P3870

Fault code description

Pump module - Open circuit

Possible cause

1. Open circuit or short circuit to earth in the pump module harness.
2. Failed pump module heater.
3. Failed EAS-3 actuator ECU.

Additional information

This fault may result in engine torque reduction or vehicle speed limiting.

Set condition of fault code

This diagnostic runs continuously when the key switch is ON.

The EAS-3 actuator detects that the in-line heater voltage is below an established value.

Reset condition of fault code

This fault code will change to inactive immediately after the diagnostic runs and passes.

M027903 - 07/22/2015 19:01:54

P3870, Diagnostic information

Technical data

"Pump module (L074)"

Location of component(s)

-

Electrical diagram(s)

Refer to the OEM service manual for more information.

Description of component(s)

"Pump module (L074)"

Block diagram

"Block diagram EAS-3"

Step by step troubleshooting

Please perform the troubleshooting steps below by utilising 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.

Is fault code P3870 active?

- Yes – Proceed to step 2A
- No – Proceed to step 4A

Step by step 2: Check the pump module and the circuit

Step 2A: Inspect the pump module and connector pins

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the pump module from the harness.
3. Inspect the pump module harness and connector for:
    1. corroded or dirty pins
    2. damaged pins
    3. pushed back or expanded pins
    4. loose connector
    5. moisture in or on the connector
    6. connector shell damaged
    7. missing or damaged connector seals
    8. wire insulation damage

Dirty or damaged pins/connector?

- Yes – A dirty or damaged connection has been detected. Clean, repair or replace the damaged connection or harness if possible - Proceed to step 4A
- No – Proceed to step 2B

Step 2B: Check the circuit response

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the pump module from the harness.
3. Place a jumper wire between the heater signal pin and the heater supply pin at the pump module connector.
4. Turn the key switch ON.
5. Check for the appropriate circuit response after one minute of engine idling.
6. Use DAVIE to read the fault codes.

Multiple fault codes related to the pump module will become active.

Is fault code P3868 active and P3870 inactive?

- Yes – Internal short circuit or open circuit has been detected in the pump module heater. Replace the pump module. Proceed to step 4A
- No – Proceed to step 3A

Step by step 3: Check the EAS-3 actuator and the harness

Step 3A: Inspect the EAS-3 actuator and the harness connector pins

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 actuator from the harness.

3. Inspect the harness and EAS-3 actuator connector for:
    1. corroded or dirty pins
    2. damaged pins
    3. pushed back or expanded pins
    4. loose connector
    5. moisture in or on the connector
    6. connector shell damaged
    7. missing or damaged connector seals
    8. wire insulation damage

Dirty or damaged pins/connector?

- Yes – A dirty or damaged connection has been detected. Clean, repair or replace the damaged connection or harness if possible - Proceed to step 4A
- No – Proceed to step 3B

Step 3B: Check for an open circuit in the harness heater signal supply circuit

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 actuator from the harness.
3. Disconnect the pump module from the harness.
4. Measure the resistance of the heater supply wire between the EAS-3 actuator connector pin and the pump module connector pin.

Is the resistance less than 10 ohms?

- Yes – Proceed to step 3C
- No – An open circuit has been detected in the harness. Repair or replace the harness - Proceed to step 4A

Step 3C: Check for an open circuit in the harness heater signal circuit

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 actuator from the harness.
3. Disconnect the pump module from the harness.
4. Measure the resistance of the heater signal wire between the EAS-3 actuator connector pin and the pump module connector pin.

Is the resistance less than 10 ohms?

- Yes – Proceed to step 3D
- No – An open circuit has been detected in the harness. Repair or replace the harness - Proceed to step 4A

Step 3D: Check for a pin to earth short circuit in the harness

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 actuator from the harness.
3. Disconnect the pump module from the harness.
4. Check for a pin to earth short circuit.
5. Measure the resistance of the pump module heater signal wire between the EAS-3 actuator connector pin and earth.
6. Measure the resistance of the pump module heater supply wire between the EAS-3 actuator connector pin and earth.

Is the resistance greater than 100k ohms?

- Yes – 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 instruction on replacement of the EAS-3 actuator.
- No – A pin to earth short circuit has been detected in the harness. Repair or replace

the harness - Proceed to step 4A

Step by step 4: Clear the fault code

Step 4A: 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 if the fault codes are inactive.

Is fault code P3870 inactive?

- Yes – Proceed to step 4B
- 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 4B: 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

M046817 - 07/23/2015 02:21:14