

2007 ACCESSORIES AND EQUIPMENT

Heated Glass - Service Information - Nitro

HEATED GLASS - SERVICE INFORMATION

DESCRIPTION

REAR WINDOW DEFOGGER (EBL) SYSTEM

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.

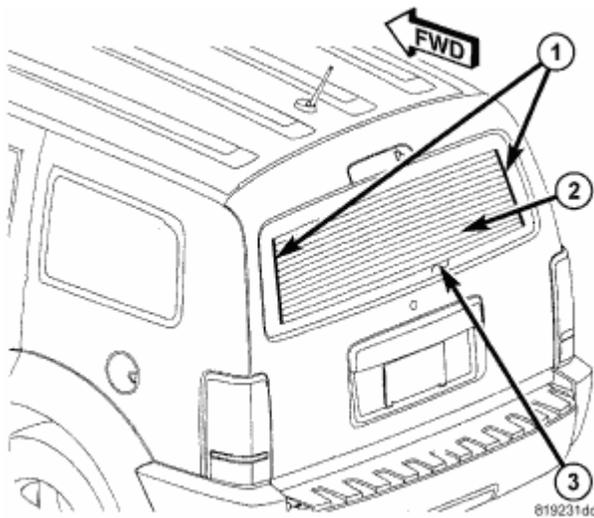


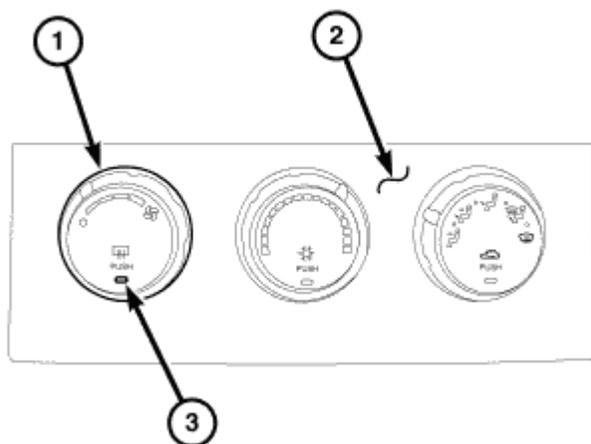
Fig. 1: Identifying Vertical Bus Bars, Grid Lines & Rear Window
Courtesy of CHRYSLER LLC

The rear window defogger system, also known as electric backlight (EBL), consists of two vertical bus bars (1) and a series of grid lines (2) fired onto the inside surface of the rear window (3).

The EBL system is turned on or off by a push-button switch located in the A/C-heater control. Refer to **DESCRIPTION** .

OPERATION

REAR WINDOW DEFOGGER (EBL) SYSTEM



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Fig. 2: Identifying Push-Button Switch & A/C-Heater Control

Courtesy of CHRYSLER LLC

The electric backlight (EBL) system is controlled by a momentary push-button switch (1) located on the A/C-heater control (2) in the instrument panel center bezel. When the rear window defogger switch is pressed to the On position with the ignition switch in RUN, the switch sends a request signal over the CAN-IHS bus to the totally integrated power module (TIPM), which provides a ground path to energize the coil in the EBL relay. When energized, the EBL relay provides battery current through a fuse to the rear window defogger grid lines and to the heated side view mirrors, when equipped. The grid lines heat the glass to help clear the rear window and side mirror surfaces of fog or frost.

An amber indicator (3) in the A/C-heater control will illuminate to indicate when the EBL system is operating.

NOTE: **The EBL system turns off automatically after 10 minutes of initial operation. Each following activation cycle of the EBL system will last 5 minutes.**

The EBL system will be automatically turned off after an initial programmed time interval of about 10 minutes as long as the ignition switch is in RUN. After the initial time interval has expired, if the rear window defogger switch is pressed to the On position again during the same ignition cycle, the EBL system will automatically turn off after about 5 minutes. The EBL system will also turn off if the ignition switch is turned to any position other than RUN or by manually pressing the rear window defogger switch a second time.

Repair of the rear window defogger grid lines, bus bars, terminals or pigtail wires can be accomplished using the Mopar® Rear Window Defogger Repair Kit (Part Number 04549275) or equivalent. See **STANDARD PROCEDURE**.

Circuit protection for the EBL system is provided by fuse 13 located in the TIPM.

DIAGNOSIS AND TESTING

REAR WINDOW DEFOGGER (EBL) SYSTEM

NOTE: Illumination of the defogger switch indicator lamp does not necessarily mean that electrical current is reaching the rear window glass and/or the outside rear view mirror heating grids (when equipped).

NOTE: For circuit descriptions and diagrams of the rear window defogger (EBL) and heated mirror systems, refer to SYSTEM WIRING DIAGRAMS .

Operation of the electric backlight (EBL) system can be confirmed by the following:

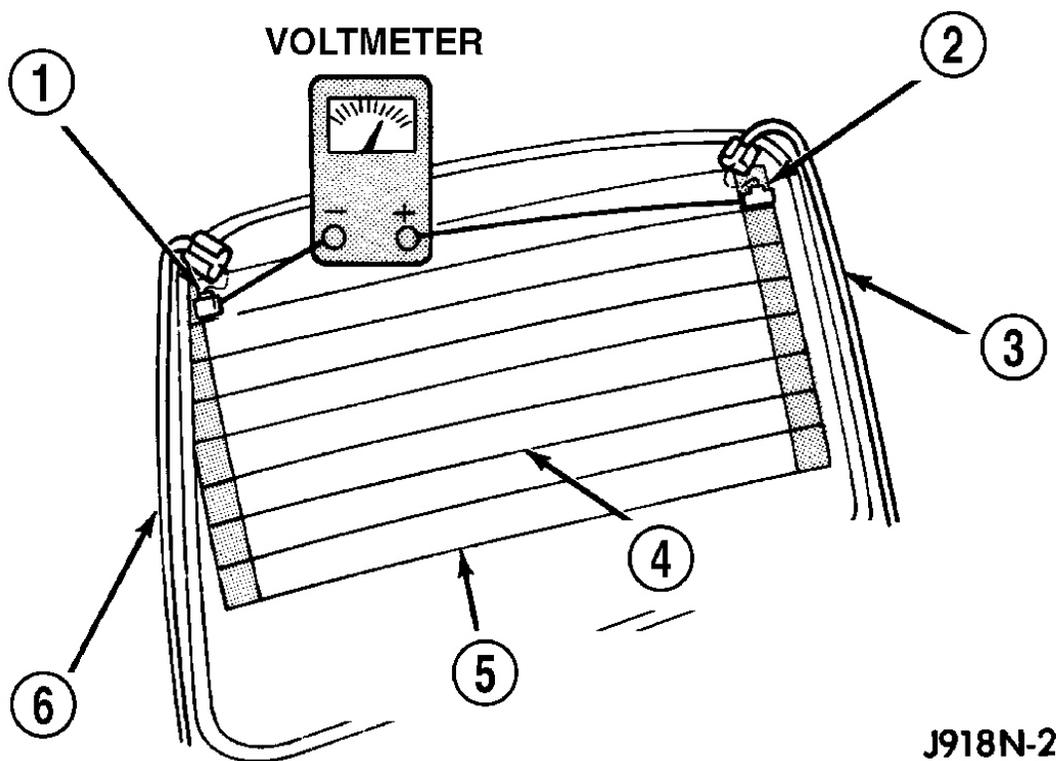


Fig. 3: Rear Window Glass Defogger Grid Test
Courtesy of CHRYSLER LLC

NOTE: Typical heated rear window glass shown.

1. Use a scan tool and check for diagnostic trouble codes (DTCs) related to the A/C-heater control and the totally integrated power module (TIPM). If no DTCs are found, go to step 2. If any DTCs are found, repair as required, then proceed to step 2.
2. Turn the ignition switch to RUN. Press the rear window defogger switch to the On position. Rear window defogger operation can be checked by feeling the surfaces of the rear window glass, or the heated outside rear view mirror glass when equipped with heated mirrors. A distinct difference in temperature between

the grid lines (5) and the adjacent clear glass or the heated mirror glass should be detected within three to four minutes of operation.

3. If a temperature difference is not detected, use a 12-volt DC voltmeter and contact the rear glass heating grid terminal A (1) with the negative lead, and terminal B (2) with the positive lead. The voltmeter should read battery voltage. If the voltmeter does not read battery voltage, check the following:

Confirm the ignition switch is in RUN.

Confirm the rear window defogger switch is pressed to the On position.

Confirm the EBL feed wire (3) is connected to the heating grid positive terminal and that there is continuity between the EBL relay terminal and the heating grid.

Confirm the EBL ground wire (6) is connected to the heating grid negative terminal and that there is continuity to ground.

Check fuse 13 and fuse 34 located in the TIPM. The fuses must be tight in the receptacles and the electrical connections must be secure.

Check the EBL relay located in the TIPM. The relay must be tight in the receptacle and the electrical connections must be secure.

When diagnosing a heater mirror concern, check fuse 54 located in the TIPM. The fuse must be tight in the receptacle and the electrical connections must be secure.

4. If broken defogger grid lines or bus bars are suspected, use a 12-volt DC voltmeter and contact terminal A with the negative lead and each rear glass heating grid line at its mid-point C (4) with the positive lead. The voltmeter should read approximately 6 volts at each grid line mid-point. If the voltmeter does not read approximately 6 volts, repair the open grid line(s) or bus bar(s). See **STANDARD PROCEDURE**.
5. If the EBL system operation has been verified but the rear window defogger indicator does not illuminate, replace the A/C-heater control. Refer to **REMOVAL**.

GRID-REAR WINDOW DEFOGGER

STANDARD PROCEDURE

GRID LINE AND TERMINAL REPAIR

WARNING: Materials contained in the Repair Kit (Part Number 04549275) may cause skin or eye irritation. The kit contains epoxy resin and amine type hardener, which are harmful if swallowed. Avoid contact with the skin and eyes. For skin contact, wash the affected areas with soap and water. For contact with the eyes, flush with plenty of water. Do not take internally. If taken internally, induce vomiting and call a physician immediately. Use with adequate ventilation. Do not use near fire or flame. Contains flammable solvents. Keep out of the reach of children. Failure to follow the warnings may result in serious or fatal injury.

Repair of the rear glass heating grid lines, bus bars, terminals or pigtail wires can be accomplished using the Mopar® Rear Window Defogger Repair Kit (Part Number 04549275) or equivalent.

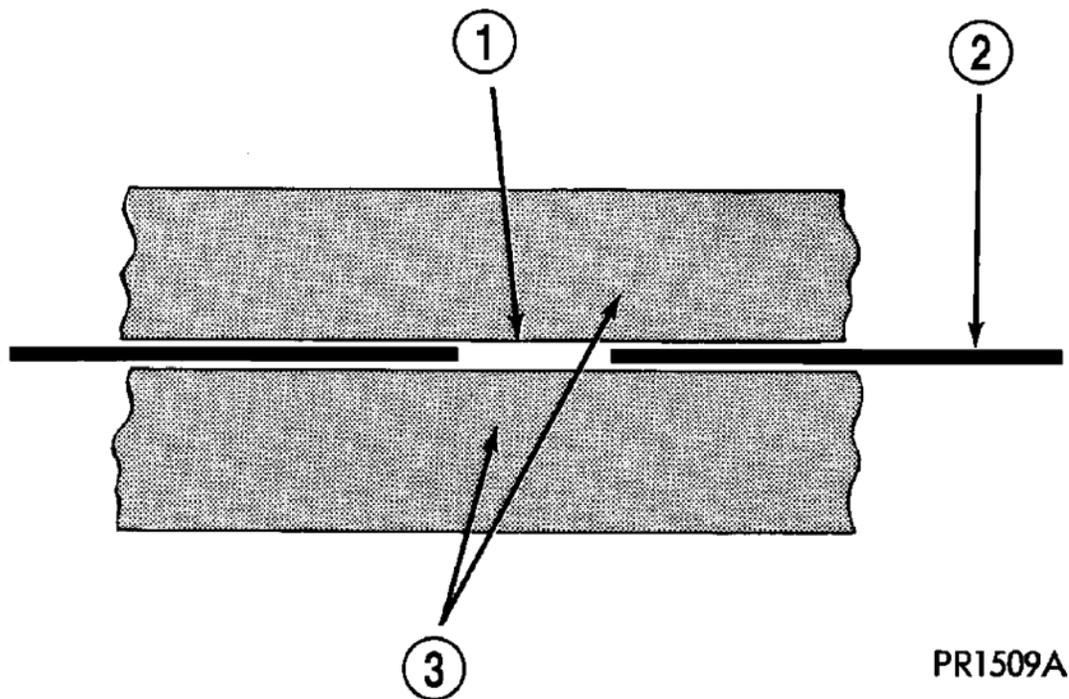


Fig. 4: Grid Line Repair - Typical
 Courtesy of CHRYSLER LLC

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

1. Mask the repair area with masking tape (3) so that the conductive epoxy can be applied neatly. Extend the epoxy application onto the grid line (2) or the bus bar on each side of the break (1).
2. Follow the instructions in the repair kit for preparing the damaged area.
3. Remove the package separator clamp and mix the two conductive epoxy components thoroughly within the packaging. Fold the package in half and cut the center corner to dispense the epoxy.
4. Apply the epoxy through the slit in the masking tape or template. Overlap both ends of the break by at least 19 millimeters (0.75 inch).
5. For a terminal or pigtail wire replacement, mask the adjacent areas so the epoxy can be extended onto the adjacent grid line as well as the bus bar. Apply a thin layer of epoxy to the area where the terminal or pigtail wire was fastened and onto the adjacent grid line.
6. Apply a thin layer of conductive epoxy to the terminal or bare wire end of the pigtail and place it in the proper location on the bus bar. To prevent the terminal or pigtail wire from moving while the epoxy is curing, it must be wedged or clamped.
7. Carefully remove the masking tape or template.

CAUTION: Do not allow the glass surface to exceed 204°C (400°F) when using a

heat gun, or the glass may fracture.

8. Allow the epoxy to cure 24 hours at room temperature, or carefully use a heat gun for 15 minutes. When using a heat gun, hold it approximately 25.4 centimeters (10 inches) from the repair and do not allow the glass surface to exceed 204°C (400°F).
9. After the conductive epoxy is properly cured, remove the wedge or clamp from the terminal or pigtail wire.
10. Connect the wire harness leads to the grid terminals or pigtail wires and verify EBL operation.

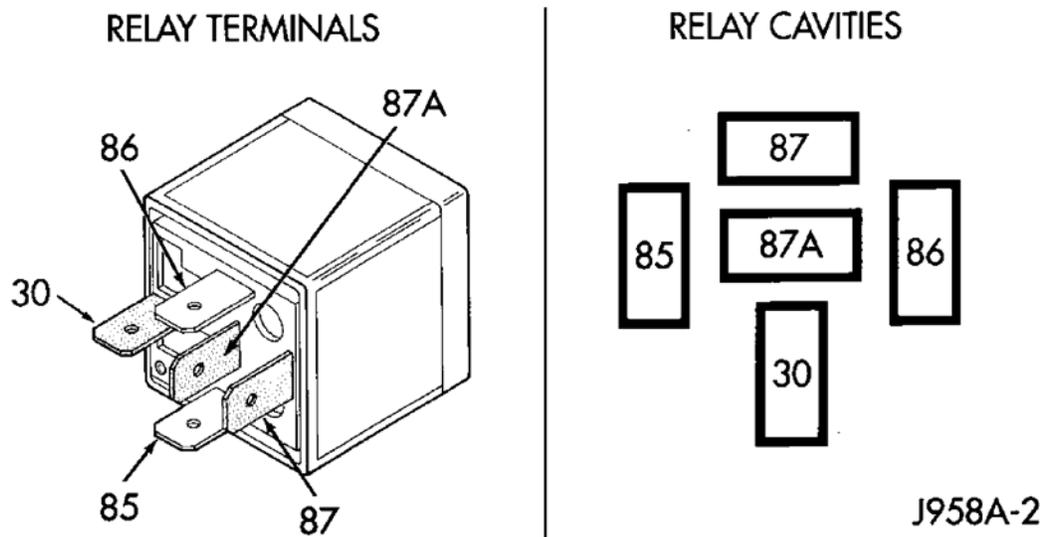
RELAY-REAR WINDOW DEFOGGER**DESCRIPTION****RELAY-REAR WINDOW DEFOGGER**

Fig. 5: Rear Window Defogger Relay
 Courtesy of CHRYSLER LLC

The rear window defogger (EBL) relay (1) is an International Standards Organization (ISO)-type relay. Relays conforming to the ISO specifications have common physical dimensions, current capacities, terminal functions and patterns (2). The EBL relay is an electromechanical device that switches fused battery current to the rear window defogger grid and to the outside rear view mirror heating grids, when equipped. The EBL relay is energized when the relay coil is provided a ground path by the control circuitry within the totally integrated power module (TIPM).

The EBL relay is located in the TIPM inside the engine compartment.

OPERATION

RELAY-REAR WINDOW DEFOGGER

The rear window defogger (EBL) relay is an electromechanical switch that uses a low current input controlled by the totally integrated power module (TIPM) to control the high current output to the rear window defogger grid lines and to the heated outside mirrors, when equipped. The movable, common feed relay contact is held against the fixed, normally closed relay contact by spring pressure. When the electromagnetic relay coil is energized, it draws the movable common feed relay contact away from the fixed, normally closed relay contact and, holds it against the fixed, normally open relay contact. This action allows high current to flow to the rear window defogger grid lines.

When the relay coil is de-energized, spring pressure returns the movable relay contact back against the fixed, normally closed contact point. The resistor or diode is connected in parallel with the relay coil, and helps to dissipate voltage spikes and electromagnetic interference that can be generated as the electromagnetic field of the relay coil collapses.

The EBL relay terminals are connected to the vehicle electrical system through a receptacle in the TIPM located in the engine compartment. The inputs and outputs of the EBL relay include:

Terminal (30) receives battery current at all times.

Terminal (85) receives a ground through the EBL control circuit of the TIPM only when the module electronically pulls the circuit to ground.

Terminal (86) receives battery current at all times.

Terminal (87) provides battery current to the rear window defogger grid and to the heated outside mirrors, only when the EBL relay coil is energized.

Terminal (87A) is not connected to any circuit in this application, but provides a battery current output only when the EBL relay coil is de-energized.

The EBL relay cannot be repaired and must be replaced if inoperative or damaged. Refer to the appropriate wiring information for diagnosis and testing of the ISO relay and for complete rear window defogger (EBL) wiring diagrams.

REMOVAL**RELAY-REAR WINDOW DEFOGGER**

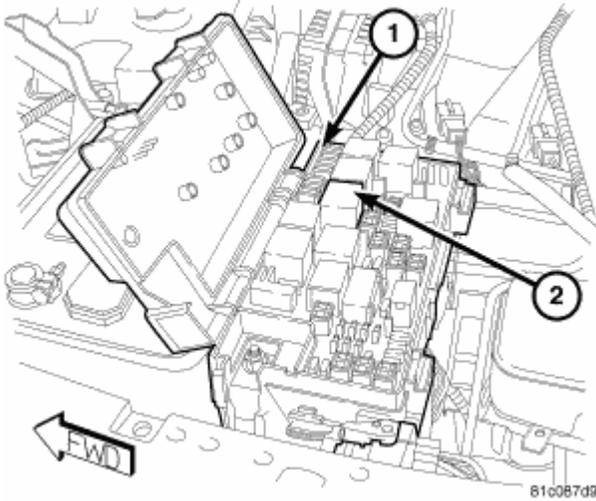


Fig. 6: Identifying Power Module (TIPM) & EBL Relay
Courtesy of CHRYSLER LLC

1. Disconnect and isolate the negative battery cable.
2. Open the cover on the totally integrated power module (TIPM) (1) located in the engine compartment.

NOTE: Refer to the fuse and relay map on the inside of the TIPM cover for EBL relay location.

3. Remove the EBL relay (2) from the TIPM.

INSTALLATION

RELAY-REAR WINDOW DEFOGGER

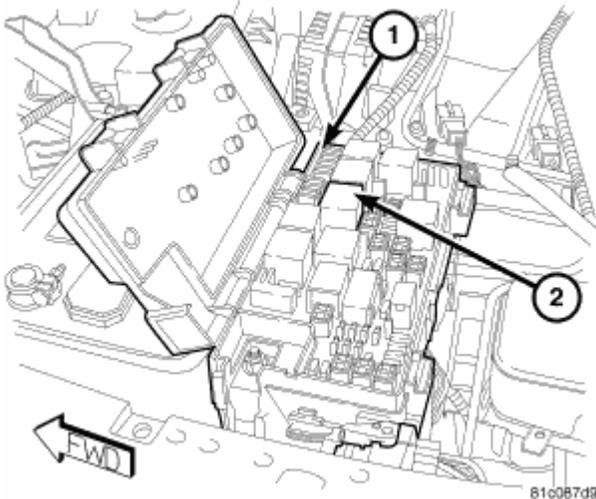


Fig. 7: Identifying Power Module (TIPM) & EBL Relay
Courtesy of CHRYSLER LLC

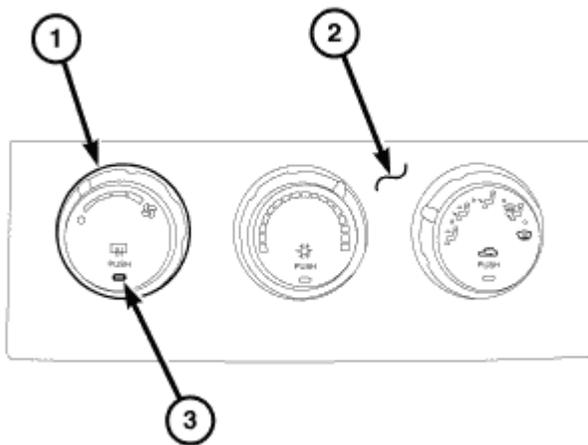
NOTE: Refer to the fuse and relay map on the inside of the totally integrated power module (TIPM) cover for EBL relay location.

1. Position the EBL relay (2) to the TIPM (1).
2. Align the EBL relay terminals with the terminal cavities in the TIPM receptacle and push down firmly on the relay until the terminals are fully seated.
3. Close the TIPM cover.
4. Reconnect the negative battery cable.

SWITCH-REAR WINDOW DEFOGGER

DESCRIPTION

SWITCH-REAR WINDOW DEFOGGER



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Fig. 8: Identifying Push-Button Switch & A/C-Heater Control
Courtesy of CHRYSLER LLC

The switch for the rear window defogger (EBL) system (1) is integral to the blower speed control located on the A/C-heater control (2) in the instrument panel. When the rear window defogger switch is pressed to the On position, a request signal is sent over the CAN-IHS bus to the totally integrated power module (TIPM) to operate the EBL system and the amber indicator (3) illuminates.

When the EBL relay is energized, current is directed to the rear defogger grid lines and to the heated side view mirrors, when equipped. The grid lines heat the glass to help clear the rear window and side mirror surfaces of fog or frost.

OPERATION

SWITCH-REAR WINDOW DEFOGGER

The amber indicator located in the blower speed control of the A/C-heater control will illuminate when the EBL

2007 Dodge Nitro R/T

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system is operating. When the rear window defogger switch is pressed to the On position with the ignition switch in RUN, the switch sends a request signal to the totally integrated power module (TIPM), which then provides a ground path to energize the coil in the EBL relay. When energized, the EBL relay provides fused battery current to the rear window defogger grid lines and to the heated side view mirrors, when equipped.

NOTE: The EBL system turns off automatically after 10 minutes of initial operation. Each following activation cycle of the EBL system will last 5 minutes.

The EBL system will be automatically turned off after an initial programmed time interval of about 10 minutes as long as the ignition switch is in RUN. After the initial time interval has expired, if the rear window defogger switch is pressed to the On position again during the same ignition cycle, the EBL system will automatically turn off after about 5 minutes. The EBL system will automatically shut off if the ignition switch is turned to any position other than RUN, or it can be turned off manually by pressing the rear window defogger switch a second time.

The rear window defogger switch is diagnosed using a scan tool (refer to **HEATING & AIR CONDITIONING - ELECTRICAL DIAGNOSTICS** for more information).

The rear window defogger switch and indicator cannot be adjusted or repaired and the A/C-heater control must be replaced if inoperative or damaged. Refer to **REMOVAL** .