



Service Information System

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Special Instruction

SPN 190 FMI 0 Engine Overspeed Vehicle Event Fault for CAT CT11 and CT13 Engines {7000}

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SPN 190 FMI 0 Engine Overspeed Vehicle Event Fault for CAT CT11 and CT13 Engines{7000}

SMCS - 7000

On Highway Truck:

CT660 (S/N: TGA1-UP; TGD1-UP; TJD1-UP; TEJ1-UP; TRK1-UP; TKL1-UP; TEM1-UP; TEP1-UP; TGR1-UP; TGS1-UP; TJS1-UP; TGT1-UP; TGW1-UP; TSW1-UP; TEY1-UP; TSY1-UP; TEZ1-UP; TGZ1-UP)

Introduction

The following procedure is for troubleshooting the SPN 190 FMI 0 engine overspeed vehicle event fault.

Introduction

NOTICE

To prevent engine damage, do not attempt to start the engine until a full engine analysis and all diagnostic steps have been completed.

The following fault can be set when the vehicle is in motion and engine speed reaches 2600 rpm with no fuel being requested by the Engine Control Module (ECM). When set, this DTC will illuminate the

Red Stop Engine Light (RSL) and the Malfunction Indicator Lamp (MIL). Once the vehicle is at 0 mph, the ECM will initiate a protection strategy. The Engine Throttle Valve (ETV) and Exhaust Gas Recirculation (EGR) valve will close, and the fuel injectors will be disabled. The Fuel Pressure Control Valve (FPCV) will open to relieve fuel rail pressure in case of injector tip damage. A complete engine analysis must be completed to assess damage due to excessive engine speed, prior to the engine being started.

Table 1

Condition / Description	Setting Criteria	Enable Conditions / Values	Time Required
Engine speed is above a threshold for a calibratable amount of time.	Engine Speed Exceeds 2600 rpm with no fuel being requested	Key ON	1 Event
		Engine Speed > 2600 rpm for 1 second for MIL reaction and 10 seconds for Red Engine Stop Light reaction	

Note: The MIL and RSL will illuminate when the fault is detected.

Note: Before beginning diagnostics, do the following

- Submit report to Dealer Solutions Network (DSN)
- Take pictures of all damage for failure evidence
- Do not replace any parts until complete inspection has been completed
- Ensure that the calibration is up to date at end of repair
- CAT CT11 and CT13 engines are to follow the same repair path.

Note: CAT CT11 and CAT CT13 parts and SRTs may be different

Related Fault Codes

Note: In the event of other fault codes logged the 190-0 Engine Overspeed Most Severe Level should be diagnosed FIRST.

Table 2

Code	Description	Action
SPN 731 FMI 18	Knock Detected: Unexpected Fueling without Demand	Continue with SPN 190 FMI 0 diagnostics
SPN 731 FMI 16	Knock Detected: Cylinder Acceleration above Normal	Continue with SPN 190 FMI 0 diagnostics

Troubleshooting

Table 3

Step	Action	Decision
1	<p>Visual inspection of Turbo Outlet Pipe</p> <p>Remove turbo outlet pipe</p> <p>Remove CAC outlet pipe</p> <p>Is there excessive oil coming from the high-pressure turbocharger(HP)</p>	<p>Yes- Go to Step 2</p> <p>No - Interview Driver When did the fault occur</p> <p>How was the truck operating when the fault occurred</p> <p>Save Freeze Frame Data from 190-0 fault code</p> <p>Save Vehicle Trip Report Submit Case File to DSN and attach the Vehicle Trip Report, Freeze Frame Data, and the answers above.</p>
2	<p>Visually inspect external engine block for damage</p> <p>Has engine block damage occurred?</p>	<p>Yes -Document damage with pictures. Open a DSN report for complete engine, block, or crankshaft replacement. DSN report is located on the vehicle information page, DSN tab. Attach freeze frame data and pictures to case file DSN report.</p> <p>No-Go to Step 3</p>
3	<p>Connect to Engine Control Module (ECM) using personal computer (PC) with engine diagnostic software.</p> <p>Open Vehicle Trip report in engine diagnostic software</p> <p>Reference PID 58071 Trip Maximum Engine Speed.</p> <p>What was the RPM recorded?</p>	<p>For RPM's ranging 2600 to 3200, Go to Step 4.</p> <p>For RPM above 3200, Go to Step 5.</p>

<p>4</p>	<p>For RPM 2600 to 3200:</p> <p>Drain oil and remove oil pan.</p> <p>Inspect engine block and liners for signs of damage. Has engine block or liner damage occurred?</p>	<p>Yes -Document damage with pictures. Open a DSN report for complete engine, block, or crankshaft replacement. DSN report is located on the vehicle information page, DSN tab. Attach freeze frame data and pictures to case file DSN report.</p> <p>THE FOLLOWING REPAIRS DO NOT NEED APPROVAL FROM TECH SERVICES</p> <p>Verify that oil has not reached the Diesel Oxidation Catalyst (DOC). If the DOC and DPF need removed to drain (Refer to UENR1845 and UENR4926 for the correct procedure). A DSN will need to be started if damage has occurred. Location of the DSN is on the Vehicle Information Page, DSN Tab</p> <p>Reinstall oil pan and refill (Refer to UENR1845 and UENR4926 for the correct procedure).</p> <p>Replace all six injectors (Refer to UENR1845 and UENR4926 for the correct procedure).</p> <p>Replace Turbo Center Section (Refer to Special Instruction REHS9168 for procedure).</p> <p>Clean Charge Air Cooler (CAC)(Refer to REHS9180)</p> <p>Proceed to Step 6.</p>
<p>5</p>	<p>For RPM above 3200</p> <p>Drain oil and remove oil pan.</p> <p>Inspect engine block and liners for signs of damage. Has engine block or liner damage occurred?</p>	<p>Yes -Document damage with pictures. Open a DSN report for complete engine, block, or crankshaft replacement. DSN report is located on the vehicle information page, DSN tab. Attach freeze frame data and pictures to case file DSN report.</p> <p>THE FOLLOWING REPAIRS DO NOT NEED APPROVAL FROM TECH SERVICES</p> <p>Verify that oil has not reached the Diesel Oxidation Catalyst (DOC). If the DOC and DPF need removed to drain (Refer to UENR1845 and UENR4926 for the correct procedure). A DSN will need to be started if damage has occurred. Location of the DSN is on the Vehicle Information Page, DSN Tab</p> <p>Reinstall oil pan and refill (Refer to UENR1845 and UENR4926 for the correct procedure).</p> <p>Replace all six injectors (Refer to UENR1845 and UENR4926 for the correct procedure).</p> <p>Replace Turbo Center Section (Refer to Special Instruction REHS9168 for procedure).</p> <p>Clean Charge Air Cooler (CAC)(Refer to REHS9180)</p> <p>Proceed to Step 6.</p>

6	Check Calibration Level	Yes -Diagnostics Complete.
	Is the calibration up to date?	No -Update Calibration.

Note: If the diagnostic steps do not assist in troubleshooting a A SPN 190 FMI 00 fault code please submit a case file to DSN explaining the issue that your having.

Part Numbers

Table 4

Part Number	Part Description	Quantity
376-2677	Tube High-pressure rail to injector 1	1
376-2677	Tube High-pressure rail to injector 2	1
376-2638	Tube High-pressure rail to injector 3	1
376-2639	Tube High-pressure rail to injector 4	1
376-2795	Tube High-pressure rail to injector 5	1
376-2796	Tube High-pressure rail to injector 6	1
376-2652	Tube High-pressure pump to rail	1
396-3798	Kit fuel injector	6
450-0395	Kit, HP turbo cartridge	1
376-2649	Tube assembly, oil supply turbocharger	1
376-2510	Ring "O" #118.862" X .965"	1
399-0139	Kit water pump assembly	1
448-6794	Gasket tape exhaust 3/4 X 36 yards	1

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