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Service Information Bulletin

SUBJECT	DATE
SPN 3563 / FMI 21	January 2019

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0191	GHG17 DD Platform	SPN 3563 (MCM) (GHG17)	HDEP GHG17 engines are not equipped with turbo wastegates. Steps in this troubleshooting involving wastegates were removed.

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 3563/FMI 21 - GHG17

Ambient and Inlet Manifold Pressure Difference (High Box)

Table 1.

SPN 3563/FMI 21			
Description	This Fault Sets When Ambient and Inlet Manifold Pressure Difference is Out of Range Under a Load		
Monitored Parameter	Inlet Manifold Pressure and Barometric Pressure		
Typical Enabling Conditions	**Engine Parameter**	**Min**	**Max**
	Engine Speed (rpm)	1350	1800
	Engine Torque (N·m)	1400	3000
	Intake Air Throttle Position (%)		5
	Engine Coolant Outlet Temperature °C (°F)	65 (149)	
Monitor Sequence	None		
Execution Frequency	Continuous When Enabling Conditions Met		
Typical Duration	40 Seconds		
Dash Lamps	SEL, CEL, MIL		
Engine Reaction	25% Derate + Engine Shutdown		
Verification	Once Engine is at Standard Operating Temperature, Drive at Highway Speed with Loaded Trailer Between 1350 To 1800 rpm Continuously for Five Minutes.		

Check as follows:

1. Inspect the front grill for air blockage including winter fronts, plows, or large hose reels. Is any blockage found?
    a. Yes; repair as needed.
    b. No; Go to step 2.
2. Inspect hood seals. Are seals missing or damaged?
    a. Yes; repair as needed.
    b. No; Go to step 3.
3. Inspect the entire air intake system, including the Charge Air Cooler (CAC), for leaks and/or restrictions. Are any air intake system leaks or restrictions found?
    a. Yes; repair as necessary. Verify repairs.
    b. No; Go to step 4.
4. Using DiagnosticLink ®, measure barometric pressure. Is barometric pressure above 69 kPa (10 psi) and below 110 kPa (16 psi)?
    a. Yes; Go to step 5.
    b. No; replace the Motor Control Module (MCM). Refer to section "Removal of the Motor Control Module". Verify repairs.
5. Using DiagnosticLink, compare inlet manifold pressure to barometric pressure. Is the inlet manifold pressure within 10.3 kPa (1.5 psi) of barometric pressure?
    a. Yes; Go to step 8.
    b. No; Go to step 6.
6. Disconnect the inlet manifold pressure sensor harness connector.
7. Inspect the inlet manifold pressure sensor and harness connector for signs of damaged, bent, spread, corroded, or unseated (pushed out) pins and signs of moisture in the connector or wire damage near the connector. Is any damage found?
    a. Yes; repair as necessary. Verify repairs.
    b. No; replace the intake manifold pressure/temperature sensor. Refer to section "Removal of the Intake Pressure/ Temperature Sensor". Verify repairs.

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, never remove any engine component while the engine is running.

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: PERSONAL INJURY

To avoid injury from hot surfaces, wear protective gloves, or allow engine to cool before removing any component.

8. Start the engine.
9. At idle, compare inlet manifold air pressure to barometric pressure.
10. Is the inlet manifold air pressure within 10.3 kPa (1.5 psi) of barometric pressure?
    a. Yes; Go to step 11.
    b. No; replace the intake manifold pressure/temperature sensor. Refer to section "Removal of the Intake Pressure/ Temperature Sensor".
11. Turn the ignition OFF.
12. Visually inspect exhaust system for leaks or damage, including manifold, gaskets, turbine housing, Exhaust Gas Recirculation (EGR) valve, and Aftertreatment Device (ATD). Are any leaks found?
    a. Yes; repair as necessary. Verify repairs. If fault code returns, Go to step 13.
    b. No; Go to step 13.
13. Turn the ignition ON (key ON, engine OFF).
14. Using DiagnosticLink, monitor EGR delta P voltage (pin 109).
15. Is the EGR delta P voltage between 0.55 and 0.83 volts?
    a. Yes; Go to step 18.
    b. No; Go to step 16.
16. Remove the EGR delta P sensor from the mounting pad; leave electrical harness connected.
17. Is the EGR delta P voltage between 0.55 and 0.83 volts?
    a. Yes; Go to step 18.
    b. No; replace the EGR delta P sensor. Refer to section "Removal of the Delta P Sensor". Verify repairs.
18. Turn the ignition OFF.
19. Inspect the EGR delivery pipe delta P pressure ports for blockage. Is any blockage found?
    a. Yes; clean the venturi pipe and reinstall the sensor. Verify repairs.
    b. No; Go to step 20.
20. Remove the EGR cooler hot pipe, EGR crossover pipe and delivery pipe and inspect for excessive build-up or blockage. Is any excessive build-up or blockage found?
    Refer to section "Removal of the Exhaust Gas Recirculation Hot Pipe".
    Refer to section "Removal of the Exhaust Gas Recirculation Venturi".

a. Yes; clean piping and replace EGR cooler. Verify repairs.
b. No; Go to step 21.

21. Disconnect the EGR valve actuator pull rod. Inspect the ball sockets on the pull rod for free movement. Do the sockets rotate or move freely?
    a. Yes; Go to step 22.
    b. No; replace the EGR valve actuator pull rod. Verify repairs.
    For the DD13 and DD15: Refer to section "Removal of the DD13 and DD15 Exhaust Gas Recirculation Valve Actuator Pull Rod".
    For the DD16: Refer to section "Removal of the DD16 Exhaust Gas Recirculation Valve Actuator Pull Rod".

NOTE: Some resistance is normal; however, the actuator should not bind in any particular spot.

22. Physically move the EGR butterfly from stop-to-stop to check for full travel (some drag is normal). Verify EGR valve moves. Does the EGR butterfly move stop-to-stop?
    a. Yes; reconnect the EGR valve actuator pull rod to the EGR valve and EGR actuator. Clear codes and verify repairs. If fault returns, Go to step 23.
    b. No; replace the EGR valve. Verify repairs.
    For the DD13 and DD15: Refer to section "Removal of the DD13 and DD15 Exhaust Manifold"
    For the DD16: Refer to section "Removal of the DD16 Exhaust Manifold"
    For the DD13 and DD15: Refer to section "Removal of the DD13 and DD15 Exhaust Gas Recirculation Valve"
    For the DD16: Refer to section "Removal of the DD16 Exhaust Gas Recirculation Valve"
23. Inspect the turbocharger for damage. Is any damage present?
    a. Yes; repair as necessary. Verify repairs.
    If fault returns, for AT engines, Go to step 25.
    If fault returns, for Turbo-Compound (TC) engines, Go to step 24.
    b. No; for AT engines, Go to step 25.
    For TC engines, Go to step 24.
24. Inspect the axial power turbine for damage. Is any damage present?
    a. Yes; repair as necessary. Clear codes and verify repairs. If fault returns, Go to step 25.
    b. No; Go to step 25.
25. Turn the ignition ON (key ON, engine OFF).
26. Inspect the Diesel Oxidation Catalyst (DOC) pressure sensor tube and elbow and the Diesel Particulate Filter (DPF) pressure sensor tube and elbow for leaks, kinks, or blockages. Are any leaks, kinks, or blockages found?
    a. Yes; repair as necessary. Verify repairs.
    b. No; Go to step 27.

WARNING: ENGINE EXHAUST

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

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: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

27. Start engine, allow to warm-up until coolant temperature is greater than 65°C (149°F).

NOTE: Normal DOC pressure is less than 10 kPa (1.5 psi) for a 1-Box™ emissions package and 13 kPa (1.9 psi) for a Two-Box option.

28. Using DiagnosticLink, monitor DOC inlet pressure while performing a parked regeneration. Refer to section "Performing a Parked Regeneration - GHG17". Does the DOC inlet pressure start out high and stay high?
    a. Yes; the DOC(s) are plugged. Perform DOC unplug routine. Refer to section "GHG17 Diesel Oxidation Catalyst Face Cleaning". Verify repairs.
    b. No; if DOC inlet pressure starts out high and then decreases, the DOC(s) were plugged and the Parked Regeneration cleared them. Clear any fault codes. Verify repairs. If DOC pressure reading is low or fault code returns, Go to step 29.
29. Turn the ignition OFF.
30. Disconnect the MCM 120-pin connector.
31. Inspect the MCM 120-pin connector and the 120-pin harness connector for signs of corrosion, spread, unseated (pushed out) or damaged pins, connector seal for damage (signs of water or oil intrusion) or signs of wire damage. Are any signs of damage found?
    a. Yes; repair as necessary. Verify repairs.
    b. No; replace MCM. Refer to section "Removal of the Motor Control Module". Verify repairs.

