

Passive Anti-Theft System (PATS)

DTC Charts

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

BCM DTC Chart

DTC	Description	Action
B10D5:13	PATS Antenna: Circuit Open	INSTALL a new PATS transceiver. REFER to: Passive Anti-Theft System (PATS) Transceiver (419-01B Passive Anti-Theft System (PATS), Removal and Installation).
B10D7:05	PATS Key: System Programming Failure	GO to Pinpoint Test B
B10D7:51	PATS Key: Not Programmed	PROGRAM the PATS key in question. REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).
B10D7:55	PATS Key: Not Configured	The CEI Lock Configuration within the BODY>SERVICE FUNCTIONS tab was not completed during the PMI procedure. CARRY OUT the CEI Lock Configuration as part of the PMI procedure.

B10D7:87	PATS Key: Missing Message	GO to Pinpoint Test D
B10D7:8F	PATS Key: Erratic	GO to Pinpoint Test C
B10D8:00	PATS Key Less Than Minimum Programmed: No Sub Type Information	Less than 2 keys are programmed (minimum of 2 keys must be programmed). CYCLE the customer's second key in the ignition key cylinder to program (when less than 2 keys are programmed, the BCM automatically programs the first 2 keys that are cycled in the ignition key cylinder).
B10D9:87	PATS Transponder: Missing Message	GO to Pinpoint Test E
B10DA:51	PATS Target Identifier: Not Programmed	There is no PCM ID stored in the BCM memory. CARRY OUT the parameter reset procedure. REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).
C113A:11	Wakeup Control: Circuit Short To Ground	GO to Pinpoint Test F
C113A:15	Wakeup Control: Circuit Short To Battery or Open	GO to Pinpoint Test F
All other Diagnostic Trouble Codes (DTCs)	-	REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

PCM DTC Chart

DTC	Description	Action
P161A	Incorrect Response from Immobilizer Control Module	The BCM ID received by the PCM does not match the ID stored in the PCM memory. CARRY OUT the parameter reset procedure. REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).
All other Diagnostic Trouble Codes (DTCs)	-	REFER to the PCM DTC Chart in the appropriate 303-14 section.

Symptom Chart

Symptom Chart: PATS

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Condition	Possible Sources	Actions
The vehicle does not start	Refer to the Pinpoint Test	GO to Pinpoint Test A
Unable to program keys using two programmed keys	Spare key programming disabled	ENABLE the spare key programming. REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).

Unable to program keys using a diagnostic scan tool	● Base PATS concern ● PATS transceiver	● CARRY OUT the BCM self-test. ○ If any Diagnostic Trouble Codes (DTCs) are present, REFER to the BCM DTC Chart in this section. ○ If no Diagnostic Trouble Codes (DTCs) are present, INSTALL a new PATS transceiver. REFER to: Passive Anti-Theft System (PATS) Transceiver (419-01B Passive Anti-Theft System (PATS), Removal and Installation).
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Pinpoint Tests

The Vehicle Does Not Start

Normal Operation and Fault Conditions

REFER to: [Passive Anti-Theft System \(PATS\) - System Operation and Component Description](#) (419-01B Passive Anti-Theft System (PATS), Description and Operation).

Possible Causes

- Communication system concern
- Key not programmed
- PATS concern
- Starting system concern
- Powertrain system concern

PINPOINT TEST A : THE VEHICLE DOES NOT START

NOTE: This pinpoint test requires a second programmed PATS key. If only one key is available, obtain a second programmed PATS key.

A1 CHECK THE OPERATION OF THE SECOND PROGRAMMED KEY

- Using the second programmed PATS key, attempt to start the vehicle.

Does the second programmed key start the vehicle?

Yes	REPROGRAM the first PATS key. REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures). TEST the system for normal operation. If the concern is still present, DISCARD the PATS key in question and program a new PATS key. REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).
No	GO to A2

A2 CHECK FOR COMMUNICATION WITH THE PCM (POWERTRAIN CONTROL MODULE) AND THE BCM (BODY CONTROL MODULE)

- Ignition ON.
- Using a diagnostic scan tool, carry out the network test.

Does the PCM and the BCM pass the network test?

Yes	GO to A3
No	REFER to: Communications Network (418-00 Module Communications Network, Diagnosis and Testing).

A3 CHECK IF THE ENGINE CRANKS

- Attempt to start the engine.

Does the engine crank?

Yes	The no-start condition is not PATS-related. Refer to Powertrain Control/Emissions Diagnosis (PC/ED) manual.
No	GO to A4

A4 CHECK FOR PCM (POWERTRAIN CONTROL MODULE) AND BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, carry out the PCM and the BCM self-tests.

Are any PCM or BCM Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the PCM DTC Chart or the BCM DTC Chart in this section.
No	DIAGNOSE the starting system. Refer to the appropriate section in Group 303 for the procedure.

B10D7:05

Normal Operation and Fault Conditions

When the BCM enters a key programming state, it activates the PATS transceiver to read the key in the ignition lock cylinder. If a valid PATS key is used and there are no concerns with PATS, the key is programmed into the BCM memory.

REFER to: [Passive Anti-Theft System \(PATS\) - System Operation and Component Description](#) (419-01B Passive Anti-Theft System (PATS), Description and Operation).

BCM DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
B10D7:05	PATS Key: System Programming Failure	Sets when a PATS key is not successfully programmed into the BCM.

Possible Causes

- PATS key not programmed

Visual Inspection and Diagnostic Pre-checks

- Inspect the PATS key for damage.
- Verify the correct key is used.

PINPOINT TEST B : B10D7:05

B1 CHECK THE BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE SELF-TEST

- Review the Diagnostic Trouble Codes (DTCs) from the BCM self-test.

Is DTC B10D5:13, B10D7:87, B10D9:87, C113A:11 or C113A:15 present?

Yes	For DTC B10D5:13, INSTALL a new PATS transceiver. REFER to: Passive Anti-Theft System (PATS) Transceiver (419-01B Passive Anti-Theft System (PATS), Removal and Installation). For DTC B10D7:87, GO to Pinpoint Test D For DTC B10D9:87, GO to Pinpoint Test E For DTC C113A:11 or C113A:15, GO to Pinpoint Test F
No	GO to B2

B2 CHECK THE PATS (PASSIVE ANTI-THEFT SYSTEM) KEY

- Verify the correct PATS keys are used with the vehicle. Refer to the PATS Job Aid in the Service Tips tab on the Professional Technician Society (PTS) web page or the parts catalog.

Are the correct PATS keys used?

Yes	PROGRAM the key again. If key programming fails, DISCARD the suspect key and PROGRAM a new key. REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).
No	OBTAIN the correct key for the vehicle. PROGRAM the new key. REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).

B10D7:8F

Normal Operation and Fault Conditions

When the ignition transitions to RUN or START, the BCM activates the PATS transceiver to read the key in the ignition lock cylinder. If the BCM does not receive a PATS key code or if the code is invalid, the PATS prevents the vehicle from starting.

REFER to: [Passive Anti-Theft System \(PATS\) - System Operation and Component Description](#) (419-01B Passive Anti-Theft System (PATS), Description and Operation).

BCM DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
B10D7:8F	PATS Key: Erratic	Sets when the BCM reads a partial or corrupt PATS key read.

Possible Causes

- Radio Frequency (RF) interference
- PATS key
- PATS transceiver

Visual Inspection and Diagnostic Pre-checks

- Inspect the PATS key for damage.
- Verify the correct key is used.

PINPOINT TEST C : B10D7:8F

NOTE: This pinpoint test requires a second programmed PATS key. If only one key is available, obtain a second programmed PATS key.

C1 CHECK THE PATS (PASSIVE ANTI-THEFT SYSTEM) KEY

- Verify the correct PATS keys are used with the vehicle. Refer to the PATS Job Aid in the Service Tips tab on the Professional Technician Society (PTS) web page or the parts catalog.

Are the correct PATS keys used?

Yes	GO to C2
No	OBTAIN the correct key(s) for the vehicle. PROGRAM the new key(s). REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).

C2 CHECK FOR RADIO FREQUENCY (RF) INTERFERENCE

- Check for metallic objects or other electronic devices on the same key ring, such as a second PATS key for another vehicle or other transponder type of device.

Are any items identified on the key ring that may cause Radio Frequency (RF) interference?

Yes	REMOVE the programmed key from the key ring. TEST the system for normal operation. If the concern is still present, GO to C3 If the concern is no longer present, INFORM the customer of the cause of the concern.
No	GO to C3

C3 ISOLATE THE PATS (PASSIVE ANTI-THEFT SYSTEM) KEYS

- Place the first PATS key in the ignition lock cylinder.
- Ignition ON.
- Using a diagnostic scan tool, clear the BCM Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, carry out the BCM self-test. Record the results.
- Record the results from the BCM self-test.
- Using a diagnostic scan tool, clear the BCM Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Insert the customer's second key.
- Ignition ON.
- Using a diagnostic scan tool, carry out the BCM self-test. Record the results.

- Record the results from the BCM self-test.

Is DTC B10D7:8F retrieved for both keys?

Yes	INSTALL a new PATS transceiver. REFER to: Passive Anti-Theft System (PATS) Transceiver (419-01B Passive Anti-Theft System (PATS), Removal and Installation).
No	DISCARD the key in question and PROGRAM a new key. REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).

B10D7:87

Normal Operation and Fault Conditions

REFER to: [Passive Anti-Theft System \(PATS\) - System Operation and Component Description](#) (419-01B Passive Anti-Theft System (PATS), Description and Operation).

BCM DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
B10D7:87	PATS Key: Missing Message	Sets when the BCM does not receive a key read from the PATS transceiver when communication is present.

Possible Causes

- Radio Frequency (RF) interference
- PATS key
- PATS transceiver

PINPOINT TEST D : B10D7:87

NOTE: This pinpoint test requires a second programmed PATS key. If only one key is available, obtain a second programmed PATS key.

D1 CHECK FOR RADIO FREQUENCY (RF) INTERFERENCE

- Check for metallic objects or other electronic devices on the same key ring, such as a second PATS key for another vehicle or other transponder type of device.

Are any items identified on the key ring that may cause Radio Frequency (RF) interference?

Yes	REMOVE the programmed key from the key ring. TEST the system for normal operation. If the concern is still present, GO to D2 If the concern is no longer present, INFORM the customer of the cause of the concern.
No	GO to D2

D2 CHECK IF THE CONCERN IS PRESENT FOR BOTH PROGRAMMED KEYS

- Place the first PATS key in the ignition lock cylinder.
- Ignition ON.
- Using a diagnostic scan tool, clear the BCM Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, carry out the BCM self-test.
- Record the results from the BCM self-test.
- Using a diagnostic scan tool, clear the BCM Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Insert the customer's second key.
- Ignition ON.

- Using a diagnostic scan tool, carry out the BCM self-test.
- Record the results from the BCM self-test.

Is DTC B10D7:87 present for both keys?

Yes	INSTALL a new PATS transceiver. REFER to: Passive Anti-Theft System (PATS) Transceiver (419-01B Passive Anti-Theft System (PATS), Removal and Installation).
No	DISCARD the key in question and PROGRAM a new key. DISCARD the key in question and PROGRAM a new key. REFER to: Anti-Theft Security Access and Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).

B10D9:87

Refer to Wiring Diagrams Cell 112 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Passive Anti-Theft System \(PATS\) - System Operation and Component Description](#) (419-01B Passive Anti-Theft System (PATS), Description and Operation).

BCM DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
B10D9:87	PATS Transponder: Missing Message	Sets when the BCM loses communication with the PATS transceiver.

Possible Causes

- Wiring, terminals or connectors
- PATS transceiver
- BCM

PINPOINT TEST E : B10D9:87

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

E1 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) C113A:11 OR C113A:15

- Review the results from the BCM self-test.

Is DTC C113A:11 or C113A:15 present?

Yes	GO to Pinpoint Test F
No	GO to E2

E2 CHECK FOR VOLTAGE TO THE PATS (PASSIVE ANTI-THEFT SYSTEM) TRANSCEIVER

- Ignition OFF.
- Disconnect: PATS Transceiver C252.
- Ignition ON.

Is the voltage greater than 11 volts?

Yes	GO to E4
No	GO to E3

E3 CHECK THE PATS (PASSIVE ANTI-THEFT SYSTEM) TRANSCEIVER VOLTAGE SUPPLY CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: BCM C2280B.

Is the resistance less than 3 ohms?

Yes	GO to E8
No	REPAIR the circuit.

E4 CHECK THE PATS (PASSIVE ANTI-THEFT SYSTEM) TRANSCEIVER GROUND CIRCUIT FOR AN OPEN

- Ignition OFF.

Is the voltage greater than 11 volts?

Yes	GO to E5
No	REPAIR the circuit.

E5 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition ON.
- Disconnect: BCM C2280B.

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to E6

E6 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO GROUND

- Connect BCM C2280B.
- Ignition OFF.
- Disconnect: BCM C2280B.

Is the resistance greater than 10,000 ohms?

Yes	GO to E7
No	REPAIR the circuit.

E7 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR AN OPEN

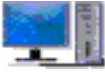
Is the resistance less than 3 ohms?

Yes	INSTALL a new PATS transceiver. REFER to: Passive Anti-Theft System (PATS) Transceiver (419-01B Passive Anti-Theft System (PATS), Removal and Installation). CLEAR the Diagnostic Trouble Codes (DTCs) and repeat the BCM self-test. If DTC B10D9:87 is retrieved again, GO to E8
No	REPAIR the circuit.

E8 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Disconnect and inspect all of the BCM connectors.
- Repair:
 - corrosion (install new connectors or terminals, clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect all the BCM connectors and make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, discontinue this test and follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern,   Click here to access Guided Routine (BCM).
No	The system is operating correctly at this time. The concern may have been caused by module connections. Address the root cause of any connector or pin issues.

C113A:11 or C113A:15

Refer to Wiring Diagrams Cell 112 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Passive Anti-Theft System \(PATS\) - System Operation and Component Description](#) (419-01B Passive Anti-Theft System (PATS), Description and Operation).

BCM DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
C113A:11	Wakeup Control: Circuit Short To Ground	Sets when the BCM detects a short to ground from the wakeup control output circuit.
C113A:15	Wakeup Control: Circuit Short To Battery or Open	Sets when the BCM detects an open short to voltage from the wakeup control output circuit.

Possible Causes

- Wiring, terminals or connectors

- PATS transceiver
- BCM
- PCM

PINPOINT TEST F : C113A:11 OR C113A:15

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

F1 REVIEW THE BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE SELF-TEST

- Review the Diagnostic Trouble Codes (DTCs) from the BCM self-test.:

Is DTC C113A:11 present?

Yes	GO to F2
No	GO to F5

F2 ISOLATE THE PCM (POWERTRAIN CONTROL MODULE) AS THE CAUSE FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: PCM B connector.
- Ignition ON.
- Using a diagnostic scan tool, clear the BCM Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, carry out the BCM self-test.

Is DTC C113A:11 still present?

Yes	GO to F3
No	GO to F10

F3 ISOLATE THE PATS (PASSIVE ANTI-THEFT SYSTEM) TRANSCEIVER AS THE CAUSE FOR A SHORT TO GROUND

- Using a diagnostic scan tool, clear the BCM Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Disconnect: PATS Transceiver C252.
- Ignition ON.
- Using a diagnostic scan tool, carry out the BCM self-test.

Is DTC C113A:11 still present?

Yes	GO to F4
No	INSTALL a new PATS transceiver. REFER to: Passive Anti-Theft System (PATS) Transceiver (419-01B Passive Anti-Theft System (PATS), Removal and Installation).

F4 CHECK THE WAKEUP CONTROL OUTPUT CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: BCM C2280B.
- Disconnect: BCM C2280F.

Are the resistances greater than 10,000 ohms?

Yes	GO to F11
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No	REPAIR the circuit in question.
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F5 CHECK THE WAKEUP CONTROL CIRCUIT FOR AN OPEN OR SHORT TO VOLTAGE

- Attempt to start the vehicle.

Does the vehicle start?

Yes	GO to F7
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No	GO to F6
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F6 CHECK THE WAKEUP CONTROL CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: PATS Transceiver C252.
- Disconnect: BCM C2280B.

Is the resistance less than 3 ohms?

Yes	GO to F11
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No	REPAIR the circuit.
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F7 ISOLATE THE PCM (POWERTRAIN CONTROL MODULE) AS THE CAUSE FOR A SHORT TO VOLTAGE

- Ignition ON.
- Using a diagnostic scan tool, clear the BCM Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Disconnect: PCM B connector.
- Ignition ON.
- Using a diagnostic scan tool, carry out the BCM self-test.

Is DTC C113A:15 still present?

Yes	GO to F8
No	GO to F10

F8 CHECK THE PCM (POWERTRAIN CONTROL MODULE) WAKEUP CONTROL CIRCUIT AS THE CAUSE FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: BCM C2280F.
- Ignition ON.

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to F9

F9 CHECK THE PATS (PASSIVE ANTI-THEFT SYSTEM) TRANSCEIVER WAKEUP CONTROL CIRCUIT AS THE CAUSE FOR A SHORT TO VOLTAGE

- Disconnect: BCM C2280B.
- Disconnect: PATS Transceiver C252.

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to F11

F10 CHECK FOR CORRECT PCM (POWERTRAIN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all of the PCM connectors.
- Repair:
 - corrosion (install new connectors or terminals, clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect all the PCM connectors and make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, discontinue this test and follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new PCM. REFER to the appropriate 303-14 section.
No	The system is operating correctly at this time. The concern may have been caused by module connections. Address the root cause of any connector or pin issues.

F11 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Disconnect and inspect all of the BCM connectors.
- Repair:
 - corrosion (install new connectors or terminals, clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect all the BCM connectors and make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, discontinue this test and follow TSB instructions. If no Technical Service Bulletins (TSBs) address this concern,   Click here to access Guided Routine (BCM).
No	The system is operating correctly at this time. The concern may have been caused by module connections. Address the root cause of any connector or pin issues.