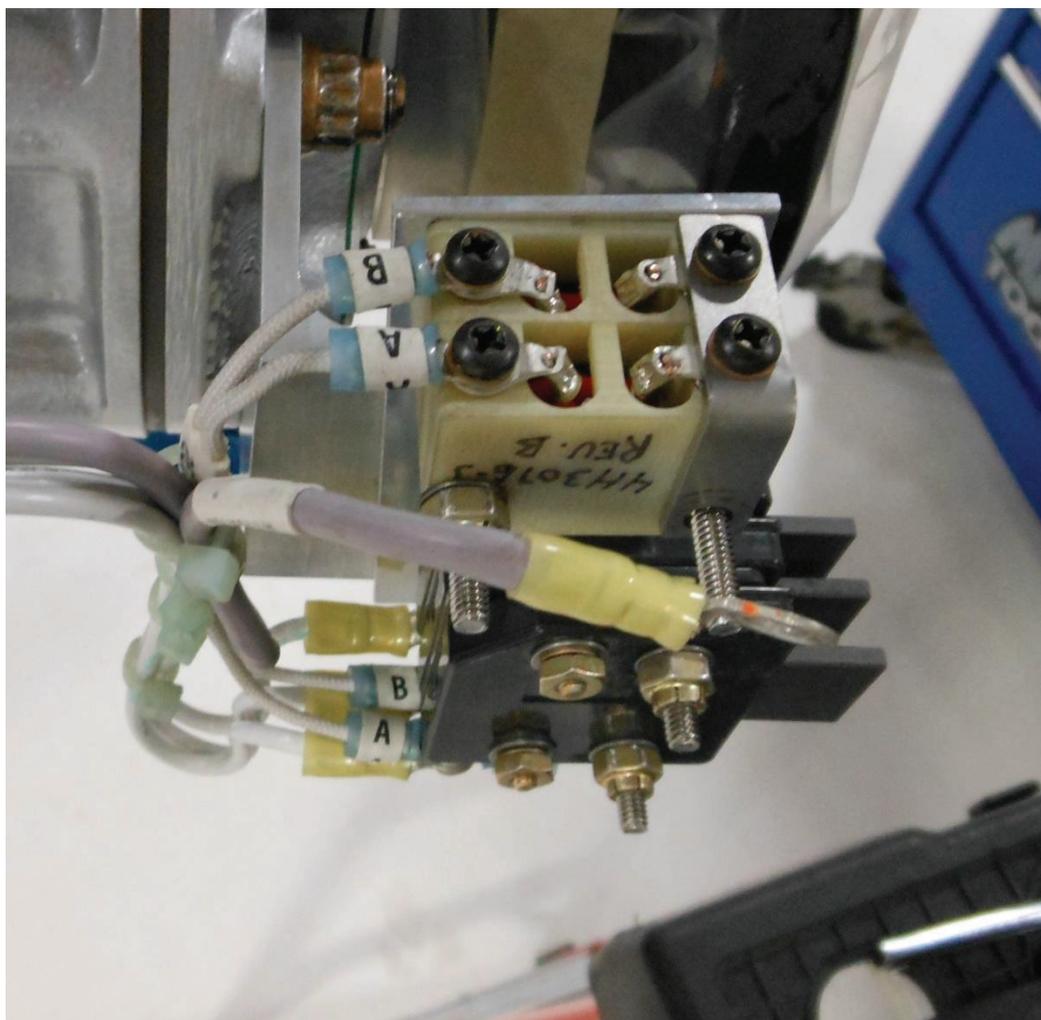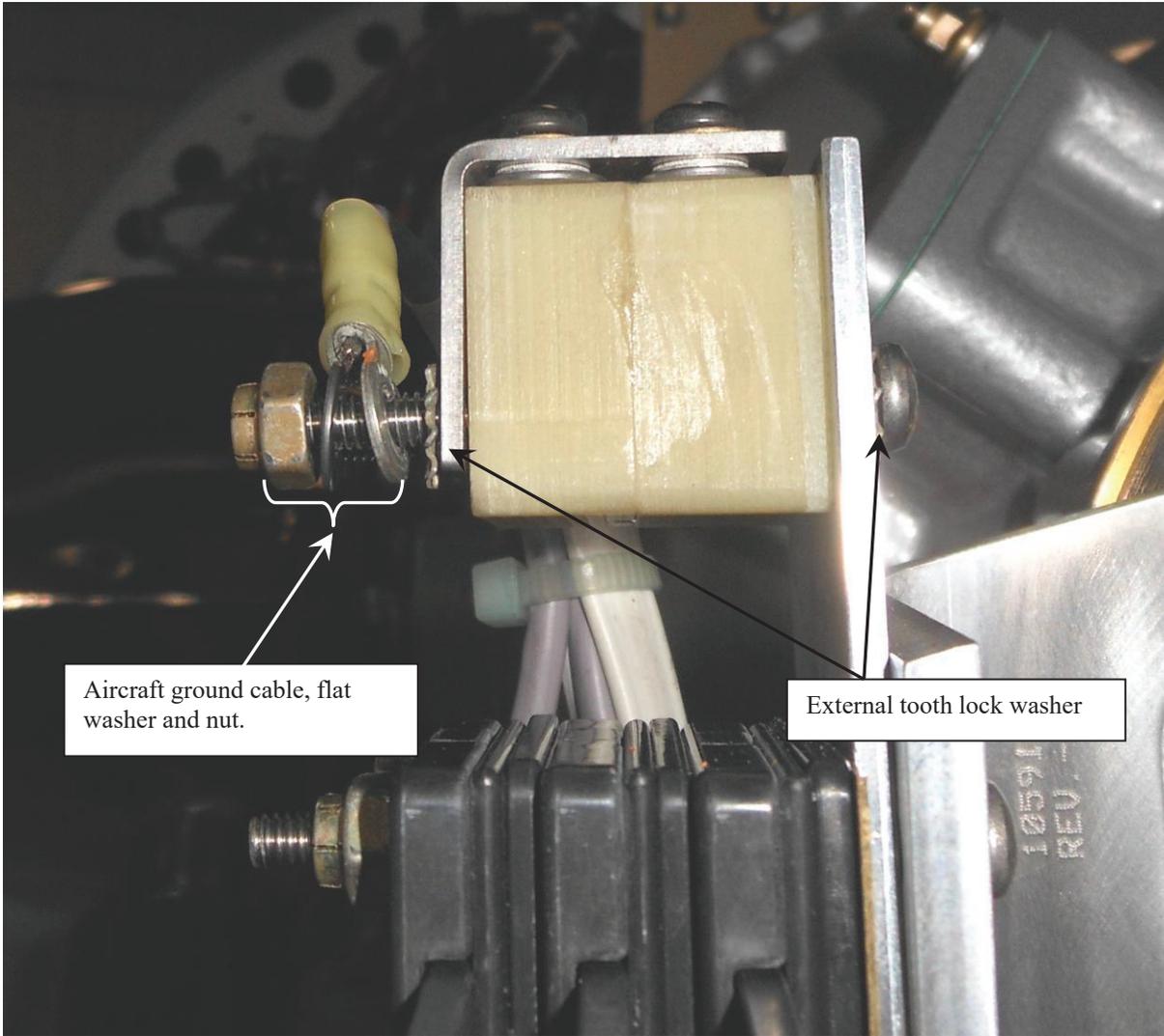**ON PILATUS PC-12 SERIES AIRCRAFT**

Figure 6
Install MOV and attach MOV wires

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Aircraft ground cable, flat washer and nut.

External tooth lock washer

Figure 7
Install aircraft ground cable and install MOV fasteners

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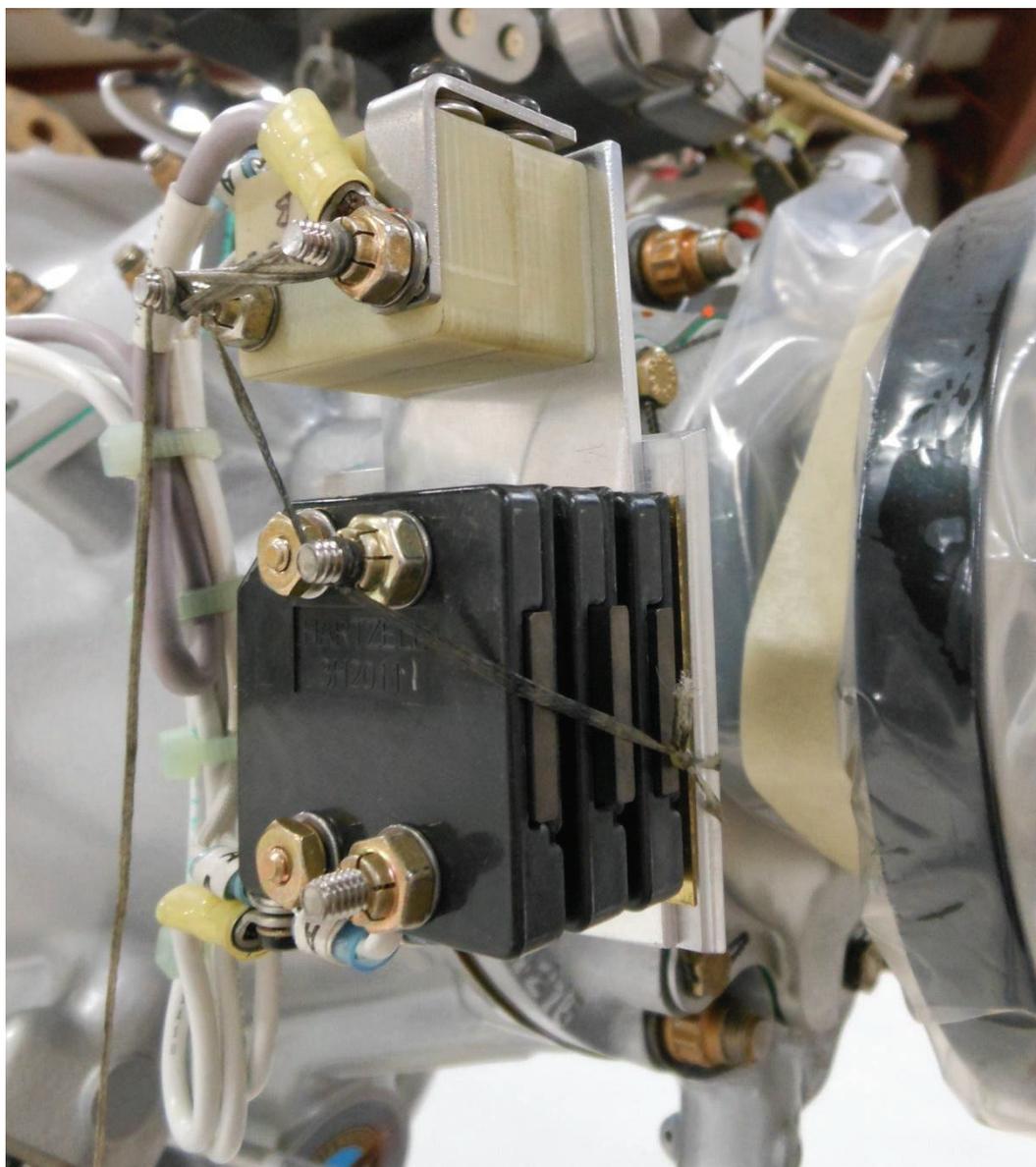**ON PILATUS PC-12 SERIES AIRCRAFT**

<u>Figure 8</u>
Completed brush block and MOV installation with brushes tied back for propeller installation

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B) <u>**Functional Ground Tests**</u>

1.   The following functional ground test procedures are required after a propeller installation and are described in Chapter 71 of the PC-12 Aircraft Maintenance Manual, Powerplant – Adjustment/Test section. General ground run procedures are provided in the Powerplant – Maintenance Practices section.

   a) Test 2 – Propeller blade feather
   b) Test 4 – Maximum propeller speed
   c) Test 13 – Propeller low-pitch warning
   d) Test 14 – Ground idle speed
   e) Test 15 – Flight idle speed
   f) Test 17 – Reverse power
   g) Test 19 – Engine stop time
   h) Test 20 – After engine stop

2.   Make adjustments to propeller governor, propeller low pitch and/or engine controls as needed to comply with the requirements of each test procedure described above. Perform additional ground runs as necessary to confirm engine and propeller settings.

   CAUTION: OPERATION OF THE PROPELLER DE-ICE SYSTEM WITHOUT THE ENGINE RUNNING MUST BE CONDUCTED IN ACCORDANCE WITH THE TIME LIMITATIONS SPECIFIED IN HARTZELL PROPELLER MANUAL 180. EXCEEDING THESE LIMITS WILL RESULT IN SEVERE DAMAGE TO THE COMPOSITE BLADES.

3.   Perform Propeller De-Ice System – Adjustment/Test procedure as provided in Instructions for Continued Airworthiness ICA_030314. Perform <u>only</u> the "Operational Test Of The Propeller Deicing System." The purpose of this test is to verify all propeller de-ice boots are operational.

   Each propeller de-ice boot installed on the composite five-blade propeller has two heating zones; inboard and outboard. The propeller de-ice system heats the inboard OR outboard zones of all five blades simultaneously based on the de-ice timer mode.

   During the operational test, each zone of all five de-ice boots are momentarily powered during the de-ice timer power on self-test to verify heating circuit resistance. The heat rise in each boot during this test can be felt by hand. If one zone and/or boot fails to increase in temperature, check connections at the brush block, MOV or on the propeller per Hartzell Manual 181.
   If "Functional Test of Propeller Deicing System" is required, refer to ICA_030314 for further details and cautions. Refer to Chapter 7 of the Hartzell Propeller Owner's Manual 147 and ICA_030314 for propeller de-ice maintenance practices if necessary.

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C) **Documentation**

1. Attach Hartzell Propeller Inc. Airplane Flight Manual Supplement AFMS_030314 to existing Airplane Flight Manual.

2. Revise weight and balance records and equipment list to show the removal of the original propeller and installation of the new propeller as follows (confirm weights and arm location with aircraft equipment list):

PC-12/47E	Weight		Arm		Moment	
Item	(lb)	(kg)	(in)	(m)	(lb-in)	(kg-m)
Remove Hartzell HC-E4A-3D/E10477SK propeller and D-5500-1(P) spinner assembly	-176.8	-80.196	32.7	0.83	-5781.36	-66.56
Install Hartzell HC-E5A-3A/NC10245B propeller and 105820(P) spinner assembly	+168.5	+76.430	32.7	0.83	+5509.95	+63.44

3. Post-installation dynamic balance is recommended but not required. Perform post-installation dynamic balance of the propeller/engine combination per Chapter 61 – Propeller – Adjustment/Test in Pilatus PC-12 Aircraft Maintenance Manual. Specific information about balance weight hardware and installation limits are provided in the Chapter 6 - Maintenance Practices section of Hartzell Owner's Manual 147.

4. Make the appropriate logbook entries and return aircraft to service with FAA Form 337 referencing STC.

5. Perform a functional check-flight using normal procedures, note maximum RPM setting and readjust propeller governor and/or engine ground idle speeds if necessary per procedures in Chapter 71 of Pilatus PC-12 Aircraft Maintenance Manual.

---- END ---