P3905

Fault code description

Tank heater valve - Short circuit to ground

Possible cause

1. DEF tank heater valve wire short circuit to ground.
2. Short circuit to ground in the DEF tank heater valve harness.
3. Malfunctioning tank heater valve.
4. Malfunctioning EAS-3 actuator.

Additional information

The DEF tank heater will be disabled.

Set condition of fault code

This diagnostic runs continuously when the key switch is ON.

The EAS-3 actuator detects a low signal voltage or a short circuit to ground at the tank heater circuit low side.

Reset condition of fault code

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

To validate the repair, start the engine and let it idle for 1 minute.

M027993 - 07/23/2015 02:09:11

P3905, Diagnostic information

Technical data

"Power supply and earth of EAS-3 actuator (D375)"

"CAN connection, EAS-3 actuator (D375)"

Location of component(s)

"Location information, EAS-3"

Electrical diagram(s)

Refer to the OEM service manual for more information.

Description of component(s)

-

Block diagram

"Block diagram EAS-3"

Step by step troubleshooting

Please perform the troubleshooting steps below by utilizing 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 P3905 inactive?

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

Step by step 2: Check the tank heater valve and the circuit

Step 2A: Inspect the tank heater valve and connector pins

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the tank heater valve from the harness.
3. Inspect the tank heater valve 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 tank heater valve from the harness.
3. Turn the key switch ON.
4. Check for the appropriate circuit response after 30 seconds.
5. Use DAVIE to read the fault codes.

Is fault code P3873 active?

- Yes – Proceed to step 2C
- No – Proceed to step 3A

Step 2C: Check the fault codes and verify the valve condition

Troubleshooting steps

1. Turn the key switch OFF.
2. Connect the tank heater valve to the harness.
3. Turn the key switch ON.
4. Check for the appropriate circuit response after 30 seconds.
5. Use DAVIE to read the fault codes.

Is fault code P3905 active?

- Yes – A damaged tank heater valve has been detected. Replace the tank heater valve. Proceed to step 4A
- No – The removal and re-installation of the connector corrected the fault. Proceed to step 4A

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?

- 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-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 tank heater valve from the harness.
4. Check for a pin-to-pin short circuit.
5. Measure the resistance between the tank heater valve ground pin and all other pins in the harness.

Is the resistance greater than 100k ohms?

- Yes – Proceed to step 4A
- 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 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 P3905 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

M046852 - 07/23/2015 02:15:44