P3909

Fault code description

DEF pipe heating relay - Short circuit to ground on ECU (B375) pin (B30)

Possible cause

1. Short circuit to ground in the line heater relay circuit.
2. Short circuit to ground in the line heater harness.
3. Failed EAS-3 actuator.

Additional information

The line heater relay provides a power supply to the line heaters. The EAS-3 actuator controls the line heater relay.

Set condition of fault code

The diagnostic runs when the key switch is turned off. The fault code will change to active when the key switch is put in the ON position again.

The EAS-3 actuator detects that the voltage in the line heater relay circuit is below a threshold value.

Reset condition of fault code

Perform a key cycle, start the engine and let it idle for 1 minute.

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

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P3909, Diagnostic information

Technical data

"Relay, line heater (R026)"

Location of component(s)

"Location information, EAS-3"

Electrical diagram(s)

Refer to the OEM service manual for more information.

Description of component(s)

"Relay, line heater (R026)"

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 P3909 inactive?

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

Step by step 2: Check the EAS-3 actuator and the harness

Step 2A: 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?

- 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 for a pin-to-pin 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 line heater relay from the harness.
4. Check for a pin-to-pin short circuit.
5. Measure the resistance between the EAS-3 actuator connector line heater relay return pin and all other pins in the harness.

Is the resistance greater than 100k ohms?

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

Step by step 3: Check the line heater relay

Step 3A: Inspect the line heater relay and connector pins

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the line heater relay from the harness.
3. Inspect the line heater relay and connections 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 a pin to ground 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 line heater relay from the harness.
4. Check for a pin to ground short circuit.
5. Measure the resistance between the EAS-3 actuator connector line heater relay return pin and ground.

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 ground 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 P3909 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

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