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Service Information Bulletin

SUBJECT	DATE
SPN 101 (MCM)(GHG17)	August 2017

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0200	DD Medium Duty	SPN 101/FMI 2 - GHG17	New MD diagnostic procedures
DDC-SVC-MAN-0193		SPN 101/FMI 1 - GHG17	
		SPN 101/FMI 3 - GHG17	
		SPN 101/FMI 4 - GHG17	
		SPN 101/FMI 2 - GHG17	

DiagnosticLink users: Please update the troubleshooting guides in DiagnosticLink with this newest version. To update the tool troubleshooting guide, open DiagnosticLink and from the Help – Troubleshooting Guides menu, select the appropriate troubleshooting manual, then click Update.



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2 SPN 101/FMI 2 - GHG17

Sensor Drift Fault for Crankcase Pressure Sensor

Table 1.

SPN 101/FMI 2	
Description	This Fault Code Sets When the Crankcase Pressure Sensor is outside of a Calibrated Threshold
Monitored Parameter	Crankcase Pressure Sensor
Typical Enabling Conditions	Always ON
Monitor Sequence	Engine Running
Execution Frequency	Continuous When Enabling Conditions Are Met
Typical Duration	Two Seconds
Dash Lamps	MIL
Engine Reaction	None
Verification	Engine Running for at Least Four Minutes



WARNING: PERSONAL INJURY

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

- Always start and operate an engine in a well ventilated area.
- If operating an engine in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system or emission control system.



WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.



WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

9. Measure the resistance between pin 3 of the crankcase pressure sensor and battery ground. Is the resistance less than five ohms?
 - a. Yes; repair the short to ground between pin 3 of the crankcase pressure sensor and ground.
 - b. No; Go to step 10.
10. Measure the voltage between pin 3 of the crankcase pressure sensor harness connector and pin 117 of the MCM 120-pin harness connector. Is the voltage greater than five volts?
 - a. Yes; repair a short to power between pin 3 of the crankcase pressure sensor harness connector and pin 117 of the MCM 120-pin harness connector.
 - b. No; Go to step 11.
11. Measure the voltage between pin 2 of the crankcase pressure sensor and battery ground. Is there voltage present?
 - a. Yes; repair a short to power between pin 2 of the crankcase pressure sensor harness connector and pin 102 of the MCM 120-pin harness connector.
 - b. No; Go to step 12.
12. Measure the voltage between pin 1 of the crankcase pressure sensor and battery ground. Is there voltage present?
 - a. Yes; repair a short to power between pin 1 of the crankcase pressure sensor harness connector and pin 60 of the MCM 120-pin harness connector.
 - b. No; replace the crankcase pressure sensor.

3 SPN 101/FMI 1 - GHG17

Crankcase Pressure Rationality

Table 2.

SPN 101/FMI 1	
Description	This Fault Code Sets When the Crankcase Pressure is Outside of the Calibrated Threshold
Monitored Parameter	Crankcase Pressure Sensor
Typical Enabling Conditions	Always ON
Monitor Sequence	Engine Running
Execution Frequency	Continuous When Enabling Conditions Are Met
Typical Duration	Two Seconds
Dash Lamps	CEL
Engine Reaction	None
Verification	Run the Engine and Bring the Engine Coolant Temperature to Normal Operating Range, 70 to 95°C (158 to 203°F)



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- If operating an engine in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system or emission control system.



WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.



WARNING: ENGINE EXHAUST

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Check as follows:

1. Check for multiple codes. Are SPN 101/FMI 3 or SPN 101/FMI 4 present?
 - a. Yes; diagnose the other codes first.
 - b. No; Refer to section "High Crankcase Pressure".

4 SPN 101/FMI 3 - GHG17

Crankcase Pressure Sensor Circuit Failed High

Table 3.

SPN 101/FMI 3	
Description	This Fault Code Sets When the Crankcase Pressure Sensor Voltage is more than a Calibrated Threshold
Monitored Parameter	Crankcase Pressure Sensor
Typical Enabling Conditions	Always ON
Monitor Sequence	Engine Running
Execution Frequency	Continuous When Enabling Conditions Are Met
Typical Duration	Two Seconds
Dash Lamps	CEL
Engine Reaction	None
Verification	Engine Running for at least Four Minutes



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- If operating an engine in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system or emission control system.



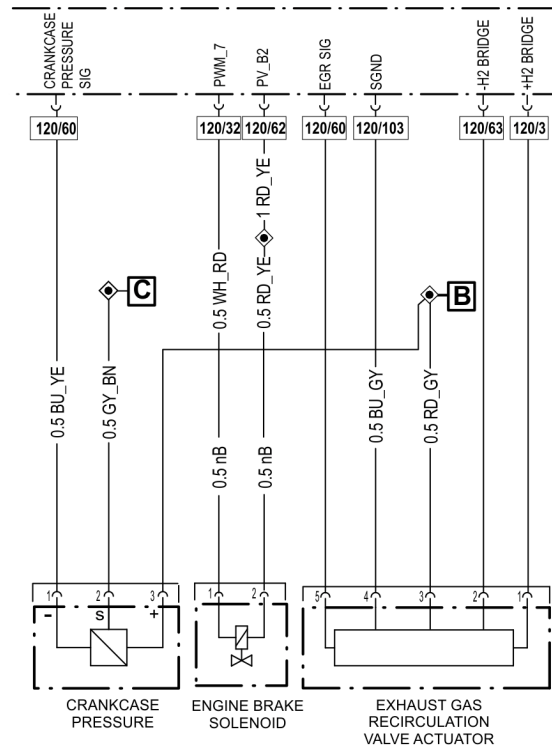
WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.



WARNING: ENGINE EXHAUST

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Check as follows:

1. Check for multiple codes. Are there any additional circuit failed high codes (FMI 3) present for the EGR valve or the Low Pressure Pump Outlet (LPPO) sensor?
 - a. Yes; repair the other faults first.
 - b. No; Go to step 2.
2. Disconnect the crankcase pressure sensor.
3. Inspect the crankcase pressure connector and harness connector for damage, bent, spread or unseated (pushed out) pins, corrosion or wire damage. Is damage present?
 - a. Yes; repair as necessary.
 - b. No; Go to step 4.
4. Measure the voltage between pin 3 of the crankcase pressure sensor harness connector and pin 117 of the MCM 120-pin harness connector. Is the voltage greater than five volts?
 - a. Yes; repair a short to power between pin 3 of the crankcase pressure sensor harness connector and pin 117 of the MCM 120-pin harness connector.
 - b. No; Go to step 5.
5. Measure the voltage between pin 2 of the crankcase pressure sensor and battery ground. Is there voltage present?
 - a. Yes; repair a short to power between pin 2 of the crankcase pressure sensor harness connector and pin 102 of the MCM 120-pin harness connector.
 - b. No; Go to step 6.
6. Measure the voltage between pin 1 of the crankcase pressure sensor and battery ground. Is there voltage present?
 - a. Yes; repair a short to power between pin 1 of the crankcase pressure sensor harness connector and pin 60 of the MCM 120-pin harness connector.
 - b. No; replace the crankcase pressure sensor.

5 SPN 101/FMI 4 - GHG17

Crankcase Pressure Sensor Circuit Failed Low

Table 4.

SPN 101/FMI 4	
Description	This Fault Code Sets When the Crankcase Pressure Sensor Voltage is less than a Calibrated Threshold
Monitored Parameter	Crankcase Pressure Sensor
Typical Enabling Conditions	Always ON
Monitor Sequence	Engine Running
Execution Frequency	Continuous When Enabling Conditions Are Met
Typical Duration	Two Seconds
Dash Lamps	CEL
Engine Reaction	None
Verification	Engine Running for at Least Four Minutes



WARNING: PERSONAL INJURY

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- Always start and operate an engine in a well ventilated area.
- If operating an engine in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system or emission control system.



WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.



WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

9. Measure the resistance between pin 3 of the crankcase pressure sensor and battery ground. Is the resistance less than five ohms?
 - a. Yes; repair the short to ground between pin 3 of the crankcase pressure sensor and ground.
 - b. No; replace the crankcase pressure sensor.

6 SPN 101/FMI 2 - GHG17

Sensor Drift Fault for Crankcase Pressure Sensor

Table 5.

SPN 101/FMI 2	
Description	This Fault Code Sets When the Crankcase Pressure Sensor is outside of a Calibrated Threshold
Monitored Parameter	Crankcase Pressure Sensor
Typical Enabling Conditions	Always ON
Monitor Sequence	Engine Running
Execution Frequency	Continuous When Enabling Conditions Are Met
Typical Duration	Two Seconds
Dash Lamps	MIL
Engine Reaction	None
Verification	Engine Running for at Least Four Minutes



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- Always start and operate an engine in a well ventilated area.
- If operating an engine in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system or emission control system.



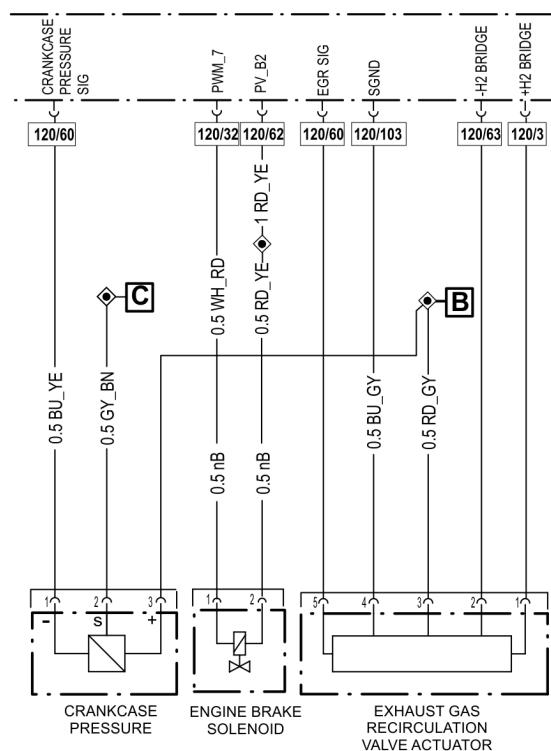
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WARNING: ENGINE EXHAUST

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Check as follows:

1. Check for multiple codes. Are there any additional circuit failed codes (FMI 4 or 3) for the EGR valve, the Low Pressure Pump Outlet (LPPO) sensor or Crankcase Pressure sensor present?
 - a. Yes; repair the other faults first.
 - b. No; Go to step 2.
2. Turn the ignition OFF.
3. Disconnect the crankcase pressure sensor.
4. Inspect the crankcase pressure connector and harness connector for damage, bent, spread or unseated (pushed out) pins, corrosion or wire damage. Is damage present?
 - a. Yes; repair as necessary.
 - b. No; Go to step 5.
5. Measure the resistance between pin 2 of the crankcase pressure sensor harness connector and ground. Is the resistance greater than five ohms?
 - a. Yes; repair the open between pin 2 of the crankcase pressure sensor harness connector and pin 102 of the MCM 120-pin connector.
 - b. No; Go to step 6.
6. Measure the voltage between pin 3 of the crankcase pressure sensor and ground. Is voltage present?
 - a. Yes; Go to step 7.
 - b. No; repair the open between pin 3 of the crankcase pressure sensor harness connector and pin 117 of the MCM 120-pin connector.
7. Measure the resistance between pin 1 of the crankcase pressure sensor harness connector and ground. Is the resistance less than five ohms?
 - a. Yes; repair the short to ground between pin 1 of the crankcase pressure sensor and ground.
 - b. No; Go to step 8.
8. Measure the resistance between pin 1 of crankcase pressure sensor harness connector and pin 60 of the MCM 120-pin connector. Is the resistance greater than five ohms?
 - a. Yes; repair the open between pin 1 of crankcase pressure sensor harness connector and pin 60 of the MCM 120-pin connector.
 - b. No; Go to step 9.

9. Measure the resistance between pin 3 of the crankcase pressure sensor and battery ground. Is the resistance less than five ohms?
 - a. Yes; repair the short to ground between pin 3 of the crankcase pressure sensor and ground.
 - b. No; Go to step 10.
10. Measure the voltage between pin 3 of the crankcase pressure sensor harness connector and pin 117 of the MCM 120-pin harness connector. Is the voltage greater than five volts?
 - a. Yes; repair a short to power between pin 3 of the crankcase pressure sensor harness connector and pin 117 of the MCM 120-pin harness connector.
 - b. No; Go to step 11.
11. Measure the voltage between pin 2 of the crankcase pressure sensor and battery ground. Is there voltage present?
 - a. Yes; repair a short to power between pin 2 of the crankcase pressure sensor harness connector and pin 102 of the MCM 120-pin harness connector.
 - b. No; Go to step 12.
12. Measure the voltage between pin 1 of the crankcase pressure sensor and battery ground. Is there voltage present?
 - a. Yes; repair a short to power between pin 1 of the crankcase pressure sensor harness connector and pin 60 of the MCM 120-pin harness connector.
 - b. No; replace the crankcase pressure sensor.