

DRAWING B-4061

INSTRUCTIONS FOR INSTALLATION

OF HARTZELL PHC-C3YF-2(L)KUF/F(J)C7453(K) PROPELLERS

AND C-4558-() SPINNERS ON

PIPER PA-34-200T SENECA II & PA-34-220T – SENECA III

STC SA649GL

LOG OF REVISIONS

Revision	Revised Pages	Description of Revision	FAA Approved	Date
A	2	Sheet 2 (installation sketch) redrawn		11/4/1996
B	1-6	<p>Page 1: <u>Added</u> "PA-34-200T Seneca II"; <u>Replaced</u> "Electrical System" with "General Arrangement Drawing, Prop de-ice"; <u>Removed</u> "Report No. 70-04-700C Installation Manual"; <u>Removed</u> "Report No. 68-04-712C Maintenance Manual"; <u>Added</u> "(ATA 30-60-02) Installation and Maintenance Manual"; <u>Removed</u> "H" from "Report No. 68-04-714H" <u>Added</u> "(ATA 30-60-01)" & "Brush Block"; <u>Added</u> "(P)" to spinner assembly, two places; <u>Removed</u> S/N restriction (to add Seneca II)</p> <p>Page 2: Incorporated Drawing B-4061, Rev. D</p> <p>Page 3: <u>Added</u> "PA-34-200T - Seneca II"; <u>Added</u> "and PA-34-200T"; <u>Removed</u> "Serial number 34-8133001 and up"</p> <p>Page 4: <u>Added</u> "PA-34-200T - Seneca II"; <u>Added</u> "(P) to D-4561-3"; <u>Replaced</u> "PRP-909-6" with "C3317-228"; <u>Added</u> "(P)" to D-4560-2</p> <p>Page 5: <u>Added</u> "Piper PA-34-200T - Seneca II"; <u>Added</u> "(P)" to C-4558-3(P); <u>Added</u> "(P)" to C-4563(P)</p> <p>Page 6: <u>Added</u> "Piper PA-34-200T - Seneca II"; <u>Deleted</u> "Issue A" after 7E1431; <u>Replaced</u> "On Hartzell bulkhead unit part number D-4561-3" with "on propeller flange bolts as depicted on Drawing 7E1431"; <u>Added</u> "(P)" to D-4561-3; <u>Replaced</u> "PRP-909-6" with C3317-228; <u>Removed</u> "Issue A" from 7E1431; <u>Added</u> "(P) to C-4558-3</p>		4/29/1997
C	All	Complete re-write. Removed drawings and references from BOM that are not sent with kit. Harmonized procedures with STC SA1118SO.		
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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 STC SA649GL

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-4061	Installation Instructions
1	1			Goodrich Drawing 7E1431	Electrical De-Ice Installation Drawing
1**	1**			102600()	De-ice Hardware Kit (See Note **2)
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-2LKUF / FJC7453K	Propeller Assembly
	1			PHC-C3YF-2KUF / FC7453K	Propeller Assembly
		1		PHC-C3YF-2LKUF / FJC7453	Propeller Assembly
			1	PHC-C3YF-2KUF / FC7453	Propeller Assembly
1	1	1	1	C-4558-3(P)	Spinner Assembly
1*		1*		Hartzell U-8-8L or Hartzell E-8-7L	Governor Assembly
1		1		Hartzell U-3-8L or Hartzell E-3-7L	Right Engine Governor Assembly
	1		1	Hartzell U-3-8 or Hartzell E-3-7	Left Engine Governor Assembly

Notes: * 1) Aircraft equipped with Hartzell synchrophaser only
 **2) 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 and PA-34-220T aircraft using the (L)TSIO-360-KB engines. The aircraft may be factory equipped with or without the optional airframe mounted propeller deicing equipment, with or without propeller synchrophasers. When installing this STC on the PA-34-200T, the aircraft must have been previously modified by STC SA1797NM to install the (L)TSIO-360-KB engines.

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.

Propeller and Propeller Limits

Left Engine

- 1 Hartzell, Hub Model PHC-C3YF-2KUF
Blade Model FC7453 or FC7453K

Right Engine

- 1 Hartzell, Hub Model PHC-C3YF-2LKUF
Blade Model FJC7453 or FJC7453K

Pitch Setting at 30" Station

High 80° to 82° (Feathered), Low 9.5° ± 0.2°

Diameter: Not over 76", not under 75"

Spinner: Hartzell Part Number C-4558-3 Left and Right Hand

Governor Assembly:

- 1 Hartzell Hydraulic Governor
Model E-3-7 or U-3-8 (Left)
- 1 Hartzell Hydraulic Governor
Model E-3-7L or U-3-8L (Right)
- 1 Hartzell Hydraulic Governor
Model E-8-7L or U-8-8L (Right with Synchrophaser)
Installation, Piper Drawing 36890 or 87719

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**NON-DEICING PROPELLER INSTALLATION
(B-4061-1 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.
8. Continue with Step 11 in the "DEICING PROPELLERS INSTALLATION" section to complete installation.

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DEICING PROPELLERS INSTALLATION
(B-4061-3 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. Remove RPM restriction placards from instrument panel (Cross wind restriction and/or MP-RPM restriction).
14. Attach Hartzell P.O.H. Supplement No. B-4061 to the existing FAA Approved Airplane Flight Manual.

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15. 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-2KUF/FC7453 and PHC-C3YF-2LkFU/FJC7453	+50	20.3	+1015
PHC-C3YF-2KUF/FC7453K and PHC-C3YF-2LKUF/FJC7453K	+54.6	20.3	+1108
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-2KUF/FC7453 and PHC-C3YF-2KLFU/FJC7453	+19.5	20.3	+396
PHC-C3YF-2KUF/FC7453K and PHC-C3YF-2LKUF/FJC7453K	+24.5	20.3	+497
C-4558-() Spinners	No significant change		

If Governors Are Replaced

Items Installed on the Aircraft	Weight and Balance Change		
	Wt. (lb)	Arm (in)	Moment (lb-in)
E-3-7 or U-3-8 (Left) E-3-7L or U-3-8L (Right) E-8-7L or U-8-8L (Right with Synchrophaser)	No Change		

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15. Perform ground engine run for a functional and leak check per Hartzell Manual 115N.
16. Make the appropriate logbook entries and return aircraft to service with FAA Form 337 referencing STC.
17. Fly a functional check-flight using normal procedures, note maximum RPM setting and readjust governor high-RPM stop if necessary.
18. 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.

DEPARTMENT OF TRANSPORTATION
 FEDERAL AVIATION ADMINISTRATION
STATEMENT OF COMPLIANCE WITH THE FEDERAL AVIATION REGULATIONS

DATE: Feb 8, 2008

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AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATIONS

MAKE Piper	MODEL NO. PA-34-200T and PA-34-220T	TYPE <small>(Airplane, Radio, Helicopter, etc.)</small> Airplane	NAME OF APPLICANT Hartzell Propeller Inc.
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LIST OF DATA

IDENTIFICATION	TITLE
Document: B-4061, Revision D Dated 2/8/08	INSTRUCTIONS FOR INSTALLATION OF HARTZELL PHC-C3YF-2(L)KUF/F(J)C7453(K) PROPELLERS AND C-4558-() SPINNERS ON PIPER PA-34-200T SENECA II and PA-34-220T SENCA III. END

PURPOSE OF DATA

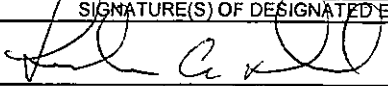
Revise Installation Instructions for Piper Seneca II and III, STC SA649GL to update kit effectivity table and revise installation steps to include reference to new de-ice kit drawing 102600.

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

NOTES:

- 1 ITEM INCLUDED AS PART OF BLADE BILL-OF-MATERIAL
- 2 EXISTING HARDWARE INSTALLED ON AIRCRAFT
- 3 THE FOLLOWING ARE ACCEPTABLE SUBSTITUTES FOR THE ITEMS LISTED:

ITEM	PART NO	DESCRIPTION
31	41-2-S14-LN2 (35 AMP)	CIRCUIT BREAKER, 35 AMP (E-T-A)
31	412-K14-LN2-35A	CIRCUIT BREAKER, 35 AMP (E-T-A)

- 4 ITEM INSTALLATION DETAILS ARE DEPICTED ON GENERAL ARRANGEMENT DRAWING, 7E1431, AND APPLICABLE STC DOCUMENTATION

	1	1		31	454-724	CIRCUIT BREAKER, 35 AMP (PIPER)	3
	(1)	(1)		30	32370-11	SWITCH, ILLUM. ROCKER (PIPER)	2
	1	1		29	3H1389-7	AMMETER, 29-33 AMPS ARC	
	1	1		28	MS91586-2	SHUNT, AMMETER, 50 AMP	
	1	1		27	3E1964-3	TIMER, DE-ICE	
4	4	4		26	B-6655-08	NUT, HEX, SELF-LOCKING	
8	8	8		25	B-3837-N832	WASHER, CRES	
4	4	4		24	B-6637-50	SCREW, PAN HEAD, CRES	
2	2	2		23	3H2062-2	MODULAR BRUSH BLOCK ASSEMBLY	
2	2	2		22	1H1157	SHIM, BRUSH BLOCK	
	(2)	(2)		21	B-3874-42A	BOLT, 1/4-28, HEX HEAD	2
	(2)	(2)		20	3E1935	SUPPORT ARM ASSEMBLY	2
	(2)	(2)		19	4E2032	BRUSH BLOCK BRACKET	2
12	12	12		18	B-3808-4	NUT, SELF-LOCKING	
12	12	12		17	B-3837-0463	WASHER, CRES	
12	12	12		16	B-7077-52	BELLEVILLE SPRING WASHER	
4	4	4		15	4H3153	MOUNTING PLATE, SPLIT	
2	2	2		14	4H2422	SLIP RING ASSEMBLY	
24	24		12	13	B-6641-265	NUT, BRASS	
24	24		12	12	2H1260	BUSHING, INSULATING	
36	36		18	11	B-3864-37	WASHER, LOCK, INT TOOTH	
12	12		6	10	B-7035-14	SCREW, PAN HEAD	
12	12		6	9	B-6655-06	NUT, HEX, SELF-LOCKING	
12	12		6	8	B-3837-N632	WASHER	
12	12		6	7	B-6637-30	SCREW, PAN HEAD, CRES	
6	6		3	6	3H1271-2	LEAD CLIP	
6	6		3	5	B-3852-1-0	TIE STRAP	
12	12		6	4	B-3852-2-0	TIE STRAP	
6	6		3	3	3H2050	WIRE HARNESS	
				2	3H2292-10	PROP DE-ICER (LEFT-HAND ROTATION)	1
				1	3H2303-10	PROP DE-ICER (RIGHT-HAND ROTATION)	1
			X		102600-1	PROPELLER SIDE HARDWARE	
			X		102600-2	AIRFRAME SIDE HARDWARE	
			X		102600-3	2-BLADE TO 3-BLADE HARTZELL CONVERSION KIT	
X					102600-4	3-BLADE McCAULEY TO 3-BLADE HARTZELL KIT	

QTY QTY QTY QTY ITEM PART NUMBER DESCRIPTION NOTE

HARTZELL
 HARTZELL PROPELLER INC.
 One Propeller Place
 Piquette, OH 45356-2634

			DLN	W KR	ECO-106306	WEIGHT
			11/30/07	11/30/07	-	SHEET 1 OF 1
MATERIAL	HEAT-TREAT	FINISH	DRAWN	CHECKER	APPROVED	REPLACES

TOLERANCES UNLESS OTHERWISE NOTED:	
DECIMALS:	.03
.00	.010
.000	.0003
ANGLES:	.5°
FRACTIONS:	1/32
(also see A-3316)	

IF THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED FOR MANUFACTURING WITHOUT PERMISSION FROM HARTZELL PROPELLER INC.

DE-ICE KIT,
TOP PROP STC

REPLACED BY	
DO NOT SCALE	<input type="radio"/>
DISTRIBUTION	102600-()