SPN 2659 FMI 16 - Engine Exhaust Gas Recirculation 1 Mass Flow Rate : Data Valid But Above Normal Operating Range - Moderately Severe Level

Fault Overview
Fault code sets when Engine Control Module (ECM) detects feedback from Mass Air Flow (MAF) Sensor indicating air flow through the engine is below expected setpoint for given Exhaust Gas Recirculation Valve (EGRV) position.

Lamp Reaction
Malfunction Indicator Lamp (MIL) will illuminate when this fault is detected during two consecutive drive cycles.

Associated Faults

SPN 91	SPN 102	SPN 641	SPN 724
SPN 1209	SPN 2623	SPN 2791	SPN 5298

Fault Facts
None

Drive Cycle to Determine Fault Status
Road Test

Possible Causes

- Soot build up on EGRV
- Failed EGRV
- Failed VGT actuator
- Failed Turbocharger

Step 1	Check for associated fault codes.	Decision
Use Electronic Service Tool (EST) with Navistar ® Engine Diagnostics, check Diagnostic Trouble Codes (DTC) list for Associated Faults .		Yes: Go to Step 2.
Is EST DTC list free of Associated Faults?		No: Repair Associated Faults. After repairs are complete, retest for SPN 2659 FMI 16.

Step 2	Inspect connections at Exhaust Back Pressure (EBP) sensor.	Decision
A. Key OFF. B. Disconnect EBP sensor connector. C. Check EBP sensor and connector terminals for: damaged or pinched wires; corroded terminals; loose, bent, or broken pins; or broken connector housing.		Yes: Go to Step 3.
Are EBP sensor, connector harness, and terminals clean and undamaged?		No: Repair connector, harness, or terminal damage. After repairs are complete, retest for SPN 2659 FMI 16.

Step 3	Verify Mass Air Flow (MAF) changes when Exhaust Gas Recirculation Valve (EGRV) is commanded ON.	Decision
Perform Air Management Test .		Yes: End diagnostics, retest for SPN 2659 FMI 16.
Does MAF signal decrease when EGR valve is 100% during test?		No: Go to Step 4.

Step 4	Verify EGRV can meet commanded position.	Decision
Perform EGR Valve Position Test .		Yes: Go to Step 5.
Does EGRV meet expected commanded position of test?		No: Replace EGRV. After repairs are complete, retest for SPN 2659 FMI 16.

Step 5	Check if VGT can meet commanded position.	Decision
Perform VGT Position Test .		Yes: End diagnostics, retest for SPN 2659 FMI

	16.
Does VGT meet commanded position?	No: Go to Step 6.

Step 6	Check VGT actuator for proper motion.	Decision
A. Key OFF. B. Disconnect VGT Actuator connector. C. Disconnect VGT linkage at VGT Actuator. **Important:** Leave Key OFF and VGT actuator connector disconnected while VGT Actuator linkage is disconnected. D. Manually move VGT Actuator from fully open to fully closed and back to open. E. Reinstall VGT Actuator linkage on to turbocharger before reconnecting actuator connector.		Yes: Replace entire VGT. After repairs are complete, perform MAF Sensor Calibration and retest for SPN 2659 FMI 16.
Is VGT actuator free from sticking or binding?		No: Replace VGT actuator only. After repairs are complete, perform MAF Sensor Calibration and retest for SPN 2659 FMI 16.

End Diagnostic Tests
After performing diagnostic steps, if SPN 2659 FMI 16 remains, verify each step was completed correctly and proper decision was made. Return to fault code diagnostics.

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