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Coding Information

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Title: MaxxForce® 11 and 13 Fuel System Diagnostic Codes and Diagnostic Steps

Applies To: 2008 - 2009 MaxxForce® 11 and 13

DESCRIPTION

MaxxForce® 11 and 13 Fuel System Codes and Diagnostic Steps.

SYMPTOMS

- DTC's related to the fuel system.

POSSIBLE DIAGNOSTIC TROUBLE CODES

DTC	MODULE	DESCRIPTION
2244	ECM	Fuel rail pressure relief valve opened (pressure was too high)
2246	ECM	FRP above or below desired
2247	ECM	HP fuel pump erratic fuel quantity balancing
2248	ECM	Fuel rail pressure above maximum
2335	ECM	FRP unable to build during engine cranking
2371	ECM	Fuel pressure above normal
2372	ECM	Fuel pressure below normal
3333	ECM	Fuel rail pressure above maximum
6913	ECM	AFP above normal with AFD open

ACRONYM DEFINITIONS

FRP - Fuel Rail Pressure Sensor

PLV - Pressure Limiting Valve

FPCV - Fuel Pressure Control Valve

HP - High Pressure

KOEO - Key On Engine Off

AFP - Aftertreatment Fuel Pressure Sensor

AFD - Aftertreatment Fuel Drain Valve

EFP - Engine Fuel Pressure Sensor

AFS - Aftertreatment Fuel Supply Valve

AFT - Aftertreatment

See links at the bottom of this document for more detail with these fuel system acronyms.

DIAGNOSTICS

DTC	MODULE	DESCRIPTION
2244	ECM	Fuel rail pressure relief valve opened (pressure was too high)

The 2244 code is set when the fuel rail pressure is higher than 28,000 psi or can be caused by aerated fuel. When the fuel rail pressure is higher than 28,000 psi the relief valve will open and return to the tank. Follow the diagnostic steps below:

- Check the fuel system for aeration.
- Remove the banjo fitting from the HP rail and install ZTSE4887-1 to HP rail. Run the High Pressure run up test, the test will take the pressure from 7250psi (500bar) to 26,100psi (1800) bar. Note: Its is normal to have a drop or two of fuel returning from the PLV during this test.

DTC	MODULE	DESCRIPTION
2246	ECM	FRP above or below desired

The 2246 will set if the FRP does not match desired. Possible problems are clogged fuel return or supply line, FPCV connection loose, excessive fuel return from head or PLV. Follow the diagnostics steps below:

- Perform low pressure fuel diagnostics (aerated fuel and fuel filter restrictions).
- Test drive the truck and record a Performance session snapshot in ServiceMaxx using the NavCom or Nexiq USB cable for later review. Monitor the FRP to see if it matches the desired FRP.
- Check the return flow from the engine to the tanks for restrictions.
- Check all the electrical connections to the FPCV and FRP. Perform a pin drag test, make sure none of the terminals are spread and then lock them into place.
- Check the fuel return flow at the back of the head per engine diagnostic manual.
- Check the fuel rail pressure relief valve to see if it is leaking per engine diagnostic manual.
- Check the HP fuel pump fuel pressure supply and return flow.
- Check for aeration in the fuel system with the clear hose provided in the MaxxForce® 11 and 13 tool kit. If further assistance is need open a case file with Tech Services.

DTC	MODULE	DESCRIPTION
2247	ECM	HP fuel pump erratic fuel quantity balancing

The 2247 DTC will set if there is air in the low pressure fuel system, leaks on the high pressure fuel system, leaking fuel pressure relief valve, aerated fuel, failed injector or failed High Pressure fuel pump, failed FRP, electrical connections at the FPCV and FRP. Follow the diagnostics steps below:

- Check the connection at the FPCV and FRP sensor. Also, make sure there are no external fuel leaks and check for aeration in the fuel.
- Check the inlet fuel restriction and check for restrictions in the return lines to the fuel tanks.
- Perform a run up test with ServiceMaxx and record the data.
- Perform a high pressure pump test with ServiceMaxx and record the data.
- Check the fuel return flow at the back of the head per engine diagnostic manual.
- Check for fuel leaking from the fuel pressure relief valve per engine diagnostic manual.
- Measure the fuel return flow and pressure from the HP fuel pump per engine diagnostic manual.
- If further assistance is needed, open a case file with Tech Services.

DTC	MODULE	DESCRIPTION
2248	ECM	Fuel rail pressure above maximum
3333	ECM	Fuel rail pressure above maximum

The 2248 and 3333 DTC's will be set if the fuel pressure stays above desired. Possible problems are injectors, failed High Pressure fuel pump, bias or failed FPCV and FRP.

Follow the diagnostic steps below:

- Check for aeration and restrictions in the fuel system.
- Check the electrical connection at the FRP and the FPCV.
- Using ServiceMaxx with the KOEO monitor the FRP sensor reading. It should read 0 +/- 10 psi.
- Perform an injector run up test and see if all the injectors are contributing equally.
- Run the high pressure pump test in ServiceMaxx and monitor the FRP actual and desired. They should be within +/- 1000 psi of each other.
- Test drive the truck and use ServiceMaxx to monitor the FRP actual and desired to see if they are still within +/- 1000 psi range.

DTC	MODULE	DESCRIPTION
2335	ECM	FRP unable to build during engine cranking

The 2335 will set when the FRP is unable to build during engine cranking. Possible problems are clogged primary fuel filter (engine mounted) will cause high fuel pressure readings on the low fuel system side, Davco filter which will cause low fuel pressure on the low fuel system side, failed fuel pump, failed HP fuel system or air in the fuel system. Follow the diagnostic steps below:

- Monitor the low pressure system during cranking ServiceMaxx. If it doesn't achieve 30 to 40 psi at crank continue testing the low pressure fuel system.
- Use ServiceMaxx to monitor the FRP at crank to see if it is matching desired.
- Check the return flow from the back of the head and record.
- Check the Pressure Limiting Valve for return flow at idle, there should be no flow at all.
- If the truck still does not start due to low FRP then unplug the FPCV and monitor the pressure in ServiceMaxx. It should spike over 28,000 psi and then steady out at 11,600 psi.

DTC	MODULE	DESCRIPTION
2371	ECM	Fuel pressure above normal

Code 2371 will set when the low fuel pressure side is above 145 psi. Possible problems are clogged primary fuel filter (engine mounted), clogged fuel return, such as bent or kinked fuel lines. Follow the diagnostic steps below:

- Diagnose the low fuel pressure system as outlined in the diagnostic manual.
- Check the primary fuel filter (engine mounted) for plugging.
- Check the fuel return lines for any restrictions or pinched lines, repair as needed.

DTC	MODULE	DESCRIPTION
2372	ECM	Fuel pressure below normal

The 2372 code will set anytime the low pressure fuel system is below 45 psi. Possible aerated fuel, plugged secondary fuel filter (Davco filter, chassis mounted) and a failed fuel filter stand pipe can be the cause. Follow the diagnostic steps below:

- Check the low pressure fuel system for aeration.
- Verify the EFP sensor is reading correctly with a manual gauge and what the AFP is reading.
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Check the Davco system for the correct filter installed, 50 ppm FS19729 for winter and 7 ppm FS19624 for summer.

- If code 2372 and 6913 are active check the fuel filter stand pipe. The top of the stand pipe should be flat at the edges and level all the way around (no raised sides or lips), see IKNOW article [IK1500045](#)

DTC	MODULE	DESCRIPTION
6913	ECM	AFP above normal with the AFD open

Code 6913 is set when there is fuel pressure detected by the AFP when the AFD valve is open. Possible stuck closed AFD, failed AFP, corroded or damaged AFP circuit. Follow the diagnostic steps below:

- Check the wires for breaks inside the insulation at the connectors for the AFP, AFS and AFD.
- Cut out all zip ties that are pulling on the harness tightly and open up the wire loom for inspection in these areas.
- Check for bent, pushed back or corroded terminals at the ACM connectors.
- Run the AFT system leak test in ServiceMaxx while in the Aftertreatment session. Monitor the AFS, when it opens the AFP should match EFP. When the AFD opens and the AFS closes the AFP should drop down to 0 psi +/- 3 psi.

OTHER RESOURCES

[MaxxForce® 11 and 13 Engine Wiring Diagram 1](#)

[MaxxForce® 11 and 13 Engine Wiring Diagram 2](#)

[EGES420-2 Low Pressure Fuel System](#)

[EGES420-2 High Pressure Fuel System](#)

[EGES420-2 Fuel Quality](#)

[Engine Diagnostic Manual for MaxxForce® 11 and 13 Fuel System EGES420-2](#)

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