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1993 FORD Bronco OEM Service and Repair Workshop Manual

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Handles, Locks, Latches and Entry Systems - Overview

501-14 Handles, Locks, Latches and Entry Systems	***2022 F-150***
Description and Operation	***Procedure revision date: 03/10/2022***

Handles, Locks, Latches and Entry Systems - Overview

Overview

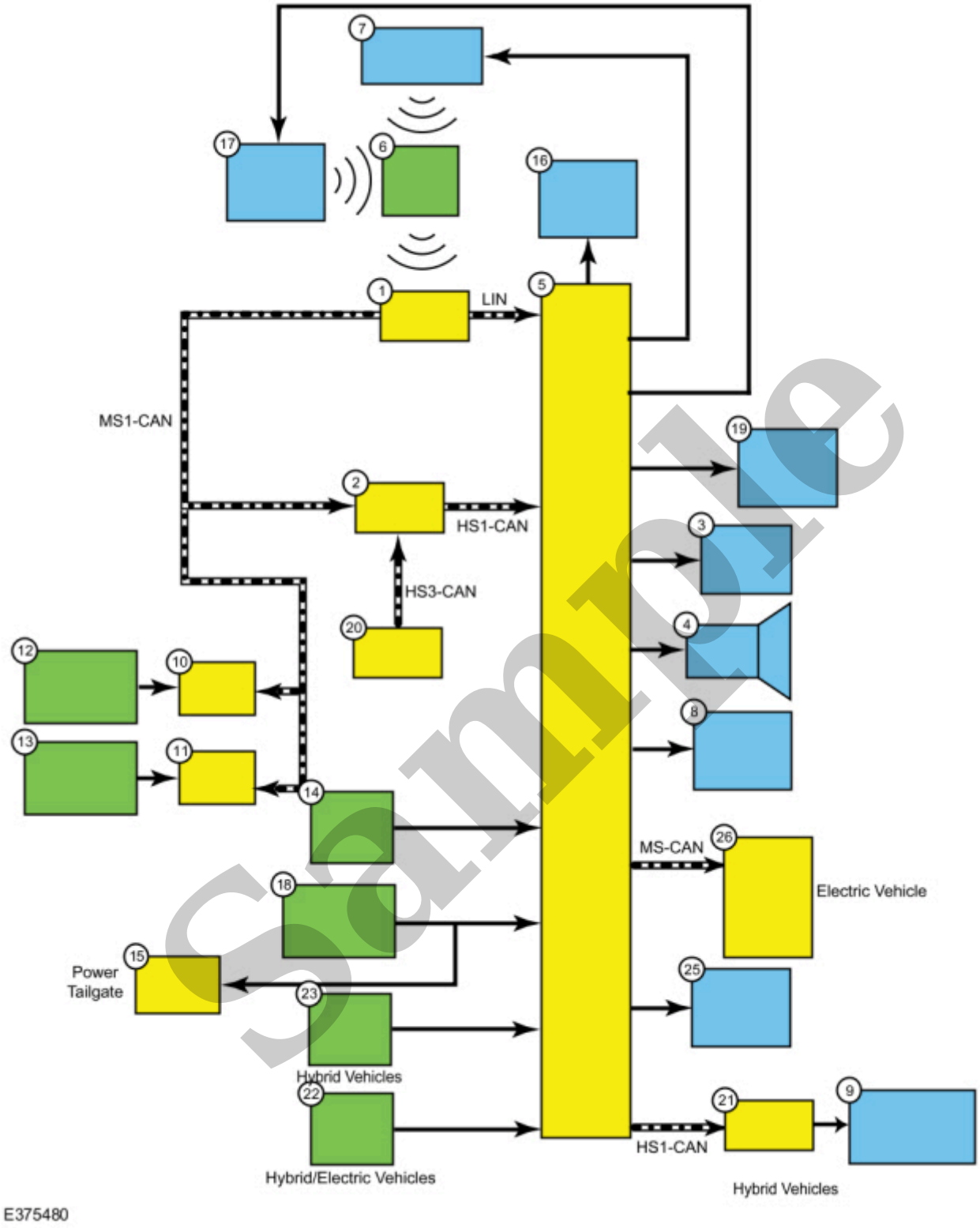
The power door lock/unlock feature locks or unlocks the doors upon a customer request from a door lock control switch, the keyless entry keypad (if equipped), the passive entry system (if equipped) or a valid programmed RKE (remote keyless entry) transmitter.

The tailgate comes equipped with either a power locking tailgate or a tailgate latch release. The F-150 is also equipped with a power tailgate.

The electric vehicle is equipped with a power front trunk luggage compartment.

The passive entry feature automatically locks or unlocks the doors, or releases the tailgate latch and power tailgate.

If equipped, the RKE (remote keyless entry) transmitter provides a button for the remote start feature.



Item	Description
1	RTM (radio transceiver module)

23	Headlamp Switch
24	Tailgate Lock Actuator
25	Tailgate Lock Actuator
26	Front Trunk Release Module

Network Message Chart

BCM (body control module) Network Input Messages

Broadcast Message	Originating Module	Message Purpose
Vehicle speed	PCM (powertrain control module)	The BCM (body control module) uses the vehicle speed data for the autolock and auto-unlock features.
Vehicle speed	SOBDMC (secondary on-board diagnostic control module C) (if equipped)	Provides the BCM (body control module) with the vehicle speed. The BCM (body control module) uses this message to determine when to activate some features, such as the autolock feature.
Door lock switch status	DDM (driver door module) / PDM (passenger door module) (if equipped)	Provides the BCM (body control module) with lock/unlock requests based on the input from the door lock control switch.

IPC (instrument panel cluster) Module Network Input Messages

Broadcast Message	Originating Module	Message Purpose
Message center feature configuration	IPC (instrument panel cluster)	Provides the BCM (body control module) configuration settings selected by the driver of the vehicle, such as autolock and auto-unlock settings.

Power Door Locks (with One-Touch Open and Close Front Windows)

NOTE

The switch inhibit feature prevents unauthorized access to the vehicle from the door lock control switches. The BCM (body control module) disables the function of both door lock control switches 20 seconds after the vehicle is electronically locked. If any of these switches are activated while they are inhibited, a chime sounds and a message is displayed in the message center to indicate the switches are inhibited. The BCM (body control module) enables the function of these switches when the vehicle is electronically unlocked.

This feature can be configured on/off through the message center.

Power Door Locking Feedback

The exterior lamps and horn provide visual and audible feedback when unlocking and locking the doors under certain circumstances. Refer to the following table:

Action	Status of Door(s)	Status of Hood	Visual/Audible Feedback
Press the lock button on the door lock control switch	Open	Closed	A short flash of the turn signals after all the doors are closed.
Press 7/8 and 9/0 on the keyless entry keypad	Closed	Closed	A short flash of the turn signals.
Press the unlock button on a RKE (remote keyless entry) transmitter	Closed	Closed	A long flash of the turn signals.
Press the lock button on a RKE (remote keyless entry) transmitter	Closed	Closed	A short flash of the turn signals.
Press the lock button on a RKE (remote keyless entry) transmitter	Open	Closed	A short flash of the turn signals after all the doors are closed.
Press the lock button on a RKE (remote keyless entry) transmitter	Closed	Open	A short flash of the turn signals after the hood is closed.
Press the lock button on a RKE (remote keyless entry) transmitter twice within 3 seconds	Closed	Closed	The horn chirps twice and the turn signals flash twice.
Press the lock button on a RKE (remote keyless entry) transmitter twice within 3 seconds	Open	Closed	The horn immediately chirps twice and the turn signals flash twice after all the doors are closed.

Front Trunk Luggage Compartment (if equipped)

For front trunk luggage compartment information, Refer to section 501-02.

Keyless Entry Keypad (if equipped)

The BCM (body control module) sends voltage signals on 3 separate circuits to the keyless entry keypad. When an individual keypad button is pressed, an individual or combination of the input circuits is routed to ground. Based on these inputs, the BCM (body control module) determines which button was pressed. When a valid code is received, the BCM (body control module) locks/unlocks the doors.

When a keypad button is pressed, the buttons illuminate. The keypad illumination turns off after 5 seconds have elapsed since the last button press. The keypad also illuminates any time the illuminated entry feature is active.

The keyless entry keypad can be used to:

- unlock the driver door.
- unlock all the doors (and the tailgate).
- lock all the doors (and the tailgate).
- program/erase up to 5 user codes.

Locking the Doors with the Keyless Entry Keypad

It is not necessary to enter the factory set or personal code prior to locking all doors. To lock all doors, press the 7/8 and 9/0 buttons at the same time for approximately 0.5 second. The locking function is disabled when the driver door is open.

Unlocking the Doors with the Keyless Entry Keypad

NOTE

Vehicles equipped with passive entry come from the factory set with the 2-stage unlock feature disabled (all doors unlock when the factory keycode is entered).

To unlock the driver door, enter either the factory set code or a personal code (each digit must be pressed within 5 seconds of the prior digit). The illuminated entry feature activates unless disabled.

If the 2-stage unlock is enabled, enter the factory set code or a personal code (driver door unlocks) and then touch the 3/4 button within 5 seconds to unlock all doors. This feature can be changed to a 1-stage unlock using the message center settings.

Anti-Scan Feature

- release the tailgate latch (tailgate release button must be pressed twice within 3 seconds) (if equipped).
- arm/disarm the perimeter alarm.
- activate/deactivate the panic alarm.
- remotely start the vehicle (if equipped).
- configure the staged lock programming (2-stage unlock or global unlock).
- open power tailgate (if equipped).

The RKE (remote keyless entry) transmitters for an IKT (integrated keyhead transmitter) have a normal operating range of 20 m (66 ft) in an open air, no obstruction environment.

The RKE (remote keyless entry) transmitters for a passive key have a normal operating range of 50 m (165 ft) in an open air, no obstruction environment.

The RKE (remote keyless entry) transmitters and the BCM (body control module) also utilize a rolling code to prevent the code from being captured by a code grabber. The system advances the counter in the RKE (remote keyless entry) transmitter and the BCM (body control module) every time a RKE (remote keyless entry) transmitter button is pressed.

The message center displays Key Battery Low Replace Soon when the battery in the key needs to be replaced.

RKE (remote keyless entry) Transmitter Unlock

The RKE (remote keyless entry) feature provides a staged process for unlocking the doors. Upon receipt of the first request for unlocking the doors, the RKE (remote keyless entry) feature unlocks only the driver door. If another unlock request is received within 3 seconds of the first, all the doors and the tailgate are unlocked. This feature can be disabled so that all the doors unlock on the first press of the unlock button (global unlock) using the message center settings.

Vehicles not equipped with push-button start come from the factory set with the 2-stage unlock feature enabled (2 unlock presses to unlock all doors).

Vehicles equipped with push button start come from the factory set with the 2-stage unlock feature disabled (single press unlocks all doors).

RKE (remote keyless entry) Transmitter Lock

The RKE (remote keyless entry) feature requests all of the doors and tailgate lock when the lock button is pressed.

RKE (remote keyless entry) Transmitter Tailgate Latch Release

The RKE (remote keyless entry) transmitter provides a tailgate release function. The tailgate release button must be pressed twice within 3 seconds for the tailgate to release.

Panic Alarm (if equipped)

- The ignition is on.
- The alarm system is triggered.
- The vehicle battery voltage is low.

For additional information regarding the remote start system, refer to the Owner's Literature.

Remote Start (Phone as a Key only)

The factory-installed remote start allows the vehicle to be remotely started from outside the vehicle. There is a 2- way communication between the mobile device and the vehicle to provide the remote start status of the vehicle.

The vehicle should remotely start and the LED on the mobile device should be lit solid green.

The vehicle does not remote start if any of the following conditions are present:

- The phone as a key feature is not enabled.
- The hood is not closed.
- The vehicle is not in PARK.
- A powertrain system DTC (diagnostic trouble code) is present, illuminating the service engine soon indicator.
- The ignition is on.
- The alarm system is triggered.
- The vehicle battery voltage is low.

For additional information regarding the remote start system, refer to the Owner's Literature.

Autolock (if equipped)

The autolock feature locks all of the doors after all of the following have occurred:

- All the doors are closed.
- The ignition is on.
- The vehicle is shifted into any gear to put the vehicle in motion.
- The vehicle attains a speed greater than 20 km/h (12.4 mph).

The autolock feature activates again during the same ignition cycle when all of the following have occurred:

- The vehicle speed is reduced to less than 15 km/h (9.3 mph).

When the fuel door button on the headlamp switch is pressed the PCM (powertrain control module) sends a voltage signal to the fuel filler door release solenoid. When the button is pressed, the signal is routed to a return circuit, indicating a request to release the fuel filler door latch.

When the PCM (powertrain control module) detects the driver front door lock switch is pressed, it checks the fuel tank for excessive fuel vapor pressure. If excess fuel tank vapor pressure is detected, the PCM (powertrain control module) activates a pump to remove the excess pressure.

When the PCM (powertrain control module) detects the excess pressure is removed, it provides voltage and ground to the fuel filler door release solenoid and send a signal to the BCM (body control module) releasing the fuel filler door latch. The process to release the fuel filler door can take as long as 15 seconds.

In the event the electronic fuel filler door release system fails, the fuel filler door latch can be released manually using the manual fuel filler door release lever.

Passive Entry

The passive entry feature unlocks or locks the doors or releases the tailgate latch without having to use a mechanical key blade or the RKE (remote keyless entry) transmitter feature.

When the BCM (body control module) detects a lock or unlock sensor is touched on an exterior door handle, or the tailgate release button is pressed, it activates the low frequency antenna in the corresponding exterior door handle or inside the tailgate. The low frequency antenna sends out a signal to activate the passive key. The passive key then responds by sending a high frequency signal back to the RTM (radio transceiver module) . The RTM (radio transceiver module) interprets the high frequency signal from the passive key and sends the information to the BCM (body control module) . If the BCM (body control module) detects a valid programmed passive key, the BCM (body control module) either unlocks the driver door, unlocks or locks all doors, or releases the tailgate latch.

Door Passive Entry

With a valid programmed passive key within 1 m (3.28 ft) outside a door, touch the lock or unlock sensor on the exterior door handle. The doors lock or unlock depending upon which sensor was touched on the handle. The unlock button is located on the inside of the handle and the lock button is located on the outside top face of the handle.

The driver front door passive entry feature either unlocks the driver door (if 2-staged unlock is enabled) or all four doors (if staged unlock is disabled). The passive entry feature always locks all the doors when the lock button is touched.

The passenger door passive entry feature always locks or unlocks all the doors.

Tailgate Passive Entry

With a valid programmed passive key within 1 m (3.28 ft) outside the tailgate, press the tailgate release button on the underside of the tailgate handle to release the tailgate latch.

Component Description

The DDM (driver door module) and the PDM (passenger door module) monitor the door lock control switches and control the operation of the power windows and the power mirrors. They communicate with each other and the BCM (body control module) over the CAN (controller area network) .

The DDM (driver door module) and PDM (passenger door module) require PMI (programmable module installation) when replaced.

IKT (integrated keyhead transmitter)

The IKT (integrated keyhead transmitter) incorporates both the PATS (passive anti-theft system) functions and the RKE (remote keyless entry) transmitter functions in a single device

During key programming procedures, the PATS (passive anti-theft system) and RKE (remote keyless entry) transmitter Identification (ID) of an IKT (integrated keyhead transmitter) are both programmed. A maximum of 6 keys can be programmed.

Passive Key

The passive key incorporates both the PATS (passive anti-theft system) and RKE (remote keyless entry) transmitter functions in a single device.

During key programming procedures, the PATS (passive anti-theft system) and RKE (remote keyless entry) transmitter Identification (ID) of a passive key are both programmed. A maximum of 4 passive keys can be programmed.

The passive key also contains a removable key blade that unlocks the driver door in the event of an electrical failure (such as a drained battery). The passive key requires 2 batteries. They should always be replaced as a set. For battery replacement instructions, refer to the Owner's Literature.

To start the vehicle in the event of a passive key battery failure, place the passive key in the backup starting location.

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).

Exterior Door Handles

The exterior front door handles contain a keyless entry antenna and capacitive touch sensor(s). The antennas and lock/unlock sensors are wired to the BCM (body control module) . When activated, the antenna transmits a low frequency signal to activate a passive key.

The rear door handles are not equipped with antennas or lock/unlock sensors.

Keyless Entry Rear Antenna

The keyless entry rear antenna is wired to the BCM (body control module) . When activated, it transmits a low frequency signal to activate a passive key.

RTM (radio transceiver module)