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2005 Jeep LIBERTY Service Manual

Go to manual page

Sample

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LED Charging Indicator Error

0808115607

CHARGING ERROR INDICATION

If an error exists with the charging of the vehicle such as a connected charger which is not plugged in to a wall outlet the outermost of the five Light Emitting Diode (LED) indicators will flash.

Screen Charging Error

0808115608

In addition an error message may display the above message on the driver information display screen

Level 1 and 2 Chargers

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YOUR CURRENT VEHICLE

Charging System - Smart Alternator

CHARGING SYSTEM - SMART ALTERNATOR

The PCM does not directly perform diagnostics for the Smart Alternator. However, the PCM does store and report the faults communicated from the Smart Alternator via the LIN bus circuit. The PCM diagnostic monitor compares the reported battery voltage from the Intelligent Battery Sensor (IBS) to the currently requested set voltage from the Smart Alternator. A fault will be detected if the absolute difference (VOLTAGE_DELTA) between commanded Smart Alternator and actual IBS voltage values vary from one another above a calibrated threshold over an accumulated period.

CHARGING SYSTEM TESTING

PRELIMINARY INSPECTION

Perform the following inspections before diagnosing the Smart Alternator system:

1. Verify proper battery condition and charge level.
2. Inspect condition and connections at the battery cable terminals, battery posts, ground locations and Smart Alternator. They should be clean and tight. Repair as required.
3. Inspect all fuses in both the BCM and Power Distribution Center (PDC) for tightness in receptacles. They should be properly installed and tight. Repair or replace as required.
4. Inspect Alternator drive belt and tensioner condition. Verify proper belt tension.

DIAGNOSTIC OVERVIEW - SMART ALTERNATOR

PCM DIAGNOSTICS: When an electrical, mechanical or over-temp fault is detected and reported by the Smart Alternator to the PCM, the PCM sets a fault (P-code) and sends a default voltage set point of 14.0 volts to the Smart Alternator. Most vehicles will combine the failure modes into one fault code (P065A). However, some vehicles will separate each failure mode and set individual DTCs. **It is important to note that on vehicles that use the combined P065A fault** that this DTC can also set if the **difference** between the commanded set point and IBS voltage feedback are greater than a calibrated threshold. This means that the charging output should be checked before condemning an Alternator as faulty when a DTC is present.

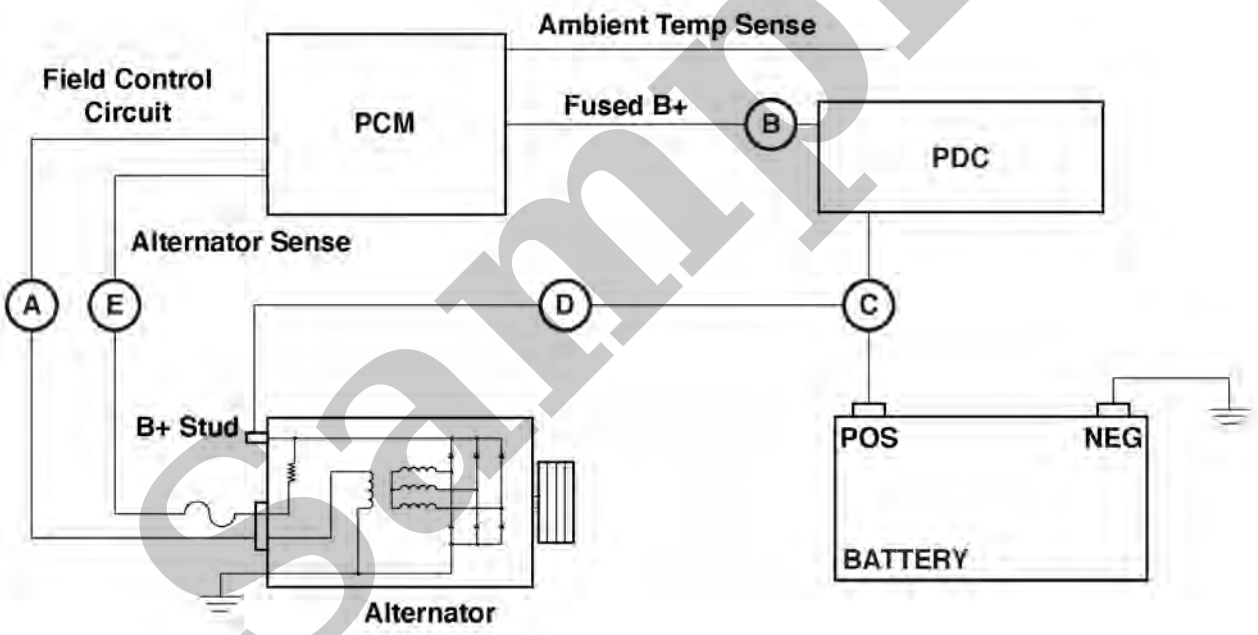
Sample

YOUR CURRENT VEHICLE

EVR Charging System - Standard Alternator

EVR CHARGING SYSTEM - STANDARD ALTERNATOR

The generic graphic below shows a single battery system. This graphic is used for the purpose of demonstrating the fundamental operation of the Electronic Voltage Regulation (EVR) system. A dual battery system is wired slightly different but basic charging system control, sense and operation is the same for both.



Sample

EVR DIAGNOSTIC MONITORS: The following EVR system diagnostics detect failure conditions in different areas of the EVR system:

1. **Alternator Field Circuit (P0622):** Detects an open or short condition in the alternator field control (A) circuit. The charging system voltage low or high diagnostics could also detected a failure in this area.
2. **Charging System Voltage High (P0563):** Detects that the battery system voltage (B,C,D) is more than 1.0 volt above the target charging voltage for an extended period with the engine running. This diagnostic

- If the voltage increases as expected, the alternator and output wiring are functioning properly. Check the vehicle for any aftermarket accessories that exceed the alternator output. Verify that the vehicle has the proper rated alternator. If the full field amperage output is too low, the alternator is likely faulty.
- Test for an intermittent condition by wiggle testing the wiring and cables to check for a loose connection.

DIAGNOSING AN UNDERCHARGING CONDITION:

1. **ALTERNATOR CONTROL CIRCUIT DIAGNOSTIC:** With the engine running check the commanded control duty cycle on the scan tool and at the alternator.
    1. If the duty cycle is 0% at the alternator, verify the duty cycle on the scan tool is not at 0%. the PCM may be commanding this duty cycle due to a fault in the system.
        - If the scan tool is reading 0% the PCM is commanding the duty cycle off. This could be due to another fault in the system. Check the control circuit for a short to ground and the sense circuit for proper operation before condemning the PCM.
        - If the scan tool is showing a commanded duty cycle and there is 0% duty cycle at the alternator, isolate and check the control circuit for an open circuit. If the circuit checks good, the PCM is most likely faulty.
    2. If the duty cycle is above 30% (approximately 3.0V with a DVOM) at the alternator, the PCM is commanding the alternator to charge. Check the voltage at the B(+) terminal of the alternator to determine if the issue is the alternator or the output wiring.
        - If the alternator output is within 0.2V of the PCM battery voltage, verify that the alternator case is grounded. If the alternator case ground is good, the alternator is faulty.
        - If the alternator output is above the PCM battery voltage, there is an open or high resistance between the alternator output connection and the PCM. Check all cables and connections at the alternator and PDC. Check for resistance in the fused B(+) supply circuit to the PCM.

ALTERNATOR SENSE CIRCUIT DIAGNOSTIC:

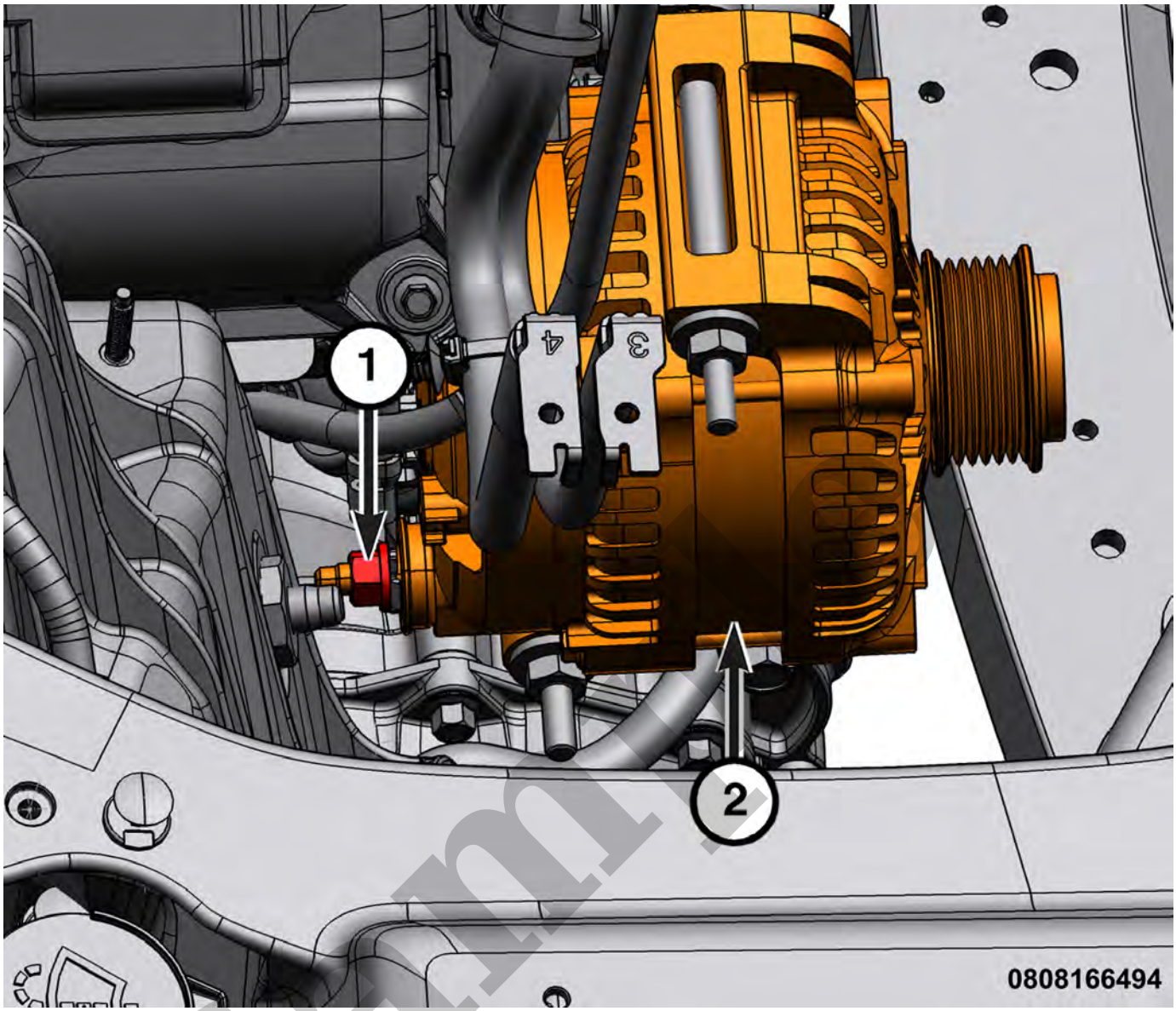
1. Compare the voltage on the alternator sense circuit to the voltage on the B(+) terminal. The voltage on the sense circuit should be approximately 3.5 volts less than the B(+) terminal due to the internal resistor in the alternator.
    - If the sense circuit voltage is equal to the B(+) terminal the sense circuit is open, shorted to voltage or the PCM is faulty (not terminating the signal). Unplug the connector and check for voltage on the sense circuit. There should be no voltage present if the circuit is not shorted to voltage. Isolate the circuit and check for an open circuit. If the circuit checks good, the PCM is faulty.

Sample

1. Check the ground connection at the IDCM. Verify proper torque for the cable. Load test the ground circuit. Read the CIRCUIT LOAD TESTING PROCEDURE for information on building the load test tool, additional load testing information and alternative methods of load testing or voltage drop testing a circuit. (Refer to Non-DTC Diagnostics/Circuit Testing Procedures/Standard Procedure).

2. Measure the voltage at the positive battery cable connection at the IDCM and compare it to the low voltage DC voltage set point reading in the IDCM data. If the voltage is low (same as system voltage) the IDCM output is low or not present. Verify that the cable nut is torqued properly and retest before condemning the IDCM.

Sample



1 - Generator B+ Nut
2 - Generator

8. Remove the generator B+ nut from the generator.

Sam

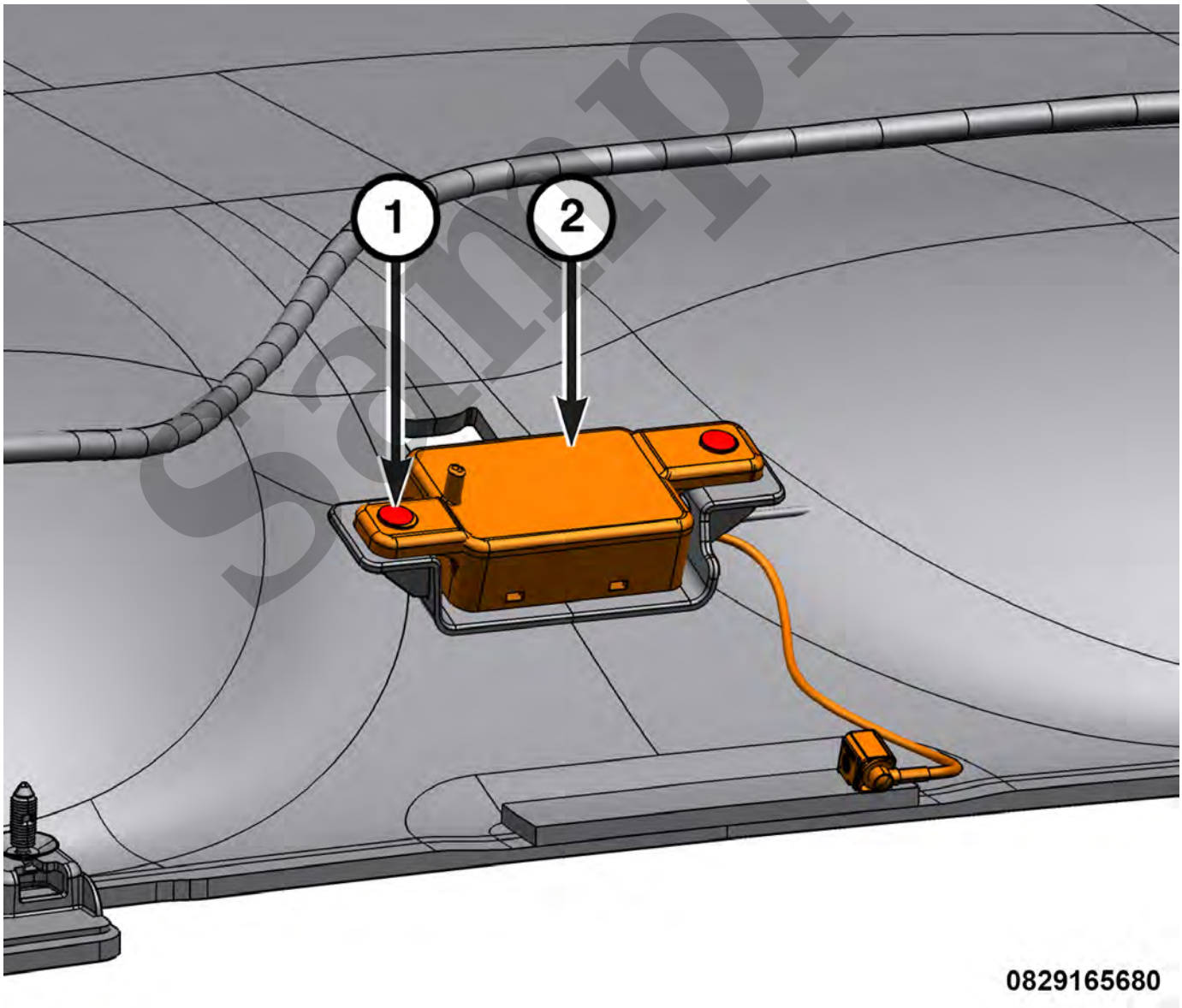
YOUR CURRENT VEHICLE

Radio Frequency (RF) Hub

RADIO FREQUENCY (RF) HUB

REMOVAL

1. Remove the Radio Frequency Hub (RFH) (Refer to Electrical/8E - Electronic Control Modules/MODULE, Radio Frequency (RF Hub)/Removal and Installation).



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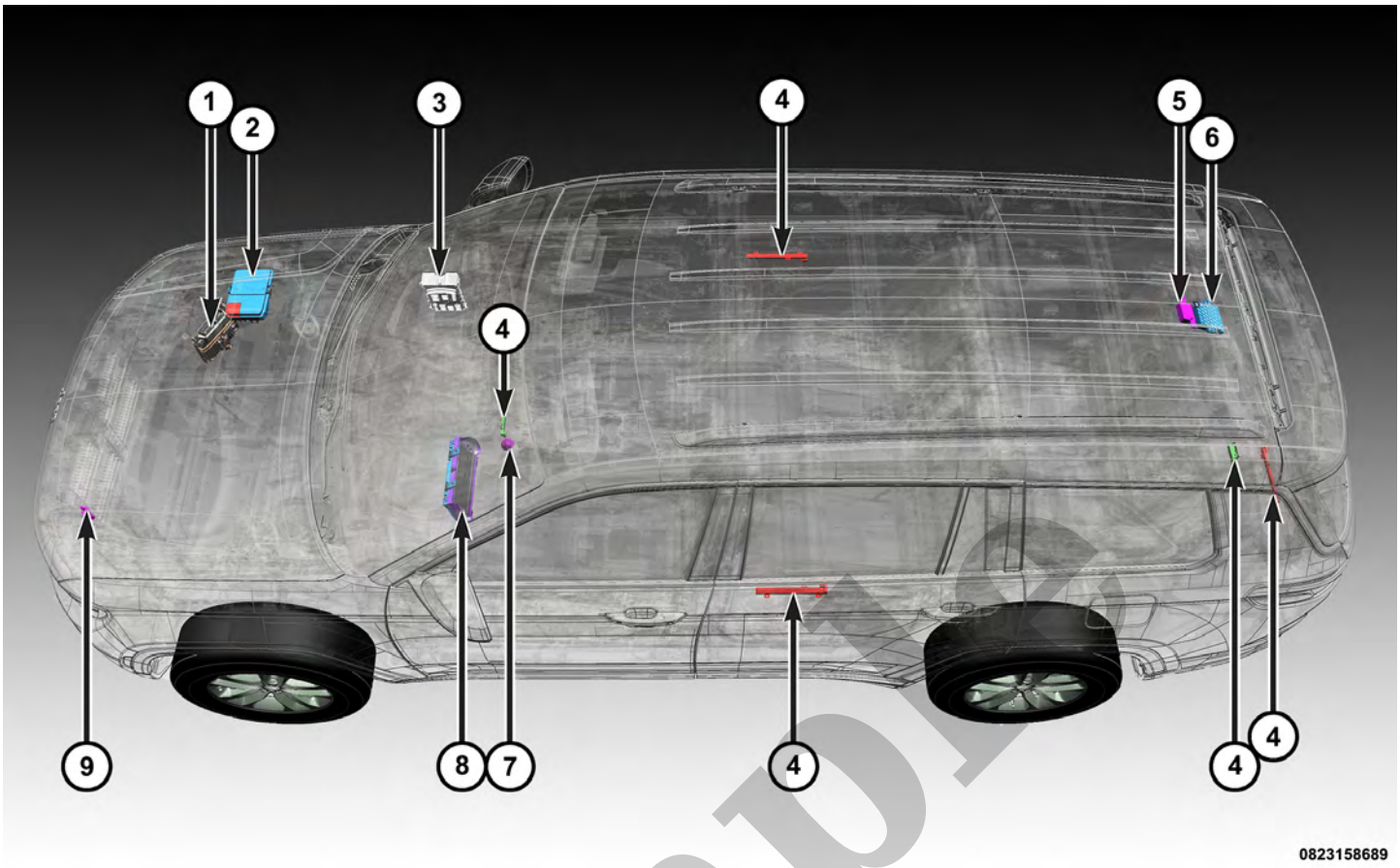

The Remote Starting system can consist of the following components:

Component Index

1.	Powertrain Control Module (PCM)
2.	Power Distribution Center (PDC)
3.	Body Control Module (BCM)
4.	Low Frequency (LF) Antennas
5.	Remote Start Antenna (RSA)
6.	Radio Frequency Hub (RFH)
7.	Keyless Ignition Node (KIN)
8.	Instrument Panel Cluster (IPC)
9.	Hood Ajar Switch

Sample

Component Index

The PCM:

- Provides ground to the hood switch and then receives input from the switch indicating the status of the hood (open or closed)
- Turns on the high side of the PCM starter relay control to start the vehicle
- Turns the ***crank hold signal*** to true enabling the BCM to turn on the low side of the starter relay
- Disables double start over ride once the engine is started

Radio Frequency Hub (RFH)

Component Index

The RFH:

- Receives the input request to start from the ignition
- Eenergizes the key transponder in the key fob in order to read it
- Sends a random code to the transponder and in return, receives a minikrypt code from the transponder
- Validates the key fob using LF antennas
- Validates that the brake is engaged
- Sends a request to the BCM to change the ignition state

Remote Keyless Entry (RKE) Key Fob

Component Index

The key fobs are used to begin the remote vehicle start request, then that begins the authentication request process by identifying the key transponder.

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