

FUEL SYSTEM

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GENERAL INFORMATION

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GENERAL INFORMATION

FUEL REQUIREMENTS — LEADED FUEL PACKAGE

Your vehicle was designed to meet all emission regulations and provide excellent fuel economy when using high quality leaded gasoline.

Use leaded gasolines having a minimum posted octane of 91.

If your vehicle develops occasional light spark knock (ping) at low engine speeds this is not harmful. However; continued heavy knock at high speeds can cause damage and should be reported to your dealer immediately. Engine damage as a result of heavy knock operation may not be covered by the new vehicle warranty.

In addition to using leaded gasoline with the proper octane rating, those that contain detergents, corrosion and stability additives are recommended. Using gasolines that have these additives will help improve fuel economy and maintain vehicle performance.

Poor quality gasoline can cause problems such as hard starting, stalling, and stumble. If you experience these problems, try another brand of gasoline before considering service for the vehicle.

GASOLINE BLENDS

DO NOT USE GASOLINES CONTAINING METHANOL.

Use of methanol/gasoline blends may result in starting and driveability problems and damage critical fuel system components.

Problems that are the result of using methanol/gasoline blends are not the responsibility of Chrysler Corporation and may not be covered by the vehicle warranty.

Materials Added to Fuel

Indiscriminate use of fuel system cleaning agents should be avoided. Many of these materials intended for gum and varnish removal may contain active solvents of similar ingredients that can be harmful to fuel system gasket and diaphragm materials.

IMMOBILIZER

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GENERAL INFORMATION

IMMOBILIZER SYSTEM

The Immobilizer System prevents unauthorized operation of the vehicle by disabling the engine. The system will NOT allow the vehicle to start unless the UNLOCK button on the RKE transmitter is pressed. The system will be activated after turning the ignition switch to the OFF position and using one of the following methods.

- (1) Press the LOCK button on the RKE transmitter.
- (2) LOCK the doors by pressing a power lock button switch.
- (3) LOCK the driver or passenger door using the key.
 - The Security light will flash, for about 16 seconds, indicating that the engine will be disabled.
 - The Security light remaining on, indicates the system is not operational.
 - The Immobilizer will activate automatically within 10 minutes of the ignition switch being in the OFF position, whether the vehicle has been locked or unlocked.
 - An attempt to start the vehicle without pressing the UNLOCK button on the RKE transmitter will result in a warning chime and the Security light flashing.

NOTE: The ignition switch must be in the OFF position in order for the system to be activated, whether the doors are closed or not.

VEHICLE IMMOBILIZER SYSTEM

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

NOTE: The following tests may not prove conclusive in the diagnosis of this system. The most reliable, efficient, and accurate means to diagnose the Vehicle Immobilizer System involves the use of a DRB scan tool. Refer to the Vehicle Theft Security System menu item on the DRB scan tool for the procedures.

The vehicle immobilizer system and the data bus network should be diagnosed using the DRB scan tool. The DRB will allow confirmation that the bus is functional, that the immobilizer receiver is placing the proper messages on the bus, and that the Powertrain Control Module is receiving the bus messages. Refer to the Vehicle Theft Security System menu item on the DRB scan tool for the procedures. Refer to 8W-39 - Vehicle Theft Security System in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

- (1) With the ignition switch in the Off position, depress the Lock or Unlock button of the immobilizer transmitter. Listen for the immobilizer receiver to issue an audible chirp (Unlock) or chirps (Lock). If OK, go to Step 2. If not OK, replace the transmitter batteries with known good units and repeat Step 1. If still not OK, go to Step 2.
- (2) Check the fuse in the Power Distribution Center (PDC). If OK, go to Step 3. If not OK, replace the faulty fuse.
- (3) Disconnect and isolate the battery negative cable. Unplug the wire harness connector at the immobilizer receiver. Check for continuity between the **ground** circuit cavity of the immobilizer receiver connector and a good ground. There should be continuity. If OK, go to Step 4. If not OK, repair the open circuit to ground as required.
- (4) Connect the battery negative cable. Check for battery voltage at the **fused B(+)** circuit cavity of the immobilizer receiver connector. If OK, refer to the Vehicle Theft Security System menu item on the DRB scan tool for further diagnosis. If not OK, repair the open circuit to the PDC fuse as required.

GENERAL INFORMATION (Continued)

ENABLING

The vehicle immobilizer system is disabled when it is shipped from the factory. This is done by programming within the Powertrain Control Module (PCM). The logic in the PCM prevents the immobilizer system from arming until the engine start counter within the PCM sees twenty engine starts. The system must be enabled when the vehicle is received from the assembly plant.

The preferred method for enabling the immobilizer system is to electronically advance the PCM engine start counter using a DRB scan tool. Refer to the Vehicle Theft Security System menu item on the DRB scan tool for the procedures. Once this condition has been met, the PCM will allow the immobilizer system to arm.

If a DRB scan tool is not available, the immobilizer system can be enabled manually, as follows:

(1) If five minutes or more have elapsed since the last previous engine start, or if the vehicle immobilizer receiver has been actively armed, depress the vehicle immobilizer transmitter Unlock button. Listen for a single chirp from the immobilizer receiver to confirm the Unlock message has been received.

(2) Start the engine. Each engine start must be followed by a minimum engine run duration of ten seconds.

(3) Allowing a cool-down period between starts, go back to Step 1 a total of twenty times. After twenty cycles, confirm that the vehicle immobilizer system is enabled by actively arming the receiver and attempting to start the engine. The engine may start momentarily, but should stall above about 500 rpm.

CAUTION: Repeated sequential starts of the engine to run up the PCM engine start counter and enable the immobilizer system must be avoided. Overheating and damage to the starting system components and wiring can result.

The same immobilizer system enable logic will apply anytime the PCM is replaced with a new unit.

IMMOBILIZER TRANSMITTER

The vehicle immobilizer system includes two transmitters that are supplied with the vehicle when it is shipped from the factory. Each of the two transmitters is equipped with two buttons labeled with International Standards Organization (ISO) symbols for Lock, and Unlock. Two spare batteries (enough for one transmitter) are also shipped with the transmitters. The transmitters are equipped with a key ring and are designed to serve as a key fob. The operating range of the radio frequency transmitter signal is up to 7 meters (23 feet) from the immobilizer receiver.

Each transmitter has a different vehicle access code, which must be programmed into the memory of the immobilizer receiver in the vehicle in order to operate the immobilizer system. The two transmitters

shipped with the vehicle have their vehicle access codes programmed into the receiver at the factory. A DRB scan tool must be used to program new or additional transmitter vehicle access codes into the memory of the immobilizer receiver. Refer to the Vehicle Theft Security System menu item on the DRB scan tool for the procedures.

Each transmitter operates on two Duracell DL2016 (or equivalent) batteries. Typical battery life is from one to two years.

IMMOBILIZER RECEIVER

The immobilizer receiver is programmed to respond to the Lock and Unlock radio signals issued by the immobilizer transmitters. The receiver will only respond to the radio signals of transmitters (up to four) whose vehicle access codes have been stored in the receiver's electronic memory. The receiver is programmed at the assembly plant with the vehicle access codes of the two transmitters that are shipped with the vehicle.

The immobilizer receiver also has a central processing unit, which contains the immobilizer system logic. The programming in the immobilizer receiver allows the system to learn and retain transmitter vehicle access codes, as well as to communicate with the Powertrain Control Module (PCM) and/or the DRB scan tool on the Chrysler Collision Detection (CCD) data bus network.

The CCD data bus network allows the sharing of sensor information. This helps to reduce wiring harness complexity, reduce internal controller hardware, and reduce component sensor current loads. At the same time, the CCD data bus network provides increased reliability and enhanced diagnostic capabilities.

Each immobilizer transmitter has a different vehicle access code, which must be programmed into the memory of the immobilizer receiver in the vehicle in order to operate the immobilizer system. A DRB scan tool must be used to program new or additional transmitter vehicle access codes into the memory of the immobilizer receiver. Refer to the Vehicle Theft Security System menu item on the DRB scan tool for the procedures.

The immobilizer receiver recognizes the Lock and Unlock signals received from the programmed immobilizer transmitters. The receiver then uses the programmed immobilizer system logic to decide whether other monitored conditions are proper for an engine Lock or Unlock message to be sent. If the programmed conditions are met, the receiver responds by sending the proper message to the PCM on the CCD data bus. The PCM responds to the message by disabling or enabling the fuel injector driver circuitry within the PCM, which will inhibit engine operation.

The immobilizer receiver is mounted to the dash panel with a hook and loop fastener patch. It is located behind the instrument cluster and above the

GENERAL INFORMATION (Continued)

driver side end of the heater-A/C housing. The receiver is connected to the dash panel cross-body wiring harness.

For diagnosis of the vehicle immobilizer receiver or the CCD data bus, a DRB scan tool is required. Refer to the Vehicle Theft Security System menu item of the DRB scan tool for the procedures. The immobilizer receiver cannot be repaired and, if faulty, the unit must be replaced.

ARMING

Active arming of the vehicle immobilizer system occurs when the Lock button of either of the two immobilizer transmitters is depressed, as long as the ignition switch is in the Off position. The vehicle immobilizer system cannot be actively armed while the ignition switch is in the On or Start positions.

Passive arming of the system occurs when the ignition switch is in the Off position for more than five minutes. See Power-Up Mode in this group for a description of other conditions that can result in passive arming of the vehicle immobilizer system.

Following successful passive or active arming of the vehicle immobilizer system, a tone generator located within the immobilizer receiver will issue two audible chirps. As a reminder, the immobilizer receiver will also generate two audible chirps if the ignition switch is turned to the On position while the vehicle immobilizer system is armed.

DISARMING

Active disarming of the vehicle immobilizer system occurs when the Unlock button of either of the two immobilizer transmitters is depressed, regardless of ignition switch position. This is the only way that the immobilizer system can be disarmed. Following successful disarming of the vehicle immobilizer system, a tone generator located within the immobilizer receiver will issue one audible chirp.

DESCRIPTION AND OPERATION

POWER-UP MODE

When the vehicle immobilizer system senses that the vehicle battery has been disconnected and reconnected, it enters its power-up mode. If the immobilizer system was armed prior to the battery disconnect, the system remains armed when the battery is reconnected.

If the immobilizer system was disarmed prior to the battery disconnect, the system will remain disarmed if the battery is reconnected within five minutes. The system will passively arm itself when the battery is reconnected more than five minutes after a battery disconnect or failure. After any passive arm-

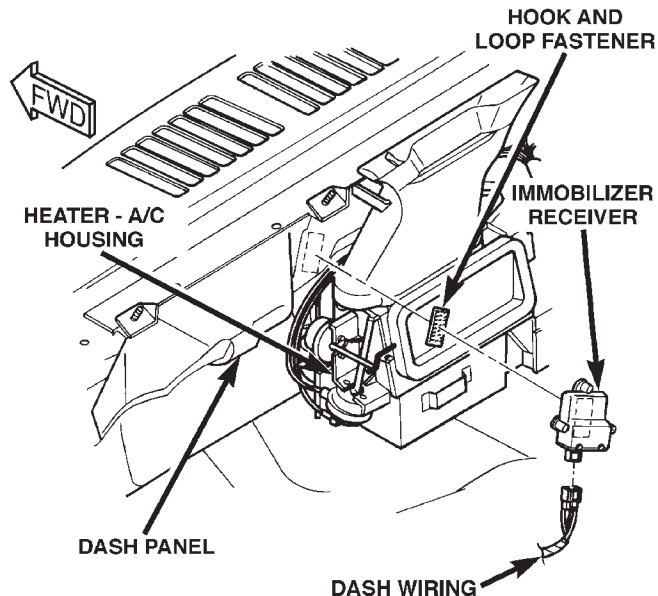
ing, the system will have to be actively disarmed using one of the transmitters.

The power-up mode logic also applies if the battery goes dead, and battery jump-starting is attempted. The engine no-run feature will prevent the engine from operating until the vehicle immobilizer system has been actively disarmed.

IMMOBILIZER RECEIVER

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the instrument cluster as described in Group 8E - Instrument Panel Systems.
- (3) Reach through the inboard side of the instrument cluster opening and remove the receiver by pulling it off of the hook and loop fastener patch on the dash panel above the heater-A/C housing (Fig. 1).



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Fig. 1 Immobilizer Receiver Remove/Install

- (4) Unplug the immobilizer receiver from the wiring connector.
- (5) Reverse the removal procedures to install.
- (6) Refer to the Vehicle Theft Security System menu item on the DRB scan tool for the procedures to program transmitter vehicle access codes into the memory of the new immobilizer receiver.

FUEL INJECTION SYSTEM

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GENERAL INFORMATION**MODES OF OPERATION — LEADED FUEL****PACKAGE**

Vehicle PCMs that are calibrated to run on leaded fuel do not use OPEN LOOP and CLOSED LOOP modes of operation, as they do not have heated oxygen sensors. Instead, PCMs with the leaded fuel cal-

ibration use predetermined parameters, based on inputs recieved from the Throttle Position Sensor (TPS), the Manifold Absolute Pressure (MAP) sensor, and engine RPM to determine fuel injector pulse width and ignition timing.

