

# VEHICLE THEFT/SECURITY SYSTEMS

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## GENERAL INFORMATION

### INTRODUCTION

The Vehicle Theft Security System (VTSS) is an available factory-installed option on versions of this model built for sale in North America. This system is designed to provide perimeter protection against unauthorized use or tampering by monitoring the vehicle doors, liftgate, and ignition system. If unauthorized use or tampering is detected, the system responds by sounding the horn, flashing the exterior lamps, and providing an engine no-run feature. The VTSS can be disarmed by unlocking the vehicle with the key in either front door lock cylinder or using the Remote Keyless Entry (RKE) transmitters.

The vehicle immobilizer system is factory-installed standard equipment on models built for sale outside North America. Models equipped with the vehicle immobilizer system cannot be equipped with the VTSS. The vehicle immobilizer system is designed to provide passive protection against unauthorized vehicle use by preventing the engine from operating while the system is armed. The vehicle immobilizer system can only be disarmed using the Remote Keyless Entry (RKE) transmitters.

Following are some general descriptions of the features of the VTSS and the vehicle immobilizer system. Refer to the vehicle owner's manual for more information on the use and operation of these systems. Refer to Group 8P - Power Lock Systems for more information on the RKE system receiver and

transmitters. Refer to 8W-39 - Vehicle Theft Security System in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

**NOTE:** This group covers both Left-Hand Drive (LHD) and Right-Hand Drive (RHD) versions of this model. Whenever required and feasible, the RHD versions of affected vehicle components have been constructed as mirror-image of the LHD versions. While most of the illustrations used in this group represent only the LHD version, the diagnostic and service procedures outlined can generally be applied to either version. Exceptions to this rule have been clearly identified as LHD or RHD, if a special illustration or procedure is required.

### ENABLING

#### VEHICLE THEFT SECURITY SYSTEM

The VTSS engine no-run feature 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 VTSS engine no-run feature from arming until the engine start counter within the PCM sees twenty engine starts. The VTSS no-run feature must be enabled when the vehicle is received from the assembly plant.

The preferred method for enabling the VTSS engine no-run feature is to electronically advance the PCM engine start counter using a DRB scan tool. Refer to the Vehicle Theft Security System menu

## GENERAL INFORMATION (Continued)

item on the DRB scan tool for the procedures. Once this condition has been met, the PCM will allow the engine no-run feature to arm.

Once the VTSS engine no-run feature has been enabled, it cannot be disabled unless the PCM is replaced with a new unit. The same VTSS engine no-run feature enable logic will apply anytime the PCM is replaced with a new unit.

## VEHICLE IMMOBILIZER SYSTEM

The vehicle immobilizer system is disabled when it is shipped from the factory. This is done by programming within the Powertrain Control Module (PCM) and the Body Control Module (BCM). The logic in the BCM allows the vehicle immobilizer system functions to remain dormant in vehicles sold in countries where it is not required. The logic in the PCM prevents the immobilizer system from arming until the engine start counter within the PCM sees twenty engine starts. The vehicle immobilizer system must be enabled when the vehicle is received from the assembly plant, if this feature is required or desired.

The only method for setting up the BCM to allow the immobilizer system to become functional is to use a DRB scan tool. Refer to the Body Computer menu item on the DRB scan tool for the procedures. The preferred method for enabling the vehicle 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 these conditions have been met, the BCM and PCM will allow the vehicle immobilizer system to function and arm.

Once the vehicle immobilizer system has been enabled, it cannot be disabled unless the PCM and the BCM are replaced with new units. The same vehicle immobilizer system enable logic will apply anytime the PCM and/or the BCM are replaced with new units.

## ARMING

## VEHICLE THEFT SECURITY SYSTEM

Passive arming of the VTSS occurs when the vehicle is exited with the key removed from the ignition switch, the headlamps are turned off, and the doors are locked using the power lock switch. The power lock switch will not function if the key is in the ignition switch or the headlamps are on with the driver side front door open. The VTSS will not arm if either front door or the liftgate are locked using the key in the lock cylinder.

Active arming of the VTSS occurs when the Remote Keyless Entry (RKE) transmitter is used to lock the vehicle, even if the doors and/or the liftgate are open when the RKE transmitter Lock button is depressed. However, the VTSS arming will not be

complete until all the doors and the liftgate are closed.

Following successful passive or active VTSS arming, the VTSS set lamp on the top of the instrument panel will flash rapidly for about fifteen seconds after the illuminated entry system times out. This indicates that VTSS arming is in progress. Once the fifteen second arming function is complete, the set lamp will flash at a slower rate to indicate that the VTSS is armed.

## VEHICLE IMMOBILIZER SYSTEM

Active arming of the vehicle immobilizer system occurs when the vehicle is locked using the power lock switch or when the Lock button of the Remote Keyless Entry (RKE) transmitter is used to lock the vehicle. Arming will occur, even if the doors and/or the liftgate are open when the vehicle is locked, 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 (one minute for vehicles sold in the United Kingdom). 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 receipt of a passive or active request for arming of the vehicle immobilizer system, a set lamp located on top of the instrument panel will begin to flash rapidly for fifteen seconds. Following successful vehicle immobilizer system arming (about fifteen seconds), the set lamp will continue to flash, but at a much slower rate. The slow flashing of the set lamp will continue for as long as the vehicle immobilizer system is armed.

## DISARMING

## VEHICLE THEFT SECURITY SYSTEM

Passive disarming of the VTSS occurs when the vehicle is unlocked using the key to unlock either front door or the liftgate. Active disarming of the VTSS occurs when the vehicle is unlocked by depressing the Unlock button of the Remote Keyless Entry (RKE) transmitter.

Once the alarm has been activated (horn sounding, lights flashing, and the engine no-run feature), either disarming method will also deactivate the alarm.

Depressing the Panic button on the RKE transmitter will also disarm the VTSS, but the horn will sound and the lights will flash for about three minutes as part of the Panic feature. Refer to Group 8P - Power Lock Systems for more information on the Panic feature.

## GENERAL INFORMATION (Continued)

## VEHICLE IMMOBILIZER SYSTEM

Active disarming of the vehicle immobilizer system occurs when the Unlock button of either of the two Remote Keyless Entry (RKE) transmitters is depressed, regardless of ignition switch position. This is the only way that the vehicle immobilizer system can be disarmed. Following successful disarming of the vehicle immobilizer system, the set lamp on top of the instrument panel will stop flashing.

## POWER-UP MODE

## VEHICLE THEFT SECURITY SYSTEM

When the armed VTSS senses that the battery has been disconnected and reconnected, it enters its power-up mode. In the power-up mode the alarm system remains armed following a battery failure or disconnect. If the VTSS was armed prior to a battery disconnect or failure, the system will have to be actively or passively disarmed after the battery is reconnected.

The power-up mode will also apply if the battery goes dead while the system is armed, and battery jump-starting is attempted. The engine no-run feature will prevent the engine from starting until the alarm system has been actively or passively disarmed.

## VEHICLE IMMOBILIZER SYSTEM

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 (one minute for vehicles sold in the United Kingdom). The system will passively arm itself when the battery is reconnected more than five minutes (one minute for vehicles sold in the United Kingdom) after a battery disconnect or failure. After any passive arming, the system will have to be actively disarmed by depressing the Unlock button on one of the Remote Keyless Entry (RKE) 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.

## TAMPER ALERT

The VTSS tamper alert will sound the horn three times upon disarming, if the alarm was activated and has since timed-out (about eighteen minutes). This

feature alerts the driver that the VTSS was activated while the vehicle was unattended.

## DESCRIPTION AND OPERATION

## BODY CONTROL MODULE

A Body Control Module (BCM) is used on this model to control and integrate many of the electronic functions and features on the vehicle. The BCM contains a central processing unit and interfaces with other modules in the vehicle on the Chrysler Collision Detection (CCD) data bus network.

The CCD data bus network allows the sharing of sensor information. This helps to reduce wire harness complexity, reduce internal controller hardware, and reduce component sensor current loads. At the same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities. Functions and features that the BCM supports and controls include the Vehicle Theft Security System (VTSS) and the vehicle immobilizer system.

In the VTSS, the BCM receives CCD message inputs from the Passenger Door Module, which contains the Remote Keyless Entry (RKE) receiver. In addition to the information received over the CCD data bus, the BCM receives hard-wired inputs from the door ajar, door lock cylinder, ignition, liftgate ajar, liftgate lock cylinder, and liftglass ajar switches. The programming in the BCM allows it to process the information from all of these inputs and send control outputs to energize or de-energize the auto headlamp relay, horn relay, park lamp relay, Powertrain Control Module (PCM), and the set lamp.

In the vehicle immobilizer system, the BCM receives CCD message inputs from the Passenger Door Module, which contains the Remote Keyless Entry (RKE) receiver. In addition to the information received over the CCD data bus, the BCM receives a hard-wired input from the ignition switch. The programming in the BCM allows it to process the information from these inputs and send the proper outputs to the Powertrain Control Module (PCM) and the set lamp.

The BCM is mounted under the driver side outboard end of the instrument panel, behind the instrument panel support armature and below the outboard switch pod. Refer to Group 8E - Instrument Panel Systems for the removal and installation procedures. For diagnosis of the BCM or the CCD data bus, refer to the proper Body Diagnostic Procedures manual. The BCM can only be serviced by an authorized electronic repair station. Refer to the latest Warranty Policies and Procedures manual for a current listing of authorized electronic repair stations.

## DESCRIPTION AND OPERATION (Continued)

**DOOR AJAR SWITCH**

The door ajar switches are mounted to the pillar in the rear of each door opening. They are plunger-type switches that are case grounded to the pillar. When the door is open the switch is closed, and when the door is closed the switch is open.

The door ajar switches cannot be repaired and, if faulty or damaged, they must be replaced.

**DOOR LOCK CYLINDER SWITCH**

The door lock cylinder switches are mounted to the back of the key lock cylinder inside each front door. They are normally-open momentary switches that close to ground only when the lock cylinder is rotated to the unlock position.

The door lock cylinder switches cannot be repaired and, if faulty or damaged, they must be replaced.

**LIFTGATE AJAR SWITCH**

The liftgate ajar switch is integral to the liftgate latch assembly on the liftgate. It is a momentary-type switch that is open when the liftgate is closed, and closed when the liftgate is open.

The liftgate ajar switch cannot be repaired and, if faulty or damaged, the liftgate latch assembly must be replaced.

**LIFTGATE LOCK CYLINDER SWITCH**

The liftgate lock cylinder switch is mounted to the back of the key lock cylinder inside the liftgate. It is a normally-open momentary switch that closes to ground only when the lock cylinder is rotated to the unlock position.

The liftgate lock cylinder switch cannot be repaired and, if faulty or damaged, it must be replaced.

**LIFTGLASS AJAR SWITCH**

The liftglass ajar switch is integral to the liftglass latch assembly on the liftgate. It is a momentary-type switch that is open when the liftglass is closed, and closed when the liftglass is open.

The liftglass ajar switch cannot be repaired and, if faulty or damaged, the liftglass latch assembly must be replaced.

**AUTO HEADLAMP RELAY**

The auto headlamp relay is a International Standards Organization (ISO) micro-relay. The terminal designations and functions are the same as a conventional ISO relay. However, the micro-relay terminal orientation (or footprint) is different, current capacity is lower, and the relay case dimensions are smaller than those of the conventional ISO relay.

The auto headlamp relay is a electromechanical device that switches battery current to the headlamps when the Body Control Module (BCM) grounds

the relay coil. See the Diagnosis and Testing section of this group for more information on the operation of the auto headlamp relay.

The auto headlamp relay is located in the junction block, on the right cowl side panel below the instrument panel in the passenger compartment.

The auto headlamp relay cannot be repaired and, if faulty or damaged, it must be replaced.

**HORN RELAY**

The horn relay is a International Standards Organization (ISO) micro-relay. The terminal designations and functions are the same as a conventional ISO relay. However, the micro-relay terminal orientation (or footprint) is different, current capacity is lower, and the relay case dimensions are smaller than those of the conventional ISO relay.

The horn relay is a electromechanical device that switches battery current to the horns when the horn switch or the Body Control Module (BCM) grounds the relay coil. See the Diagnosis and Testing section of this group for more information on the operation of the horn relay.

The horn relay is located in the Power Distribution Center (PDC), in the engine compartment. Refer to the PDC label for relay identification and location.

If a problem is encountered with a continuously sounding horn, it can usually be quickly resolved by removing the horn relay from PDC until further diagnosis is completed.

The horn relay cannot be repaired and, if faulty or damaged, it must be replaced.

**PARK LAMP RELAY**

The park lamp relay is a International Standards Organization (ISO) micro-relay. The terminal designations and functions are the same as a conventional ISO relay. However, the micro-relay terminal orientation (or footprint) is different, current capacity is lower, and the relay case dimensions are smaller than those of the conventional ISO relay.

The park lamp relay is a electromechanical device that switches battery current to the park lamps when the Body Control Module grounds the relay coil. See the Diagnosis and Testing section of this group for more information on the operation of the park lamp relay.

The park lamp relay is located in the junction block, on the right cowl side panel below the instrument panel in the passenger compartment. The park lamp relay can be accessed by removing the fuse access panel and the right cowl side trim panel.

The park lamp relay cannot be repaired and, if faulty or damaged, it must be replaced.



## DESCRIPTION AND OPERATION (Continued)

### SET LAMP

The set lamp is a red light-emitting diode mounted with the auto headlamp ambient light sensor on top of the instrument panel near the driver side defroster outlet. The set lamp receives fused battery feed at all times and is grounded by the Body Control Module to give a visible indication of the Vehicle Theft Security System or vehicle immobilizer system status.

The set lamp cannot be repaired and, if damaged or faulty, the set lamp/auto headlamp ambient light sensor must be replaced as a unit.

## DIAGNOSIS AND TESTING

### VEHICLE THEFT SECURITY SYSTEM OR VEHICLE IMMOBILIZER SYSTEM

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

The Vehicle Theft Security System (VTSS) or the vehicle immobilizer system and the data bus network should be diagnosed using the DRB scan tool and the proper Body Diagnostic Procedures manual. The DRB will provide confirmation that the bus is functional, that the Body Control Module (BCM) is receiving and sending the proper messages on the bus, that the BCM is receiving the proper hard-wired inputs and sending the proper hard-wired outputs, and that the Powertrain Control Module is receiving the bus messages from the BCM. 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.

### RELAYS

The horn relay is located in the Power Distribution Center (PDC) in the engine compartment. The auto headlamp and park lamp relays are located in the junction block in the passenger compartment. Each of these relays can be tested as described in the following procedure, however the circuits they are used in do vary. To test the relay circuits, refer to the circuit descriptions and diagrams in 8W-39 - Vehicle Theft Security System in Group 8W - Wiring Diagrams.

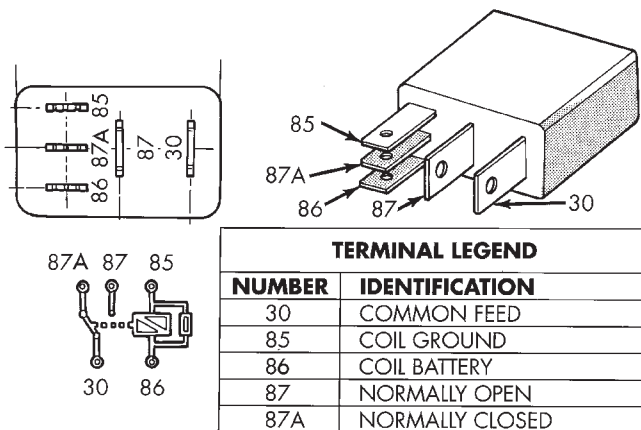
**WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL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

Remove the relay from the PDC or junction block as described in this group to perform the following tests:

(1) A relay in the de-energized position should have continuity between terminals 87A and 30, and no continuity between terminals 87 and 30. If OK, go to Step 2. If not OK, replace the faulty relay.

(2) Resistance between terminals 85 and 86 (electromagnet) should be  $75 \pm 5$  ohms. If OK, go to Step 3. If not OK, replace the faulty relay.

(3) Connect a battery to terminals 85 and 86. There should now be continuity between terminals 30 and 87, and no continuity between terminals 87A and 30. If OK, test the relay circuits. If not OK, replace the faulty relay.



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### Relay Terminals

## REMOVAL AND INSTALLATION

### DOOR AJAR SWITCH

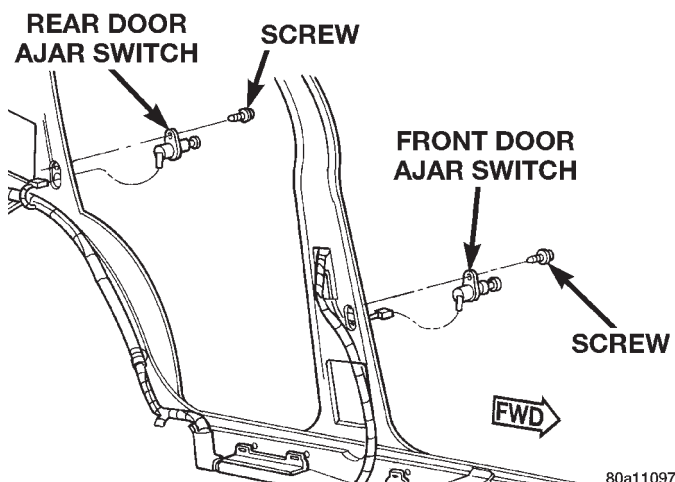
(1) Disconnect and isolate the battery negative cable.

(2) Remove the screw that secures the door ajar switch to the pillar at the rear of the door opening (Fig. 1).

(3) Pull the switch from the mounting hole in the door opening far enough to access the wire harness connector.

(4) Unplug the wire harness connector from the switch.

## REMOVAL AND INSTALLATION (Continued)

**Fig. 1 Door Ajar Switch Remove/Install**

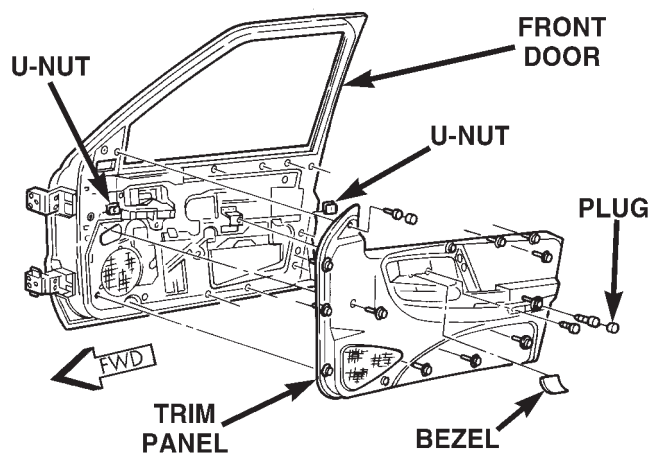
(5) Reverse the removal procedures to install. Tighten the switch mounting screw to 1.7 N·m (15 in. lbs.).

**DOOR LOCK CYLINDER SWITCH**

(1) Disconnect and isolate the battery negative cable.

(2) Remove the bezel near the inside door latch release handle by inserting a straight-bladed screwdriver in the notched end and prying gently upwards.

(3) Remove the door trim panel mounting screw located in the bezel opening near the inside door latch release handle (Fig. 2).

**Fig. 2 Front Door Trim Panel Remove/Install**

(4) Remove the trim cap and screw near the rear of the door armrest.

(5) Remove the trim cap and screw at the upper front corner of the trim panel.

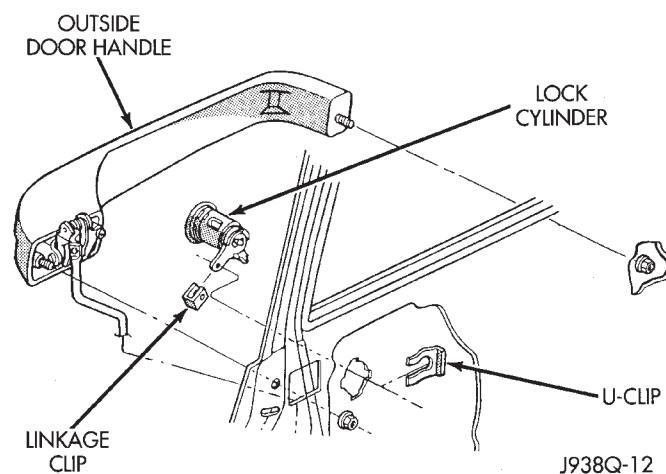
(6) Using a wide flat-bladed tool such as a trim stick, pry the trim panel away from the door around the perimeter and remove the trim panel.

**NOTE:** To aid in the removal of the trim panel, start at the bottom of the panel.

(7) Unplug the wire harness connectors from the door module and set the trim panel aside.

(8) Pull the watershield away from the rear access holes in the inner door panel.

(9) Remove the U-clip retainer that secures the lock cylinder to the outer door panel (Fig. 3).

**Fig. 3 Door Lock Cylinder Remove/Install**

(10) Disconnect the lock cylinder rod from the door latch by unsnapping the retainer from the rod.

(11) Pull the lock cylinder out from the outer door panel far enough to pry the lock cylinder switch off of the back of the lock cylinder (Fig. 4).

(12) Unplug the lock cylinder switch wire harness connector and remove the switch from inside the door.

(13) Reverse the removal procedures to install.

**LIFTGATE AJAR SWITCH**

(1) Disconnect and isolate the battery negative cable.

(2) Remove the screws that secure the liftgate lower trim panel to the liftgate (Fig. 5).

(3) Using a wide flat-bladed tool such as a trim stick, pry the trim panel away from the liftgate around the perimeter and remove the trim panel.

**NOTE:** To aid in the removal of the trim panel, start at the bottom of the panel.

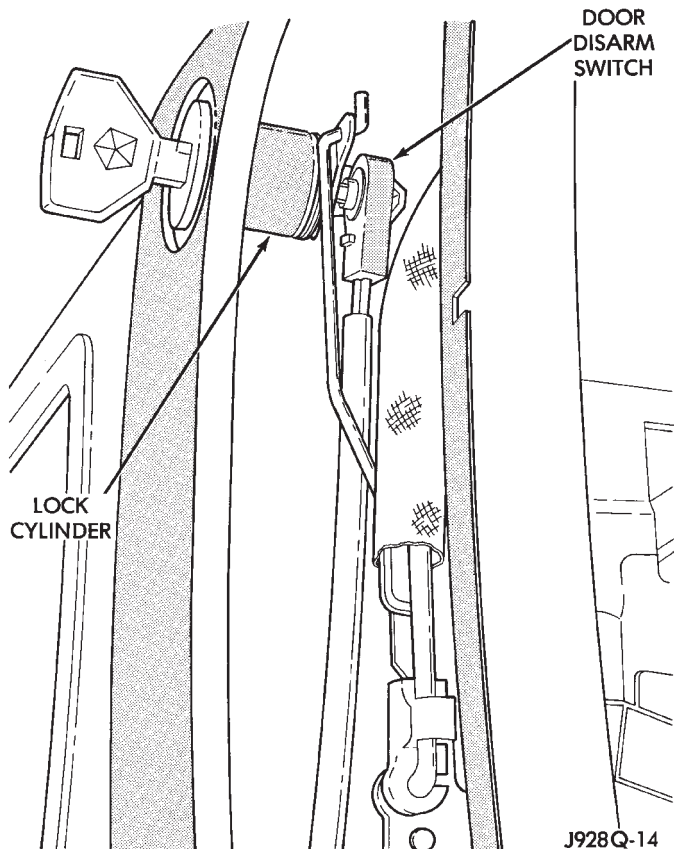
(4) Remove the three screws that secure the liftgate latch to the liftgate (Fig. 6).

(5) Disconnect the liftgate handle latch actuator rod from the latch.

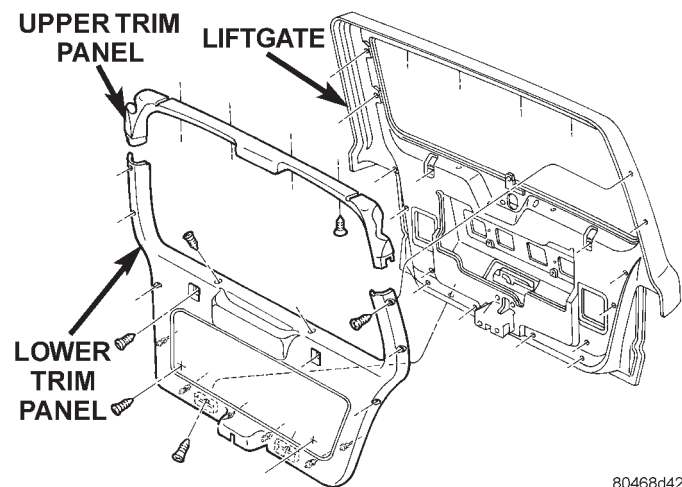
(6) Unplug the liftgate ajar switch wire harness connector from the latch.

(7) Remove the latch from the liftgate.

## REMOVAL AND INSTALLATION (Continued)



**Fig. 4 Door Lock Cylinder Switch Remove/Install-Typical**

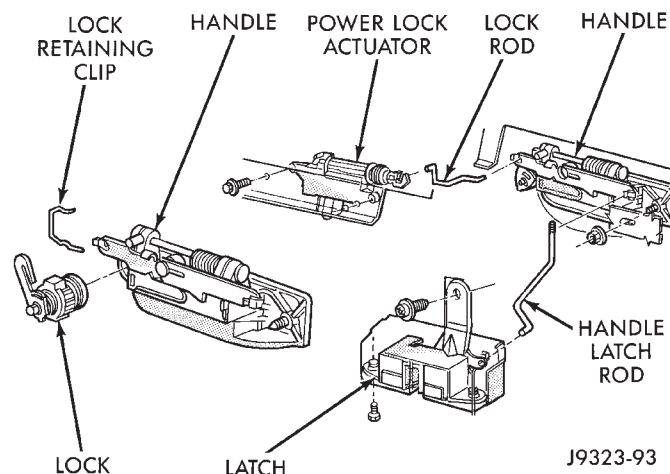


**Fig. 5 Liftgate Trim Panel Remove/Install**

(8) Reverse the removal procedures to install. Tighten the latch mounting screws to 7 N·m (62 in lbs.).

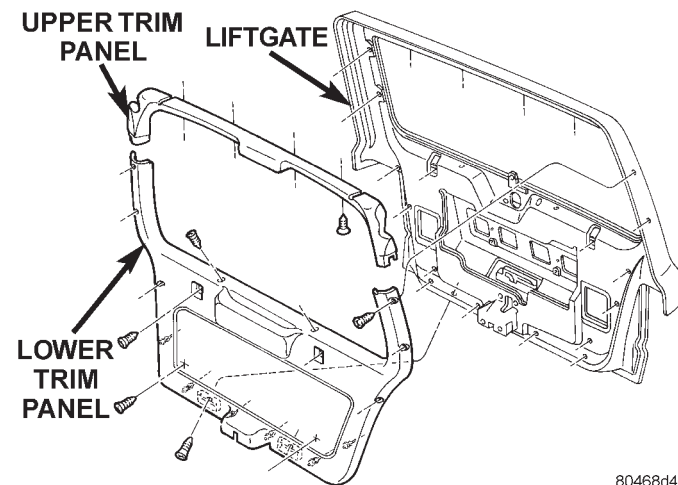
### LIFTGATE LOCK CYLINDER SWITCH

(1) Disconnect and isolate the battery negative cable.



**Fig. 6 Liftgate Latch/Lock Components**

(2) Remove the screws that secure the liftgate lower trim panel to the liftgate (Fig. 7).



**Fig. 7 Liftgate Trim Panel Remove/Install**

(3) Using a wide flat-bladed tool such as a trim stick, pry the trim panel away from the liftgate around the perimeter and remove the trim panel.

**NOTE:** To aid in the removal of the trim panel, start at the bottom of the panel.

(4) Pry the liftgate lock cylinder switch off of the back of the lock cylinder (Fig. 8).

(5) Unplug the lock cylinder switch wire harness connector and remove the switch from inside the liftgate.

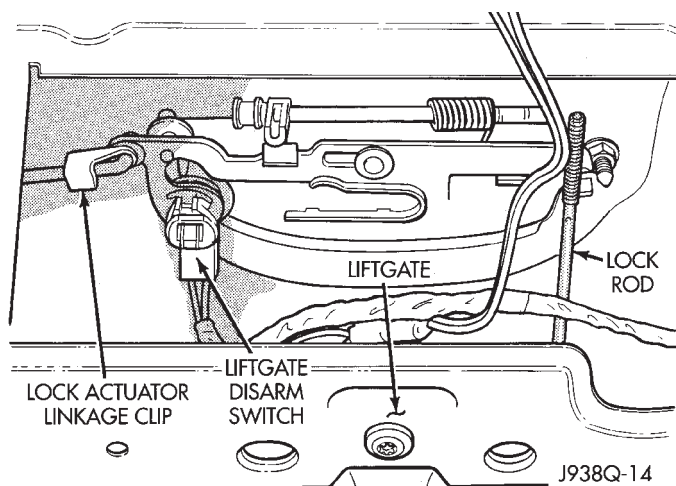
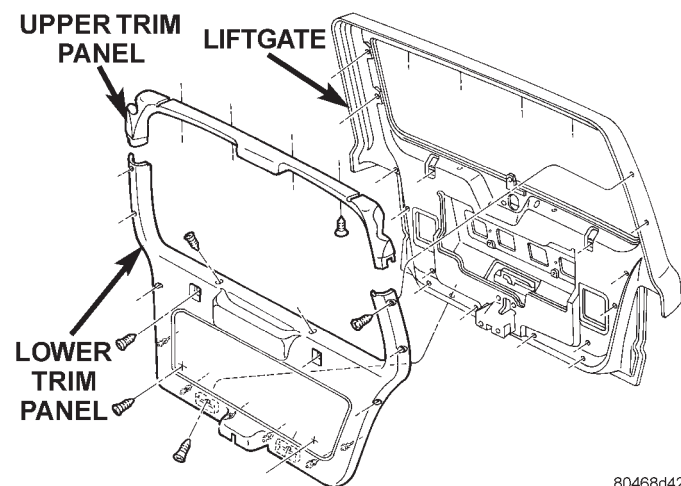
(6) Reverse the removal procedures to install.

### LIFTGLASS AJAR SWITCH

(1) Disconnect and isolate the battery negative cable.

(2) Remove the screws that secure the liftgate lower trim panel to the liftgate (Fig. 9).

## REMOVAL AND INSTALLATION (Continued)

**Fig. 8 Liftgate Lock Cylinder Switch Remove/Install****Fig. 9 Liftgate Trim Panel Remove/Install**

(3) Using a wide flat-bladed tool such as a trim stick, pry the trim panel away from the liftgate around the perimeter and remove the trim panel.

**NOTE:** To aid in the removal of the trim panel, start at the bottom of the panel.

(4) Remove the two nuts that secure the liftglass latch to the liftgate inner panel (Fig. 10).

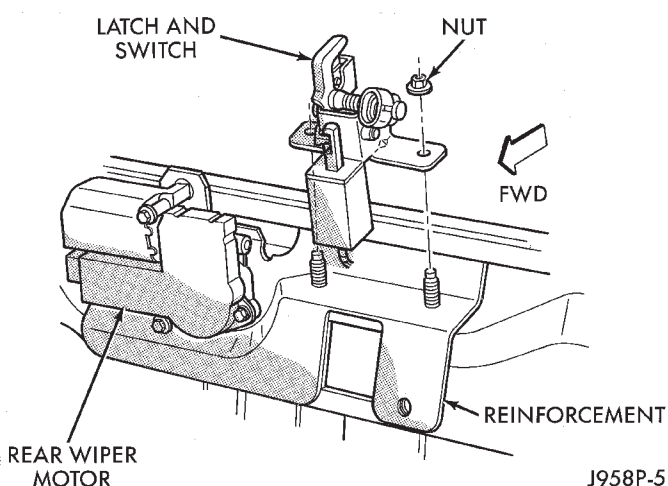
(5) Unplug the wire harness connectors for the liftglass latch solenoid and the liftglass ajar switch.

(6) Remove the liftglass latch from the liftgate.

(7) Reverse the removal procedures to install. Tighten the latch mounting nuts to 11 N·m (100 in. lbs.).

**AUTO HEADLAMP AND PARK LAMP RELAYS**

**WARNING:** ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR

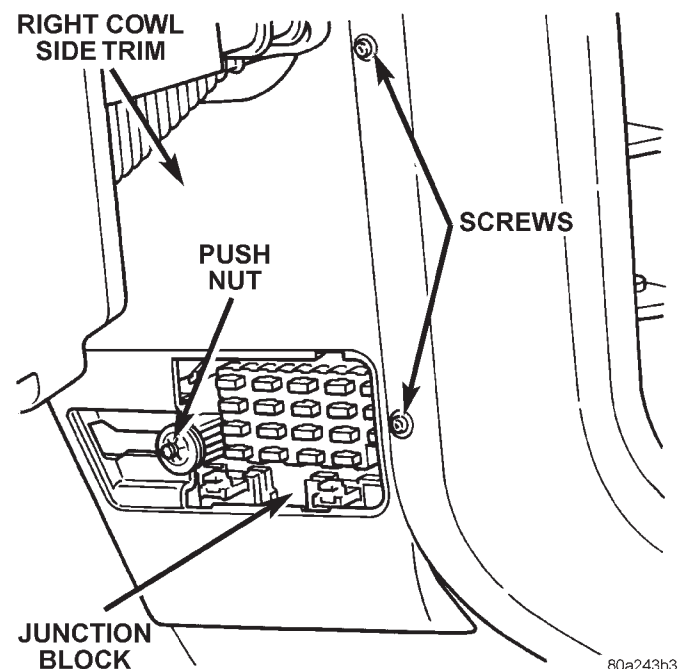
**Fig. 10 Liftglass Ajar Switch Remove/Install**

**INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.**

(1) Disconnect and isolate the battery negative cable.

(2) Remove the fuse access panel by unsnapping it from the right cowl side trim panel.

(3) Remove the push nut that secures the right cowl side trim to the junction block stud (Fig. 11).

**Fig. 11 Right Cowl Side Trim Remove/Install**

(4) Remove the two screws that secure the right cowl side trim to the right front door opening trim.

(5) Remove the right cowl side trim panel.



## REMOVAL AND INSTALLATION (Continued)

(6) Unplug the headlamp or park lamp relay from the junction block.

(7) Install the headlamp or park lamp relay by aligning the relay terminals with the cavities in the junction block and pushing the relay firmly into place.

(8) Connect the battery negative cable.

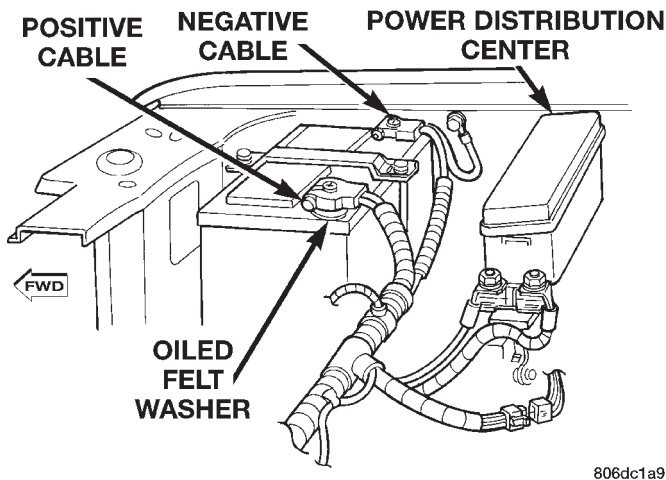
(9) Test the relay operation.

(10) Install the right cowl side trim and the fuse access panel.

**HORN RELAY**

(1) Disconnect and isolate the battery negative cable.

(2) Remove the cover from the Power Distribution Center (PDC) (Fig. 12).



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**Fig. 12 Power Distribution Center**

(3) Refer to the label on the PDC for horn relay identification and location.

(4) Unplug the horn relay from the PDC.

(5) Install the horn relay by aligning the relay terminals with the cavities in the PDC and pushing the relay firmly into place.

(6) Install the PDC cover.

(7) Connect the battery negative cable.

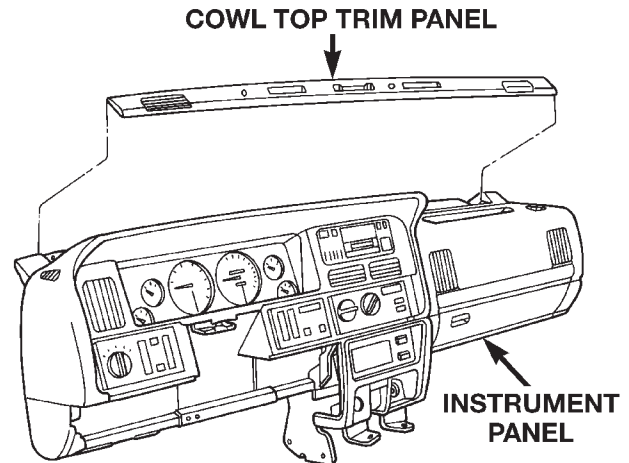
(8) Test the relay operation.

**SET LAMP**

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

(1) Disconnect and isolate the battery negative cable.

(2) Using a wide flat-bladed tool such as a trim stick, pry the cowl top trim panel off of the instrument panel top pad (Fig. 13).

**Fig. 13 Cowl Top Trim Remove/Install**

(3) If the vehicle is so equipped, pull the panel up far enough to unplug the wire harness connector from the solar sensor, or to remove the solar sensor from the cowl top trim between the passenger side and center defroster outlets.

(4) Remove the cowl top trim panel from the vehicle.

(5) Remove the auto headlamp light sensor/vehicle theft security system set lamp mounting screw near the driver side defroster duct outlet.

(6) Pull the lamp up far enough to unplug the wire harness connector and remove the lamp.

(7) Reverse the removal procedures to install.



# VEHICLE THEFT/SECURITY SYSTEMS

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## GENERAL INFORMATION

### INTRODUCTION

The Vehicle Theft Security System (VTSS) is an available factory-installed option on this model. This system is designed to provide perimeter protection against unauthorized use or tampering by monitoring the vehicle doors, hood, liftgate, and ignition system. If unauthorized use or tampering is detected, the system responds by sounding the horn, flashing the exterior lamps, and providing an engine no-run feature.

Following are some general descriptions of the features of the VTSS. Refer to the vehicle owner's manual for additional information. Refer to 8W-39 - Vehicle Theft Security System in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

**NOTE:** This group covers both Left-Hand Drive (LHD) and Right-Hand Drive (RHD) versions of this model. Whenever required and feasible, the RHD versions of affected vehicle components have been constructed as mirror-image of the LHD versions. While most of the illustrations used in this group represent only the LHD version, the diagnostic and service procedures outlined can generally be applied to either version. Exceptions to this rule

have been clearly identified as LHD or RHD, if a special illustration or procedure is required.

### ARMING

Passive arming of the VTSS occurs when the vehicle is exited with the key removed from the ignition switch, the headlamps are turned off, and the doors are locked using the power lock switch. The power lock switch will not function if the key is in the ignition switch or the headlamps are on with the driver's door open. The VTSS will not arm if either front door or the liftgate are locked using the key in the lock cylinder.

Active arming of the VTSS occurs when the Remote Keyless Entry (RKE) transmitter is used to lock the vehicle, even if the doors and/or the liftgate are open when the RKE transmitter Lock button is depressed. However, the VTSS arming will not be complete until all the doors and the liftgate are closed.

Following successful passive or active VTSS arming, the VTSS set lamp on the top of the instrument panel will flash rapidly for about 15 seconds after the illuminated entry system times out. This indicates that VTSS arming is in progress. If the light stays on steadily during the arming, it indicates that the hood switch is closed (the hood is open). The VTSS will

## GENERAL INFORMATION (Continued)

still arm if the hood is open, but the engine compartment will not be protected. Once the 15 second arming function is complete, the set lamp will flash at a slower rate to indicate that the VTSS is armed.

**DISARMING**

Passive disarming of the VTSS occurs when the vehicle is unlocked using the key to unlock either front door or the liftgate. Active disarming of the VTSS occurs when the vehicle is unlocked by depressing the Unlock button of the RKE transmitter.

Once the alarm has been activated (horn sounding, lights flashing, and the engine no-run feature), either disarming method will also deactivate the alarm.

Depressing the Panic button on the RKE transmitter will also disarm the VTSS, but the horn will sound and the lights will flash for about three minutes as part of the Panic feature. Refer to Group 8P - Power Lock Systems for more information on the Panic feature.

**POWER-UP MODE**

When the armed VTSS senses that the battery has been disconnected and reconnected, it enters its power-up mode. In the power-up mode the alarm system remains armed following a battery failure or disconnect. If the VTSS was armed prior to a battery disconnect or failure, the system will have to be actively or passively disarmed following a battery reconnection.

The power-up mode will also apply if the battery goes dead while the system is armed, and battery jump-starting is attempted. The engine no-run feature will prevent the engine from starting until the alarm system has been actively or passively disarmed.

**TAMPER ALERT**

The VTSS tamper alert will sound the horn three times upon disarming, if the alarm was activated and has since timed-out (about eighteen minutes). This feature alerts the driver that the VTSS was activated while the vehicle was unattended.

## DESCRIPTION AND OPERATION

**BODY CONTROL MODULE**

A Body Control Module (BCM) is used on this model to control and integrate many of the electronic functions and features on the vehicle. The BCM contains a central processing unit and interfaces with other modules in the vehicle on the Chrysler Collision Detection (CCD) data bus network.

The CCD data bus network allows the sharing of sensor information. This helps to reduce wire har-

ness complexity, reduce internal controller hardware, and reduce component sensor current loads. At the same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities.

One of the functions and features that the BCM supports and controls, is the Vehicle Theft Security System (VTSS). In addition to the information received on the CCD data bus, the BCM receives hard-wired inputs from the door ajar, door lock cylinder, hood, liftgate ajar, liftgate lock cylinder, and lift-glass ajar switches. In its role as the VTSS controller, the programming in the BCM allows it to process the information from all of its inputs and send control outputs to energize or de-energize the auto headlamp relay, horn relay, park lamp relay, Powertrain Control Module (PCM), and the security set lamp.

The BCM is mounted under the driver side outboard end of the instrument panel, behind the instrument panel support armature and below the outboard switch pod. Refer to Group 8E - Instrument Panel Systems for the removal and installation procedures. For diagnosis of the BCM or the CCD data bus, refer to the proper Body Diagnostic Procedures manual. The BCM can only be serviced by an authorized electronic repair station. Refer to the latest Warranty Policies and Procedures manual for a current listing of authorized electronic repair stations.

**HOOD SWITCH**

The hood switch is mounted to the right inner fender ledge, under the hood and near the battery. It is a plunger-type switch that is case grounded to the fender shield. When the hood is open the switch is closed, and when the hood is closed the switch is open.

The hood switch cannot be repaired and, if faulty or damaged, it must be replaced.

**DOOR AJAR SWITCH**

The door ajar switches are mounted to the pillar in the rear of each door opening. They are plunger-type switches that are case grounded to the pillar. When the door is open the switch is closed, and when the door is closed the switch is open.

The door ajar switches cannot be repaired and, if faulty or damaged, they must be replaced.

**DOOR LOCK CYLINDER SWITCH**

The door lock cylinder switches are mounted to the back of the key lock cylinder inside each front door. They are normally-open momentary switches that close to ground only when the lock cylinder is rotated to the unlock position.

The door lock cylinder switches cannot be repaired and, if faulty or damaged, they must be replaced.



## DESCRIPTION AND OPERATION (Continued)

**LIFTGATE AJAR SWITCH**

The liftgate ajar switch is integral to the liftgate latch assembly on the liftgate. It is a momentary-type switch that is open when the liftgate is closed, and closed when the liftgate is open.

The liftgate ajar switch cannot be repaired and, if faulty or damaged, the liftgate latch assembly must be replaced.

**LIFTGATE LOCK CYLINDER SWITCH**

The liftgate lock cylinder switch is mounted to the back of the key lock cylinder inside the liftgate. It is a normally-open momentary switch that closes to ground only when the lock cylinder is rotated to the unlock position.

The liftgate lock cylinder switch cannot be repaired and, if faulty or damaged, it must be replaced.

**LIFTGLASS AJAR SWITCH**

The liftglass ajar switch is integral to the liftglass latch assembly on the liftgate. It is a momentary-type switch that is open when the liftglass is closed, and closed when the liftglass is open.

The liftglass ajar switch cannot be repaired and, if faulty or damaged, the liftglass latch assembly must be replaced.

**AUTO HEADLAMP RELAY**

The auto headlamp relay is a International Standards Organization (ISO) micro-relay. The terminal designations and functions are the same as a conventional ISO relay. However, the micro-relay terminal orientation (or footprint) is different, current capacity is lower, and the relay case dimensions are smaller than those of the conventional ISO relay.

The auto headlamp relay is a electromechanical device that switches battery current to the headlamps when the Body Control Module (BCM) grounds the relay coil. See the Diagnosis and Testing section of this group for more information on the operation of the auto headlamp relay.

The auto headlamp relay is located in the junction block, on the right cowl side panel below the instrument panel in the passenger compartment.

The auto headlamp relay cannot be repaired and, if faulty or damaged, it must be replaced.

**HORN RELAY**

The horn relay is a International Standards Organization (ISO) micro-relay. The terminal designations and functions are the same as a conventional ISO relay. However, the micro-relay terminal orientation (or footprint) is different, current capacity is lower, and the relay case dimensions are smaller than those of the conventional ISO relay.

The horn relay is a electromechanical device that switches battery current to the horns when the horn switch or the Body Control Module (BCM) grounds the relay coil. See the Diagnosis and Testing section of this group for more information on the operation of the horn relay.

The horn relay is located in the Power Distribution Center (PDC), in the engine compartment. Refer to the PDC label for relay identification and location.

If a problem is encountered with a continuously sounding horn, it can usually be quickly resolved by removing the horn relay from PDC until further diagnosis is completed.

The horn relay cannot be repaired and, if faulty or damaged, it must be replaced.

**PARK LAMP RELAY**

The park lamp relay is a International Standards Organization (ISO) micro-relay. The terminal designations and functions are the same as a conventional ISO relay. However, the micro-relay terminal orientation (or footprint) is different, current capacity is lower, and the relay case dimensions are smaller than those of the conventional ISO relay.

The park lamp relay is a electromechanical device that switches battery current to the park lamps when the Body Control Module grounds the relay coil. See the Diagnosis and Testing section of this group for more information on the operation of the park lamp relay.

The park lamp relay is located in the junction block, on the right cowl side panel below the instrument panel in the passenger compartment. The park lamp relay can be accessed by removing the fuse access panel and the right cowl side trim panel.

The park lamp relay cannot be repaired and, if faulty or damaged, it must be replaced.

**SET LAMP**

The VTSS set lamp is a red light-emitting diode mounted with the auto headlamp ambient light sensor on top of the instrument panel near the driver's side defroster outlet. The set lamp receives fused battery feed at all times and is grounded by the body control module to give a visible indication of the VTSS status.

The set lamp cannot be repaired and, if damaged or faulty, the set lamp/auto headlamp ambient light sensor must be replaced as a unit.

**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 igni-

## DESCRIPTION AND OPERATION (Continued)

tion 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.

## 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 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.

## 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.

## DESCRIPTION AND OPERATION (Continued)

### 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 arming, 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.

## DIAGNOSIS AND TESTING

### VEHICLE THEFT SECURITY SYSTEM

The vehicle theft security system should be diagnosed using the DRB scan tool and the proper Body Diagnostic Procedures Manual. Refer to 8W-39 - Vehicle Theft Security System in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

#### Self-Diagnostics

The vehicle theft security system has a self-diagnostic mode that can be entered using the DRB scan tool. Refer to the proper Body Diagnostic Procedures Manual for more information on this feature.

### RELAYS

The horn relay is located in the Power Distribution Center (PDC) in the engine compartment. The auto headlamp and park lamp relays are located in the junction block in the passenger compartment. Each of these relays can be tested as described in the following procedure, however the circuits they are used in do vary. To test the relay circuits, refer to the circuit descriptions and diagrams in 8W-39 - Vehicle Theft Security System in Group 8W - Wiring Diagrams.

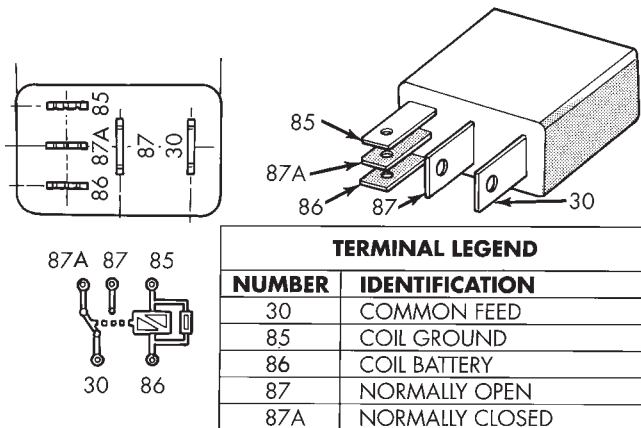
**WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL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

Remove the relay from the PDC or junction block as described in this group to perform the following tests:

(1) A relay in the de-energized position should have continuity between terminals 87A and 30, and no continuity between terminals 87 and 30. If OK, go to Step 2. If not OK, replace the faulty relay.

(2) Resistance between terminals 85 and 86 (electromagnet) should be  $75 \pm 5$  ohms. If OK, go to Step 3. If not OK, replace the faulty relay.

(3) Connect a battery to terminals 85 and 86. There should now be continuity between terminals 30 and 87, and no continuity between terminals 87A and 30. If OK, test the relay circuits. If not OK, replace the faulty relay.



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#### Relay Terminals

## SERVICE PROCEDURES

### VEHICLE IMMOBILIZER SYSTEM

**WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG 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 Chrysler Collision Detection (CCD) data bus network should be diagnosed using the DRB scan tool. The DRB will allow confirmation that the CCD data bus is functional, that the immobilizer receiver is placing the proper messages on the CCD data bus, and that the Powertrain Control Module (PCM) is receiving the CCD data 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, repair the shorted circuit or component as required and 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 wire harness 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 wire harness 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.

### 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 audible 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.

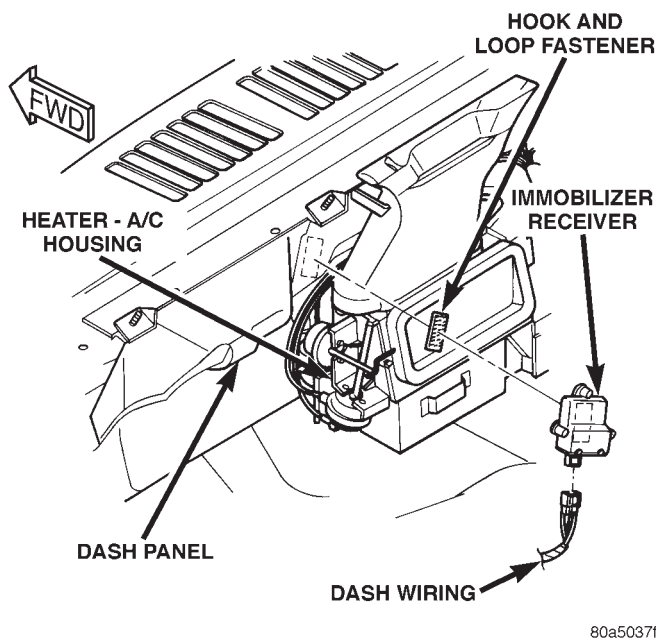


## REMOVAL AND INSTALLATION

## IMMOBILIZER RECEIVER

**WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG 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).



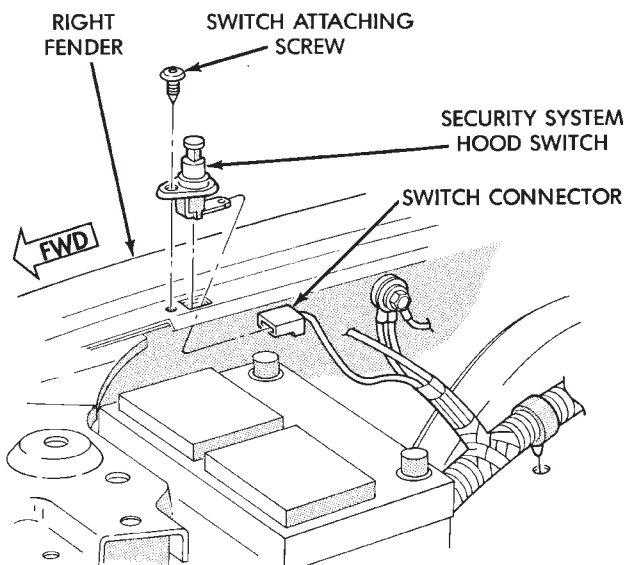
**Fig. 1 Immobilizer Receiver Remove/Install**

- (4) Unplug the immobilizer receiver from the wire harness 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.

## HOOD SWITCH

- (1) Disconnect and isolate the battery negative cable.

- (2) Remove the screw securing the hood switch to the right inner fender ledge (Fig. 2).



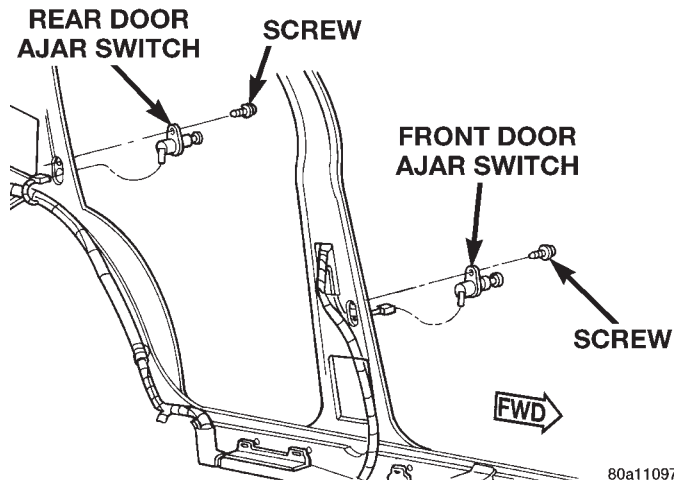
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**Fig. 2 Hood Switch Remove/Install**

- (3) Unplug the wire connector from the switch.
- (4) Remove the switch from the mounting hole in the inner fender ledge.
- (5) Reverse the removal procedures to install. Tighten the switch mounting screw to 1.5 N·m (15 in. lbs.).

## DOOR AJAR SWITCH

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the screw that secures the door ajar switch to the pillar at the rear of the door opening (Fig. 3).



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**Fig. 3 Door Ajar Switch Remove/Install**

## REMOVAL AND INSTALLATION (Continued)

(3) Pull the switch from the mounting hole in the door opening far enough to access the wire harness connector.

(4) Unplug the wire harness connector from the switch.

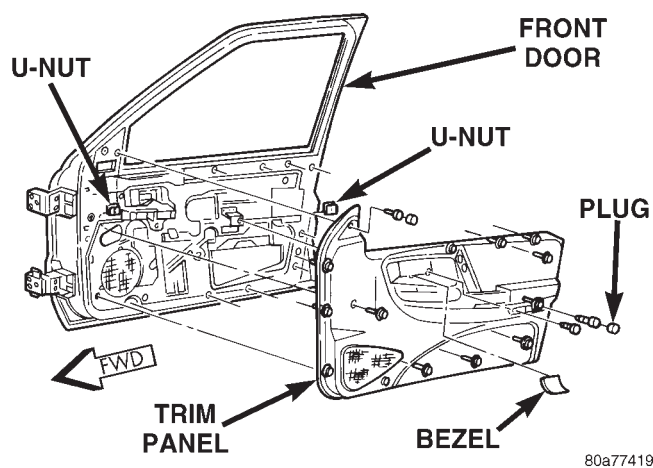
(5) Reverse the removal procedures to install. Tighten the switch mounting screw to 1.7 N·m (15 in. lbs.).

**DOOR LOCK CYLINDER SWITCH**

(1) Disconnect and isolate the battery negative cable.

(2) Remove the bezel near the inside door latch release handle by inserting a straight-bladed screwdriver in the notched end and prying gently upwards.

(3) Remove the door trim panel mounting screw located in the bezel opening near the inside door latch release handle (Fig. 4).



**Fig. 4 Front Door Trim Panel Remove/Install**

(4) Remove the trim cap and screw near the rear of the door armrest.

(5) Remove the trim cap and screw at the upper front corner of the trim panel.

(6) Using a wide flat-bladed tool such as a trim stick, pry the trim panel away from the door around the perimeter and remove the trim panel.

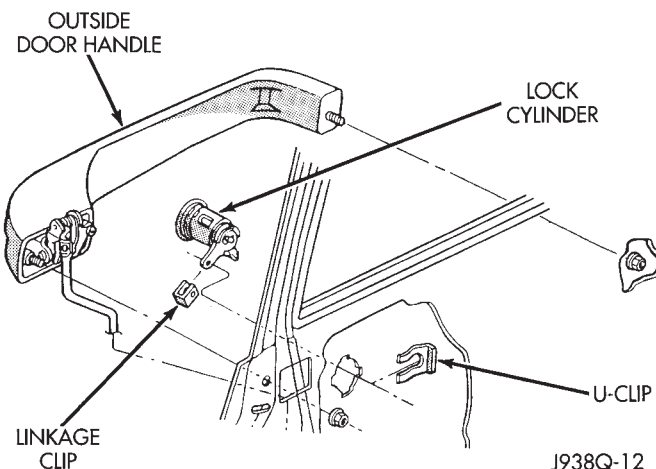
**NOTE:** To aid in the removal of the trim panel, start at the bottom of the panel.

(7) Unplug the wire harness connectors from the door module and set the trim panel aside.

(8) Pull the watershield away from the rear access holes in the inner door panel.

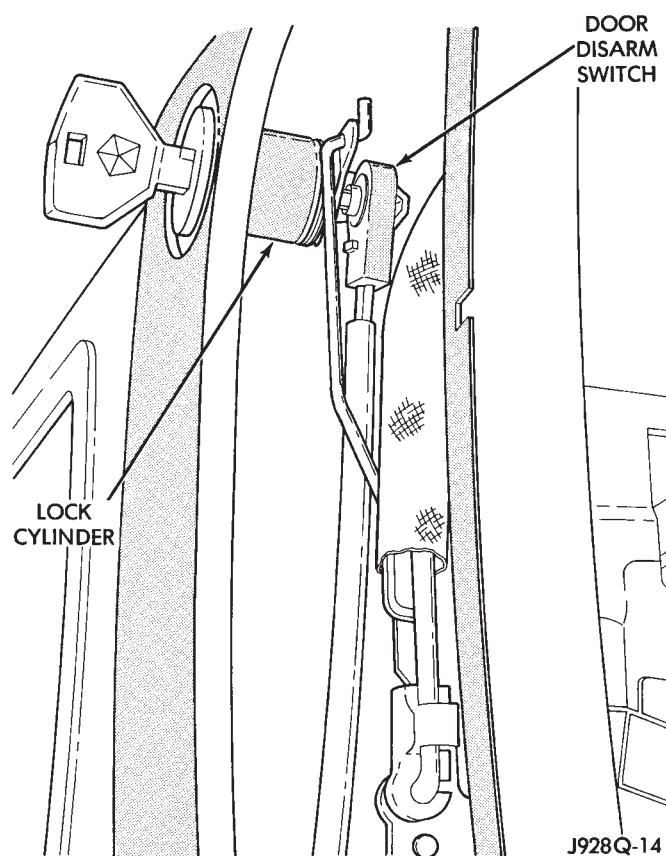
(9) Remove the U-clip retainer that secures the lock cylinder to the outer door panel (Fig. 5).

(10) Disconnect the lock cylinder rod from the door latch by unsnapping the retainer from the rod.



**Fig. 5 Door Lock Cylinder Remove/Install**

(11) Pull the lock cylinder out from the outer door panel far enough to pry the lock cylinder switch off of the back of the lock cylinder (Fig. 6).



**Fig. 6 Door Lock Cylinder Switch Remove/Install - Typical**

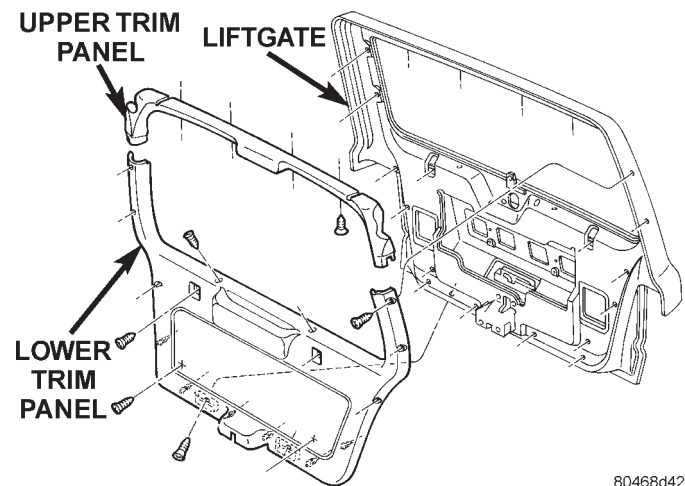
(12) Unplug the lock cylinder switch wire harness connector and remove the switch from inside the door.

(13) Reverse the removal procedures to install.

## REMOVAL AND INSTALLATION (Continued)

### LIFTGATE AJAR SWITCH

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the screws that secure the liftgate lower trim panel to the liftgate (Fig. 7).

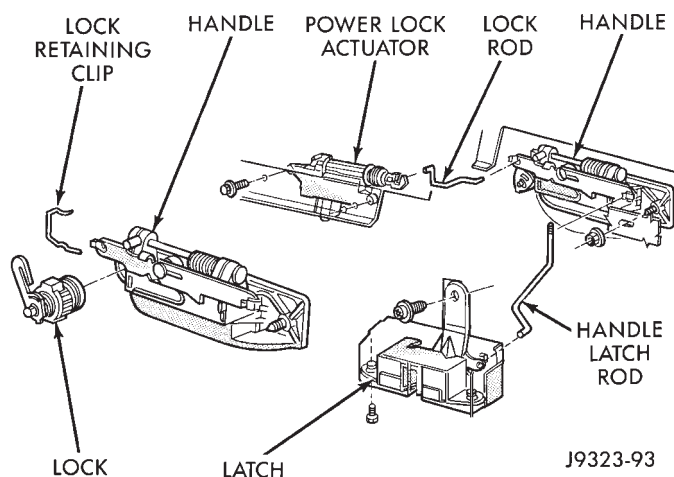


**Fig. 7 Liftgate Trim Panel Remove/Install**

- (3) Using a wide flat-bladed tool such as a trim stick, pry the trim panel away from the liftgate around the perimeter and remove the trim panel.

**NOTE:** To aid in the removal of the trim panel, start at the bottom of the panel.

- (4) Remove the three screws that secure the liftgate latch to the liftgate (Fig. 8).



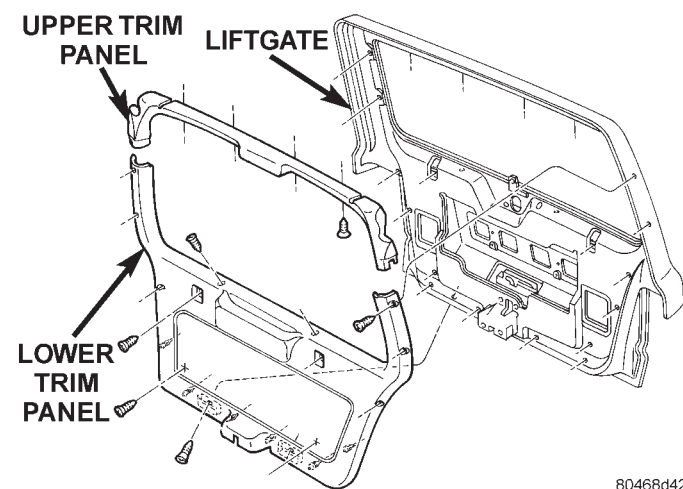
**Fig. 8 Liftgate Latch/Lock Components**

- (5) Disconnect the liftgate handle latch actuator rod from the latch.
- (6) Unplug the liftgate ajar switch wire harness connector from the latch.
- (7) Remove the latch from the liftgate.

- (8) Reverse the removal procedures to install. Tighten the latch mounting screws to 7 N·m (62 in lbs.).

### LIFTGATE LOCK CYLINDER SWITCH

- (1) Disconnect and isolate the battery negative cable.
- (2) Remove the screws that secure the liftgate lower trim panel to the liftgate (Fig. 9).

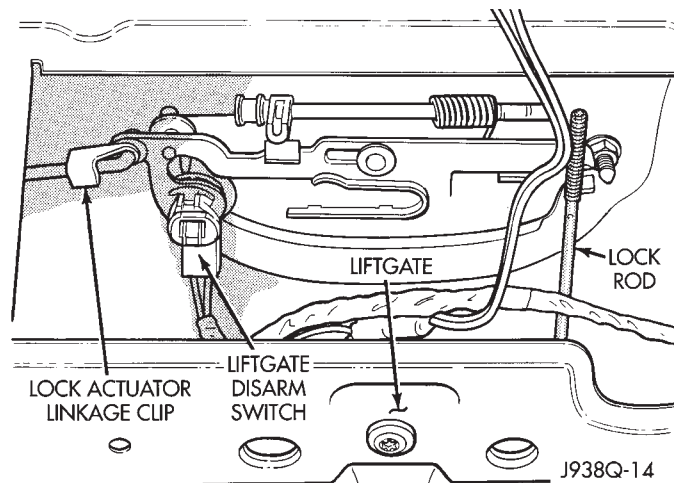


**Fig. 9 Liftgate Trim Panel Remove/Install**

- (3) Using a wide flat-bladed tool such as a trim stick, pry the trim panel away from the liftgate around the perimeter and remove the trim panel.

**NOTE:** To aid in the removal of the trim panel, start at the bottom of the panel.

- (4) Pry the liftgate lock cylinder switch off of the back of the lock cylinder (Fig. 10).



**Fig. 10 Liftgate Lock Cylinder Switch Remove/Install**

- (5) Unplug the lock cylinder switch wire harness connector and remove the switch from inside the liftgate.

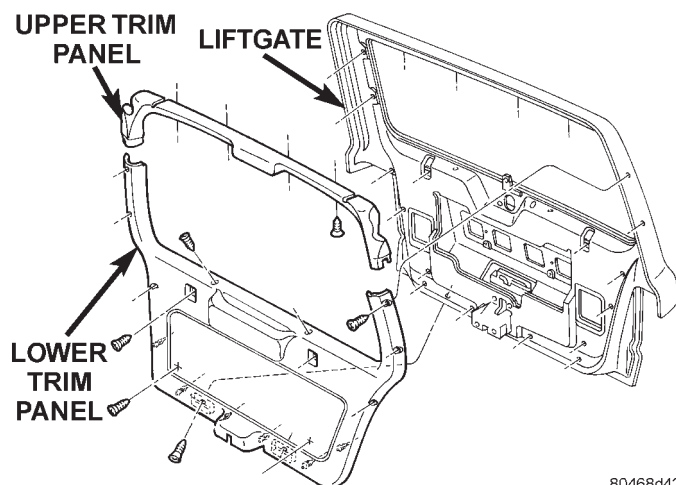
## REMOVAL AND INSTALLATION (Continued)

(6) Reverse the removal procedures to install.

**LIFTGLASS AJAR SWITCH**

(1) Disconnect and isolate the battery negative cable.

(2) Remove the screws that secure the liftgate lower trim panel to the liftgate (Fig. 11).



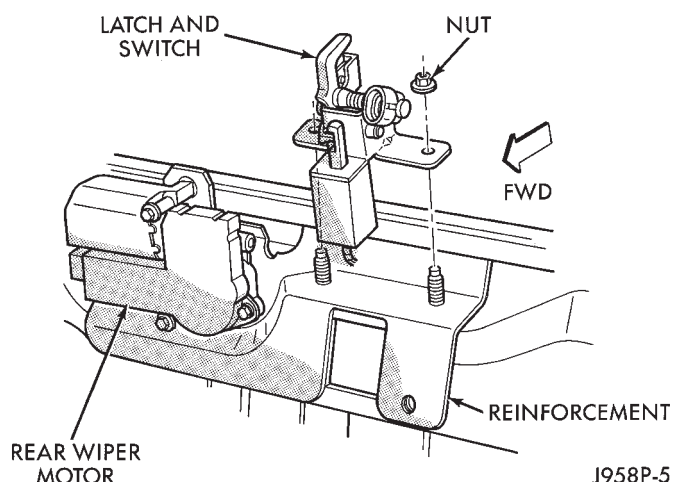
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**Fig. 11 Liftgate Trim Panel Remove/Install**

(3) Using a wide flat-bladed tool such as a trim stick, pry the trim panel away from the liftgate around the perimeter and remove the trim panel.

**NOTE:** To aid in the removal of the trim panel, start at the bottom of the panel.

(4) Remove the two nuts that secure the liftglass latch to the liftgate inner panel (Fig. 12).



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**Fig. 12 Liftglass Ajar Switch Remove/Install**

(5) Unplug the wire harness connectors for the liftglass latch solenoid and the liftglass ajar switch.

(6) Remove the liftglass latch from the liftgate.

(7) Reverse the removal procedures to install. Tighten the latch mounting nuts to 11 N·m (100 in. lbs.).

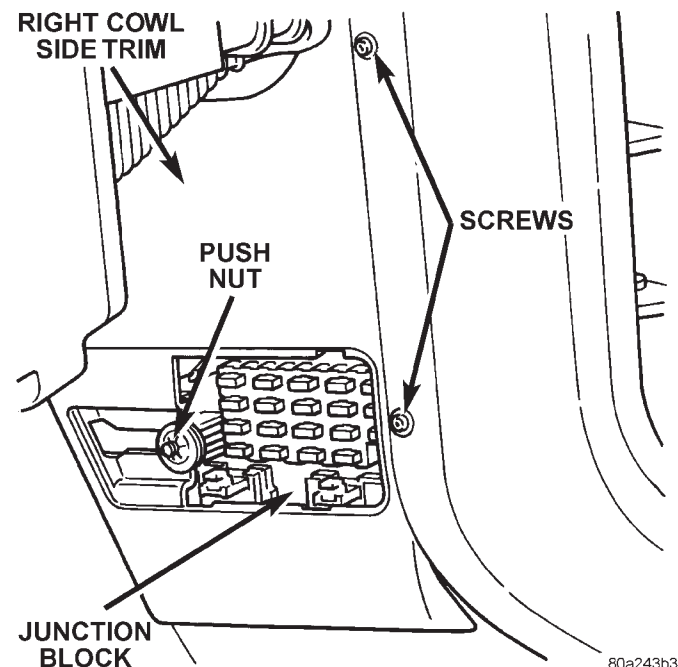
**AUTO HEADLAMP AND PARK LAMP RELAYS**

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

(1) Disconnect and isolate the battery negative cable.

(2) Remove the fuse access panel by unsnapping it from the right cowl side trim panel.

(3) Remove the push nut that secures the right cowl side trim to the junction block stud (Fig. 13).



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**Fig. 13 Right Cowl Side Trim Remove/Install**

(4) Remove the two screws that secure the right cowl side trim to the right front door opening trim.

(5) Remove the right cowl side trim panel.

(6) Unplug the headlamp or park lamp relay from the junction block.

(7) Install the headlamp or park lamp relay by aligning the relay terminals with the cavities in the junction block and pushing the relay firmly into place.

(8) Connect the battery negative cable.

(9) Test the relay operation.



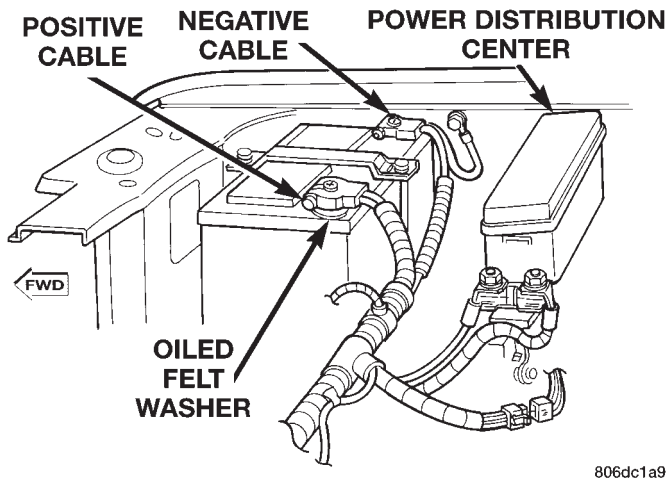
## REMOVAL AND INSTALLATION (Continued)

(10) Install the right cowl side trim and the fuse access panel.

**HORN RELAY**

(1) Disconnect and isolate the battery negative cable.

(2) Remove the cover from the Power Distribution Center (PDC) (Fig. 14).



**Fig. 14 Power Distribution Center**

(3) Refer to the label on the PDC for horn relay identification and location.

(4) Unplug the horn relay from the PDC.

(5) Install the horn relay by aligning the relay terminals with the cavities in the PDC and pushing the relay firmly into place.

(6) Install the PDC cover.

(7) Connect the battery negative cable.

(8) Test the relay operation.

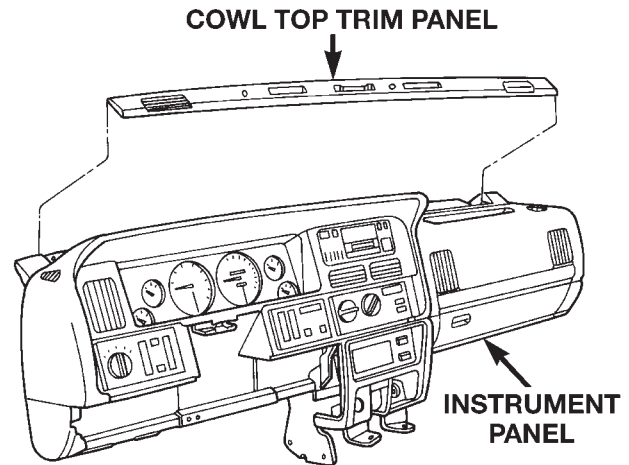
**SET LAMP**

**WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR**

**INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.**

(1) Disconnect and isolate the battery negative cable.

(2) Using a wide flat-bladed tool such as a trim stick, pry the cowl top trim panel off of the instrument panel top pad (Fig. 15).



**Fig. 15 Cowl Top Trim Remove/Install**

(3) If the vehicle is so equipped, pull the panel up far enough to unplug the wire harness connector from the solar sensor, or to remove the solar sensor from the cowl top trim between the passenger side and center defroster outlets.

(4) Remove the cowl top trim panel from the vehicle.

(5) Remove the auto headlamp light sensor/vehicle theft security system set lamp mounting screw near the driver side defroster duct outlet.

(6) Pull the lamp up far enough to unplug the wire harness connector and remove the lamp.

(7) Reverse the removal procedures to install.

