

Passive Anti-Theft System (PATS)

BCM DTC Chart

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).

DTC	Description	Action <i>New: hover over Pinpoint Test links to show title</i>
B10C7:01	Interior Trunk Antenna: General Electrical Failure	GO to Pinpoint Test A
B10C8:01	Interior Centre Antenna: General Electrical Failure	GO to Pinpoint Test A
B10D7:05	PATS Key: System Programming Failure	GO to Pinpoint Test C
B10D7:55	PATS Key: Not Configured	GO to Pinpoint Test D
B10D8:00	PATS Key Less Than Minimum Programmed: No Sub Type Information	GO to Pinpoint Test E
B10DA:51	PATS Target Identifier: Not Programmed	GO to Pinpoint Test F
B1336:01	Left Front Door External Antenna: General Electrical Failure	GO to Pinpoint Test A
B1337:01	Right Front Door External Antenna: General Electrical Failure	GO to Pinpoint Test A
All other Diagnostic Trouble Codes (DTCs)	-	REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Diagnosis and Testing).

PCM DTC Chart

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).

DTC	Description	Action <i>New: hover over Pinpoint Test links to show title</i>
P161A	Incorrect Response from Immobilizer Control Module	GO to Pinpoint Test G
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
No Key Detected displays in the message center	Refer to the Pinpoint Test	GO to Pinpoint Test A
The vehicle does not start with the passive key in certain areas within the vehicle but starts using the passive key backup location	Refer to the Pinpoint Test	GO to Pinpoint Test A
Unable to program keys	Refer to the Pinpoint Test	GO to Pinpoint Test A
Unable to turn the ignition on	Refer to the Pinpoint Test	GO to Pinpoint Test B

Pinpoint Tests

The PATS does not disable an already running vehicle.

PINPOINT TEST A : NO KEY DETECTED DISPLAYS IN THE MESSAGE CENTER

Refer to Wiring Diagrams Cell [117](#) for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: Passive Anti-Theft System (PATS) - System Operation and Component Description (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
BCM B10C7:01	Interior Trunk Antenna: General Electrical Failure	Sets when the BCM detects a fault with the keyless entry rear antenna or associated circuitry.
BCM B10C8:01	Interior Centre Antenna: General Electrical Failure	Sets when the BCM detects a fault with the PATS center antenna or associated circuitry.
BCM B1336:01	Left Front Door External Antenna: General Electrical Failure	Sets when the BCM detects a fault with the driver door keyless entry antenna or associated circuitry.
BCM B1337:01	Right Front Door External Antenna: General Electrical Failure	Sets when the BCM detects a fault with the passenger door keyless entry antenna or associated circuitry.

Possible Sources

- Environmental interference
- Wiring, terminals or connectors
- Passive key not programmed
- PATS center antenna
- PATS rear antenna
- Driver exterior front door handle
- Passenger exterior front door handle
- BCM

Visual Inspection and Pre-checks

- If the selection is available on the scan tool (Body>Security>PATS Functions), make sure the passive entry/passive start feature is enabled. If disabled, the vehicle only starts with the key in the backup starting location.

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

NOTE: If unable to program new keys, follow the diagnostics for DTC B10C8:01.

A1 CHECK FOR BCM (BODY CONTROL MODULE) ANTENNA DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, carry out the BCM self-test. Record the DTC.
- Ignition OFF.

Is BCM DTC B10C7:01, B10C8:01, B1336:01 or B1337:01 present?

Yes	GO to A8
No	GO to A2

A2 CHECK IF THE PASSIVE KEYS START THE VEHICLE FROM THE BACKUP STARTING LOCATION

- Place the suspect passive key in the backup starting location and attempt to start the vehicle.
REFER to: Passive Anti-Theft System (PATS) - System Operation and Component Description (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Description and Operation).

Does the key start the vehicle?

Yes	GO to A5
No	GO to A3

A3 DOCUMENT THE KEY IDENTIFICATIONS USING THE BCM (BODY CONTROL MODULE) KEY ID AND RTM (RADIO TRANSCEIVER MODULE) KEY ID PARAMETER IDENTIFICATIONS (PIDS)

- Using the diagnostic scan tool, monitor the following BCM PIDs:
 - Access the BCM and monitor the TIC_1 (Undefined / Not Used) PID
 - Access the BCM and monitor the TIC_2 (Undefined / Not Used) PID
 - Access the BCM and monitor the TIC_3 (Undefined / Not Used) PID
 - Access the BCM and monitor the TIC_4 (Undefined / Not Used) PID
- Document each programmed TIC ID.
- Using the diagnostic scan tool, view the RTM PIDs.
- Using the diagnostic scan tool,
Access the RTM and monitor the TIC_LAST_BC (Undefined / Not Used) PID
while pressing the lock and unlock buttons on the suspect key.
- Document the RTM
Access the RTM and monitor the TIC_LAST_BC (Undefined / Not Used) PID
ID displayed when pressing the lock and unlock buttons on the suspect key.
- Compare the RTM TIC ID to the recorded BCM TIC IDs.

Does the RTM TIC ID match any of the recorded BCM TIC IDs?

Yes	GO to A4
No	No fault found. The key in question is not the original key that came with the vehicle.

A4 VERIFY THE KEY OPERATION

- Check the operation of the suspect key.

Is the concern still present?

Yes	REPLACE the suspect key. PROGRAM the new key. Refer to the appropriate key programming procedure. REFER to: Anti-Theft Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).
No	The system is OK. The concern was caused by an incompleting programmed key.

A5 CHECK THE RKE (REMOTE KEYLESS ENTRY) TRANSMITTER OPERATION

- Press the lock and unlock RKE transmitter buttons on the suspect passive key.

Do the doors lock and unlock?

Yes	GO to A6
No	REFER to: Locks, Latches and Entry Systems (501-14 Handles, Locks, Latches and Entry Systems, Diagnosis and Testing).

A6 CHECK THE PASSIVE KEY LOCATION

- Check the location of the passive key. If it is placed in the far corners of the interior of the vehicle, move the passive key out of these areas and attempt to start the vehicle.

Does the vehicle start?

Yes	The system is OK. INFORM the customer of the normal vehicle operation.
No	GO to A7

A7 CHECK FOR ENVIRONMENTAL INTERFERENCE

- Check for the use of consumer electronic devices that may cause interference with the passive key such as:
 - other passive keys.
 - a charger that is plugged in.
 - a USB plugging into the media center.
 - a cell phone, speed pass or other electronic device next to the passive key.
- Remove any devices found and attempt to start the vehicle.

Does the vehicle start?

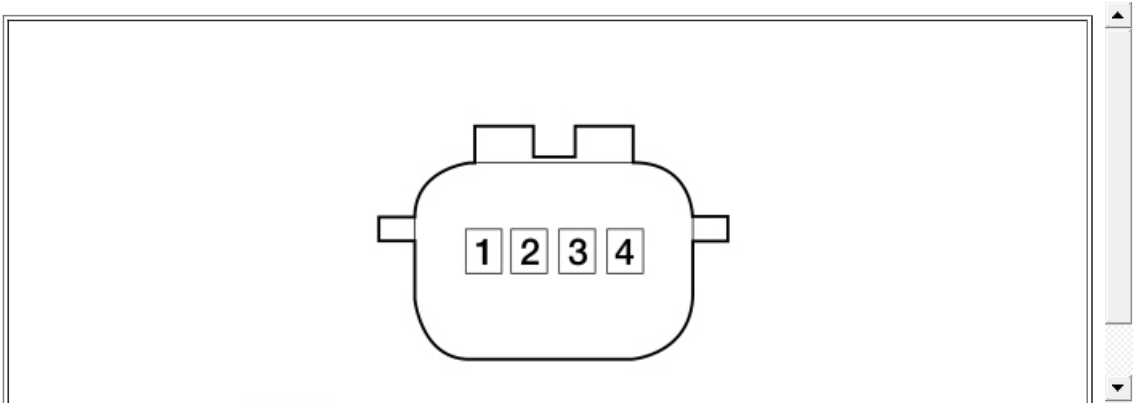
Yes	INFORM the customer of the cause of the concern and the normal operation of the vehicle.
No	GO to A8

A8 CHECK THE SUSPECT ANTENNA

NOTE: For a concern with key programming or if unable to start the vehicle with the passive key in the backup starting location, follow the diagnostics for the PATS front/center antenna.

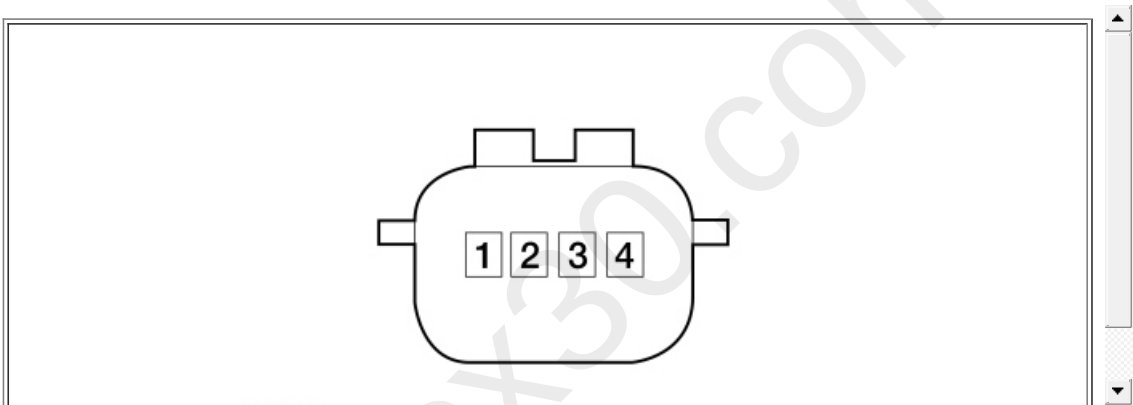
- Disconnect the suspect antenna.

- Measure:



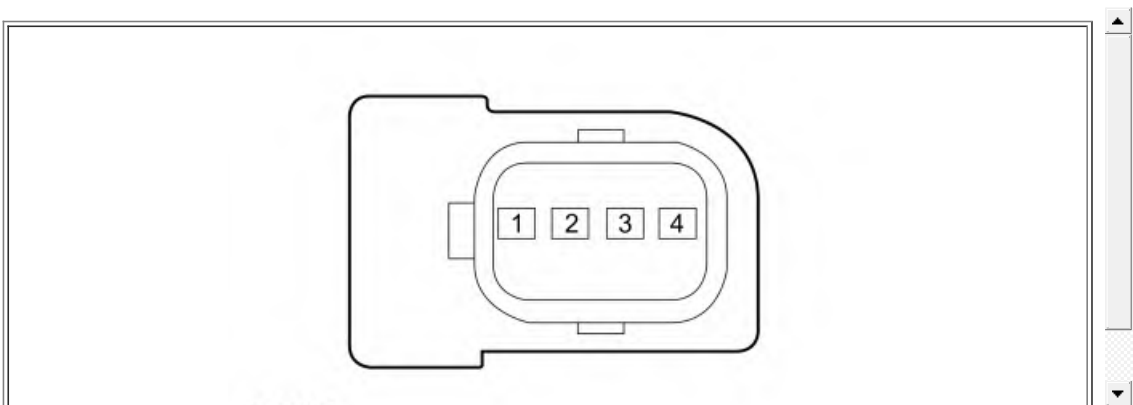
PATS Center Antenna

Positive Lead	Measurement / Action	Negative Lead
C325, pin 1, component side	Ω	C325, pin 2, component side



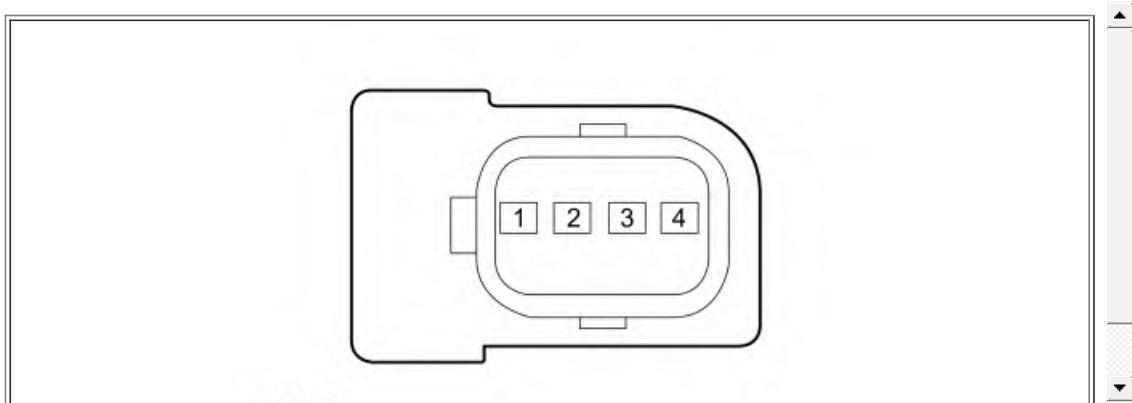
PATS Rear Antenna

Positive Lead	Measurement / Action	Negative Lead
C348, pin 1, component side	Ω	C348, pin 2, component side



Driver Exterior Front Door Handle

Positive Lead	Measurement / Action	Negative Lead
C543, pin 2, component side	Ω	C543, pin 3, component side



Passenger Exterior Front Door Handle

Positive Lead	Measurement / Action	Negative Lead
C634, pin 2, component side	Ω	C634, pin 3, component side

Is the resistance between 0.5 and 3 ohms?

Yes	GO to A9
No	INSTALL a new antenna in question. REFER to: Passive Anti-Theft System (PATS) Center Antenna - Vehicles With: Center Console (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Removal and Installation). REFER to: Passive Anti-Theft System (PATS) Center Antenna - Vehicles With: Center Console (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Removal and Installation). REFER to: Passive Anti-Theft System (PATS) Rear Antenna (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Removal and Installation). REFER to: Exterior Front Door Handle (501-14 Handles, Locks, Latches and Entry Systems, Removal and Installation).

A9 CHECK THE SUSPECT ANTENNA CIRCUITS FOR A SHORT TO VOLTAGE

- Disconnect BCM [C2280B](#) (center antenna).
- Disconnect BCM [C2280D](#) (door handle or rear antenna).
- Measure:

PASSIVE ANTI-THEFT SYSTEM (PATS) CENTER ANTENNA	
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PATS Center Antenna

Positive Lead	Measurement / Action	Negative Lead
C325-1		Ground
C325-2		Ground

PASSIVE ANTI-THEFT SYSTEM (PATS) REAR ANTENNA	
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PATS Rear Antenna

Positive Lead	Measurement / Action	Negative Lead
C348-1		Ground
C348-2		Ground

EXTERIOR DOOR HANDLE, LEFT FRONT	
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Driver Exterior Front Door Handle

Positive Lead	Measurement / Action	Negative Lead
C543-2		Ground
C543-3		Ground

EXTERIOR DOOR HANDLE, RIGHT FRONT



Passenger Exterior Front Door Handle

Positive Lead	Measurement / Action	Negative Lead
C634-2		Ground
C634-3		Ground

Is any voltage present?

A10 CHECK THE SUSPECT ANTENNA CIRCUITS FOR A SHORT TO GROUND

- **Yes** - REPAIR the circuit in question.
- **No** - GO to [A10](#)

PASSIVE ANTI-THEFT SYSTEM (PATS) CENTER ANTENNA



PATS Center Antenna

Positive Lead	Measurement / Action	Negative Lead
C325-1	Ω	Ground
C325-2	Ω	Ground

PASSIVE ANTI-THEFT SYSTEM (PATS) REAR ANTENNA	
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PATS Rear Antenna

Positive Lead	Measurement / Action	Negative Lead
C348-1	Ω	Ground
C348-2	Ω	Ground

EXTERIOR DOOR HANDLE, LEFT FRONT	
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Driver Exterior Front Door Handle

Positive Lead	Measurement / Action	Negative Lead
C543-2	Ω	Ground
C543-3	Ω	Ground

EXTERIOR DOOR HANDLE, RIGHT FRONT	
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Passenger Exterior Front Door Handle

Positive Lead	Measurement / Action	Negative Lead
C634-2	Ω	Ground
C634-3	Ω	Ground

A11 CHECK THE SUSPECT ANTENNA CIRCUITS FOR AN OPEN

- Measure:

Are the resistances greater than 10,000 ohms?

PASSIVE ANTI-THEFT SYSTEM (PATS) CENTER ANTENNA		BODY CONTROL MODULE (BCM)	
Yes	GO to A11		
No	REPAIR the circuit in question.		

PATS Center Antenna

Positive Lead	Measurement / Action	Negative Lead
C325-1	Ω	C2280B-40
C325-2	Ω	C2280B-27

PASSIVE ANTI-THEFT SYSTEM (PATS) REAR ANTENNA	BODY CONTROL MODULE (BCM)
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PATS Rear Antenna

Positive Lead	Measurement / Action	Negative Lead
C348-1	Ω	C2280D-16
C348-2	Ω	C2280D-15

EXTERIOR DOOR HANDLE, LEFT FRONT

BODY CONTROL MODULE (BCM)

Driver Exterior Front Door Handle

Positive Lead	Measurement / Action	Negative Lead
C543-2	Ω	C2280D-13
C543-3	Ω	C2280D-28

EXTERIOR DOOR HANDLE, RIGHT FRONT

BODY CONTROL MODULE (BCM)

Passenger Exterior Front Door Handle

Positive Lead	Measurement / Action	Negative Lead
C634-2	Ω	C2280D-12
C634-3	Ω	C2280D-29

Are the resistances less than 3 ohms?

Yes	INSTALL a new antenna in question. REFER to: Passive Anti-Theft System (PATS) Center Antenna - Vehicles With: Center Console (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Removal and Installation). REFER to: Passive Anti-Theft System (PATS) Center Antenna - Vehicles With: Center Console (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Removal and Installation). REFER to: Passive Anti-Theft System (PATS) Rear Antenna (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Removal and Installation). REFER to: Exterior Front Door Handle (501-14 Handles, Locks, Latches and Entry Systems, Removal and Installation). TEST the system for normal operation. If the concern is still present, GO to A12
No	REPAIR the circuit in question.

A12 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 service articles: TSB, GSB, SSM, or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new BCM. REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Removal and Installation).
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.

☐ PINPOINT TEST B : UNABLE TO TURN THE IGNITION ON

Normal Operation and Fault Conditions

REFER to: Passive Anti-Theft System (PATS) - System Operation and Component Description (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Description and Operation).

Possible Sources

- Battery voltage concern
- Driveability system concern
- Starting system concern
- PATS concern

B1 CHECK VEHICLE BATTERY

- Carry out the Battery Condition Test.
REFER to: Battery (414-01 Battery, Mounting and Cables, Diagnosis and Testing).

Is the battery OK?

Yes	GO to B2
No	CORRECT the battery condition and VERIFY correct charging operation. REFER to the Diagnosis and Testing in the appropriate 414-00 section.

B2 CHECK FOR THE NO KEY DETECTED MESSAGE

- Press and release the START/STOP button while monitoring the message center.

Is the No Key Detected message displayed in the message center?

Yes	GO to Pinpoint Test A
No	GO to B3

B3 CHECK FOR IGNITION ON MODE

- Press and release the START/STOP button while monitoring the ignition mode indicator at the top of the button.

Does the ignition mode indicator flash on and off continuously?

Yes	The condition is not PATS-related. DIAGNOSE no power in ON. REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing).
No	GO to B4

B4 CHECK FOR BCM (BODY CONTROL MODULE) AND PCM (POWERTRAIN CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Follow the procedure to establish a diagnostic scan tool session with the vehicle.
REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).
- Using a diagnostic scan tool, carry out the BCM self-test.
- Using a diagnostic scan tool, carry out the PCM self-test.

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

Yes	REFER to the BCM DTC Chart or the PCM DTC Chart in this section.
No	The condition is not PATS-related. DIAGNOSE no power in ON. REFER to: Steering Wheel and Column Electrical Components (211-05 Steering Wheel and Column Electrical Components, Diagnosis and Testing).

[PINPOINT TEST C : DTC \(DIAGNOSTIC TROUBLE CODE\) B10D7:05](#)

Normal Operation and Fault Conditions

REFER to: Passive Anti-Theft System (PATS) - System Operation and Component Description (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
BCM B10D7:05	PATS Key: System Programming Failures	Sets when a failure occurs during the key programming procedure.

Possible Sources

- Keys not programmed
- Passive key

C1 CHECK BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

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

Are there any other Diagnostic Trouble Codes (DTCs) Present ?

Yes	DIAGNOSE all other Diagnostic Trouble codes (DTCs) first. Refer to DTC Chart in this section.
No	GO to C2

C2 PROGRAM SUSPECT PASSIVE KEY

- Program the suspect passive key again.
REFER to: Anti-Theft Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).

Is the passive key programmed successfully?

Yes	The system is operating correctly at this time. The passive key was not programmed correctly.
No	If key programming fails, REPLACE the suspect passive key. PROGRAM the new passive key. REFER to: Anti-Theft Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).

[PINPOINT TEST D : DTC \(DIAGNOSTIC TROUBLE CODE\) B10D7:55](#)

Normal Operation and Fault Conditions

REFER to: Passive Anti-Theft System (PATS) - System Operation and Component Description (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
BCM B10D7:55	PATS Key: Not Configured	Sets when the CEI was not completed during the PMI procedure.

Possible Sources

- CEI was not completed during the PMI procedure.

D1 CHECK BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

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

Are there any other Diagnostic Trouble Codes (DTCs) Present?

Yes	DIAGNOSE all other Diagnostic Trouble codes (DTCs) first. Refer to DTC Chart in this section.
No	The Configurable Engine Immobilizer (CEI) was not completed during the PMI. CARRY OUT the Configurable Engine Immobilizer (CEI) as part of the PMI.

[PINPOINT TEST E : DTC \(DIAGNOSTIC TROUBLE CODE\) B10D8:00](#)

Normal Operation and Fault Conditions

REFER to: Passive Anti-Theft System (PATS) - System Operation and Component Description (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
BCM B10D8:00	PATS Key Less Than Minimum Programmed: No Sub Type Information	Sets when the when less than two keys are programmed.

Possible Sources

- Minimum 2 keys not programmed

E1 CHECK BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

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

Are there any other Diagnostic Trouble Codes (DTCs) Present?

Yes	DIAGNOSE all other Diagnostic Trouble codes (DTCs) first. Refer to DTC Chart in this section.
No	PROGRAM the second PATS key. REFER to: Anti-Theft Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).

PINPOINT TEST F : DTC (DIAGNOSTIC TROUBLE CODE) B10DA:51

Normal Operation and Fault Conditions

REFER to: Passive Anti-Theft System (PATS) - System Operation and Component Description (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
BCM B10DA:51	PATS Target Identifier: Not Programmed	Sets when there is no PCM, SOBDMC (if equipped), ID stored in the BCM memory.

Possible Sources

- There is no PCM ID stored in the BCM memory

F1 CHECK BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

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

Are there any other Diagnostic Trouble Codes (DTCs) Present?

Yes	DIAGNOSE all other Diagnostic Trouble codes (DTCs) first. Refer to DTC Chart in this section.
No	CARRY OUT a parameter reset. REFER to: Anti-Theft Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).

PINPOINT TEST G : DTC (DIAGNOSTIC TROUBLE CODE) P161A:00

Normal Operation and Fault Conditions

REFER to: Passive Anti-Theft System (PATS) - System Operation and Component Description (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
PCM P161A:00	Incorrect Response from Immobilizer Control Module: No Sub Type Information	Sets when the BCM ID received by the PCM does not match the ID stored in the PCM memory.

Possible Sources

- The BCM ID received by the PCM does not match the ID stored in PCM.

G1 CHECK PCM (POWERTRAIN CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, carry out the PCM self-test.

Are there any other Diagnostic Trouble Codes (DTCs) Present?

Yes	DIAGNOSE all other Diagnostic Trouble codes (DTCs) first. Refer to DTC Chart in this section.
No	CARRY OUT a parameter reset. REFER to: Anti-Theft Key Programming - Scan Tool (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Keyless Vehicle System, General Procedures).