

SECTION 9T

REMOTE KEYLESS ENTRY AND ANTI-THEFT SYSTEM

REMOTE KEYLESS ENTRY AND ANTI-THEFT SYSTEM

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SECTION 9T

REMOTE KEYLESS ENTRY AND ANTI-THEFT SYSTEM

CAUTION: Disconnect the negative battery cable before removing or installing any electrical unit or when a tool or equipment could easily come in contact with exposed electrical terminals. Disconnecting this cable will help prevent personal injury and damage to the vehicle. The ignition must also be in LOCK unless otherwise noted.

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SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	N•m	Lb-Ft	Lb-In
Siren Mounting Screws	3.5	-	31

REMOTE KEYLESS ENTRY AND ANTI-THEFT SYSTEM



REMOTE KEYLESS ENTRY AND ANTI-THEFT SYSTEM

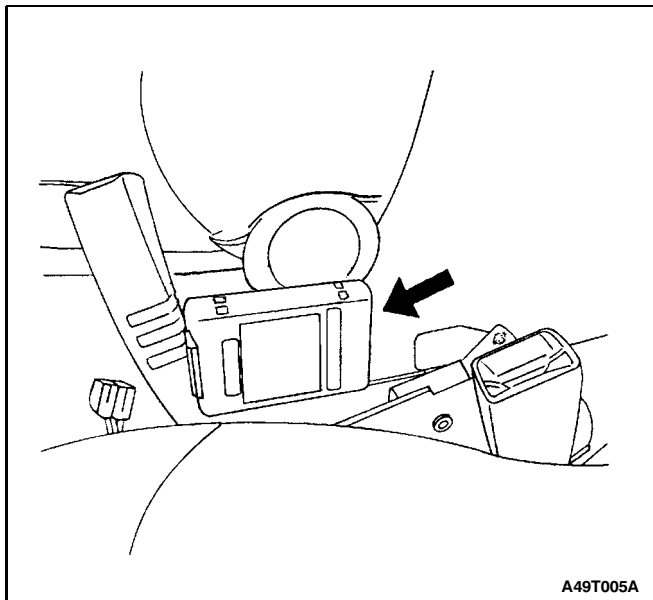
MAINTENANCE AND REPAIR

ON-VEHICLE SERVICE

CONTROL MODULE/RECEIVER

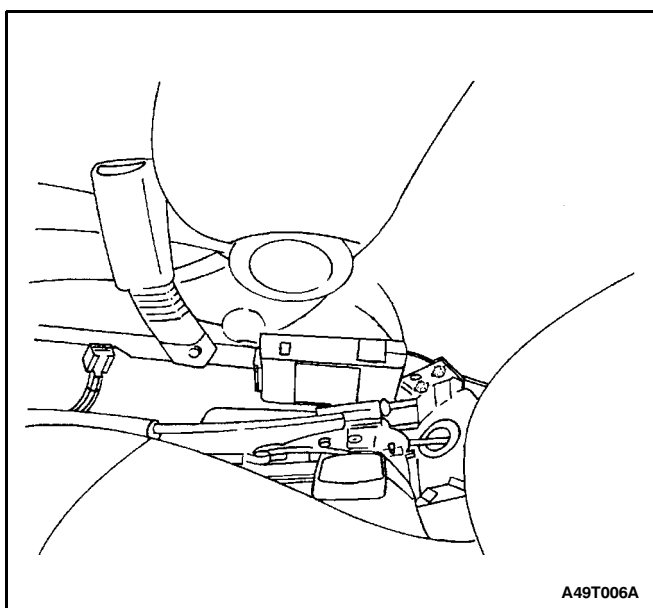
Removal Procedure

1. Disconnect the negative battery cable.
2. Remove the rear portion of the floor console. Refer to Section 9G, Interior Trim.
3. Disconnect the control module/receiver electrical connector.
4. Slide the control module/receiver away from its mounting bracket.



Installation Procedure

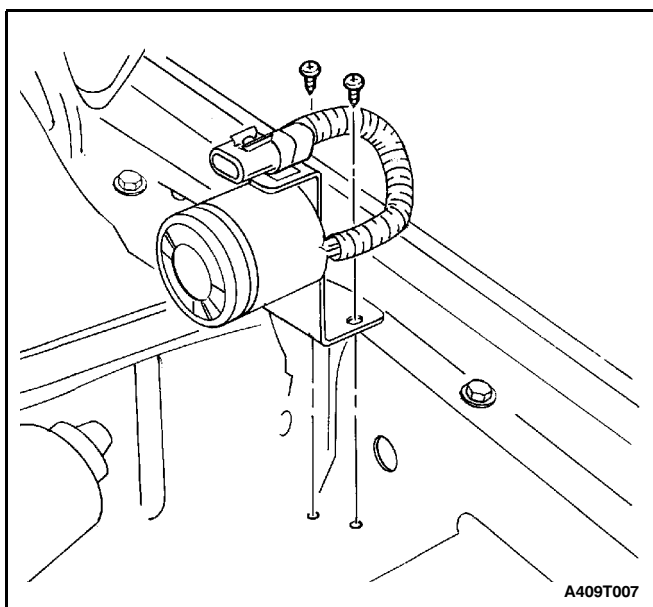
1. Install the control module/receiver on its mounting bracket.
2. Connect the control module/receiver electrical connector.
3. Install the floor console. Refer to Section 9G, Interior Trim.
4. Connect the negative battery cable.

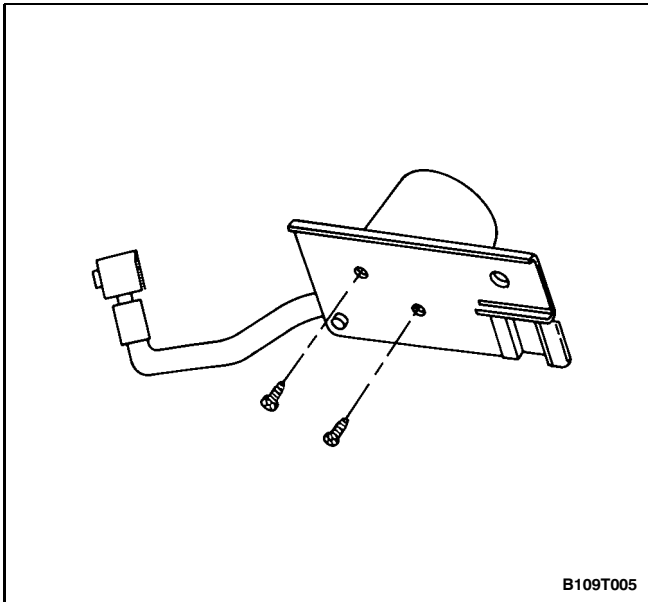


SIREN

Removal Procedure

1. Remove the siren electrical connector.
2. Remove the siren bracket mounting screws and siren.





Installation Procedure

1. Install the siren with the mounting screws.

Tighten

Tighten the siren mounting screws to 3.5 N•m (31 lb-in).

2. Connect the siren electrical connector.

PASSWORD PROGRAMMING

If a transmitter is lost or damaged, the control module/receiver must be re-programmed to communicate with a new transmitter. The passwords recorded in the control module/receiver should not be deleted when power is not connected to the control module/receiver.

Each control module/receiver should be able to record five passwords. The following method is used to record new passwords in the control module/receiver:

1. Connect the scan tool to the data link connector (DLC).
2. Turn the ignition ON.
3. Use the scan tool to delete the current passwords.
4. Send the programming mode message to the control module/receiver.
5. Press any button of the transmitter to generate a data code, including a password which will be recorded by the control module/receiver. The control module/receiver will send a response message to the scan tool to indicate that the first password has been recorded.
6. Press any button of the transmitter to generate a data code, including a password which will be recorded by the control module/receiver. The control module/receiver will then send a response message to the scan tool to indicate that the second password has been recorded.
7. Press any button of the transmitter three more times until the control module/receiver has indicated to the scan tool that the third, fourth, and fifth passwords have been recorded.
8. Turn the ignition OFF.
9. Disconnect the scan tool.

The control module/receiver leaves the programming mode automatically and switches to the normal operating mode when either of the following conditions occur:

- The scan tool is disconnected from the DLC.
- Five passwords are recorded in the control module/receiver.

GENERAL DESCRIPTION AND SYSTEM OPERATION

REMOTE KEYLESS ENTRY AND ANTI-THEFT SYSTEM

The remote keyless entry and anti-theft system can perform the following functions:

- Remotely lock and unlock the vehicle doors by means of a hand-held, high-frequency transmitter.
- Sense intrusion into the vehicle.
- Activate a warning in the event of an intrusion.
- Help the driver find the vehicle in a parking area.
- Automatically re-lock the doors if the door or the trunk is not opened within 30 seconds after the vehicle has been unlocked by the remote keyless entry.
- Communicate serial data to a scan tool to help diagnose system faults.

The remote keyless entry and anti-theft system consists of the following components:

- Keyless entry and anti-theft control module/receiver.
- Security indicator.
- Trunk open switch.
- Trunk tamper switch.
- Front door tamper switches.
- Door contact switches.
- Central door lock relay.
- Turn signal bulbs.
- Siren.
- Hood open switch.

REMOTE LOCKING AND UNLOCKING

The hand-held transmitter locks and unlocks the vehicle doors by sending radio waves to the control module/receiver in the vehicle. The effective range of the transmitter varies between 5 and 10 meters, (approximately 16 to 32 feet), depending on whether or not objects, such as other vehicles are blocking the path of the radio waves.

The transmitter has a LOCK button and an UNLOCK button which only function when the ignition is OFF. Pressing the UNLOCK button has the following effects:

- The doors are unlocked.
- The turn signal bulbs flash twice.
- The control module is disarmed.

Pressing the LOCK button has the following effects:

- The doors are locked.
- The turn signal bulbs flash once.
- A "Chirp" sound is heard.
- The control module is armed.

The transmitter has a replaceable battery. The battery is designed to last at least three years before replacement is necessary.

SECURITY INDICATOR

There is a security indicator on the instrument panel. After the LOCK button of the transmitter is pressed, the module is placed in the armed mode, and the security indicator flashes. The security indicator turns ON for 0.1 second and OFF for 0.7 second. It then flashes at that frequency until the control module/receiver is disarmed.

INTRUSION SENSING

The anti-theft function is armed if the transmitter sends the LOCK message to the control module/receiver when the ignition is OFF. When the hood, door, or trunk is opened, the hood open, door contact, or trunk open switch sends a "ground" signal to the control module/receiver. Unless the control module/receiver is disarmed, the siren will be activated when the "ground" signal is received from the trunk open, hood open, or door contact switches.

The following actions disarm the anti-theft system:

- An UNLOCK message is received from the transmitter.
- Key operation is detected by the tamper switches. (The tamper switches are operated by the lock cylinders in the front driver's door.)

The alarm will also be activated if the control module/receiver detects voltage from the ignition before either of the following conditions occur:

- An UNLOCK message is received from the transmitter.
- Key operation is indicated by the tamper switches.

SIREN

The remote keyless entry system is armed when the LOCK message is received from the transmitter when the ignition is OFF. When the system is armed, it will activate the siren and flash the turn signals for 28 seconds if any of the following conditions occur:

- Close all the windows.
- Turn the ignition key to LOCK and remove the key.
- Have all passengers get out of the vehicle.
- Close all doors, the hood and the trunk lid.
- The control module/receiver detects ignition voltage while the system is armed.

The siren will not operate if any of the following conditions occur after the system has been armed:

- The driver's door is opened with the key.

- The UNLOCK or LOCK button on the remote transmitter is pressed within 2 seconds after the siren is activated.

VEHICLE LOCATOR

The remote keyless entry system assists the driver in locating the vehicle. When the vehicle is unlocked with the remote control, the turn signals flash twice to indicate the location of the vehicle. The duration of the flashes and the length of time between flashes is used to indicate certain vehicle conditions. Refer to "Fault or Alarm Indication" in this section.

AUTOLOCKING (SAFETY LOCK)

The remote keyless entry system features an autolocking feature. If the doors are unlocked with the remote transmitter when the control module/receiver is in the armed mode, the doors are automatically re-locked after 30 seconds unless any of the following events occur:

- A door is opened.
- The ignition is ON.
- The trunk is opened.
- The hood is opened.

CONTROL MODULE/RECEIVER

The remote keyless entry control module/receiver is contained in the floor console. The module/receiver processes signals from the remote transmitter and various switches. It activates the alarm if an intrusion is detected. The control module/receiver also has a self-diagnostic function which will display trouble codes. In order to display trouble codes, a scan tool must be connected to the data link connector (DLC).

The control module/receiver will not communicate with transmitters from other vehicles because there are over four billion possible electronic password combinations. It

is highly unlikely that any transmitters will use the same password. The control module/receiver has an attached antenna to detect signals from the transmitter.

FAULT OR ALARM INDICATION

When the UNLOCK button on the remote transmitter is pressed, the control module/receiver will flash the parking lights to indicate information about the remote keyless entry and anti-theft system.

Normal Condition: If there has not been an intrusion, and no fault has been detected, the control module/receiver will signal a normal condition when the UNLOCK button is pressed. The parking lights will flash twice for 0.5 second, with a 0.5 second pause between flashes.

Fault Indication: If there is a fault in the remote keyless entry and anti-theft system, the control module/receiver will signal the fault when the UNLOCK button is pressed. The parking lights will flash twice for 1 second, with a 0.5 second pause between flashes.

Alarm Indication: If there has been an intrusion since the last time the LOCK button was pressed, the control module/receiver will signal that there has been an intrusion when the UNLOCK button is pressed. The parking lights will flash twice for 0.5 second, with a 1.5 second pause between flashes.

Alarm and fault information will be erased the next time the transmitter arms the control module/receiver by transmitting a LOCK message.

PANIC BUTTON

In addition to the LOCK and UNLOCK buttons on the transmitter, there is another button which is used to activate the siren if a threatening situation occurs while the driver is approaching the vehicle. If the panic button is held down for 2 seconds, the siren will be activated for 30 seconds, and the turn signal lamps will flash during that time.

SECTION 9T

IMMOBILIZER ANTI-THEFT SYSTEM

CAUTION: Disconnect the negative battery cable before removing or installing any electrical unit or when a tool or equipment could easily come in contact with exposed electrical terminals. Disconnecting this cable will help prevent personal injury and damage to the vehicle. The ignition must also be in LOCK unless otherwise noted.

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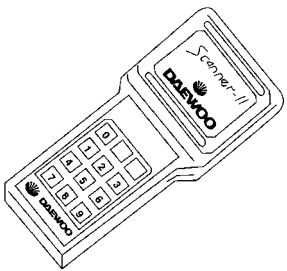
SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	N•m	Lb-Ft	Lb-In
Trim Panel Retaining Screws	3	-	27

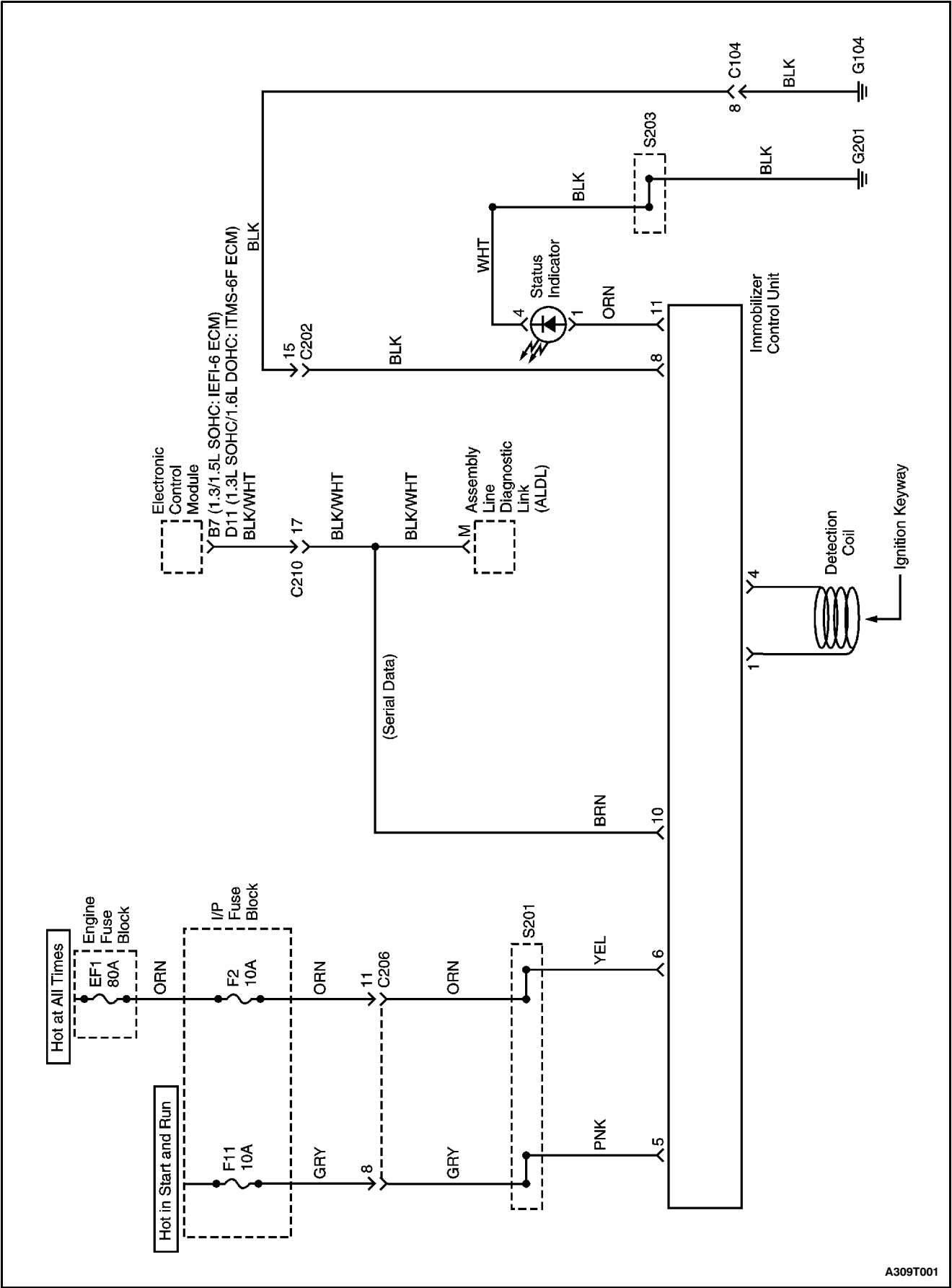
SPECIAL TOOLS

SPECIAL TOOLS TABLE

 <p>A110B003</p>	Scan Tool
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SCHEMATIC AND ROUTING DIAGRAMS

IMMOBILIZER SYSTEM



A309T001

DIAGNOSIS

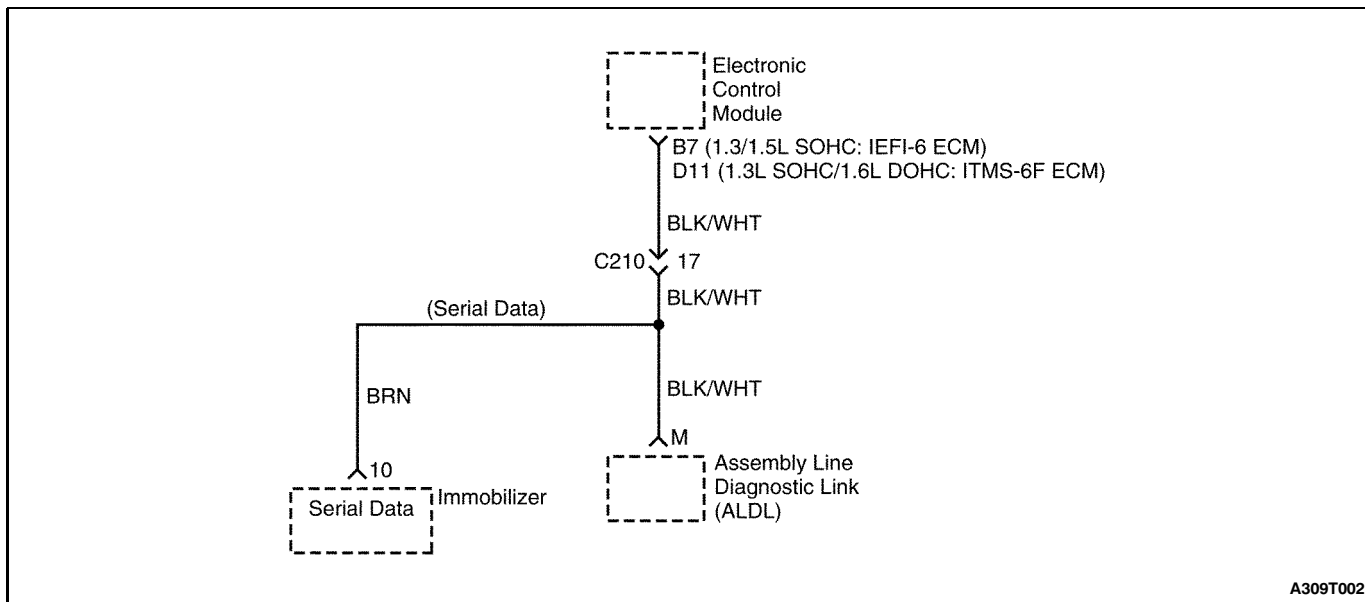
IMMOBILIZER ANTI-THEFT SYSTEM

The immobilizer anti-theft system requires diagnosis when it is not possible to start the engine. If the no-start condition occurs because of the immobilizer system, a diagnostic trouble code (DTC) 53 should be set. The immobilizer control unit monitors the detection and reading of the ignition key, and the self-test capacity is limited to those functions. Faults are communicated to a scan tool during diagnosis, but they are not stored in the immobilizer control unit's memory. Unauthorized use of a scan tool could be a method of defeating the immobilizer anti-theft system, so certain scan tool procedures require the use of a password. The following functions are password protected:

- Coding of an additional key.
- Deleting all key codes.
- Deletion of the immobilizer identification (ID) Code.
- Deletion of the electronic control module (ECM) ID Code.

The following functions do not require a password:

- Reading an ignition key to determine if the transponder is working or if a key is authorized.
- Reading the immobilizer ID code to verify that it matches the ECM ID code.



DIAGNOSTIC TROUBLE CODE (DTC) 53 ECM IMMOBILIZED ERROR

Circuit Description

When the ignition is turned ON, the key is tested by the immobilizer anti-theft system. While the key code is being read by the immobilizer control unit, the engine can start and run with any key that will turn the lock cylinder. The key code is read and compared with key codes that have been stored in the memory of the immobilizer control unit. If a valid key is detected, the immobilizer control unit sends a serial data release message to the electronic control module (ECM). Included in the release message is an identification (ID) code which assures that neither the immobilizer control unit nor the ECM have been substituted to defeat the system. If the ECM receives an invalid release message, the ECM performs the following actions:

- Disables the fuel injector circuit.

- Disables the fuel pump circuit.

DTC 53 Will Set When

- The ECM does not receive the signal from the immobilizer control module within .562 second when the vehicle is stationary, or within 1.5 seconds when the vehicle is moving.
- The ECM receives an incorrect release message from the immobilizer control unit more than five times.
- The above conditions are maintained until the ignition is switched OFF.

DTC 53 Will Clear When

The ignition switch is turned OFF or the scan tool CLEAR CODES command is issued.

DTC 53 ECM Immobilized Error

Step	Action	Value	Yes	No
1	Connect the scan tool using the following procedure: 1. Insert the immobilizer data cartridge into the scan tool. 2. Turn the ignition switch to the OFF position. 3. Connect the scan tool to the assembly line diagnostic link (ALDL). 4. Connect the scan tool's power cord to the cigar lighter socket. 5. Turn the ignition ON, but do not start the engine. Is communication established between the scan tool and the immobilizer control unit?	-	Go to Step 2	Go to "Communication Between Immobilizer and Test Equipment"
2	Select SYSTEM DIAGNOSIS from the scan tool menu. Does the KEY STATUS message indicate POS NR (position number) 00?	-	Go to "Key Status Errors"	Go to Step 3
3	Read the IMMO & ECM ID CODE message that was displayed after requesting SYSTEM DIAGNOSIS. Does the message ID CODE DIFFERENT appear?	-	Go to "Identification (ID) Code Reprogramming"	Go to Step 4
4	Check for an open serial data wire between the immobilizer control unit and the electronic control module (ECM). Is the circuit open?	-	Go to Step 5	Go to Step 6
5	Repair the open serial data wire between the ECM and the immobilizer control unit. Is the repair complete?	-	System OK	-
6	1. Replace the ECM. 2. Reprogram the identification (ID) code. Refer to "Identification (ID) Code Reprogramming" in this section. Is the repair complete?	-	System OK	-

KEY STATUS ERRORS

The following KEY STATUS messages may be shown on the scan tool after commanding SYSTEM DIAGNOSIS:

- **IGNITION OFF STATUS.** This message informs the technician that the ignition is off during the key coding process. Turn the ignition ON during key coding, but do not start the engine.
- **KEY IS OCCUPIED.** Only five keys may be coded. If a new key is desired, the previous key codes must be deleted. Up to five keys may then be authorized.
- **ALREADY AUTHORIZED.** Key coding is being attempted with a key that is already authorized.
- **ERROR NO. 001, 002, 003.** There is no communication between the transponder in the ignition key and the detection coil. Follow the steps below to diagnose the problem:

1. Try a different key. If a different key works, the problem is in the original key.
 2. If trying a different key results in the same error message, replace the detection coil.
- **INVALID KEY.** The communication between the immobilizer control unit and the key transponder has not validated the key. Follow the steps below to diagnose the problem:
 1. Code the key. Refer to "Key Coding Procedure" in this section.
 2. If the same message is received after key coding, check the connection of the detection coil.
 3. If the detection coil is okay, replace the immobilizer. Refer to "Immobilizer Control Unit" in this section.

- **NO TRANSPONDER DETECTED.** The fault may be in ignition key transponder, the detection coil, or the immobilizer. Follow the steps below to diagnose the problem
 1. Try a different key. If a different key works, the problem is in the original key.
 2. If trying a different key results in the same error message, check the connection of the detection coil.
 3. If the connection of the detection coil is okay, disconnect the detection coil and use an ohmmeter to check for an open detection coil.
 4. If the detection coil is not open, replace the immobilizer control unit. Refer to “Immobilizer Control Unit” in this section.

COMMUNICATION BETWEEN IMMOBILIZER AND TEST EQUIPMENT

1. Connect the test equipment as described in the Scan Tool Equipment Manual.
2. If communication between the scan tool and the test equipment is unsuccessful, wait 30 seconds and try again.
3. If communication is not successful on the second try, turn the ignition OFF and check the wire and connectors between the immobilizer control unit terminal 3 and the assembly line diagnostic link (ALDL) terminal M.
4. If the wire and connectors between the ALDL and the immobilizer control unit are okay, replace the immobilizer control unit. Refer to “Immobilizer Control Unit” in this section.

MAINTENANCE AND REPAIR

ON-VEHICLE SERVICE

KEY CODING PROCEDURE

1. Install the immobilizer control unit cartridge in the scan tool.
2. Turn the ignition OFF.
3. Connect the scan tool.
4. Turn the ignition ON with the key to be coded.
5. Enter the four-number password that enables service personnel to use the scan tool for coding keys.
6. A lost key can be deleted only by deleting all keys and reauthorizing the remaining keys as new keys. If a key is lost, go to the next step. If no keys have been lost, but an additional key is desired, go to Step 8.
7. Use the scan tool command DELETE ALL KEY CODES.
8. Use the scan tool command AUTHORIZE ONE ADDITIONAL KEY.
9. Repeat Steps 4, 5, and 6 until the immobilizer control unit has recorded all of the new keys or reauthorized all of the remaining keys after a deletion. The immobilizer control unit can record a maximum of five keys.
10. Return the system to the normal mode.
11. Turn OFF the ignition.
12. Turn ON the ignition.
13. Crank to start the engine.

IDENTIFICATION (ID) CODE REPROGRAMMING

Reprogram the identification (ID) code in the following situations:

- An electronic control unit is replaced.
- An engine control module (ECM) is replaced.

If a valid key has been lost, refer to "Key Coding Procedure" in this section.

Reprogramming Procedure

1. Turn the ignition OFF. Reprogramming is not allowed while the engine is running.
2. Insert the immobilizer control unit cartridge into the scan tool.
3. Do not start the vehicle, but turn the ignition ON.
4. Enter the four-number password that enables service personnel to use the scan tool for coding keys.
5. Use the scan tool to command RESET ID CODE.

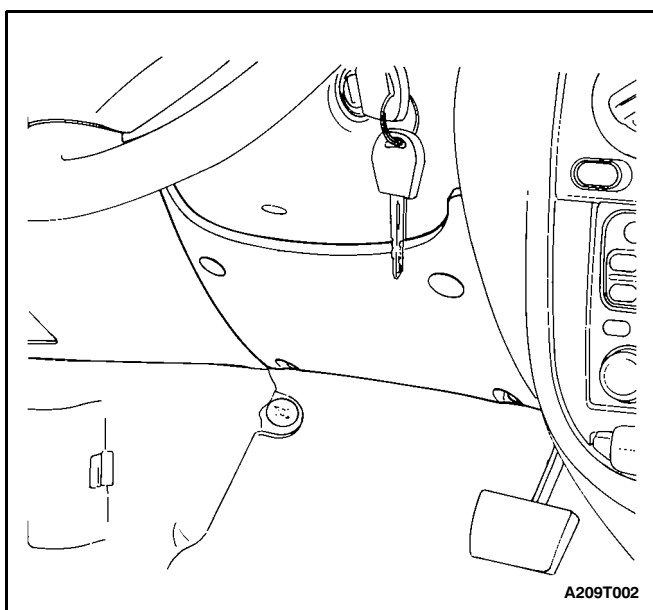
6. Turn the ignition OFF and ON again, but do not crank or start the engine. The ECM will reset the ECM ID code to match the new ID code that was calculated and sent by the immobilizer control unit when the ignition was first turned ON after the reset command.
7. Return the system to the normal mode.
8. Turn OFF the ignition.
9. Turn ON the ignition.
10. Start the engine.

After reprogramming the ID code, the scan tool SYSTEM DIAGNOSIS command can verify that the ECM ID code matches the immobilizer control unit ID code.

If the reprogramming procedure does not result in matching ID codes, check the electrical connectors for the serial data wire between the immobilizer control unit and the ECM.

IGNITION KEY TRANSPONDER

If a transponder is faulty, the ignition key must be replaced. It is not possible to install a new transponder into a key.

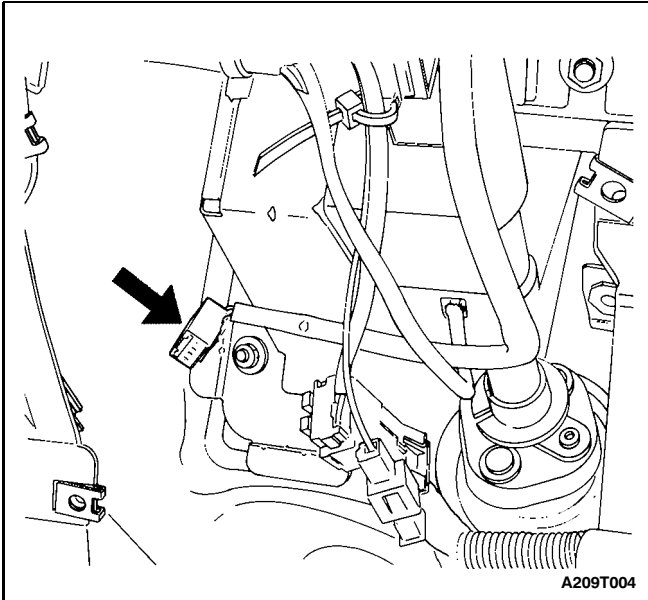


DETECTION COIL

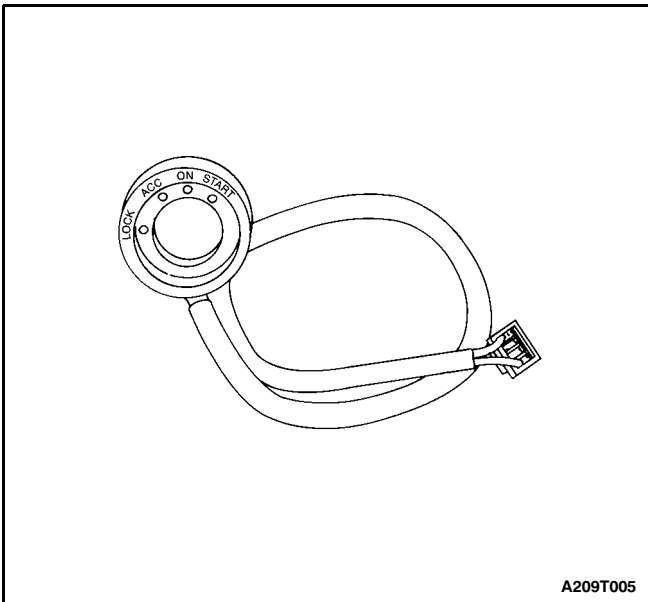
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Removal Procedure

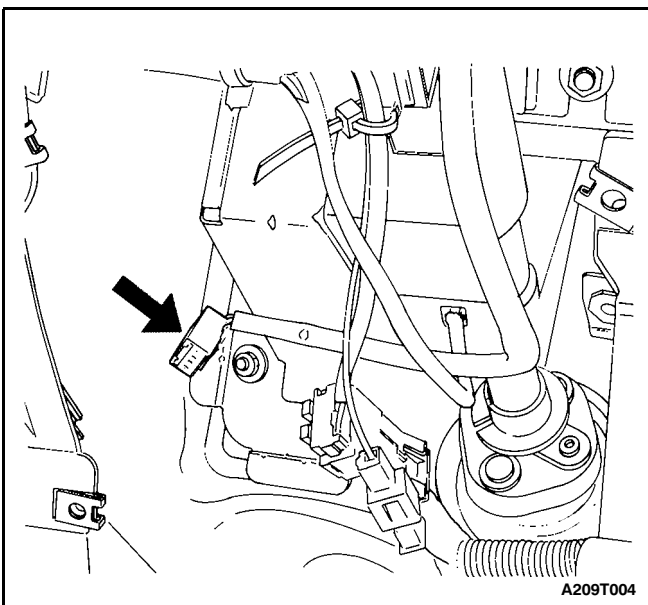
1. Remove the retaining screws from the trim panel below the steering column.



2. Slide the trim panel upward and pull outward to remove it.
3. Remove the steering column lower cover. Refer to Section 6E, Steering Wheel and Column.
4. Disconnect the two-pin connector from the immobilizer.

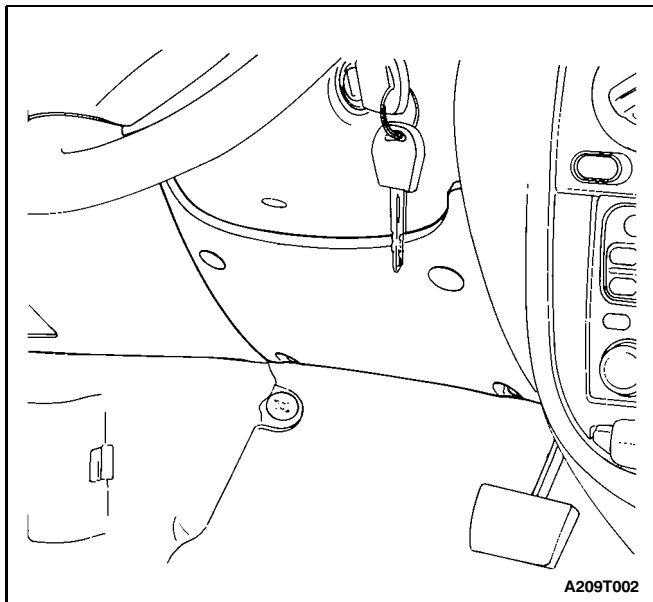


5. Pry the detection coil away from the lock cylinder. If the detection coil will be replaced with a new one, it does not matter if the key position trim ring is damaged during removal. A new trim ring is part of the new detection coil.



Installation Procedure

1. Install the detection coil by pressing it onto the lock cylinder until it snaps in place.
2. Connect the two-pin connector to the immobilizer.

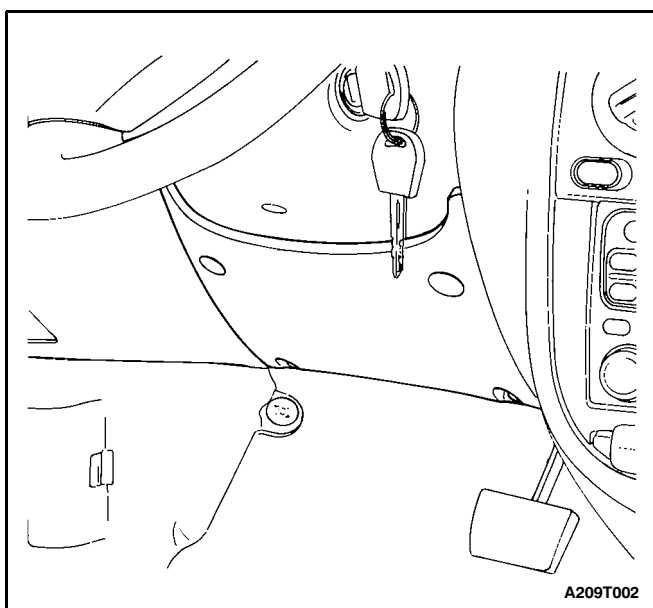


3. Install the steering column lower cover. Refer to Section 6E, Steering Wheel and Column.

4. Install the trim panel using the retaining screws.

Tighten

Tighten the trim panel retaining screws to 3 N•m (27 lb-in).

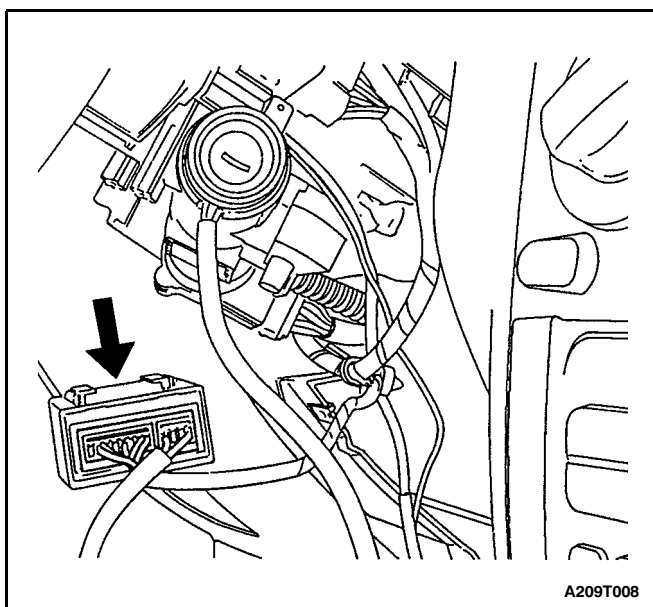


IMMOBILIZER CONTROL UNIT

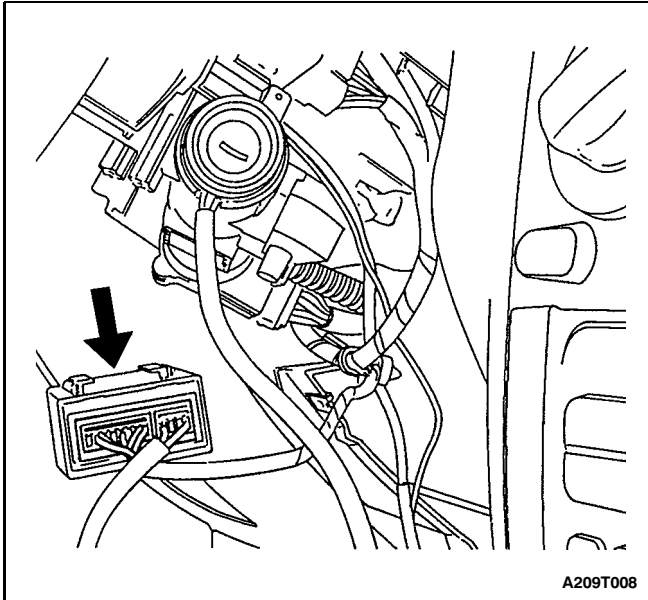
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Removal Procedure

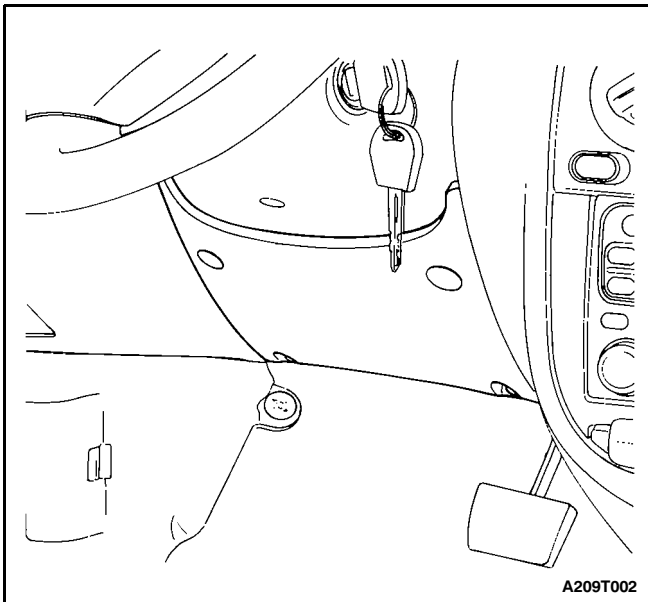
1. Disconnect the negative battery cable.
2. Remove the retaining screws from the trim panel below the steering column.



2. Slide the trim panel upward and pull outward to remove it.
3. Cut the tie-strap which attaches the yellow supplemental inflatable restraint wires to a retaining clip. Use caution not to damage the wires or the retaining clip.
4. Slide the immobilizer control unit toward the steering wheel until it slides off its mounting bracket.
5. Disconnect the electrical connectors from the immobilizer control unit.



A209T008



A209T002

Installation Procedure

Important: After replacing the immobilizer, the keys must be re-authorized using the key coding procedure. Refer to "Key Coding Procedure" in this section. Also, the electronic control module (ECM) identification (ID) code must be reset. Refer to "Identification (ID) Code Reprogramming" in this section.

1. Connect the electrical connectors to the immobilizer control unit.

2. Slide the immobilizer control unit onto its mounting bracket.
3. Use a tie-strap to fasten the yellow supplemental inflatable restraint wires to the retaining clip.
4. Install the trim panel using the retaining screws.

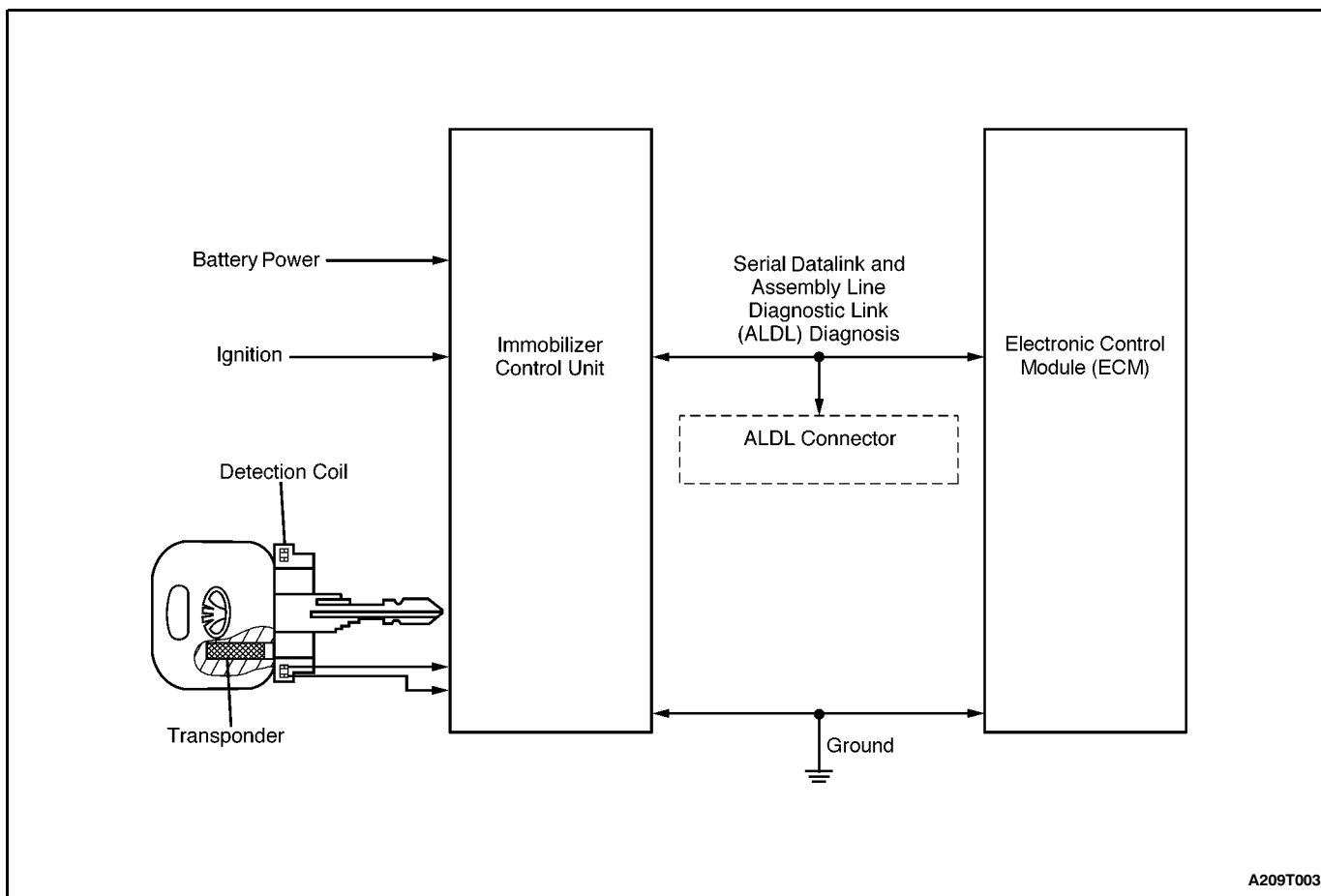
Tighten

Tighten the trim panel retaining screws to 3 N•m (27 lb-in).

5. Connect the negative battery cable.

GENERAL DESCRIPTION AND SYSTEM OPERATION

IMMOBILIZER SYSTEM



The purpose of the immobilizer system is to prevent the vehicle from being stolen or driven by unauthorized users.

Authorization is accomplished by the use of an electronically coded key. When the ignition is turned ON, the key is tested by the immobilizer system. While the key code is being read by the immobilizer control unit, the engine can start and run with any key that will turn the lock cylinder. The key code is read and compared with key codes that have been stored in the immobilizer control unit's memory. If a valid key is detected, the immobilizer control unit sends a serial data release message to the electronic control module (ECM). Included in the release message is an identification (ID) code which assures that neither the immobilizer control unit nor the ECM have been substituted to defeat the system. If the ECM does not receive a release message within a specified time, or if the ID codes do not match, the ECM performs the following actions:

- Disables the fuel injector circuit.
- Disables the fuel pump circuit.

- Disables the ignition coil.
- Sets Diagnostic Trouble Code (DTC) 53.

The above conditions are maintained until the ignition is switched OFF.

The immobilizer control unit system consists of the following components:

- Electronically coded keys.
- Detection coil.
- Immobilizer control unit.
- ECM.
- Instrument cluster indicator.
- Assembly line diagnostic link (ALDL) connector to provide serial data access for a scan tool.

An ECM for a vehicle without an immobilizer control unit cannot be interchanged for an ECM that is used with an immobilizer control unit system. The immobilizer control unit and the ECM must have a matching ID code. ID coding and key coding are accomplished by using a scan tool.

ELECTRONICALLY CODED KEYS

Each valid ignition key has an internal transponder which transmits a unique code. When a key is inserted into the ignition lock, the transponder is inductively coupled to the detection coil. The transponder interacts with the detection coil to generate an amplitude modulated signal which is conducted from the detection coil to the immobilizer control unit. The immobilizer control unit reads the radio frequency signal, and a release message is sent to the electronic control module, if the key is authorized.

New keys are coded by using a scan tool. Refer to "Key Coding Procedure" in this section.

DETECTION COIL

A detection coil is mounted at the ignition lock as an integral part of the key position trim ring. The wires to and from the detection coil are connected to the immobilizer. When the ignition is turned ON, the immobilizer energizes the detection coil, and the coil is coupled inductively to the transponder in the ignition key. The immobilizer sends a modulated signal to the detection coil, and the signal is changed by interaction with the internal transponder in the ignition key. The immobilizer reads the signal from the detection coil and determines whether the key is authorized.

IMMOBILIZER CONTROL UNIT

The immobilizer control unit is an electronic module in the instrument panel which verifies the validity of an ignition key when the ignition is turned ON. To accomplish its purpose, the immobilizer control unit performs the following actions:

- Learns and stores the codes of valid keys.
- Reads the radio frequency input from the ignition key.
- Compares the received code with the codes of the valid keys.
- Sends a release message to the electronic control module (ECM) if a valid key has been presented.
- Calculates and transmits identification (ID) codes within each release message.
- Controls the status indicator in the instrument cluster.
- Monitors system faults.
- Supports system test functions.

Normal Operation

When the ignition is turned ON, the immobilizer control unit tries to read the key code transmitted by the transponder in the ignition key. If a valid key is detected, the immobilizer control unit sends a release message to the ECM, and the immobilizer control unit switches to the inactive mode. The release message contains an ID code. Immobilization will be performed by the ECM if no release message is received, or if the ID code in the ECM does not match the immobilizer control unit ID code. If a non-valid key is detected, the release message is not

sent to the ECM. When the driver turns the ignition OFF, the immobilizer control unit switches to the active mode.

Assembly Line Diagnostic Link (ALDL) Mode

When the ignition is on, a scan tool can switch the immobilizer control unit to the assembly line diagnostic link (ALDL) mode for the purpose of diagnostics, key coding, or ID coding.

ID Code Handling

One of 65,535 possible ID codes is stored in the immobilizer control unit's memory. The ID code can be erased by using the scan tool's RESET ID CODE command. When the immobilizer control unit calculates a new ID code, the ECM ID code must be reset to match the immobilizer control unit ID code. To reset the ID code refer to "Identification (ID) Code Reprogramming." During diagnostic procedures, the ID code can be read for comparison with the ECM ID code by using the scan tool's READ IMMOBILIZER CONTROL UNIT ID CODE command.

ELECTRONIC CONTROL MODULE (ECM)

When the electronic control module (ECM) detects that the ignition is being turned ON, the ECM waits for a release message from the immobilizer control unit. If a release message is not received within a specified time, the ECM disables the engine. The engine is also disabled if the identification (ID) code transmitted by the immobilizer control unit does not match the code stored in the ECM's memory. Immobilization remains in effect until the ignition is turned OFF or battery power is removed.

To prevent the vehicle from being driven, the ECM applies the following strategy:

- The ignition module is put in a bypass mode.
- The ECM will not create an electronic spark timing (EST) output, so no spark will be generated by the ignition coil.
- The ECM will not enable the fuel pump.
- The ECM will not enable the fuel injectors.
- The ECM sets Diagnostic Trouble Code (DTC) 53.

Serial data communication is transmitted on a single wire between the immobilizer control unit and the ECM. During diagnostic procedures or ID code changing, a scan tool is added to the communication system.

An ECM with an immobilizer control unit is not exchangeable with the ECM without an immobilizer control unit.

SERIAL DATA LINK

Serial data can be exchanged between a scan tool, electronic control module (ECM), and the immobilizer control unit. The scan tool connection is the assembly line diagnostic link (ALDL).