# P3984

## Fault code description

ECU power supply - Too low on ECU (D375)

## Possible cause

1. Loss of power supply before key switch to the EAS-3 actuator ECU.
2. Loss of power supply after key switch to the EAS-3 actuator ECU.
3. Loss of battery earth to the EAS-3 actuator ECU.
4. Shorted or open CAN communication wire to the EAS-3 actuator ECU.
5. Failed EAS-3 actuator ECU.
6. Blown or missing fuses on the battery voltage before or after key switch.

## Additional information

DEF injection into the SCR system is disabled.

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 ECU detects that CAN communication with the EAS-3 actuator ECU has been lost.

## Reset condition of fault code

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

M029235 - 07/22/2015 16:15:06

# P3984, 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 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 P3984 active?

- Yes – Proceed to step 1B
- No – Proceed to step 5A

### Step 1B: Check for fault codes

Troubleshooting steps

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

### Is fault code P3874 active?

- Yes – Proceed with the fault code P3874.
- No – Proceed to step 1C

### Step 1C: Check for fault codes

Troubleshooting steps

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

### Is fault code P3812, P3962, P3963, P3955, P3960 or P3961 active?

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

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

### Step 2A: Inspect the EAS-3 actuator and connector pins

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 actuator from the harness.
3. Inspect the EAS-3 actuator 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 5A
- No – Proceed to step 2B

### Step 2B: Check the voltage before key switch to the EAS-3 actuator

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 actuator from the harness.
3. Check the power supply and return circuit to the EAS-3 actuator.
4. Measure the voltage between the EAS-3 actuator battery supply circuit and return circuit at the EAS-3 connector.

    Check the voltage at key ON, while

cranking the engine and with the engine running at idle.

### Is the voltage within 1 VDC of the battery voltage?

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

## Step 2C: Check the voltage after key switch to the EAS-3 actuator

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 actuator from the harness.
3. Turn the key switch ON.
4. Check the key switch power supply and return circuit to the EAS-3 actuator.
5. Measure the voltage between the EAS-3 actuator key switch supply circuit and return circuit at the EAS-3 connector.

Check the voltage at key ON, while cranking the engine and with the engine running at idle.

### Is the voltage within 1 VDC of the battery voltage?

- Yes – Proceed to step 4A
- No – An open circuit has been detected in the EAS-3 actuator supply circuit. Check for an open circuit, short circuit or blown fuses in the power supply after key switch circuit. Repair or replace the wiring/fuse. Proceed to step 5A

# Step by step 3: Check the battery and the harness

## Step 3A: Check the battery connections

Troubleshooting steps

1. Turn the key switch OFF.
2. Check the positive and negative battery

terminals.

### Are the connections tight and corrosion-free?

- Yes – Proceed to step 3B
- No – Tighten and/or clean the connections. Refer to the OEM manual. Proceed to step 5A

## Step 3B: Check for an open circuit in the battery voltage supply

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 actuator from the harness.
3. Check for an open circuit.
4. Measure the voltage between the EAS-3 actuator battery supply pin and the engine block earth.

Check the voltage at key ON, while cranking the engine and with the engine running at idle.

### Is the voltage within 1 VDC of the battery voltage?

- Yes – An open circuit has been detected in the EAS-3 actuator earth circuit. Repair or replace the wiring. Proceed to step 5A
- No – An open circuit has been detected in the EAS-3 actuator supply circuit. Check for an open circuit, short circuit or blown fuses in the power supply circuit. Repair or replace the wiring/fuse. Proceed to step 5A

# Step by step 4: Check the CAN data wiring

## Step 4A: Inspect the EAS-3 unit and the harness connector pins

Troubleshooting steps

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

3. Inspect the harness and EAS-3 unit 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 5A
- No – Proceed to step 4B

## Step 4B: Check for an open circuit in the harness

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit from the harness.
3. Disconnect the EAS-3 actuator from the harness.
4. Check for an open circuit in the CAN wiring
5. Measure the resistance of the CAN high wire between the EAS-3 unit connector pin and the EAS-3 actuator connector pin.
6. Measure the resistance of the CAN low wire between the EAS-3 unit connector pin and the EAS-3 actuator connector pin.

### Is the resistance less than 10 ohms?

- Yes – Proceed to step 4C

- No – An open circuit has been detected in the harness. Troubleshoot the wiring harness and all interconnects. Repair or replace the harness - Proceed to step 5A

### Step 4C: Check for a pin-to-pin short circuit in the harness

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit from the harness.
3. Disconnect the EAS-3 actuator from the harness.
4. Disconnect the NOx sensor before the catalyst.
5. Disconnect the NOx sensor after the catalyst.
6. Disconnect the engine management system ECU.
7. Check for a pin to pin short circuit in the CAN wiring.
8. Measure the resistance of the CAN high wire between the EAS-3 unit connector pin and all other connector pins in the harness.
9. Measure the resistance of the CAN low wire between the EAS-3 unit connector pin and all other connector pins in the harness.

### Is the resistance greater than 100k ohms?

- Yes – Proceed to step 4D
- No – A short circuit has been detected in the harness. Troubleshoot the wiring harness and all interconnects. Repair or replace the harness - Proceed to step 5A

### Step 4D: Check for a short circuit to earth in the harness

Troubleshooting steps

1. Turn the key switch OFF.

2. Disconnect the EAS-3 unit from the harness.
3. Disconnect the EAS-3 actuator from the harness.
4. Disconnect the NOx sensor before the catalyst.
5. Disconnect the NOx sensor after the catalyst.
6. Disconnect the engine management system ECU.
7. Check for a short circuit to earth in the CAN wiring.
8. Measure the resistance of the CAN high wire between the EAS-3 unit connector pin and earth.
9. Measure the resistance of the CAN low wire between the EAS-3 unit connector pin and earth.

### Is the resistance greater than 100k ohms?

- Yes – Proceed to step 4E
- No – A short circuit to earth has been detected in the harness. Troubleshoot the wiring harness and all interconnects. Repair or replace the harness - Proceed to step 5A

## Step 4E: Check the CAN terminating resistance

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit.
3. Connect all other components.
4. Check the terminating resistance.
5. Measure the resistance between the CAN high pin and the CAN low pin on the EAS-3 unit connector.

### Is the resistance 50 to 70 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 instructions.

- No – Proceed to step 4F

### Step 4F: Check the CAN terminating resistance

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 actuator from the harness.
3. Disconnect the EAS-3 unit.
4. Connect all other components.
5. Check the terminating resistance.
6. Measure the resistance between the CAN high pin and the CAN low pin on the EAS-3 unit connector.

### Is the resistance 110 to 130 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 instructions on replacement of the EAS-3 actuator.
- No – End resistance or CAN wiring engine management system not correct. Troubleshoot the engine management system. 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 if the fault codes are inactive.

### Is fault code P3984 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

M046931 - 07/22/2015 16:13:36