

## FUEL QUANTITY INDICATING SYSTEMS - MAINTENANCE PRACTICES

### 1. General

- A. Fuel quantity indicating systems maintenance practices consist of component removal/installation.
- B. For Airplanes 20800500 and On and Airplanes 208B2000 and On the fuel quantity indicator is shown on the engine display of the Garmin Display Unit (GDU) configured as the Multifunction Display (MFD). For more data applicable to the GDU functions refer to the G1000 Line Maintenance Manual (Cessna Caravan) P/N 190-00869-00 found in the Introduction, List of Publications.
- C. Airplanes 20800001 thru 20800499 and Airplanes 208B0001 thru 208B1999 have Fuel quantity indicators (one for each fuel tank) installed on the upper right side of the instrument panel. The fuel quantity transmitters are connected to the electrically operated fuel quantity indicators in series.

**CAUTION: When performing resistance tests of the fuel quantity wiring or fuel probe transmitters, use a digital ohmmeter only. Some older analog ohmmeters may introduce high current, which will destroy fuel probe transmitters.**

### 2. Fuel Quantity Indicator Removal/Installation (Airplanes 20800001 thru 20800499 and Airplanes 208B0001 thru 208B1999)

- A. Remove Fuel Quantity Indicator (Refer to Figure 201).
  - (1) Remove screws (5) from instrument panel (3). Detach fuel quantity indicators (1) or (2) from instrument panel.
  - (2) Disconnect fuel quantity indicators (1) or (2) from electrical connectors (6).
- B. Install Fuel Quantity Indicator (Refer to Figure 201).
  - (1) Attach fuel quantity indicators (1) or (2) to electrical connectors (6).
  - (2) Attach fuel quantity indicators (1) or (2) to instrument panel.
  - (3) Replace screws (5) in instrument panel (3).

### 3. Low Fuel Level Switch Removal/Installation.

- A. Remove Low Fuel Level Switch (Refer to Figure 201).
  - (1) Defuel and purge fuel system.
  - (2) Clean access cover sealant from mating surfaces of fuel bulkhead (7), connector (10), jamnut (11), and cover (14).
  - (3) Remove screws (15) and detach cover (14) from fuel bulkhead (7).
  - (4) Loosen jamnut (11) and connector (10) and remove low fuel level switch (9) at bracket (17).
- B. Install Low Fuel Level Switch (Refer to Figure 201 ).
  - (1) Attach low fuel level switch (9) to bracket (17) and replace jamnut (11) and connector (10).
  - (2) Attach cover (14) to fuel bulkhead (7) and replace screws (15).
  - (3) Apply access cover sealant to jamnut (11) connector (10) sides, and bottom surfaces of cover (14).
  - (4) Refuel system.

### 4. Reservoir Low Fuel Level Switch Removal/Installation

- A. Remove Reservoir Low Fuel Level Switch (Refer to Fuel Reservoir - Maintenance Practices, Figure 201).
  - (1) Remove safety wire and turn both fuel selector valves to the position.
  - (2) Remove drain valve (25) and O-ring (24). Discard O-ring. Drain fuel in suitable containers.
  - (3) Remove bolts (28) and lock washers (29). Detach plate (27) and gasket (26) from fuel reservoir (1). Discard gasket (26).
  - (4) Disconnect switch wires (30C) from connector, and remove nut (15) and washer (16). Separate nut and washer from wires (30C).
  - (5) Remove switch (18), O-ring (17) and switch wires through port in bottom of fuel reservoir (1). Discard O-ring.
- B. Install Reservoir Low Fuel Level Switch (Refer to Fuel Reservoir - Maintenance Practices, Figure 201).
  - (1) Replace switch wires (30C), O-ring (17) and switch (18) in fuel reservoir (1).
  - (2) Replace new O-ring (17), washer (16) and nut (15) on switch wires (30C). Attach switch wires (30C) to connector. Replace washer (16) and nut (15) on threaded stem of switch (18). Tighten nut (15).

- (3) Replace new gasket (26) on fuel reservoir (1). Attach plate (27) to gasket (26) and fuel reservoir (1).
- (4) Install lock washers (29) and bolts (28). Tighten bolts in a cross sequence pattern.
- (5) Replace new O-ring (24) and drain valve (25). Tighten drain valve.
- (6) Turn both fuel selector valves on and safety wire. Check system for leaks.

#### 5. Fuel Quantity Indicating System Test Airplanes (Airplanes 20800500 and On and Airplanes 208B2000 and On)

- A. To do a test of the fuel quantity systems for Airplanes 20800500 and On and Airplanes 208B2000 and On that have the Garmin G1000 system installed refer to the applicable procedures found at Fuel Quantity Indicating Systems - Inspection/Check.

#### 6. Wing and Reservoir Low Fuel Level Switches Test (Airplanes 20800001 thru 20800499 and Airplanes 208B0001 thru 208B1999)

- A. Test Wing and Reservoir Low Fuel Level Switches.
  - (1) Place airplane in flight attitude (wings level, nose up 1 degree 30 minutes - refer to Chapter 8, Leveling and Weighing).
  - (2) Defuel system.
  - (3) Turn both fuel selector valves off.
  - (4) Check that LEFT FUEL LOW, RIGHT FUEL LOW AND RESERVOIR low annunciator panel lights are on. (If any of the lights are not on, run continuity check of the circuit and replace bulbs if required.)
  - (5) Partially fill each fuel bay with 20 gallons of measured fuel, continue to add fuel, if necessary until each bay contains 30 gallons of fuel.
 

**NOTE:** If LEFT and RIGHT annunciator lights do not shut off between the 20 and 30 gallon levels, drain fuel, purge system and replace either or both switches. After replacing defective switch(es), repeat steps (1) thru (5).
  - (6) Turn both fuel selector valves ON until RESERVOIR low light turns off, then turn both fuel selector valves OFF.
  - (7) Slowly drain fuel from reservoir until light turns ON.
  - (8) Drain remaining fuel from reservoir, and measure quantity, should check from 1.95 to 2.15 gallons.
 

**NOTE:** If quantity of measured fuel exceeds 2.25 gallons, or is less than 1.75 gallons; remove and replace the reservoir fuel low level switch. Repeat step (8) to verify continuity and accuracy of replacement.
  - (9) Remove jacks (if utilized) and refuel airplane.
  - (10) Check fuel system for leaks and replace any covers or panels removed during testing procedures.

#### 7. Fuel Quantity Indication System Calibration (Airplanes 20800001 thru 20800499 and Airplanes 208B0001 thru 208B1999)

- A. Calibrate Fuel Quantity Indication System (Refer to Figure 202).
 

**NOTE:** Always use a screwdriver with an insulated shank when calibrating the fuel system, also, use a quality ohmmeter while conducting continuity checks of fuel system.

  - (1) Remove fuel system access covers from bottom of wings.
  - (2) Place airplane in level flight attitude (wings level, 1 degree 30 minutes nose up waterline, refer to Chapter 8, Leveling and Weighing).
  - (3) Place fuel shutoff valves in OFF position.
  - (4) Drain fuel tanks completely.
  - (5) Place 2.5 gallons of fuel in each fuel tank and turn electrical power on.
  - (6) Adjust null trimpot on each gage carefully so that needle is completely within red zone.
  - (7) After adjusting null trimpot as noted in step (6), turn electrical power off, locate and disconnect electrical wire from center post of inboard fuel transmitter on one wing.
  - (8) Insert a 230-ohm dummy load between this wire and airplane ground, turn electrical power on.
  - (9) Carefully adjust gain trimpot on fuel gage to center the needle on 1100 pound mark for wing being checked, turn electrical power off, remove dummy load and connect electrical wire to center post of inboard fuel level transmitter.

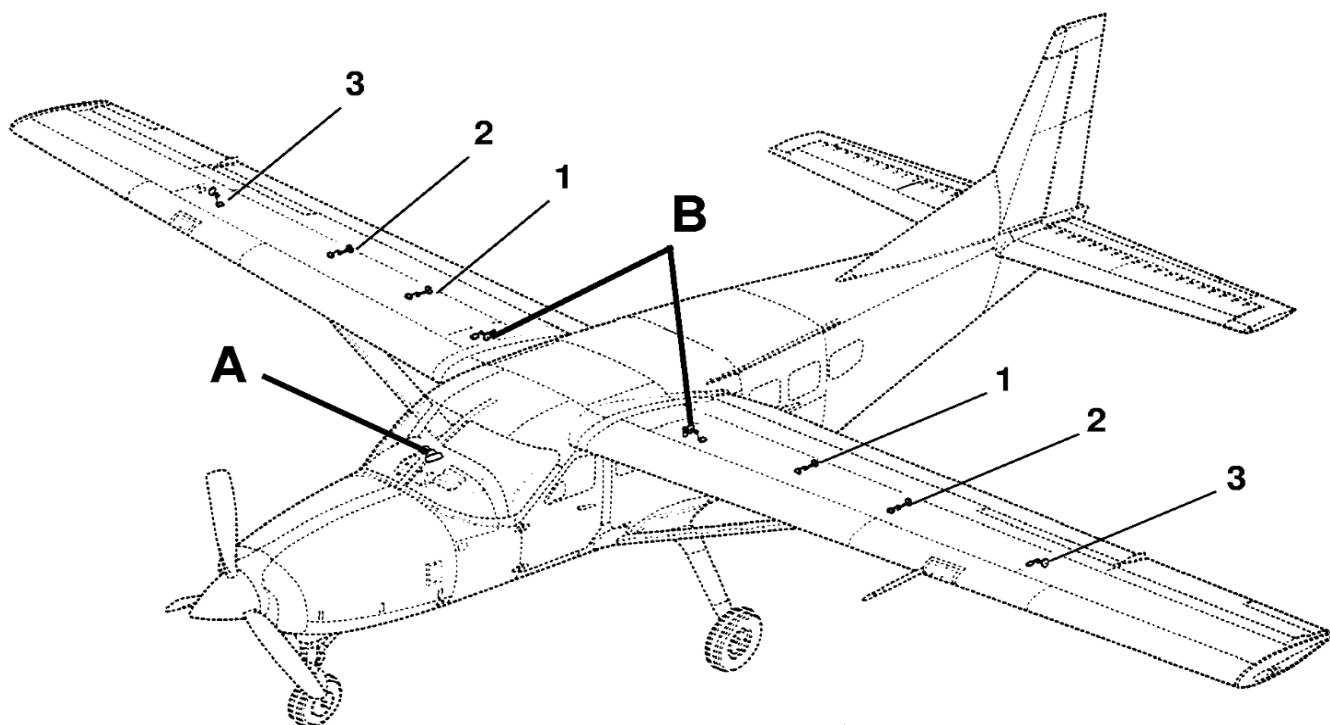
- (10) Disconnect electrical wire from center post of opposite inboard fuel level transmitter and repeat steps (8) and (9).
- (11) Readjust null and gain trimpots if required until both fuel gage settings are satisfactory.
- (12) Fill both tanks to full capacity.
- (13) Measure the resistance between the center post and ground on the wing being checked. The resistance should be between 224-ohms and 242-ohms.
- (14) If the resistance is above or below 224-ohms and 242-ohms, check connections at each transmitter and the ground at the outboard transmitter for corrosion and security.
- (15) If the connections between each transmitter and ground are good, a resistance check of each transmitter will be required.
- (16) Remove both wires from each transmitter.
- (17) Use Table 201 for transmitter resistance check.
- (18) If a faulty transmitter is found drain fuel in accordance with 28-01, A.
- (19) Replace transmitter and perform the calibration procedure starting with step (1).
- (20) Perform steps (13) thru (15) on opposite wing.
- (21) After calibration procedure is complete, check that all transmitter connections are secure and install access covers.

**Table 201. Resistance Values at Various Float Levels.**

<b>PART NUMBER</b>	<b>EMPTY</b>	<b>IN. ABOVE EMPTY</b>	<b>FULL TANK</b>
C668050-1103	0 ohms to 1 ohm	.93 inch / 2 to 6 ohms	41 ohms to 45 ohms
C668050-1104	0 ohms to 1 ohm	1.00 inch / 2 to 6 ohms	23 ohms to 27 ohms
C668050-1105	0 ohms to 1 ohm	1.00 inch / 3 to 7 ohms	43 ohms to 47 ohms
C668050-1106	0 ohms to 1 ohm	1.00 inch / 11 to 15 ohms	117 ohms to 123 ohms
C668050-1107	0 ohms to 1 ohm	1.00 inch / 3 to 7 ohms	43 ohms to 47 ohms
C668050-1108	0 ohms to 0.5 ohm	1.00 inch / 11 to 15 ohms	117 ohms to 123 ohms

Figure 201 : Sheet 1 : Fuel Quantity Indicating System

A22460

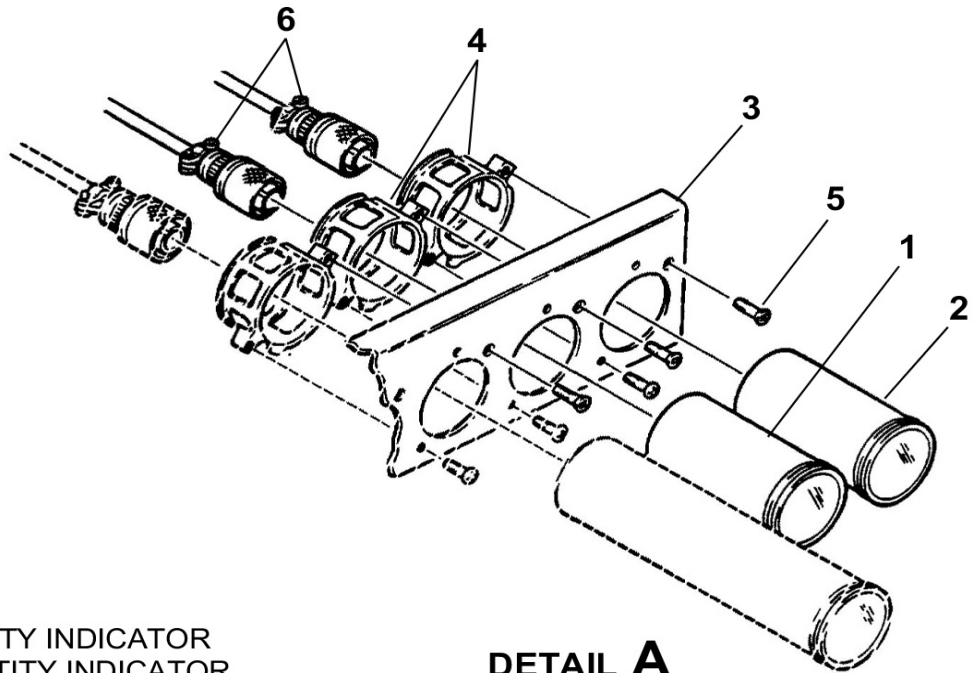


1. CENTER INBOARD FUEL LEVEL TRANSMITTER
2. CENTER OUTBOARD FUEL LEVEL TRANSMITTER
3. OUTBOARD FUEL LEVEL TRANSMITTER

26263002

Figure 201 : Sheet 2 : Fuel Quantity Indicating System

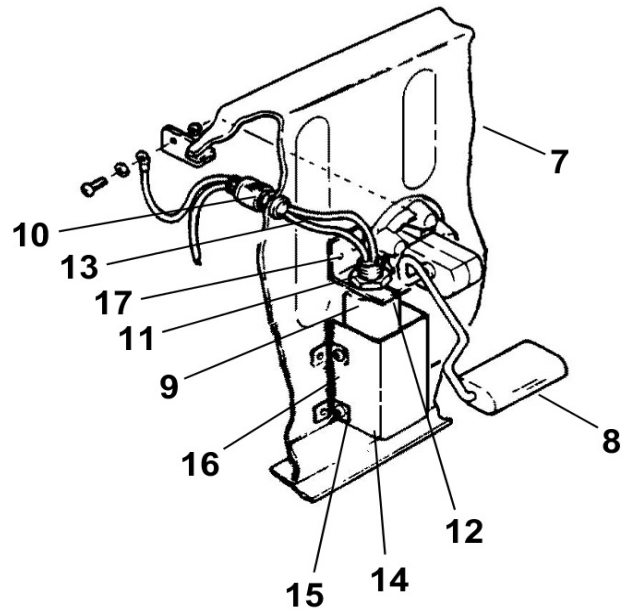
A22461



1. LEFT FUEL QUANTITY INDICATOR
2. RIGHT FUEL QUANTITY INDICATOR
3. INSTRUMENT PANEL
4. CLAMP
5. SCREW
6. ELECTRICAL CONNECTOR
7. FUEL BULKHEAD
8. FUEL LEVEL TRANSMITTER
9. LOW FUEL LEVEL SWITCH
10. CONNECTOR
11. JAMNUT
12. BRACKET
13. LOW FUEL LEVEL SWITCH WIRES
14. COVER
15. SCREW
16. ACCESS COVER SEALANT
17. BRACKET

**DETAIL A**

AIRPLANES 2080001  
THRU 2080499 AND  
AIRPLANES 208B0001  
THRU 208B1999

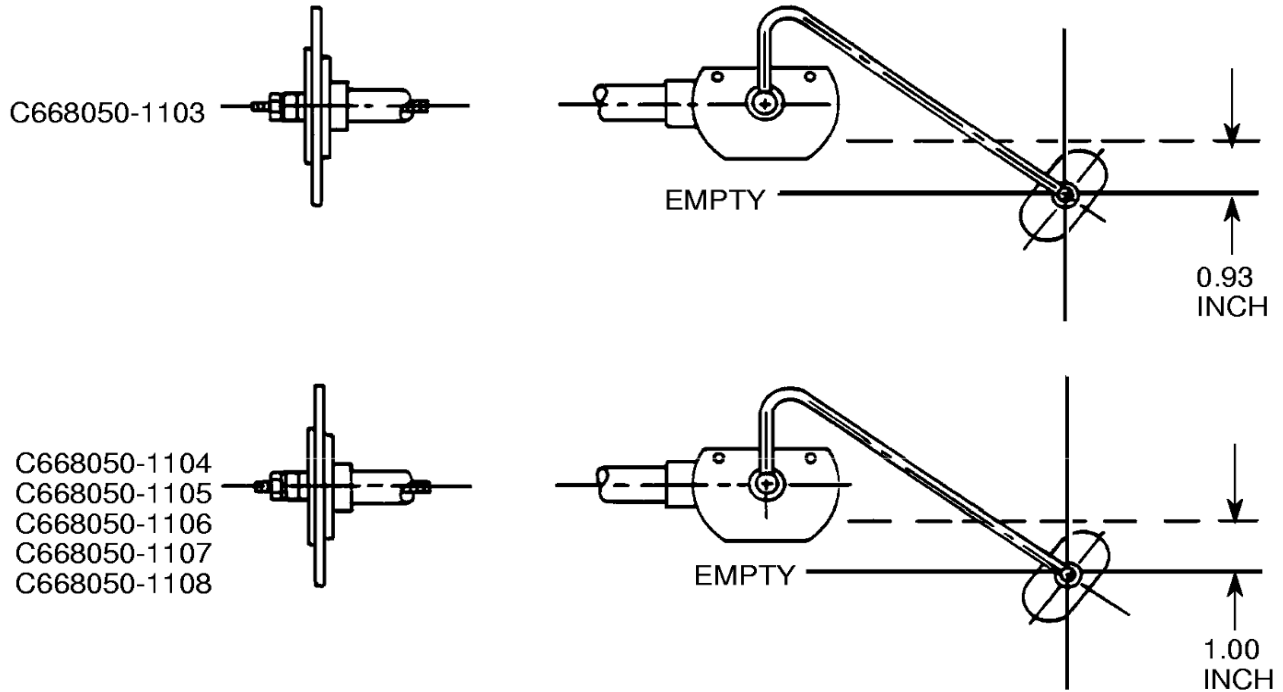


**DETAIL B**

A26161016  
B16262002

Figure 202 : Sheet 1 : Fuel Transmitter Resistance Check

A22462



**NOTE:** EMPTY IS DEFINED AS TRANSMITTER INSTALLED IN THE TANK WITH ALL THE FUEL DRAINED.

INCH ABOVE EMPTY IS DEFINED AS TRANSMITTER REMOVED FROM THE TANK, ATTACH PLATE VERTICAL, CENTER OF FLOAT RAISED FROM EMPTY POSITION.

FULL IS DEFINED AS TRANSMITTER INSTALLED IN THE TANK WITH TANK FULL OF FUEL.

26561009