1 01 41-17

Service Information Bulletin

SUBJECT	DATE
SPN 2659 (MCM) (EPA10)	January 2017

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0084	EPA10 DD Heavy Duty	SPN 2659/FMI 18 - EPA10	This is a new procedure for this section and should replace the section in PSL that states this fault is an Advanced Diagnostic only.

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.

13400 Outer Drive, West, Detroit, Michigan 48239-4001
Telephone: 313-592-5000
www.demanddetroit.com

2 SPN 2659/FMI 18 - EPA10

Exhaust Gas Recirculation Flow Target Error Diagnostic - Low Flow

Table 1.

SPN 2659/FMI 18	
Description	This Fault Code Sets When the Difference Between the Actual EGR Flow and the Commanded EGR Flow is Lower than a Calibrated Threshold
Monitored Parameter	EGR Mass Flow
Typical Enabling Conditions	Desired EGR Mass Flow greater than .08, EGR in Closed-Loop Control, CAC Outlet Temperature greater than 0°C (32°F), Engine Speed 1080 to 2500 rpm, Engine Torque 200 to 2500 N·m (148 to 1844 lb·ft), Coolant Temperature greater than 65°C (149°F), Ambient Temperature greater than -8°C (18°F) Ambient, Barometric Pressure greater than 755 mbar (11 psi)
Monitor Sequence	None
Execution Frequency	Always Enabled
Typical Duration	20
Dash Lamps	MIL
Engine Reaction	None
Verification	Start Engine, Warm Up so that Coolant Temperature is greater than 65°C (149°F), Ensure Ambient Temperature greater than -8°C (18°F), Ambient Barometric Pressure greater than 755 mbar (11 psi)

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.

Check as follows:

1. Connect DiagnosticLink ®.
2. Turn the ignition ON (key ON, engine OFF).
3. Check for multiple fault codes. Are any of the following fault codes present?
   - SPN 411/FMI 2, FMI 3, FMI 4, FMI 13
   - SPN 1636/FMI 3, FMI 4
   - SPN 2791/FMI 2, FMI 7, FMI 9, FMI 11, FMI 12, FMI 13, FMI 14, FMI 16, FMI 18, FMI 31

- SPN 3563/FMI 3, FMI 4, FMI 10
  a. Yes; diagnose the other fault codes first.
  b. No; Go to step 4.

4. Check the DPF Zone; is the DPF zone zero?
   a. Yes; Go to step 5.
   b. No; perform a parked regeneration.
5. Monitor the EGR delta pressure voltage at Key ON, Engine OFF. Is the voltage between 0.55 and 0.83 volts?
   a. Yes; Go to step 12.
   b. No; Go to step 6.
6. Turn the ignition OFF.
7. Disconnect and inspect the EGR delta pressure sensor electrical connector. Is there damage, corrosion, or fretting present?
   a. Yes; replace the delta pressure sensor and the pigtail. Refer to section "Removal of the Delta P Sensor". Verify repair.
   b. No; Go to step 8.
8. Remove the EGR delta pressure sensor and inspect the ports. Refer to section "Removal of the Delta P Sensor". Is there a restriction or contamination present?
   a. Yes; clean the delta pressure sensor and clean the ports in the venturi pipe.
   b. No; Go to step 9.
9. Reconnect the EGR delta pressure sensor connector while the sensor is still removed from the venturi pipe.
10. Turn the ignition ON (key ON, engine OFF).
11. Monitor the EGR delta pressure voltage at Key ON, Engine OFF. Is the voltage between 0.55 and 0.83 volts?
    a. Yes; clean the ports on the venturi pipe.
    b. No; replace the Delta Pressure sensor. Refer to section "Installation of the Delta P Sensor". Verify repair.
12. Compare the barometric pressure reading to the local barometric pressure for your area. Is the barometric pressure within 69 mbar (1 psi) of the barometric pressure for your area?
    a. Yes; Go to step 13.
    b. No; replace the MCM. Refer to section "Removal of the Motor Control Module". Verify repair.
13. Compare the intake manifold pressure sensor reading to the barometric pressure sensor reading. Is the intake manifold pressure sensor reading within 103 mbar (1.5 psi) of the barometric pressure reading?
    a. Yes; Go to step 15.
    b. No; Go to step 14.
14. Disconnect and inspect the intake manifold pressure sensor electrical connector. Is there damage, corrosion or fretting present?
    a. Yes; repair as necessary.
    b. No; replace the intake manifold pressure sensor. Refer to section "Removal of the Intake Pressure/Temperature Sensor". Verify repair.
15. Compare the intake manifold temperature to the Charge Air Cooler (CAC) outlet temperature. Is the intake manifold temperature within plus or minus 10°C (18°F) of the CAC outlet temperature?
    a. Yes; Go to step 17.
    b. No; Go to step 16.
16. Disconnect and inspect the intake manifold temperature sensor electrical connector. Is there any damage, corrosion, or fretting present?
    a. Yes; repair as necessary. Verify repair.
    b. No; replace the intake manifold temperature sensor. Refer to section "Removal of the Intake Manifold Air Temperature Sensor". Verify repair.
17. Remove the EGR Delta Pressure sensor and inspect the ports. Is there a restriction or contamination present?
    a. Yes; clean the Delta Pressure sensor and clean the ports in the venturi pipe. Refer to section "Cleaning of the Exhaust Gas Recirculation Venturi Pipe Delta P Sensor Ports". Verify repair.
    b. No; Go to step 18.
18. Remove and inspect the EGR hot pipe. Refer to section "Removal of the Exhaust Gas Recirculation Hot Pipe". Are there any restrictions present in the EGR hot pipe?
    a. Yes; clean the EGR system. Verify repair.

Refer to section "Cleaning of the DD13 Exhaust Gas Recirculation System"
Refer to section "Cleaning of the Turbo Compound DD15 and DD16 Exhaust Gas Recirculation Systems"

b. No; Go to step 21.

19. Move EGR pull rod back and forth by hand while watching the EGR valve. Does the EGR flap move when the pull rod is moved back and forth?
    a. Yes, Go to step 20.
    b. No; replace the EGR valve. Verify repair.
       Refer to section "Removal of the DD15 and DD16 Exhaust Gas Recirculation Valve"
       Refer to section "Removal of the Exhaust Manifold" for the DD13 engine.
20. Remove and inspect the EGR crossover tube, mixer pipe, and venturi pipe. Are there any restrictions present?
    a. Yes; clean the EGR system. Verify repair.
       Refer to section "Cleaning of the DD13 Exhaust Gas Recirculation System"
       Refer to section "Cleaning of the Turbo Compound DD15 and DD16 Exhaust Gas Recirculation Systems"
    b. No; Go to step 21.
21. Inspect the EGR cooler. Are there any restrictions present in the EGR cooler?
    a. Yes; clean the EGR system. Verify repair.
       Refer to section "Cleaning of the DD13 Exhaust Gas Recirculation System"
       Refer to section "Cleaning of the Turbo Compound DD15 and DD16 Exhaust Gas Recirculation Systems"
    b. No; replace the Delta P sensor. Refer to section "Removal of the Delta P Sensor". Verify repair.

