

2001 ACCESSORIES & EQUIPMENT**Remote Keyless Entry Systems - Catera****DESCRIPTION**

WARNING: Vehicles are equipped with air bag supplemental restraint system. Before attempting any repairs involving steering column, instrument panel or related components, see SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM in appropriate AIR BAG RESTRAINT SYSTEMS article.

Remote Keyless Entry (RKE) system is used to lock and unlock vehicle doors, trunk and release fuel door. Transmitters consists of 4 buttons which control door lock, door unlock, fuel filler door unlock and trunk release. System also uses existing power door lock components. Transmitter sends signals directly to Body Control Module (BCM). The BCM then locks/unlocks doors, opens trunk or opens fuel filler door directly.

OPERATION**ROLLING CODE**

Remote Keyless Entry (RKE) uses rolling code technology. This technology prevents a person from recording the signal sent between the transmitter and the Body Control Module (BCM). The transmitter sends the signal in a different order each time its activated. The transmitter and BCM are synchronized to the same signal order. If the transmitter is not synchronized with the BCM, only the fuel door release function will operate.

LOCKING ALL DOORS

When LOCK button is depressed once on transmitter and Body Control Module (BCM) receives a signal with a valid vehicle access code the following events will occur:

- All doors and fuel filler door lock.
- Interior lights are immediately turned off.
- Parking lights will flash once.
- Horn will chirp (if selected in personalization feature).
- Content Theft Deterrent (CTD) will arm.

UNLOCK DRIVERS DOOR

When UNLOCK button is depressed once on transmitter and BCM receives a signal with a valid vehicle access code the following events will occur:

- Driver door unlocks.
- Interior lights will turn on for approximately 40 seconds (if sun sensor senses darkness) or until ignition is turned on.
- Parking lights will flash once.
- Content Theft Deterrent (CTD) will disarm (if equipped).

UNLOCK REMAINING DOORS

When UNLOCK button is depressed a second time within 5 seconds of first press, transmitter and BCM receives a signal with a valid vehicle access code the following events will occur:

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- Remaining doors unlock.
- Interior lights will turn on for approximately 40 seconds (if sun sensor senses darkness) or until ignition is turned on.
- Parking lights will flash once.
- Horn will chirp (if selected in personalization feature).

TRUNK LID RELEASE

When vehicle is in Park or Neutral and ignition is off, a single press of trunk lid release button will open trunk. Interior lights will not illuminate.

FUEL DOOR RELEASE

When vehicle is in Park or Neutral and ignition is off, a single press of fuel door release button will open fuel door. Interior lights will not illuminate.

COMPONENT LOCATIONS

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Component	Location
Body Control Module (BCM)	Mounted To Lower Right "A" Pillar, Behind Trim Panel
Data Link Connector (DLC)	Instrument Panel Carrier Left Of Steering Column
Door Lock Relay	Behind BCM
Fuse Block	Lower Left Side Of Steering Column, Mounted To Instrument Panel

PROGRAMMING

TRANSMITTER PROGRAMMING

NOTE: All transmitters which are being programmed must be performed in a single programming sequence. DO NOT operate or program transmitters in the vicinity of other vehicles that are in the remote keyless entry programming mode. This will prevent a transmitter from being programmed to the incorrect vehicle.

The order in which the transmitters are programmed is important. The first transmitter programmed is transmitter number one. The second transmitter programmed is transmitter number 2. The number for the transmitter is for reference only. Transmitter number 2 can be programmed as number one and vice versa.

Install scan tool. Turn ignition on with engine off. Display Remote Keyless Entry (RKE) main menu. Select SPECIAL FUNCTIONS menu. Follow directions on screen display. Vehicle doors will lock, then unlock to confirm programming mode. Scan tool must remain connected until all transmitters are programmed. On transmitter number one, press and hold LOCK and UNLOCK buttons simultaneously. After 15 seconds, doors will lock and unlock to confirm programming of transmitter. Operate transmitter to confirm successful programming. Repeat procedure for up to 4 transmitters.

TRANSMITTER SYNCHRONIZATION

Resynchronization may be necessary due to security methods used by Remote Keyless Entry (RKE) system. Transmitters do not send the same signal twice. Reasons for resynchronization are as follows:

- Transmitter battery is very weak.
- Transmitter battery is changed.

- Vehicle battery is very weak.
- Vehicle battery has been in a state of low or no charge for an extended amount of time.

To resynchronize transmitter to Body Control Module (BCM), stand within 5 feet of vehicle. Simultaneously press and hold LOCK and UNLOCK buttons on transmitter for 7 seconds, then release. Door locks will cycle to confirm resynchronization.

TROUBLE SHOOTING

PRELIMINARY INSPECTION

Verify transmitter is applicable to Cadillac Catera models. See **TRANSMITTER IDENTIFICATION**. Check DOOR LOCK fuse No. 28 (20-amp) at instrument panel fuse block. Ensure all electrical connectors, circuits and grounds are okay. Try second transmitter. If second transmitter operates system, replace battery in first transmitter. Ensure transmitter battery terminals are clean and making good contact. Ensure power door locks system is operational. See appropriate POWER DOOR LOCKS - CATERA article. If any problems are found, repair as necessary. If no problems are found, go to **REMOTE KEYLESS ENTRY DIAGNOSTIC SYSTEM CHECK** under SELF-DIAGNOSTIC SYSTEM.

TRANSMITTER IDENTIFICATION

Transmitters may be identified with the Regular Production Option (RPO) code. RPO codes AUO and UA6 are applicable to Cadillac Catera.

SELF-DIAGNOSTIC SYSTEM

REMOTE KEYLESS ENTRY DIAGNOSTIC SYSTEM CHECK

1. Connect scan tool to DLC. If scan tool powers up, go to next step. If scan tool does not power up, go to TEST B: SCAN TOOL DOES NOT POWER UP under SYSTEM TESTS in BODY CONTROL MODULES - CATERA article.
2. Turn ignition on with engine off. Attempt to communicate with BCM. If scan tool communicates with BCM, go to next step. If scan tool does not communicate with BCM, go to TEST A: SCAN TOOL DOES NOT COMMUNICATE WITH CLASS 2 DEVICE under SYSTEM TESTS in BODY CONTROL MODULES - CATERA article.
3. Select BCM and retrieve DTCs. If any DTCs exist, go to next step. If no DTCs exist, diagnose by symptom. See **SYSTEM TESTS**.
4. If any communication DTCs (DTCs that begin with a "U") exist, go to TEST A: SCAN TOOL DOES NOT COMMUNICATE WITH CLASS 2 DEVICE under SYSTEM TESTS in BODY CONTROL MODULES - CATERA article. If no communication DTCs exist, go to next step.
5. If BCM DTCs B1000, B1004, B1007 or B1009 exists, see BODY CONTROL MODULES - CATERA article for description and diagnosis. If BCM DTCs B1000, B1004, B1007 or B1009 do not exist, go to next step.
6. If BCM DTCs B1327 or B1328 exists, repair charging system as necessary. See GENERATORS & REGULATORS - CATERA article in STARTING & CHARGING. If scan tool does not display DTCs B1327 or B1328, go to next step.
7. If BCM DTCs B2556 or B2560 are set, see **RKE DIAGNOSTIC TROUBLE CODES** table. If BCM DTCs B2556 or B2560 are not set, diagnose by symptom. Go to **SYSTEM TESTS**.

DIAGNOSTIC TROUBLE CODE DEFINITIONS

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DTC	Description
B2556	EEPROM Error
B2560	RKE Message Validation Error

(1) See appropriate DTC under DIAGNOSTIC TESTS

CLEARING DIAGNOSTIC TROUBLE CODES

After repair, clear DTCs using CLEAR DTC function on scan tool. DTC will automatically clear after 50 consecutive ignition cycles or can be cleared by using scan tool.

DIAGNOSTIC TESTS

DTC B2556: EEPROM ERROR

NOTE: When this DTC is set, all keyless entry functions are disabled.

Description

The keyless entry receiver is integrated into Body Control Module (BCM). Calibrations for the receiver are stored in EEPROM. When ignition is first turned on, the receiver performs internal tests on EEPROM to determine the integrity of EEPROM's non-volatile memory. The receiver compares previously stored checksum last time ignition was on and off with current checksum during this ignition cycle. If checksum's do not match, the receiver indicates that a calibration error has occurred and DTC B2556 will be set into memory.

Diagnostic Procedure

1. Perform **REMOTE KEYLESS ENTRY (RKE) DIAGNOSTIC SYSTEM CHECK** under SELF-DIAGNOSTIC SYSTEM. After performing remote keyless entry diagnostic system check, go to next step.
2. This fault indicates an internal malfunction in the EEPROM. The EEPROM is not serviceable. The BCM must be replaced. See BODY CONTROL MODULES - CATERA article. After replacing BCM, DTCs must be cleared. See **CLEARING DIAGNOSTIC TROUBLE CODES** under SELF-DIAGNOSTIC SYSTEM. After repair, transmitters must be programmed to new BCM. See **TRANSMITTER PROGRAMMING** under PROGRAMMING.

DTC B2560: RKE MESSAGE VALIDATION ERROR

Description

A message is received with correct transmitter identification, but accompanying security information cannot be validated. A message validation counter is increased each time consecutive time incorrect security information is received. When counter reaches 16, DTC B2560 is set. After DTC is set, message counter is reset and receiver operation is disabled for a minimum of 20 seconds.

Diagnostic Procedure

1. Perform **REMOTE KEYLESS ENTRY (RKE) DIAGNOSTIC SYSTEM CHECK** under SELF-DIAGNOSTIC SYSTEM. After performing remote keyless entry diagnostic system check, go to next step.
2. If DTC sets with one transmitter only, go to next step. If DTC does not set with one transmitter only, go to step 4 .
3. Replace battery in transmitter that sets DTC. Resynchronize transmitter. See **TRANSMITTER SYNCHRONIZATION** under PROGRAMMING. After replacing transmitter battery and resynchronizing transmitter, go to step 5
4. If DTC sets with both transmitters, go to step 6 .

5. Using scan tool, clear DTCs. See **CLEARING DIAGNOSTIC TROUBLE CODES** . Operate transmitter through all 4 functions. Using scan tool, check DTCs. If DTC reset, go to step 7 . If DTC did not reset, go to step 8 .
6. Reprogram both transmitters. See **TRANSMITTER PROGRAMMING** under PROGRAMMING. Operate both transmitters through all 4 functions. Using scan tool, check DTCs. If DTC reset with both transmitters, go to step 9 . If DTC did not reset with both transmitters, go to step 8 .
7. Replace suspect transmitter. Reprogram transmitter. See **TRANSMITTER PROGRAMMING** under PROGRAMMING. After completing transmitter programming, go to next step.
8. Verify keyless entry operation. Using transmitter, lock and unlock doors, release trunk and fuel filler door. If keyless entry system operates properly, repair is complete. If keyless entry system does not operate properly, go to next step.
9. Replace Body Control Module (BCM). See BODY CONTROL MODULES - CATERA article. After replacement, go to step 8 .

SYSTEM TESTS

CAUTION: To prevent damage to terminal, connector Test Adaptor Kit (J 35616-A) must be used whenever a diagnostic procedure requires checking or probing a terminal.

NOTE: To locate and identify terminals, see **WIRING DIAGRAMS** .

REMOTE KEYLESS ENTRY SYSTEM INOPERATIVE

1. Perform **REMOTE KEYLESS ENTRY (RKE) DIAGNOSTIC SYSTEM CHECK** under SELF-DIAGNOSTIC SYSTEM. After performing remote keyless entry diagnostic system check, go to next step.
2. Operate each of the 4 functions of the transmitter. Observe system operation. If RKE system does not operate normally (fault is present), go to next step. If RKE system operates normally (fault not present), condition is intermittent. Go to **PRELIMINARY INSPECTION** under TROUBLE SHOOTING.
3. Lock and unlock vehicles doors using switches inside vehicle. Observe lock operation. If locks operate properly, go to next step. If locks do not operate properly, see POWER DOOR LOCKS - CATERA article.
4. Operate trunk release and fuel filler door release using switches inside vehicle. Observe trunk and fuel filler door operation. If trunk and fuel filler door operate properly, go to next step. If trunk and fuel filler door do not operate properly, repair wiring as necessary. See appropriate POWER REAR COMPARTMENT & FUEL DOOR RELEASE SYSTEMS article.

NOTE: Verify transmitter is the correct model for vehicle remote system. An incorrect model transmitter may pass this test, but not activate vehicle remote system. See **TRANSMITTER IDENTIFICATION** under TROUBLE SHOOTING.

5. Using Keyless Entry Tester (J 43241), place transmitter on tester pad. Press each transmitter button one at a time. If keyless entry tester indicates transmitter passed, go to step 10 . If keyless entry tester indicates transmitter failed, go to next step.
6. If any of the transmitter buttons sound a tone and illuminate the Green light on keyless entry tester when pressed, go to step 9 . If none of the transmitter buttons sound a tone and illuminate the Green light on keyless entry tester when pressed, go to next step.
7. Replace transmitter battery. After replacing transmitter battery, perform **TRANSMITTER PROGRAMMING** under PROGRAMMING. After completing transmitter programming, go to next step.
8. Using Keyless Entry Tester (J 43241), place transmitter on tester pad. Press each transmitter button one at a

time. If keyless entry tester indicates transmitter passed, go to step 10 . If keyless entry tester indicates transmitter failed, go to next step.

9. Replace keyless entry transmitter. After replacing transmitter, go to step 13 .
10. Press fuel filler door button on transmitter. Observe fuel filler door. If fuel filler door released, go to next step. If fuel filler door did not release, go to step 13 .
11. Synchronize transmitter. See **TRANSMITTER SYNCHRONIZATION** under PROGRAMMING. If transmitter synchronization was successful, go to next step. If transmitter synchronization was not successful, go to step 13 .
12. Within range of vehicle, operate transmitter. If all functions operate properly, go to step 15 . If all functions do not operate properly, go to next step.
13. All transmitters that are to be recognized by the Body Control Module (BCM) must be programmed in a single programming sequence. If system is placed in programming mode, it will erase all previously programmed transmitters upon receiving programming signal from the first transmitter. Perform programming procedure using ALL transmitters. See **TRANSMITTER PROGRAMMING** under PROGRAMMING. Check RKE system operation. If RKE system operates properly, go to step 15 . If RKE system does not operate properly, go to next step.
14. Replace BCM. See BODY CONTROL MODULES - CATERA article. After replacement, go to next step.
15. Operate RKE system to verify repair. If system operation is okay, repair is complete. If system operation is not okay, go to step 3 .

REMOVAL & INSTALLATION

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION before disconnecting battery.

BODY CONTROL MODULE

For removal and installation procedures, see BODY CONTROL MODULES - CATERA article.

WIRING DIAGRAMS

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Fig. 1: Power Door Lock & Remote Keyless Entry System Wiring Diagram (Catera)

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