Your Ultimate Source for OEM Repair Manuals

FactoryManuals.net is a great resource for anyone who wants to save money on repairs by doing their own work. The manuals provide detailed instructions and diagrams that make it easy to understand how to fix a vehicle.

2004 FORD F-150 Super Crew OEM Service and Repair Workshop Manual

Go to manual page

NOTE

If available as a selection on the diagnostic scan tool, the passive start feature is a programmable parameter and can be enabled/disabled. If the feature is disabled, the features to passively enter and start the vehicle are inoperative. To start the vehicle, the passive key must be placed in the backup starting location.

The BCM (body control module) controls the ignition modes and in conjunction with the PCM (powertrain control module) , ABS (anti-lock brake system) , and the SOBDMC (secondary on-board diagnostic control module C) (if equipped), controls the PATS (passive anti-theft system) .

PATS (passive anti-theft system) Parameter Identifications (PIDs)

In conjunction with Diagnostic Trouble Codes (DTCs), the PATS (passive anti-theft system) Parameter Identifications (PIDs) are a useful tool when diagnosing PATS (passive anti-theft system) concerns.

BCM (body control module) PID (parameter identification) Chart

Broadcast Message	Originating Module	Message Purpose
KEYS_PROGMD	PATS (passive anti-theft system) number of ignition key codes supported	Displays the number of keys currently programmed into the BCM (body control module) . If unlimited key mode is enabled, this PID (parameter identification) only reads 2 regardless of how many keys are programmed.
MIN_KEYS_RQD	Minimum number of keys required	Minimum number of programmed keys required. This PID (parameter identification) always reads 2.

PCM (powertrain control module) PID (parameter identification) Chart

Broadcast Message	Originating Module	Message Purpose
PATSENABL	Vehicle enable status	Indicates if PATS (passive anti-theft system) allows the vehicle to be driven. Must read enabled for the vehicle to be driven.

No Key Detected Message

NOTE

PATS (passive anti-theft system) Rear Antenna (SuperCrew and SuperCab vehicles)

NOTE

Some brands/types of mobile phone or laptop computer chargers may cause interference that could lead to a PATS (passive anti-theft system) concern if the passive key is within a few inches of the charger and the “No Key Detected” message displays in the message center. If a concern is observed, move the passive key away from the charger and attempt to transition the ignition on.

The PATS (passive anti-theft system) rear antenna is wired to the BCM (body control module) . When activated by the BCM (body control module) , it transmits a low frequency signal that activates a passive key.

A programmed passive key must be within the passenger compartment for the PATS (passive anti-theft system) to detect the passive key and allow the ignition to transition from OFF to ON.

If a passive key is placed in the far outside edges of the interior, such as the far corners of the passenger compartment the vehicle can experience a PATS (passive anti-theft system) concern. If the passive key is located in one of these areas and there is a PATS (passive anti-theft system) concern, move the passive key out of the area and attempt to transition the ignition on. If the key is outside the range of the PATS (passive anti-theft system) rear antenna and PATS (passive anti-theft system) center antenna when the START/STOP button is pressed, the No Key Detected message displays in the IPC (instrument panel cluster) message center.

Passive Key

NOTE

Some brands/types of mobile phone or laptop computer chargers may cause interference that could lead to a PATS (passive anti-theft system) concern if the passive key is within close proximity of the charger. If a concern is observed, move the passive key away from the charger and attempt to turn the ignition on.

The passive key incorporates both the PATS (passive anti-theft system) and the RKE (remote keyless entry) transmitter functions in a single device. The passive key must be located inside the vehicle for the ignition to transition from OFF to ON and on the outside for keyless entry features. During key programming procedures, the PATS (passive anti-theft system) and the RKE (remote keyless entry) transmitter of the passive key are both programmed into the BCM (body control module) . See the Owner's Literature for maximum number of keys that can be programmed to the vehicle.

The passive key receives the low frequency signals from the PATS (passive anti-theft system) center antenna, exterior door handles antennas (gas/hybrid vehicles), approach detection antennas (electric vehicles), PATS (passive anti-theft system) rear antenna (SuperCrew and SuperCab vehicles), and keyless entry rear antenna (regular cab vehicles) . When the passive key is activated by one of the low frequency signals, it sends out a high frequency signal that is received by the RTM (radio transceiver module) . The passive key must be located

The PATS (passive anti-theft system) exterior front door handle antennas are wired to the BCM (body control module) . When activated by the BCM (body control module) , it transmits a low frequency signal that activates a passive key with in the approximate range of 1 m (3ft) from the front exterior door handles.

A programmed passive key must be within the passenger compartment for the PATS (passive anti-theft system) to detect the passive key and allow the ignition to transition from OFF to ON.

If a passive key is placed in the far outside edges of the interior, such as the far corners of the passenger compartment the vehicle can experience a PATS (passive anti-theft system) concern. If the passive key is located in one of these areas and there is a PATS (passive anti-theft system) concern, move the passive key out of the area and attempt to transition the ignition on. If the key is outside the range of the PATS (passive anti-theft system) center or rear antennas when the START/STOP button is pressed, the No Key Detected message displays in the message center.

Approach Detection Antennas (electric vehicles)

NOTE

Some brands/types of mobile phone or laptop computer chargers may cause interference that could lead to a PATS (passive anti-theft system) concern if the passive key is within a few inches of the charger and the No Key Detected message displays in the message center. If a concern is observed, move the passive key away from the charger and attempt to transition the ignition on.

The PATS (passive anti-theft system) approach detection antennas are wired to the BCM (body control module) . When activated by the BCM (body control module) , it transmits a low frequency signal that activates a passive key with in the approximate range of 1 m (3ft) from the front exterior door handles.

A programmed passive key must be within the passenger compartment for the PATS (passive anti-theft system) to detect the passive key and allow the ignition to transition from OFF to ON.

If a passive key is placed in the far outside edges of the interior, such as the far corners of the passenger compartment the vehicle can experience a PATS (passive anti-theft system) concern. If the passive key is located in one of these areas and there is a PATS (passive anti-theft system) concern, move the passive key out of the area and attempt to transition the ignition on. If the key is outside the range of the PATS (passive anti-theft system) center or rear antennas when the START/STOP button is pressed, the No Key Detected message displays in the message center.

PCM (powertrain control module)

When the PCM (powertrain control module) is replaced, perform the parameter reset procedure. There is no need to program keys if the PCM (powertrain control module) is replaced.

The PCM (powertrain control module) requires PMI (programmable module installation) when it is replaced.

SOBDMC (secondary on-board diagnostic control module C) (if equipped)

Passive Anti-Theft System (PATS)

419-01C Passive Anti-Theft System (PATS) - Vehicles With: Push Button Start	***2022 F-150***
Diagnosis and Testing	***Procedure revision date: 11/2/2022***

Passive Anti-Theft System (PATS)

Diagnostic Trouble Code (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).

Diagnostic Trouble Code Chart

Module	DTC (diagnostic trouble code)	Description	Action
BCM (body control module)	B10C6:01	Exterior Trunk Antenna: General Electrical Failure	GO to Pinpoint Test A
BCM (body control module)	B10C7:01	Interior Trunk Antenna: General Electrical Failure	GO to Pinpoint Test A
BCM (body control module)	B10C8:01	Interior Centre Antenna: General Electrical Failure	GO to Pinpoint Test A
BCM (body control module)	B10D7:05	PATS Key: System Programming Failure:	GO to Pinpoint Test

Start/Run/Move > Starting > Push Button Start > Inoperative	GO to Pinpoint Test A
Start/Run/Move > Starting > Push Button Start > Inoperative	GO to Pinpoint Test B

Symptom Chart

Symptom Chart: PATS (passive anti-theft system)

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	Actions
No Key Detected displays in the IPC (instrument panel cluster) message center	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	GO to Pinpoint Test A
Unable to program keys	GO to Pinpoint Test A
Unable to turn the ignition on	GO to Pinpoint Test B

Pinpoint Tests

PINPOINT TEST A : NO KEY DETECTED DISPLAYS IN THE IPC (INSTRUMENT PANEL CLUSTER) MESSAGE CENTER

Refer to Wiring Diagrams Cell 112for 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: Push Button Start, Description and Operation).
DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition

This test may require all of the vehicle owner keys for the vehicle to be present. If all of the keys are not present, at least 2 key must be present during programming.

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

- Ignition ON.
- Using a diagnostic scan tool, carry out the BCM (body control module) self-test. Record the DTC (diagnostic trouble code) 's.

Is BCM (body control module) DTC (diagnostic trouble code) B10C6:01, 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 the Owner's Literature.

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,
  - Access the BCM (body control module) and monitor the TIC_1 (Programmed Transmitter ID Code (TIC) Value 1) (Undefined / Not Used) PID (parameter identification)
  - Access the BCM (body control module) and monitor the TIC_2 (Programmed Transmitter ID Code (TIC) Value 2) (Undefined / Not Used) PID (parameter identification)

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 (universal serial bus) device plugged 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.

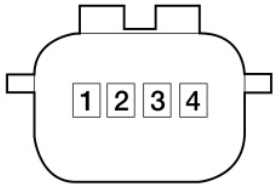
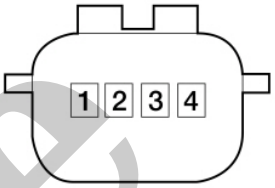
Does the vehicle start?

Yes	INFORM the customer of the cause of the concern and the normal operation of the vehicle.

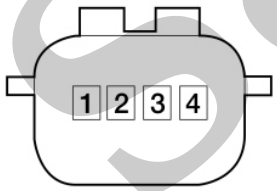
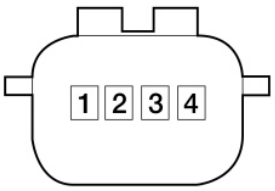
No	GO to A8

C4321, pin 1, component side		C4321, pin 2, component side

Keyless Entry Rear Antenna (vehicles with tailgate step with light bar)

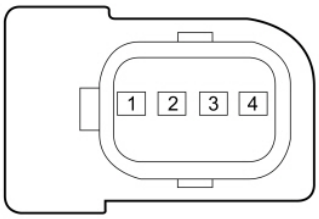
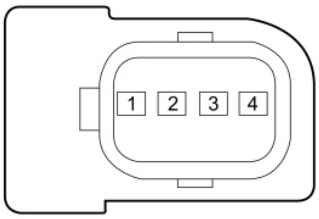
Positive Lead	Measurement / Action	Negative Lead
 E157911 C4817, pin 1, component side	Ω	 E157911 C4817, pin 2, component side

PATS (passive anti-theft system) Rear Antenna (Super Crew and SuperCab)

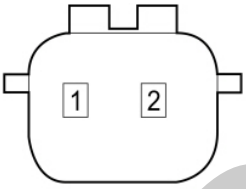
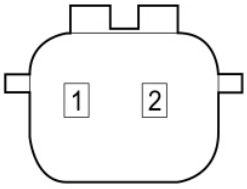
Positive Lead	Measurement / Action	Negative Lead
 E157911 C348, pin 1, component side	Ω	 E157911 C348, pin 2, component side

PATS (passive anti-theft system) Left Front Door External Antenna (gasoline/hybrid vehicles)

Positive Lead	Measurement / Action	Negative Lead

 E158730 C634, pin 2, component side	Ω	 E158730 C634, pin 3, component side

PATS (passive anti-theft system) Approach Detection Antenna RH (right-hand) (electric vehicles)

Positive Lead	Measurement / Action	Negative Lead
 E398278 C1796, pin 1, component side	Ω	 E398278 C1796, pin 2, component side

Is the resistance less than 3 ohms?

Yes	GO to A9

No	INSTALL a new antenna in question. REFER to: Passive Anti-Theft System (PATS) Center Antenna - Vehicles With: Column Shift (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Push Button Start, Removal and Installation). REFER to: Passive Anti-Theft System (PATS) Center Antenna - Vehicles With: Column Shift (419-01C Passive Anti-Theft System (PATS) - Vehicles With: Push Button Start, Removal and Installation).