

HORNS

CONTENTS

	page		page
DESCRIPTION AND OPERATION		HORNS WILL NOT SOUND	3
HORN RELAY	1	SYSTEM TEST	3
INTRODUCTION	1	REMOVAL AND INSTALLATION	
DIAGNOSIS AND TESTING		HORN CONTACT SWITCH	5
HORN	2	HORN RELAY	5
HORN CONTACT SWITCH	2	HORNS	5
HORN RELAY	2		

DESCRIPTION AND OPERATION

INTRODUCTION

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAG, SEE GROUP 8M, RESTRAINT SYSTEMS FOR STEERING WHEEL OR COLUMN REMOVAL PROCEDURES.

The horn circuit consists of a horn contact, horn relay, and horns. The horn circuit feed is from the fuse to the horn relay in the Junction Block. When the horn contact is depressed, it completes the ground circuit. Then the horn relay coil closes a set of contacts which allows current to flow to the horns. The horn(s) are grounded at the shock tower. Refer to Group 8W, Wiring Diagrams for horn circuit.

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 on the conventional ISO relay.

The horn relay is a electromechanical device that switches current to the horn when the Driver Airbag Module is depressed. 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 Junction Block. Refer to the Junction Block label for horn 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 Junction Block until further diagnosis is completed. The horn relay cannot be repaired and, if faulty, it must be replaced.

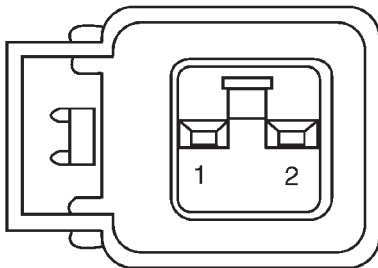
DIAGNOSIS AND TESTING

HORN

- (1) Disconnect wire connector at horn.
- (2) Using a voltmeter, connect one lead to ground terminal and the other lead to the horn relay output wire terminal (Fig. 1).
- (3) Depress the horn switch, battery voltage should be present.
- (4) If no voltage, refer to Horn Does Not Sound. If voltage is OK, go to Step 5.
- (5) Using ohmmeter, test ground wire for continuity to ground.
- (6) If no ground repair as necessary.
- (7) If wires test OK and horn does not sound, replace horn.

HORN CONNECTOR PIN CALL-OUT

PIN #	CIRCUIT NAME
1	GROUND
2	HORN RELAY OUTPUT



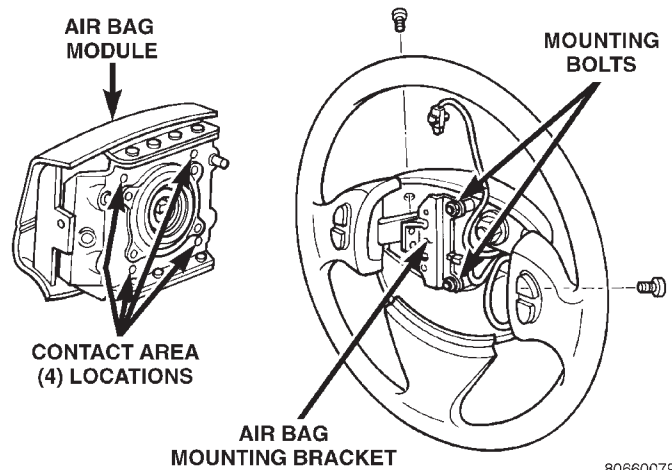
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Fig. 1 Horn Connector Pin Call - Out

HORN CONTACT SWITCH

- The horn contact consist of,
- A contact switch is mounted between the Driver Airbag Module and steering wheel
 - The horn wire is attached to Driver Airbag Module mounting bracket.
 - When the Driver Airbag Module is pressed the contact ring touches the bracket mounting bolts and makes contact to ground. The ground signal is carried to the horn relay and horn sounds.

- (1) Ground horn wire (Fig. 2).
- (2) If horn does not sound, check for corrosion on wire, bracket or airbag contact ring and ensure horn wire is properly connected.
- (3) If bracket needs to be replaced, the steering wheel must be replaced. If contact ring is bad the Driver Airbag Module must be replaced.
- (4) Refer to Group 8W, Wiring Diagrams if wire circuit needs to be repaired.

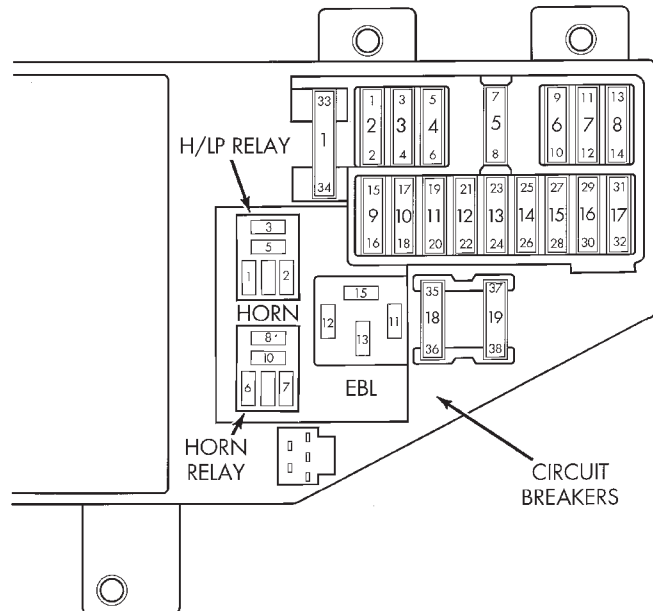


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Fig. 2 Horn Contact

HORN RELAY

- (1) Remove horn relay from the Junction Block (Fig. 3).



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Fig. 3 Horn Relay Location

- (2) Using ohmmeter, test between the Junction Block relay terminal 7 and ground for continuity.

DIAGNOSIS AND TESTING (Continued)

(a) When the horn contact is not depressed, no continuity.

(b) Continuity to ground when horn contact is depressed.

(c) If continuity is not correct, repair horn contact or wiring as necessary. Refer to Group 8W, Wiring diagrams.

(3) Insert a jumper wire between terminals 8 and 10 of the horn relay in the Junction Block.

(a) If horns sound replace relay.

(b) If the horns do not sound, install horn relay and refer to Horn Test.

(4) Using voltmeter, test battery voltage:

(a) Test Junction Block horn relay terminals 6 and 8 for voltage from fuse 8.

(b) If not OK, repair as necessary. Refer to Group 8W, Wiring Diagrams.

HORNS WILL NOT SOUND

Check horn fuse 14 in the Power Distribution Center and fuse 8 in the Junction Block. If fuse is blown refer to FUSE BLOWN section. If fuse is OK, refer to FUSE OK section.

FUSE BLOWN

(1) Verify condition of battery terminals and voltage, refer to Group 8A, Battery. If battery connections and battery charge is OK, go to Step 2.

(2) Using a voltmeter, test for battery voltage at both sides of horn fuse 8. If voltage is OK, on both sides of fuse, go to Fuse OK. If voltage is OK, on one side of fuse, the fuse is blown, go to Step 3.

(3) Using a suitable ammeter in place of the fuse, test amperage draw of the horn circuit. If amperage draw is greater than 20 amps without the horn switch depressed, a grounded circuit exists between the fuse and the horn relay. Go to Step 4. If amperage draw is greater than 20 amps with the horn switch depressed, a grounded circuit exists between the horn relay and the horn. Go to Step 6.

(4) Remove the horn relay from the Junction Block. If the amperage draw drops to 0 amps, the horn switch or circuit is shorted. Refer to group 8W, Wiring Diagrams for circuit information. If amperage does not drop go to Step 5.

(5) Disconnect both horns. If amperage does not drop with both horns disconnected and the horn switch depressed, go to Step 7. If the amperage draw drops go to Step 6.

(6) Disconnect the wire connector from one of the horns. If amperage drops and the connected horn sounds, reverse the procedure, and replace the faulty horn.

(7) Using a continuity tester, with the horns disconnected test continuity of the X2 cavity of the horn relay to ground. Refer to Group 8W, Wiring Diagrams for circuit information. If continuity is detected, the circuit is grounded between the Junction Block and the horns. Locate and repair pinched harness. If the amperage draw does not drop to 0 amps, repair short at the Junction Block.

FUSE OK

(1) Remove the horn relay from the Junction Block.

(2) Using a continuity tester, Depress horn switch and test continuity from the X3 cavity of the horn relay to ground. Refer to Group 8W, Wiring Diagrams for circuit information.

(a) If continuity is detected, go to Step 3.

(b) If NO continuity, go to Step 4.

(3) Using a suitable jumper wire, jump across the fuse F62 cavity and the X2 cavity of the horn relay in the Junction Block.

(a) If the horn sounds, replace the horn relay.

(b) If the horn does not sound, go to Step 4.

(4) Remove airbag/horn pad from steering wheel. Refer to Group 8M, Restraint Systems for proper procedures.

(5) Test continuity across horn switch connectors with horn switch depressed.

(a) If continuity is detected, repair open circuit between the relay and the horn switch.

(b) If NO continuity, replace airbag cover.

(6) Install horn relay into Junction Block.

(7) Disconnect the wire connectors from horns.

(8) Using a voltmeter, with the horn switch depressed test voltage across horn connector terminals of the wire harness (Fig. 1).

(a) If voltage is detected, replace horns.

(b) If NO voltage, go to Step 9.

(9) With the horn switch depressed, test for voltage between the X2 circuit and ground.

(a) If voltage OK, repair system ground at right cowl area. Refer to Group 8W, Wiring Diagrams.

(b) If NO voltage, repair open X2 circuit between the relay and the horns.

SYSTEM TEST

CAUTION: Continuous sounding of horns will cause horn relay to fail.

Check fuse 8 in the Junction Block, and refer to Horn System Test table.

Refer to Group 8W, Wiring Diagrams for circuit and wiring information.

DIAGNOSIS AND TESTING (Continued)

HORN SYSTEM TEST

CONDITION	POSSIBLE CAUSE	CORRECTION
HORN SOUNDS CONTINUOUSLY. NOTE: IMMEDIATELY UNPLUG HORN RELAY IN THE JUNCTION BLOCK	(1) FAULTY HORN RELAY. (2) HORN CONTROL CIRCUIT TO RELAY SHORTED TO GROUND. (3) PINCHED HORN SWITCH WIRE UNDER DRIVER AIRBAG MODULE. (4) DEFECTIVE HORN SWITCH	(1) REFER TO HORN RELAY TEST. (2) CHECK HORN RELAY TERMINAL 8 IN THE JUNCTION BLOCK FOR CONTINUITY TO GROUND INDICATES: (A) WIRING HARNESS SHORTED TO GROUND. (B) FIND THE SHORT AND REPAIR AS NECESSARY. (3) REMOVE DRIVER AIRBAG MODULE AND CHECK FOR RUBBING, SHORTED OR LOOSE WIRE CONNECTOR AND REPAIR AS NECESSARY. (4) REPLACE DRIVER AIRBAG MODULE.
HORN SOUND INTERMITTENTLY AS THE STEERING WHEEL IS TURNED.	(1) HORN RELAY CONTROL CIRCUIT X3 IS SHORTED TO GROUND INSIDE STEERING COLUMN OR THE WHEEL. (2) PINCHED HORN SWITCH WIRE UNDER DRIVER AIRBAG MODULE (3) DEFECTIVE HORN SWITCH	(1) REMOVE DRIVER AIRBAG MODULE AND/OR STEERING WHEEL AS NEEDED. CHECK FOR RUBBING OR LOOSE WIRE/CONNECTOR, REPAIR AS NECESSARY. (2) REPLACE DRIVER AIRBAG MODULE. (3) REPLACE DRIVER AIRBAG MODULE.
HORN DOES NOT SOUND	(1) CHECK FUSE 8 IN THE JUNCTION BLOCK. (2) NO VOLTAGE AT HORN RELAY TERMINALS 6 & 8, AND FUSE IS OK. (3) DEFECTIVE OR DAMAGED HORN. (4) DEFECTIVE HORN SWITCH	(1) REPLACE FUSE IF BLOWN AS REPAIR AS NECESSARY. (2) NO VOLTAGE, REPAIR OR REPLACE JUNCTION BLOCK AS NECESSARY. (3) VOLTAGE AT HORN WHEN HORN SWITCH IS PRESSED, REPLACE HORN. (4) REPLACE DRIVER AIRBAG MODULE.
FUSE BLOWS WHEN HORN IS BLOWN	(1) SHORT CIRCUIT IN HORN OR HORN WIRING	(1) REMOVE HORN RELAY, CHECK FOR SHORTED HORN OR HORN WIRING. DISCONNECT HORN WIRE HARNESS TO ISOLATE SHORT AND REPAIR AS NECESSARY.
FUSE BLOWS WITHOUT BLOWING HORN NOTE: FOR WIRING REPAIRS REFER TO GROUP 8W, WIRE DIAGRAMS.	(1) SHORT CIRCUIT	(1) REMOVE RELAY, INSTALL NEW FUSE, IF FUSE DOES NOT BLOW REPLACE HORN RELAY. IF FUSE BLOWS WITH RELAY REMOVED, CHECK FOR SHORT TO GROUND WITH OHMMETER ON CIRCUIT BETWEEN TERMINALS 6 & 8 AND THE FUSE TERMINAL. REPAIR AS NECESSARY.

REMOVAL AND INSTALLATION

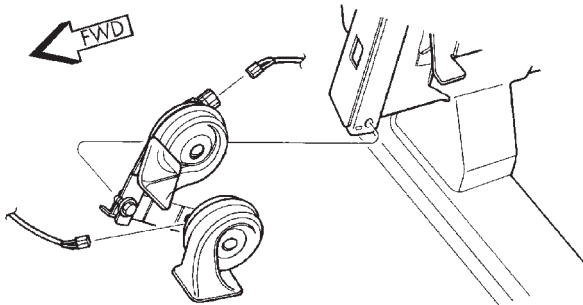
HORNS

REMOVAL

- (1) Hoist and support front vehicle on safety stands.
- (2) The horns are located behind the front fascia on the right front frame rail. Remove the splash shield as necessary for access.
- (3) Disconnect the wire connector from the horn.
- (4) Remove mount bracket attaching bolt from the front frame rail. Do not remove horn from mounting bracket (Fig. 4).
- (5) Remove horn from vehicle.

INSTALLATION

For installation, reverse the above procedures.



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Fig. 4 Horn Location

HORN CONTACT SWITCH

WARNING: BEFORE BEGINNING ANY AIRBAG SYSTEM REMOVAL OR INSTALLATION PROCEDURES, REMOVE AND ISOLATE THE BATTERY NEGATIVE CABLE FROM THE VEHICLE BATTERY. THIS IS THE ONLY SURE WAY TO DISABLE THE AIRBAG SYSTEM. FAILURE TO DO THIS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

REMOVAL

- (1) Disconnect and isolate battery negative cable in engine compartment.
- (2) Remove the screws that attach the Driver Airbag Module to the steering wheel.
- (3) Lift the module to gain access and disconnect the squib wire.
- (4) Place Driver Airbag Module on a clean level surface with pad facing upward.
- (5) If the contact area is bad, replace Driver Airbag Module. If the mounting bracket or bushings are bad, replace steering wheel.

INSTALLATION

For installation, reverse the above procedures. Use caution not to pinch wires.

HORN RELAY

REMOVAL

- (1) Open driver's door and remove instrument panel end cover.
- (2) Remove horn relay (Fig. 3).

INSTALLATION

For installation, reverse the above procedures.

