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1993 JEEP Wrangler OEM Service and Repair Workshop Manual

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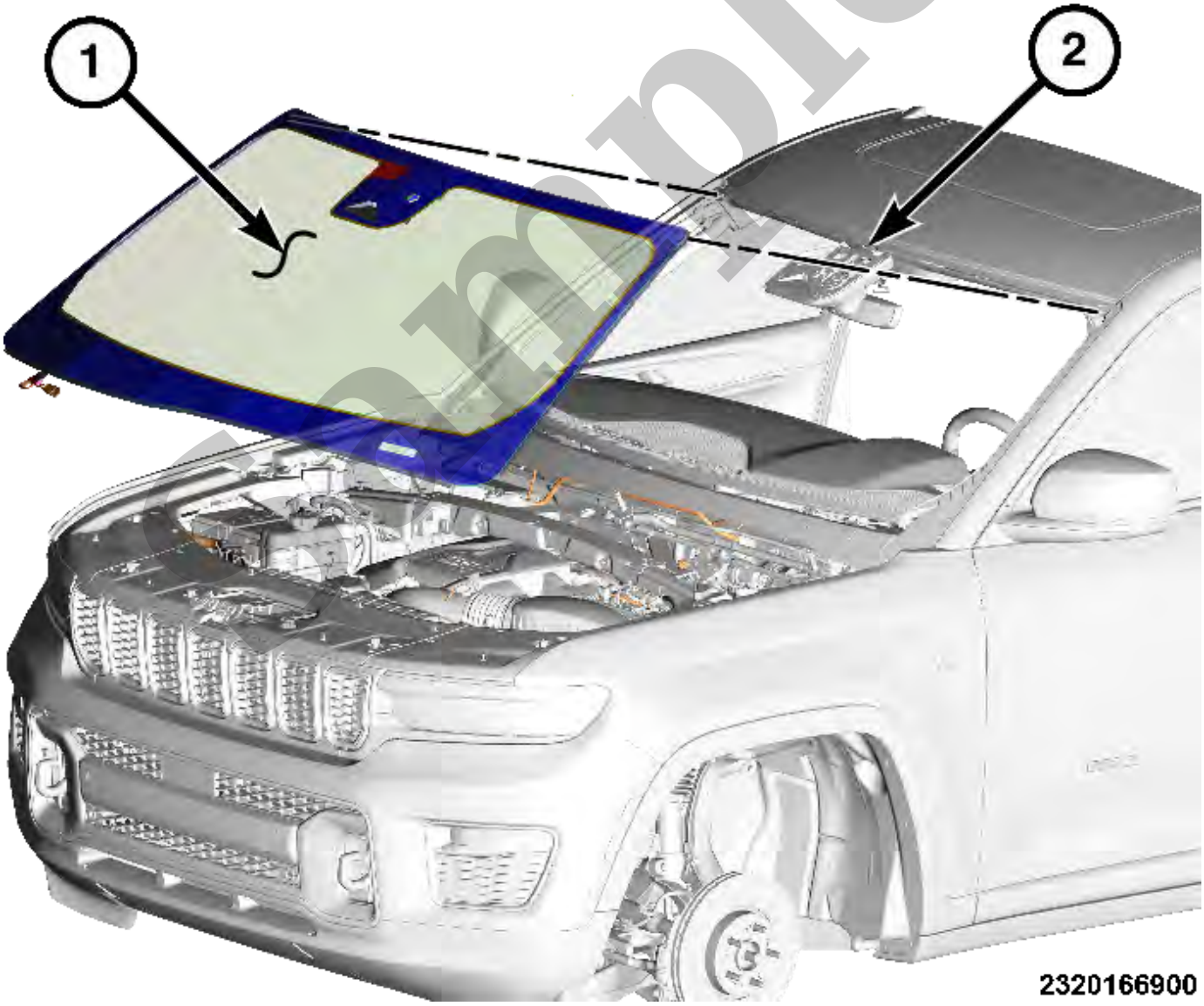
NOTE

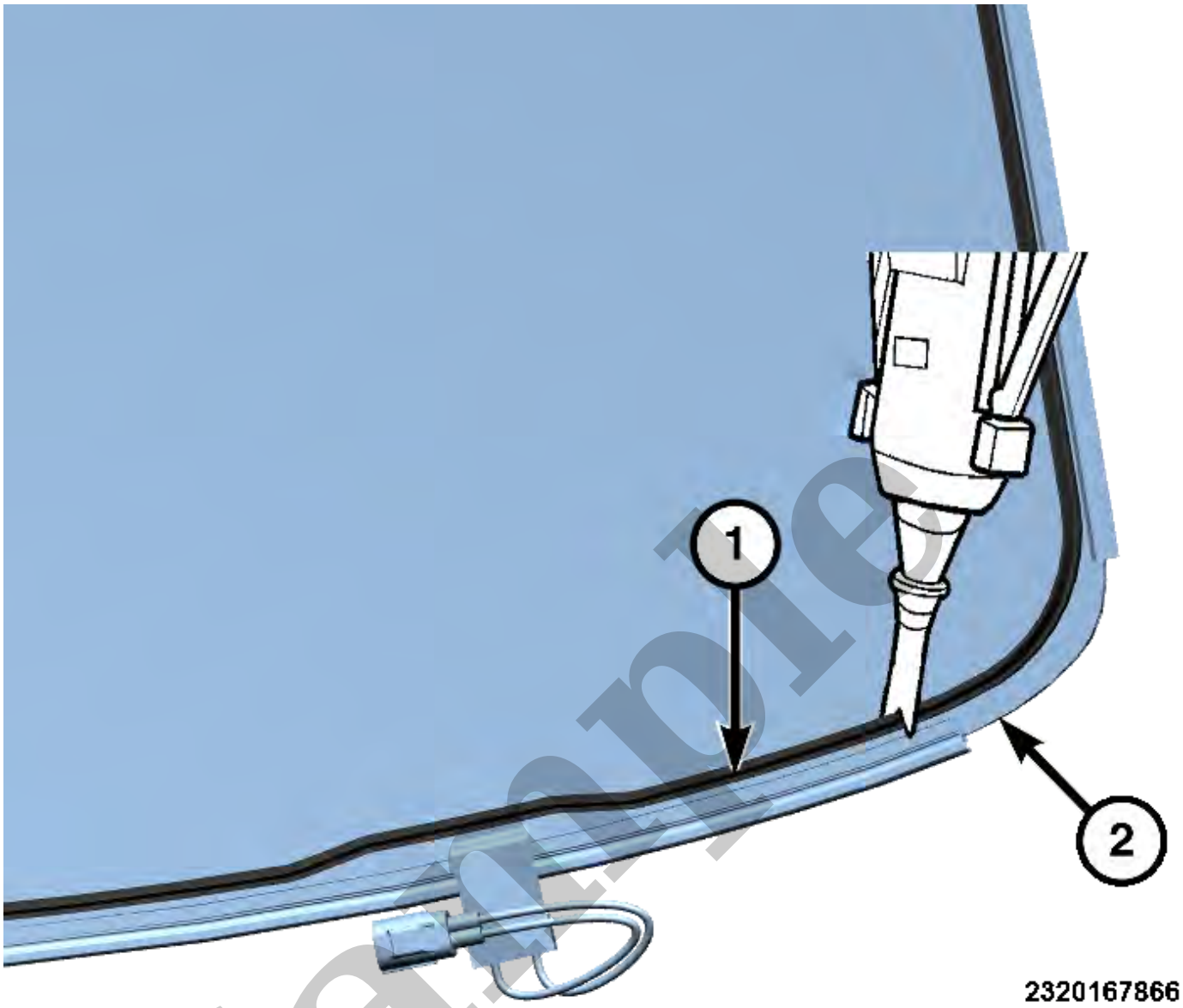
To prevent corrosion, do not damage the paint on the windshield fence when removing the original urethane.

NOTE

The windshield fence should be cleaned of most of its old urethane adhesive. A small amount of old urethane, approximately 1 mm in height should remain on the fence. Do not completely remove all old urethane from the fence, the paint finish and bonding strength will be adversely affected.

- Using a razor knife, level the original bead of urethane on the windshield fence to a thickness of approximately 1 mm (0.04 in.) and remove the loose adhesive.





1 - Urethane Adhesive
2 - Windshield

CAUTION

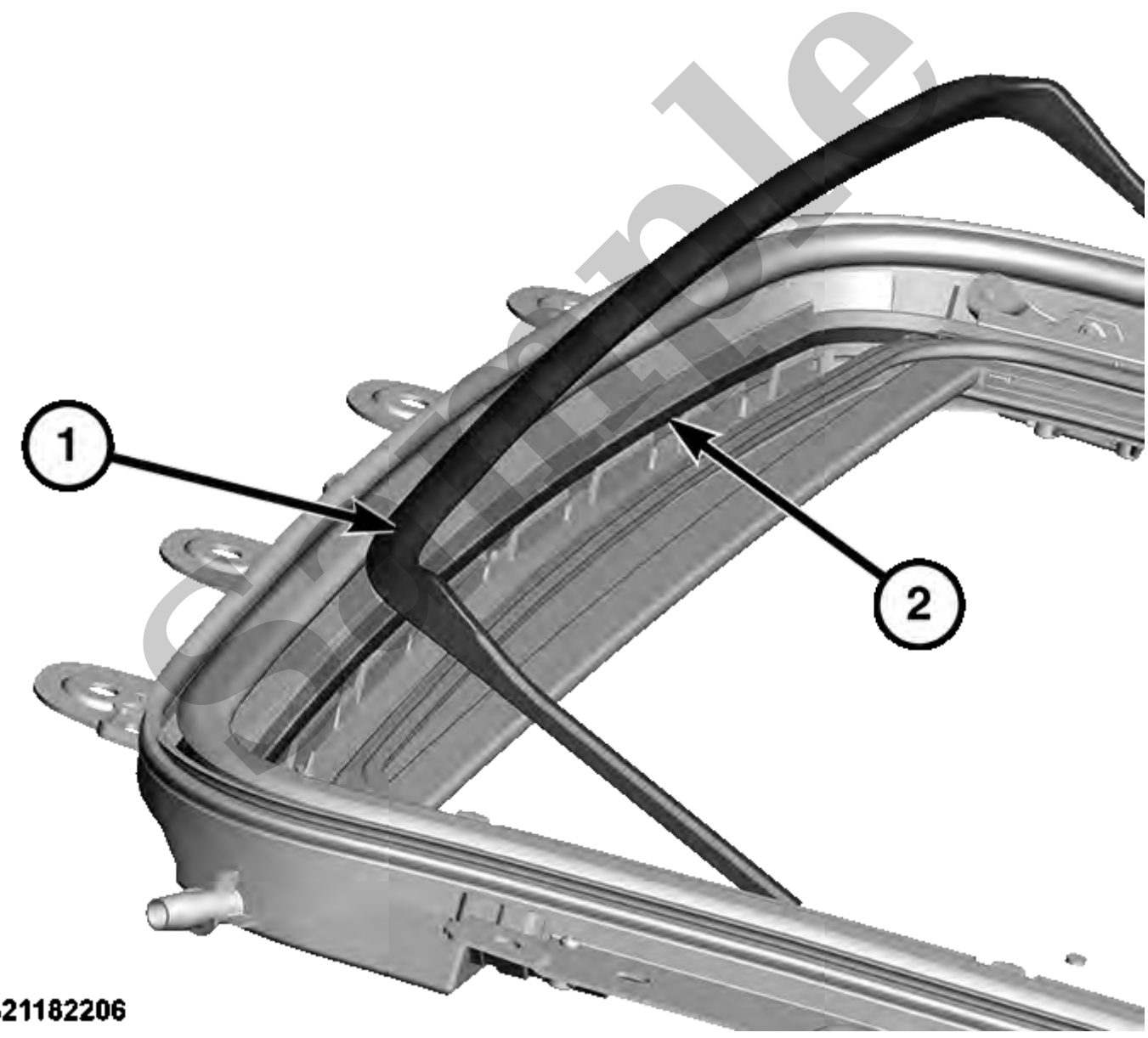
Always apply the bead of adhesive to the windshield. Always install the windshield within 5 minutes after applying the adhesive.

NOTE

If the original urethane adhesive has been exposed for more than 12 hours, the entire adhesive area

Wind Deflector

WIND DEFLECTOR



1 - Wind Deflector

There are two electric motors located on the rear of the dual pane sunroof assembly that operate the sliding glass panel and sunshade. For further information regarding the sunroof motor drive systems, refer to the Power Systems section of this service information for additional information on these components.

The dual pane sunroof glass panels interface with the body roof opening flange with rubber seals to prevent wind noise and minimize water intrusion when the sunroof is closed. The sunroof system features a water management system that collects any water that leaks passed the sunroof seals and drains it safely outside the vehicle through drain hoses connected at all four corners of the sunroof frame.

The sunroof system features a wind deflector that automatically deploys when the sunroof is in a slide open position to help minimize wind buffeting and wind noise. Wind buffeting is a pressure pulse that may be heard or felt when driving with sunroof open and side windows closed.

The main components of the dual pane sunroof system are:

- Fixed Rear Glass Panel
- Front Glass Panel
- Frame and Mechanism
- Motor Assemblies
- Power Sunshade
- Overhead Switches
- Wind Deflector
- Drain Hoses

OPERATION

The power sunroof system can only be operated when the vehicle ignition is set to ON/RUN, or Accessory Delay System is active. If the sunroof is in operation when the vehicle ignition is switched to START the sunroof will stop all motion. The sunroof switch will need to be pressed again to continue sunroof operation after the engine has started. If the sunroof is in operation when the vehicle ignition is switched to OFF all sunroof motion will stop immediately unless Accessory Delay System is active.

The sunroof has two modes of operation, Manual and Express:

- **Manual mode** is active when the sunroof switch is pressed and held for a time >0.8 seconds. When in manual mode the sunroof or sunshade operation will stop whenever the switch released.
- **Express mode** is active when the sunroof switch is pressed & released in a time <0.8 seconds. Express mode operation is a convenience feature that will automatically open or close the sunroof. Pressing any of the sunroof switches while express mode is active will immediately stop sunroof operation. The sunroof also provides an obstacle detection feature during express mode operation which automatically reverses the sunroof when it encounters an obstacle within the roof opening. Express mode operation for vent is not available when vent operation is initiated when the glass is in a slide open position.

NOTE

If the dual pane sunroof exterior seal is being replaced or reseated, Engineering is recommending to apply P-80 Grip-It lubricant (Mopar # 68425736AA) to ease installation force required to fully seat the seal.

2. **INSPECT FRONT DRAIN SPOUTS:** Open the sunroof glass panel. Looking down from the exterior of vehicle, visually inspect the front corners of the sunroof frame water management system for debris (small leaves, seeds, pine needles, and others) that may be blocking the entrance to the drain spouts and remove if necessary.

3. **TEST FRONT DRAIN TUBES:** Confirm that the front drain tubes are properly draining water. With the sunroof glass open, identify the water management channel in the sunroof frame directly below the body roof opening flange. Using a small bottle of water, carefully and slowly poor water in the channel near the front corner of the roof opening. Confirm if water is draining from the drain spout.
    - When the front drain tubes are functioning properly water will be seen accumulating on the ground under the front of the vehicle.
    - If water is standing/pooling in the sunroof water management system and not draining, the tube could be plugged with debris. Attempt to clear the hose by applying high pressure air in the entrance of the drain spout and retest. If water is still not draining the tube may be pinched, kinked or the plug condition cannot be cleared. In this case the sunroof drain tube will need to be repaired or replaced (Refer to Body/Sunroof/TUBE, Sunroof Drain/Removal).
    - If water is draining in the drain spout but no water is seen on the ground underneath the vehicle, the drain tube is likely disconnected from the sunroof frame spout or body exit grommet. Water may be seen leaking out of the interior trim or the interior floor may become wet. In this condition the headliner may need to be lowered to confirm drain tube connection to the sunroof or interior trim removed to confirm the exit grommet connection (Refer to Body/Sunroof/TUBE, Sunroof Drain/Removal).

4. **TEST REAR DRAIN TUBES:** If the front drain tubes are confirmed OK, the headliner should next be lowered (Refer to Body/Interior/HEADLINER/Removal) to test the rear drain tubes and inspect the sunroof frame joints for leaks. Testing to confirm if the rear drain tubes are functioning properly can be done using the method described for front tubes but the front of the vehicle must be driven up ramps during test to direct water flow to the rear of the vehicle. It is recommended to use small quantities of water when testing the rear drain tubes because it is not possible to visibly see if water is pooling up in the rear of water management system. If water is not seen on ground underneath the rear of vehicle, the interior trim should be removed for further inspection of the rear drain tube and replace if necessary (Refer to Body/Sunroof/TUBE, Sunroof Drain/Removal).

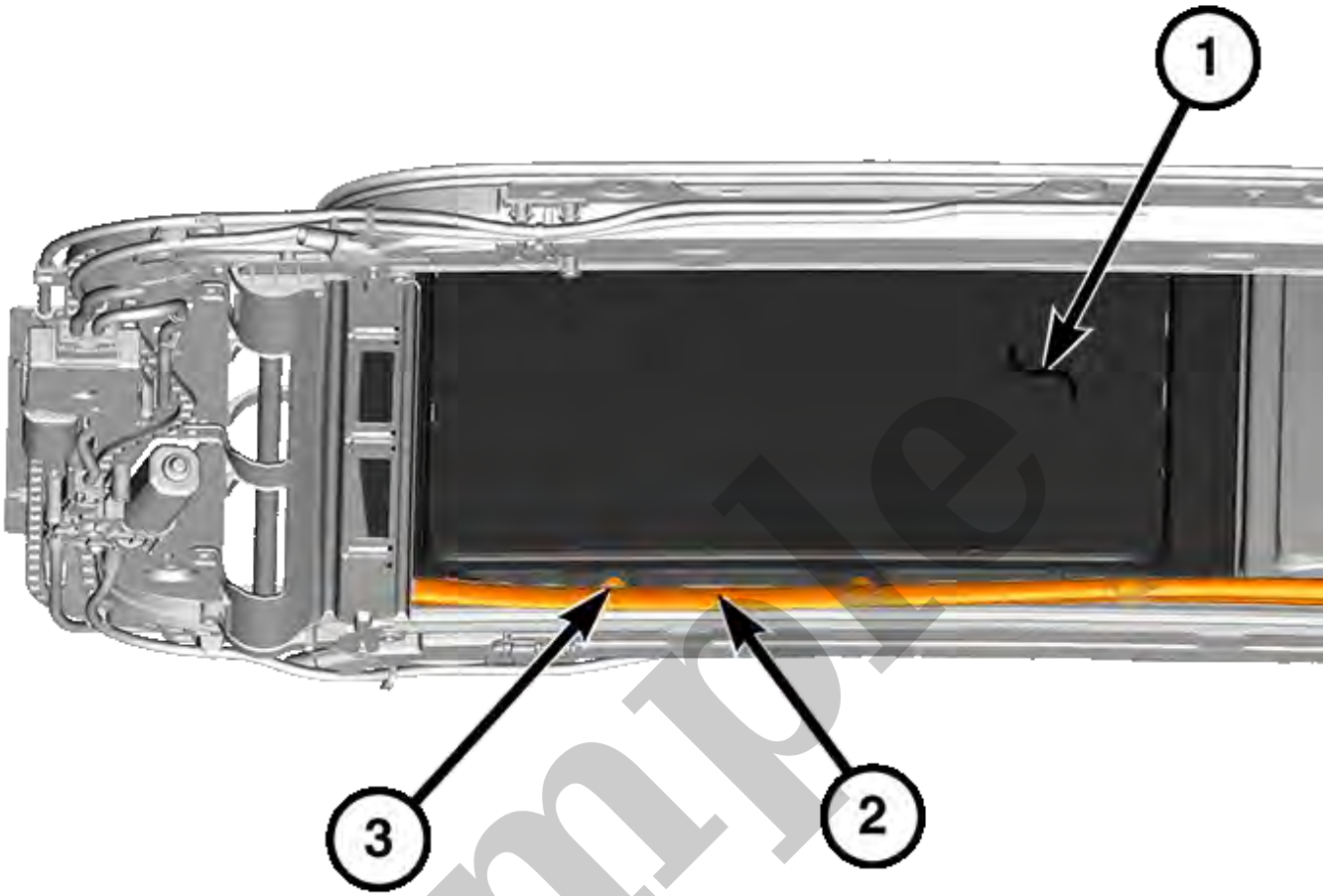
3. Verify the sunroof front glass is in the fully closed position.
4. Loosen the screws on each side of the rear glass enough to allow the adjustment of the glass gap and flushness.

> **NOTE**
>
> Before making adjustments, apply tape at 300 mm (11.8 inches) outboard from the center of vehicle. This is where flush measurements are taken.

5. Adjust the front edge of the rear glass gap to 1.2 mm (0.06 in.).
6. Starting at one of the FRONT corners of the REAR sunroof glass, stand outside of the vehicle (perform this step, one side at a time, while also supporting the front corner of the rear sunroof glass) and lift the glass corner until it is flush (+1.5 mm to -1.5 mm) to the seal. Loosely tighten the screw (finger tight), so the weight of the glass is supported. Repeat this process for the opposite FRONT corner of the REAR sunroof glass.
7. Moving to one of the REAR corners of the REAR sunroof glass, stand outside of the vehicle (perform this step, one side at a time, while also supporting the rear corner of the rear sunroof glass) and lift the glass corner until the seal along the rear is flush (+1.5 mm to -1.5 mm) to the roof. Loosely tighten the screw (finger tight), so the weight of the glass is supported. Repeat this process on the opposite REAR corner of the REAR sunroof glass.
8. After the proper sunroof glass position has been achieved, tighten the sunroof glass screws to the proper torque specification.
9. Check for proper fit. If not OK, repeat rear glass adjustment.
10. Follow the sunroof calibration procedure (Refer to 08 - Electrical/Power Top, Sunroof/Standard Procedure).
11. Verify the sunroof operation.

TORQUE SPECIFICATIONS - SUNROOF

DESCRIPTION	SPECIFICATION	COMMENT
Sunroof Bolts	**7 N·m (62 In. Lbs.)**	—
Sunroof Glass Screws	**4 N·m (35 In. Lbs.)**	—



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1 - Rear Glass Panel
2 - Sunroof Seal
3 - Rear Glass Panel Screws

3. Position the seal aside to gain access to the rear glass panel screws.
4. Remove the screws from each side of the rear glass, then remove the rear glass.

INSTALLATION

Follow the removal procedure in reverse for general reassembly of the components on the vehicle. The steps listed below are calling out specific procedures that should be followed during installation.

- Position the rear glass and install the screws. Tighten slightly to hold the glass into place until final adjustment in-vehicle, but loose enough to be repositioned while installing the sunroof assembly.

1 - Front Seal

2. Pull slowly to release the adhesive and remove and the front seal.

INSTALLATION

Follow the removal procedure in reverse for general reassembly of the components on the vehicle. The steps listed below are calling out specific procedures that should be followed during installation.

- The use of the **P80 lubricant** is recommended for seal installation.
- Recommended installation sequence is as follows: start by installing the seals bonded butt joint first at the rear center of the sunroof, then at the four corners, then all of the straights. This method helps manage the seal length so you don't have a bunch of excessive length when you are finishing an installation of the seal that you can't get seated.

1 - Drain Tubes
2 - Wire Harness Connector

2. Detach the front and rear drain tubes from the sunroof.

3. Disconnect the sunroof motor wire harness connector.

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1 - Sunroof Bolts

4. With the help of two assistants holding the sunroof, remove the sunroof bolts.

5. Place the sunroof on a workbench and inspect the roof seal for damage. If the seal is folded or any other type of damage is observed, replace the seal with a **NEW** service part.