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Service Information Bulletin

SUBJECT	DATE
SPN 2791 (MCM) (EPA07;EPA10)	January 2017

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0084	DD Platform	SPN 2791/FMI 10 - EPA07 - EPA10	Added troubleshooting for the fault code, changing the troubleshooting from being 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.

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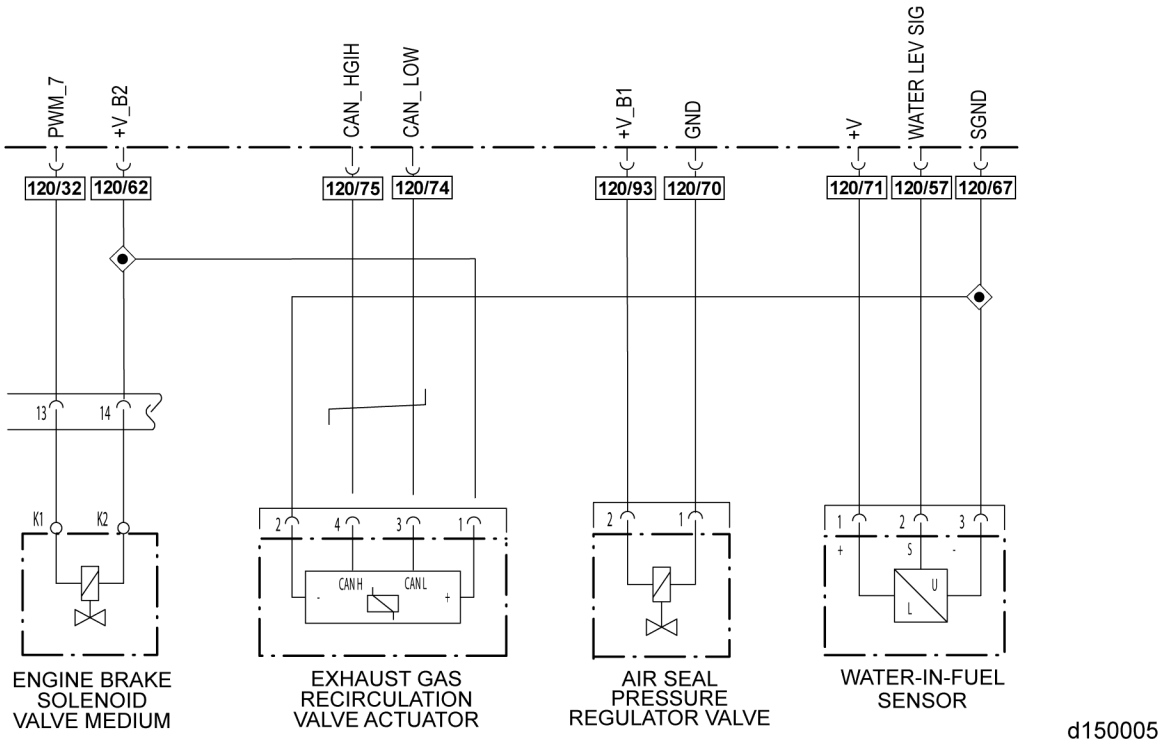
2 SPN 2791/FMI 10 - EPA07 - EPA10

Exhaust Gas Recirculation Actuator Slow Response

Table 1.

SPN 2791/FMI 10	
Description	Exhaust Gas Recirculation (EGR) Actuator Slow Response
Monitored Parameter	EGR Mass Flow Gradient
Typical Enabling Conditions	EGR in Closed-Loop Control, EGR Flow Must Vary, CAC Outlet Temperature greater than 0°C (32°F), Engine Speed 1200 to 2500 rpm, Engine Torque 500 to 2500 N·m, Coolant Temperature greater than 65°C (149°F), Ambient Temperature Greater Than -8°C (17.6°F) Ambient, Barometric Pressure Greater Than 755 mbar, Engine Must Have Not Been in Regeneration Mode for greater than Five Minutes
Monitor Sequence	None
Execution Frequency	Always Enabled
Typical Duration	Five Seconds
Dash Lamps	MIL
Engine Reaction	
Verification	When Ambient Temperature Greater Than -8°C (17.6°F), Barometric Pressure Greater Than 755 mbar, and Engine Has Not Been in Regeneration Mode for greater than Five Minutes, Warm Up Engine such that Coolant Temperature Greater Than 65°C (149°F). Run Vehicle, Varying Throttle To Vary EGR Flow, Insuring Engine Is Operating In Closed-Loop EGR Control And CAC Outlet Temperature Greater Than 0°C (32°F)



Check as follows:

1. Using DiagnosticLink® Standard, check SPN 2791/FMI 31 extended data record #3 “physical data.” Refer to the chart below for the reserved extreme parameter value.

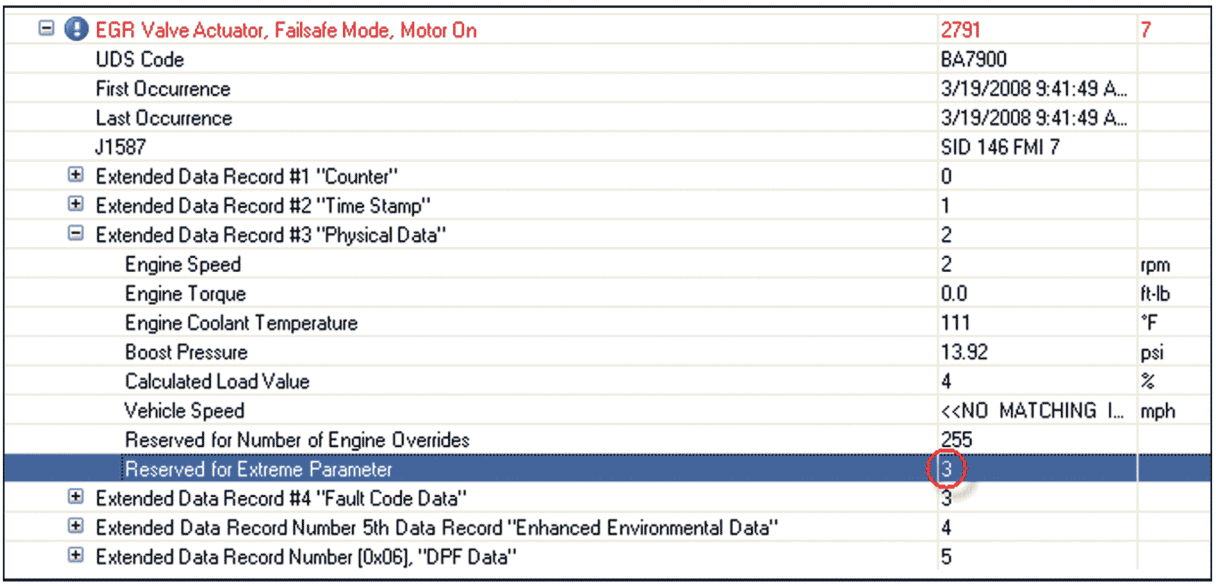


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Table 2.

Reserved Extreme Parameter	Action to Take
3,4,9,10,22,23,65535	Go to step 2.
15,255	Go to step 5.
8,11	Go to step 9.
5,7,20	Replace the EGR valve actuator.
	For the DD13: Refer to section "Removal of the DD13 Exhaust Gas Recirculation Valve Actuator"
	For the DD15 and DD16: Refer to section "Removal of the DD15 and DD16 Delphi © Exhaust Gas Recirculation Valve Actuator"

2. Turn the ignition OFF.

WARNING: PERSONAL INJURY

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

3. Disconnect the Exhaust Gas Recirculation (EGR) valve actuator pull rod. Inspect the ball sockets on the pull rod for free movement. Do the sockets move freely?
   a. Yes; Go to step 4.
   b. No; replace the EGR valve actuator pull rod.
      For the DD13: Refer to section "Removal of the Exhaust Gas Recirculation Valve Actuator Pull Rod"
      For the DD15 and DD16: Refer to section "Removal of the DD15 and DD16 Exhaust Gas Recirculation Valve Actuator Pull Rod"
4. Physically move the EGR butterfly from stop-to-stop to check for full travel (some drag is normal). Does the EGR butterfly move stop-to-stop?

a. Yes; replace the EGR valve actuator.
   For the DD13: Refer to section "Removal of the DD13 Exhaust Gas Recirculation Valve Actuator"
   For the DD15 and DD16: Refer to section "Removal of the DD15 and DD16 Delphi © Exhaust Gas Recirculation Valve Actuator"
b. No; If the EGR butterfly does not move stop-to-stop, replace the EGR valve.
   For the DD13: Refer to section "Removal of the Exhaust Manifold"
   For the DD15 and DD16: Refer to section "Removal of the DD15 and DD16 Exhaust Gas Recirculation Valve"

5. Disconnect the EGR valve actuator harness connector.
6. Turn the ignition ON (key ON, engine OFF).
7. Measure the voltage between pins 1 and 2 of the EGR valve actuator connector (engine harness side). Is the voltage greater than 11 volts?
   a. Yes; Go to step 9.
   b. No; Go to step 8.
8. Turn the ignition OFF. Is the voltage less than 11 volts?
   a. Yes; repair wire between pin 1 of the EGR valve actuator connector harness and pin 62 of the Motor Control Module (MCM) 120-pin connector.
   b. No; repair wire between pin 2 of the EGR valve actuator connector (engine harness side) and pin 67 of the MCM 120-pin connector.
9. Turn the ignition OFF.
10. Measure the resistance between pins 3 and 4 of the EGR valve actuator connector (engine harness side). Is the resistance between 55 and 65 ohms?
    a. Yes; replace the EGR valve actuator.
       For the DD13: Refer to section "Removal of the DD13 Exhaust Gas Recirculation Valve Actuator"
       For the DD15 and DD16: Refer to section "Removal of the DD15 and DD16 Delphi © Exhaust Gas Recirculation Valve Actuator"
    b. No; Go to step 11.
11. Disconnect the Motor Control Module (MCM) 120-pin connector.
12. Measure the resistance between pins 3 and 4 of the EGR valve actuator connector (engine harness side). Is the resistance greater than 10K ohms?
    a. Yes; repair the short between pins 3 and 4 of the EGR valve actuator harness connector and MCM pins 74 and 75.
    b. No; Go to step 13.
13. Measure the resistance between pin 3 of the EGR valve actuator connector harness and pin 74 of the MCM 120-pin connector. Is the resistance greater than three ohms?
    a. Yes; repair the wire between pin 3 of the EGR valve actuator connector harness and pin 74 of the MCM 120-pin connector.
    b. No; Go to step 14.
14. Measure the resistance between pin 4 of the EGR valve actuator connector harness and pin 75 of the MCM 120-pin connector. Is the resistance greater than three ohms?
    a. Yes; repair the wire between pin 4 of the EGR valve actuator connector harness and pin 75 of the MCM 120-pin connector.
    b. No; Go to step 15.
15. Install a test MCM. Clear codes, cycle the ignition and repeat the procedure. Did SPN 2791/FMI 31 become active?
    a. Yes; obtain a log file of active code, note the measurements in all steps, and contact the Detroit™ Customer Support Center at 800-445-1980 for further instruction.
    b. No; reconnect the original MCM. Go to step 16.
16. Is SPN 2791/FMI 31 active with the original MCM?
    a. Yes; replace the MCM. Refer to section "Removal of the Motor Control Module".
    b. No; inspect the connections at the MCM and EGR valve actuator connector harness; repair as necessary.

