

# \*MANDATORY SERVICE BULLETIN\*

**NUMBER:** SB11-12  
**REVISION:** 00  
**DATE:** 08/05/2011

**SUBJECT:** FUEL QUANTITY CALIBRATION PROCEDURES

**EFFECTIVITY:**

KODIAK 100 Series Aircraft Serial Numbers: 100-0001 through 100-0054.

**SUMMARY:**

It has come to Quest's attention that the fuel quantity calibration data, in some cases, is not being retained by the Garmin G1000 system, potentially leading to inaccurate fuel quantity indication.

**ACTION:**

Quest is mandating a one time verification of the fuel quantity calibration.

**COMPLIANCE:**

Section 1 must be complied with before the next flight. If Section 2 is required, this procedure must be complied with before the next flight unless proper facilities and equipment are not available in which case the procedure must be complied within the next 10 flight hours.

**LOG OF CHANGES:**

Revision:	Date:	Description of Change:
00	08/05/2011	Initial Release

**ATTACHED DOCUMENTS:**

Document #:	Date:	Document Title:
N/A	N/A	N/A

**PARTS, TOOLS, AND EQUIPMENT:**

The parts, tools and equipment listed below are needed in order to complete the instructions contained within.

Parts and Tools included in this Service Bulletin:

Item	Quantity	Part Number	Description
N/A	N/A	N/A	N/A

Parts and Tools **Not** included in this Service Bulletin:

Item	Quantity	Part Number	Description
N/A	N/A	N/A	N/A

**FAA APPROVED:**

The modification described in this Mandatory Service Bulletin has shown compliance with the applicable Federal Aviation Regulations and is FAA Approved.

**INDUSTRY SUPPORT INFORMATION:**

N/A

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**WEIGHT AND BALANCE:**  
N/A

**MANPOWER:**

The instructions contained in this Mandatory Service Bulletin will take approximately:

- 15 Minutes (Fuel Quantity Calibration Check)
- 4 Hours (Fuel Quantity Calibration)

**CREDIT AND WARRANTY INFORMATION:**

Quest Aircraft Company will reimburse for the cost of this procedure: \$40.00 for the Calibration Check procedure (**Section 1**) and up to an additional \$300.00 for Calibration procedure (**Section 2**) if required. For reimbursement, send Quest Aircraft Company a copy of the logbook entry, as well as a copy of **Table 1-4** and **Table 1-5** from this procedure.

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Service Bulletin SB11-12  
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**COMPLETION:**

Record all work performed in the appropriate *KODIAK 100 Maintenance Log Book*.

**ACCOMPLISHMENT INSTRUCTIONS:**

Accomplishment Instructions are listed in the next section of this Service Bulletin.

**ATTACHED DOCUMENTS:**

N/A

**SPECIAL WARNINGS AND INSTRUCTIONS:**



**WARNING:** The aircraft **MUST** be electrically grounded prior to beginning of the procedures described in this Service Bulletin. Attach two ground wires to the aircraft at the wing strut tie down rings. Two ground wires should be used in case one accidentally becomes disconnected.



**WARNING:** While accomplishing any servicing of the fuel system, fire extinguishing equipment must be available.

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## 1. FUEL QUANTITY CALIBRATION CHECK

1. Turn all three displays on in Configuration mode by pushing and holding the **ENT** key on each display, while applying display power. Release the **ENT** key after "INITIALIZING SYSTEM" appears in the upper left corner of the display.
2. On PFD #1, go to the "CAL" page group, "FUEL TANK CALIBRATION" page.
3. Ensure that the CURRENT TANK is "LEFT".
4. Observe the CALIBRATION TABLE in the lower right screen. See **Figure 1-1**. Ensure an empty and a full calibration entry are displayed.
5. Record displayed values in the Existing Fuel Quantity Table (**Table 1-4**). Write "Blank" for any missing values in the corresponding entry boxes.
6. Press the **TNK SEL** softkey, and rotate the inner **FMS** knob to select "RIGHT." Press **ENT** and repeat **Step 4** and **5** above.
7. If the empty calibration entry for either the left or right tank is missing as shown in **Figure 1-2**, perform the "Empty Fuel Quantity Calibration Procedure" (**Section 2.1**). If the full calibration entry for either the left or right tank is missing as shown in **Figure 1-3**, perform the "Full Fuel Quantity Calibration Procedure" (**Section 2.2**). If both the empty and full calibration entries are missing, perform the entire "Fuel Quantity Calibration Procedure" (**Section 2**). If all fuel quantity calibration entries are present, proceed to **Section 3**.
8. Turn the master switch to the **OFF** position.

## 2. FUEL QUANTITY CALIBRATION

### 2.1 EMPTY CALIBRATION

1. Place the aircraft in a 1.0° +/- 0.25° nose up and 0° +/- 0.25° roll attitude, to simulate an average level cruise flight attitude.
2. Drain all fuel from each fuel tank, in accordance with the *KODIAK 100 Maintenance Manual, Chapter 28 "Fuel."* Turn both of the overhead fuel selector valves to the **OFF** position. Fill each wing tank with 2.5 gallons (17.0 lb) of **Jet A** fuel.



**NOTE:** If the G1000 system is shut down during fuel handling, the system should be allowed to stabilize for *AT LEAST* three minutes before proceeding.



**CAUTION:** If the aircraft is on jacks assure that there is no greater than 50 gallons (345.0 lb) of fuel imbalance between the left and right fuel tanks at any point during this procedure.



**NOTE:** A continuous audible tone will sound signaling that both of the overhead fuel selector valves are in the **OFF** position. The **NO. 1** and **NO. 2 Audio** circuit breakers may be pulled to deactivate the tone. Ensure both circuit breakers are re-activated after this procedure is completed.

3. Turn all three displays on in Configuration mode by pushing and holding the **ENT** key on each display, while applying display power. Release the **ENT** key after "INITIALIZING SYSTEM" appears in the upper left corner of the display.
4. On PFD #1, go to the "CAL" page group, "FUEL TANK CALIBRATION" page.
5. On PFD #1, enter pass code: softkeys **12, 11, 10, 9** by pressing each softkey sequentially.

6. Additional softkey labels will appear at the bottom of the display. The system will default to the “LEFT” tank.
7. Press the **EMPTY** softkey. The cursor will highlight the “CALIBRATE?” option.
8. Press **ENT**. If a previous CALIBRATION VALUE exists, a prompt will appear requesting overwrite acknowledgement. If prompted, select “YES” and press **ENT**. An “ACTUAL QUANTITY” of 0.00 lb and a “CALIBRATED VALUE” will appear in the CALIBRATION TABLE.
9. Record the “ACTUAL QUANTITY” and “CALIBRATED VALUE” for the left tank in the New Fuel Quantity Calibration Table (**Table 1-5**) in the row labeled Empty.
10. Observe the “CALIBRATED TOTAL” indication in the lower right-hand corner. Verify that it remains at 0.00 lb +/-3.0 lb.
11. Press the **TNK SEL** softkey, and rotate the inner **FMS** knob to select “RIGHT.” Press **ENT**.
12. Press the **EMPTY** softkey. The cursor will highlight the “CALIBRATE?” option.
13. Press **ENT**. If a previous CALIBRATION VALUE exists, a prompt will appear requesting overwrite acknowledgement. If prompted, select “YES” and press **ENT**. An “ACTUAL QUANTITY” of 0.00 lb and a “CALIBRATED VALUE” will appear in the CALIBRATION TABLE.
14. Record the “ACTUAL QUANTITY” and “CALIBRATED VALUE” for the right tank in the New Fuel Quantity Calibration Table (**Table 1-5**) in the row labeled Empty.
15. Observe the “CALIBRATED TOTAL” indication in the lower right-hand corner. Verify that it remains at 0.00 lb +/-3.0 lb..
16. Turn off the cursor by pressing the **FMS** knob, and rotate the outer **FMS** knob to select “SYSTEM” page group. Rotate the inner knob to select “SYSTEM UPLOAD” page. Press the **UPDT CFG** softkey. A prompt appears asking to “UPDATE CONFIG MODULE.” Select “YES” and press **ENT**.
17. After “UPDATE CONFIG COMPLETE” appears, press the **ENT** key to select “OK”.
18. Continue to **Section 2.2** if performing the “Full Calibration” procedure.
19. If the “Empty Calibration” procedure has been successfully completed and the “Full Calibration” procedure does not need to be completed, turn the master switch to the **OFF** position and proceed to **Section 2.3**.

## 2.2 FULL CALIBRATION

1. If not already performed, place the aircraft in a 1.0° +/- 0.25° nose up and 0° +/- 0.25° roll attitude, to simulate an average level cruise flight attitude.
2. Fill the fuel tanks to the bottom of the outboard filler cap with **Jet A** or **Jet A1** fuel, ensuring the aircraft remains in a 1.0° +/- 0.25° nose up and 0° +/- 0.25° roll attitude.



**CAUTION:** If the aircraft is on jacks assure that there is no greater than 50 gallons (345.0 lb) of fuel imbalance between the left and right fuel tanks at any point during this procedure.

3. Allow the system to stabilize for a minimum of three minutes.
4. If not already performed, turn all three displays on in Configuration mode by pushing and holding the **ENT** key on each display, while applying display power. Release the **ENT** key after “INITIALIZING SYSTEM” appears in the upper left corner of the display.
5. On PFD #1, go to the “CAL” page group, “FUEL TANK CALIBRATION” page.
6. If not already performed, On PFD #1, enter pass code: softkeys **12, 11, 10, 9** by pressing each softkey sequentially.
7. With the “LEFT” selected as the CURRENT TANK, press the **FULL** softkey. The cursor will automatically activate and select the “CALIBRATE?” option.

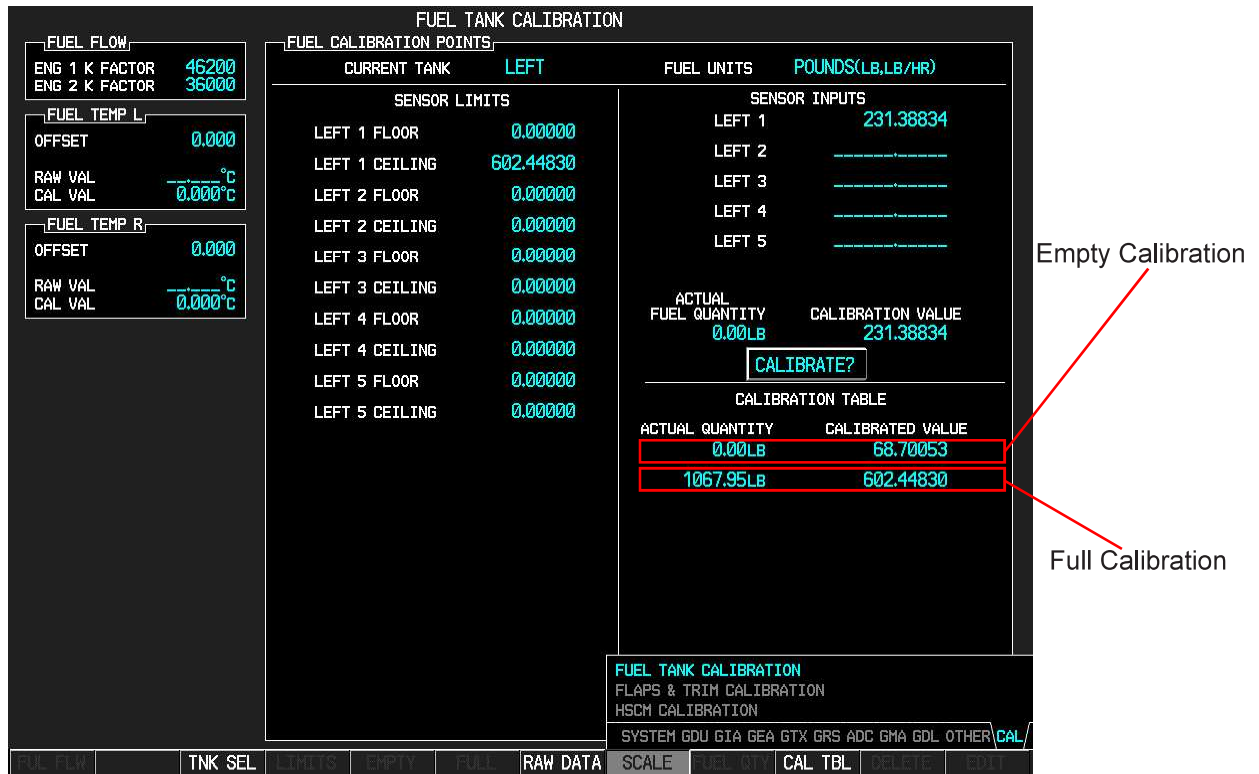
8. Press **ENT**. If a previous CALIBRATION VALUE exists, a prompt appears requesting overwrite acknowledgement. If prompted, select "YES" and press **ENT**. An "ACTUAL QUANTITY" of 1067.95 lb and a "CALIBRATED VALUE" will appear in the CALIBRATION TABLE.
9. Record the "ACTUAL QUANTITY" and "CALIBRATED VALUE" for the left tank in the New Fuel Quantity Calibration Table (**Table 1-5**) in the row labeled Full.
10. Observe the "CALIBRATED TOTAL" indication in the lower right hand corner. Verify that it remains at 1067.95 lb +/- 3.0 lb.
11. Press the **TNK SEL** softkey, and rotate the inner **FMS** knob to select "RIGHT." Press **ENT**.
12. Press the **FULL** softkey. The cursor will highlight the "CALIBRATE?" option.
13. Press **ENT**. If a previous CALIBRATION VALUE exists, a prompt appears requesting overwrite acknowledgement. If prompted, select "YES" and press **ENT**. An "ACTUAL QUANTITY" of 1067.95 lb and a "CALIBRATED VALUE" will appear in the CALIBRATION TABLE.
14. Record the "ACTUAL QUANTITY" and "CALIBRATED VALUE" for the right tank in the New Fuel Quantity Calibration Table (**Table 1-5**) in the row labeled Full.
15. Observe the "CALIBRATED TOTAL" indication in the lower right hand corner. Verify that it remains at 1067.95 lb +/- 3.0 lb.
16. Turn off the cursor by pressing the **FMS** knob, and rotate the outer **FMS** knob to select "SYSTEM" page group. Rotate the inner knob to select "SYSTEM UPLOAD" page. Press the **UPDT CFG** softkey. A prompt appears asking to "UPDATE CONFIG MODULE." Select "YES" and press **ENT**.
17. After "UPDATE CONFIG COMPLETE" appears, press the **ENT** key to select "OK".
18. Turn the master switch to the **OFF** position.
19. Proceed to **Section 2.3**.

## 2.3 VERIFICATION

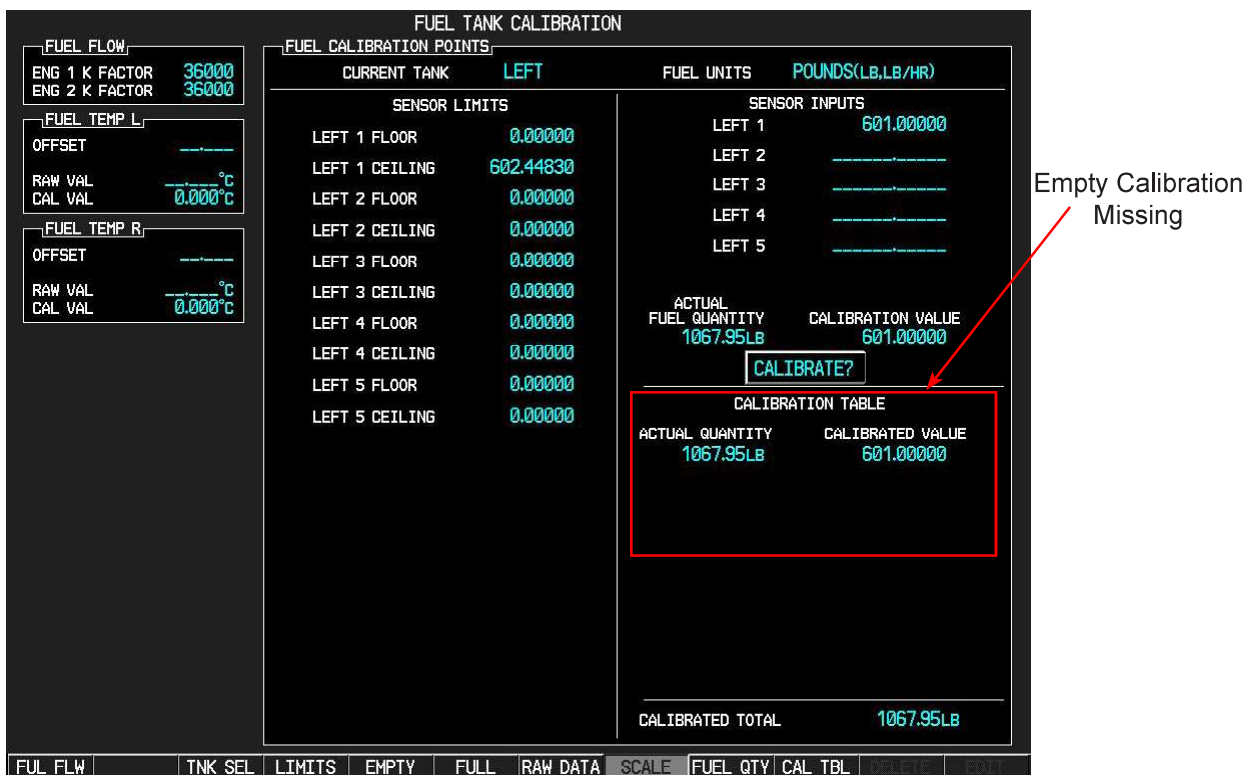
1. Turn all three displays on in Configuration mode by pushing and holding the **ENT** key on each display while applying power. Release the **ENT** key after "INITIALIZING SYSTEM" appears in the upper left corner of the display.
2. On PFD #1, go to the "CAL" page group, "FUEL TANK CALIBRATION" page.
3. Ensure that the CURRENT TANK is "LEFT".
4. Observe the "CALIBRATION TABLE" in the lower right screen. See **Figure 1-1**. Ensure an empty and a full calibration entry are displayed.
5. Assure that the displayed values match those recorded in the New Fuel Calibration Table (**Table 1-5**).
6. Press the **TNK SEL** softkey, and rotate the inner **FMS** knob to select "RIGHT." Press **ENT** and repeat **Step 4** and **5** above.
7. Cycle the master switch to the **OFF** position and then back to the **ON** position, so that the Garmin G1000 system returns to Normal mode.
8. Verify the indicated fuel quantity matches the actual fuel quantity onboard. If the actual quantity is empty with only unusable fuel onboard, the indication must read 0 lb, otherwise the indication must be accurate  $\pm 50.0$  lb.
9. Turn the master switch to the **OFF** position.

## 3. COMPLETION INSTRUCTIONS

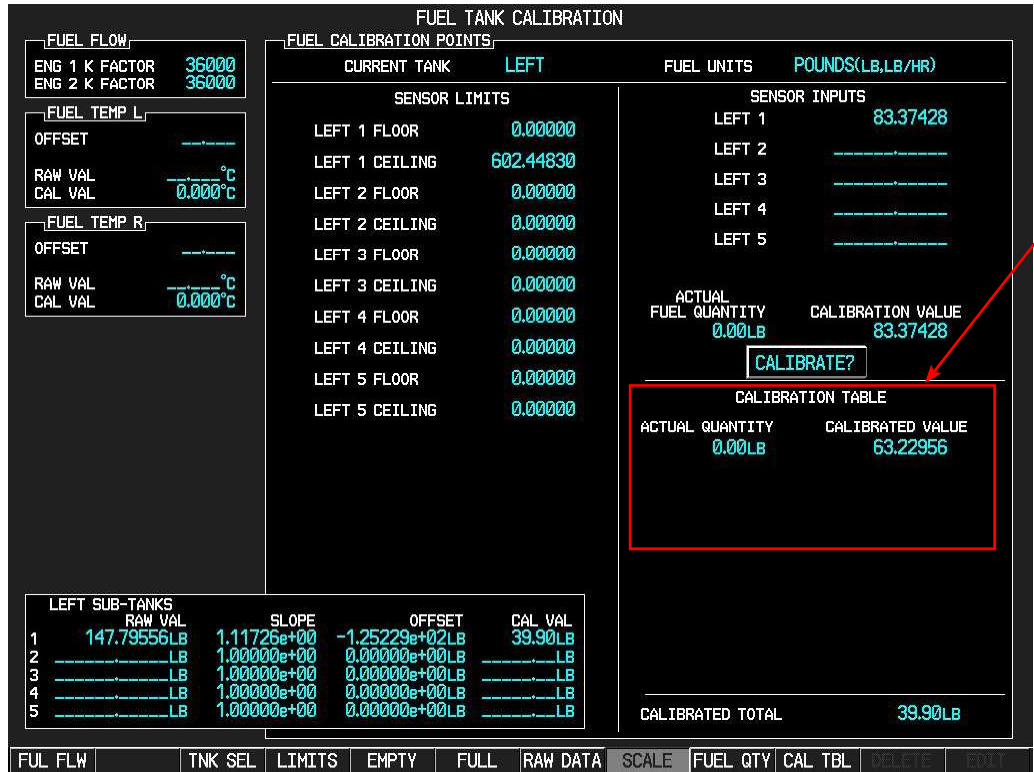
1. Upon completion, record all work performed in the appropriate *KODIAK Maintenance Log Book* stating compliance in accordance with **Section 1** and/or **Section 2** as appropriate.
2. Send a copy of both the maintenance log book entry and the Calibration Tables (**Table 1-4** and **Table 1-5**) to Quest Aircraft Company for warranty reimbursement.



**Figure 1-1: Empty and Full Calibration**



**Figure 1-2: Fuel Calibration Screen Empty Calibration Missing**



Full Calibration Missing

Figure 1-3: Fuel Calibration Screen Full Calibration Missing

Date: \_\_\_\_\_

Aircraft Serial Number: \_\_\_\_\_

	Actual Quantity		Calibrated Value	
	Left Tank	Right Tank	Left Tank	Right Tank
Empty				
Full				

**Table 1-4:** Existing Fuel Quantity Calibration Table

	Actual Quantity		Calibrated Value	
	Left Tank	Right Tank	Left Tank	Right Tank
Empty				
Full				

**Table 1-5:** New Fuel Quantity Calibration Table