HORN

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HORN SYSTEM

DESCRIPTION

WARNING: ON VEHICLES EQUIPPED WITH AIRBAG, REFER TO ELECTRICAL, RESTRAINTS FOR SAFETY PRECAUTIONS. DISCONNECT THE NEGATIVE CABLE FROM THE BATTERY BEFORE SERVICING COMPONENTS INVOLVING THE AIRBAG SYSTEM. ACCIDENTAL DEPLOYMENT OF AIRBAG AND PERSONAL INJURY CAN RESULT.

The horn circuit consists of a horn switch, clockspring, horn relay, horns and Integrated Power Module (IPM). The horn switch is a membrane switch located in the airbag trim cover. The horns are located forward of the left front wheel behind the bumper fascia.

OPERATION

The horn relay plugs into the Integrated Power Module (IPM) which is located in the engine compartment. For circuit information and component locations, refer to the appropriate wiring information. The wiring information includes wiring diagrams, proper wire and connector repair procedures, details of wire harness routing and retention, connector pinout information and location views for the various wire harness connectors, splices and grounds.

The horns will not function if the switch is “CLOSED” for more than 30 seconds. Once the switch is “OPEN”, a 20–30 second delay will occur before the horns are functional again.

DIAGNOSIS AND TESTING

HORN SYSTEM

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO ELECTRICAL, RESTRAINTS 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.

Refer to Horn System Test below. If the horn does not sound, check horn fuse located in the Integrated Power Module (IPM). If the fuse is blown, replace with the correct fuse. If the horns fail to sound and the new fuse blows when depressing the horn switch, a short circuit in the horn or the horn wiring between the fuse terminal and the horn is responsible, or a defective horn switch allowed the horn to burn out is responsible.

If the fuse is OK, test horn relay.

If the relay is OK, test horn.

CAUTION: Continuous sounding of horn may cause horn failure.

Should the horn sound continuously, unplug the horn relay from IPM.

Refer to the appropriate wiring information.

HORN SYSTEM (Continued)

HORN SYSTEM TEST

CONDITION	POSSIBLE CAUSE	CORRECTION
HORN SOUNDS CONTINUOUSLY. NOTE: IMMEDIATELY UNPLUG HORN RELAY IN THE IPM.	(1) HORN RELAY INOPERATIVE.	(1) REPLACE RELAY.
	(2) HORN CONTROL CIRCUIT TO RELAY SHORTED TO GROUND.	(2) CHECK TERMINAL 85 IN IPM FOR CONTINUITY TO GROUND. IF CONTINUITY TO GROUND INDICATES: (A) STEERING WHEEL HORN SWITCH/ LEAD SHORTED TO GROUND. (B) WIRING HARNESS SHORTED TO GROUND. FIND THE SHORT AND REPAIR AS NECESSARY.
	(3) PINCHED HORN SWITCH WIRE UNDER DRIVER AIRBAG MODULE.	(3) REPLACE DRIVER AIRBAG TRIM COVER.
	(4) HORN SWITCH INOPERATIVE.	(4) REPLACE DRIVER AIRBAG TRIM COVER.
	(5) CLOCKSPRING INOPERATIVE.	(5) REPLACE CLOCKSPRING.
	(6) FRONT CONTROL MODULE INOPERATIVE.	(6) REFER TO ELECTRONIC CONTROL MODULES/FRONT CONTROL MODULE.
HORN SOUND INTERMITTENTLY AS THE STEERING WHEEL IS TURNED.	(1) HORN RELAY CONTROL CIRCUIT X3 IS SHORTED TO GROUND INSIDE STEERING COLUMN OR WHEEL.	(1) REMOVE DRIVER AIRBAG AND/OR WHEEL. CHECK FOR RUBBING OR LOOSE WIRE/CONNECTOR, REPAIR AS NECESSARY.
	(2) PINCHED HORN SWITCH WIRE UNDER DRIVER AIRBAG MODULE.	(2) REPLACE DRIVER AIRBAG TRIM COVER.
	(3) HORN SWITCH INOPERATIVE.	(3) REPLACE DRIVER AIRBAG TRIM COVER.
	(4) CLOCKSPRING INOPERATIVE.	(4) REPLACE CLOCKSPRING.
HORN DOES NOT SOUND	(1) CHECK FUSE 8 IN INTELLIGENT POWER MODULE.	(1) REPLACE FUSE IF BLOWN REPAIR AS NECESSARY.
	(2) NO VOLTAGE AT HORN RELAY TERMINALS 30 & 86, AND FUSE IS OK.	(2) NO VOLTAGE, REPAIR THE CIRCUIT AS NECESSARY.
	(3) OPEN CIRCUIT FROM TERMINAL 85 OF THE HORN RELAY TO HORN SWITCH, X3 CIRCUIT.	(3) REPAIR CIRCUIT AS NECESSARY.
	(4) HORN INOPERATIVE OR DAMAGED.	(4) CHECK VOLTAGE AT HORN WHEN HORN SWITCH IS PRESSED. IF NO VOLTAGE, REPLACE HORN.
	(5) HORN SWITCH INOPERATIVE.	(5) REPLACE DRIVER AIRBAG TRIM COVER.

HORN SYSTEM (Continued)

CONDITION	POSSIBLE CAUSE	CORRECTION
	(6) CLOCKSPRING INOPERATIVE.	(6) REPLACE CLOCKSPRING.
	(7) FRONT CONTROL MODULE INOPERATIVE.	(7) REFER TO ELECTRONIC CONTROL MODULES/FRONT CONTROL MODULE.
FUSE BLOWS WHEN HORN SOUNDS	(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.
	(2) CLOCKSPRING INOPERATIVE.	(2) REPLACE CLOCKSPRING.
FUSE BLOWS WITHOUT BLOWING HORN	(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 30 & 86 AND THE FUSE TERMINAL. REPAIR AS NECESSARY.
	(2) CLOCKSPRING INOPERATIVE.	(2) REPLACE CLOCKSPRING.

HORN

DIAGNOSIS AND TESTING

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(1) Disconnect wire connector at horn.

(2) Using a voltmeter, connect one lead to ground terminal and the other lead to the positive wire terminal (Fig. 1).

(3) Depress the horn switch, battery voltage should be present.

(4) If no voltage, refer to **HORNS WILL NOT SOUND**. If voltage is OK, go to step 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.

HORNS SOUND CONTINUOUSLY

CAUTION: Continuous sounding of horns may cause relay to fail.

The horn switch (membrane) sometimes can be the cause without the switch being depressed.

(1) Remove the horn relay from the intelligent power module.

(2) Using a continuity tester, test continuity from the X3 cavity of the horn relay to ground. Refer to the appropriate wiring information. The wiring information includes wiring diagrams, proper wire and connector repair procedures, details of wire harness routing and retention, connector pin-out information and location views for the various wire harness connectors, splices and grounds.

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

(b) If NO continuity, replace the horn relay.

(3) Remove the airbag trim cover from the steering wheel and disengage horn connector.

(4) Install horn relay into Integrated Power Module (IPM).

(a) If horn does not sound, replace airbag trim cover.

(b) If horn sounds, repair grounded X3 circuit from IPM to clockspring in the steering column.

HORNS WILL NOT SOUND

Check horn fuse # 8 in the IPM. If fuse is blown, check for a shorted switch in the airbag module. and 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 8 - ELECTRICAL/BATTERY SYSTEM

HORN (Continued)

- DIAGNOSIS AND TESTING). If battery connections and battery charge is OK proceed to Step 2.

(2) Using a voltmeter, test for battery voltage at both sides of horn fuse 7. If voltage is OK, on both sides of fuse, proceed to Fuse OK. If voltage is OK, on one side of fuse, the fuse is blown, proceed 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. Proceed 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. Proceed to step Step 5.

(4) Remove the horn relay from the IPM. If the amperage draw drops to 0 amps, the horn switch or circuit is shorted. If the amperage draw does not drop to 0 amps, repair short at the IPM.

(5) Disengage a wire connector from one of the horns. If amperage drops and the connected horn sounds, replace the faulty horn. If amperage does not drop with both horns disconnected and the horn switch depressed, proceed to Step 6.

(6) Using a continuity tester, with the horns disconnected test continuity of the X2 cavity of the horn relay to ground. If continuity is detected, the circuit is grounded between the Junction Block and the horns. Locate and repair pinched harness.

FUSE OK

(1) Remove the horn relay from the intelligent power module.

(2) Using a continuity tester, Depress horn switch and test continuity from the X3 cavity of the horn relay to ground.

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

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

(4) Remove airbag trim cover from steering wheel. Refer to ELECTRICAL, RESTRAINTS.

(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 trim cover.

(6) Install horn relay into intelligent power module.

(7) Disengage 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, proceed to step Step 9.

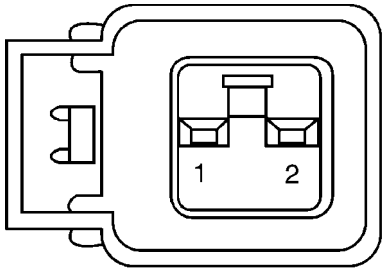

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Fig. 1 Horn Connector

(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.

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

REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Hoist and support the front of the vehicle on safety stands.

(3) From behind the front fascia and forward of the left front wheel, disconnect the wire connectors from horn.

(4) Remove the mounting bracket attaching nut from the bottom of radiator closure panel. Do not remove the horn from mounting bracket.

(5) Separate the horn(s) from vehicle.

INSTALLATION

(1) Install the horns to the vehicle.

(2) Install the mounting bracket fastener.

(3) Reconnect the wire connectors to the horns.

(4) Lower the vehicle.

(5) Reconnect the battery negative cable.

HORN SWITCH

DESCRIPTION

The horn switch is molded into the airbag trim cover. The horn switch can not be serviced separately. For service procedures (Refer to 8 - ELECTRICAL/ RESTRAINTS/AIRBAG COVER - REMOVAL).