

# \*MANDATORY SERVICE BULLETIN\*

**NUMBER:** SB-003

**DATE:** 12/15/2008

**SUBJECT:** FUEL SYSTEM; Low Fuel Sensor Replacement

## SUMMARY

### RECURRENT REQUIREMENTS

No recurrent requirements associated with this Mandatory Service Bulletin.

### BACKGROUND

Quest has identified that a low fuel sensor in the fuel reservoir tank (also known as "Header Tank") has the potential to leak due to an o-ring that is susceptible to failure located inside the component. The fuel leak could result in an undetermined amount of fuel dripping into the floor of the aux fuel pump bay. A one for one replacement is required. This Mandatory Service Bulletin is attached to service instructions to remove the low fuel sensor and install the new low fuel sensor.



**Figure 1 - Low Fuel Sensor**

### ACTION

Install and replace the low fuel sensor in the fuel reservoir tank, record the changes in the KODIAK Maintenance Log Books, and send the defective fuel sensor to Quest Aircraft.

### EFFECTIVITY

Serial Numbers 0001 through 0007

### AFFECTED PARTS

KODIAK PART AFFECTED:

- *P/N EM2098-1 Low Fuel Sensor*

REPLACEMENT PART FOR AIRCRAFT RECORDS:

- *P/N EM2098-9 Low Fuel Sensor*

### COMPLIANCE

This Mandatory Service Bulletin needs to be completed at next scheduled maintenance interval or annual service, whichever occurs first.

### INDUSTRY SUPPORT INFORMATION

None

### MANPOWER

The instructions contained in this Service Bulletin will take 2 hours to complete.

### COMPLETION

Upon completion, please return the replaced low fuel sensors to Quest Aircraft as soon as possible.

### WARRANTY INFORMATION

This modification is warranty reimbursable for the manpower listed above after the low fuel sensor has been replaced and been returned to Quest Aircraft.

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## Low Fuel Sensor Replacement Instructions

### 1.1 Overview

This document provides instruction for replacing the KODIAK low fuel sensor.

**Estimated Time to Complete:** 2 hours

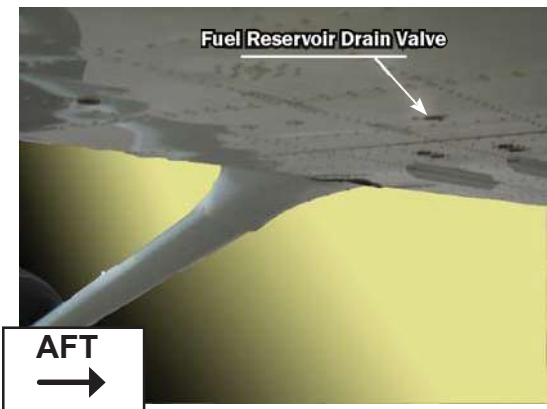
**Parts Included in the Service Kit:**

Part Number	Description	Quantity
SB-003	SERVICE BULLETIN AND REPLACEMENT INSTRUCTIONS	1
EM2098-9	ELECTROMECH LOW FUEL SENSOR	1
MS29512-08	SEALING O-RING	1
100-828-4425	FUEL RESERVOIR LARGE OVAL GASKET	1
T100-828-4413	HEADER TANK BLADDER COVER ATTACHMENT AIDS	4
100-828-2011	30T TORX SCREWS	24
N/A	FUEL LUBRICANT	1
N/A	RETURN SHIPPING MATERIAL	1


**Tools Required:**

Tool Name	Tool Duty
Phillips #2 Screwdriver	Remove the bay access covers.
1" Inch Open End Wrench	Remove and install the retaining nut on the fuel sensor.
1" Crows Foot Wrench	Remove and install the fuel sensor.
0-120 Foot Pounds Torque Wrench	Check the torque of the fuel connections.
30T Torx Socket	Remove and install the reservoir tank access cover.

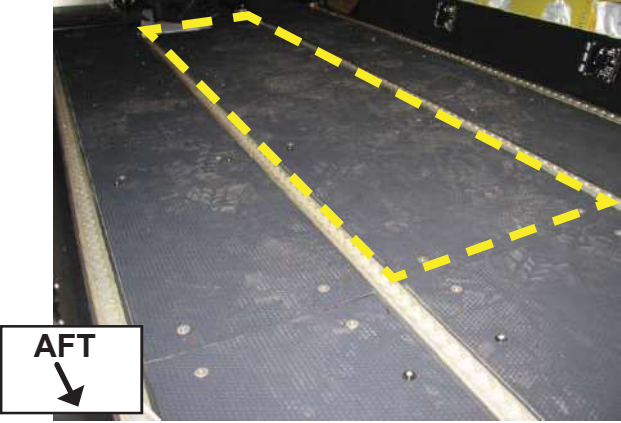
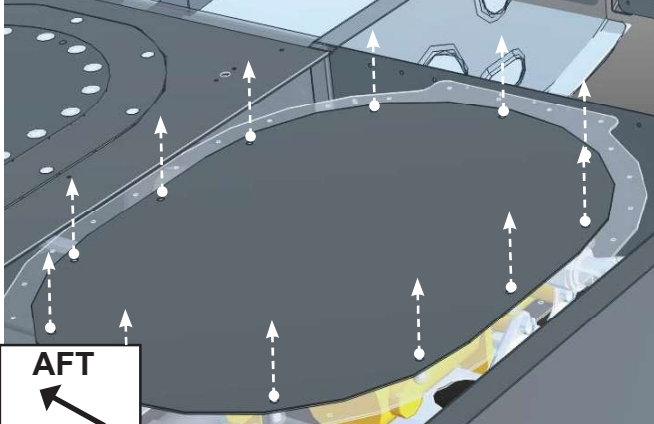
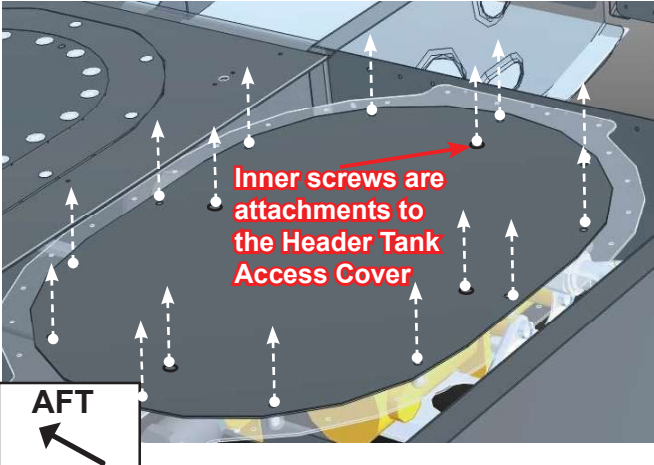
## 1.2 Step One: Turn off Fuel Valves and Drain Residual Fuel from Lines

Task	Instruction	Visual	Complete
1	Ground the Aircraft using an approved grounding wire and grounding point. Ensure master switch is in the <b>OFF position</b> .	No Visual	<input type="checkbox"/>
2	Turn the overhead fuel selector valves located in the cockpit to <b>CLOSED</b> .	No Visual	<input type="checkbox"/>
3	Using the fuel drain valves, drain the residual fuel from the fuel lines following the Instructions and procedures listed in the KODIAK 100 Pilot Operating Handbook, <b>Page 4-9 of Section 4</b> .	No Visual	<input type="checkbox"/>
4	Empty the forward fuel tank reservoir into a suitable container (approximately 4.5 gallons) using the fuel reservoir drain valve.		<input type="checkbox"/>

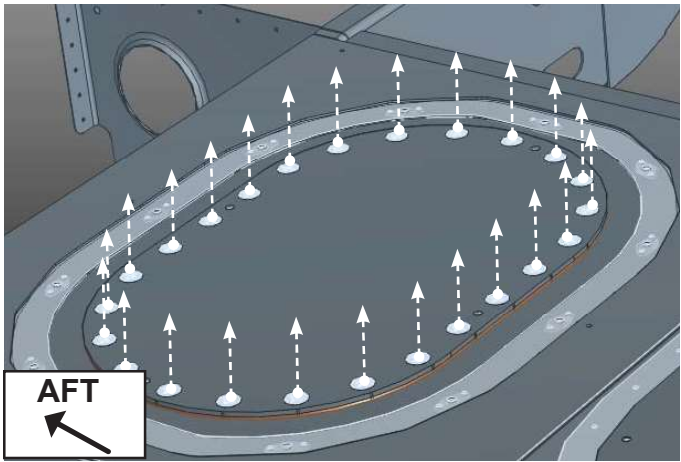
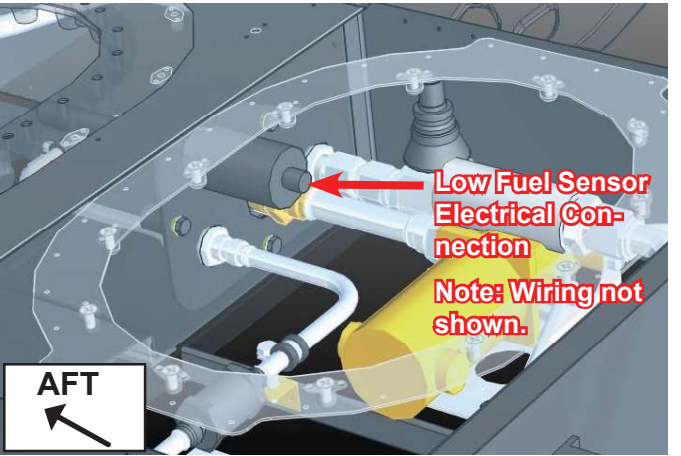
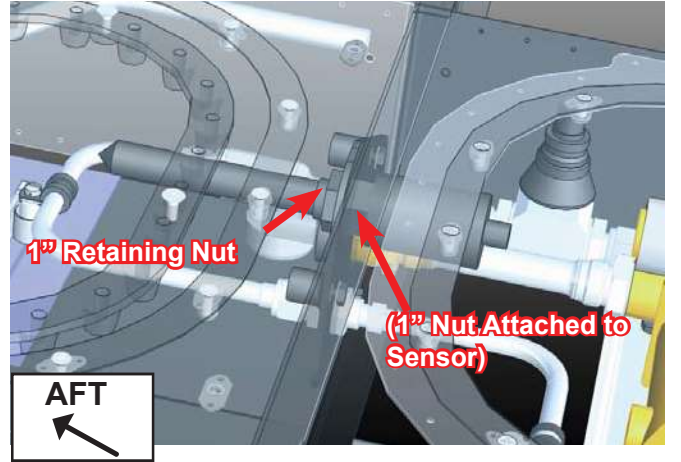
## 1.3 Step Two: Remove Passenger Seats and Cargo Floor.

Task	Instruction	Visual	Complete
1	Remove the pilot, copilot, and passenger seats in the cockpit and cargo compartment using the procedures defined in the KODIAK 100 Maintenance Manual.		<input type="checkbox"/>

## 1.4 Step Two: Remove Passenger Seats and Cargo Floor Continued...



Task	Instruction	Visual	Complete
2	Once all seats have been removed, use a Phillips #2 Screwdriver to remove the center cargo floor panel. (one panel, 8 screws)		<input type="checkbox"/>
3	<p><b>Remove the access cover in front of the fuel reservoir.</b></p> <p>Once the center cockpit floor has been removed, using a Phillips #2 Screwdriver, remove the 12 screws that secure the forward fuel compartment access panel to the floor.</p> <p><b>*CAUTION*</b> - When removing, do not damage the seal located underneath the forward fuel compartment access panel.</p>		<input type="checkbox"/>
4	<p><b>Remove the fuel reservoir bay access cover and bladder access cover.</b></p> <p>Using a Phillips #2 Screwdriver, remove the 12 screws that secure the fuel bay reservoir compartment access panel to the floor. Remove the access cover after removing the screws,</p>		<input type="checkbox"/>
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1.5 Step Three: Remove Low Fuel Sensor

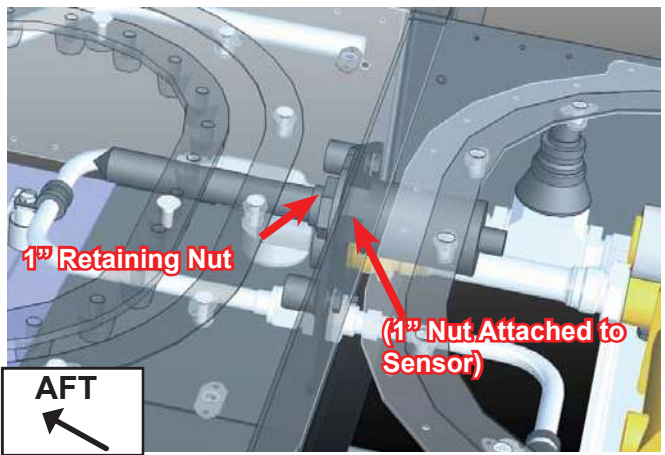
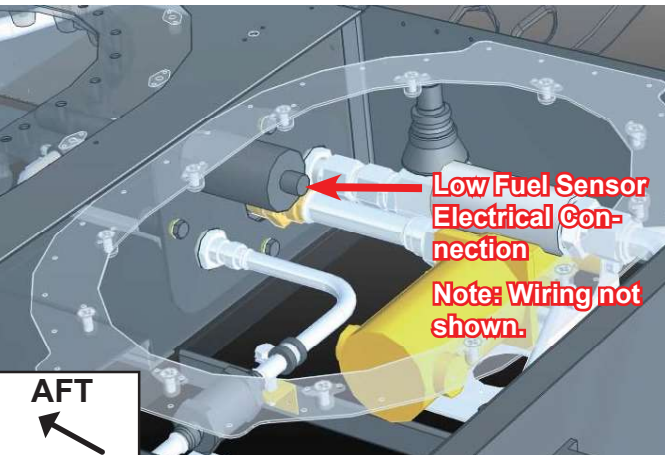
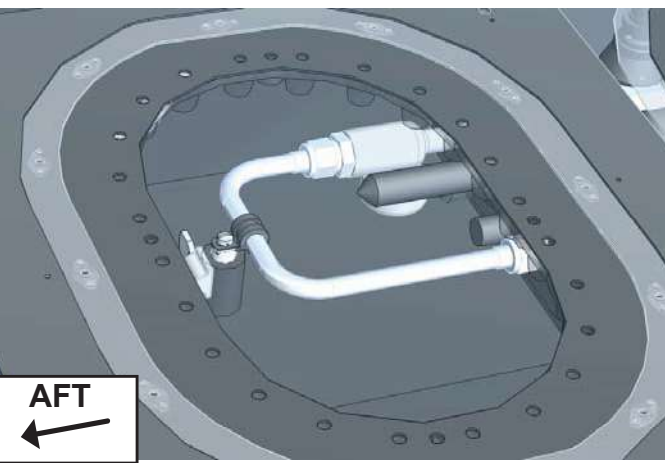
Task	Instruction	Visual	Complete
1	<p>Using a 30T Torx socket, remove the 24 Torx screws that secure the fuel reservoir compartment access panel to the floor.</p> <p>NOTE: If #2 Phillips screws are installed, discard screws after removing and replace with 30T Torx screws provided in this Service Kit.</p> <p><b>*CAUTION*</b> - While working in or around the reservoir bladder, ensure that tools and parts are accounted for. <b>DO NOT</b> use sharp tools in the bladder.</p>		<input type="checkbox"/>
2	<p><b>Disconnect the Cannon Plug</b></p> <p>After removing the top cover of the forward fuel compartment, disconnect the wires that connect the low fuel sensor to the aircraft in the Aux. Fuel Pump Bay.</p>		<input type="checkbox"/>
3	<p><b>Remove the low fuel sensor</b></p> <p>With a 1" Crows Foot and a 1" open end wrench, remove the low fuel sensor using a 1" open end wrench.</p> <p>Note: <b>DO NOT</b> reuse the o-ring on the fuel sensor. This installation kit includes a new o-ring (P/N MS29512-08) and fuel sensor (P/N EM2098-9).</p>		<input type="checkbox"/>
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## 1.6 Install New Low Fuel Sensor

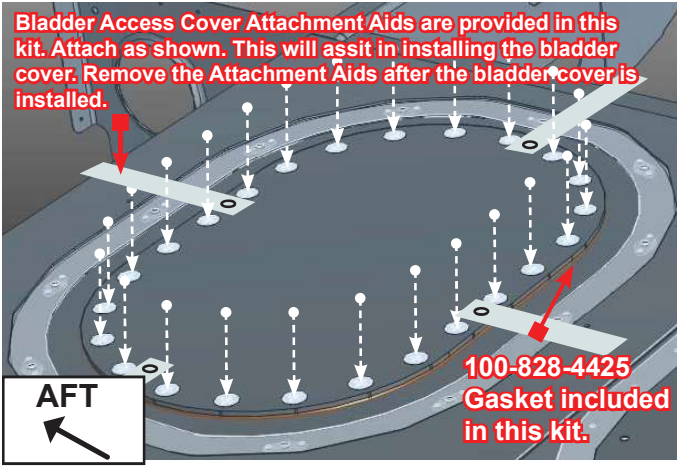
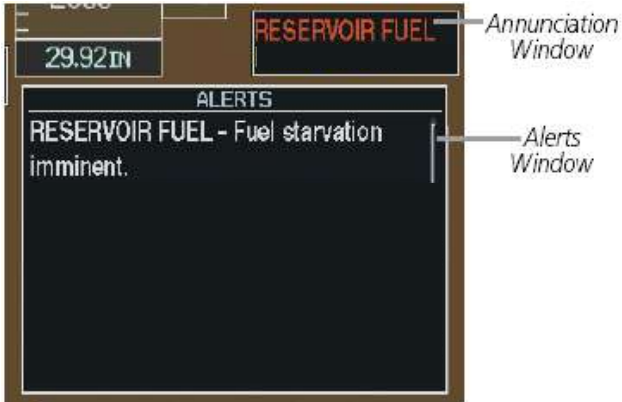
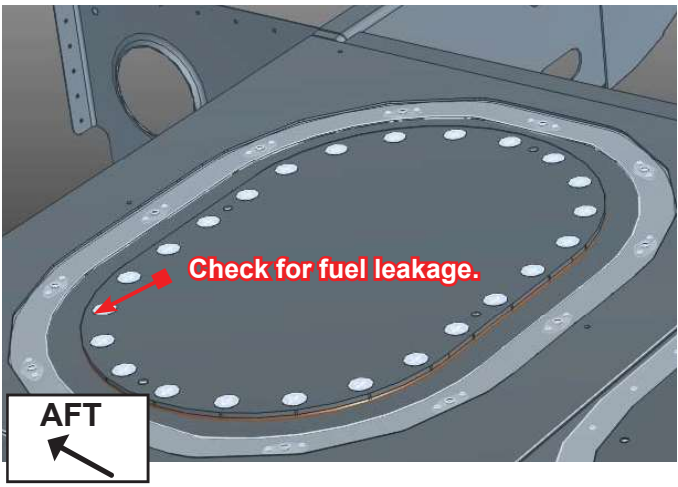
Task	Instruction	Visual	Complete
1	<p><b>Prepare the new low fuel sensor for installation</b></p> <p>Apply a small amount of fuel lubricant to the threads of the low fuel sensor. Apply a light coating of fuel lubricant to the o-ring.</p>	 <p>Apply fuel lubricant to the low fuel sensor threads.</p>	<input type="checkbox"/>
2	<p><b>Install o-ring</b></p> <p>Place the o-ring (P/N MS29512-08) on the tube and roll the o-ring up to the mating area of the tube and sensor.</p>	 <p>MS29512-08 o-ring included in this kit. Install as shown.</p>	<input type="checkbox"/>
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1.7 Install New Low Fuel Sensor Continued...


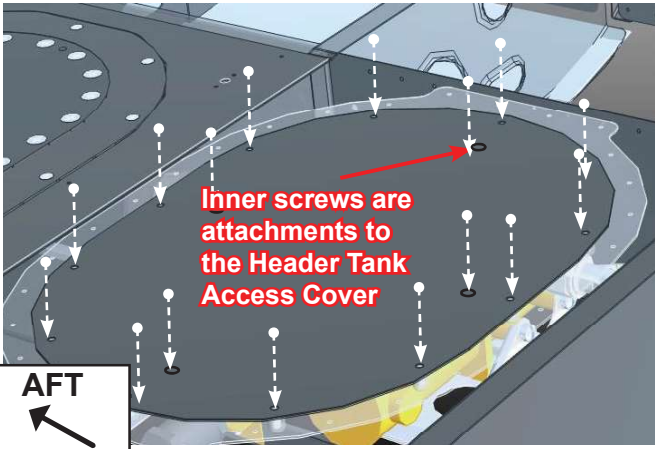
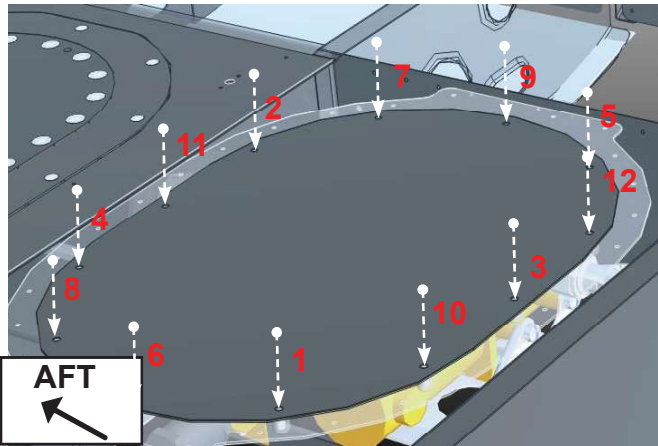
Task	Instruction	Visual	Complete
3	<p><b>Install the new low fuel sensor</b></p> <p>With a 1" Crows Foot and a 1" open end wrench, install the low fuel sensor using a 1" open end wrench. <b>Torque retaining nut to 22.5 to 29.2 foot-pounds.</b></p>	 <p><b>1" Retaining Nut</b></p> <p><b>(1" Nut Attached to Sensor)</b></p> <p><b>AFT</b></p>	<input type="checkbox"/>
4	<p><b>Connect the electrical connection to the low fuel sensor.</b></p> <p>Ensure that the electrical cannon plug is seated properly.</p>	 <p><b>Low Fuel Sensor Electrical Connection</b></p> <p><b>Note: Wiring not shown.</b></p> <p><b>AFT</b></p>	<input type="checkbox"/>
5	<p><b>Inspect reservoir bladder for foreign objects or tools.</b></p> <p>Ensure that all parts and tools are accounted for and that the bladder is free of any debris or foreign objects.</p>	 <p><b>AFT</b></p>	<input type="checkbox"/>
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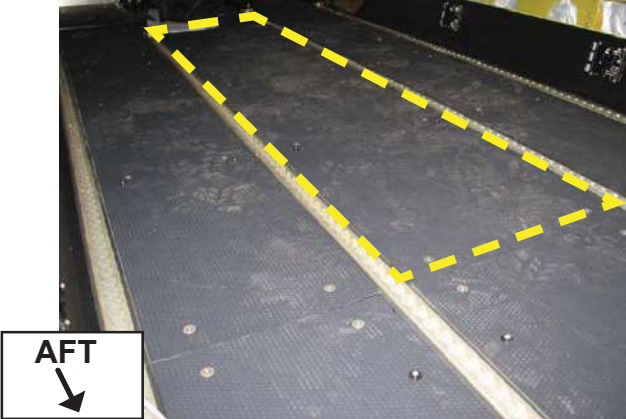

## 1.8 Post Installation

Task	Instruction	Visual	Complete
1	<p><b>Install the reservoir fuel access cover and gasket.</b></p> <p>Temporarily install the Bladder Access Cover Attachment aids as shown. Using a 30T Torx socket, install the 24 Torx screws that secure the fuel reservoir compartment access panel to the floor. Torque the 24 screws in a star pattern to <b>60 ±10 inch-pounds and re-torque after 30 min.</b></p> <p>NOTE: If #2 Phillips screws are installed, discard screws after removing and replace with 30T Torx screws provided in this Service Kit.</p>		<input type="checkbox"/>
2	<p><b>Low fuel sensor test #1</b></p> <p>Power on the master avionics switch and ensure that the <b>RESERVOIR FUEL</b> Annunciation <b>IS ILLUMINATED</b> the G1000 PFD. After the annunciation is observed, turn the master avionics switch to OFF.</p>		<input type="checkbox"/>
3	<p><b>Leak Check</b></p> <p>Prior to installing the reservoir fuel bay cover, open the overhead fuel selector valves and fill reservoir with fuel until the bladder rises to the level of the surrounding floor structure, then shut-off the overhead fuel selector valves. Ensure that there are no leaks.</p> <p><b>CAUTION:</b> Pay close attention to the bladder while the overhead fuel selector valves are open. Damage to the bladder could occur if the bladder is filled in excess which would lead to the bladder bulging out of the bay. Ensure that the bladder cover does not rise above the aircraft floor.</p>		<input type="checkbox"/>
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1.9 Post Installation Continued...

Task	Instruction	Visual	Complete
4	<p><b>Low fuel sensor test #2</b></p> <p>Power on the master avionics switch and ensure that the <b>RESERVOIR FUEL</b> Annunciation is <b>OFF</b> the G1000 PFD. After ensuring that the annunciation is not present, turn the master avionics switch to OFF.</p>		<input type="checkbox"/>
5	<p><b>Reinstall the reservoir bay access cover.</b></p> <p>Using a Phillips #2 Screwdriver, Install the 12 screws that secure the forward fuel compartment access panel to the floor.</p> <p><b>*CAUTION*</b> - When installing, do not damage the seal located underneath the forward fuel compartment access panel.</p>		<input type="checkbox"/>
6	<p><b>Install the Aux. Fuel Pump bay access cover.</b></p> <p>Using a Phillips #2 Screwdriver, tighten the 12 screws that secure the reservoir bay access cover to the aircraft. Use an asymmetrical tightening pattern (see red numbers on figure) to ensure that the gasket is being compressed evenly.</p>		<input type="checkbox"/>
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**1.10 Post Installation Continued...**

Task	Instruction	Visual	Complete
7	<b>Reinstall flooring</b>  Using a Phillips #2 Screwdriver, tighten the 8 screws that secure the floor to the aircraft.		<input type="checkbox"/>
8	<b>Install pilot and copilot seats.</b>  Install the pilot and copilot seats and travel locks.		<input type="checkbox"/>
9	<b>Annotate this work in the KODIAK Maintenance Log Books. Please return defective low fuel sensors to Quest Aircraft.</b>		<input type="checkbox"/>
<b>End of Instructions.</b>			