INST-030822

INSTRUCTIONS FOR INSTALLATION OF HARTZELL

5D3-NK366A1(Y)( )/91D17(B)

PROPELLER ON DAHER KODIAK 100 AIRCRAFT

STC SA04589CH

LOG OF REVISIONS

Revision	Revised Pages	Description of Revision	Date
IR	All	Initial Release	03/15/2023

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

FAA Approved _____ Digitally signed by Leslie A. Doud Date: 2023.03.15 14:03:54 -04'00'

Les Doud
STC ODA administrator
Hartzell STC ODA-100082-CE

Date 3/15/2023

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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

Engineering Drawing Disclaimer

The figures provided in the following installation instructions are for reference only. In the event of a disagreement between the current revision of the drawing on file at Hartzell Propeller Inc. and the figures in this document, the current revision of the drawing must be used.

List of required documents, drawings, or software

Hartzell Propeller Owner's Manual No. 486 ..... All installations (included with STC kit)

Garmin G1000 (legacy hardware pre-GDU 20.87) operating software..... 006-B0552-29 or later

List of required modifications

Quest Field Service Instruction FSI-007..... Wing and flap vortex generators

List of optional and/or compatible modifications

Quest Field Service Instruction FSI-020.....External Cargo Compartment

Type Certificate A00007SE .....Large or Oversized Tires

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GENERAL

These STC installation instructions provide the necessary information to install either a 5D3-NK366A1(Y)( )/91D17B propeller or a 5D3-NK366A1(Y)( )/91D17 propeller with Hartzell model 109044(P) aluminum spinner on the following aircraft:

Table 1: Aircraft included in this STC

Aircraft Config	Aircraft Serial Number Range	Max TOGW (lb_f)	Engine Model	Engine Power/RPM Takeoff Rating
Kodiak 100	100-0001 and greater	7,255	P&WC PT6A-34	750 HP / 2200 RPM

It is the responsibility of the installer to verify compatibility of this STC with previously approved modifications installed on the airplane.

APPLICABLE MODELS

This STC propeller conversion applies to all aircraft listed in Table 1, equipped with the listed 750 HP engine. No other aircraft / engine combinations are applicable.

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Section A: Field Installation of STC

(1) Prior to beginning the installation, start the engine according to the Normal Procedures section of the current Airplane Flight Manual. Allow the engine temperatures and pressures to stabilize with the power lever at IDLE.

(2) Record the following data for future reference in Table 2, then shut down the engine, and proceed with the installation.

Propeller Lever Position	TRQ [FT-LB]	ITT	N_G [%]	FFLOW PPH	Outside Air Temp	Field Altitude
HIGH RPM						
FEATHER						

Table 2: Baseline Engine Parameters

(3) Remove the existing propeller and spinner in accordance with the current Kodiak 100 series aircraft Airplane Maintenance Manual procedures.

(4) Install the 5D3-NK366A1(Y)( )/91D17(B) propeller and 109044(P) spinner in accordance with the current Kodiak 100 series aircraft Airplane Maintenance Manual procedures.

(5) Update propeller RPM tachometer using Garmin SD card P/N 006-B2633-56 according to Section E: and ensure the following (see Figure 5 for example):

a. The yellow band between 450-1050 RPM on the tachometer remained in place;

b. The green band is displayed from 1900 RPM to 2000 RPM, and

c. The redline on the tachometer is displayed at 2000 RPM.

(6) Adjust main governor according to Section C of this document.

(7) Adjust overspeed governor according to Section D of this document.

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(8) Attach Hartzell Propeller Inc. Airplane Flight Manual Supplement AFMS-030822 to the existing Pilot's Operating Handbook and FAA Approved Airplane Flight Manual. Revise weight and balance records to show:

Removal of existing propeller & spinner

Item	Model	Weight [lb]	Arm [in.]
Propeller (with ice protection)	HC-E4N-3P/D9511FSB	145.2[1]	-70.3
Propeller (without ice protection)	HC-E4N-3P/D9511FS	142.6[1]	-70.3
Propeller (other)	As designated	Actual weight	-70.3
Aluminum Spinner, polished	D-630-(6,8,10)P	Actual weight	-70.3
Aluminum Spinner, painted	D-630-(6,8,10)	Actual weight	-70.3
Spinner (other)	As designated	Actual weight	-70.3

Installation of the Hartzell 5D3-NK366A1(Y)( )/91D17(B) propeller & 109044(P) spinner

Item	Model	Weight [lb]*	Arm [in.]
Propeller (with ice protection)	5D3-NK366A1(Y)( )/91D17B	136.8[1]	-70.3
Propeller (without ice protection)	5D3-NK366A1(Y)( )/91D17	133.1[1]	-70.3
Aluminum Spinner (polished)	109044P	7.4[1]	-70.3
Aluminum Spinner (painted)	109044	Actual weight	-70.3

(9) Make the appropriate logbook entries and return aircraft to service with FAA Form 337 referencing this STC.

(10) Post-installation dynamic balance of the propeller/engine combination is recommended, but not required, per Chapter 6 of Hartzell Propeller Owner's Manual No. 486.

(11) Perform a functional check flight using normal procedures.

[1] Or actual weight

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Section B: Factory Installation of STC

(1) Install the 5D3-NK366A1(Y)( )/91D17(B) propeller and 109044(P) spinner in accordance with the current Kodiak 100 series aircraft Airplane Maintenance Manual procedures.

(2) Update propeller RPM tachometer using Garmin SD card P/N 006-B2633-56 according to Section E: and ensure the following (see Figure 5 for example):

a. The yellow band between 450-1050 RPM on the tachometer remained in place;

b. The green band is displayed from 1900 RPM to 2000 RPM, and

c. The redline on the tachometer is displayed at 2000 RPM.

(3) Adjust main governor according to Section C of this document.

(4) Adjust overspeed governor according to Section D of this document.

(5) Attach Hartzell Propeller Inc. Airplane Flight Manual Supplement AFMS-030822 to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.

(6) Update AFM equipment list with the appropriate information below:

Item	Model	Weight [lb]	Arm [in.]
Propeller (with ice protection)	5D3-NK366A1(Y)( )/91D17B	136.8[2]	-70.3
Propeller (without ice protection)	5D3-NK366A1(Y)( )/91D17	133.1[2]	-70.3
Aluminum Spinner (polished)	109044P	7.4[2]	-70.3
Aluminum Spinner (painted)	109044	Actual weight	-70.3

(7) Post-installation dynamic balance of the propeller/engine combination is recommended, but not required, per Chapter 6 of Hartzell Propeller Owner's Manual 486.

(8) Perform a production flight test using normal procedures.

(9) Make appropriate logbook entries prior to issuance of Airworthiness Certificate.

[2] Or actual weight

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Section C: Main governor adjustment

(1) Start the engine according to the Normal Procedures section of the current Airplane Flight Manual.

(2) Taxi the aircraft to a location suitable for a high-power engine run.

(3) Set the parking brake and firmly depress the brake pedals. The overspeed governor set point may be checked at this point according to the Normal Procedures section of the current Airplane Flight Manual. This will be required in Section D below.

(4) Advance the power lever to obtain maximum propeller RPM (approximately 2,200 RPM).

(5) Move the cockpit propeller speed control lever aft until the propeller RPM reads 2,000 RPM.

(6) Reduce the power lever to IDLE, taxi the aircraft to the maintenance facility, and shut down the engine according to the Normal Procedures section of the current Airplane Flight Manual. Do not move the cockpit propeller speed control lever from its position in Step 5.

(7) Gain access to the main propeller governor (CSU) and propeller overspeed governor (OSG).

Note

The CSU and governor propeller RPM control linkage will be in the position that results in approximately 2,000 RPM. See Figure 1 for approximate position. The goal at the end of this adjustment procedure is to limit the propeller to 2,000 RPM with the cockpit propeller speed control lever in the full forward position (i.e., not in the “retracted” position in Step 5.)

(8) Using a permanent marker, draw a line across the serrated shaft onto the governor speed control lever (Figure 2, item 1) to serve as an indexing reference.

(9) Remove the safety wire from the governor speed control lever retaining screw (Figure 2, item 2). Loosen the screw and remove the governor speed control lever from the serrated shaft.

(10) Remove the Spirolox retaining ring (Figure 2, item 3).

(11) Remove the safety wire from the max N_P stop screw (Figure 2, item 4). Loosen the jam nut several turns.

(12) Remove the safety wire from the skirt retaining screw (Figure 2, item 5), and remove the screw.

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(13) To prevent rotation, hold the feathering lift rod with an Allen key (Figure 2, item 6), lift the governor propeller speed control lever skirt (Figure 2, item 5), and rotate it clockwise (as viewed from above) four serrations. Reinstall skirt retaining screw and torque to 33-38 IN-LB. Do not safety the screw yet.

(14) While still holding the assembly with the Allen key, turn the max N_P stop screw clockwise until contact is made with governor propeller speed control lever skirt. Torque the jam nut 33-38 IN-LB. Do not safety the screw yet.

(15) Turn the feathering lift rod one turn clockwise (as viewed from above) with the Allen key.

(16) Remove the safety wire from the feather stop screw (Figure 3, item 1), loosen the jam nut, and turn the screw clockwise 2 ½ turns. Torque the jam nut 33-38 IN-LB. Do not safety the screw yet.

(17) Rig the propeller speed control linkage according to the Kodiak Airplane Maintenance Manual. Rigging is listed in Chapter 76. Torque the governor speed control lever retaining screw to 33-38 IN-LB prior to safetying.

Note

During the subsequent engine run, if N_G is below the value in the FEATHER row of Table 2, the feathering lift rod may be turned clockwise to increase N_G.

(18) Reinstall engine access panels removed in Step (7), and perform Steps (1) through (3) again.

(19) Advance the power lever until propeller RPM stabilizes. Make a note of the RPM. Return the power lever to idle.

(20) If required, adjust the propeller RPM by loosening the jam nut, and turning the max N_P stop screw until 2,000 ± 10 RPM is achieved. A ½ turn on the max speed fine adjustment bolt results in approximately 10 RPM change. Turn the bolt clockwise to decrease RPM or counterclockwise to increase RPM.

(21) Once the propeller RPM is within 2,000 ± 10 RPM, torque the jam nut to 33-38 IN-LB, and re-safety the max N_P stop screw according to the Airplane Maintenance Manual. Additional engine controls rigging procedures may be found in Chapter 76 of the Airplane Maintenance Manual.

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(22) Ensure jam nuts and loosened retaining screws have been torqued to 33-38 IN-LB. Re-safety the skirt retaining screw, max N_P stop screw, and feather stop screw according to the Kodiak 100 Airplane Maintenance Manual.

(23) Clean the area highlighted as Region 1 (red oval area, see Figure 1), and firmly apply the provided placard (Figure 4).

As an option, the CSU may be removed and sent to an FAA-certified governor servicing facility for adjustment. After adjustment, the CSU part number must be re-marked to have an “H” suffix.

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Figure 1: CSU position at approximately 2000 RPM

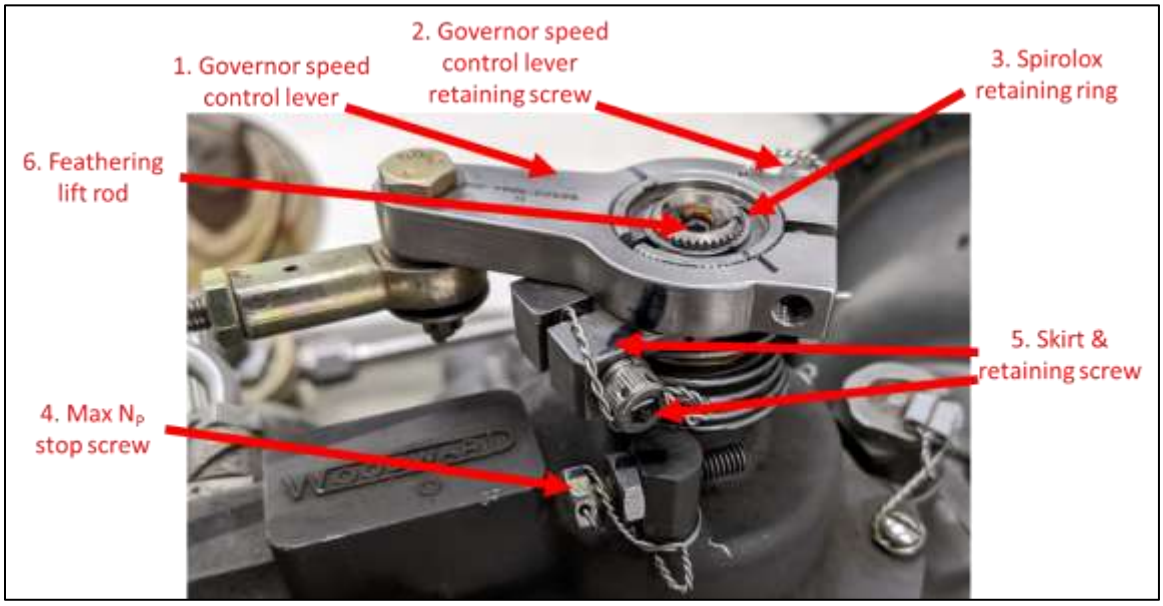

Figure 2: CSU components, right view

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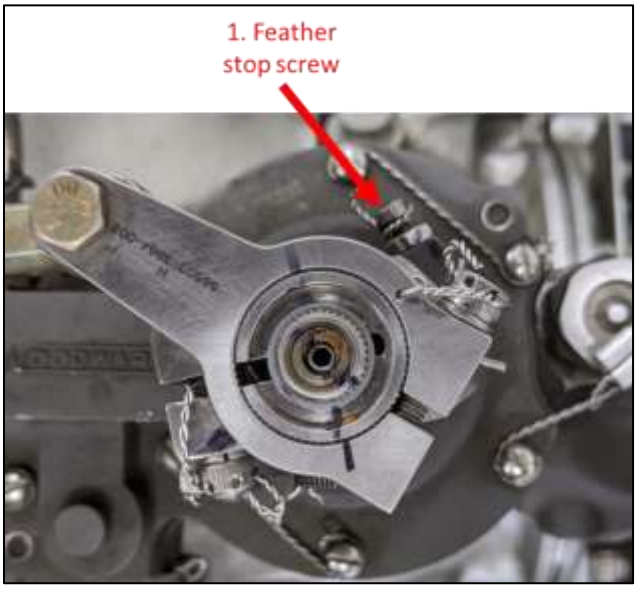

Figure 3: CSU components, top view

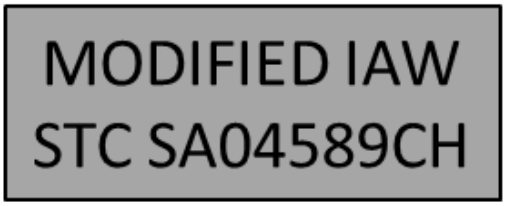

Figure 4: Required CSU & OSG placard (Hartzell P/N 109331)

Figure 5: Propeller tachometer after software installation

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Section D: Overspeed governor adjustment

(1) Start the engine according to the Normal Procedures section of the current Airplane Flight Manual.

(2) Taxi the aircraft to a location suitable for a high-power engine run.

(3) Set the parking brake and firmly depress the brake pedals.

(4) Perform a Propeller Overspeed Governor Check according to the Normal Procedures section of the current Airplane Flight Manual. Note the stabilized propeller RPM with the Overspeed Governor Test Button depressed.

(5) Gain access to the main propeller governor (CSU) and propeller overspeed governor (OSG).

(6) With a permanent marker, mark a reference line (Figure 6, item 1) on the top of the OSG next to the maximum speed adjustment screw (Figure 6, item 2).

(7) Turn the maximum speed adjustment screw counterclockwise one turn.

(8) Reinstall engine access panels removed in Step (5), and perform Steps (1) through (4) again.

(9) If required, adjust the maximum speed adjustment screw until the Propeller Overspeed Governor Check results in a stabilized propeller RPM of 1,880 ± 50 RPM. Turn the screw clockwise to increase the overspeed RPM, or counterclockwise to reduce the overspeed RPM.

(10) Clean the area highlighted as Region 2 (red oval area, see Figure 6), and firmly apply the provided placard (Figure 4).

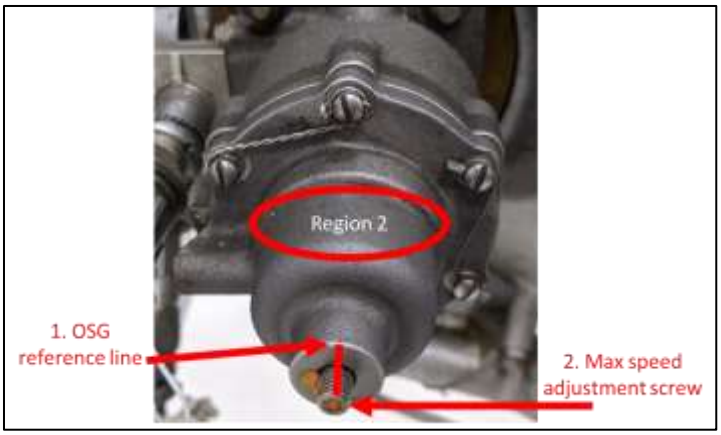

Figure 6: OSG detail

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Section E: Software Loading Procedure

Note

This section was written and validated by Kodiak Aircraft Company, and reviewed and verified by Garmin Ltd. If any step or menu selection is not available, unclear, or there are questions, stop and contact Hartzell Propeller Inc. for support at the phone number or email provided at the beginning of this document.

G1000 Hartzell 5-Bladed Propeller Installation Instruction

Pre GDU 20.87 (Legacy G1000)

Note

G1000 Legacy systems must be loaded with operating software 006-B0552-29 or later.

(1) With G1000 power off, insert the 006-B2633-56 card into top slot of PFD1.

(2) Power-up both the PFDs and the MFD in configuration mode.

(3) On PFD1, go to the System Upload page using the FMS knob.

(4) Activate the cursor and use the small FMS knob to highlight "Kodiak 100 - Hartzell 5 Blade Prop" field.

(5) Press the ENT key.

(6) Once any of the Kodiak Options are selected and the cursor moves to the ITEM field, turn the small FMS knob to generate a pick list. Move the cursor to highlight "Hartzell Propeller STC Pre GDU 20.87".

(7) Press the ENT key.

(8) Press LOAD softkey.

(9) Acknowledge "OK" after Upload and Crossfill Complete by pressing ENT key.

(10) Verify the SUMMARY field lists the configuration upload as complete and PASS is displayed next to the configuration check box.

(11) Press UPDT CFG softkey.

(12) Acknowledge "YES" to Update Config Module by pressing ENT key.

(13) Acknowledge "OK" for Update config complete by pressing ENT key.

(14) Power cycle the G1000 to reboot the system in normal mode.

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GDU 20.87+ (G1000 NXi System)

Note

It is recommended to update the operating software to the latest version. Verify GDU software is 20.87 or later.

(1) With G1000 power off, insert the 006-B2633-56 card into top slot of PFD1.

(2) Power-up both the PFDs and the MFD in configuration mode.

(3) On PFD1, go to the System Upload page using the FMS knob.

(4) Activate the cursor and use the small FMS knob to highlight " Kodiak 100 - Hartzell 5 Blade Prop" field.

(5) Press the ENT key.

(6) Once any of the Kodiak Options are selected and the cursor moves to the ITEM field, turn the small FMS knob to generate a pick list. Move the cursor to highlight "Hartzell Propeller STC GDU 20.87+".

(7) Press the ENT key.

(8) Press LOAD softkey.

(9) Acknowledge "OK" after Upload and Crossfill Complete by pressing ENT key.

(10) Verify the SUMMARY field lists the configuration upload as complete and PASS is displayed next to the configuration check box.

(11) Press UPDT CFG softkey.

(12) Acknowledge "YES" to Update Config Module by pressing ENT key.

(13) Acknowledge "OK" for Update config complete by pressing ENT key.

(14) Power cycle the G1000 to reboot the system in normal mode.

END