

# HORN SYSTEMS

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## GENERAL INFORMATION

### INTRODUCTION

Following are general descriptions of the major components in the factory-installed horn systems. Refer to 8W-41 - Horns/Cigar Lighter 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.

## DESCRIPTION AND OPERATION

### 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 horn when the horn switch 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 the PDC until further diagnosis is completed.

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

### HORN SWITCH

A center-blow, resistive membrane type horn switch is installed on the back side of the driver side airbag module trim cover in the center of the steering wheel. When the center area of the airbag trim cover is depressed, the horn switch completes a circuit to ground for the coil side of the horn relay. The steering wheel and steering column must be properly grounded for the horn switch to function.

The horn switch is only serviced as a part of the airbag module trim cover. If the horn switch should fail, or if the airbag is deployed, the airbag module trim cover and horn switch unit must be replaced.

### HORN

The standard, dual-note, electromagnetic diaphragm-type horns are secured next to each other on a bracket beneath the right radiator closure extension panel and forward of the right front inner wheelhouse. The two horns are connected in parallel and are grounded through their wire harness connector and circuit to an eyelet bolted to the right inner fender shield near the Power Distribution Center (PDC), and receive battery feed through the closed contacts of the horn relay.

The horns cannot be repaired or adjusted and, if faulty or damaged, they must be replaced.

## DESCRIPTION AND OPERATION (Continued)

## BODY CONTROL MODULE

A Body Control Module (BCM) is used on this model to control and integrate many of the electronic functions and features included 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.

The horn system is one of the outputs of the BCM. The BCM is programmed to energize or de-energize the horn relay in response to certain inputs from the Vehicle Theft Security System (VTSS) and the Remote Keyless Entry (RKE) system. Refer to Group 8P - Power Lock Systems for more information on the RKE system. Refer to Group 8Q - Vehicle Theft/Security Systems for more information on the VTSS.

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.

## DIAGNOSIS AND TESTING

## HORN RELAY

For circuit descriptions and diagrams, refer to 8W-41 - Horns/Cigar Lighter in Group 8W - Wiring Diagrams.

**WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, 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 AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.**

## RELAY TEST

The horn relay is located in the Power Distribution Center (PDC) in the engine compartment. Refer to

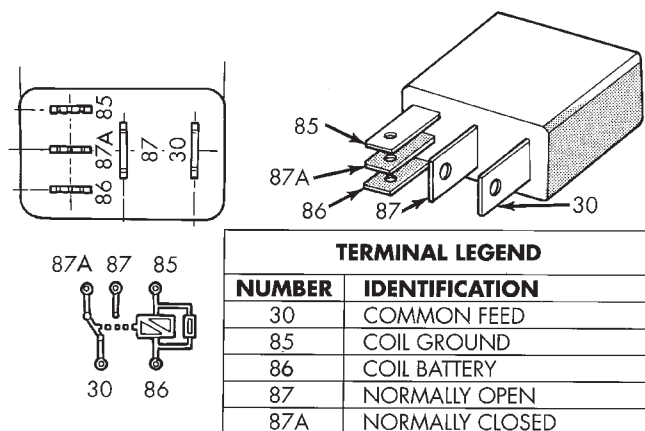
the PDC label for horn relay identification and location.

Remove the horn relay from the PDC 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, see the Relay Circuit Test in this group. If not OK, replace the faulty relay.



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## Horn Relay

## RELAY CIRCUIT TEST

(1) The relay common feed terminal cavity (30) is connected to battery voltage and should be hot at all times. If OK, go to Step 2. If not OK, repair the open circuit to the PDC fuse as required.

(2) The relay normally closed terminal (87A) is connected to terminal 30 in the de-energized position, but is not used for this application. Go to Step 3.

(3) The relay normally open terminal (87) is connected to the common feed terminal (30) in the energized position. This terminal supplies battery voltage to the horn(s). There should be continuity between the cavity for relay terminal 87 and the horn relay output circuit cavity of each horn wire harness connector at all times. If OK, go to Step 4. If not OK, repair the open circuit to the horn(s) as required.

(4) The coil battery terminal (86) is connected to the electromagnet in the relay. It is connected to battery voltage and should be hot at all times. Check for battery voltage at the cavity for relay terminal 86. If OK, go to Step 5. If not OK, repair the open circuit to the PDC fuse as required.

## DIAGNOSIS AND TESTING (Continued)

(5) The coil ground terminal (85) is connected to the electromagnet in the relay. It is grounded through the horn switch when the horn switch is depressed. It can also be grounded by the Body Control Module (BCM) in response to inputs from the Vehicle Theft Security System (VTSS) or the Remote Keyless Entry (RKE) system. Check for continuity to ground at the cavity for relay terminal 85. There should be continuity with the horn switch depressed, and no continuity with the horn switch released. If not OK, see the diagnosis for the Horn Switch in this group.

## HORN SWITCH

For circuit descriptions and diagrams, refer to 8W-41 - Horns/Cigar Lighter in Group 8W - Wiring Diagrams.

**WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, 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 AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.**

(1) Disconnect and isolate the battery negative cable. Remove the lower steering column cover/knee blocker. Check for continuity between the metal steering column jacket and a good ground. There should be continuity. If OK, go to Step 2. If not OK, refer to Group 19 - Steering and check for proper installation of the steering column ground clip.

(2) Remove the driver side airbag module as described in Group 8M - Passive Restraint Systems. Unplug the horn switch wire harness connectors from the airbag module. Unplug the Body Control Module (BCM) wire harness connector B (white). Unplug the horn relay from the Power Distribution Center (PDC). Check for continuity between the steering column half of the horn switch feed wire harness connector and a good ground. There should be no continuity. If OK, go to Step 3. If not OK, repair the short circuit as required.

(3) Check for continuity between the steering column half of the horn switch feed wire harness connector and the horn relay control circuit cavity for the horn relay in the PDC. There should be continuity. If OK, go to Step 4. If not OK, repair the open circuit as required.

(4) Check for continuity between the horn switch feed wire and the horn switch ground wire on the airbag module. There should be no continuity. If OK, go to Step 5. If not OK, replace the faulty horn switch.

(5) Depress the center of the airbag module cover and check for continuity between the horn switch feed wire and the horn switch ground wire on the airbag module. There should now be continuity. If not OK, replace the faulty horn switch.

## HORN

For circuit descriptions and diagrams, refer to 8W-41 - Horns/Cigar Lighter in Group 8W - Wiring Diagrams.

(1) Unplug the horn wire harness connector. Measure the resistance between the ground circuit cavity of the horn wire harness connector and a good ground. There should be no measurable resistance. If OK, go to Step 2. If not OK, repair the circuit to ground as required.

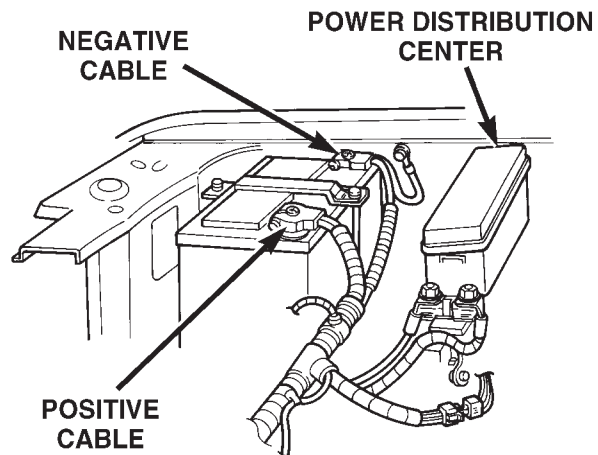
(2) With the horn wire harness connector still unplugged, depress the horn switch. There should be battery voltage at the horn relay output circuit cavity of the horn wire harness connector. If OK, replace the faulty horn. If not OK, repair the open circuit to the horn relay as required.

## REMOVAL AND INSTALLATION

## HORN RELAY

(1) Disconnect and isolate the battery negative cable.

(2) Remove the cover from the Power Distribution Center (PDC) (Fig. 1).



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**Fig. 1 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.

## REMOVAL AND INSTALLATION (Continued)

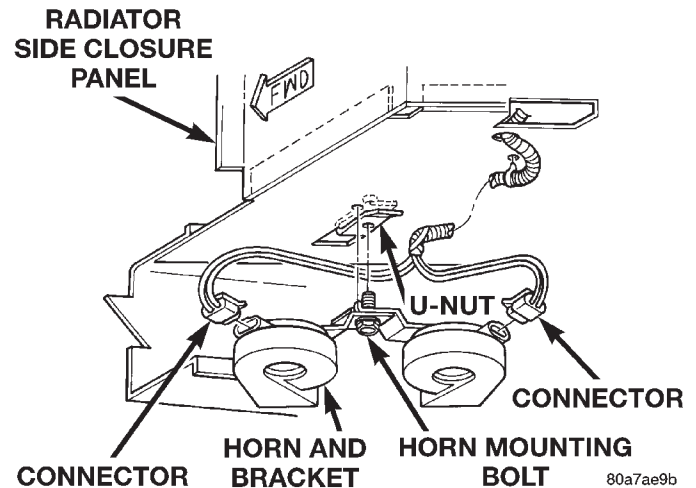
- (8) Test the relay operation.

## HORN SWITCH

**WARNING:** ON VEHICLES EQUIPPED WITH A DRIVER SIDE AIRBAG, THE HORN SWITCH IS INTEGRAL TO THE AIRBAG MODULE TRIM COVER. SERVICE OF THIS COMPONENT SHOULD BE PERFORMED ONLY BY CHRYSLER-TRAINED AND AUTHORIZED DEALER SERVICE TECHNICIANS. FAILURE TO TAKE THE PROPER PRECAUTIONS OR TO FOLLOW THE PROPER PROCEDURES COULD RESULT IN ACCIDENTAL, INCOMPLETE, OR IMPROPER AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY. REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS FOR THE SERVICE PROCEDURES.

## HORN

- (1) Disconnect and isolate the battery negative cable.
- (2) Raise and support the vehicle.
- (3) Remove the radiator lower air deflector. Refer to Group 7 - Cooling System for the procedures.
- (4) Unplug the horn wire harness connectors (Fig. 2).



**Fig. 2 Horn Remove/Install**

- (5) Remove the screw that secures the horn mounting bracket to the radiator closure extension panel.
- (6) Remove the horns and mounting bracket from the vehicle.
- (7) Reverse the removal procedures to install. Tighten the horn mounting bracket screw to 30 N·m (22 ft. lbs.).