

# HORN SYSTEMS

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## GENERAL INFORMATION

### INTRODUCTION

An electric horn system is standard factory-installed equipment on this model. Refer to 8W-41 - Horns/Cigar Lighter in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

### HORN SYSTEM

Two horn systems are offered on this model. The standard equipment horn system features a single low-note electromagnetic horn unit, while the optional dual horn system features one low-note unit and one high-note unit.

Each horn system is activated by a switch concealed beneath the driver side airbag module trim cover in the center of the steering wheel. The horn system is connected to a non-switched battery feed so that the system remains functional, regardless of the ignition switch position.

Following are general descriptions of the major components in the horn system. Refer to the owner's manual in the vehicle glove box for more information on the features, use and operation of the horn system.

## 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 Horn Relay in the Diagnosis and Testing section of this group for more information.

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 must be replaced as a unit.

### HORN

The standard single, low-note, electromagnetic diaphragm-type horn is secured with a bracket to the right front inner fender shield in the engine compartment. The high-note horn for the optional dual-note horn system is connected in parallel with and secured with a bracket just forward of the low-note horn. Each horn is grounded through its wire harness connector and circuit to an eyelet on the right

## DESCRIPTION AND OPERATION (Continued)

inner fender shield, and receives 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 individually replaced.

## CENTRAL TIMER MODULE

Two versions of the Central Timer Module (CTM) are available on this vehicle, a base version and a high-line version. The base version of the CTM is used on base models of the vehicle. The base version of the CTM combines the functions of a chime/buzzer module, an intermittent wipe module, an illuminated entry module and an ignition lamp time delay relay in a single unit.

The high-line version of the CTM is used on high-line vehicles. The high-line CTM provides all of the functions of the base version CTM, but also is used to control and integrate many of the additional electronic functions and features included on the high-line models. The high-line version of the CTM 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 relay is one of the outputs that the high-line CTM can control. The high-line CTM 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.

Both versions of the CTM are mounted under the passenger side end of the instrument panel, outboard of the instrument panel glove box opening. Refer to Central Timer Module in the Removal and Installation section of Group 8E - Instrument Panel Systems for the service procedures.

Refer to Central Timer Module in the Diagnosis and Testing section of Group 8U - Chime/Buzzer Warning Systems for diagnosis of the base version of the CTM. For diagnosis of the high-line version of the CTM or the CCD data bus, a DRB scan tool and the proper Diagnostic Procedures manual are recommended. The CTM cannot be repaired and, if faulty or damaged, it must be replaced.

## 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 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.**

## RELAY TEST

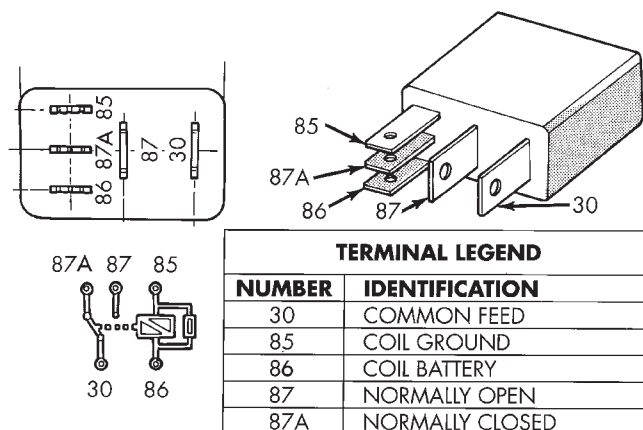
The horn relay (Fig. 1) is located in the Power Distribution Center (PDC) in the engine compartment. Refer to the PDC label for horn relay identification and location.

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 Relay Circuit Test in the Diagnosis and Testing section of this group. If not OK, replace the faulty relay.



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Fig. 1 Horn Relay

## DIAGNOSIS AND TESTING (Continued)

*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 fuse in the PDC as required.

(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 high-line Central Timer Module (CTM) 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 Horn Switch in the Diagnosis and Testing section of 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 steering column opening cover and knee blocker from the instrument panel.

(2) Check for continuity between the metal steering column jacket and a good ground. There should be continuity. If OK, go to Step 3. If not OK, refer to Steering Column in Group 19 - Steering for the

proper installation of the steering column mounting hardware.

(3) Remove the driver side airbag module from the steering wheel. Refer to Airbag Module in the Removal and Installation section of Group 8M - Passive Restraint Systems for the procedures. Unplug the horn switch wire harness connectors from the airbag module.

(4) 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 5. If not OK, repair the short circuit as required.

(5) 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 6. If not OK, repair the open circuit as required.

(6) 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 7. If not OK, replace the faulty horn switch.

(7) Depress the center of the airbag module trim 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) Measure the resistance between the horn mounting bracket and a good ground. There should be no measurable resistance. If OK, go to Step 2. If not OK, repair the horn ground connection as required.

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

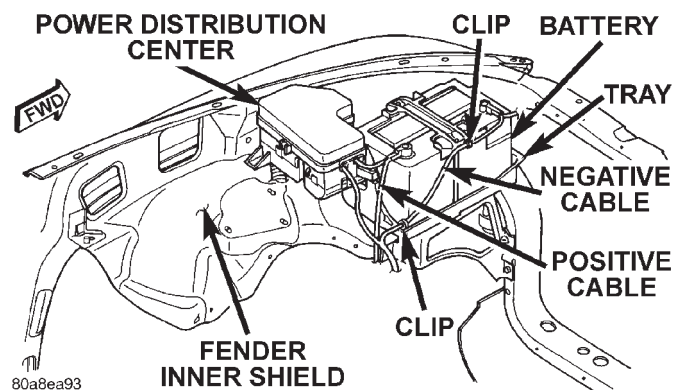
**REMOVAL AND INSTALLATION****HORN RELAY**

(1) Disconnect and isolate the battery negative cable.

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

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

## REMOVAL AND INSTALLATION (Continued)

**Fig. 2 Power Distribution Center**

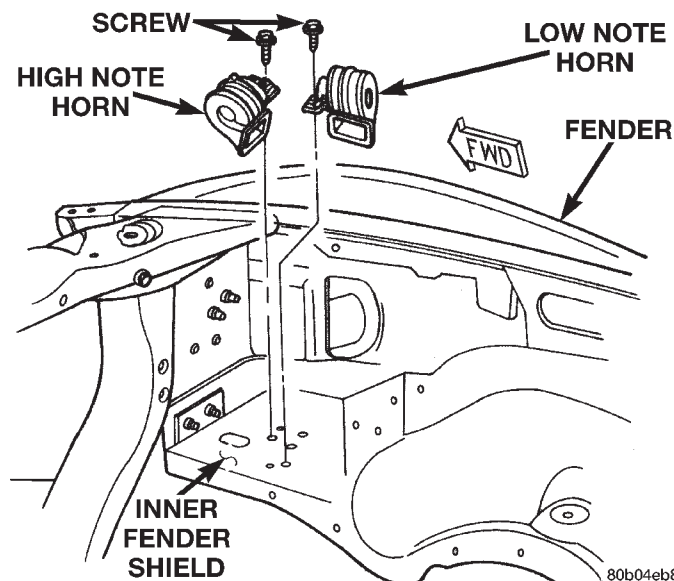
- (4) Unplug the horn relay from the PDC.
- (5) Install the horn relay by aligning the relay terminals with the cavities in the PDC and pushing the relay firmly into place.
- (6) Install the PDC cover.
- (7) Connect the battery negative cable.
- (8) Test the relay operation.

**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 DRIVER SIDE AIRBAG TRIM COVER AND HORN SWITCH IN THE REMOVAL AND INSTALLATION SECTION OF**

**GROUP 8M - PASSIVE RESTRAINT SYSTEMS FOR THE SERVICE PROCEDURES.****HORN**

- (1) Disconnect and isolate the battery negative cable.
- (2) Unplug the wire harness connector from the horn (Fig. 3).

**Fig. 3 Horns Remove/Install**

- (3) Remove the screw that secures the horn mounting bracket to the inner fender shield.
- (4) Remove the horn and mounting bracket from the inner fender shield.
- (5) Reverse the removal procedures to install. Tighten the mounting screw to 11 N·m (95 in. lbs.).