

DRAWING B-4060

INSTRUCTIONS FOR INSTALLATION

OF HARTZELL PHC-C3YF-2(L)UF/F(J)C7663(B)-2R PROPELLERS

AND C-4558-() SPINNERS ON

PIPER PA-34-200T – SENECA II

STC SA1118SO

LOG OF REVISIONS

Revision	Revised Pages	Description of Revision	FAA Approved	Date
C	All	Complete Re-Write	Stamped 8110-3 on-file	3/29/06
D	2 5	Update affectivity table to include new de-ice hardware kit drawing. Add Tech Support contact information. Incorporate use of de-ice kit drawing 102600 into installation instructions		

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

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Please read these instructions 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*

BILL OF MATERIALS

-4	-3	-2	-1	Part Number	Part Name
1	1	1	1	Drawing B-4060	Installation Instructions
1	1			Goodrich Drawing 7E1431	Electrical De-Ice Installation Drawing
1**	1**			102600()	De-ice Hardware Kit (See Note **3)
1	1	1	1	Hartzell Manual 115N	Propeller Owner's Manual
				-4 Installation	Right Engine, Deicing
				-3 Installation	Left Engine, Deicing
				-2 Installation	Right Engine, Non-Deicing
				-1 Installation	Left Engine, Non-Deicing
1				PHC-C3YF-2LUF / FJC7663B-2R	Propeller Assembly
	1			PHC-C3YF-2UF / FC7663B-2R	Propeller Assembly
		1		PHC-C3YF-2LUF / FJC7663-2R	Propeller Assembly
			1	PHC-C3YF-2UF / FC7663-2R	Propeller Assembly
1	1	1	1	C-4558-1(P) or C-4558-3(P)	Spinner Assembly
1*		1*		E-8L (See Note 2)	Governor Assembly
1		1		E-3L Hartzell or 210658 Woodward	Right Engine Governor Assembly
	1		1	E-3 Hartzell or C210659 Woodward	Left Engine Governor Assembly

- Notes: 1. Aircraft serial number effectivity S/N 34-7570001 & up
 *2. Aircraft equipped with Hartzell synchronphaser only
 **3. De-ice kit dependent on propeller model being upgraded from as shown below:

Aircraft OEM Propeller	Applicable De-ice hardware kit
2 Blade Hartzell	102600-3
3 Blade McCauley	102600-4

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GENERAL

Hartzell three-bladed propellers may be installed on the Piper PA-34-200T aircraft, serial numbers 34-7570001 and up. The aircraft may be factory equipped with or without the optional airframe mounted propeller deicing equipment, with or without propeller synchrophasers, and with Hartzell or Woodward propeller governors.

Each combination of factory installed options that are related to the propeller requires specific instructions and Bills of Material for Supplemental Type Certificate modification to the three-bladed Hartzell propeller.

**PIPER FACTORY APPROVED PROPELLERS AND ASSOCIATED OPTIONS
 (Reference TC Data Sheet A7SO)**

	<u>Left Engine</u>	<u>Right Engine</u>
<u>Hartzell Propeller</u>		
Hub	BHC-C2YF-2()F Or BHC-C2YF-2()UF	BHC-C2YF-2()L()F Or BHC-C2YF-2()L()UF
Blades	FC8459-8R (non-deice) FC8459B-8R (deice)	FJC8459-8R (non-deice) FJC8459B-8R (deice)
Spinner	Piper P/N 37138-0	Piper P/N 37138-1
Governor	Woodward Model C210659 or Hartzell Model E-3	Woodward Model 210658 or Hartzell Model E-3L
<u>McCauley Propeller</u>		
Hub	3AF34C502	3AF34C503
Blades	80HA-4	L80HA-4
Spinner	Piper P/N PS50077-49	Piper P/N PS50077-49
Governor	Woodward Model C210659 or Hartzell Model E-3	Woodward Model 210658 or Hartzell Model E-3L Or Hartzell Model E-8L for synchrophaser (Synch. Installation on Piper Dwg. 36890)

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**NON-DEICING PROPELLER INSTALLATION
(B-4060-1 and -2 Installations)**

1. Read and familiarize yourself with the propeller installation procedures provided in Section 3 of Hartzell Manual 115N (Propeller Owner's Manual). Reference instructions for "Installation of "F" Flange Propellers."
2. Install the spinner bulkhead unit before installing the propeller on the engine crankshaft. The A-2476-9 spinner mounting kit hardware is installed on factory-delivered propellers. Reference "Spinner Pre-Installation" instructions in Hartzell Manual 115N. Torque spinner mounting nuts to the appropriate torque specified in the Manual 115N table.
3. Remove the top spark plug from #6 cylinder.
4. Rotate the engine crankshaft until #6 cylinder is on approximate top dead center. This will position the dowel pin holes on the crankshaft flange at 12 o'clock and 6 o'clock.
5. Ensure the propeller shaft O-ring is properly seated before mounting the propeller.
6. Align and install the appropriate propeller with one blade oriented straight-up, in-line with the top engine case split line.
7. Complete installation of propeller mounting hardware per "Installation of "F" Flange Propellers" in Hartzell Manual 115N.

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**DEICING PROPELLERS INSTALLATION
(B-4060-3 and -4 Installations)**

1. Read and familiarize yourself with the propeller installation procedures provided in Section 3 of Hartzell Manual 115N (Propeller Owner's Manual). Reference instructions for "Installation of "F" Flange Propellers."
2. Install the spinner bulkhead unit before installing the propeller on the engine crankshaft. The A-2476-9 spinner mounting kit hardware is installed on factory-delivered propellers. Reference "Spinner Pre-Installation" instructions in Hartzell Manual 115N. Torque spinner mounting nuts to the appropriate torque specified in the Manual 115N table.

NOTE: Use parts list/bill of materials on kit drawing 102600 in lieu of parts list on Goodrich drawing 7E1431.

3. Reference Goodrich Drawing 7E1431 and Hartzell kit drawing 102600. Install Slip Ring Assembly P/N 4E2422 and Mounting Plate P/N 4E3153 on the engine flange in accordance with Drawing 7E1431 with kit hardware specified on Hartzell drawing 102600. Install 1 each item 17 washer (not shown on Goodrich Drawing 7E1431) between item 15 plate and item 18 nut. It is recommended to loosely fasten the mounting plate and slip ring together with item 14 to facilitate alignment of the mounting plate holes with the propeller mounting studs.
4. If converting from a two blade propeller installation, remove and replace ammeter, shunt, timer, circuit breaker and associated hardware. Install new components in same location as previously installed. Modify aircraft wiring as required per Goodrich Drawing 7E1431 note 3.
5. Remove the top spark plug from #6 cylinder.
6. Rotate the engine crankshaft until #6 cylinder is on approximate top dead center. This will position the dowel pin holes on the crankshaft flange at 12 o'clock and 6 o'clock.
7. Ensure the propeller shaft O-ring is properly seated before mounting the propeller.

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8. Rotate the Slip Ring Assembly as necessary to align the lead wires with the de-ice wire screw holes in the spinner bulkhead before installing the propeller and torquing the propeller mounting nuts.
9. Align and install the appropriate propeller with one blade oriented straight-up, in-line with the top engine case split line.
10. Complete installation of propeller mounting hardware per "Installation of "F" Flange Propellers" in Hartzell Manual 115N.

NOTE: Torque the mounting plate-to-slip ring nuts after the propeller is installed on the engine crankshaft but before torquing the propeller mounting nuts.

11. Reference Goodrich Drawing 7E1431. Install all Goodrich de-icing components on the spinner bulkhead including the slip ring wire leads and de-ice boot wire leads to the screw-post. Fasten de-icer boot wire leads with clamps and tie-straps as shown on drawing 7E1431.
12. Install spinner dome and complete spinner installation per Hartzell Manual 115N Spinner Installation Section 3.6. Based on the dome configuration, use the appropriate installation procedure for single-piece spinner dome for spinners with no dome cap, or two-piece spinner dome (Procedure 2) for spinners with a dome cap.
13. Remark tachometers by extending green arc from 500 to 2575 RPM (Red Radial at 2575 RPM). Optional: install new tachometers, Piper Code 548-303.
14. Remove RPM restriction placards from instrument panel (Cross wind restriction and/or MP-RPM restriction).
15. Attach Hartzell P.O.H. Supplement No. B-4060 to the existing FAA Approved Airplane Flight Manual.

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16. Apply the following weight and moment corrections to the weight and balance records based on the propeller configuration replaced:

For Replacing Hartzell Two-Blade Propellers

Items Installed on the Aircraft	Weight and Balance Change		
	Wt. (lb)	Arm (in)	Moment (lb-in)
PHC-C3YF-2UF/FC7663-2R and PHC-C3YF-2LFU/FJC7663-2R	+32	20.3	+650
PHC-C3YF-2UF/FC7663B-2R and PHC-C3YF-2LUF/FJC7663B-2R	+34	20.3	+690
C-4558-() Spinners	No significant change		

For Replacing McCauley Three-Blade Propellers

Items Installed on the Aircraft	Weight and Balance Change		
	Wt. (lb)	Arm (in)	Moment (lb-in)
PHC-C3YF-2UF/FC7663-2R and PHC-C3YF-2LFU/FJC7663-2R	-5.2	20.3	-106
PHC-C3YF-2UF/FC7663B-2R and PHC-C3YF-2LUF/FJC7663B-2R	-3.2	20.3	-65
C-4558-() Spinners	No significant change		

If Woodward Governors Are Replaced

Items Installed on the Aircraft	Weight and Balance Change		
	Wt. (lb)	Arm (in)	Moment (lb-in)
E-3 and E-3L or E-3 and E-8L	+2.4	28.1	+67

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17. Perform ground engine run for a functional and leak check per Hartzell Manual 115N.
18. Make the appropriate logbook entries and return aircraft to service with FAA Form 337 referencing STC.
19. Fly a functional check-flight using normal procedures, note maximum RPM setting and readjust governor high-RPM stop if necessary.
20. Post-installation dynamic balance of the propeller/engine combination is recommended, but not required, per Section 61-00-15 of Hartzell Owner's Manual 115N.

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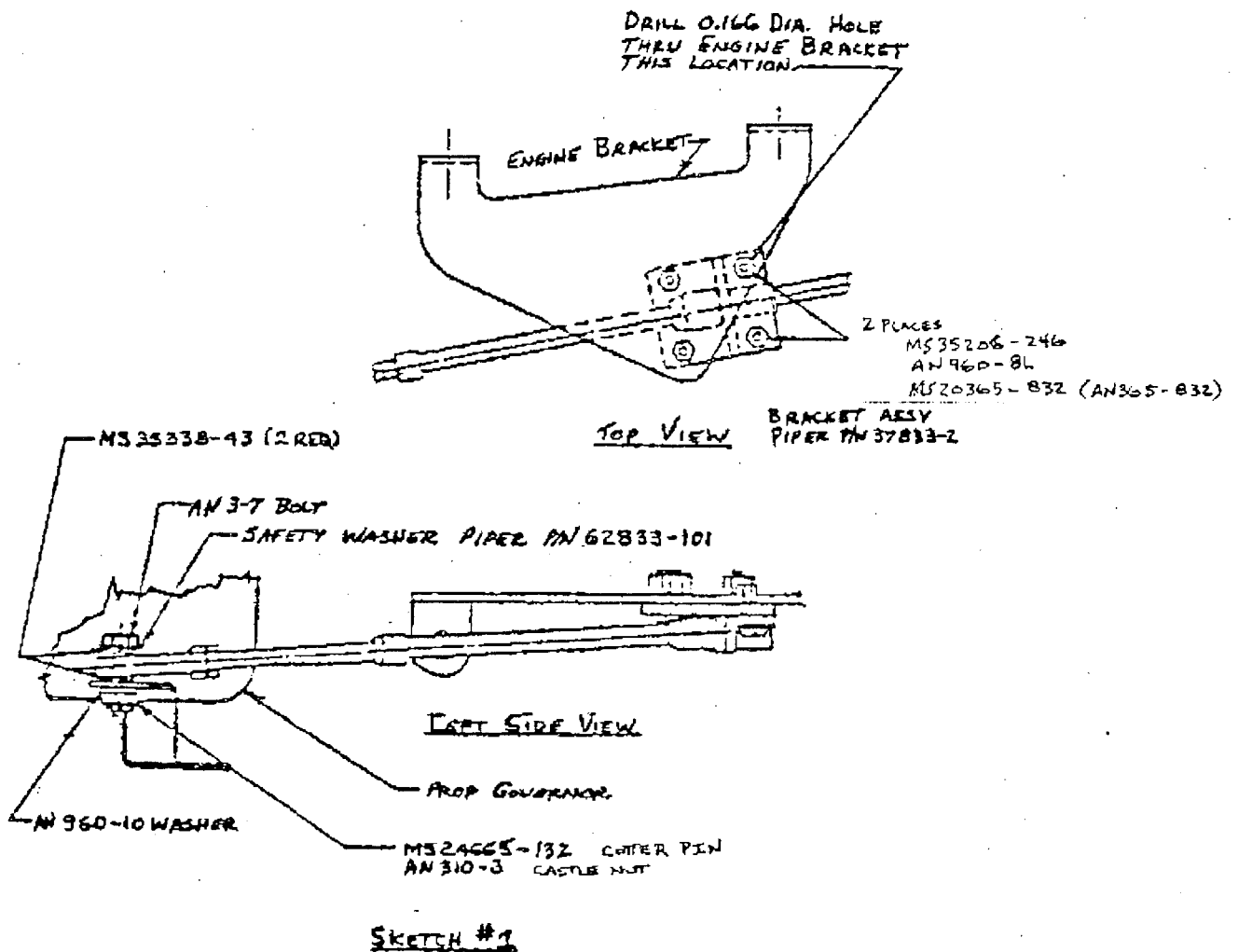
REPLACEMENT OF WOODWARD GOVERNORS WITH HARTZELL GOVERNORS

1. Refer to the appropriate airplane maintenance manual for propeller governor removal and installation instructions. Install appropriate governors using existing engine attachment hardware. Torque the four attachment nuts to 18-20 ft-lbs.
2. Remove the propeller control cable anchor hardware from the engine bracket.
3. Install Piper Plate P/N 37833-2 to the engine bracket (see Sketch #1) with existing hardware.
4. Drill a 0.166" diameter hole through the engine bracket using the aft hole of part 37833-2 as a guide.
5. Anchor the engine control cable as shown on Sketch #1.
6. Attach the propeller control cable rod end as shown in Sketch #1.

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PROP CONTROL BRACKET MODIFICATION
FOR
REPLACEMENT OF WOODWARD WITH
HARTZELL PROP. GOVERNORS

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATIONS

MAKE	MODEL NO.	TYPE <small>(Airplane, Radio, Helicopter, etc.)</small>	NAME OF APPLICANT
Piper	PA-34-200T	Airplane	Hartzell Propeller Inc.

LIST OF DATA

IDENTIFICATION	TITLE
Document: B-4060, Revision D Dated 1/22/08	INSTRUCTIONS FOR INSTALLATION OF HARTZELL PHC-C3YF-2(L)UF/F(J)C7663(B)-2R PROPELLERS AND C-4558-() SPINNERS ON PIPER PA-34-200T SENECA II. END

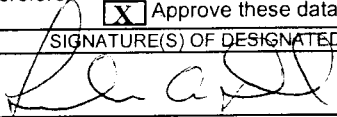
PURPOSE OF DATA
 Revise Installation Instructions for Piper Seneca II, STC SA1118SO to update kit effectivity table and revise installation steps to include reference to new de-ice kit drawing 102600.

APPLICABLE REQUIREMENTS (List specific sections)

14 CFR 23.901

CERTIFICATION - Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered XXX have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations.

I (XX) therefore Recommend approval of these data
 Approve these data

SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	DESIGNATION NUMBER(S)	CLASSIFICATION(S)
 Leslie A. Doud	DERY-410155-CE	Chart B - A7, B7, A16, B16 Chart G - A5, A7, A8, A10