

INST_032513

STC SA03291CH

March 25, 2013
Revision E, March 17, 2016

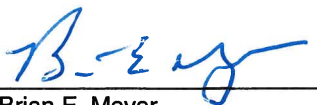
INSTRUCTIONS FOR INSTALLATION
OF A
HARTZELL HC-E5N-3C/NC8834K PROPELLER
ON SOCATA TBM 700 AIRCRAFT

LOG OF REVISIONS

Revision	Revised Page(s)	Description of Revision	Engineer	Date
New	All	Original Release	L. Doud	3/25/13
A	6 17	- Update PWC SB 14476R1 to 14476R2 - Clarified requirement to perform adjustment of beta control - Clarify reverse power setting check and adjustment	L. Doud	3/6/14
B	3,7,19	Added references to Hartzell Service Bulletin HC-SB-61-355 for fuselage strake installation	L. Doud	7/7/14
C	3,7,19	Added reference to Hartzell Service Bulletin HC-SB-61-355, Revision 1	L.Doud	9/8/14
D	3,7,19	Added reference to Hartzell Service Bulletin HC-SB-61-355, Revision 2. Document is re-issued in its entirety.	L.Doud	2/27/15
E	3,6,19	Update PWC SB 14476R4 (Revision 4) making the PY line kit optional. Document is re-issued in its entirety.	B. Meyer	3/17/16

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

FAA Approved



Brian E. Meyer
STC ODA administrator
Hartzell STC ODA-100082-CE

Date

MARCH 18, 2016

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**INSTRUCTIONS FOR INSTALLATION
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HARTZELL HC-E5N-3C/NC8834K PROPELLER
ON SOCATA TBM 700 AIRCRAFT**

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) 778-4379 or
1-800-942-7767***

E-mail: techsupport@hartzellprop.com

APPLICABLE MODELS AND SERIAL NUMBERS

All Socata TBM 700 configurations listed below:

Aircraft Config.	Aircraft Serial Number Range	Max TOGW (lbs)	Engine	Max Cont Power HP @ RPM
700A	1-125, except 38 and 71	6579	PT6A-64	700 @ 2000
700B	126 to 243, except 205 and 240	6579	PT6A-64	700 @ 2000
700C1	205, 240, 244 to 345, except 269 with Mod No 70-140-00	6579	PT6A-64	700 @ 2000
700C2	205, 240, 244 to 345, except 269 with Mod No 70-139-00 and Mod No 70-140-00	7394	PT6A-64	700 @ 2000
700N (aka 850)	346 to 684 (Marketing designation TBM 850)	7394	PT6A-66D	850 @ 2000

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- NOTES:
- 1) These instructions require that the aircraft be in the type-certificated configuration with the four-blade Hartzell HC-E4N-3/E9083SK propeller installed. If any other propeller has been installed, the aircraft must be returned to the original type-certificated Hartzell HC-E4N-3/E9083SK propeller configuration before installing this STC.
 - 2) Approximately 8 man-hours of labor are required for field-installation of this STC kit when replacing an existing Hartzell HC-E4N-3/E9083SK propeller.
 - 3) The fuselage strake installation per Hartzell Service Bulletin HC-SB-61-355 Revision 2 is optional but highly recommended.

REQUIRED DOCUMENTS:

- 1) Hartzell Propeller Owner's Manual 147
- 2) TBM 700 Maintenance Manual applicable to aircraft model and serial number
- 3) Hartzell Drawing 105550, 105551, 105068 (latest revisions)
- 4) Pratt & Whitney PT6A-64 Maintenance Manual (for TBM 700A, B, C ())
Or Pratt & Whitney PT6A-66D Maintenance Manual (for TBM 700N)

OPTIONAL DOCUMENTS:

- 1) Hartzell Service Bulletin HC-SB-61-355, Revision 2
- 2) Daher-Socata Service Bulletin SB 70-214 53
- 3) Pratt & Whitney Service Bulletin No. 14476R4 for optional installation of PY-Tube support with five-blade propellers on PT6A-64 and PT6A-66D engines

A) Propeller Installation

1. When replacing the HC-E4N-3/E9083SK propeller, remove original spinner and propeller per Chapter 61 of the TBM 700 Maintenance Manual (P/N Z00.DMNMPXEE0R6).

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

2. Unpack and inspect the new HC-E5N-3C/NC8834K propeller per Chapter 3 of Hartzell Propeller Owner's Manual 147.

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3. Verify/inspect spinner bulkhead and propeller mounted de-ice components are properly installed and secured on the new propeller per Hartzell Drawing 105550.
4. Install the engine-mounted propeller de-ice Metal Oxide Varistor (MOV) module and associated bracket on the engine gearbox by following the steps below.
 - A. Disconnect existing brush block wires from brush block as shown in Figure 1. Confirm airframe wire labels are as follows:
 - 1) # 1 Wire (GND) attached to inboard brush block
 - 2) # 2 Wire (inboard boot sector) attached to middle brush block
 - 3) # 3 Wire (outboard boot sector) attached to outboard brush block
 - B. Remove existing de-ice brush block and bracket and attaching parts from the engine gearbox as shown in Figure 1.
 - C. Install 105065 brush block bracket in the place of the removed bracket as shown in Figure 2. Torque nuts holding the bracket to engine gearbox using standard torque values provided in the Pratt & Whitney Maintenance Manual.
 - D. Temporarily position MOV mounting plate (P/N 105070) and brush block shim (P/N 1H1157) on brush block bracket with two 105398-53 10-32 hex bolts as shown in Figure 3. Install a B-3837-0332 CRES flat washer under the head of each bolt.
 - E. Install P/N 105404 modular brush block assembly onto bracket using a B-3837-0332 washer and B-3869-3 nut on each bolt as shown in Figure 4. Do not torque at this time.
 - F. Attach short wire harness connecting MOV module assembly (P/N 105069) to de-ice brush block as shown in Figure 5. Simultaneously attach the aircraft wires to the brush block module as follows:
 - 1) Connect MOV Wire A and aircraft wire # 3 to Terminal A on the de-ice brush
 - 2) Connect MOV Wire B and aircraft wire # 2 to Terminal B on the de-ice brush block.
 - 3) Connect aircraft wire # 1 (ground) to Terminal C on the de-ice brush block

NOTE: Rubber terminal boots may be omitted if desired.

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Propeller Installation (continued)

- G. Install MOV module on the MOV mounting plate as shown in Figure 6 using the following procedure:
- 1) Install one 105398-53 10-32 hex bolt through the front hole with a B-3855-32 external tooth lock washer under the head and under the B-3869-3 nut.
 - 2) Install one 105398-53 bolt in the aft hole with a B-3837-0332 flat washer under the head and nut.
 - 3) Torque fasteners to 22-25 in-lbs.
- H. The completed brush block and MOV installation is shown in Figure 7. 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 Socata TBM 700 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 105180() spinner assembly consists of the following components:
- A. 105176() Dome
 - B. 105178() Rear Bulkhead
 - C. 105181 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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Propeller Installation (continued)

8. Re-rig the propeller reverse linkage as follows:

NOTE: Refer to Section 76-10-00 of the applicable Pratt & Whitney Maintenance Manual and Section 76-10-02 of the Aircraft Maintenance Manual for information and procedures when re-rigging propeller reverse linkage.

- A. Disconnect the rear clevis of the push/pull control assembly from the propeller control cam/beta cam. Remove cotter pin, washer and pin fastening clevis to control arm.
- B. Move clevis up one hole on the propeller control cam/beta cam (one hole further from the control cam pivot point) and re-install pin, washer and a new cotter pin. See Figure 8. Adjustment of the clevis may be necessary to facilitate installation at the new location.
- C. Perform "Adjustment of Beta valve control" procedure in Section 76-10-02 in the applicable aircraft maintenance manual. Additional information and details about the engine-mounted prop reverse linkage can be found in Section 76-10-00 of the applicable PT6 maintenance manual.

9. **OPTIONAL:** Install PY line modification on engine per Pratt & Whitney Service Bulletin No. 14476R4 on airplanes using the PT6A-64 or PT6A-66D engines. Confirm the Service Bulletin provided in this kit is the latest revision via your P&WC Customer Portal access to technical publications, by calling a P&WC Field Service Representative, emailing P&WC at customer.service@pwc.ca or calling toll-free (USA & Canada) at: 1-800-268-8000, Global: 1-450-647-8000, International: (+IAC*): +8000-268-8000.

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Propeller Installation (continued)

10. Install the following placard on the pedestal console, just forward of the Condition Lever:

**WHEN OPERATING IN LO/IDLE
BLEED AIR MUST BE – OFF/RST**

When operating in LO / IDLE on the ground, BLEED AIR must be OFF/RST to minimize risk of exceeding ITT temperature limit. The above placard is necessary to remind the pilot to turn off bleed air when operating in LO/IDLE. Operating in LO/IDLE typically results in propeller RPM stabilizing in the yellow arc on the propeller tachometer, which also singles the pilot/operator to turn BLEED AIR to OFF/RST.

The placard is to be made locally with a color that contrasts to the background. Suggested placement of the placard is shown in Figure 9 for the TBM 700 and 850 without the G1000 and in Figure 10 for the TBM 850 with the G1000 cockpit.

11. Install optional fuselage strake per Hartzell Service Bulletin HC-SB-61-355 Revision 2. Installation of fuselage strake is highly recommended.

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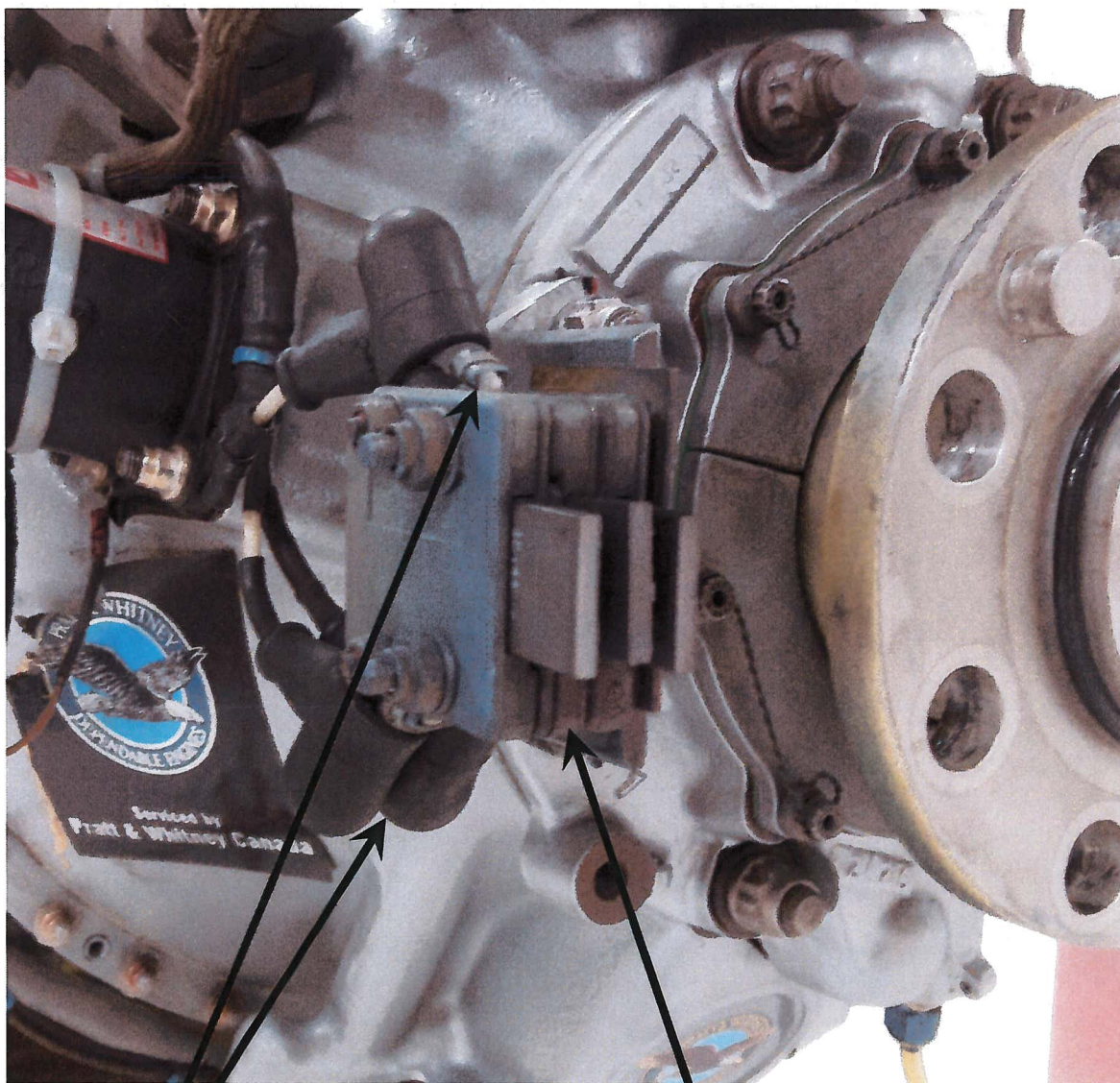


Figure 1

Disconnect brush block
wires

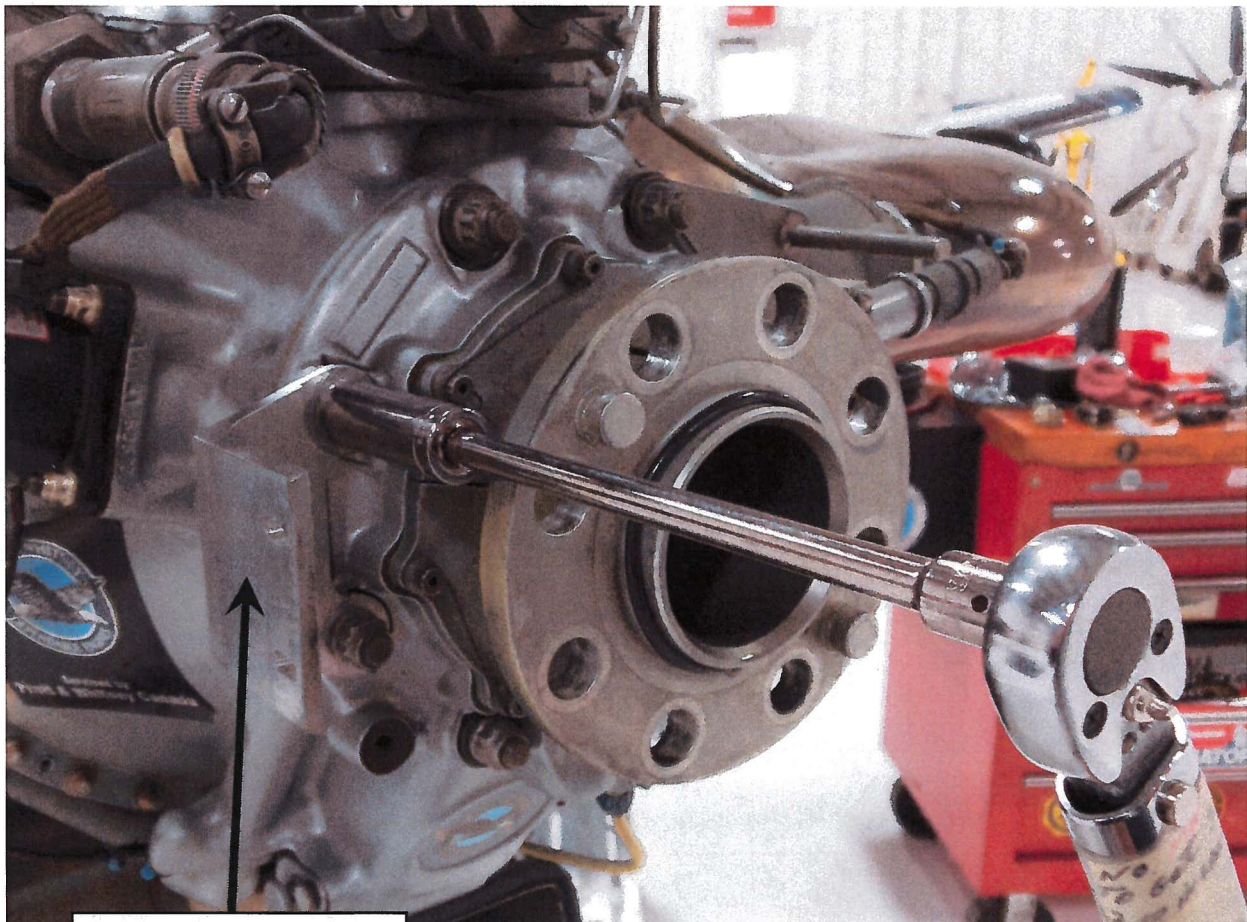
Remove the existing brush block and
bracket.

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Install 105065 bracket

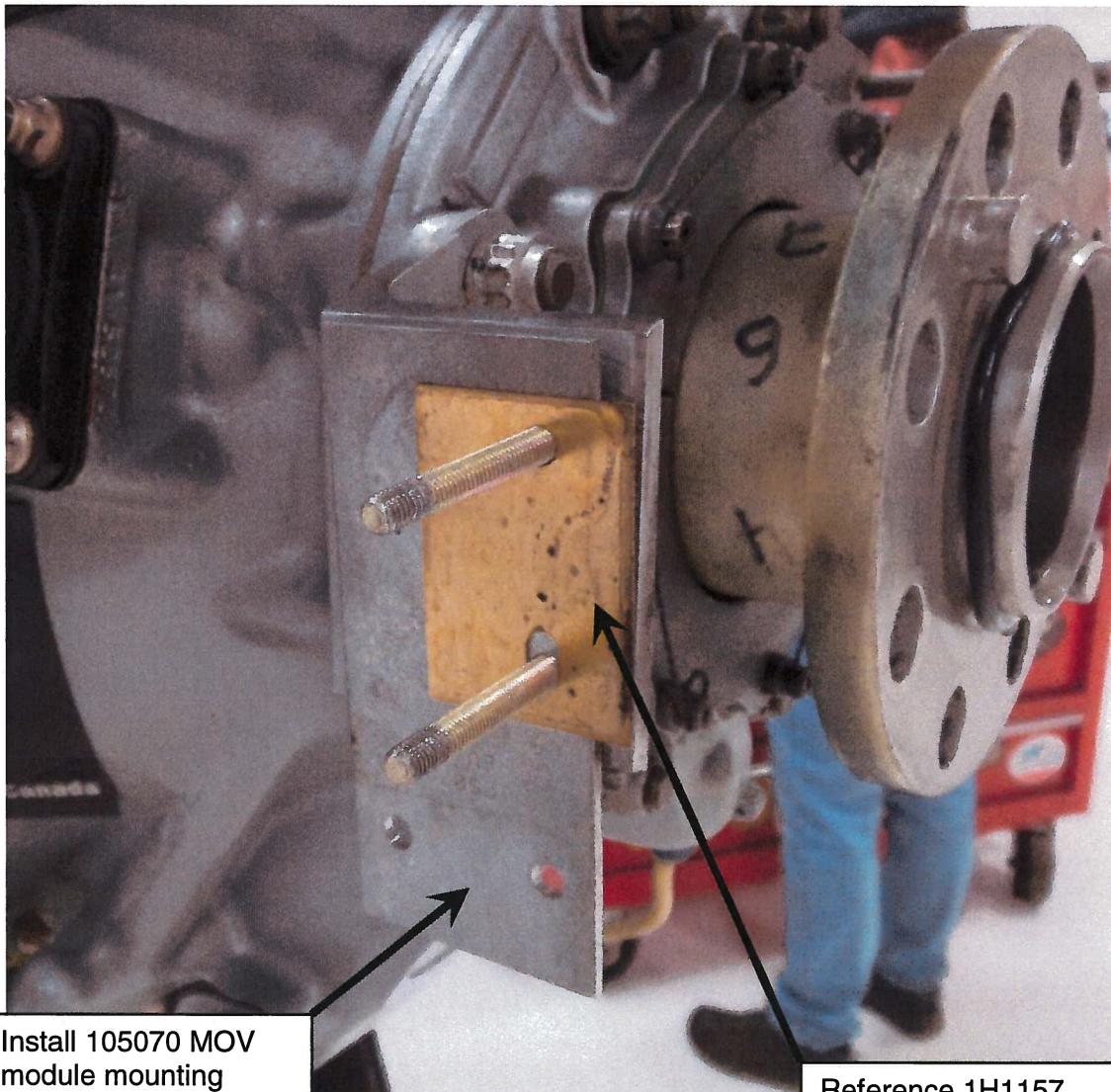
Figure 2

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Install 105070 MOV
module mounting
plate

Reference 1H157
shim

Figure 3

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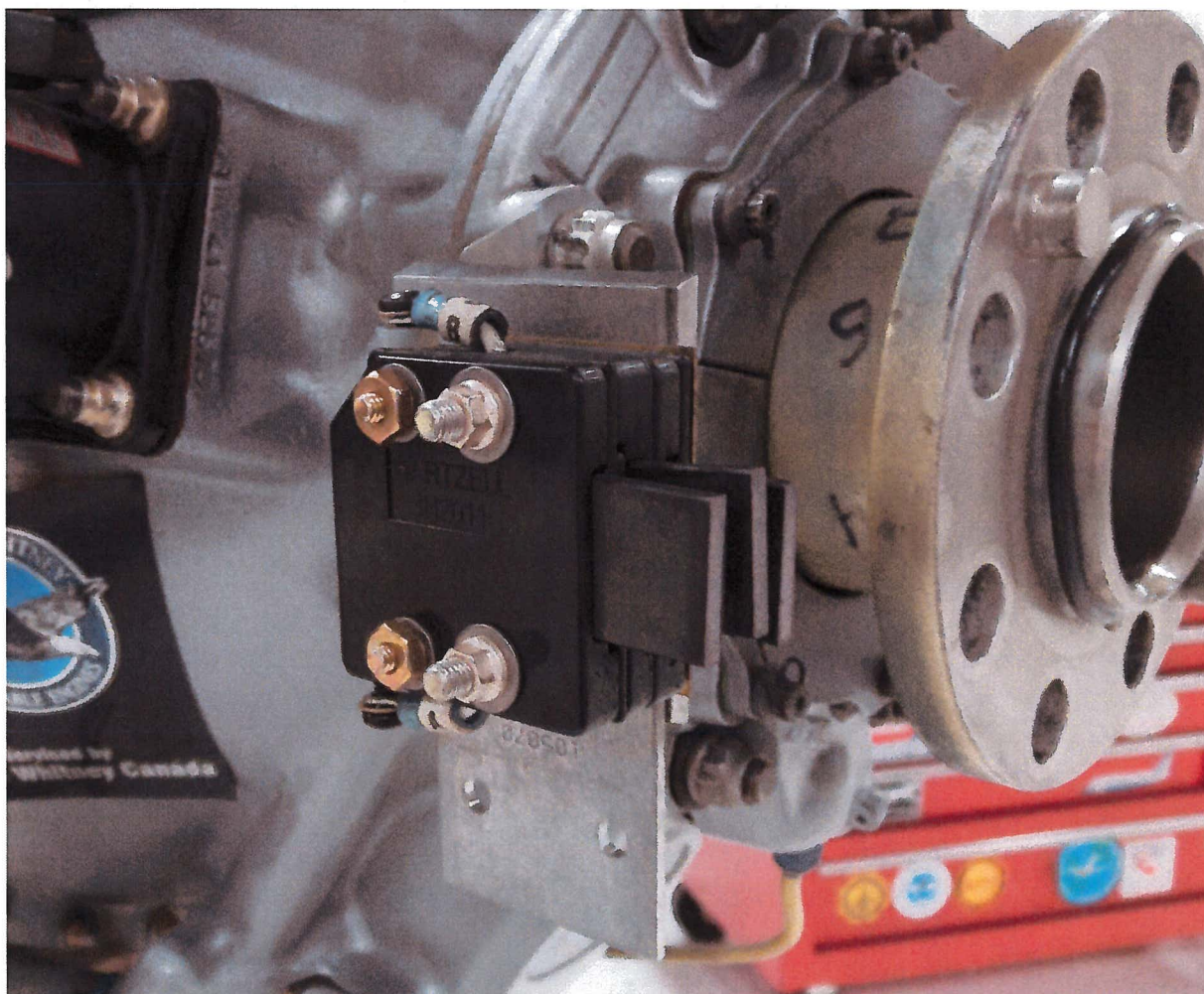


Figure 4

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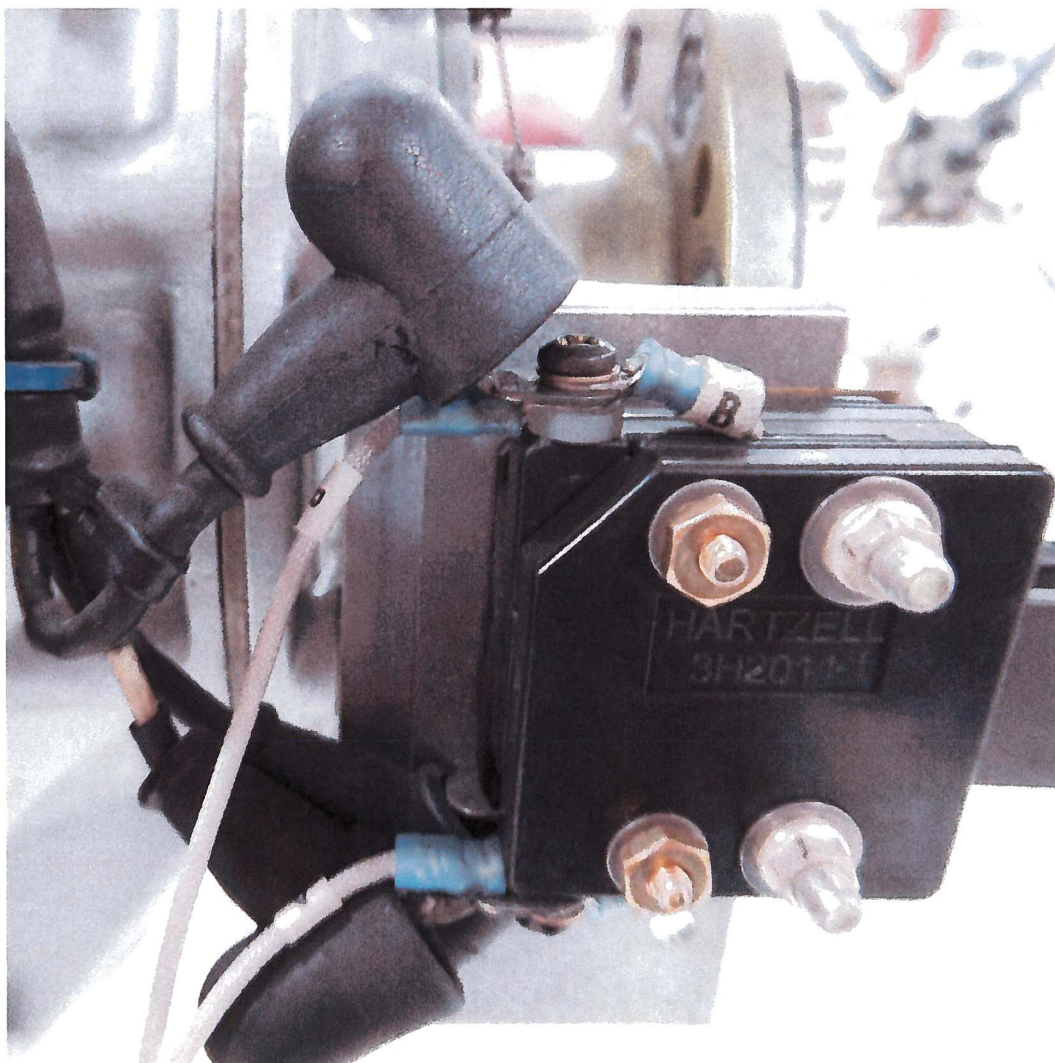


Figure 5

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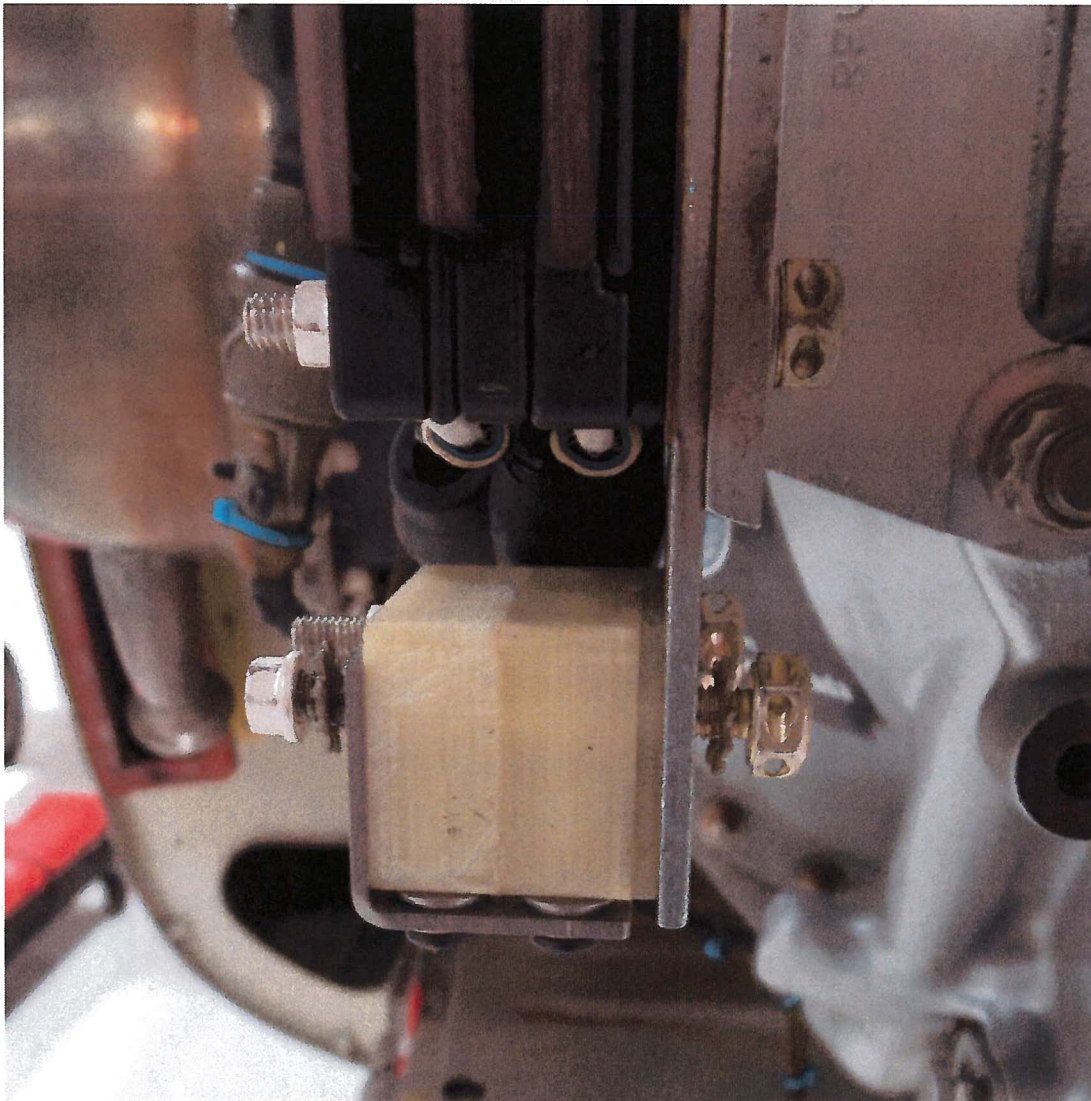


Figure 6

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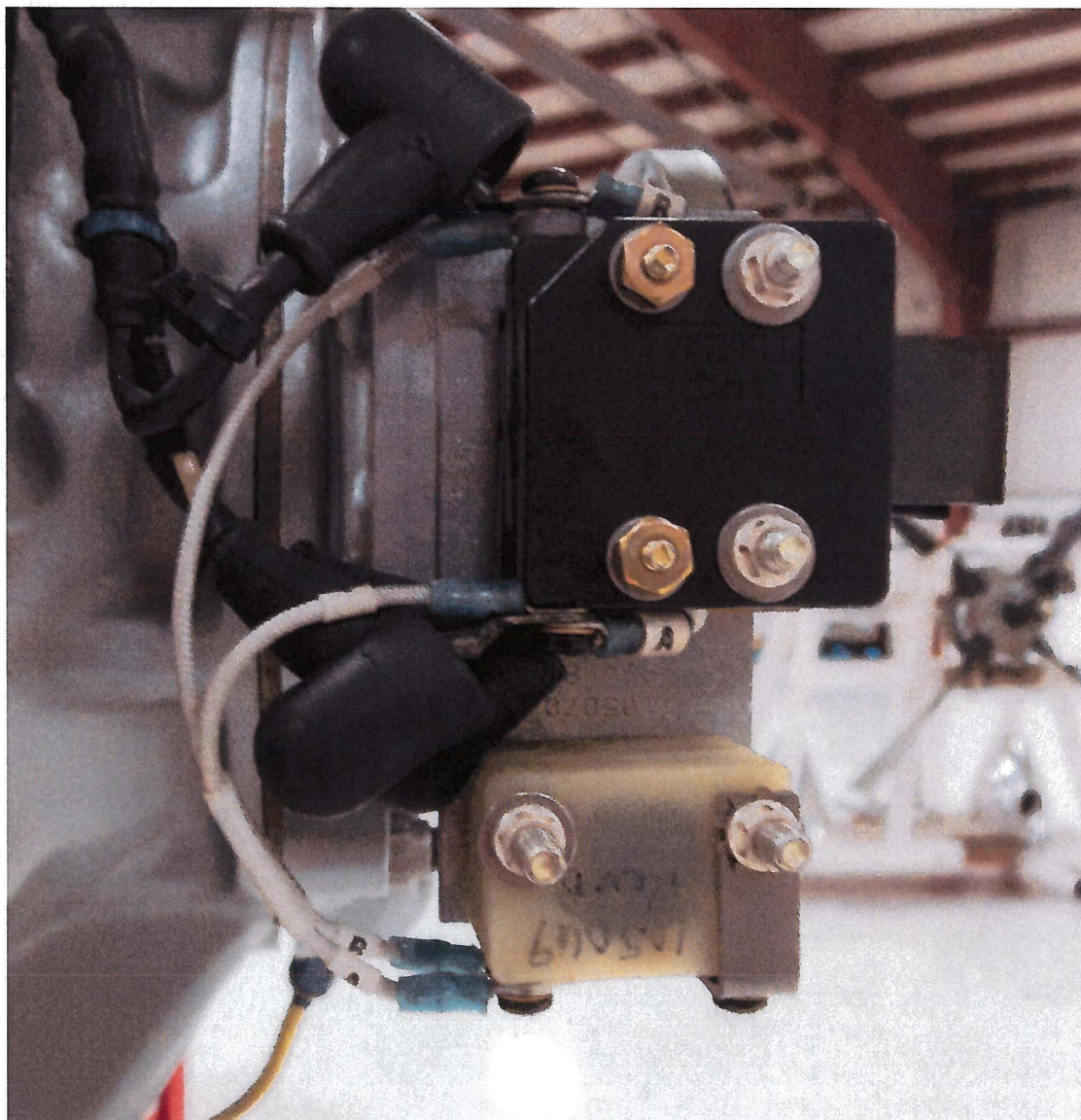


Figure 7

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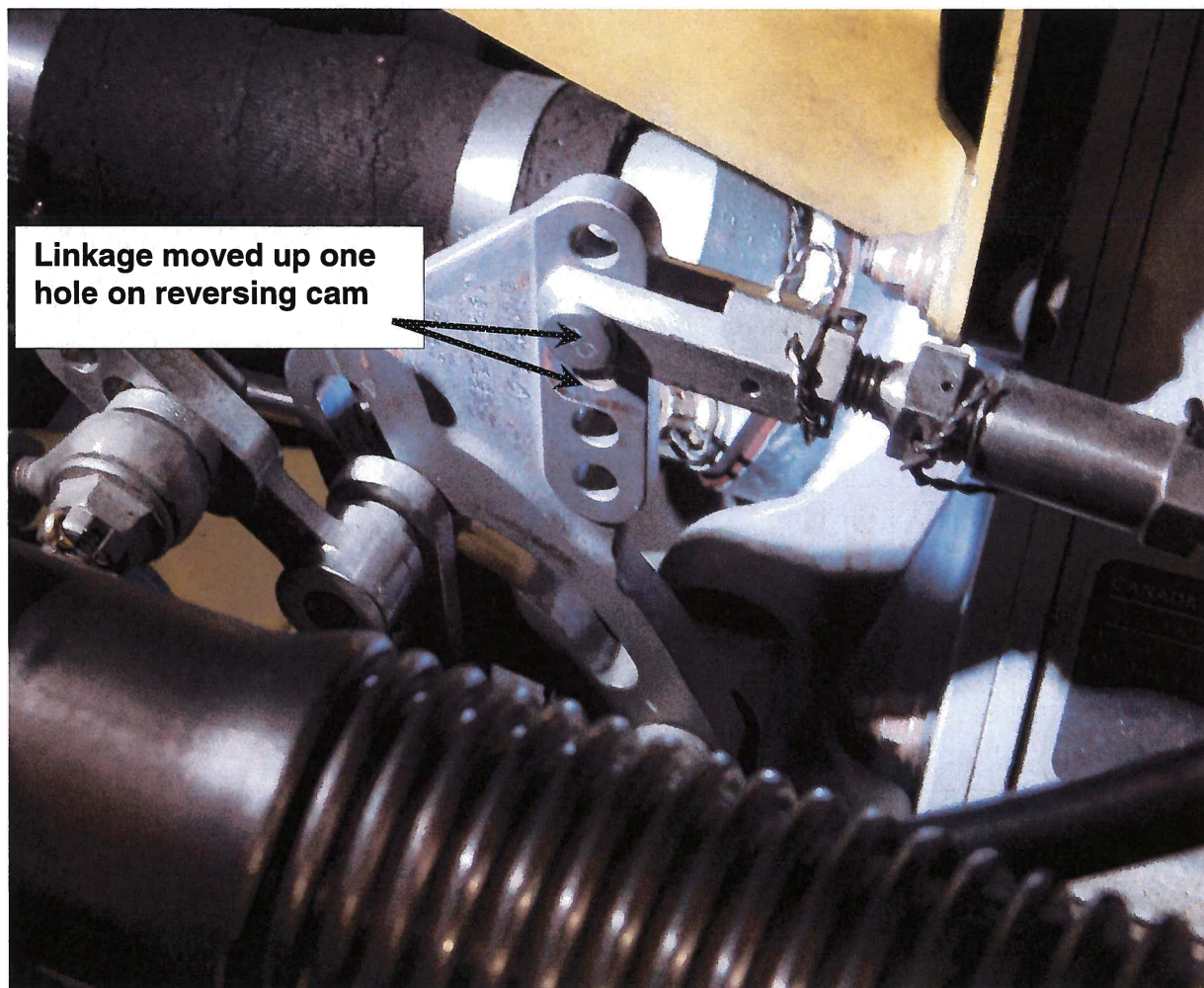


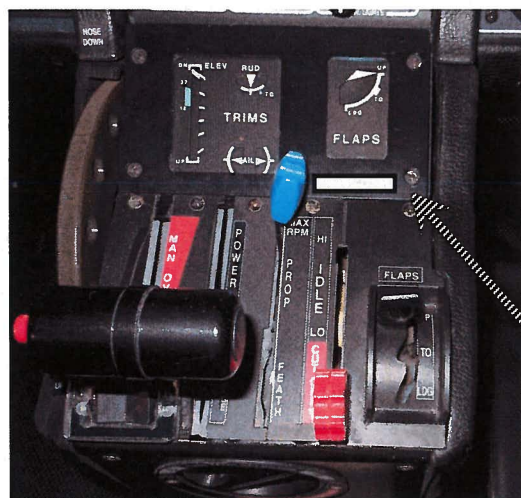
Figure 8

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Placard location on TBM
700 and 850 without
Garmin 1000 instrument
panel

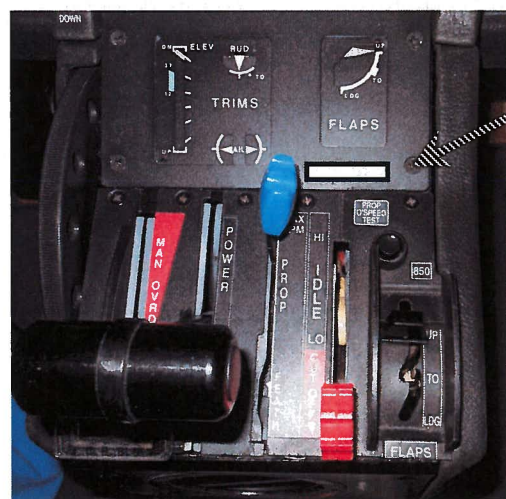


Figure 9: Placard Location on TBM 700 and 850 Without G1000

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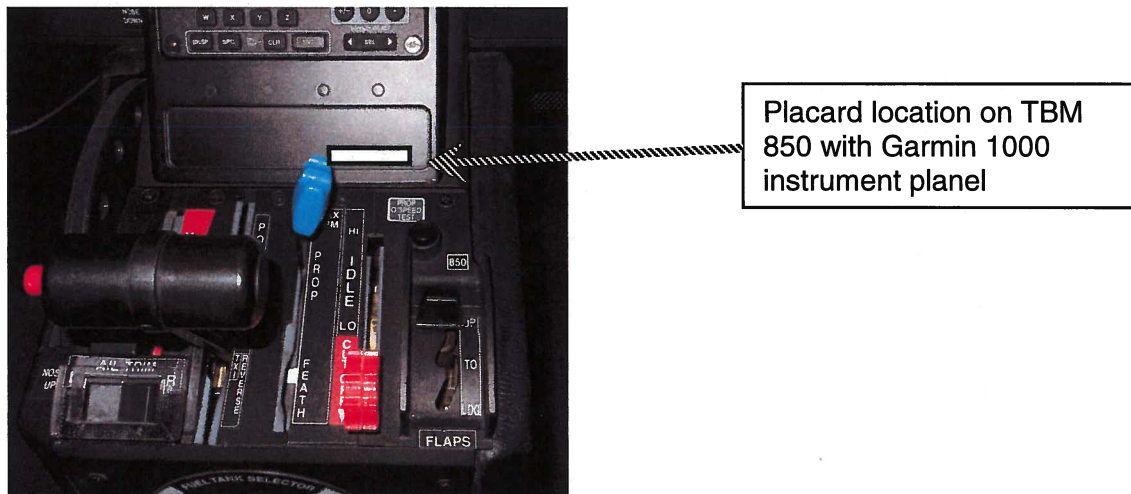


Figure 10: Placard Location on TBM 850 With G1000

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B) Functional Ground Tests

CAUTION: OPERATION OF THE PROPELLER DE-ICE SYSTEM WITHOUT THE ENGINE RUNNING IS LIMITED TO 10 SECONDS OR SEVERE DAMAGE TO THE COMPOSITE BLADES MAY RESULT.

1. Start the engine using normal procedures checklists.
2. Perform Propeller De-Ice functional check with engine running. Move PROP DE ICE switch to the "ON" position. Check illumination of green light located above the switch to indicate proper amperage (8-12 amps). The propeller de-ice timer will cycle de-ice power to the inboard section of the de-ice boot for 90 seconds then to the outboard section for 90 seconds. Refer to Chapter 7 of the Hartzell Propeller Owner's Manual 147 and ICA_032513 for propeller de-ice maintenance practices if necessary.
3. Check HI and LO IDLE speeds per section of Chapter 71 of the Socata TBM 700 Maintenance Manual to verify/adjust engine idle RPM settings.

CAUTION: OPERATION IN LO IDLE WITH BLEED AIR ON CAN RESULT IN ENGINE OVERTEMPERATURE. MONITOR ITT CLOSELY WHILE OPERATING IN LO IDLE

NOTE: The ground operation RPM restriction represented by the yellow arc on the propeller tachometer (450-1000) is not applicable to the new five-blade propeller and may be ignored.

4. Check beta system operation by momentarily moving power lever to full reverse. Perform "Adjust reverse power setting" procedure (subsection to "Engine Power Run") in Section 71-00-00 of the applicable aircraft maintenance manual to confirm maximum reverse power meets minimum requirements. Adjust the "Max Reverse" stop screw if necessary.
5. Shut down engine. Check engine oil level and replenish as necessary.

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C) Documentation

1. Attach Hartzell Propeller Inc. Airplane Flight Manual Supplement AFMS_032513 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 at FS 43.11 moment arm:

Weight (lbs)

- | | |
|--------------------------------------------------------------------------------|---------|
| a. Remove Hartzell HC-E4N-3/E9083SK propeller and D-630-1(P) spinner assembly | -153.22 |
| b. Install Hartzell HC-E5N-3C/NC8834K propeller and 105180(P) spinner assembly | +168.5 |

3. Post-installation dynamic balance is recommended but not required. Perform post-installation dynamic balance of the propeller/engine combination per Chapter 61 – Propeller Dynamic Balance Maintenance Practices in Socata BTM 700 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. If installed, make appropriate logbook entry for installation of fuselage strake per Hartzell Service Bulletin HC-SB-61-355 Revision 2 from Note 3 on Page 3. If installed, make appropriate logbook entry for installation of PY-Tube support per Pratt & Whitney Service Bulletin No. 14476R4 from Step A9.
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 Socata TBM 700 Series Maintenance Manual.

---- END ---