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Service Information Bulletin

SUBJECT	DATE
SPN 5927 (MCM) (GHG17) SPN 5927 (MCM) (GHG14)	September 2016

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0191	GHG17 DD Platform	SPN 5927/FMI 7 - GHG17	Updated GHG17 HD diagnostic procedures
DDC-SVC-MAN-0084	GHG14 DD Platform	SPN 5927/FMI 7 - GHG14	Updated GHG14 HD diagnostic procedures

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2 SPN 5927/FMI 7 - GHG17

Water Pump Mechanical Defect Detected

Table 1.

SPN 5927/FMI 7	
Description	This Code Logs When an Error Has Been Detected on the Water Pump Speed
Monitored Parameter	Water Pump Speed
Typical Enabling Conditions	Always Enabled
Monitor Sequence	None
Execution Frequency	Always Enabled
Typical Duration	Two Seconds
Dash Lamps	CEL
Engine Reaction	25% Derate
Verification	Engine Running

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

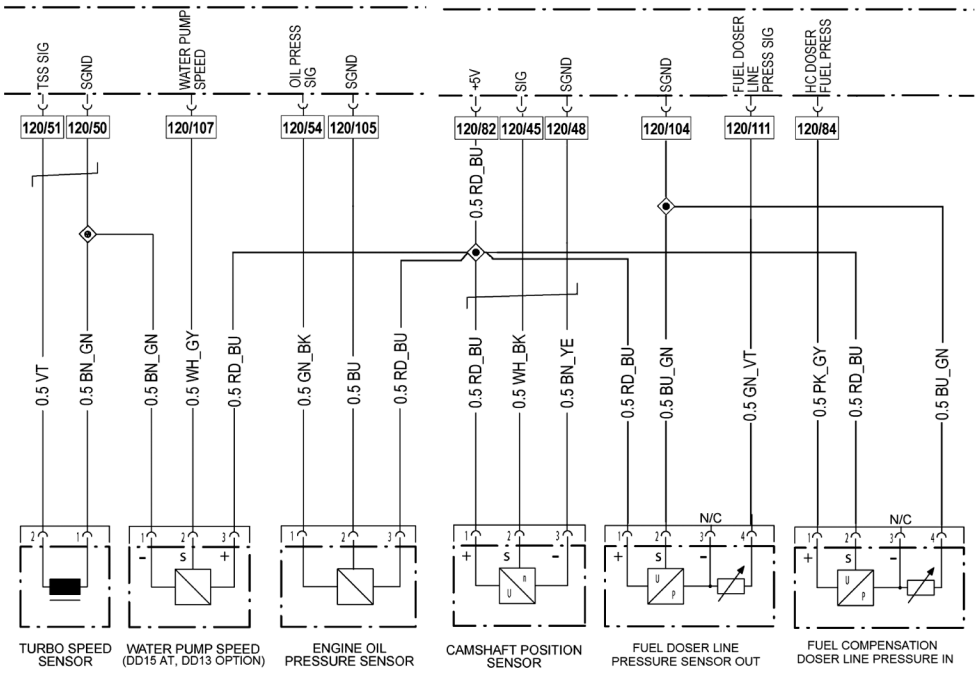
To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: ENGINE EXHAUST

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

This fault can be caused by:

- Water Pump Speed Less Than Commanded Threshold
- Coolant Temperature In High
- Coolant Temperature Out
- Intake Temperature High
- Engine Protection Mode



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Check as follows:

1. Check for multiple codes. Are there any other active cooling system faults?
   a. Yes; repair those faults first.
   b. No; Go to step 2.
2. With engine cold, compare coolant inlet and coolant outlet temperatures. Are the temperatures within 14°C (25°F) of each other?
   a. Yes; Go to step 3.
   b. No; check coolant sensor resistance. Refer to chart for specifications; replace sensor which is out of range.

Table 2.

Coolant Sensor Resistance Chart							
Temp (°C)	Temp (°F)	Resistance Nominal (ohms)	Resistance Low (ohms)	Resistance High (ohms)	Nominal Voltage (V)	Voltage Low (V)	Voltage High (V)
0	32	5872.8	5496.4	6249.2	2.56	2.51	2.61
10	50	3769	3640.3	3897.7	2.37	2.33	2.41
20	68	2480.7	2260.0	2701.4	2.14	2.05	2.22
30	86	1693.2	1613.4	1773.0	1.89	1.83	1.95
35	95	1401.1	1338.4	1463.8	1.75	1.69	1.81
40	104	1166.8	1117.5	1216.1	1.62	1.56	1.67
50	122	829.5	798.2	860.8	1.36	1.30	1.41
60	140	593.8	574.5	613.1	1.12	1.07	1.17
70	158	435.4	423.1	447.7	0.91	0.86	0.95

3. Check for coolant loss.
4. Check thermostat operation.
5. Check for blockage in radiator and Charge Air Cooler (CAC).
6. Check fan belt condition (slippage).

7. Check for proper location of fan shroud.
8. Check for proper radiator hose condition (no collapsed hoses).
9. Check for proper viscous fan operation.
10. Are any cooling system issues present?
    a. Yes; repair cooling system issues first.
    b. No; Go to step 11.
11. Connect to DiagnosticLink ®.
12. Turn the ignition ON (key ON, engine OFF).
13. Monitor water pump speed signal. Does water pump speed equal engine speed?
    a. Yes, Go to step 14.
    b. No, Go to step 17.

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- Do not modify or tamper with the exhaust system or emission control system.

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WARNING: ENGINE EXHAUST

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

14. Start engine and bring to operating temperature of 85°C (185°F).
15. Does engine reach operating temperature of 85°C (185°F)?
    a. Yes; Go to step 16.
    b. No; service the engine cooling system thermostat. Refer to section "Removal of the Engine Coolant Thermostat and Seal".
16. Monitor water pump speed signal with engine at operating temperature. Does water pump speed equal engine speed?
    a. Yes; clear the fault and verify repair. If the code returns, Go to step 17.
    b. No; Go to step 17.
17. Turn the ignition OFF.
18. Disconnect the water pump harness connector.
19. Disconnect the MCM 120-pin connector.
20. Measure the resistance between pins 1 and 2 of the water pump speed sensor harness connector (engine harness side). Is the resistance greater than 10K ohms?
    a. Yes; Go to step 21.
    b. No; repair the short between pins 1 and 2 of the water pump harness connector and pins 107 and 50 of the MCM 120-pin connector.
21. Measure the resistance between pin 2 of the water pump speed sensor harness connector and pin 107 of the MCM 120-pin connector. Is the resistance less than five ohms?
    a. Yes; Go to step 22.
    b. No; repair the wire between pin 2 of the water pump speed sensor harness connector and pin 107 of the MCM 120-pin connector.

22. Measure the resistance between pin 1 of the water pump speed sensor harness connector and pin 50 of the MCM 120-pin connector. Is the resistance less than five ohms?
    a. Yes; Go to step 23.
    b. No; repair the wire between pin 1 of the water pump speed sensor harness connector and pin 50 of the MCM 120-pin connector.
23. Connect the MCM 120-pin connector.
24. Turn the ignition ON (key ON, engine OFF).
25. Measure the voltage between pin 3 on the harness side of the water pump speed sensor harness connector and ground. Is the voltage less than five volts?
    a. Yes; repair the open wire between pin 3 of the water pump speed sensor harness connector and pin 82 of the Motor Control Module (MCM) 120-pin connector.
    b. No; Go to step 26.
26. Measure the resistance between pin 3 of the water pump speed sensor harness connector and pin 82 of the MCM 120-pin connector. Is the resistance less than five ohms?
    a. Yes; replace the water pump.
    b. No; repair the wire between pin 3 of the water pump speed sensor harness connector and pin 82 of the MCM 120-pin connector.

3 SPN 5927/FMI 7 - GHG14

Water Pump Mechanical Defect Detected

Table 3.

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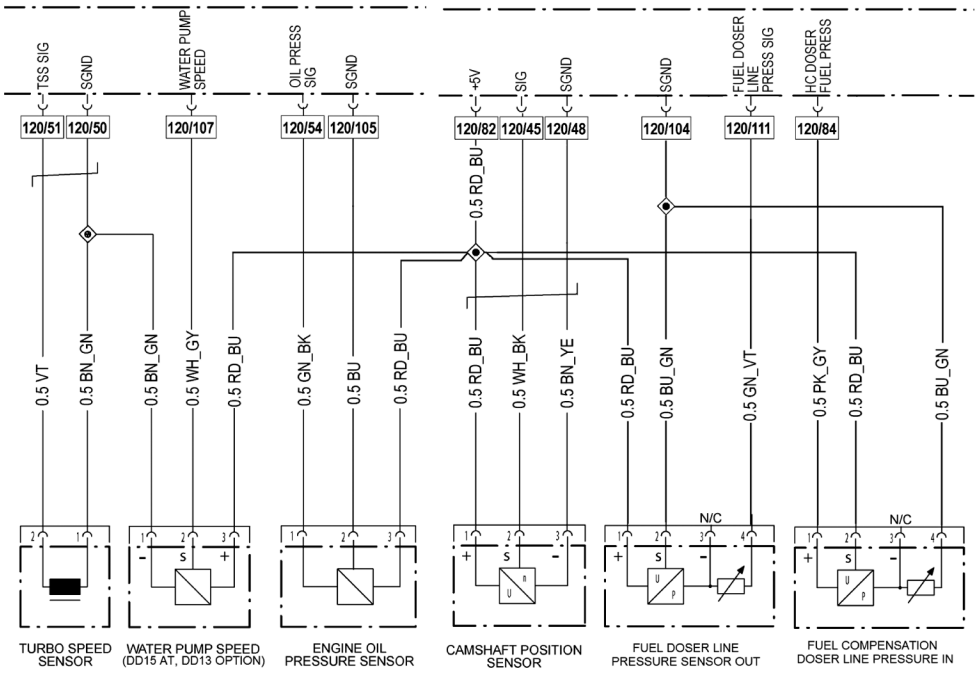

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    a. Yes; Go to step 22.
    b. No; repair the wire between pin 2 of the water pump speed sensor harness connector and pin 107 of the MCM 120-pin connector.

22. Measure the resistance between pin 1 of the water pump speed sensor harness connector and pin 50 of the MCM 120-pin connector. Is the resistance less than five ohms?
    a. Yes; Go to step 23.
    b. No; repair the wire between pin 1 of the water pump speed sensor harness connector and pin 50 of the MCM 120-pin connector.
23. Connect the MCM 120-pin connector.
24. Turn the ignition ON (key ON, engine OFF).
25. Measure the voltage between pin 3 on the harness side of the water pump speed sensor harness connector and ground. Is the voltage less than five volts?
    a. Yes; repair the open wire between pin 3 of the water pump speed sensor harness connector and pin 82 of the Motor Control Module (MCM) 120-pin connector.
    b. No; Go to step 26.
26. Measure the resistance between pin 3 of the water pump speed sensor harness connector and pin 82 of the MCM 120-pin connector. Is the resistance less than five ohms?
    a. Yes; replace the water pump.
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