



MG21

Hinged Glass

**Uniform
Procedures For
Collision Repair
UPCR**

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v.4.0



1. Description

This procedure describes replacement, inspection, and testing requirements for hinged glass. Methods for correcting air and water leaks are also included.



2. Purpose

The purpose of this procedure is to provide industry-accepted requirements for performing high-quality replacement of hinged glass. This procedure is intended for use by professionals who are qualified through training and experience.



3. Referenced Documents

The following documents are considered part of this procedure by reference.

3.1 Procedures

- HM01 Hazardous Materials
- PS01 Personnel Safety
- RF01P Surface Preparation
- RF01S Surface Preparation

3.2 Other Information

- Equipment-specific information
- National Auto Glass specifications
- Product-specific information
- Recycled parts information
- Vehicle-specific repair information

Note: The National Glass Association (NGA) acknowledges the role of both the vehicle and adhesive makers in the replacement of glass parts. At times, their published replacement procedures may conflict.

The NGA does not warrant published adhesive procedures by either the vehicle or adhesive maker, but acknowledges the validity of both in the replacement of vehicle glass. It is the responsibility of the business owner and installing technician to determine the applicability of published information to the installation and business environment.



4. Equipment And Material Requirements

4.1 Equipment

The use of this equipment is included in this procedure:

- finger rack
- portable glass stand
- vacuum or suction cups
- 6 mm ($\frac{1}{4}$ ") rivet gun
- rivet head removal tool
- press-pin removal pliers

4.2 Power Tools

The use of these power tools is included in this procedure:

- drill
- vacuum cleaner

4.3 Materials

The use of these materials is included in this procedure:

- glass cleaners
- clips and fasteners
- lubricants
- protective covers
- razor blades



5. Damage Analysis

5.1 Glass

Inspect the glass for these conditions:

- visible damage
- damaged defroster grid
- improper previous installation

Plan to adjust or replace the glass if any of these conditions are present.

(cont'd)



5. Damage Analysis (cont'd)

5.2 Mounting Area And Parts

Inspect the mounting area parts for these conditions:

- visible damage
- damaged or missing clips, fasteners, hinges, latches, etc.
- damaged or distorted weatherstrip
- signs of water leakage
- corrosion
- binding or improper alignment
- improper previous repairs

Determine if the mounting parts will be replaced or reused. Plan to replace any missing parts. Verify the availability of replacement parts.

5.3 Adjacent Areas

Inspect the operation and condition of adjacent areas, such as body panels, seats, garnish moldings, electrical wiring or switches, etc. Determine if the parts will be repaired, replaced, or reused. Verify the availability of replacement parts.



6. Personnel Safety

6.1 General Safety

General safety information is in **PS01**.

6.2 Glass Safety

To avoid injury when handling glass, follow these safety precautions:

- Wear the appropriate eye and hand protection.
- Inspect the edges for slivers and rough or sharp edges before handling.
- Never carry glass under your arm or over your head. Hold the glass with palms outward so that it can only fall away from you. Keep your pathway free of obstacles.
- When carrying glass with vacuum cups, stay on the side with the vacuum cups. Keep vacuum cups clean.



7. Environmental Safety

Hazardous material safety information is in **HM01**.



8. Vehicle Protection

8.1 Glass And Adjacent Surfaces

To protect the glass and adjacent surfaces when replacing hinged movable glass:

- Place protective coverings or tape around the work area, including trim, carpet, seats, exterior body parts, etc.
- Remove any jewelry or belt buckles which may cause damage to the vehicle.

8.2 Electronic Parts

To protect computers and other sensitive parts from damage:

- Make sure the ignition switch is in the LOCK position, and the key is removed. Open a window in the vehicle to prevent lockout.
- Protect modules, connectors, and wiring from dirt, heat, static electricity, and moisture.
- Loosen or remove any wiring harnesses or electrical parts that could be damaged during the repair process.



9. Replacement Procedure

Plan the replacement based upon fastener design, molding type, hardware and trim accessibility, etc.

9.1 Glass Replacement

To replace a hinged glass part:

- 1. Remove, loosen, or reposition any parts required to gain access to the glass, such as trim panels, garnish moldings, clothes hooks, seat belt D-rings, etc.
- 2. Remove all fasteners holding the glass, hinges, and latch.
- 3. Remove the glass.
- 4. Check for proper tint or shade before installing the glass.
- 5. Install the hinges on the replacement glass, as required. Duplicate the original mounting method and follow the vehicle maker's recommendations.
- 6. Install the latch on the replacement glass, as required. Duplicate the original mounting method and follow the vehicle maker's recommendations.
- 7. Install the glass, duplicating the original mounting method.
- 8. Reinstall any other parts previously removed, loosened, or repositioned.
- 9. Check the installation for water and air leaks. See **11.2** and **11.3**.
- 10. Continue vehicle reassembly.



10. Use Of Recycled (Salvage) Parts

10.1 Condition Of Salvage Parts

Do not install salvage mounting hardware or moldings having visible damage.

Do not install salvage glass parts having any of these conditions:

- visible damage
- optical distortion
- delamination
- improper tint or shade



11. Inspection And Testing

11.1 Appearance And Performance

Inspect replaced hinged glass for these conditions:

- improper seal
- optical distortion
- improper tint or shade
- improper alignment
- binding
- improper range of travel

Correct any defects.

11.2 Water-Leak Test

To test for water leaks:

- 1. Protect the vehicle interior.
- 2. Apply water at low pressure around the perimeter of the glass from the outside, starting at the bottom and working up.
- 3. Look for water leaks on the inside.

Correct any water leaks by adjusting the glass in the opening or replacing the weatherstrip and repeat the test.

11.3 Air-Leak Tests

To test for air leaks using compressed air:

- 1. Apply a mixture of liquid soap and water, or foam glass cleaner around the perimeter of the glass and gasket, from outside of the vehicle.
- 2. Use a NIOSH-approved air nozzle to apply compressed air around the perimeter of the glass and gasket from inside the vehicle.

Note: Bubbles appearing on the outside indicate leak areas.

To test for air leaks using internal pressure:

- 1. Close all windows.
- 2. Cover air exhausts or pressure-relief vents with masking tape.
- 3. Set the heater or air conditioner to the highest fan speed.
- 4. Start the engine to move any vacuum-operated air doors into position.
- 5. Turn the ignition to ACCESSORY to keep the blower running while the engine is shut off.
- 6. Close the doors and allow the pressure to build up.

(cont'd)



11. Inspection And Testing (cont'd)

- 7. Slowly feel around the perimeter of the glass and weatherstrip for air leaks outside the vehicle. A short length of hose or a stethoscope can be used to listen for leaks.
- 8. Mark any locations where air is escaping.
- 9. Uncover the relief vents.

To test for air leaks using an ultrasonic leak detector:

- 1. Place the signal transmitter inside the closed vehicle.
- 2. Use the detecting unit to probe around the perimeter of the glass or gasket on the outside of the vehicle.
- 3. Mark any locations where leaks are detected by the probe.

Correct any air leaks by adjusting the glass in the opening or by replacing the weatherstrip or hinges, and repeat the test.