

ELECTRICALLY HEATED SYSTEMS

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DESCRIPTION AND OPERATION

REAR WINDOW DEFOGGER SYSTEM

For proper operation of the Rear Window Defogger system refer to the Owner's Manual.

The system consists of a rear glass with two vertical bus bars and a series of electrically connected grid lines fired on the inside surface (Fig. 1). A control switch and a timing circuit are combined into a single assembly.

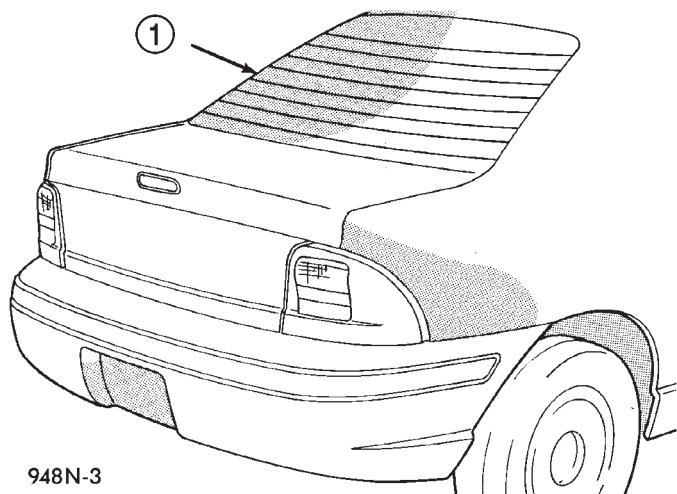


Fig. 1 Rear Window Defogger - Typical

1 - REAR WINDOW DEFOGGER

Circuit protection is provided by a cartridge fuse located in the Power Distribution Center (PDC) for the heated grid circuit, and by a fuse in the fuse block for the control circuit.

When the switch is turned to the ON position, current is directed to the rear defogger grid lines. The heated grid lines heat the rear glass to clear the surface of fog or frost.

CAUTION: Grid lines can be damaged or scraped off with sharp instruments. Care should be taken in cleaning glass or removing foreign materials, decals or stickers. Normal glass cleaning solvents or hot water used with rags or toweling is recommended.

REAR WINDOW DEFOGGER SWITCH

The rear window defogger switch is a control switch and timing circuit integrated into a single panel mounted assembly (Fig. 2). Actuating the switch energizes the circuit which allows current to flow through the grid lines. Upon initial actuation for approximately eight to ten minutes, or until either the switch or ignition is turned off. An indicating lamp illuminates a Light Emitting Diode (LED) inlaid in the control switch.

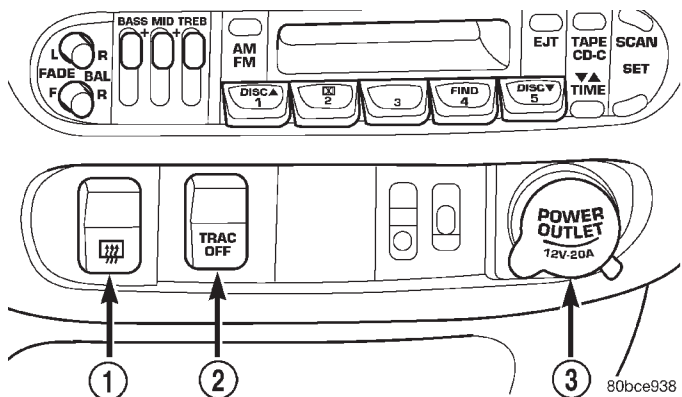


Fig. 2 Rear Window Defogger Switch Location

- 1 - REAR WINDOW DEFOGGER SWITCH
- 2 - TRACTION CONTROL SWITCH
- 3 - CIGAR LIGHTER/AUXILIARY POWER OUTLET

DIAGNOSIS AND TESTING

GRID LINES

The horizontal grid lines and vertical bus bar lines printed and fired on the inside surface of rear window glass (Fig. 5) comprise an electrical parallel circuit. The electrically conductive lines are composed of a silver-ceramic material which when fired on glass becomes bonded to the glass and is highly resistant to abrasion. It is possible however, that a break may occur in an individual grid line resulting in no current flow through the line. To detect breaks in grid lines the following procedure is required:

(1) Turn ignition ON and turn control switch to ON. The LED should come on.

(2) Using a DC voltmeter with 0-15 volt range, contact terminal (B) with the negative lead of the voltmeter. With the positive lead of the voltmeter, contact terminal (A) (Fig. 5). The voltmeter should read 10-14 volts. A lower voltage reading indicates a poor connection in the feed or the ground circuit.

(3) With the negative lead of the voltmeter, contact a good body ground point. The voltage reading should not change.

(4) Connect the negative lead of the voltmeter to terminal (B) and touch each grid line at Mid-Point with the positive lead. A reading of:

- Approximately 6 volts indicates the line is OK.
- 0 volts indicates a break in line between Mid-Point (C) and terminal (A).
- 10-14 volts indicates a break between Mid-Point (C) and terminal (B).

Move the lead toward the break and voltage will change as soon as the break is crossed. Refer to (Fig. 5).

REAR WINDOW DEFOGGER SWITCH

The rear window defogger switch may be tested in the vehicle or out of the vehicle, on the bench.

IN-VEHICLE TESTING

(1) Remove the switch from the instrument panel but leave the switch connected, refer to Group 8E-Instrument Panel and Systems, Auxiliary Switch Bezel Removal and Installation.

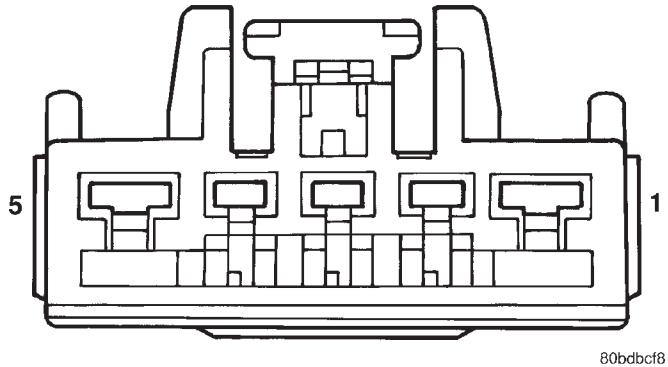
(2) Turn the ignition switch ON.

(3) Using a voltmeter, check for battery voltage at Pin 1 and 2 (Fig. 3).

(a) If OK, go to Step 4.

(b) If NOT OK, check fuse 7 in the fuse block and the 40 Amp cartridge fuse in the Power Distribution Center (PDC). If fuses are OK, check wiring circuit. Refer to Group 8W-Wiring Diagrams.

(4) Check Pin 5, with switch in the ON position there should be battery voltage and no voltage in the OFF position.



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Fig. 3 Rear Window Defogger Switch Harness Connector

REAR WINDOW DEFOGGER SWITCH AND HARNESS CONNECTOR PIN CALL-OUTS

PIN	FUNCTION
1	FUSED B+
2	FUSED IGNITION SWITCH OUTPUT (RUN)
3	GROUND
4	PANEL LAMPS DRIVER
5	PANEL LAMPS DRIVER

(a) If OK, go to Step 5.

(b) If NOT OK, no voltage in the ON position or voltage in the OFF position. Replace the switch.

(5) Press switch to ON position. The indicator lamp should come on and remain on for approximately 10 minutes. If the indicator lamp fails to light or no voltage is present for approximately 10 minutes. Replace Rear Window Defogger Switch. Refer to Group 8E-Instrument Panel and Systems, Auxiliary Switch Bezel Removal and Installation.

BENCH TESTING

(1) First remove switch. Refer to Group 8E-Instrument Panel and Systems, Auxiliary Switch Bezel Removal and Installation.

(2) With switch removed from vehicle, use a jumper wire and connect a 12 volt supply to Pin 1 and 2. Using a third jumper wire, ground Pin 3. Refer to (Fig. 4) and the Rear Window Defogger Switch and Harness Connector Pin Call-Outs table.

(3) Follow the same procedures used for IN-VEHICLE TESTING, except for step Step 2.

REAR WINDOW DEFOGGER SYSTEM

Electrically heated rear window defogger operation can be checked in the vehicle in the following manner:

(1) Turn the ignition switch to the ON position.

DIAGNOSIS AND TESTING (Continued)

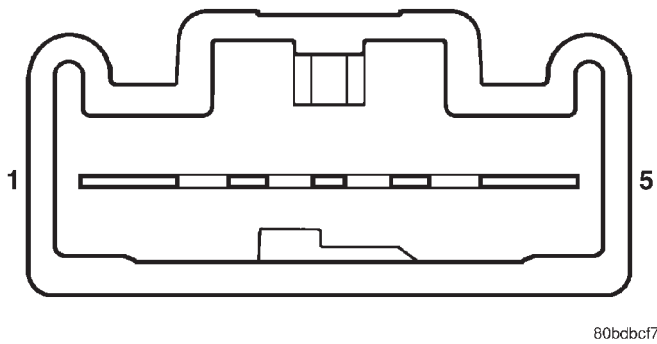


Fig. 4 Rear Window Defogger Switch Connector

(2) Connect an ammeter in series with the battery. Push the rear window defogger switch to the ON position (Fig. 2). A distinct increase in amperage draw should be noted.

(3) The rear window defogger operation can be checked by feeling the glass. A distinct difference in temperature between the grid lines and adjacent clear glass can be detected in three to four minutes of operation.

(4) Using a DC voltmeter, connect the negative lead to Point B, and the positive lead to Point A (Fig. 5). The voltmeter should read 10-14 volts.

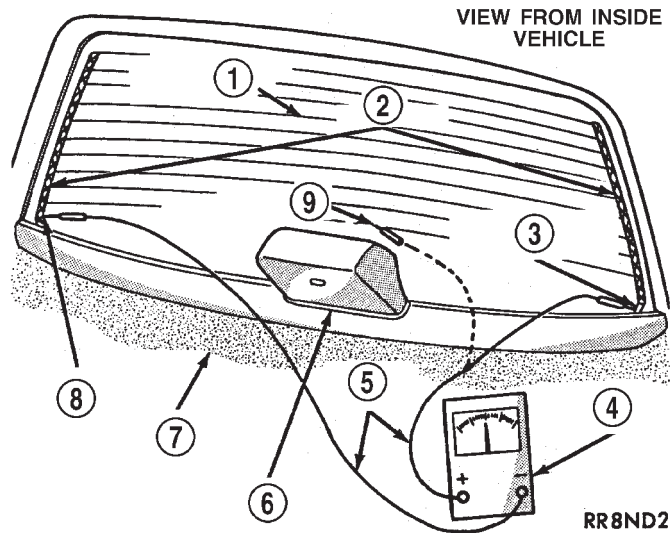


Fig. 5 Rear Glass Grid Line Test - Typical

- 1 - REAR WINDOW DEFOGGER
- 2 - BUS BARS
- 3 - VOLTAGE FEED "A"
- 4 - VOLTMETER
- 5 - PICK-UP LEADS
- 6 - C. H. M. S. L. TRIM COVER
- 7 - PARCEL SHELF
- 8 - GROUND "B"
- 9 - MID-POINT "C"

(5) Step 2, Step 3 or Step 4 above will confirm system operation. Indicator light illumination means that there is power available at the switch output, and does not necessarily verify system operation.

(6) If turning the switch ON produced no distinct current draw on the ammeter the problem should be isolated in the following manner:

- (a) Confirm the ignition switch is ON.
- (b) Ensure that the heated rear glass feed wire is connected to the terminal or pigtail and that the ground wire is in fact grounded.
- (c) Ensure that the cartridge fuse and control circuit fuse are OK and all electrical connections are secure.

(7) When the above steps have been completed and the system is still inoperative, one or more of the following is defective:

- (a) Rear Window Defogger Switch.
- (b) All rear window grid lines would have to be broken or one of the feed wires are not connected for the system to be inoperative.

(8) If turning the switch ON produces severe voltmeter deflection, the circuit should be closely checked for a shorting condition.

(9) If the system operation has been verified but indicator lamp does not light, replace the switch.

(10) For detailed wiring information, refer to group 8W-Wiring Diagrams.

SERVICE PROCEDURES

GRID LINE AND TERMINAL REPAIR

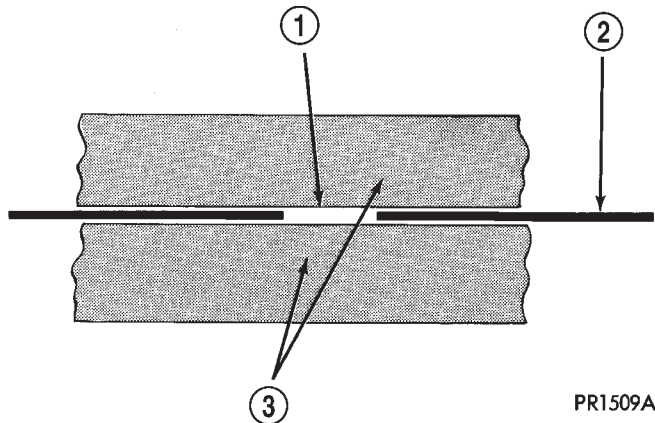
WARNING: REPAIR KIT MAY CAUSE SKIN OR EYE IRRITATION. CONTAINS EPOXY RESIN AND AMINE TYPE HARDENER, HARMFUL IF SWALLOWED. AVOID CONTACT WITH SKIN AND EYES. FOR SKIN, WASH AFFECTED AREAS WITH SOAP AND WATER. DO NOT TAKE INTERNALLY. IF TAKEN INTERNALLY, INDUCE VOMITING; CALL A PHYSICIAN IMMEDIATELY. IF IN CONTACT WITH EYES, FLUSH WITH PLENTY OF WATER. USE WITH ADEQUATE VENTILATION. DO NOT USE NEAR FIRE OR FLAME. CONTENTS CONTAIN 3 PERCENT FLAMMABLE SOLVENTS.

KEEP OUT OF REACH OF CHILDREN.

The repair of the grid lines or the terminal is possible using the Mopar® Repair Package or equivalent.

SERVICE PROCEDURES (Continued)

(1) Mask repair area so conductive epoxy can be extended onto the line or the bus bar (Fig. 6).



PR1509A

Fig. 6 Grid Line Repair

- 1 - BREAK
2 - GRID LINE
3 - MASKING TAPE

(2) Follow instructions in repair kit for preparing damaged area.

(3) Remove package separator clamp and mix plastic conductive epoxy thoroughly. Fold in half and cut center corner to dispense epoxy.

(4) For grid line, mark off area to be repaired with masking tape or a template (Fig. 6).

(5) Apply conductive epoxy through slit in masking tape. Overlap both ends of the break by 19 mm (3/4 inch).

(6) For a terminal or pigtail replacement, mask adjacent areas so epoxy can be extended onto line as well as bus bar. Apply a thin layer of epoxy to area where terminal was fastened and to adjacent line.

(7) Apply a thin layer of conductive epoxy on terminal and place terminal on desired location. To prevent terminal from moving while the epoxy is curing, it must be wedged or clamped.

(8) Carefully remove masking tape from grid line.

CAUTION: Do not allow the glass surface to exceed 204°C (400°F), glass may fracture.

(9) Allow epoxy to cure 24 hours at room temperature or use heat gun with a 260° to 371°C (500° to 700°F) range for 15 minutes. Hold gun approximately 254 mm (10 inches) from repaired area.

(10) After conductive epoxy is properly cured remove wedge from terminal and check out operation of rear window defogger. Do not attach connectors until curing is complete.

REMOVAL AND INSTALLATION

REAR WINDOW DEFOGGER SWITCH

Refer to Group 8E-Instrument Panel and Systems, Auxiliary Switch Bezel Removal and Installation for rear defogger switch service procedures.