P3787

Fault code description

Diesel Particulate Filter (DPF) - Soot level too high (4)

Possible cause

1. The engine has been operating under light load conditions that prevented exhaust temperatures from being high enough to actively regenerate the DPF.
2. An engine malfunction that is increasing smoke output.
3. Wiring harness or temperature sensor connectors incorrectly installed.
4. When fault codes 3789, 3792 and 3975 are inactive and fault code 3787 is active. Possibility that a regeneration inhibit message has been received and that active regeneration of the DPF was not allowed.

Additional information

The soot load in the DPF is estimated using the DPF pressure sensor and the calculated soot output of the engine.

This fault code may be triggered if the application is not operating at a duty cycle that is high enough to actively regenerate the DPF. This fault code indicates that the exhaust temperature exiting the turbocharger is not high enough to regenerate the soot that is trapped in the DPF. It may be necessary to increase the duty cycle of the application in order to prevent blocking of the DPF.

The driver has ignored the warning lights for soot levels 1, 2 and 3.

A severe torque derate will be applied to the output of the engine

Set condition of fault code

This diagnostic runs continuously when the

engine speed is greater than the set limit.

The EAS-3 ECU detects that the soot load inside the DPF has reached level 4 (most severe level).

Reset condition of fault code

This fault code indicates that the DPF requires inspection and cleaning according to the guidelines for re-use. See Engine Rapido job: 'check/clean DPF element'. Replace the filter if it does not pass the inspection. After inspection, cleaning or replacing:

1. Reset the soot level with DAVIE.
2. Perform the 'New diesel particulate filter installation' test with DAVIE if a new DPF is installed.
3. Perform the 'DPF regeneration' test with DAVIE after the 'New diesel particulate filter installation' test has finished.
4. The fault is cleared after the soot level in the aftertreatment diesel particulate filter has dropped to a normal level.

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P3787, Diagnostic information

Technical data

"Sensor, DPF pressure (F837)"

Location of component(s)

"Location information, EAS-3"

Electrical diagram(s)

Refer to the OEM service manual for more information.

Description of component(s)

"Sensor, DPF pressure (F837)"

Block diagram

"Block diagram EAS-3"

Step by step troubleshooting

Please perform the troubleshooting steps below using the breakout harness if necessary to check electrical components such as sensors, electrical control units or harnesses. Back probing is not recommended as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to electrical components.

- Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors.
- For specific electrical component information and pin out locations, always refer to the technical data.
- It is necessary to exit the fault code menu in DAVIE and run the diagnostic test again to identify a

change in errors.

- Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

Step by step 1: Check fault codes

Step 1A: Check for fault codes

Troubleshooting steps

1. Turn the key switch ON.
2. Use DAVIE to check for fault codes.

Are fault codes other than P3787 active?

- Yes – The DPF has been blocked with soot. Inspect the DPF. Clean or replace as necessary. Continue to troubleshoot the cause of the high DPF soot load. Proceed to step 2A
- No – Proceed to step 4A

Step by step 2: Check the aftertreatment exhaust gas temperature sensors

Step 2A: Check for fault codes

Troubleshooting steps

1. Turn the key switch ON.
2. Use DAVIE to check for fault codes related to the aftertreatment temperature sensors.

Is fault code P3750, P3751, P3752, P3753, P3754, P3755, P3756, P3757 or P3758 active?

- Yes – Proceed with the appropriate fault code
- No – Proceed to step 2B

Step 2B: Monitor the exhaust gas temperature sensors

Troubleshooting steps

1. Turn the key switch ON.
2. Engine idling longer than ten minutes.
3. Monitor the exhaust gas temperature sensors with DAVIE.
   - Let the engine idle for ten minutes to stabilise the exhaust gas temperatures.
   - If any fault occurs, go to the appropriate fault code.
   - If no fault occurs, record the value of the DOC and DPF exhaust gas temperature sensors

Does the value of the sensors vary by more than 75°F (24°C)?

- Yes – Proceed to step 4A after completing the following checks.
  - Check for a short circuit from the signal pin of the relevant temperature sensor to all other pins in the harness.
  - Check for a short circuit in the DOC/DPF temperature sensor interface.
  - If no short circuit is found, replace the temperature sensor that is reading higher or lower than the other sensors.
- No – Proceed to step 3A

Step by step 3: Check the DPF pressure sensor

Step 3A: Monitor the DPF pressure sensor accuracy

Troubleshooting steps

1. Turn the key switch ON.
2. Engine off.
3. Monitor the DPF pressure sensor reading with DAVIE.

An exhaust ventilation system

connected to the exhaust can influence the DPF pressure sensor reading. Remove any ventilation or vacuum system before reading the DPF pressure.

Is the DPF differential pressure reading 0±0.44 PSI (0±0.03 bar) with key switch ON and engine OFF?

- Yes – Troubleshoot possible engine failure, creating excessive black smoke. Proceed to step 4A
- No – Proceed to step 3B

Step 3B: Inspect the DPF pressure sensor tubes

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the DPF pressure sensor tubes.
3. Check the DPF pressure sensor tubes for blockage.

Are there damaged, disconnected or blocked tubes?

- Yes – Clean, repair or replace the damaged pressure sensor tubes - Proceed to step 4A
- No – Proceed to step 4A after completing the following checks.
  - Check for a short circuit from the signal pin of the DPF pressure sensor to all other pins in the harness.
  - If no short circuit is found, replace the DPF pressure sensor.

Step by step 4: Check the DPF

Step 4A: Check the DPF for damage

Troubleshooting steps

1. Turn the key switch OFF.

2. Remove and inspect the DPF. See Engine Rapido job: 'check/clean DPF element'
3. Clean the DPF as needed. Refer to the cleaning machine manufacturing instructions.

DPF discolouration does not indicate a failed filter. See Engine Rapido job: 'check/clean DPF element'.

Is the DPF damaged according to the Engine Rapido job: 'check/clean DPF element'

- Yes – The DPF may need to be replaced. Contact the Engine Support Center for confirmation before replacing the DPF. Proceed to step 5A.
- No – Proceed to step 5A.

Step by step 5: Clear the fault code

Step 5A: Disable the fault code

Troubleshooting steps

1. Connect all components.
2. Operate the system within the 'reset condition of the fault code' found in the fault code information.
3. Use DAVIE to verify that the fault codes are inactive.

Is fault code P3787 inactive?

- Yes – Proceed to step 5B
- No – Return to the troubleshooting steps - Proceed to step 1A

  If all the steps have been completed and checked again, contact the Engine Support Center for further instructions.

Step 5B: Clear the inactive fault codes

Troubleshooting steps

1. Connect all components
2. Turn the key switch ON.
3. Use DAVIE to clear the inactive fault codes.

Have all the fault codes been cleared?

- Yes – Repair complete
- No – Troubleshoot any remaining active fault codes

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