

Anti-Theft —Passive Anti-Theft System (PATS)

Refer to Wiring Diagrams Cell [112](#), Anti-Theft (PATS) for schematic and connector information.

Refer to Wiring Diagrams Cell [62](#), Instrument Cluster for schematic and connector information.

Special Tool(s)

| | |
|--|--|
|  <p>ST1137-A</p> | 73 Digital Multimeter or equivalent 105-R0051 |
|  <p>ST1217-A</p> | New Generation STAR (NGS) Tester or equivalent 418-F048 (007-00500) |

Inspection and Verification

NOTE: The PATS module must be reconfigured after replacement. Refer to the PATS Configuration Command Index. For additional reprogramming assistance, refer to the help screen on the New Generation STAR (NGS) Tester configuration card.

1. Verify the customer concern by duplicating the condition.
2. Visually inspect for obvious signs of mechanical and electrical damage.

Visual Inspection Chart

| Mechanical | Electrical |
|--|--|
| <ul style="list-style-type: none"> ● Ignition lock cylinder ● Encoded ignition key (PATS key) ● Use of non-encoded ignition key (key without the molded plastic head, non-PATS key) ● Use of a non-programmed encoded ignition key | <ul style="list-style-type: none"> ● Fuse: <ul style="list-style-type: none"> ■ Fuse 24 (7.5A) ■ Fuse 25 (7.5A) ■ Fuse 19 (25A) ● PATS transceiver module ● Connectors ● Ignition switch |

3. If the concern remains after the inspection connect the New Generation STAR (NGS) Tester to the data link connector (DLC) located beneath the instrument panel and select the vehicle to be tested

from the NGS menu. If the NGS does not communicate with the vehicle:

- check that the program card is properly installed.
 - check the connections to the vehicle.
 - check the ignition switch position.
4. If the NGS still does not communicate with the vehicle, refer to the New Generation STAR Tester manual.
 5. Perform the DATA LINK DIAGNOSTIC TEST. If the NGS responds with:
 - CKT914, CKT915 or CKT70 = ALL ECUS NO RESP/NOT EQUIP, refer to [Section 418-00](#).
 - NO RESP/NOT EQUIP for PATS module, go to Pinpoint Test A.
 - SYSTEM PASSED, retrieve and record the continuous diagnostic trouble codes (DTCs), erase the continuous DTCs and perform self-test diagnostics for the PATS module.
 6. If the DTCs retrieved are related to the concern, go to PATS Diagnostic Trouble Code (DTC) Index to continue diagnostics.
 7. If no DTCs related to the concern are retrieved, proceed to Symptom Chart to continue diagnostics.

PATS Diagnostic Trouble Code (DTC) Index

PATS Diagnostic Trouble Code (DTC) Index

| DTC | Description | Action |
|----------------|---|---|
| B1213 | Anti-Theft Number of Programmed Encoded Ignition Keys Below Minimum | GO to Pinpoint Test B1213 . |
| B2103 or B1232 | Antenna Not Connected Defective Transceiver | GO to Pinpoint Test B2103 . |
| B1600 | No Key Code Received — Damaged Encoded Ignition Key or Use of Non-PATS Encoded Ignition Key | GO to Pinpoint Test B1600 . |
| B1601 | Unprogrammed Encoded Ignition Key (Keycode Format OK) | GO to Pinpoint Test B1601 . |
| B1602 | Invalid Key Code Format From Encoded Ignition Key Transponder (Partial Key Read) | GO to Pinpoint Test B1602 . |
| B1681 | PATS Transceiver Signal Is Not Received (Not Connected, Damaged, or Wiring) | GO to Pinpoint Test B1681 . |
| B2139 | PCM ID Does Not Match Between PATS and PCM | GO to Pinpoint Test B2139 . |
| B2141 | No Security ID Exchange Between PATS and PCM | GO to Pinpoint Test B2141 . |
| U1147 | Faulty SCP Link or Incorrect PCM Calibration | GO to Pinpoint Test U1147 . |
| U1262 | Missing SCP Message | REFER to Section 418-00 . |

PATS Parameter Identification (PID) Index**PATS Parameter Identification (PID) Index**

| Display | Description | Expected Value |
|----------|--|-----------------------|
| CCNTPATS | Number of Continuous DTCs On PATS | One Count Per DTC |
| IGN_PAT | Ignition Switch | RUN, OFF |
| NUMKEYS | Number of Encoded Ignition Key Codes Programmed | BCD (valid range 0-8) |
| M_KEY | Is This A Programmed Encoded Ignition Key | YES, NO |
| ENABL_S | Has PATS Enabled the Vehicle | ENABLED, DISABLED |
| ACCESS | Security Access Status | TIMED, CODED |
| MIN#KEY | Minimum Number of Programmed Keys Required to Start Vehicle | BCD (valid range 2-8) |
| ANTISCN | Time-Out for Unprogrammed PATS Key (Active Will Last Up to 20 Seconds) | ACTIVE, notACT |
| PCM_ID | Is PCM ID Stored in PATS Module | STORED, notSTR |
| SPARE_KY | Can Spare Encoded Ignition Keys Be Added With Two Programmed Encoded Ignition Keys | YES, NO |
| PCM_VFY | PCM ID Matches Between PCM and PATS Module | YES, NO |

PATS Active Command Index**PATS Active Command Index**

| Active Command | Display | Action |
|---------------------------|------------|---------|
| PATS ANTI-THEFT INDICATOR | THEFT LAMP | ON, OFF |
| TRANSMIT SIGNAL COMMAND | TRANSMIT | ON, OFF |

PATS Configuration Command Index**PATS Configuration Command Index — Available After Security Access Entered**

| Display | NGS/SBDS Menu | Description |
|-------------------------|---------------|--|
| IGNITION KEY CODE ERASE | PATS | Erase All Programmed Ignition key Codes |
| PARAMETER RESET — PATS | PATS | Clear the PCM ID Stored in PATS Module that Matches PATS Module to PCM |
| PARAMETER RESET — PCM | PCM | Reset the PCM Security ID (Required After Replacing the PATS Module) |
| SPARE KEY SWITCH | PATS | Enable the Spare Key Programming Procedure |

| | | |
|-----------------------------|------|---|
| ENABLE | | |
| SPARE KEY SWITCH DISABLE | PATS | Disable the Spare Key Programming Procedure |

Symptom Chart

Symptom Chart

| Condition | Possible Sources | Action |
|---|--|--|
| <ul style="list-style-type: none"> No Communication With The Module — PATS Module | <ul style="list-style-type: none"> Fuses Circuitry Passive anti-theft system module | <ul style="list-style-type: none"> GO to Pinpoint Test A. |
| <ul style="list-style-type: none"> The Anti-Theft Indicator Is Always/Never On — No 3 Second Anti Theft Indicator Prove Out | <ul style="list-style-type: none"> Passive anti-theft system module Circuitry Fuse Theft indicator | <ul style="list-style-type: none"> GO to Pinpoint Test B. |
| <ul style="list-style-type: none"> The Vehicle Does Not Start — Theft Indicator Proves Out for 3 Seconds as Normal | <ul style="list-style-type: none"> Less than two keys programmed to the system Transceiver not connected/defective Circuitry Transceiver internal antenna damaged NON-PATS key, damaged key or no code received Partial key read of PATS key Unprogrammed PATS key No PCM ID stored in PATS PATS/PCM ID do not match Problem with SCP link | <ul style="list-style-type: none"> PERFORM VIC on-demand self-test. RETRIEVE DTCs. If DTCs are present, GO to VIC Diagnostics Trouble Code (DTC) Index. If no DTCs are retrieved, check for other possible No-Start causes. Clear the stored DTCs. Cycle the ignition key from off to run. Retrieve continuous DTCs. If DTCs are present, GO to VIC Diagnostics Trouble Code (DTC) Index. If no DTCs are retrieved, check for other possible causes. |
| <ul style="list-style-type: none"> The Alarm System Does Not Operate Properly — The Vehicle Starts But Flashes a Fault Code on Theft Indicator at Key On | <ul style="list-style-type: none"> Incorrect PCM calibration | <ul style="list-style-type: none"> GO to Pinpoint Test U1147. |

Pinpoint Tests

PINPOINT TEST B1213: ANTI-THEFT NUMBER OF PROGRAMMED ENCODED IGNITION KEYS BELOW MINIMUM

| CONDITIONS | DETAILS/RESULTS/ACTIONS |
|--|--|
| B12131 RETRIEVE THE DTCS | |
| <p>1 </p> <p>2  NGS</p> <p>3 </p> <p>4  Clear Continuous DTCs</p> <p>5  PATS On-Demand Self-Test</p> | <p>3 Retrieve and document continuous DTCs.</p> <p>• Is DTC B1213 the only DTC retrieved?</p> <p>→ Yes GO to B12132.</p> <p>→ No REPAIR the other DTCs PATS retrieved. CLEAR the DTCs. REPEAT the PATS On-Demand Self Test. TEST the system for normal operation.</p> |
| B12132 CHECK FOR PROGRAMMED ENCODED IGNITION KEYS—MONITOR THE PATS PID NUMKEYS | |
| <p>1 </p> | <p>1 Monitor the PATS PID NUMKEYS.</p> |

| | |
|---|---|
| | <ul style="list-style-type: none"> • Does the PATS PID NUMKEYS display less than two encoded ignition keys programmed? <p>→ Yes GO to B12133.</p> <p>→ No System is OK.</p> |
| B12133 PROGRAM ENCODED IGNITION KEYS | |
| <p>2</p>  | <p>1 NOTE: Two programmed encoded ignition keys must be available to start the vehicle.</p> <p>Cut a new encoded ignition key.</p> <p>3 Program the new encoded ignition key.</p> <ul style="list-style-type: none"> • Does the theft indicator illuminate for three seconds and then go out? <p>→ Yes CLEAR the DTCs. PERFORM PATS On-Demand Self-Test to verify all codes have been cleared. TEST the system for normal operation.</p> <p>→ No If the theft indicator is on continuously, REPEAT DTC B1213-3 with a second new encoded ignition key. If the theft indicator is flashing, RETRIEVE DTC stored for new fault and REPAIR the other DTCs retrieved.</p> |

PINPOINT TEST B2103: ANTENNA NOT CONNECTED — DEFECTIVE TRANSCEIVER

| CONDITIONS | DETAILS/RESULTS/ACTIONS |
|---|--|
| B21031 INSPECT ANTENNA FOR PROPER INSTALLATION | |
| <p>1</p>  <p>3</p>  | <p>2 Verify the PATS transceiver is properly installed; refer to Module—Passive Anti-Theft Transceiver.</p> |

| | |
|--|---|
| <p>4</p>  <p>Clear Continuous DTCs</p> <p>5</p>  <p>PATS On-Demand Self Test</p> | <ul style="list-style-type: none"> ● Is DTC B1600 retrieved? <p>→ Yes GO to B16002.</p> <p>→ No If other DTCs are retrieved, REFER to PATS Module Diagnostic Trouble Code (DTC) Index. If no DTCs are retrieved, system is OK.</p> |
|--|---|

B16002 REPLACE THE ENCODED IGNITION KEY

| | |
|--|--|
| <p>1</p>  <p>3</p>  <p>5</p>  <p>PATS On-Demand Self-Test</p> | <p>2 NOTE: Check to make sure the customer and replacement encoded ignition keys are approved Ford encoded PATS ignition keys. Unapproved PATS keys do not always operate properly over different temperature ranges (encoded ignition keys from Rotunda, Ilco, or Strattec are approved encoded ignition keys).</p> <p style="text-align: center;">Cut a new encoded ignition key.</p> <p>4 Program the new encoded ignition key; refer to Key Programming—Erase All Key Codes and Program Two Keys.</p> <ul style="list-style-type: none"> ● Is DTC B1600 still present? |
|--|--|

| | |
|---|--|
| | <p>→ Yes GO to B16003.</p> <p>→ No If no other DTCs are retrieved, system is OK.</p> <p>If other DTCs are retrieved, REFER to PATS Module Diagnostic Trouble Code (DTC) Index</p> |
| <p>B16003 REPLACE THE PATS TRANSCIVER</p> | |
| <p>1</p>  <p>3</p>  <p>4</p>  <p>PATS On-Demand Self-test</p> | <p>2</p> <p>REPLACE the PATS transceiver; refer to Module—Passive Anti-Theft Transceiver.</p> <p>4</p> <p>NOTE: Use the customers original encoded ignition key, not the encoded ignition key that was cut in the previous step.</p> <p>• Is DTC B1600 retrieved?</p> <p>→ Yes REPLACE the PATS module; REFER to Module—Passive Anti-Theft System (PATS). CYCLE the ignition to RUN using two encoded ignition keys. GO to Pinpoint Test B2139. CLEAR the DTCs. TEST the system for normal operation.</p> <p>→ No System is OK.</p> |

PINPOINT TEST B1601: UNPROGRAMMED ENCODED IGNITION KEY (KEYCODE FORMAT OK)

| CONDITIONS | DETAILS/RESULTS/ACTIONS |
|---|-------------------------|
| <p>B16011 RETRIEVE THE DTCS</p> | |
| <p>1</p>  <p>2</p> | |

| | |
|--|--|
|  <p>NGS</p> <p>3</p>  <p>4</p>  <p>Clear Continuous DTCs</p> <p>5</p>  <p>PATS On-Demand Self-Test</p> | <p>3 Retrieve and document continuous DTCs.</p> <p>4</p> <p>5</p> <p>Clear Continuous DTCs</p> <p>PATS On-Demand Self-Test</p> <ul style="list-style-type: none"> • Is DTC B1601 retrieved? <p>→ Yes GO to B16012.</p> <p>→ No System is OK. CHECK all customer encoded ignition keys with PATS On-Demand Self-Test to verify all other encoded ignition keys are programmed.</p> |
| <p>B16012 CHECK FOR PROGRAMMED ENCODED IGNITION KEYS—MONITOR THE PATS PID NUMKEYS</p> | |
| <p>1</p>  | <p>1 Monitor the PATS PID NUMKEYS.</p> <ul style="list-style-type: none"> • Does the PATS PID NUMKEYS display 8? <p>→ Yes ERASE and REPROGRAM the key codes; REFER to Key Programming—Erase All Key Codes and Program Two Keys. CLEAR the DTCs. TEST the system for normal operation.</p> <p>→ No GO to B16013.</p> |
| <p>B16013 CHECK THE NUMBER OF PROGRAMMED ENCODED IGNITION KEYS AVAILABLE</p> | |
| | <p>1 Verify there are at least two currently programmed encoded ignition keys available with the vehicle.</p> |

| | |
|--|--|
| | <ul style="list-style-type: none"> • Are at least two currently programmed encoded ignition keys available with the vehicle? <p>→ Yes GO to B16014.</p> <p>→ No CUT new encoded ignition key so that at least two encoded ignition keys are available. PROGRAM the encoded ignition keys; REFER to Key Programming—Erase All Key Codes and Program Two Keys. GO to B16014.</p> |
|--|--|

B16014 VERIFY THE PATS PID SPARE_KY INDICATES ENABLE

| | |
|--|--|
| <p>1</p>  | <p>1 Monitor the PATS PID SPARE_KY.</p> <ul style="list-style-type: none"> • Does the PATS PID SPARE_KY indicate ENABLE? <p>→ Yes REFER to Key Programming—Erase All Key Codes and Program Two Keys. TEST the system for normal operation. GO to B16015.</p> <p>→ No REFER to Key Programming—Spare Key Programming Switch to enable the PATS PID SPARE KEY to enable. TEST the system for normal operation. Once completed, GO to B16015.</p> |
|--|--|

B16015 CHECK THE ENCODED IGNITION KEYS FOR PROPER OPERATION

| | |
|---|--|
| <p>1</p>  <p>2</p>  <p>3</p>  <p>4</p>  | <p>2 Start the vehicle using the first encoded ignition key.</p> <p>3 Start the vehicle with the second ignition key.</p> <ul style="list-style-type: none"> • Does the vehicle start properly using both encoded ignition keys? |
|---|--|

| | |
|---|---|
| | <p>→ Yes System is OK. If there are additional keys that need to be programmed, REFER to Key Programming—Spare Key Programming Switch.</p> <p>→ No GO to B16016.</p> |
| <p>B16016 RETRIEVE THE DTCS — CHECK FOR DTC B1601</p> | |
| <p>1 </p> <p>2 </p> <p>Clear Continuous DTCs</p> <p>3 </p> | <p>1 Retrieve and document continuous DTCs.</p> <p>3 Perform a self-test using both ignition keys from Step B1601-5.</p> <ul style="list-style-type: none"> ● Is DTC B1601 retrieved? <p>→ Yes REPLACE the PATS module; REFER to Module—Passive Anti-Theft System (PATS). CYCLE the ignition to RUN using two encoded ignition keys. GO to Pinpoint Test B2139. CLEAR the DTCs. TEST the system for normal operation.</p> <p>→ No System is OK.</p> <p>If other DTCs are retrieved, REFER to PATS Module Diagnostic Trouble Code (DTC) Index.</p> |

PINPOINT TEST B1602: INVALID KEY CODE FORMAT FROM ENCODED IGNITION KEY TRANSPONDER (PARTIAL KEY READ)

| CONDITIONS | DETAILS/RESULTS/ACTIONS |
|--|-------------------------|
| <p>NOTE: Verify the customer key chain is not the cause of interference. Large metal objects on the key chain or a second encoded ignition key on the same key chain may cause this DTC under certain conditions. Check to make sure the encoded ignition key used by the customer is an approved Ford encoded ignition key (encoded ignition keys from Rotunda, Ilco, or Strattec are approved encoded ignition keys).</p> | |
| <p>B16021 RETRIEVE THE DTCS</p> | |
| <p>1</p> | |



2



NGS

3



3 Retrieve and document continuous DTCs.

4



Clear Continuous DTCs

5



PATS On-Demand Self-Test

• Is DTC B1602 retrieved?

→ **Yes**
GO to [B16022](#).

→ **No**
System is OK. CHECK all customer encoded ignition keys with PATS On-Demand Self-Test to verify all other keys are programmed.

B16022 REPLACE THE ENCODED IGNITION KEY

1



2 **NOTE:** Check to make sure the customer and replacement encoded ignition keys are approved Ford encoded PATS ignition keys. Unapproved PATS keys do not always operate properly over different temperature ranges (encoded ignition keys from Rotunda, Ilco, Curtis, or Strattec are approved encoded ignition keys).

Cut a new encoded ignition key.

3



5



PATS On-Demand
Self-Test

- 4 Program a new encoded ignition key; refer to [Key Programming—Erase All Key Codes and Program Two Keys](#).

• Is DTC B1602 retrieved?

→ **Yes**
GO to [B16023](#).

→ **No**
System is OK. If the customer has any remaining encoded keys at home, instruct them to perform [Key Programming—Program a Key Using Two Programmed Keys](#) on each remaining key. This procedure is detailed in the Owners Manual.

B16023 REPLACE THE PATS TRANSCEIVER

1



3



4



PATS On-Demand
Self-Test

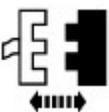
- 2 Replace the PATS transceiver; refer to [Module—Passive Anti-Theft Transceiver](#).

• Are any DTCs retrieved?

→ **Yes**
REFER to PATS Module Diagnostic Trouble Code (DTC) Index.

→ **No**
System is OK.

PINPOINT TEST B1681: PATS TRANSCEIVER SIGNAL IS NOT RECEIVED (NOT CONNECTED, DAMAGED, OR WIRING)

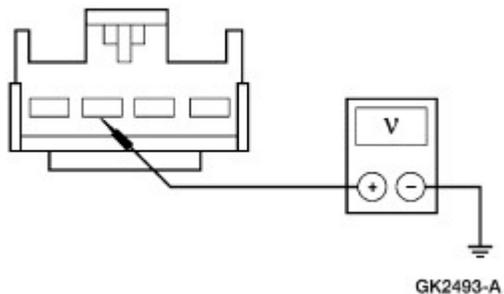
| CONDITIONS | DETAILS/RESULTS/ACTIONS |
|--|---|
| B16811 RETRIEVE THE DTCS | |
| <p>1 </p> <p>2  NGS</p> <p>3 </p> <p>4  Clear Continuous DTCs</p> <p>5  PATS On-Demand Self-Test</p> | <p>3 Retrieve and document continuous DTCs.</p> <p>• Is DTC B1681 retrieved?</p> <p>→ Yes GO to B16812.</p> <p>→ No System is OK.</p> |
| B16812 CHECK THE PATS TRANSCEIVER FOR VOLTAGE — CIRCUIT 936 (DG/W) | |
| <p>1 </p> <p>2 </p> | |

PATS Transceiver C221

3



4



4 Measure the voltage between PATS transceiver C221-2, circuit 936 (DG/W), and ground.

• Is the voltage greater than 9 volts?

→ **Yes**
GO to [B16813](#).

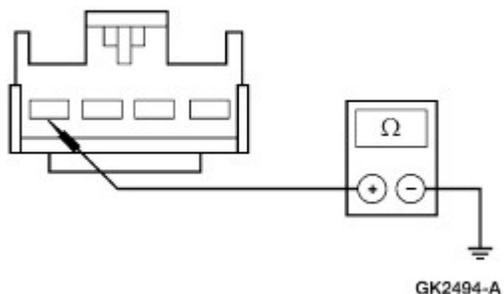
→ **No**
REPAIR circuit 936 (DG/W). CLEAR the DTCs. TEST the system for normal operation.

B16813 CHECK THE PATS TRANSCEIVER GROUND — CIRCUIT 651 (BK/Y)

1



2



2 Measure the resistance between PATS transceiver C221-1, circuit 651 (BK/Y), and ground.

• Is the resistance less than 5 ohms?

→ **Yes**
GO to [B16814](#).

→ **No**

REPAIR circuit 651 (BK/Y). CLEAR the DTCs.
TEST the system for normal operation.

B16814 CHECK THE PATS TRANSCEIVER RECEIVE CIRCUIT FOR VOLTAGE — CIRCUIT 1216 (GY/O)

1

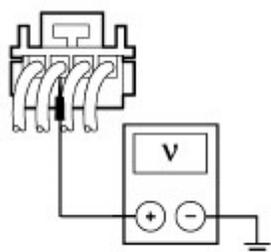


PATS Transceiver C221

2



3



GK6413-A

3 Measure the voltage by back probing between PATS transceiver C221-3, circuit 1216 (GY/O), and ground.

• Is the voltage greater than 9 volts?

→ **Yes**
GO to [B16816](#).

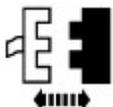
→ **No**
GO to [B16815](#).

B16815 CHECK THE PATS TRANSCEIVER RECEIVE CIRCUIT FOR SHORT — CIRCUIT 1216 (GY/O)

1



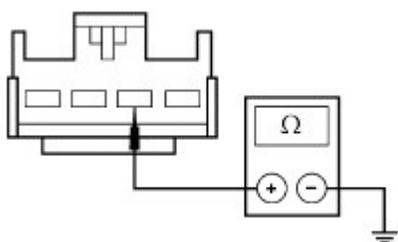
2



PATS Transceiver C221

3

3 Measure the resistance between PATS transceiver C221-3, circuit 1216 (GY/O), and ground.



GK6404-A

- Is the resistance greater than 100 ohms?

→ **Yes**

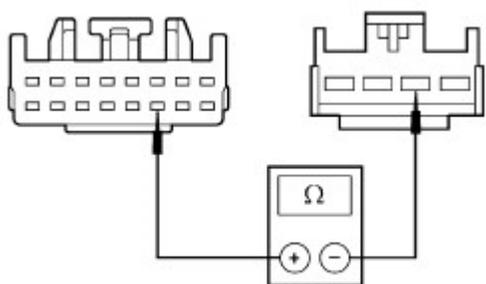
GO to [B16816](#).

→ **No**

CHECK circuit 1216 (GY/O) for short to ground. If the circuit is OK, REPLACE the PATS module; REFER to [Module—Passive Anti-Theft System \(PATS\)](#). CYCLE the ignition to RUN using two encoded ignition keys. GO to [Pinpoint Test B2139](#). CLEAR the DTCs. TEST the system for normal operation. If the circuit is not OK, REPAIR circuit 1216 (GY/O). CLEAR the DTCs. TEST the system for normal operation.

B16816 CHECK CIRCUIT 1216 (GY/O) FOR OPEN

1



GK8238-A

1

Measure the resistance between PATS transceiver C221-3, circuit 1216 (GY/O), and PATS C222-11, circuit 1216 (GY/O).

- Is the resistance less than 5 ohms?

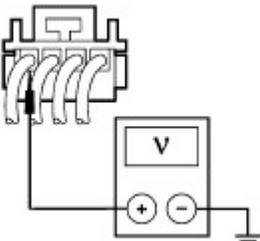
→ **Yes**

GO to [B16817](#).

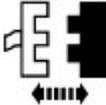
→ **No**

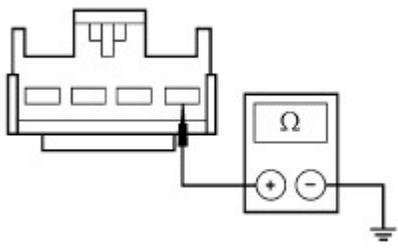
REPAIR circuit 1216 (GY/O). CLEAR the DTCs. TEST the system for normal operation.

B16817 CHECK THE PATS TRANSCEIVER TRANSMIT CIRCUIT FOR VOLTAGE — CIRCUIT 1215 (W/LG)

| | |
|--|--|
| <div style="margin-bottom: 10px;"> <p>1</p>  </div> <div style="margin-bottom: 10px;"> <p>2</p>  <p style="text-align: center;">PATS Transceiver C221</p> </div> <div style="margin-bottom: 10px;"> <p>3</p>  </div> <div style="margin-bottom: 10px;"> <p>4</p>  <p style="text-align: right; margin-right: 50px;">GK6414-A</p> </div> | <p>4 Measure the voltage by back probing between PATS transceiver C221-4, circuit 1215 (W/LG), and ground.</p> <ul style="list-style-type: none"> • Is the voltage greater than 9 volts? <p>→ Yes GO to B16819.</p> <p>→ No GO to B16818.</p> |
|--|--|

B16818 CHECK THE PATS TRANSCEIVER TRANSMIT CIRCUIT FOR OPEN — CIRCUIT 1215 (W/LG)

| | |
|--|--|
| <div style="margin-bottom: 10px;"> <p>1</p>  </div> <div style="margin-bottom: 10px;"> <p>2</p>  <p style="text-align: center;">PATS Transceiver C221</p> </div> <div style="margin-bottom: 10px;"> <p>3</p> </div> | <p>3 Measure the resistance between PATS transceiver C221-4, circuit 1215 (W/LG), and ground.</p> |
|--|--|



GK6405-A

- Is the resistance greater than 100 ohms?

→ **Yes**

GO to [B16819](#).

→ **No**

CHECK circuit 1215 (W/LG) for short to ground. If the circuit is OK, REPLACE the PATS module; REFER to [Module—Passive Anti-Theft System \(PATS\)](#). CYCLE the ignition to RUN using two encoded ignition keys. GO to [Pinpoint Test B2139](#). CLEAR the DTCs. TEST the system for normal operation. If the circuit is not OK, REPAIR circuit 1215 (W/LG). CLEAR the DTCs. TEST the system for normal operation.

B16819 CHECK THE PATS TRANSMIT CIRCUIT FOR PROPER OPERATION — CIRCUIT 1215 (W/LG)

1



PATS Transceiver C221

2



3



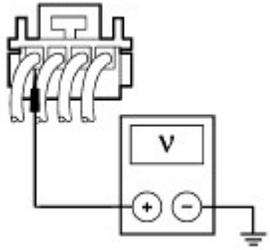
4

3

Trigger the PATS active command TRANSMIT SIGNAL COMMAND to ON.

4

Measure the voltage by back probing between PATS transceiver C221-4, circuit 1215 (W/LG), and ground.



GK6414-A

- Does the voltage drop from greater than 9 volts to less than 1 volt when the PATS active command is triggered on?

→ **Yes**

GO to [B168110](#).

→ **No**

CHECK circuit 1215 (W/LG) for continuity to PATS module C222-13. If the circuit is OK, REPLACE the PATS module; REFER to [Module—Passive Anti-Theft System \(PATS\)](#). CYCLE the ignition to RUN using two encoded ignition keys. GO to [Pinpoint Test B2139](#). CLEAR the DTCs. TEST the system for normal operation. If the circuit is not OK, REPAIR circuit 1215 (W/LG). CLEAR the DTCs. TEST the system for normal operation.

B168110 CHECK THE PATS SYSTEM WITH NEW PATS TRANSCEIVER

1



3



4



PATS On-Demand Self-Test

2

Replace the PATS transceiver; refer to [Module—Passive Anti-Theft Transceiver](#).

- Is DTC B1681 retrieved?

→ **Yes**

| | |
|--|--|
| | <p>GO to B168111.</p> <p>→ No System is OK.</p> |
| <p>B168111 CHECK THE PATS SYSTEM WITH NEW PATS MODULE</p> | |
| <p>1</p>  <p>3</p>  <p>4</p>  <p>PATS On-Demand Self-Test</p> | <p>2 Replace the PATS module; refer to Module—Passive Anti-Theft System (PATS). CYCLE the ignition to RUN using two encoded ignition keys. GO to Pinpoint Test B2139. CLEAR the DTCs. TEST the system for normal operation.</p> <p>● Is DTC B1681 retrieved?</p> <p>→ Yes REPAIR circuit 651 (BK/Y), 936 (DG/W), 1215 (W/LG), and 1216 (GY/O). CLEAR the DTCs. TEST the system for normal operation.</p> <p>→ No If no DTCs are retrieved, the system is OK.</p> <p>If other DTCs are retrieved, REFER to PATS Diagnostic Trouble Code (DTC) Index.</p> |

PINPOINT TEST B2139: PCM ID DOES NOT MATCH BETWEEN PATS AND PCM

| CONDITIONS | DETAILS/RESULTS/ACTIONS |
|--|-------------------------|
| <p>B21391 RETRIEVE THE DTCS</p> | |
| <p>1</p>  <p>2</p> | |

| | |
|--|---|
|  <p>NGS</p> <p>3</p>  <p>4</p>  <p>Clear Continuous DTCs</p> <p>5</p>  | <p>3 Retrieve and document continuous DTCs.</p> <p>4</p> <p>5 Key OFF and Key ON and retrieve DTCs.</p> <p>• Is DTC B2139 retrieved?</p> <p>→ Yes GO to B21392.</p> <p>→ No System is OK.</p> |
|--|---|

B21392 CLEAR PCM ID FROM PATS MODULE AND PCM

| | |
|--|---|
| <p>1</p>  <p>2</p>  <p>3</p>  <p>4</p>  <p>5</p>  | <p>1 Perform the security access procedure for the PATS Module; refer to Security Access—Procedure .</p> <p>2 NOTE: Do not perform ignition key code erase.</p> <p>Select PARAMETER RESET command for PATS.</p> <p>3 Use diagnostic card for PCM Active Command Keep Alive Memory Reset.</p> <p>4</p> <p>5 Turn the ignition switch to RUN for 30 seconds.</p> |
|--|---|

| | |
|--|---|
| <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">6</div>  | <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">6</div> Clear continuous DTCs. |
| <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">7</div>  | |
| <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">8</div>  | <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">8</div> Retrieve continuous DTCs. |
| <p style="text-align: center;">● Is DTC B2139 retrieved?</p> <p>→ Yes VERIFY PCM calibration is correct for the vehicle. If correct, repeat Step 2. If fault code persists, REPLACE the PATS module; REFER to Module—Passive Anti-Theft System (PATS). CYCLE the ignition to RUN using two encoded ignition keys. GO to Pinpoint Test B2139. CLEAR the DTCs. TEST the system for normal operation. If DTC B2139 still exists, REPLACE the PCM; GO to Pinpoint Test B2139. CLEAR the DTCs. TEST the system for normal operation.</p> <p>→ No System is OK. CHECK for any other DTCs. FOLLOW Diagnostic Trouble Code (DTC) Index.</p> | |

PINPOINT TEST B2141: NO SECURITY ID EXCHANGE BETWEEN PATS AND PCM

| CONDITIONS | DETAILS/RESULTS/ACTIONS |
|---|--|
| B21411 RETRIEVE THE DTCS | |
| <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">1</div>  | |
| <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">2</div>  <p style="text-align: center; margin-top: 5px;">NGS</p> | |
| <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">3</div>  | <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">3</div> Retrieve and document continuous DTCs. |
| <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">4</div> | |



Clear Continuous DTCs

5



5

Key OFF then key ON and retrieve continuous DTCs.

• Are any DTCs retrieved?

→ Yes

If DTC B2141 only is retrieved, GO to [B21412](#).

If DTC U1147 is retrieved with DTC B2141, GO to [Pinpoint Test U1147](#).

→ No

System is OK.

B21412 PERFORM KEEP ALIVE MEMORY RESET FROM PCM

1



1

Use diagnostic card for PCM Active Command — Keep Alive Memory Reset.

2



3



3

Leave key on for 30 seconds.

4



4

Start vehicle.

• Does the vehicle start?

→ Yes

System is OK.

→ No

GO to [B21413](#).

B21413 RETRIEVE THE PATS DTCS

1

| | |
|---|---|
|  <p>Clear Continuous DTCs</p> <p>2</p>  <p>3</p>  <p>4</p>  <p>5</p>  <p>PATS On-Demand Self-Test</p> | <ul style="list-style-type: none"> ● Is DTC B2141 retrieved? <p>→ Yes REPEAT B2141-2. If the fault persists, verify the PCM calibration. If the calibration is OK, REPLACE the PATS. REFER to Section 413-01. Cycle the ignition key to run using two encoded ignition keys. GO to Pinpoint Test B2139. CLEAR the DTCs. TEST the system for normal operation.</p> <p>→ No REFER to the DTC index.</p> |
|---|---|

PINPOINT TEST U1147: FAULTY SCP LINK OR INCORRECT PCM CALIBRATION

| CONDITIONS | DETAILS/RESULTS/ACTIONS |
|--|--|
| U11471 CHECK THE ANTI-THEFT INDICATOR FOR PROPER OPERATION | |
| <p>1</p>  | <p>2 Verify the theft indicator proves out properly.</p> |

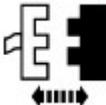
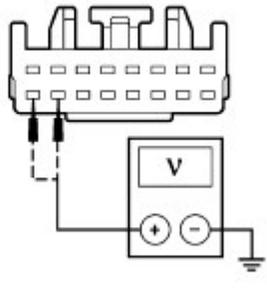
| | |
|--|---|
| | <p>→ No VERIFY PCM power and ground. REFER to Section 3A in the Powertrain Control/Emissions Diagnosis (PC/ED) manual.</p> |
| <p>U11474 CHECK THE COMMUNICATION NETWORK</p> | |
| <p>2</p>  <p>3</p>  <p>4</p>  <p>Clear Continuous DTCs</p> <p>5</p>  <p>PATS On-Demand Self-Test</p> | <p>1 Repeat Inspection and Verification steps three through seven; refer to Inspection and Verification.</p> <p>3 Retrieve and document continuous DTCs.</p> <p>Is DTC U1147 retrieved?</p> <p>→ Yes REPLACE the PATS module; REFER to Module—Passive Anti-Theft System (PATS). CYCLE the ignition to RUN using two encoded ignition keys. GO to Pinpoint Test B2139. CLEAR the DTCs. TEST the system for normal operation. If DTC U1147 is still present, REPLACE the PCM; GO to Pinpoint Test B2139. CLEAR DTCs. TEST the system for normal operation.</p> <p>→ No System is OK.</p> |

PINPOINT TEST A: NO COMMUNICATION WITH THE MODULE

| CONDITIONS | DETAILS/RESULTS/ACTIONS |
|--|--|
| <p>A1 CHECK FUSE JUNCTION PANEL FUSES 25 (7.5A), FUSE 24 (7.5A) AND FUSE 19 (25A)</p> | <p>1 Check fuse junction panel fuses 25 (7.5A), fuse 24 (7.5A) and fuse 19 (25A).</p> |

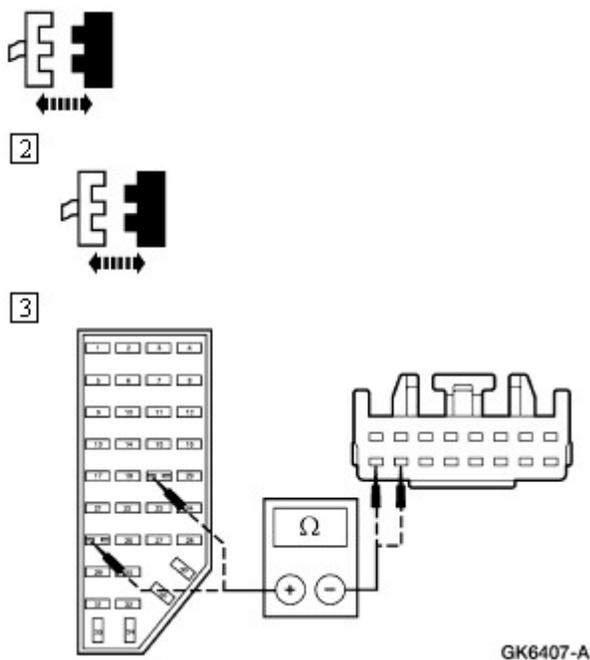
| | |
|--|--|
| | <ul style="list-style-type: none"> • Are the fuses OK? <p>→ Yes GO to A2.</p> <p>→ No REPLACE the fuse(s). TEST the system for normal operation. If the fuse(s) fail(s) again, CHECK for short to ground. REPAIR as necessary.</p> |
|--|--|

A2 CHECK THE PATS MODULE FOR VOLTAGE — CIRCUITS 16 (R/LG) AND 1002 (W/Y)

| | |
|--|---|
| <p>1 </p> <p>2  PATS Module C222</p> <p>3 </p> <p>4  GK6406-A</p> | <p>4 Measure the voltage between PATS module C222-15, circuit 1001 (W/Y), and ground; and between PATS module C222-16, circuit 16 (R/LG), and ground.</p> <ul style="list-style-type: none"> • Are the voltages greater than 10 volts? <p>→ Yes GO to A4.</p> <p>→ No GO to A3.</p> |
|--|---|

A3 CHECK CIRCUITS 16 (R/LG) AND 1001 (W/Y) FOR OPEN

| | |
|----------|--|
| <p>1</p> | <p>1 Fuse junction panel fuse 25 (7.5A).</p> |
|----------|--|

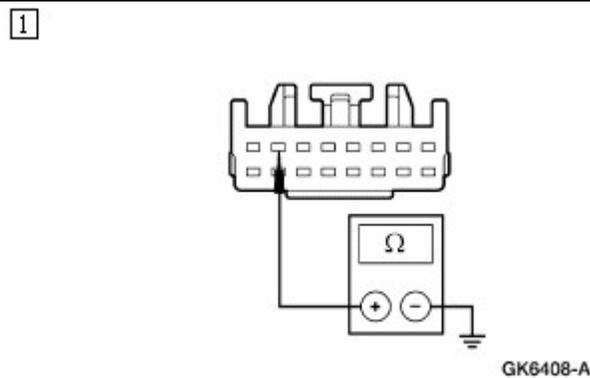


- 2 Fuse junction panel fuse 19 (25A).
- 3 Measure the resistance between PATS module C222-15, circuit 1001 (W/Y), and fuse junction fuse 25 (7.5A), pin 1; and between PATS module C222-16, circuit 16 (R/LG), and fuse junction fuse 19 (25A), pin 1.

• Are the resistances less than 5 ohms?

- **Yes**
REPAIR circuit(s) 1052 (T/BK) and/or 1050 (LG/P). CLEAR the DTCs. TEST the system for normal operation.
- **No**
REPAIR circuit(s) 1001 (W/Y) and/or 16 (R/LG). CLEAR the DTCs. TEST the system for normal operation.

A4 CHECK CIRCUIT 570 (BK/W) FOR OPEN



- 1 Measure the resistance between PATS module C222-7, circuit 570 (BK/W), and ground.

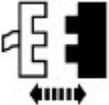
• Is the resistance less than 5 ohms?

- **Yes**
REFER to [Section 418-00](#).
- **No**

| | |
|--|--|
| | REPAIR circuit 570 (BK/W). CLEAR the DTCs. TEST the system for normal operation. |
|--|--|

PINPOINT TEST B: THE ANTI-THEFT IS ALWAYS/NEVER ON — NO 3 SECOND ANTI-THEFT INDICATOR PROVE OUT

| CONDITIONS | DETAILS/RESULTS/ACTIONS |
|--|--|
| B1 CHECK THE THEFT LED FOR PROPER PROVE OUT | |
| <div style="margin-bottom: 10px;"> 1  </div> <div> 2  </div> | <div style="margin-top: 20px;"> 3 Observe the theft LED for at least 3 seconds while turning the ignition switch to run. <ul style="list-style-type: none"> • Does the LED fail to flash every 2 seconds when the ignition is off, but prove out normally (remain illuminated for 3 seconds) when the ignition is turned to run? <p>→ Yes REPAIR circuit 1001 (W/Y). TEST the system for normal operation. If the indicator still does not illuminate correctly, REPLACE the PATS module. CYCLE the ignition to run using two encoded ignition keys. GO to Pinpoint Test B2139.</p> <p>→ No GO to B2.</p> </div> |
| B2 CHECK THE THEFT INDICATOR FOR ON CONTINUOUS | |
| | <div style="margin-top: 10px;"> 1 Turn the ignition to run and observe the theft indicator for at least 10 seconds. <ul style="list-style-type: none"> • Does the theft indicator remain illuminated? <p>→ Yes Perform the PATS on-demand self-test and CHECK for stored DTCs. If DTCs are retrieved, REFER to PATS DTC Index. If no DTCs are retrieved, GO to B3.</p> </div> |

| | |
|---|---|
| | <p>→ No GO to B5.</p> |
| <p>B3 CHECK THE THEFT INDICATOR CIRCUIT FOR SHORT TO BATTERY</p> | |
| <p>1 </p> <p>2  PATS C222</p> <p>3 </p> | <p>• Does the theft indicator remain illuminated?</p> <p>→ Yes CHECK circuit 343 (DB/LG) for short to power. TEST the system for normal operation.</p> <p>→ No GO to B4.</p> |
| <p>B4 CHECK THE THEFT INDICATOR USING THE ACTIVE COMMAND THEFT LAMP</p> | |
| <p>1 </p> <p>2  PATS C222</p> <p>3 </p> <p>4 </p> | <p>4 Trigger the PATS active command THEFT LMP ON and OFF.</p> |

| | |
|--|--|
| | <ul style="list-style-type: none"> • Does the theft indicator illuminate when the active command is triggered ON and go off when the active command is triggered OFF? <p>→ Yes PERFORM the PATS on-demand self-test and check for stored DTCs. If DTCs are retrieved, REFER to PATS DTC Index. If no DTCs are retrieved, REPLACE the PATS module. REFER to Module—Passive Anti-Theft Transceiver.</p> <p>→ No REPLACE the PATS module. REFER to Module—Passive Anti-Theft Transceiver. CYCLE the ignition to run. GO to Pinpoint Test B2139.</p> |
|--|--|

B5 ENTER THE PATS ACTIVE COMMAND MODE

| | |
|---|--|
| <p>1 </p> <p>2 </p> | <p>2 Enter the PATS active command mode.</p> <ul style="list-style-type: none"> • Can the PATS active command mode be entered? <p>→ Yes GO to B6.</p> <p>→ No GO to Pinpoint Test A.</p> |
|---|--|

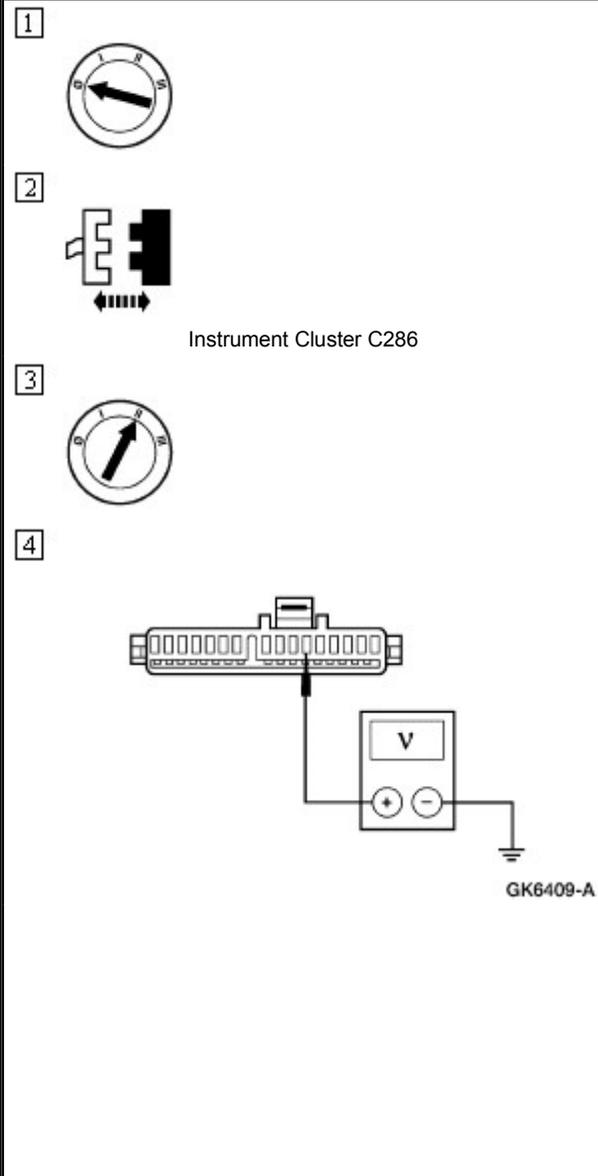
B6 CHECK THE THEFT INDICATOR — TRIGGER THE PATS ACTIVE COMMAND THEFT LMP ON

| | |
|---|--|
| <p>1 </p> <p>2 </p> | <p>2 Trigger the PATS active command THEFT LMP ON.</p> <ul style="list-style-type: none"> • Does the theft indicator illuminate? |
|---|--|

→ **Yes**
System OK.

→ **No**
GO to [B7](#).

B7 CHECK PATS MODULE OUTPUT TO THE THEFT INDICATOR FOR VOLTAGE — CIRCUIT 343 (DB/BK)



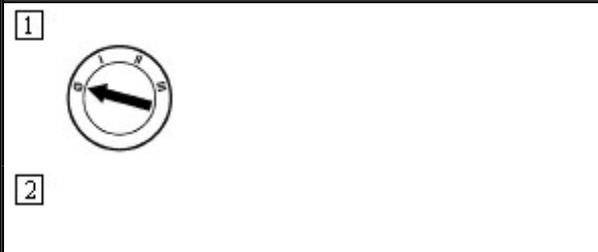
4 Measure the voltage between instrument cluster C286-6, circuit 343 (DB/LG), and ground.

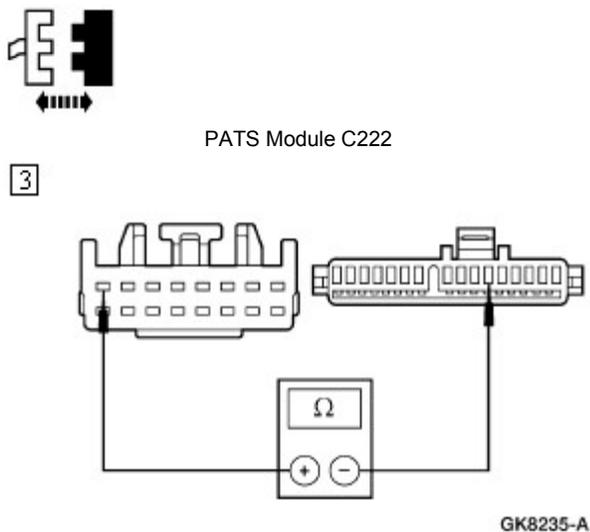
• Is the voltage greater than 9 volts?

→ **Yes**
GO to [B11](#).

→ **No**
GO to [B8](#).

B8 CHECK FOR CONTINUITY BETWEEN THE THEFT INDICATOR AND PATS MODULE — CIRCUIT 343 (DB/LG)





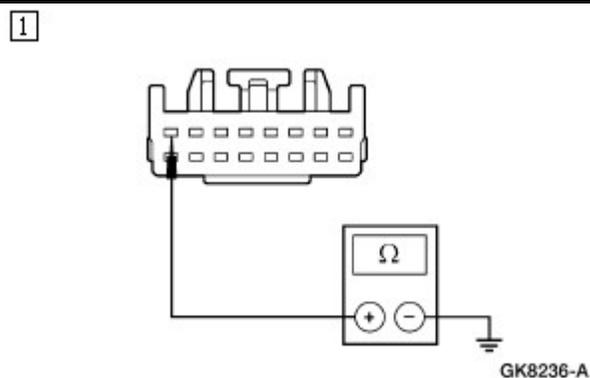
3 Measure the resistance between PATS module C222-8, circuit 343 (DB/LG), and instrument cluster C286-6, circuit 343 (DB/LG).

• Is the resistance less than 5 ohms?

→ **Yes**
GO to [B9](#).

→ **No**
REPAIR circuit 343 (DB/LG). TEST the system for normal operation.

B9 CHECK FOR SHORT BETWEEN THE THEFT INDICATOR AND PATS MODULE — CIRCUIT 343 (DB/LG)



1 Measure the resistance between PATS module C222-8, circuit 343 (DB/LG), and ground.

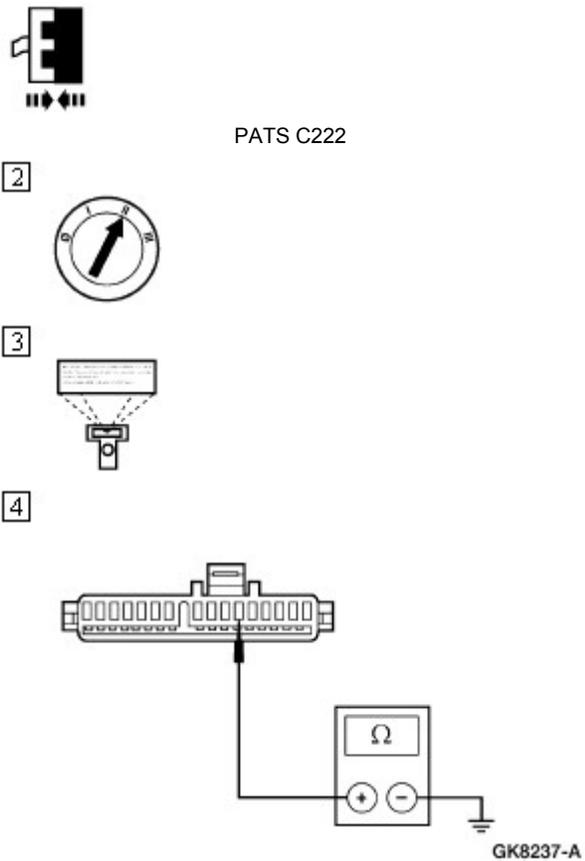
• Is the resistance greater than 10,000?

→ **Yes**
GO to [B10](#).

→ **No**
REPAIR circuit 343 (DB/LG). TEST the system for normal operation.

B10 CHECK THE PATS MODULE FOR OUTPUT TO THE INDICATOR FOR VOLTAGE — CIRCUIT 343 (DB/LG)



| | |
|---|--|
|  <p style="text-align: center;">PATS C222</p> <p>2</p> <p>3</p> <p>4</p> <p style="text-align: right;">GK8237-A</p> | <p>3 Trigger the PATS active command THEFT LMP ON.</p> <p>4 Measure the resistance between instrument cluster C286-6, circuit 343 (DB/LG), and ground.</p> <ul style="list-style-type: none"> • Is the voltage greater than 9 volts? <p>→ Yes GO to B11.</p> <p>→ No REPLACE the PATS module. REFER to Module—Passive Anti-Theft Transceiver.</p> |
|---|--|

B11 CHECK THE THEFT INDICATOR GROUND FOR OPEN

| | |
|---|--|
| <p>1</p>  <p>2</p>  <p style="text-align: center;">Theft Indicator</p> <p>3</p> | <p>3 Measure the resistance between instrument cluster C286, terminal 7, and theft indicator socket ground terminal.</p> |
|---|--|

