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Coding Information

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Title: 2659-10 Slow EGR Response Diagnostics

Applies To: EPA 10 N13B Engines

CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

01/13/2016 - Initial Article Release

N13B Visual Identification (see image below)

N13B Identification by ESN 4400001 and up



DESCRIPTION

This document is intended to provided updated diagnostics for fault code 2659-10 in N13B engines.

This document temporarily replaces : 2659-10 Diagnostics in Diagnostic Manual 0000004601.

SYMPTOM(s)

Diagnostic Trouble Code(s) & Dashboard Indicator Light(s):

DTC/Light	Description
SPN 2659 FMI 10 (link to FCAP)	Slow EGR Response

Customer Observations or Concerns:

Malfunction Indicator Lamp (MIL) and active or pending fault 2659-10.

SPECIAL TOOL(s) / SOFTWARE

Tool Description	Tool Number	Comments	Instructions
Electronic Service Tool		Any EST with ServiceMaxx Software	

SERVICE PARTS INFORMATION

Description	Part Number	Quantity Required	Notes
EGR Valve Gasket	3018687C1	2	Bellows Gasket (s) when removing bellows

DIAGNOSTIC STEP(s)

Fault Overview

Fault code sets when Engine Control Module (ECM) detects feedback from Oxygen Sensor (O2S) indicating oxygen levels in exhaust are responding too slow to Exhaust Gas Recirculation Valve (EGRV) movement commands.

Lamp Reaction

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

Associated Faults

SPN 27 (EGR) ; SPN 724 (O2S) ; SPN 2659 FMI 20 and 21 (AMS), SPN 2791 (EGR).

Fault Facts

None

Drive Cycle to Determine Fault Status

Road Test

Possible Causes

- Soot build-up on EGRV
- Failed EGRV
- Soot build-up in EGR Cooler

 WARNING:	
To prevent property damage, personal injury, and / or death, ensure key is in the ON position, and the engine OFF position during testing.	

**WARNING:**

To prevent personal injury and / or death, read all safety instructions in the "Safety Information" section of the Service / Diagnostic Manual prior to performing procedures.

CAUTION:

To prevent property damage, engine / component damage, ensure key is in the ON position, and the engine OFF position during testing.

Step	Action	Decision
1	DIAGNOSTIC: Use Electronic Service Tool (EST) with ServiceMaxx™ software, check Diagnostic Trouble Codes (DTC) list for Associated Faults . Is EST DTC list free of Associated Faults?	Yes. Go to Step 2.
		No. Repair Associated Faults. After repairs are complete, retest for SPN 2659 FMI 10.

Step	Action	Decision
2	DIAGNOSTIC: 1. Key off. 2. Disconnect EGR Valve connector 3. Check EGR Valve and connector terminals for: damage or pinched wires; moisture or corroded terminals; loose, bent or broken pins; or broken connector housing. Are EGRV connector, harness, and terminals clean and undamaged?	Yes. Go to Step 3.
		No. Repair connector, harness, or terminal. After repairs are complete, retest for SPN 2659 FMI 10.

Step	Action	Decision
3	DIAGNOSTIC:	Yes. Clear codes and release the vehicle. Do NOT replace the EGR Valve.

Remove EGR cooler bellow tubes (see *Engine Service manual*). Perform EGR Valve Position Test and inspect for shaft and bore for soot build-up blocking EGRV movement. Verify EGRV can meet commanded position.

A calibration will be released to relieve this fault from setting.

No. Replace EGRV. After repairs are complete, retest for SPN 2659 FMI 10.

Perform [EGR Valve Position Test](#). (see below)

2 ENGINE SYSTEM TESTS AND INSPECTIONS

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EGR Valve Position Test

Overview

Determine if Exhaust Gas Recirculation Valve (EGRV) can meet commanded position and if it is sticking due to debris or carbon build-up.

Tools Required

- Electronic Service Tool (EST) with ServiceMaxx™ software
- Interface cable (RP1210B-compliant supporting J1939 and J1708)

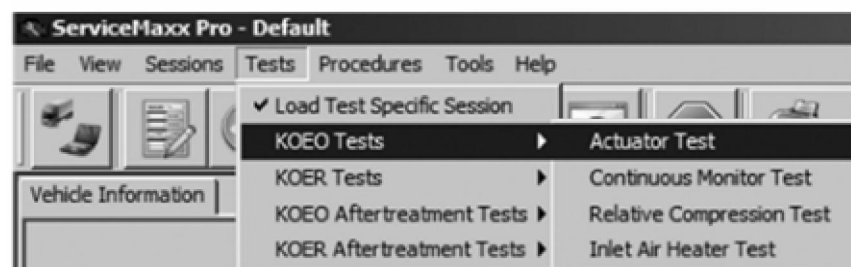
Equipment Condition

1. EGRV heat protection shield removed (see *Engine Service Manual*).
2. Front EGR bellows (between EGR cooler and EGRV) removed (see *Engine Service Manual*).

Test Setup

1. Key-On Engine-Off (KOEO)
2. Connect Electronic Service Tool (EST) to Vehicle Diagnostic Connector and launch ServiceMaxx™ software. (page 2010).

Test Procedure



0000356121

Figure 811 Selecting Actuator Test

1. Select Tests: KOEO Tests > Actuator Test. Follow on-screen instructions.

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2 ENGINE SYSTEM TESTS AND INSPECTIONS

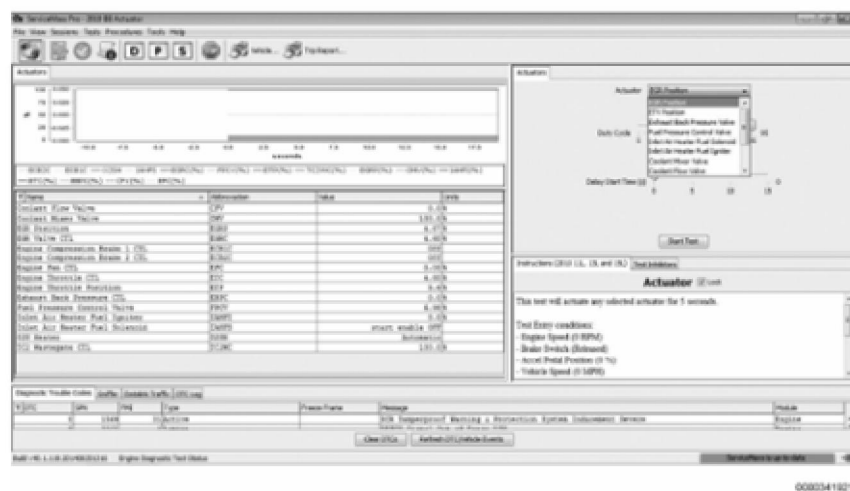


Figure 812 Actuator Control Panel

- From the actuator control panel (Figure 812) select EGR Position and set duty cycle to 95%.
- Press the Start Test button and monitor the EGR Position (EGRP) signal to see if EGRV can meet commanded position.
- After monitoring EGRP signal, set desired delay time to run actuator test again and visually monitor EGRV movement.
- Verify duty cycle is at 95% and press the Start Test button.
- With front EGR bellows(between EGR cooler and EGRV) removed, monitor EGRV movement. Check for debris and carbon build-up in EGRV.
- Repeat steps 2–6 with duty cycle set to 15% in steps 2 and 5.

Expected Outcome

EGRV position will meet ServiceMax™ commanded position, movement of EGRV can be seen, and no debris or carbon build-up restricting EGRV movement.

Follow-On Procedure

None

REPAIR STEP(s)

If the all test pass **DO NOT REPLACE THE EGR Valve** clear codes and release vehicle.

REMOVAL PROCEDURE:

Not Applicable

INSTALLATION PROCEDURE:

Not Applicable

WARRANTY INFORMATION

Warranty Claim Coding:

Group:	12000 - Engines
Noun:	893 - Valve, EGR

Standard Repair Time(s):

Step	Repair	Model	Engine	SRT	Hours
1	Check fault codes	All Models	N13B	T-time	.1
2	Connector check	All Models	N13B	T-time	.1
3	Bellows removal / EGRV butterfly inspection / Visual inspection of Actuator Test	All Models	N13B	T-time	.5

Claim SRT Example:

Claim Comment Suggestion:

In the Claim comments please state if a 2659-10 is active.

Special Requirement(s):

OTHER RESOURCES

[Master Service Information Site](#)

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Feedback Information

Viewed: 376
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