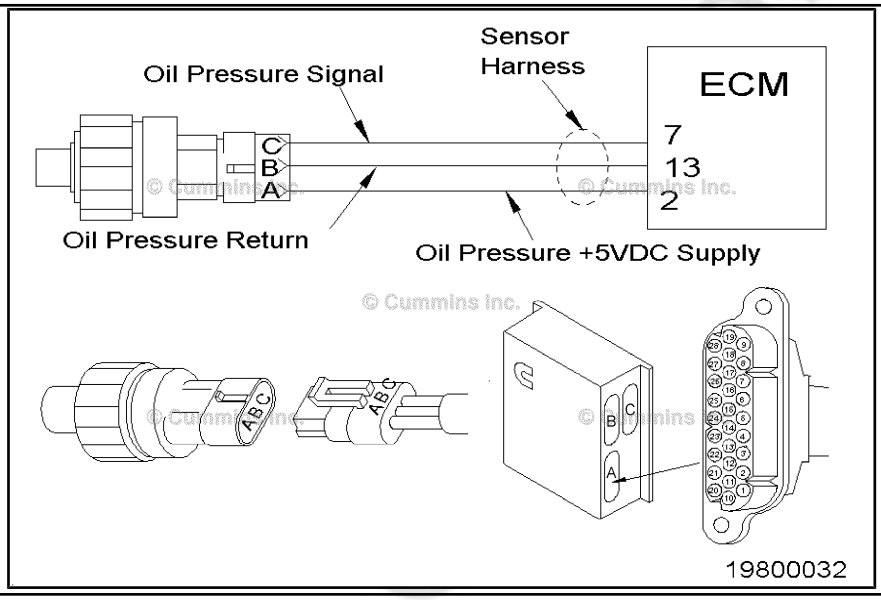
Fault Code 141

Oil Pressure Sensor Circuit

CODES	REASON	EFFECT
Fault Code: 141 PID(P), SID(S): P100 FMI: 4 Lamp: Yellow SRT: 00-087	Low voltage detected at oil pressure sensor signal pin 7 of the sensor harness connector.	No engine protection for oil pressure.

Oil Pressure Sensor Circuit



Circuit Description:

The oil pressure sensor is used by the electronic control module (ECM) to monitor the lubricating oil pressure. The ECM monitors the voltage on the signal pin and converts this to a pressure value. The oil pressure value is used by the ECM for the engine protection system.

Component Location:

- M11 - The oil pressure sensor is located on the engine block to the right of the ECM.
- N14 - The oil pressure sensor is located on the engine block near the pan rail on the fuel pump side of the engine.

Shop Talk:

If Fault Code 143 or 415 is **not** present, the problem is **not** base engine related.

TROUBLESHOOTING SUMMARY

⚠CAUTION⚠

To avoid pin and harness damage, use the following test leads when taking a measurement:
Part Number 3822758 - male Deutsch/AMP/Metri-Pack test lead
Part Number 3822917 - female Deutsch/AMP/Metri-Pack test lead
Part Number 3824775 - breakout cable.

STEPS		SPECIFICATIONS	SRT CODE
STEP 1:	**Check for multiple fault codes.**		
STEP 1A:	Read the fault codes.	Fault Codes 123, 145, 154, 213, 222, 352, and 422 are not active	
STEP 1B:	Read the fault codes.	Fault Code 123, 222, and 422 are not active	
STEP 2:	**Check the oil pressure sensor.**		
STEP 2A:	Inspect the oil pressure sensor and the engine harness connector pins.	No damaged pins	
STEP 2B:	Read the fault codes.	Fault Code 141 is active	
STEP 2C:	Check the oil pressure sensor supply voltage.	4.75 to 5.25 VDC	
STEP 2C-1:	Check the oil pressure sensor supply voltage.	4.75 to 5.25 VDC	
STEP 2C-2:	Measure the voltage out of the ECM.	4.75 to 5.25 VDC	
STEP 2D:	Check the oil pressure sensor signal voltage.	0.40 to 0.60 VDC	
STEP 2D-1:	Check for a short circuit from pin-to-pin.	More than 100k ohms	
STEP 2D-2:	Check for continuity in the sensor harness.	Less than 10 ohms	
STEP 2D-3:	Check ECM response.	Fault Code 141 inactive; Fault Code 135 active	
STEP 2D-4:	Check ECM signal pin to return pin resistance.	Less than 100k ohms	
STEP 3:	**Check the engine harness.**		
STEP 3A:	Inspect the engine harness and the ECM connector for damaged pins.	No damaged pins	
STEP 3B:	Read the fault codes.	Fault Code 141 is active	
STEP 3C:	Check for a short circuit to ground.	More than 100k ohms	
STEP 3D:	Check for a short circuit from pin-to-pin.	More than 100k ohms	
STEP 3E:	Check for correct pin-to-pin wiring between sensor and ECM and for continuity between sensor and ECM.	Less than 10 ohms	
STEP 3F:	Clear and check the fault codes.	No reoccurrence of Fault Code 141	
STEP 4:	**Check for an ECM response.**		
STEP 4A:	Check for the appropriate ECM response.	Fault Code 141 inactive ; Fault Code 135 active	

STEP 5: Clear the fault codes.

STEP 5A:	Disable the fault code.	Fault Code 141 inactive
STEP 5B:	Clear the inactive fault codes.	All faults codes cleared

TROUBLESHOOTING STEP

STEP 1: Check for multiple fault codes.

STEP 1A: Read the fault codes.

Condition:
- Turn keyswitch "ON".

Action	Specification/Repair	Next Step
read the fault codes. • Read the fault codes using Compulink™, Part Number 3823548, Echek™, Part Number 3824437, or INSITE™, Part Number 3824638.	**OK** Fault Codes 123, 145, 154, 213, 222, 352, and 422 are not active	1B
	NOT OK Possible sensor failure, a short circuit to ground in the sensor +5 VDC common supply, or a short circuit from pin-to-pin.	Multiple Fault Code A

STEP 1B: Read the fault codes.

Condition:
- Turn keyswitch "ON".

Action	Specification/Repair	Next Step
read the fault codes. • Read the fault codes using Compulink™, Part Number 3823548, Echek™, Part Number 3824437, or INSITE™, Part Number 3824638.	**OK** Fault Codes 123, 222, and 422 are not active	2A
	NOT OK Possible open circuit in the sensor +5 VDC common supply.	Multiple Fault Code C

STEP 2: Check the oil pressure sensor.

STEP 2A: Inspect the oil pressure sensor and the engine harness connector pins.

Condition:
- Turn keyswitch "OFF".
- Disconnect the engine harness from the oil pressure sensor.
- Flush and clean the connector pins using electronic contact cleaner, Part Number 3824510.

Action	Specification/Repair	Next Step
inspect the oil pressure sensor and the engine harness connector pins for: • bent or broken pins • pushed back or expanded pins • corroded pins • moisture in or on the connector • missing or damaged seals • dirt or debris in or on the connector pins.	**OK** No damaged pins	2B
	NOT OK Repair the damaged pinsRepair or replace the oil pressure sensor or the engine harness, whichever has damaged pins. • Flush the dirt, debris, or moisture from the connector pins using electronic contact cleaner, Part Number 3824510. • Repair the engine harness. Refer to Procedure 019-201 and 019-202 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130. • Replace the engine harness. Refer to Procedure 019-043 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130. • Replace the oil pressure sensor. Refer to Procedure 019-066 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130. • Install the appropriate connector seal if it is damaged or missing. Refer to Procedure 019-201 and 019-202 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130.	5A

STEP 2B: Read the fault codes.

Condition:
- Turn keyswitch “OFF”.
- Connect all components.

Action	Specification/Repair	Next Step
read the fault codes. • Start the engine and let it idle for one (1) minute. • Read the fault codes using Compulink™, Part Number 3823548, Echek™, Part Number 3824437, or INSITE™, Part Number 3824638.	**OK** Fault Code 141 is active	2C
	NOT OK Repair complete.	5B

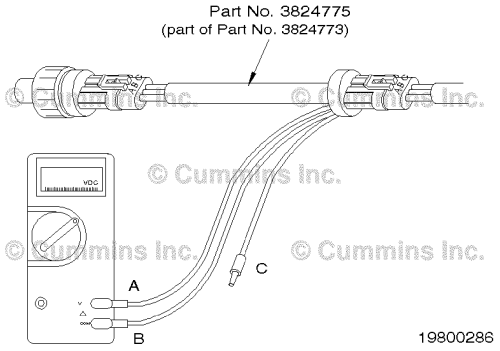
STEP 2C: Check the oil pressure sensor supply voltage.

⚠CAUTION⚠

To avoid pin and harness damage, use this test lead when taking a measurement: Part Number 3824775 - breakout cable.

Condition:
- Connect sensor harness connector to ECM.
- Disconnect all pressure and temperature sensors and the Coolant Level Sensor or shorting plug from their connector on sensor harness.
- Turn keyswitch "ON".

Action	Specification/Repair	Next Step
check the oil pressure sensor supply voltage. • Install the oil pressure sensor breakout cable, Part Number 3824775, between the sensor and the engine harness connector. • Measure the supply voltage from pin A to pin B of the breakout cable.	**OK** 4.75 to 5.25 VDC	2D
	NOT OK Does **not** meet specifications.	2C-1



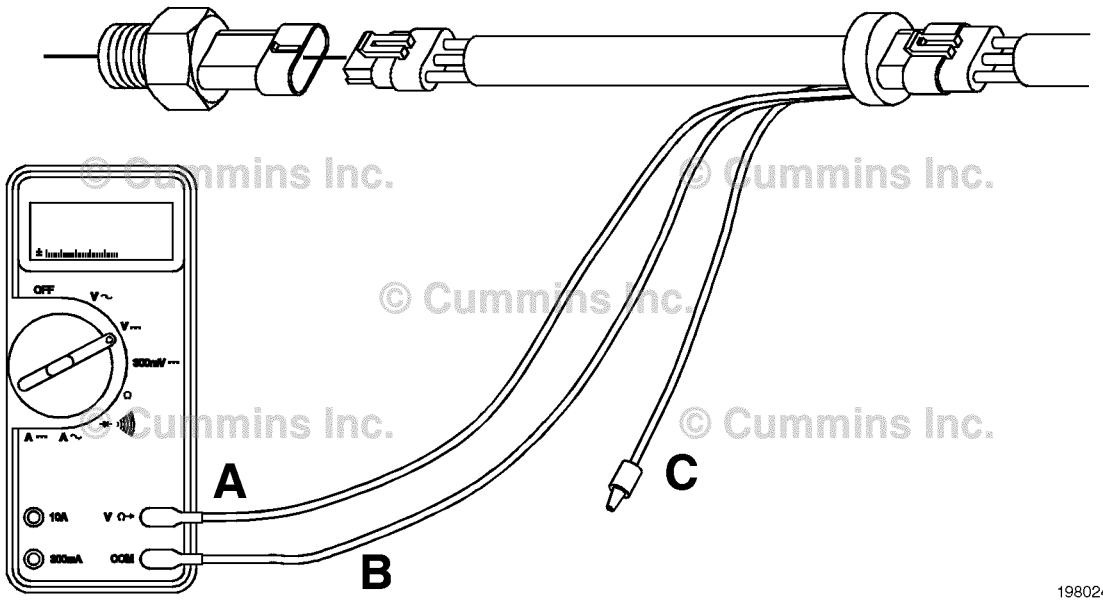
STEP 2C-1: Check the oil pressure sensor supply voltage.

⚠CAUTION⚠

To avoid pin and harness damage, use this test lead when taking a measurement: Part Number 3824775 - breakout cable.

Condition:
- Connect sensor harness connector to ECM.
- Disconnect all pressure and temperature sensors and the Coolant Level Sensor or shorting plug from their harness connector.
- Turn keyswitch "ON".

Action	Specification/Repair	Next Step
check the oil pressure sensor supply voltage. • Install the oil pressure sensor breakout cable, Part Number 3824775, between the sensor and the engine harness connector. Note: Do **not** connect the sensor to the breakout cable. • Measure the supply voltage from pin A to pin B of the breakout cable.	**OK** 4.75 to 5.25 VDC. Replace the oil pressure sensor. Refer to Procedure 019-066.	5A
	NOT OK Does **not** meet specifications.	2C-2



STEP 2C-2: Measure the voltage out of the ECM.

⚠CAUTION⚠

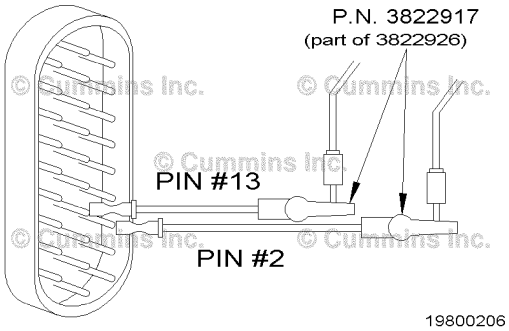
To avoid damaging a new ECM, all other active fault codes must be investigated prior to replacing the ECM.

⚠CAUTION⚠

To avoid pin and harness damage, use the following test lead when taking a measurement: Part Number 3822917 - female Deutsch/AMP/Metri-Pack test lead.

Condition:
- Disconnect the sensor harness connector from the ECM.
- Turn keyswitch "ON".

Action	Specification/Repair	Next Step
check the voltage at the ecm. • Measure the voltage between pin 2 and pin 13 of the ECM sensor port.	**OK** 4.75 to 5.25 VDC. Repair or replace the engine harness. Refer to Procedure 019-203 or 019-043 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130.	5A
	NOT OK Replace the ECM. Refer to Procedure 019-031 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130.	5A



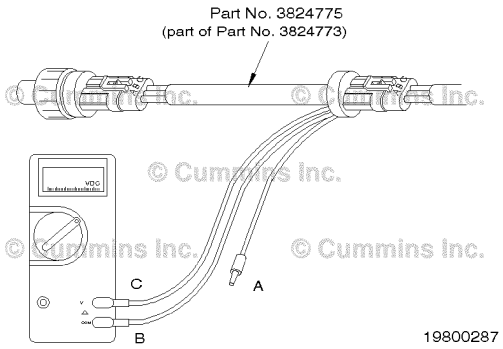
STEP 2D: Check the oil pressure sensor signal voltage.

⚠CAUTION⚠

To avoid pin and harness damage, use this test lead when taking a measurement: Part Number 3824775 - breakout cable.

Condition:
- Connect sensor harness connector to ECM.
- Disconnect all pressure sensors except the oil pressure sensor from the engine harness.
- Disconnect the Coolant Level Sensor or shorting plug from the engine harness.
- Turn keyswitch "ON".

Action	Specification/Repair	Next Step
check the oil pressure sensor signal voltage. • Install the oil pressure sensor breakout cable, Part Number 3824775, between the sensor and the engine harness connector. • Measure the signal voltage from pin C to pin B of the breakout cable.	**OK** 0.40 to 0.60 VDC	3A
	NOT OK Does **not** meet specifications.	2D-1



STEP 2D-1: Check for a short from pin-to-pin.

Condition:
- Turn keyswitch "OFF".
- Disconnect the sensor harness connector from the ECM.
- Disconnect all pressure sensors and the CLS or shorting plug from their connectors.

Action	Specification/Repair	Next Step
check for a short from pin-to-pin. • Measure the resistance from pin 2 to all other pins in the ECM sensor connector. • Measure the resistance from pin 7 to all other pins in the ECM sensor connector. • Measure the resistance from pin 13 to all other pins in the ECM sensor connector.	**OK** More than 100k ohms	2D-2
	NOT OK Repair or replace the engine harness. Refer to Procedure 019-201 and 019-202, 019-203, or 019-043.	5A

STEP 2D-2: Check for continuity in the sensor harness.

Condition:
- Turn keyswitch "OFF".
- Disconnect sensor harness connector from the ECM.
- Disconnect oil pressure sensor from the engine harness.

Action	Specification/Repair	Next Step
check for continuity in sensor harness. • Measure the resistance from pin 2 of the sensor harness connector to pin A of the sensor connector. • Measure the resistance from pin 7 of the sensor harness connector to pin C of the sensor connector. • Measure the resistance from pin 13 of the sensor harness connector to pin B of the sensor connector.	**OK** Less than 10 ohms	2D-3
	NOT OK Correct pin-to-pin wiring or open circuit. Repair or replace harness. Refer to Procedure 019-203 or 019-043.	5A

STEP 2D-3: Check ECM response.

⚠CAUTION⚠

To avoid pin and harness damage, use this test lead when taking a measurement: Part Number 3822917.

Condition:
- Disconnect sensor harness connector from the ECM.
- Install Part Number 3822917, as a jumper wire, between pin 2 and pin 7 in the ECM sensor port.
- Turn keyswitch "ON".

Action	Specification/Repair	Next Step
check for appropriate ecm response. • Read the fault codes using an electronic service tool.	**OK** Fault Code 141 inactive; Fault Code 135 active	2D-4
	NOT OK Fault Code 141 active. Replace the ECM. Refer to Procedure 019-031.	5A

STEP 2D-4: Check ECM signal pin to return pin resistance.

Condition:
- Turn keyswitch "OFF".
- Disconnect sensor harness connector from the ECM.

Action	Specification/Repair	Next Step
check ecm signal pin to return pin resistance. • Measure the resistance from pin 7 to pin 13 in the ECM sensor port; use test lead, Part Number 3822917.	**OK** Less than 100k ohms. Replace the sensor	5A
	NOT OK More than 100k ohms. Replace the ECM. Refer to Procedure 019-031.	5A

STEP 3: Check the engine harness.

STEP 3A: Inspect the engine harness and the ECM connector for damaged pins.

⚠CAUTION⚠

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

Condition:
- Turn keyswitch "OFF".
- Disconnect the sensor 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 engine harness and the ecm connector pins for: • bent or broken pins • pushed back or expanded pins • corroded pins • moisture in or on the connector • missing or damaged seals • dirt or debris in or on the connector pins.	**OK** No damaged pins	3B
	NOT OK Repair the damaged pins. Repair or replace the engine harness or ECM, whichever has the damaged pins. • 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. • Repair the engine harness. Refer to Procedure 019-203 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130. • Replace the engine harness. Refer to Procedure 019-043 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130. • Replace the ECM. Refer to Procedure 019-031 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130. • 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.	5A

STEP 3B: Read the fault codes.

Condition:
- Turn keyswitch "OFF".
- Connect all components.

Action	Specification/Repair	Next Step
read the fault codes. • Start the engine and let it idle for one (1) minute. • Read the fault codes using Compulink™, Part Number 3823548, Echek™, Part Number 3824437, or INSITE™, Part Number 3824638.	**OK** Fault Code 141 is active	3C
	NOT OK Repair complete.	5B

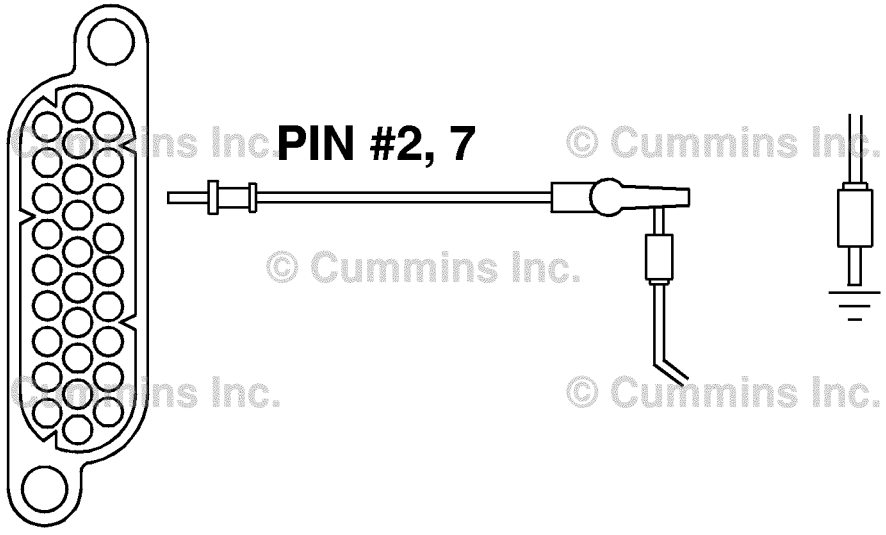
STEP 3C: Check for a short circuit to ground.

⚠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:
- Turn keyswitch "OFF".
- Disconnect all pressure sensors and the Coolant Level Sensor or shorting plug from the engine harness.
- Disconnect the sensor harness connector from the ECM.

Action	Specification/Repair	Next Step
check for a short circuit to ground. • Measure the resistance from pin 7 of the engine harness connector to engine block ground. • Measure the resistance from pin 2 of the engine harness connector to engine block ground.	**OK** More than 100k ohms	3D
	NOT OK Repair or replace the engine harness. Refer to Procedure 019-043 or 019-203 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130.	5A



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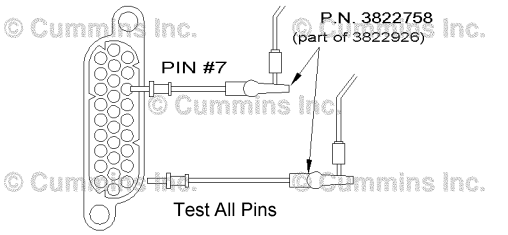
STEP 3D: Check for a short circuit from pin-to-pin.

⚠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:
- Turn keyswitch "OFF".
- Disconnect all pressure sensors and the Coolant Level Sensor or shorting plug from the engine harness.
- Disconnect the sensor harness connector from the ECM.

Action	Specification/Repair	Next Step
check for a short circuit from pin-to-pin. • Measure the resistance from pin 7 of the sensor harness connector to all other pins in the connector. • Measure the resistance from pin 2 of the sensor harness connector to all other pins in the connector.	**OK** More than 100k ohms	3E
	NOT OK Repair or replace the engine harness. Refer to Procedure 019-043 or 019-203 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130.	5A



STEP 3E: Check for correct pin-to-pin wiring between sensor and ECM and for continuity between sensor and ECM.

Condition:
- Turn keyswitch "OFF".
- Disconnect sensor harness connector from the ECM.
- Disconnect oil pressure sensor from the engine harness.

Action	Specification/Repair	Next Step
check for correct pin-to-pin wiring from sensor to ecm and continuity of harness. • Measure the resistance from pin 2 of the sensor harness connector at the ECM to pin A of the engine harness. • Measure the resistance from pin 7 of the sensor harness connector at the ECM to pin C of the engine harness. • Measure the resistance from pin 13 of the sensor harness connector at the ECM to pin B of the engine harness.	**OK** Less than 10 ohms	3F
	NOT OK Repair or replace engine harness. Refer to Procedure 019-201, 019-202, 019-043, or 019-203.	5A

STEP 3F: Clear and check the fault codes.

Condition:
- Connect all the components.

Action	Specification/Repair	Next Step
clear and check the fault codes. • Start the engine and let it idle for one (1) minute. • Snap the accelerator pedal. • Read the fault codes with the service tool.	**OK** No reoccurrence of Fault Code 141	5A
	NOT OK Fault Code 141 still occurred	4A

STEP 4: Check for an ECM response.

STEP 4A: Check for the appropriate ECM response.

⚠CAUTION⚠

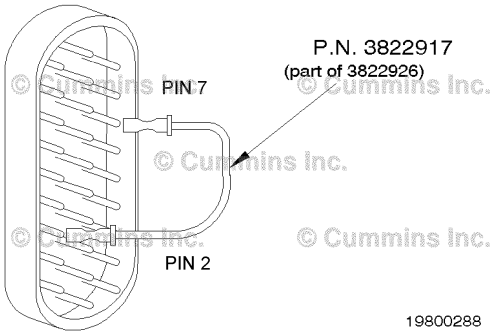
To avoid damaging a new ECM, all other active fault codes must be investigated prior to replacing the ECM.

⚠CAUTION⚠

To avoid pin and harness damage, use the following test lead when taking a measurement:
Part Number 3822917 - female Deutsch/AMP/Metri-Pack test lead.

Condition:
- Disconnect the sensor harness connector from the ECM.
- Turn keyswitch "ON".

Action	Specification/Repair	Next Step
check for the appropriate ecm response. • Install Part Number 3822917, as a jumper wire between the ECM sensor port pin 2 and pin 7. • Read the fault codes using Compulink™, Part Number 3823548, Echek™, Part Number 3824437, or INSITE™, Part Number 3824638.	**OK** Fault Code 141 inactive; Fault Code 135 active	4B
	NOT OK Replace the ECM. Refer to Procedure 019-031 in the Troubleshooting and Repair Manual, Industrial CELECT™ Plus System, Bulletin 3666130.	5A



STEP 4B: Check ECM signal pin resistance.

⚠CAUTION⚠ **To avoid pin and harness damage, use the following test lead when taking a measurement: Part Number 3822917 - female Deutsch/AMP/Metri-Pack test lead.**
Condition: • Turn keyswitch "OFF". • Disconnect the sensor harness connector from the ECM.

Action	Specification/Repair	Next Step
check ecm signal pin resistance. • Measure the resistance from pin 7 to pin 13 in the ECM sensor port; use test lead, Part Number 3822917.	**OK** Less than 100k ohms	5A
	NOT OK Replace the ECM. Refer to Procedure 019-031.	5A

STEP 5: Clear the fault codes.

STEP 5A: Disable the fault code.

Condition: • Connect all the components.

Action	Specification/Repair	Next Step
disable the fault code. • Start the engine and let it idle for one (1) minute. • Verify Fault Code 141 is inactive.	**OK** Fault Code 141 inactive	5B
	NOT OK Return to the troubleshooting steps or contact your local Cummins Authorized Repair Location if all the steps have been completed and checked again.	1A

STEP 5B: Clear the inactive fault codes.

Condition: • Connect all the components.

Action	Specification/Repair	Next Step
clear the inactive fault codes. • Erase the inactive fault codes using Compulink™, Part Number 3823549, Echek™, Part Number 3824437, or INSITE™, Part Number 3824638.	**OK** All faults codes cleared	Repair complete
	NOT OK Troubleshoot any remaining active fault codes.	Appropriate troubleshooting charts