



Mack Chassis - Diagnostic Trouble Code (DTC) SPN4094, Check List - US10 Emissions



> Internal Content

EM-USA10 4094 Check-list

Vehicle Information

What is the application of this unit?

Is customer adding DEF more than usual? less than usual? No difference noted? _____

What are the operating conditions when unit faults?

Engine failures that could have contaminated the system with oil, fuel or coolant? _____

What are the total engine hours? _____ total idle hours? _____

Is the customer adding excessive fluids? Oil _____ Coolant _____

Has engine power or fuel economy changed recently? _____

Engine Checks

Perform cylinder balance test with engine at normal operating temperature. Results? _____

Any hard start/stumble complaints? _____

EGR DP Checked per [SNM 11-09A](#).

EGR cooler inspected? _____

EGR valve open and close properly? Disconnect piping to verify _____

128 (EMS) and 233(ACM) have current Software? _____

DEF added to fuel tank can cause corrosion of fuel system. Condition of _____ and overflow? _____



Turbocharger function checks complete?

Turbocharger function checks complete? _____

Remove inlet to DPF, with engine at normal operating temp, snap throttle. Any excessive smoke? _____

Remove the inlet to SCR, With engine at normal operating temp snap throttle. Any smoke? _____

Light smoke at DPF inlet during acceleration is OK, no smoke should exit DPF.

Any signs of soot in piping or stacks, any signs on Nox sensors? _____

Crystal build up in SCR inlet or pipes? _____

SCR - DEF Operations

DEF quality check with refractometer (results) _____

DEF Dosing Pressure: PSI _____ Percentage _____

Doser flow test: Test #2 _____ Test #3 _____

Nox sensor replaced recently? _____

Nox conversion test completed? _____

Regen Data

Does the unit complete a soot regen? _____

What is your maximum T 1: _____ T 2: _____ and T 3: _____ temperatures?

Boost pressure? _____ PSI. Boost sensor part# _____

Turbocharger wheel Speed? _____

Turbocharger VGT position? _____ Turbo serial# _____

Engine Load? _____

DPF last serviced/inspected? _____ Part # DPF _____

DOC last serviced/inspected? _____ Part # DOC _____

AHI system to include 7th injector serviced/inspected/tested? _____

All basic diagnostics should be completed prior to opening a TSS case (NON Warranty).

The 4 hour limit still applies for Warranty purposes. Pressure/smoke test the complete

intake and exhaust systems. There is zero tolerance for leaks in these systems. Next, go over

all the wiring harnesses Chassis and After-treatment. Load test the batteries, validate all

battery power and grounds. Next check the chassis air supply system to be sure the

COALESCING type air dryer cartridge has been serviced. Repair any leaks, electrical and air

system issues before starting diagnostics on the After-treatment system. Complete

diagnostics and repair on any other active DTC'S that may be related.



Tags

[k25036045](#)[us10](#)[spn 4094](#)[mack](#)

Related links and attachments

[SNM 11-09A](#)

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To: Mack Service Managers
Mack Warranty Administrators

Bulletin: SNM 11-09a
Date: Nov 14, 2012
Valid to: Pending
Replaces: N/A
Priority: **HIGH**

From: Reliability

Subject: EGR Delta P ports

The following information is being provided by the VPTNA Team. The intent is to provide guidance regarding issues that may be observed on US10 Trucks in service.

Mack Trucks has released an updated Venturi tube for the MP7, MP8 and MP10 engines that have been coated with a special coating, if you have the updated Venturi **DO NOT** remove the coating this is a non-serviceable part. If during your checks you need to confirm there are no restrictions in the ports use shop air to verify ports are free from restriction. If ports are found to be clogged then replacement of the coated Venturi is required. If your truck is equipped with the old style non-coated Venturi, proceed with cleaning as per directions.



ISSUE DESCRIPTION:

Clogging of the EGR dP ports has been seen on MP7, MP8 and MP10 engines. The port clogging can lead to 5 MPH inducement. The symptoms of this include but are not limited to the following:

Inducement with SPN 4094-18 logged:

Units that have logged SPN 4094 FMI 18 have been found to have a high incidence of EGR dP tube clogging however this is not the only cause for this fault.

SPN 411 FMI 7:

EGR port clogging
EGR flow issues



Engine performance issues with no faults logged:

EGR port clogging can cause complaints of low power, hesitation or stumble.

DO NOT clear faults before investigating all active faults most non-electrical faults are difficult to log and may require extensive vehicle operation to make them become active.

Correction:

If one of the scenarios list above are observed or there is plugging detected for any reason follow the instructions below.

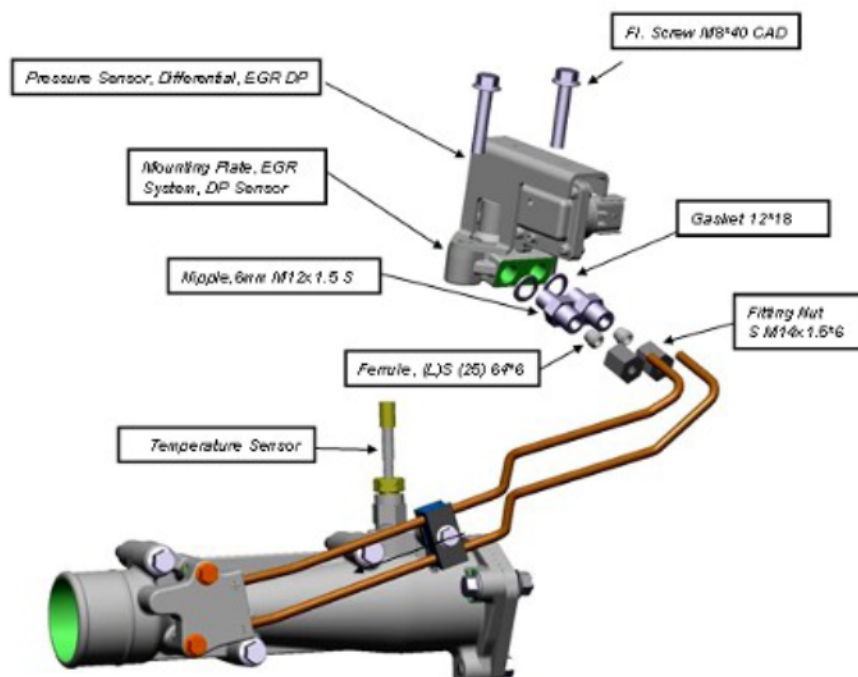
For 11L engines:

Remove the dP sensor from the mounts. Remove the lines and lower mounting block from the Venturi. Check for soot blockages. Clean any blockage from the blocks and plates. Clear tubes if possible. Both tubes and ports should be inspected and cleaned as per cleaning instructions later in this bulletin. If unable to clean soot from the tubes they must be replaced. Inspect the mounting blocks and seals. If any damage to seals or sealing surfaces is found replace components as needed.

Be sure to investigate all relevant faults and symptoms.

11L engines:

2930 – Exhaust Gas Recirculation



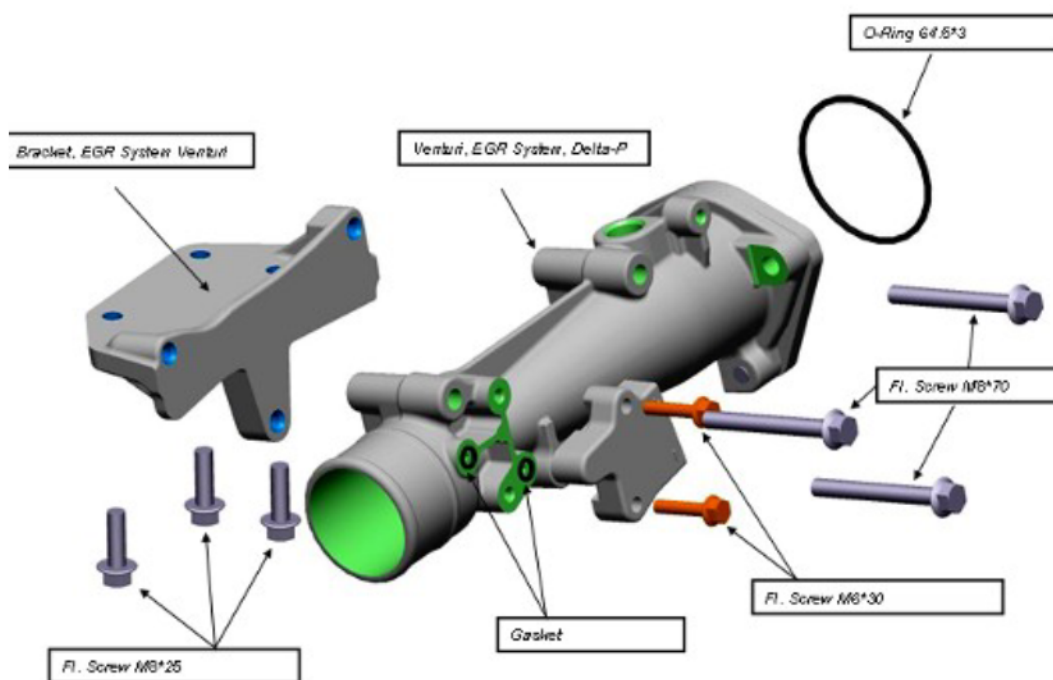
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2930 – Exhaust Gas Recirculation (6 of 10)**For 13L and 16L engines:**

Remove the dP sensor from the mount. Heat the four screws that hold the adaptor to the Venturi (see instructions later in this document). Remove the mounting adaptor block from the Venturi. Check for soot blockages. Clean any blockage from the blocks and plates as per cleaning instructions later in this bulletin. If unable to clean soot from the components they must be replaced. Inspect the mounting blocks and seals. If any damage to seals or sealing surfaces is found, replace components as needed.

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When removing the dP sensor and the mounting adaptor, the adaptor mounting bolts for the 13L and 16L engines have thread lock applied by the component manufacturer. This may contribute to bolt breakage. A gentle application of heat to the side of the Venturi from a propane torch will melt the thread lock and allow the bolt to be removed easily. Removal of the Venturi may be needed to avoid damage to wiring when the heat is applied.

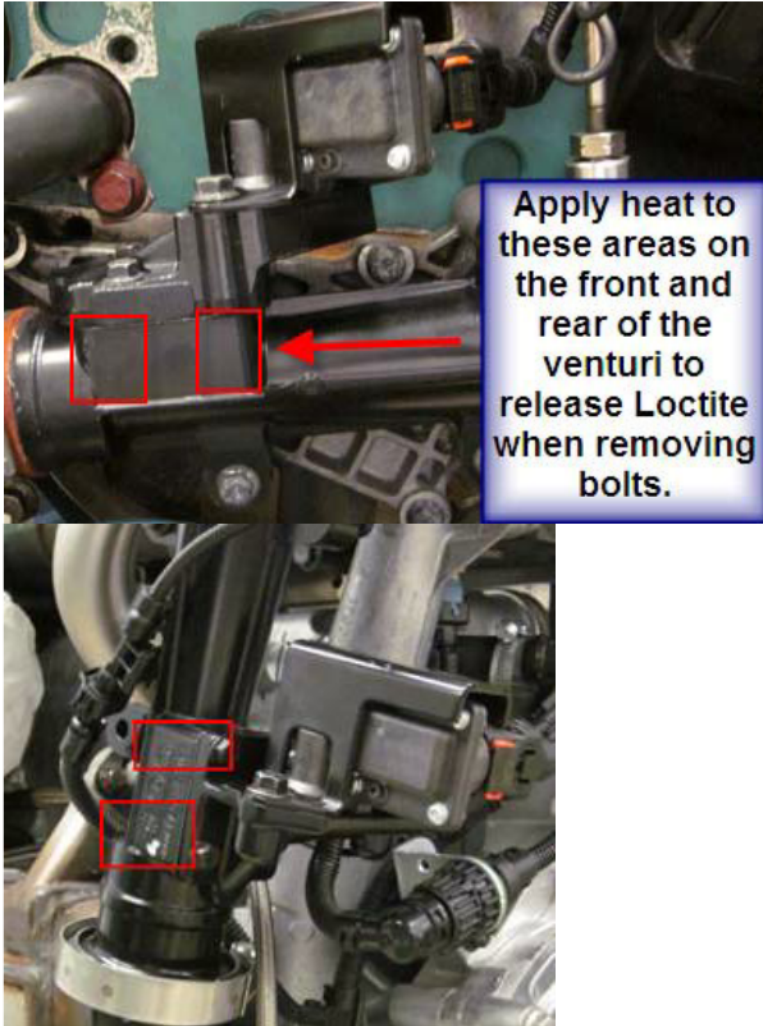
16L





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Cleaning

The components are aluminum and are coated to prevent corrosion. Care must be taken not to damage this coating when cleaning the blockage from the ports and tubes.

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The mounting adaptor in the top picture is not to be reused. The mounting adaptor in the lower picture is borderline. If the coating comes off during proper cleaning then it must be replaced. The corrosive nature of EGR gases will attack the material now and may eventually cause a leak under the seals.

Clean the components with mineral spirits type parts cleaner and a rag. Carburetor cleaner can be used but must not be allowed to soak and must be blown dry after cleaning. For blockages use a Non-marring instrument like the end of a cotton swab, soft tooth brush (do not use a wire brush or scraper) to clear the ports. The dP tubes on the 11L engine can be cleaned with a piece of mechanics wire. If the blockages cannot be cleared or the coating is

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damaged the component must be replaced. Mounting adaptor bolts for the 13L and 16L engines should be reassembled using Loctite 241 or 271 and torqued to proper specs 11L engines do not get Loctite applied.

Torque Specifications:

MountingBlockFlangeScrewM6*30 = 10 ± 1.5 Nm (7.4 ± 1 ft-lb) (89 ± 13 in-lb)

dPSensorFlangeScrewM8*40 = 20 ± 3 Nm (15 ± 2 ft-lb) Tubebracketretainer screw (11L only) = 10 ± 1 Nm (90 ± 9 in-lb). EGRdifferentialpressurefitting = 20 ± 3 Nm (15 ± 2 ft-lb)

SRT= .25 hrs.