

DEF Gauge Reading Incorrectly

49-007

- > Shuttle Bus
- > Recreational Vehicle
- > School Bus
- > Walk-In Van
- > S2

Freightliner Custom Chassis Service Bulletin

Description of Revisions: *This bulletin replaces the version dated February 2014. Table 1 is revised and now includes a range of resistance ohms.*

General Information

When a vehicle equipped with a diesel exhaust fluid (DEF) system sits for an extended period of time, the DEF in the tank may crystallize around the float on the DEF level sending-unit tube and require cleaning. This crystallization may cause the float to stick on the tube. See Fig. 1 . If the DEF level indicator displays an incorrect level reading, complete the procedure below.

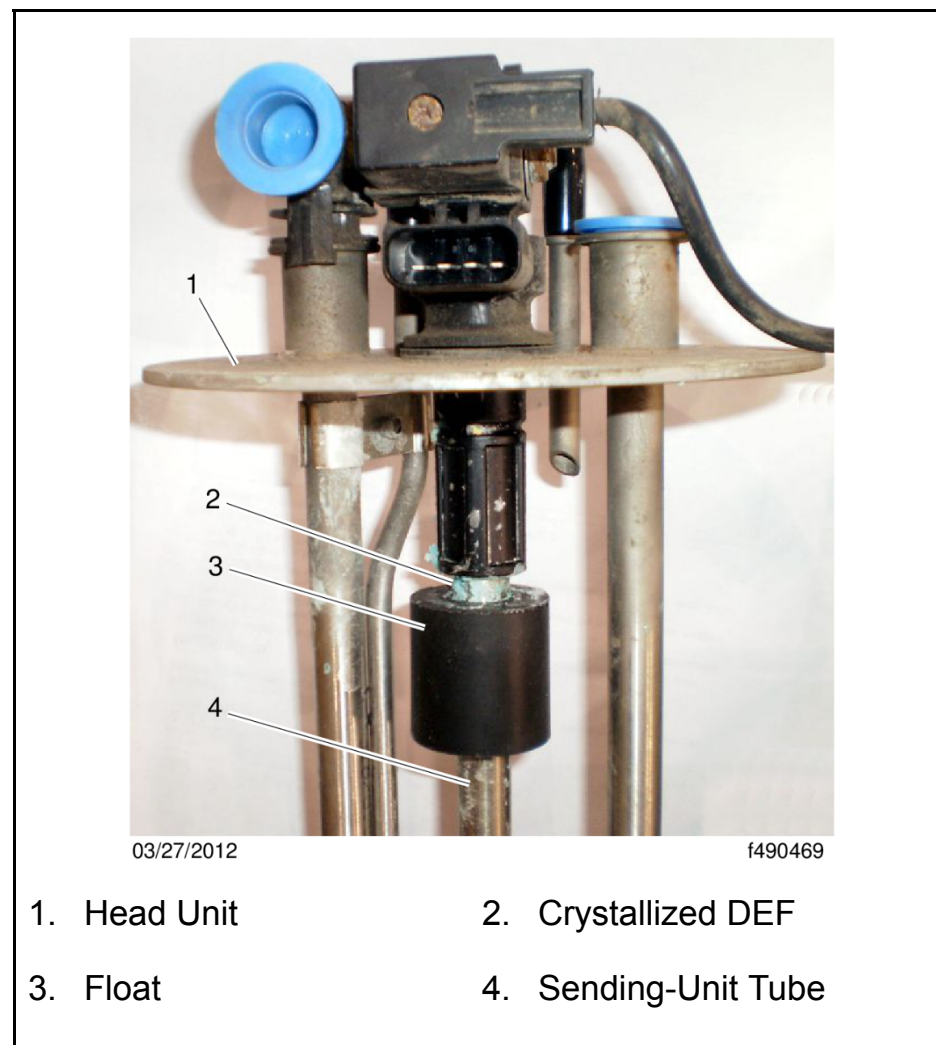


Fig. 1, Stuck DEF Float

IMPORTANT: When using an ohmmeter to measure the different resistance settings of the DEF level sensor, it is important that the readings fall below the range chosen on the ohmmeter. The resistance settings on the DEF sensor can range from approximately 68 ohms to 20,000 ohms. If the ohmmeter is set on a 4k resistance setting, any reading over 4000 ohms will show "OL" on the meter. This is not an open circuit issue but a mistake in

choosing the range setting on the ohmmeter. To avoid this situation, set the ohmmeter resistance scale to one that is above the highest resistance reading expected. For example, if the highest resistance reading will be 20,000 ohms, set the ohmmeter to the 40k setting. As you work down to the lower resistance settings, switch the ohmmeter to a lower range. When encountering an "OL" reading on the ohmmeter, always select a higher range to determine whether there is an open circuit or if it's just a matter of being on too low of a range.

Removal, Testing, and Installation

1. Check to see if there is DEF in the tank. If the tank is not empty, drain the tank.

On vehicles with A04-27943-000 and A04-27943-001 tanks, disconnect the DEF line from the DEF outlet port at bottom of the tank, and let the DEF drain into the drain pan.

On vehicles with any other DEF header, use a siphon or invert the DEF tank after removal from the mounting brackets to empty the DEF from the tank.
2. Remove the tank from the vehicle. For instructions refer to **Group 49** of the vehicle's Workshop Manual.
3. Remove the DEF-level sending unit. For instructions refer to **Group 49** of the vehicle's Workshop Manual.
4. Clean the float and tube thoroughly with hot water, to restore free movement of the float on the tube.
5. Clean all DEF crystallization from the remainder of the unit with hot water.
6. Using a digital multimeter (DMM), test the sending unit resistance to make sure it is working properly. Refer to Table 1 for DEF level sensor resistance.

6.1 Connect the ohm meter to the sending unit connector on the pins identified in Table 1 .

NOTE: DEF level testing by moving the float with the sensor connected to the vehicle wiring is not recommended because the display response time to any movement in the DEF sensor float can take several minutes.

6.2 Position the float at the full, midpoint, and empty positions and compare the resistance to that shown in Table 1 .

If the readings are not within range, replace the sending unit with a new one.
7. Install the sending unit in the tank. For instructions refer to **Group 49** of the vehicle's Workshop Manual.
8. Install the tank. For instructions refer to **Group 49** of the vehicle's Workshop Manual.
9. Fill the tank with DEF.

DEF Level Sensor Resistance Measurement				
Engine Type	Detroit	Cummins		
Part Number	A04-27943-000 A04-27943-001 04-30774-000 04-30774-004 04-27881-000	A04-27445-000 A04-27942-000	A04-28046-000 A04-28402-000	04-30774-001 04-30774-005
Test at Sensor Connector Pins NOTE: Pins are numbered left to right.	1 and 2	1 and 4	1 and 4	1 and 2
Resistance: Float at Top of Travel	21788 to	61 to 75Ω	112 to 379Ω	61 to 75Ω

	17820Ω			
Resistance: Float at Center of Travel	2494 to 1661Ω	598 to 982Ω	428 to 1135Ω	610 to 905Ω
Resistance: Float at Bottom of Travel	264 to 216Ω	4328 to 5293Ω	1297 to 4812Ω	4259 to 5205Ω

Table 1, DEF Level Sensor Resistance Measurement

Warranty

This procedure is warrantable only if the described condition exists and the repair is performed within the applicable base or extended coverage warranty period. If a failure is not found, this procedure is considered preventive and warranty does not apply.

Normal warranty applies. See Table 2 for OWL VMRS codes and labor allowance information. Enter this service bulletin number in the *Service Bulletin #* field.

OWL VMRS Codes and Labor Allowance					
Primary Failed Part	Component Code	Cause Code	SRT Code	Description	Time: Hours
DEF Level Sensor	043-007-156	37	234-5010A	DEF Level Sensor, R/R and Clean	2.5
DEF Level Sensor	043-007-012	37	234-5010A	DEF Level Sensor, R/R and Clean	2.5

Table 2, OWL VMRS Codes and Labor Allowance