1 9 05-14

Service Information Bulletin

SUBJECT	DATE
SPN 111 (CPC) (EPA07;EPA10;GHG14)	September 2014
SPN 111 (CPC) (GHG14)	
SPN 111 (MCM) (EPA10) (GHG14)	

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0084	DD Platform	SPN 111/FMI 1 - EPA07 - EPA10 - GHG14	This is an updated section, including new float sensor, resistance values and test procedures.
		SPN 111/FMI 3 - EPA07 - EPA10 - GHG14	
		SPN 111/FMI 4 - EPA07 - EPA10 - GHG14	
		SPN 111/FMI 6 - GHG14	
		SPN 111/FMI 18 - GHG14	
		SPN 111/FMI 19 - EPA10 - GHG14	

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2 SPN 111/FMI 1 - EPA07 - EPA10 - GHG14

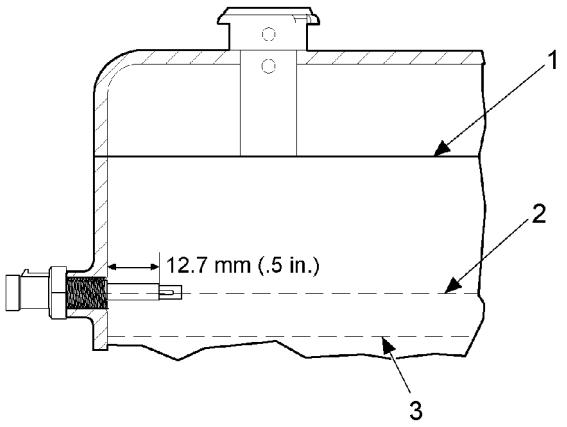
Coolant Level Very Low

Table 1.

SPN 111/FMI 1	
Description	Coolant level below normal range
Monitored Parameter	Coolant Level
Typical Enabling Conditions	Always on
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 Seconds
Dash Lamps	CEL
Engine Reaction	None
Verification	Cycle Key

Check as follows:

1. Is the vehicle an EPA10 or newer model?
   a. Yes; ensure Motor Control Module (MCM), Aftertreatment Control Module (ACM), and Common Powertrain Controller (CPC) software levels are 7.6/8.6/R22 or higher. After reprogramming, clear faults. If they do not become active, verify coolant level is correct and release the vehicle. If software levels are correct or faults become active, Go to step 2.
   b. No; Go to step 2.
2. Check the coolant level in the reservoir. Is the coolant level in the reservoir within limit (2) or (3)?



   a. Yes; fill to proper level (1) with coolant. Go to step 3.
   b. No; replace the Engine Coolant Level (ECL) sensor. Refer to section "Engine Coolant Level Sensor".
3. Check the following for leaks. Verify repairs.
   a. Check for coolant leak at cylinder head gasket.
   b. Check for coolant leak at air compressor head gasket.
   c. Check for external coolant leak at hose connections.
   d. Check for coolant in oil.

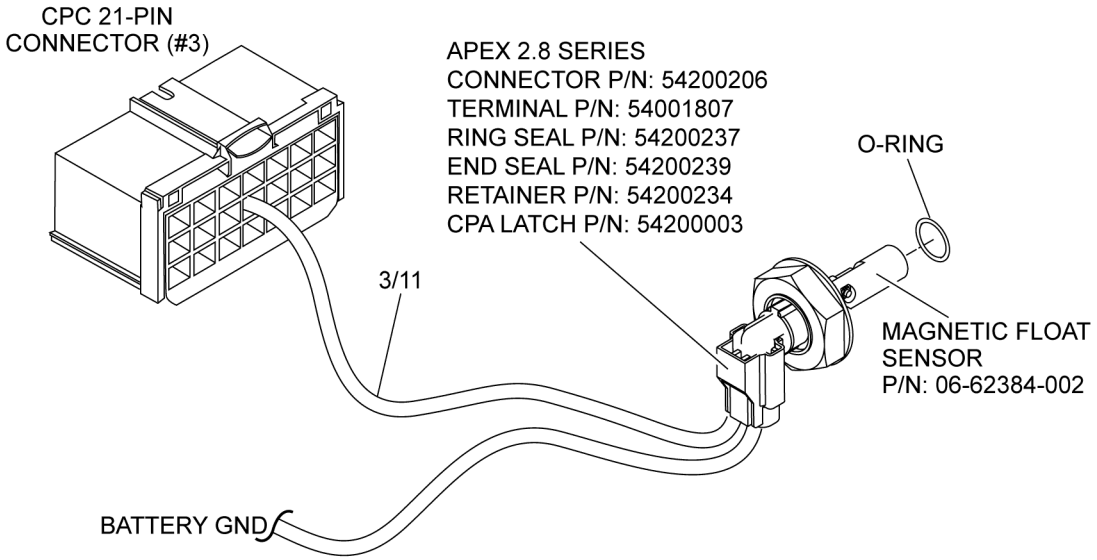
e. Check for loose or faulty radiator cap.
f. Check cab heating system for leaks.

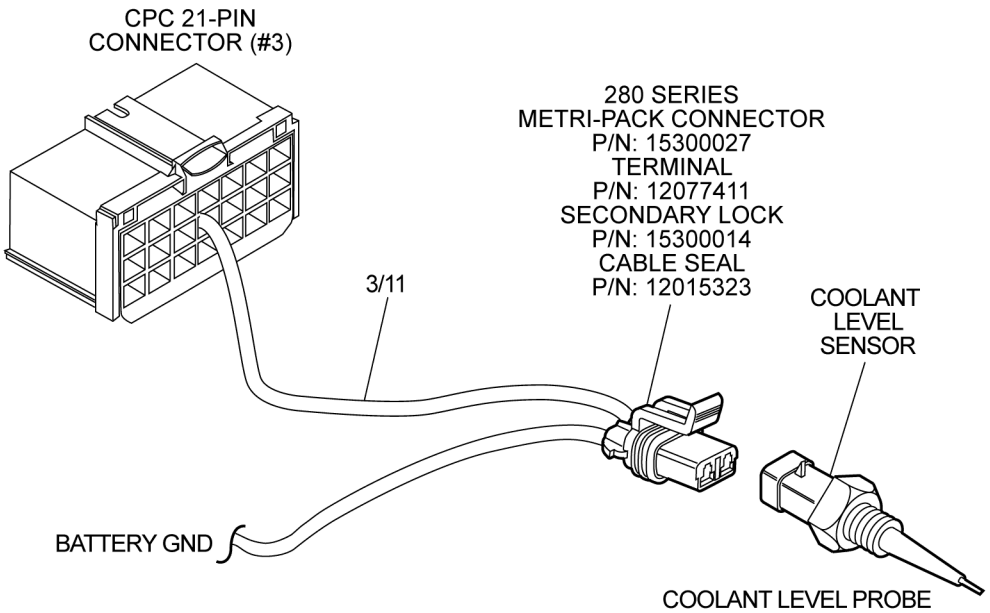
3 SPN 111/FMI 3 - EPA07 - EPA10 - GHG14

Coolant Level Circuit Failed High

Table 2.

SPN 111/FMI 3	
Description	Coolant level circuit signal above normal range
Monitored Parameter	Coolant Level
Typical Enabling Conditions	Always on
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 Seconds
Dash Lamps	CEL
Engine Reaction	None
Verification	Cycle Key





LABEL	CPC CONNECTOR CAVITY	WIRE COLOR	CLS CAVITY
COOLANT LEVEL	3/11	ORN	A
GROUND	—	BLK	B

Check as follows:

1. Turn ignition OFF.
2. Disconnect the Engine Coolant Level (ECL) sensor.
3. Inspect sensor and harness connector for bent, spread, or corroded pins. Is any damage found?
   a. Yes; repair as necessary. Verify repairs.
   b. No; Go to step 4.
4. Is ECL a magnetic float type? Refer to Original Equipment Manufacturer (OEM) literature.
   a. Yes; Go to step 5.
   b. No; Go to step 6.
5. Measure the resistance between pins 1 and 2 of the ECL sensor with the sensor submerged (float up, circuit closed). Is the resistance between 120 to 140 ohms?
   a. Yes; Go to step 7.
   b. No; replace the ECL sensor. Refer to section "Engine Coolant Level Sensor".
6. Measure the resistance between pins 1 and 2 of the ECL sensor. Is the resistance less than 600K ohms while submerged?
   a. Yes; Go to step 7.
   b. No; replace the ECL sensor. Refer to section "Engine Coolant Level Sensor".
7. Turn the ignition ON (key ON, engine OFF).
8. Measure the voltage between pin 1, or pin A for magnetic float type, of the ECL sensor harness connector and ground. Is the voltage above 4.0 volts?
   a. Yes; repair the open circuit between pin 2 of the ECL sensor harness and ground. Verify repairs.
   b. No; Go to step 9.
9. Turn the ignition OFF.
10. Disconnect the CPC #3 connector.
11. Inspect CPC #3 connector for bent, spread, or corroded pins. Is any damage found?
    a. Yes; repair as necessary. Verify repairs.
    b. No; Go to step 12.
12. Measure the resistance between pin 1 of the ECL harness connector and pin 11 of the CPC #3 connector. Is the resistance greater than 5 ohms?

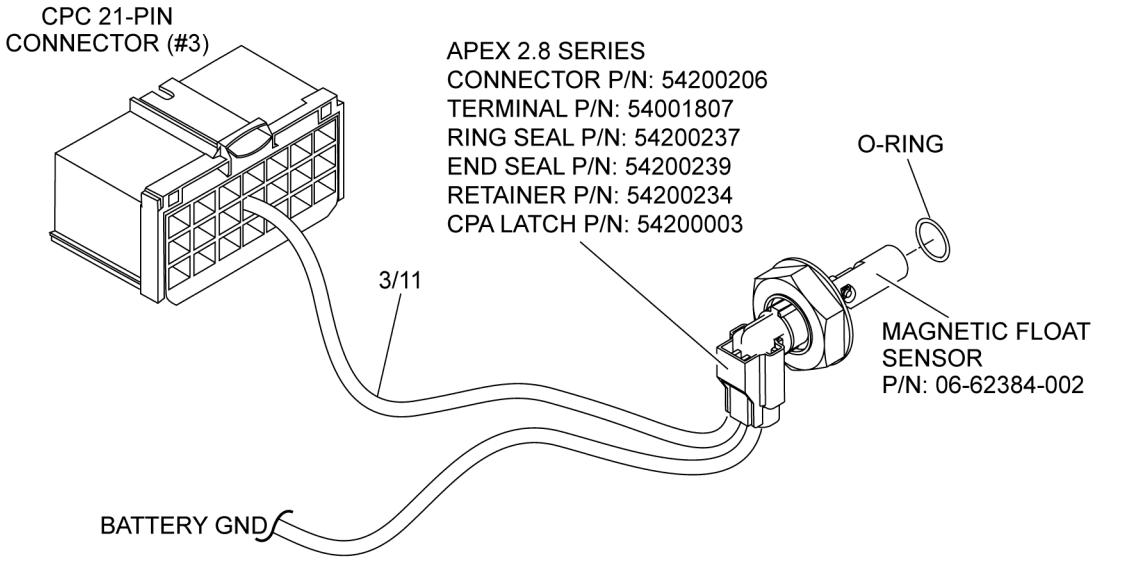
a. Yes; repair the open circuit between pin 1 of the ECL sensor harness connector and pin 11 of the CPC #3 connector. Verify repairs.
b. No; replace the CPC. Refer to Original Equipment Manufacturer (OEM) literature.

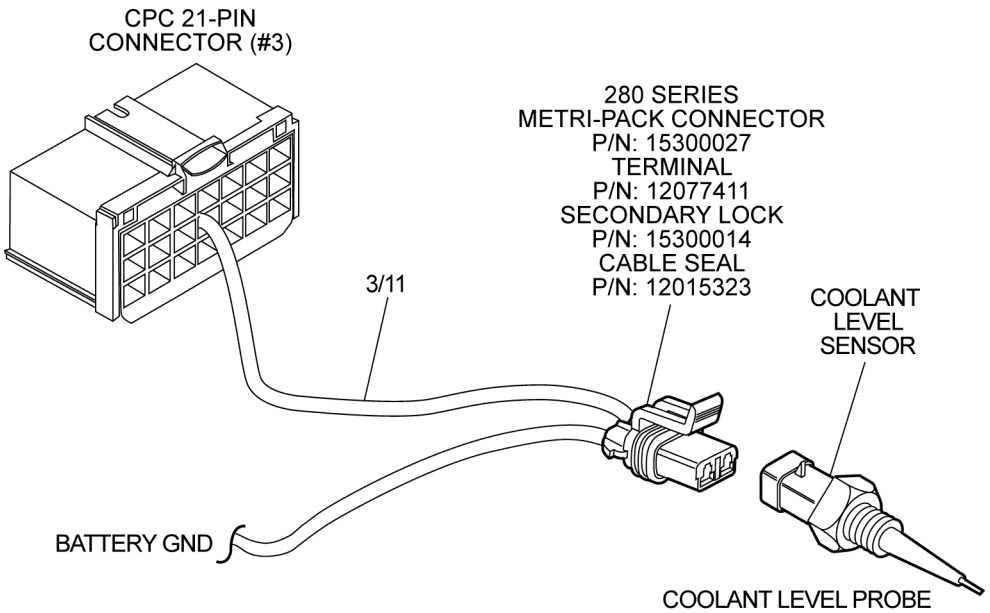
4 SPN 111/FMI 4 - EPA07 - EPA10 - GHG14

Coolant Level Circuit Failed Low

Table 3.

SPN 111/FMI 4	
Description	Coolant level circuit signal below normal range
Monitored Parameter	Coolant Level
Typical Enabling Conditions	Always on
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 Seconds
Dash Lamps	CEL
Engine Reaction	None
Verification	Cycle Key





LABEL	CPC CONNECTOR CAVITY	WIRE COLOR	CLS CAVITY
COOLANT LEVEL	3/11	ORN	A
GROUND	—	BLK	B

Check as follows:

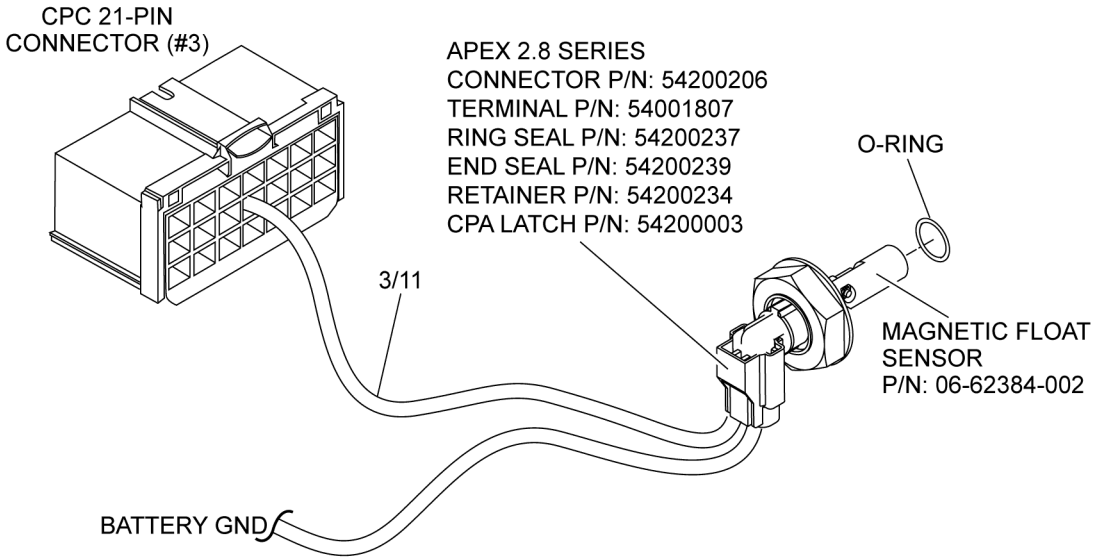
1. Turn ignition OFF.
2. Disconnect the Engine Coolant Level (ECL) sensor.
3. Inspect sensor and harness connector for bent, spread, or corroded pins. Is any damage found?
   a. Yes; repair as necessary. Verify repairs.
   b. No; Go to step 4.
4. Disconnect the Common Powertrain Controller (CPC) #3 connector (21-pin).
5. Inspect CPC #3 connector for bent, spread, or corroded pins. Is any damage found?
   a. Yes; repair as necessary. Verify repairs.
   b. No; Go to step 6.
6. Measure the resistance across pins 1 and 2 of the ECL sensor harness side connector. Is the resistance greater than 10K ohms?
   a. Yes; Go to step 7.
   b. No; repair the short between pin 1 and pin 2 of the ECL sensor harness side connector.
7. Measure the resistance between pin 1 of the ECL sensor harness connector and ground. Is the resistance greater than 10K ohms?
   a. Yes; replace the ECL sensor. Refer to section "Engine Coolant Level Sensor".
   b. No; repair the short to ground between pin 1(A) of the ECL sensor harness connector and pin 11 of the CPC #3 connector. Verify repairs. If fault returns, replace the CPC. Refer to Original Equipment Manufacturer (OEM) literature.

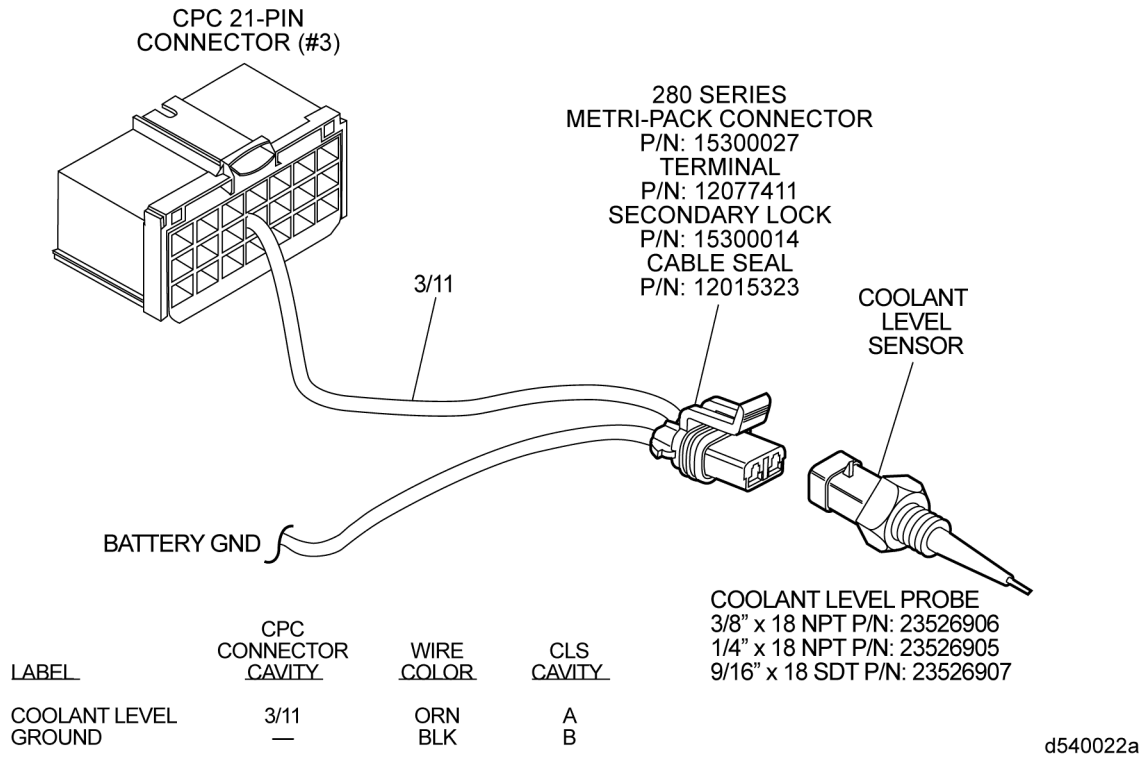
5 SPN 111/FMI 6 - GHG14

Coolant Level Sensor Circuit Failed Low

Table 4.

SPN 111/FMI 6	
Description	Coolant level circuit signal below normal range
Monitored Parameter	Coolant Level
Typical Enabling Conditions	Always on
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 Seconds
Dash Lamps	CEL
Engine Reaction	None
Verification	Cycle Key





LABEL	CPC CONNECTOR CAVITY	WIRE COLOR	CLS CAVITY
COOLANT LEVEL	3/11	ORN	A
GROUND	—	BLK	B

Check as follows:

1. Turn ignition OFF.
2. Disconnect the Engine Coolant Level (ECL) sensor.
3. Inspect sensor and harness connector for bent, spread, or corroded pins. Is any damage found?
   a. Yes; repair as necessary. Verify repairs.
   b. No; Go to step 4.
4. Disconnect the Common Powertrain Controller (CPC) #3 connector (21-pin).
5. Inspect CPC #3 connector for bent, spread, or corroded pins. Is any damage found?
   a. Yes; repair as necessary. Verify repairs.
   b. No; Go to step 6.
6. Measure the resistance across pins 1 and 2 of the ECL sensor harness side connector. Is the resistance greater than 10K ohms?
   a. Yes; Go to step 7.
   b. No; repair the short between pin 1 and pin 2 of the ECL sensor harness side connector.
7. Measure the resistance between pin 1 of the ECL sensor harness connector and ground. Is the resistance greater than 10K ohms?
   a. Yes; replace the ECL sensor. Refer to section "Engine Coolant Level Sensor".
   b. No; repair the short to ground between pin 1(A) of the ECL sensor harness connector and pin 11 of the CPC #3 connector. Verify repairs. If fault returns, replace the CPC. Refer to Original Equipment Manufacturer (OEM) literature.

6 SPN 111/FMI 18 - GHG14

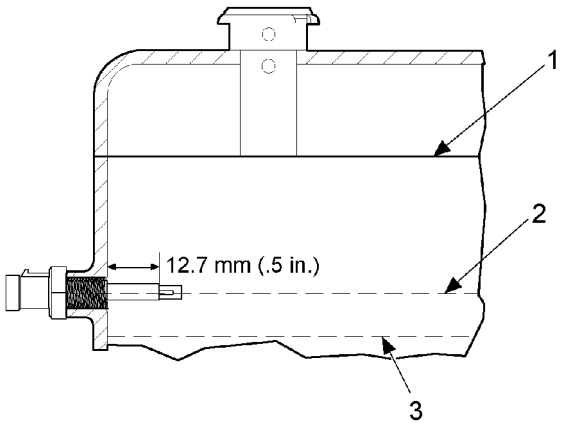
Coolant Level Low

Table 5.

SPN 111/FMI 18	
Description	Coolant level below normal range
Monitored Parameter	Coolant Level
Typical Enabling Conditions	Always on
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 Seconds
Dash Lamps	CEL
Engine Reaction	None
Verification	Cycle Key

Check as follows:

1. Is the vehicle an EPA10 or newer model?
   a. Yes; ensure Motor Control Module (MCM), Aftertreatment Control Module (ACM), and Common Powertrain Controller (CPC) software levels are 7.6/8.6/R22 or higher. After reprogramming, clear faults. If they do not become active, verify coolant level is correct and release the vehicle. If software levels are correct or faults become active, Go to step 2.
   b. No; Go to step 2.
2. Check the coolant level in the reservoir. Is the coolant level in the reservoir within limit (2) or (3)?



   a. Yes; fill to proper level (1) with coolant. Go to step 3.
   b. No; replace the Engine Coolant Level (ECL) sensor. Refer to section "Engine Coolant Level Sensor".
3. Check the following for leaks. Verify repairs.
   a. Check for coolant leak at cylinder head gasket.
   b. Check for coolant leak at air compressor head gasket.
   c. Check for external coolant leak at hose connections.
   d. Check for coolant in oil.

e. Check for loose or faulty radiator cap.
f. Check cab heating system for leaks.

7 SPN 111/FMI 19 - EPA10 - GHG14

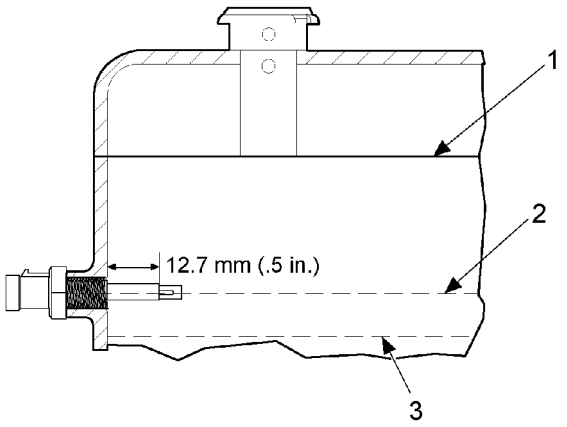
Coolant Level Low

Table 6.

SPN 111/FMI 19	
Description	Coolant level below normal range
Monitored Parameter	Coolant Level
Typical Enabling Conditions	Always on
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 Seconds
Dash Lamps	CEL
Engine Reaction	None
Verification	Cycle Key

Check as follows:

1. Is the vehicle an EPA10 or newer model?
   a. Yes; ensure Motor Control Module (MCM), Aftertreatment Control Module (ACM), and Common Powertrain Controller (CPC) software levels are 7.6/8.6/R22 or higher. After reprogramming, clear faults. If they do not become active, verify coolant level is correct and release the vehicle. If software levels are correct or faults become active, Go to step 2.
   b. No; Go to step 2.
2. Check the coolant level in the reservoir. Is the coolant level in the reservoir within limit (2) or (3)?



   a. Yes; fill to proper level (1) with coolant. Go to step 3.
   b. No; replace the Engine Coolant Level (ECL) sensor. Refer to section "Engine Coolant Level Sensor".
3. Check the following for leaks. Verify repairs.
   a. Check for coolant leak at cylinder head gasket.
   b. Check for coolant leak at air compressor head gasket.
   c. Check for external coolant leak at hose connections.
   d. Check for coolant in oil.

e. Check for loose or faulty radiator cap.
f. Check cab heating system for leaks.

