Service Instruction SI-0035

Epic Aircraft, LLC ◆ 22590 Nelson Road ◆ Bend OR 97701
Phone: 541-318-8849 ◆ Fax: 541-382-5125 ◆ Web: www.epicaircraft.com

Subject: Stall Computer Tuning Procedures

ATA-Code: 31-00

Labor: 6 hours

Effectivity: K031

Affected Model(s): E1000 GX

Due: Before Next Flight

Compliance: Mandatory

Recurrence: No

1 BACKGROUND AND PURPOSE:

Stall computers on K031 require tuning. This Service Instruction provides instructions for performing this tuning.

2 REFERENCES:

Epic E1000 Airframe Maintenance Manual, SK05000000 Rev F
Epic E1000 Wiring Manual, SK05000002 Rev A
Production Flight Test Manual, FTM-000 Rev I
Stall Protection System Checkout and Adjustment, SK31000002 Rev -

3 WARRANTY:

For aircraft under warranty, parts and labor will be covered by Epic Aircraft, LLC if the work is performed within the compliance period and at an Authorized E1000 Service Center.

4 APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

5 TOOLS:

No.	Description	Qty	Epic Aircraft Supplied	Customer Supplied
1.	Common Hand Tools	A/R	☐	☒
2.	Stall Computer Breakout Box (SK1003601)	1	☒	☐
3.	Lift Computer Voltage Test Harness (DWK17310001)	1	☒	☐
4.	Safe Flight Force Gauge Applicator	1	☒	☐

6 PARTS/MATERIALS:

No.	Part Number	Description	Qty	Epic Aircraft Supplied	Customer Supplied
1.	N/A			☐	☐

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7 INSTRUCTIONS:

1. Test Setup
    a. For the following tests, it will be necessary to install the Lift Computer Voltage Test Harness as described in Figure 2 with support from Epic Aircraft engineering. Gain access to the stall computers under the passenger floor in accordance with the Airframe Maintenance Manual.
    b. Perform and record Voltage sweep in table 1.
    c. Tune lift computer to previous tip grams settings (record of previous stall tune should be on file with customer service). Record tip gram and voltage shake and push set points in table 2.
2. Flight Test Procedures

WARNING: FLIGHT TESTING MUST BE DONE BY AN EPIC AIRCRAFT, LLC APPROVED PILOT

a. Perform the following tests with the aircraft in the heavy forward configuration (between 7500 to 7700 lbs. and a CG between 169.0 to 170.0) and with the Lift Computer Voltage Test Harness installed. From trim speed, decelerate at approximately 1 knot per second. Note the speed of shaker activation. The stall warning shaker shall activate at least 5 knots prior to the pusher. Verify the Red warning “STICK SHAKER” CAS message appears with an aural “STALL-STALL-STALL”.

b. Continue decelerating at 1 knot per second until the pusher activates as evidenced by nose down pitching. Verify the Red warning “STICK PUSH” CAS message appears with an aural “PUSH-PUSH-PUSH”. Natural Stall speeds were determined for this aircraft (K031) during production flight test, values provided below for reference.
    i. Flaps Up, Gear Up, 78 KIAS
    ii. Flaps T/O, Gear Up, 74 KIAS
    iii. Flaps Full, Gear DN, 66 KIAS

c. Verify the AoA indications at each flap position for the shaker and pusher activation. Shake = 0.76 ± 0.04, Push = 0.94 ± 0.06.

Note: Incorrect deceleration can produce incorrect shake and push values

3. Requirements

a. Stalls shall be conducted in the following configurations:

i. Flaps UP, Gear UP, High idle – Trim 127 KIAS, Shaker speed margin 5-8 KIAS from push, Push speed margin 5-7 KIAS from stall.

ii. Flaps T/O, Gear UP, High idle – Trim 125 KIAS, Shaker speed margin 6-9 KIAS from push, Push speed margin 6-8 KIAS from stall.

iii. Flaps FULL, Gear DN High idle- Trim -102 KIAS, Shaker speed margin 10-11 KIAS from push, Push speed margin of at least 2 KIAS from stall not to exceed 68 KIAS.

iv. For each flap position, shake activation for both stall computers shall occur within 1 second of each other.

v. For each flap position, push activation for both stall computers shall occur within 1 second of each other.

4. Tuning Procedures

a. When additional tuning is necessary to meet requirements, the following steps are required:

i. Connect a breakout box to the lift computer to be adjusted. Monitor voltage from the lift transducer using positive lead on pin 22 and negative lead on pin 23.

ii. Connect the Force Gram Applicator (FGA) to the appropriate lift transducer.

iii. Disconnect the shake motor to avoid unnecessary vibrations.

iv. With the acceptable tool, place the aircraft in Weight Off Wheels mode.

v. For the flap condition requiring adjustment (if tuning flaps full an air data test set is required):

1. Adjust the appropriate potentiometer based on flight data recorded using the Lift Computer Voltage Test Harness (an approximate amount is -0.15 volts per +1 knot). A clockwise turn will apply negative volts, and a counterclockwise turn will apply positive volts, see Figure 1.

2. Reverify that the push or shake becomes active at the new voltage setting using the FGA to approach the push or shake.

3. Repeat as needed for the other flap settings.

4. Record the new values in Table 2.

vi. Reconnect the shake motor.

vii. Flight test the new lift computer settings. If necessary, repeat steps i-vi as required.

b. When tuning is complete, provide and update the aircraft stall tune voltage sweep in Table 1, as well as final tip gram and voltage set points in Table 2. Results are to be kept on file by customer service.

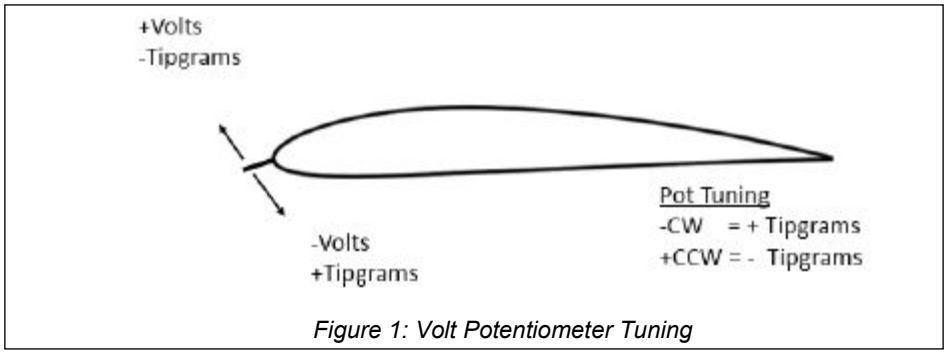

Figure 1: Volt Potentiometer Tuning

Table 1

TG	Left Volts	Right Volts
8		
6		
4		
2		
0		
-2		
-4		
-6		
-8		

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Table 2

	VDC Left		TG Left		VDC Right		TG Right	
Flaps	$VOLT_{PSH}$	$VOLT_{SH}$	TG_{PSH}	TG_{SH}	$VOLT_{PSH}$	$VOLT_{SH}$	TG_{PSH}	TG_{SH}
Up								
T/O								
Full								

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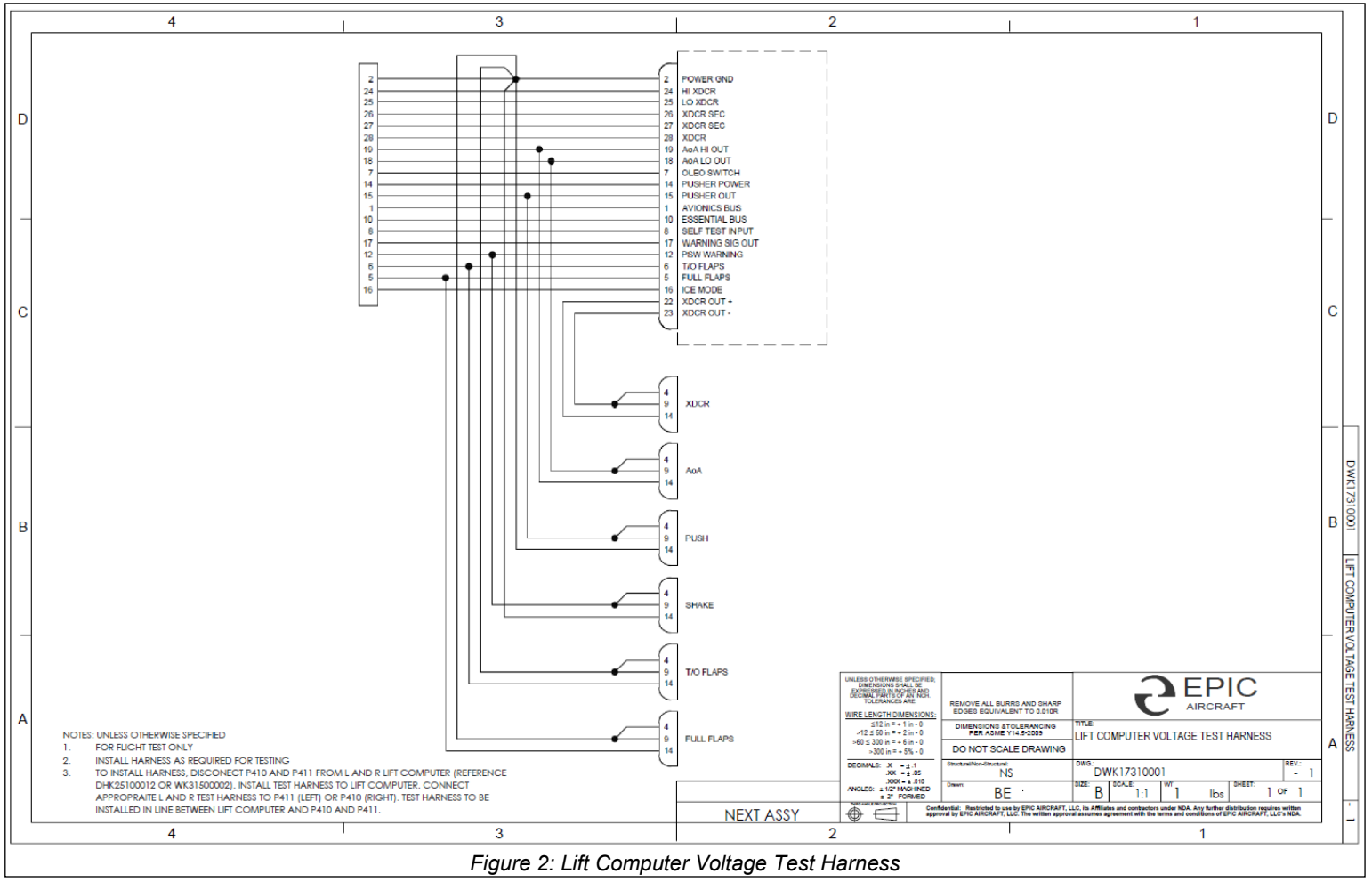

Figure 2: Lift Computer Voltage Test Harness

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8 WEIGHT AND BALANCE:

N/A

9 PUBLICATIONS AFFECTED:

N/A

10 RECORD COMPLIANCE:

Make appropriate entry in airplane maintenance records.

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Appendix A: Compliance Letter

Please complete and mail this form to Customersupport@epicaircraft.com

This is to certify that I have completed the work in accordance with the Epic Aircraft, LLC Service Instruction.

Aircraft Owner Information:
Date: _____ Aircraft Serial Number: _____ Aircraft Reg. Number: _____ Owner's Name: _____
Maintenance Entity Information
Name of Shop Performing the work: _____ Name of Person(s) Performing inspection and/or work: _____ Phone Number: _____ Email: _____