

SS 1034220 SSI Ultrasonic Fuel Level Sensor Information

SSI Ultrasonic Fuel Level Sensor Information

Applicable Vehicles

Cascadia, New Cascadia, M2, Coronado, Western Star and possibly others depending on customer order preferences.

Symptoms

Fuel gauge reading inaccurate.

Fuel gauge reading empty all the time.

Fault codes for fuel level sensor.

Issue

The SSI Ultrasonic Fuel Level Sensor sends high frequency pulses then measures the echo in order to determine the fuel level in the tank. To test the resistance output of this ultrasonic sensor the sensor needs to be properly connected to power and ground.

Solution

There are two attached files containing the same instructions.

- [Ultrasonic_FLS_Diagnostic_Procedure.pdf](#) - Instructions from the supplier.
- [Revised_Diagnostic_Procedure.pdf](#) - Instructions with additional pictures showing how to connect jumper wires and measurements.

NOTE: When using jumper wires make sure the connections to the terminals are snug and the terminals are protected from coming into contact with each other.

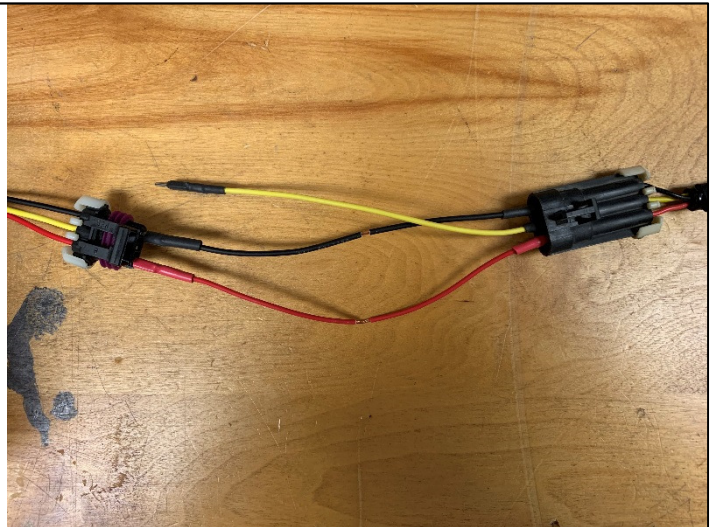
1. With ignition in “off” position:

Disconnect the fuel level sending unit and insert test wires between Pins A and Pins C of the vehicle harness and sender.

Pin A to Pin A

Pin C to Pin C

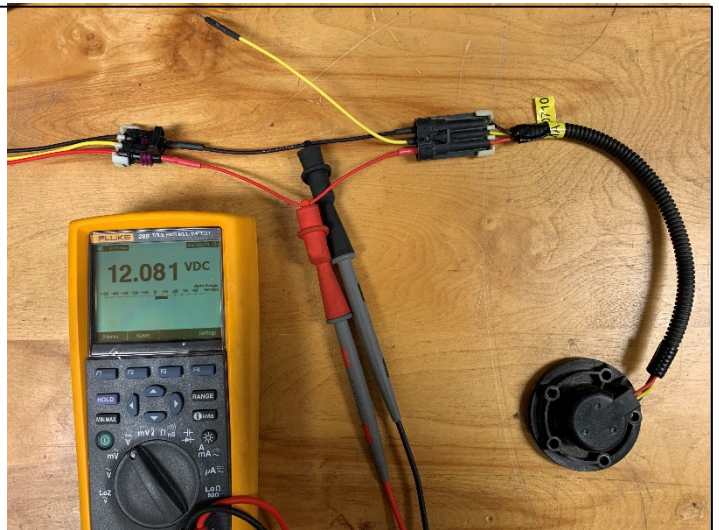
Do not connect Pin B to the vehicle harness.



2. With ignition in “on” position:

Measure voltage between Pin A (black wire) and Pin B (red wire).

Voltage should be 12- 14 volts.

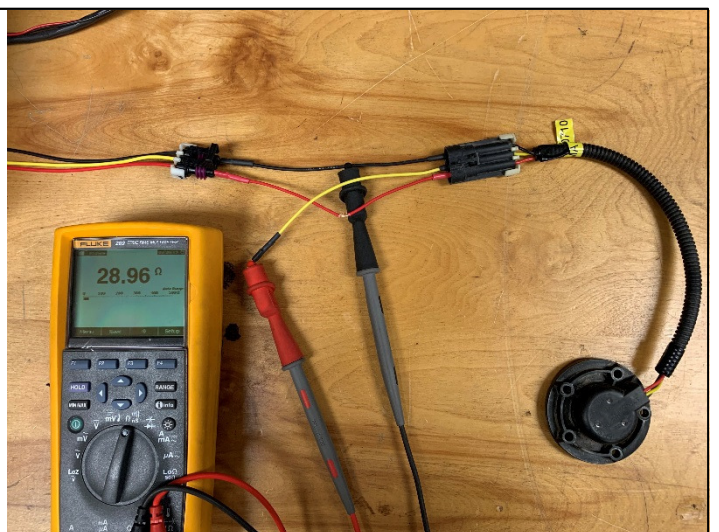


3. With ignition in “on” position:

Measure resistance between Pin A (black wire) and Pin B (yellow wire).

Resistance should be close to:

Full Tank	30 Ohms
3/4 Tank	76 Ohms
1/2 Tank	103 Ohms
1/4 Tank	152 Ohms
Empty	236 Ohms



If resistance values are out then check for proper installation of the fuel level sender per page 2 of this document.

Visual Inspection for Proper Installation of Ultrasonic Fuel level Sender

- Confirm that fuel tank is oriented with fuel level sender level on the highest point on the top of the tank (fuel level sender positioned within +/-10° of highest point on the tank)
- Confirm that the proper gasket is present between the aluminum tank flange and the focus tube assembly, and the proper gasket is present between the focus tube assembly and the ultrasonic fuel level sender.

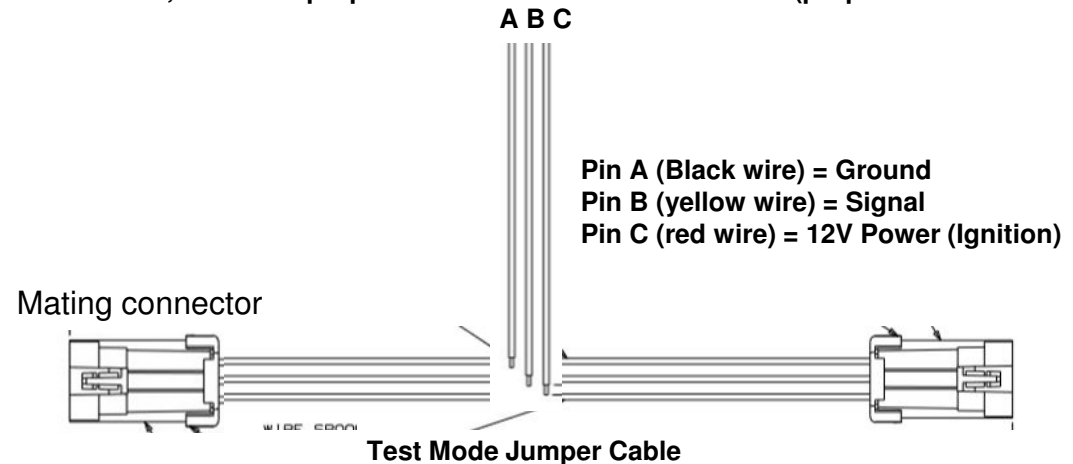


- Confirm that 5 mounting screws are tightened uniformly (15 in lbs max) to ensure that ultrasonic level sender is parallel to the fuel surface.
- Inspect cable harness electrical connectors for corrosion, dirt, and water ingress.
- If all of the above items are as specified and the fuel level sender is not providing the correct signal, please record any diagnostic fault codes, and results of the above diagnostic procedure.

Freightliner – SSI Ultrasonic Fuel Level Sender (3 wire) On Truck Diagnostic Procedure

1. With ignition in “off” position unplug 3 way electrical connector from fuel level sending unit and insert Test Mode Jumper Cable.
2. With ignition in “on” position (engine not running) use a Digital Multi-Meter to confirm stable 12 Volt power between Pin A and Pin C.
3. With ignition in “on” position (engine not running) use a Digital Multi-Meter to determine resistance between Pin A and Pin B. Compare measured resistance value to values in chart below according to approximate actual fuel level in the tank. The actual fuel level can be visually estimated by removing the fuel cap and looking in the tank. Record measured resistance value and visually estimated fuel level.
4. If resistance value is not close to the values in the table below, check for proper installation of fuel level sender (proper installation details listed on page 2).

Pin B must be isolated from vehicle harness,
Not connected back to mating harness



Fuel Level Sender Resistance Table	
Full Tank	30 Ohms
3/4 Tank	76 Ohms
1/2 Tank	103 Ohms
1/4 Tank	152 Ohms
Empty	236 Ohms



Freightliner – SSI Ultrasonic Fuel Level Sender (3 wire) On Truck Diagnostic Procedure (page 2)

Visual Inspection for Proper Installation of Ultrasonic Fuel level Sender

- Confirm that fuel tank is oriented with fuel level sender level on the highest point on the top of the tank (fuel level sender positioned within +/-10° of highest point on the tank)
- Confirm that the proper gasket is present between the aluminum tank flange and the focus tube assembly, and the proper gasket is present between the focus tube assembly and the ultrasonic fuel level sender (refer to photo on page 3).
- Confirm that 5 mounting screws are tightened uniformly (15 in lbs max) to ensure that ultrasonic level sender is parallel to the fuel surface
- Inspect cable harness electrical connectors for corrosion, dirt, and water ingress.
- If all of the above items are as specified and the fuel level sender is not providing the correct signal, please record any diagnostic fault codes, and results of the above diagnostic procedure.

Freightliner – SSI Ultrasonic Fuel Level Sender (3 wire) On Truck Diagnostic Procedure (page 3)

- Remove fuel sender and place on flat surface – part should sit flush with the surface
 - If part is bowed, it was over-torqued during installation (damaged)
 - In this event, replace both the fuel sender and the focus tube assembly as the focus tube flange may be damaged as well.

Installation Instructions for new sensor, get photo with all 4 elements in proper sequence

