

## TROUBLESHOOTING SUMMARY



To avoid pin and harness damage, use this test lead when taking a measurement: Part Number 3822758 - male Deutsch/AMP/Metri-Pack test lead.



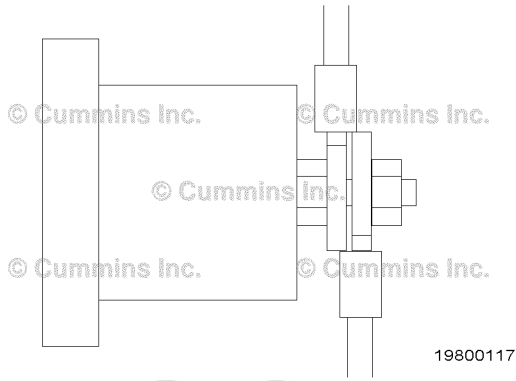
To avoid damaging a new ECM, all other active fault codes must be investigated prior to replacing the ECM.

STEPS	SPECIFICATIONS	SRT CODE
<b>STEP 1: Check the fan clutch solenoid.</b>		
<b>STEP 1A:</b> Check for extra wires on the fan clutch solenoid post.	No extra wires	
<b>STEP 1B:</b> Check for shorted fan clutch; check on OEM side.	Fault Code 245 is active	
<b>STEP 2: Check the OEM harness.</b>		
<b>STEP 2A:</b> Inspect the 21-pin Deutsch connector for damaged pins.	No damaged pins	
<b>STEP 2B:</b> Check for a short circuit in the OEM harness.	More than 100k ohms	
<b>STEP 2C:</b> Check for a short circuit to ground.	More than 100k ohms	
<b>STEP 3: Check the actuator harness.</b>		
<b>STEP 3A:</b> Inspect the harness and the ECM connector pins.	No damaged pins	
<b>STEP 3B:</b> Check for a short circuit between pins.	More than 100k ohms	
<b>STEP 3C:</b> Check for a short circuit to ground.	More than 100k ohms	
<b>STEP 4: Check the ECM fan clutch supply voltage.</b>		
<b>STEP 4A:</b> Check the supply voltage at the ECM.	At least 6 VDC	
<b>STEP 5: Clear the fault codes.</b>		
<b>STEP 5A:</b> Disable the fault code.	Fault Code 245 inactive	
<b>STEP 5B:</b> Clear the inactive fault codes.	All faults cleared	

## TROUBLESHOOTING STEP

### STEP 1: Check the fan clutch solenoid.

#### STEP 1A: Check for extra wires on the fan clutch solenoid post.

<b>Condition:</b> • Turn keyswitch "OFF".		
Action	Specification/Repair	Next Step
Check for extra wires on the fan clutch solenoid. • Inspect the fan clutch solenoid post or the fan clutch relay coil.	<b>OK</b> No extra wires	1B
	<b>NOT OK</b> Remove extra wires. Note: A single wire can exist from relay/solenoid back to pin 7 or pin 17 (if there are two fan clutches) in the actuator connector at the ECM.	5A
		

#### STEP 1B: Check for shorted fan clutch circuit on OEM side.

<b>Condition:</b> • Turn keyswitch "OFF". • Disconnect the 21-pin OEM connector. • Jump the keyswitch across the 21-pin OEM connector from pin A to pin A.		
Action	Specification/Repair	Next Step
Check for short in fan clutch circuit. • Start the engine.	<b>OK</b> Fault Code 245 is active	2A
	<b>NOT OK</b> Fault Code 245 is inactive. Repair or replace defective OEM component causing the short.	5A

**STEP 2: Check the OEM harness.**

**STEP 2A: Inspect the 21-pin Deutsch connector for damaged pins.**

<p><b>Condition:</b></p> <ul style="list-style-type: none"> <li>• Turn keyswitch "OFF".</li> <li>• Disconnect the OEM harness from the 21-pin Deutsch connector.</li> <li>• Disconnect the actuator harness from the 21-pin Deutsch connector.</li> <li>• Flush and clean the connector pins using electronic contact cleaner, Part Number 3824510.</li> </ul>		
Action	Specification/Repair	Next Step
<p>Inspect the 21-pin Deutsch connector for:</p> <ul style="list-style-type: none"> <li>• bent or broken pins</li> <li>• pushed back or expanded pins</li> <li>• corroded pins</li> <li>• moisture in or on the connector</li> <li>• missing or damaged seals</li> <li>• dirt or debris in or on the connector pins.</li> </ul>	<p><b>OK</b></p> <p>No damaged pins</p>	<p>2B</p>
	<p><b>NOT OK</b></p> <p>Repair the damaged pins. Repair or replace the OEM harness or the 21-pin connector, whichever has the damaged pins.</p> <ul style="list-style-type: none"> <li>• Flush the dirt, debris, or moisture from the connector pins using electronic contact cleaner, Part Number 3824510. Refer to Procedure 019-203 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.</li> <li>• Repair the OEM harness. Refer to Procedure 019-208 in the Troubleshooting and Repair Manual Industrial CELECT™ Plus System Bulletin 3666130.</li> <li>• Replace the OEM harness. Reference the OEM Troubleshooting and Repair Manual.</li> <li>• Repair the actuator harness. Refer to Procedure 019-208 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.</li> <li>• Replace the actuator harness. Refer to Procedure 019-043 in the Troubleshooting and Repair Manual Industrial CELECT™ Plus System Bulletin 3666130.</li> <li>• Replace the 21-pin connector. Refer to Procedure 019-208 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.</li> </ul>	<p>5A</p>

**STEP 2B: Check for a short circuit in the OEM harness.**

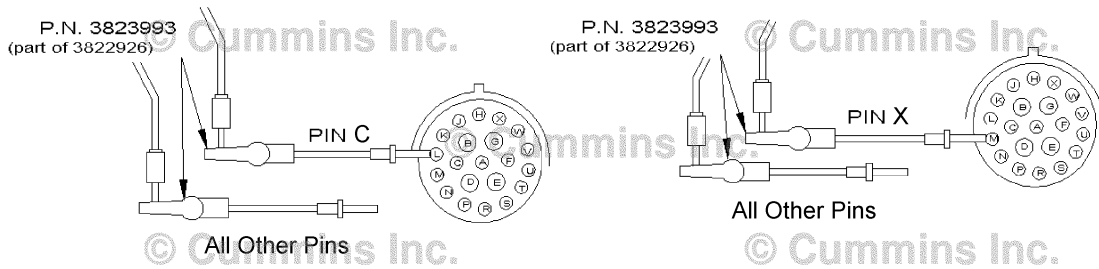


To avoid pin and harness damage, use the following test lead when taking a measurement: Part Number 3822758 - male Deutsch/AMP/Metri-Pack test lead.

**Condition:**

- Turn keyswitch "OFF".
- Disconnect the OEM harness from the fan clutch solenoid.
- Disconnect the actuator harness from the 21-pin connector.

Action	Specification/Repair	Next Step
Check for a short circuit in the OEM harness. • Measure the resistance from pins C and X of the 21-pin connector to all other pins in the connector.	<b>OK</b> More than 100k ohms	2C
	<b>NOT OK</b> Replace the OEM harness. Reference the OEM Troubleshooting and Repair Manual.	5A



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**STEP 3: Check the actuator harness.**

**STEP 3A: Inspect the harness and the ECM connector pins.**



To avoid damaging a new ECM, all other active fault codes must be investigated prior to replacing the ECM.

**Condition:**

- Turn keyswitch "OFF".
- Disconnect the actuator harness connector from the ECM.
- Flush and clean the connector pins using electronic contact cleaner, Part Number 3824510.

Action	Specification/Repair	Next Step
Inspect the harness and the ECM connector pins for: <ul style="list-style-type: none"> <li>• bent or broken pins</li> <li>• pushed back or expanded pins</li> <li>• corroded pins</li> <li>• moisture in or on the connector</li> <li>• missing or damaged seals</li> <li>• dirt or debris in or on the connector pins.</li> </ul>	<p><b>OK</b> No damaged pins</p>	3B
	<p><b>NOT OK</b> Repair the damaged pins. Repair or replace the engine harness or ECM, whichever has the damaged pins.</p> <ul style="list-style-type: none"> <li>• Flush the dirt, debris, or moisture from the connector pins using electronic contact cleaner, Part Number 3824510. Refer to Procedure 019-203 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.</li> <li>• Repair the engine harness. Refer to Procedure 019-203 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.</li> <li>• Replace the engine harness. Refer to Procedure 019-043 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.</li> <li>• Replace the ECM. Refer to Procedure 019-031 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.</li> <li>• Replace the o-ring on the 28-pin connector if it is damaged or missing. Refer to Procedure 019-203 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.</li> </ul>	5A

**STEP 3B: Check for a short circuit between the pins.**

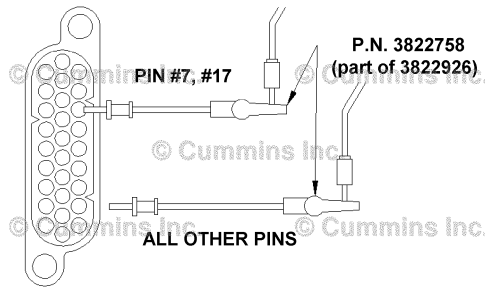
**⚠CAUTION⚠**

To avoid pin and harness damage, use the following test lead when taking a measurement: Part Number 3822758 - male Deutsch/AMP/Metri-Pack test lead.

**Condition:**

- Disconnect the OEM harness from the fan clutch solenoid.
- Disconnect the actuator harness connector from the ECM.
- Disconnect the sensor harness connector from the ECM.

Action	Specification/Repair	Next Step
Check for a short circuit between the pins. <ul style="list-style-type: none"> <li>• Measure the resistance from pins 7 and 17 to all other pins in the actuator harness connector.</li> <li>• Measure the resistance from pins 7 and 17 to all other pins in the sensor harness connector.</li> </ul>	<b>OK</b> More than 100k ohms	3C
	<b>NOT OK</b> Replace the engine harness. Refer to Procedure 019-043 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.	5A



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**STEP 3C: Check for a short circuit to ground.**



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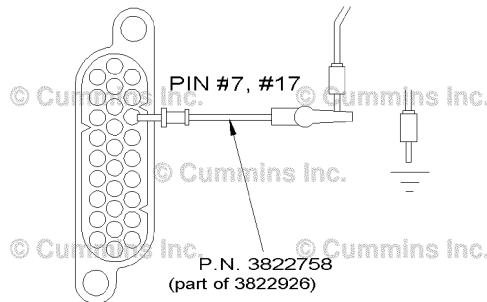


To avoid damaging a new ECM, all other active fault codes must be investigated prior to replacing the ECM.

**Condition:**

- Disconnect the OEM harness from the fan clutch solenoid.
- Disconnect the actuator harness connector from the ECM.

Action	Specification/Repair	Next Step
Check for a short circuit to ground. • Measure the resistance from pins 7 and 17 in the actuator harness connector to engine block ground.	<b>OK</b> More than 100k ohms	4A
	<b>NOT OK</b> Repair or replace the engine harness. Refer to Procedure 019-043 or Refer to Procedure 019-203 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.	5A

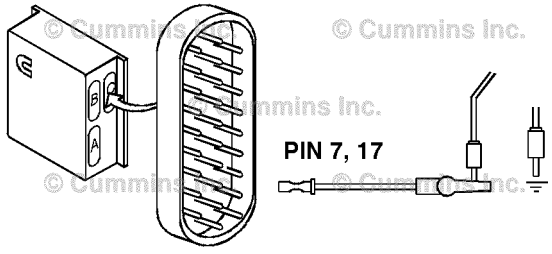


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**STEP 4: Check the ECM fan clutch supply voltage.**

**STEP 4A: Check the supply voltage at the ECM.**

<p><b>Condition:</b></p> <ul style="list-style-type: none"> <li>• Disconnect the actuator harness connector from the ECM.</li> <li>• Be sure the fan is "OFF".</li> <li>• Insert jumper wire from pin 23 of actuator harness connector to pin 23 of ECM actuator port.</li> <li>• Insert jumper wire from pin 27 of actuator harness connector to pin 27 of ECM actuator port.</li> <li>• Turn keyswitch "ON".</li> </ul>		
Action	Specification/Repair	Next Step
<p>Check the voltage at the ECM.</p> <ul style="list-style-type: none"> <li>• Measure the voltage from pin 7 at the ECM actuator port to ground.</li> <li>• Measure the voltage from pin 17 at the ECM actuator port to ground.</li> </ul>	<p><b>OK</b></p> <p>Greater than 6 VDC</p>	5A
	<p><b>NOT OK</b></p> <p>Replace the ECM. Refer to Procedure 019-031 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System Bulletin 3666130.</p>	5A
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**STEP 5: Clear the fault codes.**

**STEP 5A: Disable the fault code.**

<p><b>Condition:</b></p> <ul style="list-style-type: none"> <li>• Connect all the components.</li> </ul>		
Action	Specification/Repair	Next Step
<p>Disable the fault code.</p> <ul style="list-style-type: none"> <li>• Start the engine and let it idle for one (1) minute.</li> <li>• Verify Fault Code 245 is inactive.</li> </ul>	<p><b>OK</b></p> <p>Fault Code 245 is inactive</p>	5B
	<p><b>NOT OK</b></p> <p>Return to the troubleshooting steps or contact your local Cummins Authorized Repair Location if all the steps have been completed and checked again.</p>	1A

**STEP 5B: Clear the inactive fault codes.**

<b>Condition:</b>		
<ul style="list-style-type: none"> <li>Connect all the components.</li> </ul>		
<b>Action</b>	<b>Specification/Repair</b>	<b>Next Step</b>
Clear the inactive fault codes. <ul style="list-style-type: none"> <li>Erase the inactive fault codes using Compulink™, Part Number 3823549, Echeck™, Part Number 3824437, or INSITE™, Part Number 3824638.</li> </ul>	<b>OK</b> All faults cleared	Repair complete
	<b>NOT OK</b> Troubleshoot any remaining active fault codes.	Appropriate troubleshooting chart

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