ELECTRICALLY HEATED SYSTEMS

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DESCRIPTION AND OPERATION

INTRODUCTION

The electrically heated Rear Window Defogger (Fig. 1), Heated Power Side View Mirrors, and Heated Windshield Wiper De-icer (Fig. 2) is available on NS vehicles.

The Rear Window Defogger system consists of two vertical bus bars linked by a series of grid lines on the inside surface of the rear window. The electrical circuit consists of the rear defogger switch in the HVAC and a relay with timer switch to turn OFF the system after ten minutes. The main feed circuit is protected by fuse one (40 amp) in the Junction Block. The rear defogger switch and relay also activates the heated power side view mirrors and heated windshield wiper de-icer. The HVAC rear defogger switch is protected by fuse ten (10 amp) in the Junction Block. The heated mirror circuit is protected by fuse 12 (10 amp) in the junction block. The heated windshield wiper de-icer circuit is protected by fuse 21 (25 amp) in the Junction Block.

The Heated Windshield Wiper Deicer is also activated when the DEFROST mode is selected on the HVAC. In the DEFROST mode the rear defogger relay/timer is bypassed, the heated windshield wiper de-icer will stay ON until the another mode is selected. For circuit information and component location refer to Group 8W, Wiring Diagrams.

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

HVAC MOUNTED SWITCH

The rear window defogger switch is integrated into the HVAC (Fig. 3). An LED indicator will illuminate when the switch is activated. The switch energizes the timing circuit and activates the rear window defogger relay. The relay controls the current to flow to the grids of the rear window defogger, heated power side view mirrors and the heated windshield wiper de-icer. The defogger relay will be on for approximately 10 minutes or until the control switch or ignition is turned off.

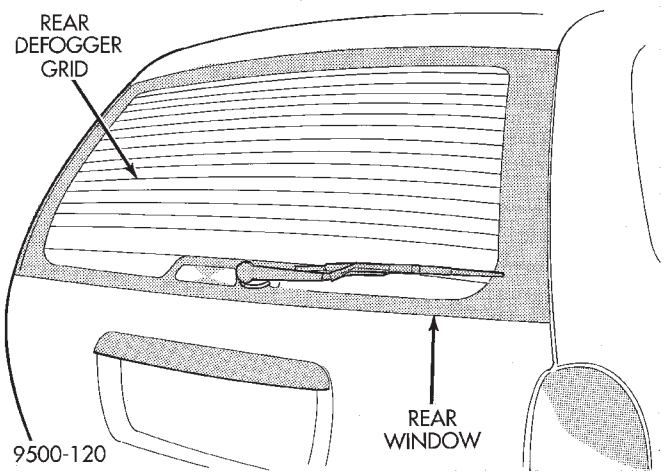

Fig. 1 Rear Window Defogger

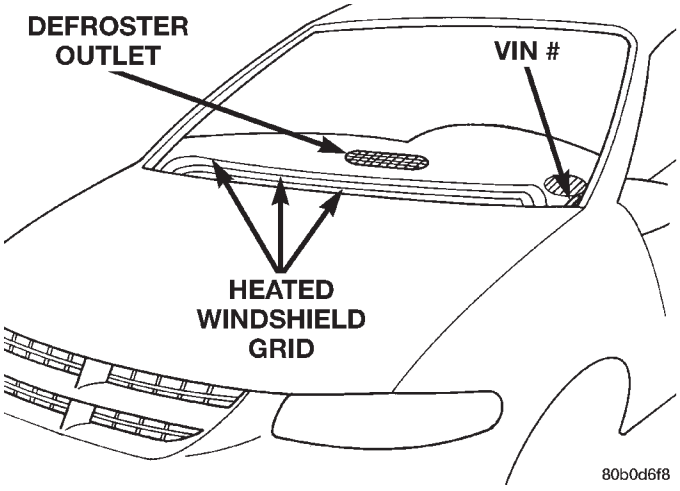

Fig. 2 Heated Windshield Wiper De-icer

DIAGNOSIS AND TESTING (Continued)

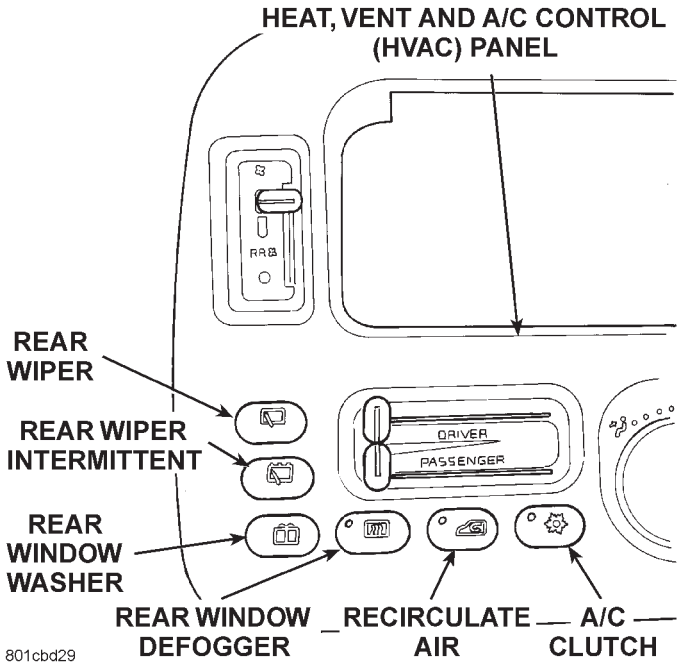

Fig. 3 HVAC Rear Window Defogger Switch

DIAGNOSIS AND TESTING

SYSTEM TEST

Electrically heated rear window defogger or the heated windshield wiper deicer operation can be checked on the vehicle in the following manner:

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

(2) Using a ammeter on the battery, turn the rear defogger control switch to the ON position, a distinct increase in amperage draw should be noted.

(3) The rear window defogger or the heated windshield wiper deicer 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 3 to 4 minutes of operation.

(4) Using a DC voltmeter (Fig. 4) contact terminal B with the negative lead, and terminal A with the positive lead. The voltmeter should read 10-14 volts.

(5) Indicator light illumination means that there is power available at the switch only and does not necessarily verify system operation.

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

- Confirm that ignition switch is ON.
- Ensure that the heated rear window or the heated windshield wiper deicer feed pigtail is connected to the wiring harness and that the ground pigtail is in fact grounded.
- Ensure that the proper fuse in the Junction Block is OK.

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

- HVAC switch
- Rear window defogger relay in the relay bank.
- Check for loose connector or a wire pushed out of connector.
- Rear window or the windshield grid lines (all grid lines would have to be broken, or one of the feed pigtails not connected to the bus bar, for no ammeter deflection).

(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 LED does not light, replace switch.

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

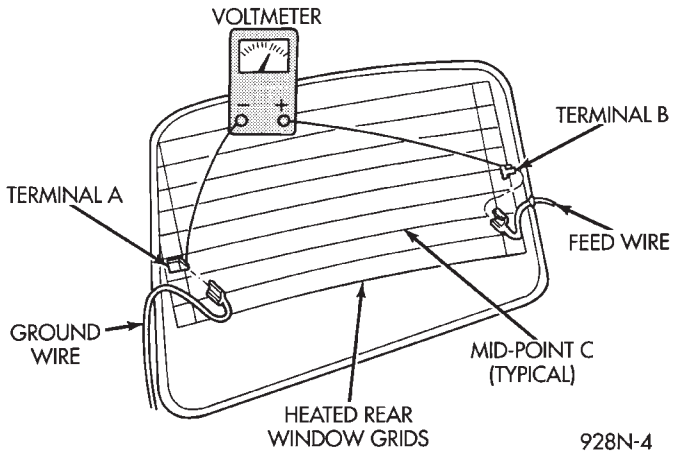

Fig. 4 Grid Line Test

GRID LINE TEST

The horizontal grid lines and vertical bus bar lines printed and baked on inside surface of the window glass makes up an electrical parallel circuit. The electrically conductive lines are composed of a silver ceramic material which when baked on glass becomes bonded to the glass and is highly resistant to abrasion. It is possible, however, that a break may exist or 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 and rear window defogger control switch ON. The indicator light should come on.

(2) Using a DC voltmeter with 0-15 volt range, contact vertical bus bar connecting grid lines on passenger side of vehicle at terminal A with negative lead of voltmeter (Fig. 4). With positive lead of voltmeter, contact vertical bus bar on driver side of vehicle at terminal B. The voltmeter should read 10-14 volts.

DIAGNOSIS AND TESTING (Continued)

(3) With negative lead of voltmeter, contact a good body ground point. The voltage reading should not change. A different reading indicates a poor ground connection.

(4) Connect negative lead of voltmeter to terminal A on passenger side bus bar and touch each grid line at Mid-Point with positive lead. A reading of approximately 6 volts indicates a line is good. A reading of 0 volts indicates a break in line between Mid-Point C and terminal B. A reading of 10-14 volts indicates a break between Mid-Point C and ground terminal A. Move toward break and voltage will change as soon as break is crossed.

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 CONTAINS 3% FLAMMABLE SOLVENTS. KEEP OUT OF REACH OF CHILDREN.

The repair for the front windshield or the rear window grids are the same.

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

(1) Clean area surrounding grid line or terminal by gently rubbing area with steel wool.

(2) Wipe area with clean cloth soaked in alcohol or similar solvent. It is necessary that all contaminants be removed from repair area.

(3) Remove package separator clamp and mix plastic conductive epoxy thoroughly.

(4) For grid line, mark off area to be repaired with masking tape (Fig. 5).

(5) Apply conductive epoxy through slit in masking tape. Overlap both ends of the break.

(6) For a terminal replacement, apply a thin layer of epoxy to area where terminal was fastened.

(7) Apply a thin layer of epoxy on terminal and place terminal on desired location. To prevent terminal from falling off use a wooden wedge to secure it.

(8) Carefully remove masking tape from grid line.

CAUTION: Do not allow the laminated windshield glass surface to exceed 82° C (180° F) or the glass may fracture. The rear window glass surface should not exceed 204° C (400° F).

(9) Allow epoxy to cure 24 hours at room temperature.

(10) After epoxy is properly cured remove wedge from terminal and check the operation of the rear window defogger.

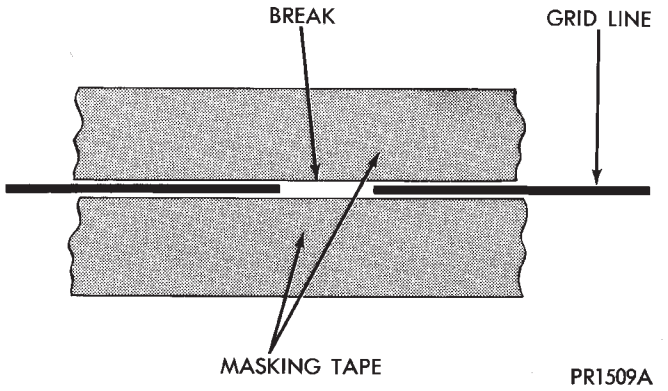

Fig. 5 Grid Line Repair