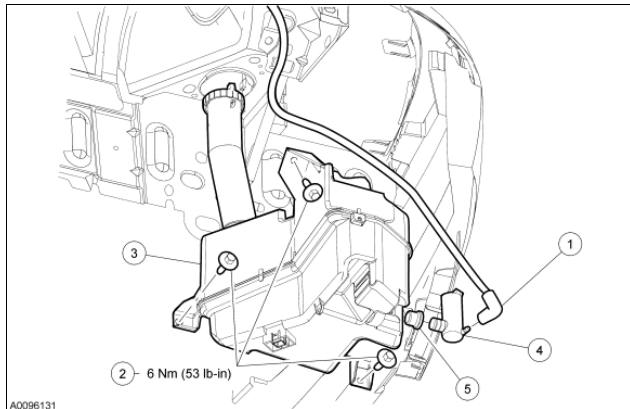


SECTION 501-16: Wipers and Washers  
REMOVAL AND INSTALLATION2006 Lincoln LS Workshop Manual  
Procedure revision date: 06/24/2005**Windshield Washer Pump and Reservoir**

Item	Part Number	Description
1	17A605	Windshield washer hose
2	W705641	Windshield washer reservoir screws (3 required)
3	17618	Windshield washer reservoir
4	17664	Windshield washer motor and pump assembly
5	17B610	Pump seal

**Removal and Installation**

1. **⚠ CAUTION:** Do not make electrical connections prior to filling the windshield washer reservoir. Do not operate the windshield washer pump prior to filling the windshield washer reservoir.

Disconnect the battery. For additional information, refer to [Section 414-01](#) .

2. Position the right-front splash shield aside. For additional information, refer to [Section 501-02](#) .
3. Disconnect the windshield washer hose and collect the windshield washer fluid in a container.
4. Remove the 3 screws and the windshield washer reservoir.
  - To install, tighten to 6 Nm (53 lb-in).
5. Disconnect the electrical connector and remove the washer motor and pump assembly.
6. To install, reverse the removal procedure.



SECTION 501-17: Roof Opening Panel  
SPECIFICATIONS2006 Lincoln LS Workshop Manual  
Procedure revision date: 06/24/2005

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**General Specifications**

Item	Specification
Roof opening panel glass flushness: front	-1.0 mm (-0.04 in)
Roof opening panel glass flushness: rear	1.0 mm (0.04 in)

**Torque Specifications**

Description	Nm	lb-in
Roof opening panel frame bolts	10	89
Roof opening panel glass screws	4	35
Roof opening panel motor screws	3	27

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**SECTION 501-17: Roof Opening Panel**  
**DESCRIPTION AND OPERATION**2006 Lincoln LS Workshop Manual  
Procedure revision date: 06/24/2005

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**Roof Opening Panel**

The roof opening panel is an electronically operated panel that is opened, closed or vented (tilted) by the roof opening panel switch. The switch has 2 detents for opening, 2 detents for closing and a center position for venting operations. Manual open and close are provided by the motor as long as the switch is held in the first detent. Express open or express close occurs if the switch is moved to the second detent, at which time it is released. Proportional tilt-up occurs when the vent/tilt switch is pressed while the roof opening panel is in the fully closed or tilt range. Proportional tilt-up stops when the vent/tilt switch is released. One-touch tilt occurs when the vent/tilt switch is pressed and released while the roof opening panel is in fully open or slide. When commanded, the roof opening panel express closes then moves to the full vent position.

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## SECTION 501-17: Roof Opening Panel



### DIAGNOSIS AND TESTING

2006 Lincoln LS Workshop Manual  
Procedure revision date: 12/06/2005

### Roof Opening Panel

Refer to Wiring Diagrams Cell 101 for schematic and connector information.

#### Special Tool(s)

	73III Automotive Meter 105-R0057 or equivalent
	Flex Probe Kit 105-R025B or equivalent

### Principles of Operation

The roof opening panel assembly uses an integrated motor and module to operate the roof opening panel. The roof opening panel motor and module are installed new as an assembly. The roof opening panel is an electronically operated glass panel that can be opened, closed or tilted by the roof opening panel switch. Actuating the switch in either a forward or rearward motion supplies a ground to the roof opening panel motor/module. The roof opening panel has an express open feature that is activated when the switch is momentarily pressed to the double detent open position. This function is controlled by the roof opening panel motor/module.

### Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

### Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"> <li>• Roof opening panel glass</li> <li>• Roof opening panel</li> <li>• Roof opening panel drain hoses</li> <li>• Roof opening panel lifter assemblies</li> <li>• Roof opening panel water trough</li> <li>• Roof opening panel weatherstrip</li> </ul>	<ul style="list-style-type: none"> <li>• Rear battery junction box (BJB) fuse 16 (20A)</li> <li>• Circuitry</li> <li>• Driver door module (DDM)</li> <li>• Loose or corroded connections</li> <li>• Roof opening panel motor</li> <li>• Roof opening panel control switch</li> </ul>

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. Any disassembly of the roof opening panel requires motor initialization. Refer to Roof Opening Panel Motor Initialization in this section.
5. If the concern is not visually evident, verify the symptom and GO to Symptom Chart .

## Symptom Chart

Symptom Chart

## Pinpoint Tests

### Pinpoint Test A: The Roof Opening Panel Has Excessive Wind Noise

#### Normal Operation

When the roof opening panel glass is completely closed, it should be flush with the roof panel.

#### Possible Causes

- roof opening panel adjustment
- roof opening panel weatherstrip

#### PINPOINT TEST A: THE ROOF OPENING PANEL HAS EXCESSIVE WIND NOISE

Test Step	Result / Action to Take
<b>A1 CHECK THE ROOF OPENING PANEL SEALS</b>	
<ul style="list-style-type: none"> <li>• <b>NOTE:</b> Make sure the weatherstrip is not loose, cracked, pinched or obstructed.</li> <li>• Check the roof opening panel weatherstrip.</li> <li>• <b>Is the weatherstrip OK?</b></li> </ul>	<p><b>Yes</b> GO to <u>A2</u> .</p> <p><b>No</b> INSTALL a new roof opening panel weatherstrip. REFER to <u>Roof Opening Panel Weatherstrip</u> in this section. INITIALIZE the roof opening panel. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section.</p>
<b>A2 CHECK THE ROOF OPENING PANEL ADJUSTMENT</b>	
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Open and close the roof opening panel glass.</li> <li>• Check the adjustment when the roof opening</li> </ul>	<p><b>Yes</b> CHECK for correct installation of the roof opening panel motor. REFER to <u>Roof Opening Panel Motor</u> in this section. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p>

Normal Operation

panel glass closes. • <b>Is the adjustment OK?</b>	<b>No</b> ALIGN the roof opening panel. REFER to <u>Roof Opening Panel Alignment</u> in this section. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.
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## Pinpoint Test B: The Roof Opening Panel Leaks

### Normal Operation

When the roof opening panel glass is completely closed, it should be flush with the roof panel.

#### Possible Causes

- roof opening panel adjustment
- roof opening panel drain hose(s)
- roof opening panel weatherstrip
- roof opening panel
- roof opening panel frame

### PINPOINT TEST B: THE ROOF OPENING PANEL LEAKS

Test Step	Result / Action to Take
<b>B1 CHECK THE ROOF OPENING PANEL OPERATION</b>	
<ul style="list-style-type: none"> <li>• Cycle the roof opening panel glass from the full-open position to the full-closed position.</li> <li>• Check the roof opening panel glass adjustment. REFER to <u>Roof Opening Panel Alignment</u> in this section.</li> <li>• <b>Does the roof opening panel glass operate smoothly, close tightly and meet general adjustment specifications?</b></li> </ul>	<b>Yes</b> GO to <u>B2</u> .  <b>No</b> ADJUST the roof opening panel. REFER to <u>Roof Opening Panel Alignment</u> in this section.
<b>B2 CHECK THE ROOF OPENING PANEL WEATHERSTRIP</b>	
<ul style="list-style-type: none"> <li>• Actuate the roof opening panel glass to the full-open position.</li> <li>• <b>NOTE:</b> The weatherstrip has a bonded butt joint located on the passenger side or rear edge. This is not a defect.</li> <li>• Inspect the roof opening panel weatherstrip for cuts, tears, gouges and creases.</li> <li>• <b>Is the roof opening panel weatherstrip damaged?</b></li> </ul>	<b>Yes</b> INSTALL a new roof opening panel weatherstrip. REFER to <u>Roof Opening Panel Weatherstrip</u> in this section.  <b>No</b> GO to <u>B3</u> .
<b>B3 CHECK THE ROOF OPENING PANEL REAR TROUGH AND TROUGH GUIDES</b>	
<ul style="list-style-type: none"> <li>• <b>NOTE:</b> The rear trough should travel back and forth smoothly with the roof opening panel</li> </ul>	<b>Yes</b> GO to <u>B4</u> .

glass. • Check the rear trough and trough guides for proper attachment and function. • <b>Does the rear trough operate correctly?</b>	<b>No</b> INSTALL a new roof opening panel trough assembly. REFER to <u>Trough Assembly</u> in this section.
<b>B4 CHECK THE ROOF OPENING PANEL DRAIN TUBES</b>	
• <b>NOTE:</b> Drain hoses can be viewed with a flashlight by removing the headliner lace around the inside opening and <b>gently</b> pulling down on the headliner. • <b>NOTE:</b> On some vehicles the trim lace has been replaced by Velcro® style attachments. • Gain access to the roof opening panel frame drain tubes. • <b>Are the drain tubes correctly positioned and properly attached.</b>	<b>Yes</b> GO to <u>B5</u> .  <b>No</b> ADJUST or ATTACH the drain tube(s). GO to <u>B5</u> .
<b>B5 CHECK THE ROOF OPENING PANEL DRAIN TUBES FLOW</b>	
<b>NOTE:</b> Drain hoses must flow downhill and can not be pinched or restricted by the headliner or any other trim components.  • Open the roof opening panel. • <b>Slowly</b> pour water into the trough area and make sure that the same amount of water exits the vehicle at the bottom of the A and C pillars. • <b>Does the water properly drain through each of the drain tubes?</b>	<b>Yes</b> TAPE off the roof opening panel and INSPECT other areas of the vehicle that may cause water leaks to enter the roof area.  <b>No</b> CLEAR obstruction(s) with compressed air. REPEAT test. If obstruction is not clear, LOWER the headliner and INSPECT drain tube(s) for correct routing, pinches or restrictions. REPAIR as necessary.

### Pinpoint Test C: The Roof Opening Panel Rattles

#### Normal Operation

When the roof opening panel glass is completely closed, it should be flush with the roof panel. All components should be secured correctly.

#### Possible Causes

- roof opening panel
- roof opening panel tracks
- roof opening panel water trough
- roof opening panel lifter assemblies
- headliner
- roof opening panel motor pad
- roof opening panel bolts
- roof opening panel frame



## PINPOINT TEST C: THE ROOF OPENING PANEL RATTLES

Test Step	Result / Action to Take
<b>C1 CHECK THE ROOF OPENING PANEL OPERATION</b>	
<ul style="list-style-type: none"> <li>• Check the roof opening panel during operation.</li> <li>• <b>Is the roof opening panel loose?</b></li> </ul>	<p><b>Yes</b> ALIGN the roof opening panel. REFER to <u>Roof Opening Panel Alignment</u> in this section. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p> <p><b>No</b> GO to <u>C2</u> .</p>
<b>C2 CHECK THE ROOF OPENING PANEL TRACKS</b>	
<ul style="list-style-type: none"> <li>• Open the roof opening panel.</li> <li>• Check the roof opening panel tracks for obstructions and damage.</li> <li>• <b>Are the roof opening panel tracks OK?</b></li> </ul>	<p><b>Yes</b> GO to <u>C3</u> .</p> <p><b>No</b> REMOVE all the roof opening panel track obstructions and REPAIR the roof opening panel tracks. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p>
<b>C3 CHECK THE ROOF OPENING PANEL WATER TROUGH AND TROUGH GUIDES</b>	
<ul style="list-style-type: none"> <li>• Check the roof opening panel water trough and trough guides for any loose fasteners or obstructions.</li> <li>• <b>Are the roof opening panel trough and trough guides installed securely and free from obstructions?</b></li> </ul>	<p><b>Yes</b> GO to <u>C4</u> .</p> <p><b>No</b> REMOVE all obstructions from the roof opening panel trough and INSTALL securely. SECURE the trough guides or INSTALL a new roof opening panel frame if damaged. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p>
<b>C4 CHECK THE ROOF OPENING PANEL MOTOR PAD</b>	
<ul style="list-style-type: none"> <li>• Check the motor pad for correct installation and damage.</li> <li>• <b>Is the motor pad installed correctly and not damaged?</b></li> </ul>	<p><b>Yes</b> GO to <u>C5</u> .</p> <p><b>No</b> INSTALL the motor pad correctly or INSTALL a new roof opening panel motor. REFER to <u>Roof Opening Panel Motor</u> in this section. TEST the system for normal operation.</p>
<b>C5 CHECK THE ROOF OPENING PANEL AIR DEFLECTOR ASSEMBLY</b>	
<ul style="list-style-type: none"> <li>• Check the roof opening panel air deflector for obstructions</li> </ul>	<p><b>Yes</b> GO to <u>C6</u> .</p>

<p>and damage.</p> <ul style="list-style-type: none"> <li>• <b>Is the roof opening panel air deflector OK?</b></li> </ul>	<p><b>No</b> REMOVE all obstructions and REPAIR as necessary. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p>
<b>C6 CHECK THE ROOF OPENING PANEL</b>	
<ul style="list-style-type: none"> <li>• Verify the roof opening panel is free from obstruction and damage, and is securely fastened.</li> <li>• <b>Is the roof opening panel assembly OK?</b></li> </ul>	<p><b>Yes</b> GO to <u>C7</u> .</p> <p><b>No</b> REPAIR or INSTALL a new roof opening panel frame. REFER to <u>Roof Opening Panel Frame</u> in this section. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p>
<b>C7 CHECK THE ROOF OPENING PANEL LIFTER ASSEMBLIES</b>	
<ul style="list-style-type: none"> <li>• Verify the roof opening panel lifter assemblies are free from obstructions and damage.</li> <li>• <b>Are the roof opening panel lifter assemblies OK?</b></li> </ul>	<p><b>Yes</b> INSTALL a new roof opening panel frame. REFER to <u>Roof Opening Panel Frame</u> in this section. INITIALIZE the roof opening panel. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p> <p><b>No</b> REMOVE all obstructions from the roof opening panel lifter assemblies and REPAIR any damage. TEST the system for normal operation.</p>

### Pinpoint Test D: The Roof Opening Panel Is Noisy During Operation

#### Normal Operation

The roof opening panel should operate smoothly while opening and closing.

#### Possible Causes

- roof opening panel
- roof opening panel lifter assemblies
- roof opening panel adjustment
- roof opening panel motor

#### PINPOINT TEST D: THE ROOF OPENING PANEL IS NOISY DURING OPERATION

Test Step	Result / Action to Take
<b>D1 CHECK THE ROOF OPENING PANEL FOR OBSTRUCTIONS OR DAMAGE</b>	

<ul style="list-style-type: none"> <li>• Check the roof opening panel for any obstructions and damage.</li> <li>• <b>Are there any obstructions or damage?</b></li> </ul>	<p><b>Yes</b> REMOVE all obstructions. REPAIR any damage or INSTALL a new roof opening panel frame. REFER to <u>Roof Opening Panel Frame</u> in this section. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p> <p><b>No</b> GO to <u>D2</u> .</p>
<b>D2 CHECK THE ROOF OPENING PANEL OPERATION</b>	
<ul style="list-style-type: none"> <li>• Check the roof opening panel during operation.</li> <li>• <b>Is the roof opening panel loose or incorrectly adjusted?</b></li> </ul>	<p><b>Yes</b> ALIGN the roof opening panel. REFER to <u>Roof Opening Panel Alignment</u> in this section. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p> <p><b>No</b> GO to <u>D3</u> .</p>
<b>D3 CHECK THE ROOF OPENING PANEL TRACKS</b>	
<ul style="list-style-type: none"> <li>• Open the roof opening panel.</li> <li>• Check the roof opening panel tracks for obstructions and damage.</li> <li>• <b>Are the roof opening panel tracks OK?</b></li> </ul>	<p><b>Yes</b> GO to <u>D4</u> .</p> <p><b>No</b> REMOVE all obstructions and REPAIR any damage. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p>
<b>D4 CHECK THE ROOF OPENING PANEL LIFTER ASSEMBLIES</b>	
<ul style="list-style-type: none"> <li>• Check the roof opening panel lifter assemblies for obstructions and damage.</li> <li>• <b>Are the roof opening panel lifter assemblies OK?</b></li> </ul>	<p><b>Yes</b> GO to <u>D5</u> .</p> <p><b>No</b> REMOVE all obstructions and REPAIR any damage. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p>
<b>D5 CHECK THE ROOF OPENING PANEL MOTOR</b>	
<ul style="list-style-type: none"> <li>• Gain access to the roof opening panel motor.</li> <li>• Open the roof opening panel.</li> <li>• <b>Does the roof opening panel motor make excessive noise?</b></li> </ul>	<p><b>Yes</b> INSTALL a new roof opening panel motor. REFER to <u>Roof Opening Panel Motor</u> in this section. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section. TEST the system for normal operation.</p> <p><b>No</b> ALIGN the roof opening panel. REFER to <u>Roof Opening Panel Alignment</u> in this section. INITIALIZE the roof opening panel motor. REFER to <u>Roof Opening Panel Motor Initialization</u> in this section.</p>