

Roof Opening Panel

The roof opening panel motor must be initialized when repairs are carried out on any part of the roof opening panel system or when the roof opening panel motor, glass, assembly, or air deflector has been removed or replaced for any reason.

REFER to: [Power Roof Opening Panel Initialization](#) (501-17A Roof Opening Panel, General Procedures).

Symptom Charts

Symptom Chart: Roof Opening Panel

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Condition	Possible Sources	Actions
The roof opening panel leaks	Refer to the Pinpoint Test	GO to Pinpoint Test B
The roof opening panel does not open or close	Refer to the Pinpoint Test	GO to Pinpoint Test E
The roof opening panel does not seat in flush position from any position	- Incorrect roof opening panel adjustment - Mechanism mistimed	ALIGN the roof opening panel glass. REFER to: Roof Opening Panel Alignment (501-17A Roof Opening Panel, General Procedures).

The one-touch open feature is inoperative	Refer to the Pinpoint Test	GO to Pinpoint Test F
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Symptom Chart: NVH

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Condition	Possible Sources	Actions
The roof opening panel has excessive wind noise	Refer to the Pinpoint Test	GO to Pinpoint Test A
The roof opening panel rattles	Refer to the Pinpoint Test	GO to Pinpoint Test C
Roof opening panel is noisy during operation	Refer to the Pinpoint Test	GO to Pinpoint Test D

Pinpoint Tests

The roof opening panel motor must be initialized when repairs are carried out on any part of the roof opening panel system or when the roof opening panel motor, glass, assembly, or air deflector has been removed or replaced for any reason.

REFER to: [Power Roof Opening Panel Initialization](#) (501-17A Roof Opening Panel, General Procedures).

The Roof Opening Panel Has Excessive Wind Noise

Normal Operation and Fault Conditions

During normal operation the sunroof seals against the roof opening tightly and evenly preventing wind noise. Any variation in alignment or failure to seal will cause wind noise.

Possible Causes

- Incorrect roof opening panel alignment
- Roof opening panel glass seals

Visual Inspection and Diagnostic Pre-checks

- Roof opening panel seals

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

A1 CHECK THE ROOF OPENING PANEL GLASS SEALS

- Check the roof opening panel glass seals for:
 - looseness
 - cracking
 - pinching
 - obstructions

Are the seals OK?

Yes	GO to A2
No	REPAIR as necessary.

A2 CHECK THE ROOF OPENING PANEL GLASS ALIGNMENT

- Ignition ON.
- Open and close the roof opening panel glass.
- Check the alignment of the roof opening panel glass after closing.

Is the alignment OK?

Yes	Test drive the vehicle. If wind noise is still present, ALIGN the roof opening panel glass to closer tolerance within specification. REFER to: Roof Opening Panel Alignment (501-17A Roof Opening Panel, General Procedures).
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No	ALIGN the roof opening panel glass. REFER to: Roof Opening Panel Alignment (501-17A Roof Opening Panel, General Procedures).
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The Roof Opening Panel Leaks

Normal Operation and Fault Conditions

When the roof opening panel glass is completely closed, it is flush with the roof panel. The roof opening panel weatherstrip provides a seal against adverse weather conditions such as rain and wind, preventing them from entering the passenger compartment. A damaged, deformed or incorrectly installed weatherstrip is unable to seal the glass efficiently. The roof opening panel trough assembly and drain hoses provide a route for water to drain away from the opening panel, damaged or obstructed drain hoses or trough assembly will allow water to collect and possibly leak into the passenger compartment.

Possible Causes

- Incorrect roof opening panel glass alignment
- Roof opening panel drain hoses
- Roof opening panel glass seals
- Damaged roof opening panel frame
- Incorrect position of the roof opening panel glass

Visual Inspection and Diagnostic Pre-checks

- Roof opening panel seals

PINPOINT TEST B : THE ROOF OPENING PANEL LEAKS

B1 VERIFY CUSTOMER OPERATION OF THE ROOF OPENING PANEL WHEN PARKED

- Make sure the customer is parking with the roof opening panel correctly in the closed position.

Is the customer parking with the roof opening panel in the closed position?

Yes	GO to B2
No	Instruct the customer to REFER to the Owner's Literature for correct operation of the roof opening panel.

B2 CHECK THE ALIGNMENT OF THE ROOF OPENING PANEL

- Make sure the roof opening panel glass is centered and flush with the roof line.

Is the roof opening panel aligned correctly?

Yes	GO to B3
No	ALIGN the roof opening panel. REFER to: Roof Opening Panel Alignment (501-17A Roof Opening Panel, General Procedures).

B3 CHECK THE WEATHERSTRIP CONDITION

NOTE: The seal has a bonded joint located on the passenger side or rear edge. This is not a defect.

- Check the roof opening panel seal for position, deformation, cracks, tears, or looseness.

Is the roof opening panel seal in good condition and free from damage?

Yes	GO to B4
No	INSTALL a new roof opening panel glass. REFER to: Roof Opening Panel Glass (501-17A Roof Opening Panel, Removal and Installation).

B4 CHECK THE WATER TROUGH CONDITION

- Check the roof opening panel rear trough for damage. Check the water trough and guides for damage and/or correct attachment and function.

Is the water trough OK?

Yes	GO to B5
No	REPAIR or INSTALL a new roof opening panel water trough assembly as necessary. REFER to: Trough Assembly (501-17A Roof Opening Panel, Removal and Installation).

B5 CHECK THE DRAIN HOSES

- Make sure the drain hoses are all connected and not cracked, slit, pinched or obstructed.

Are all the drain hoses present and attached correctly?

Yes	GO to B6
No	REPAIR or INSTALL a new drain hose(s).

B6 CHECK THE DRAIN HOSES FOR CORRECT FLOW

NOTE: *Drain hoses must flow downhill and cannot be pinched or restricted by headliner or any other trim components.*

- With the panel open, slowly pour water into the water trough area and make sure that the same amount of water exits the vehicle at the bottom of the A and C-pillars.
- Check drain hoses for obstructions by blowing compressed air through the drain spouts in the water trough area, then retest with water.

Are the drain hoses operating correctly?

Yes	INSPECT other areas of the vehicle that may cause water to enter the roof area such as the windshield or luggage rack, if equipped, and REPAIR as necessary. Test the system for normal operation, if the condition still exists, GO to B7
No	LOWER the headliner and INSPECT the drain hoses for correct routing. REPAIR or INSTALL a new drain hose(s) as necessary.

B7 CHECK THE CONDITION OF THE ROOF OPENING PANEL FRAME

- Check the roof opening panel frame for damage that may cause the roof opening panel seal to seat incorrectly.

Is the roof opening panel frame OK?

Yes	INSTALL a new roof opening panel glass. REFER to: Roof Opening Panel Glass (501-17A Roof Opening Panel, Removal and Installation).
No	REPAIR or REPLACE the roof opening panel frame as necessary. REFER to: Roof Opening Panel Frame (501-17A Roof Opening Panel, Removal and Installation).

The Roof Opening Panel Rattles

Normal Operation and Fault Conditions

When the roof opening panel glass is completely closed, it is flush with the roof panel. All components should be secured correctly. The roof opening panel system is made up of many components that require specific torque specifications and correct installation in order to avoid any NVH concerns. Over time, components may become loose or damaged, fasteners may become loose, sound insulating material may wear out and foreign material may collect in the roof opening panel frame. It is possible that one or more of these conditions may lead to a rattle concern in the roof opening panel system.

Possible Causes

- Incorrect roof opening panel glass alignment
- Roof opening panel lifter assemblies
- Roof opening panel tracks

- Roof opening panel drain channels and guides
- Roof opening panel shield (sunshade)
- Roof opening panel assembly

Visual Inspection and Diagnostic Pre-checks

- Roof opening panel glass
- Roof opening panel lifter assemblies
- Roof opening panel trough
- Roof opening panel air deflector assembly
- Roof opening panel seal
- Roof opening panel shield (sunshade)

PINPOINT TEST C : THE ROOF OPENING PANEL RATTLES

C1 CHECK THE ROOF OPENING PANEL GLASS OPERATION

- Check the roof opening panel glass during operation.

Is the roof opening panel glass loose?

Yes	ALIGN the roof opening panel. REFER to: Roof Opening Panel Alignment (501-17A Roof Opening Panel, General Procedures).
No	GO to C2

C2 CHECK THE ROOF OPENING PANEL TRACKS

- Open the roof opening panel glass.
- Check the tracks for obstructions or signs of damage.

Are the tracks OK?

Yes	GO to C3
No	REMOVE any obstructions. REPAIR the roof opening panel tracks as necessary.

C3 CHECK THE DRAIN CHANNELS AND GUIDES

- Check the drain channel and channel guides for any loose fasteners or obstructions.

Is the drain channel installed securely and free from foreign material?

Yes	GO to C4
No	REMOVE all foreign material from the drain channel and INSTALL securely.

C4 CHECK THE ROOF OPENING PANEL SHIELD (SUNSHADE)

- Check the shield (sunshade) for correct installation

Is the shield (sunshade) installed correctly?

Yes	GO to C5
No	INSTALL the shield (sunshade) correctly. REFER to: Roof Opening Panel Shield (501-17A Roof Opening Panel, Removal and Installation).

C5 CHECK THE ROOF OPENING PANEL

- Make sure the roof opening panel frame, drain tubes and wire harnesses are free from obstructions and damage, and are securely fastened.

Is the roof opening panel assembly OK?

Yes	The system is operating normally.
No	REPAIR as necessary.

The Roof Opening Panel is Noisy During Operation

Normal Operation and Fault Conditions

When the roof opening panel glass closes, it should do so quietly and smoothly. The roof opening panel system is made up of many components that require specific torque specifications and correct installation in order to avoid any NVH concerns. Over time, components may become loose or damaged, fasteners may become loose, sound insulating material may wear out and foreign material may collect in the roof opening panel frame. It is possible that one or more of these conditions may lead to a noise concern in the roof opening panel system.

Possible Causes

- Incorrect roof opening panel glass alignment
- Roof opening panel tracks
- Roof opening panel shield (sunshade)
- Roof opening panel motor

Visual Inspection and Diagnostic Pre-checks

- Roof opening panel obstructions
- Roof opening panel lifter assemblies
- Roof opening panel shield (sunshade)
- Roof opening panel motor

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

D1 CHECK THE ROOF OPENING PANEL GLASS FOR OBSTRUCTIONS OR DAMAGE	
• Check the roof opening panel for any obstructions and damage.	
Are there any obstructions and/or damage?	
Yes	REMOVE all obstructions. REPAIR the roof opening panel as necessary.
No	GO to D2
D2 CHECK THE ROOF OPENING PANEL GLASS OPERATION	

- Check the roof opening panel glass during operation.

Is the roof opening panel loose or incorrectly aligned?

Yes	ALIGN the roof opening panel. REFER to: Roof Opening Panel Alignment (501-17A Roof Opening Panel, General Procedures).
No	GO to D3

D3 CHECK THE ROOF OPENING PANEL TRACKS

- Open the roof opening panel glass.
- Check the roof opening panel tracks for obstructions and damage.

Are the roof opening panel tracks OK?

Yes	GO to D4
No	REMOVE all obstructions. REPAIR any damage as necessary.

D4 CHECK THE ROOF OPENING PANEL SHIELD (SUNSHADE)

- Check the roof opening panel shield (sunshade) for correct movement.

Is the roof opening panel shield moving correctly?

Yes	GO to D5
No	REPAIR or INSTALL a new roof opening panel shield (sunshade) as necessary. REFER to: Roof Opening Panel Shield (501-17A Roof Opening Panel, Removal and Installation).

D5 CHECK THE ROOF OPENING PANEL MOTOR

- Gain access to the roof opening panel motor.
- Open the roof opening panel.

Does the motor make excessive noise?

Yes	INSTALL a new roof opening panel motor/module. REFER to: Roof Opening Panel Motor (501-17A Roof Opening Panel, Removal and Installation).
No	ALIGN the roof opening panel glass. REFER to: Roof Opening Panel Alignment (501-17A Roof Opening Panel, General Procedures).

The Roof Opening Panel Does Not Open, Close Or Vent

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

Normal Operation and Fault Conditions

The roof opening panel motor receives battery voltage at all times from BCM fuse F27 (30A), and receives ignition voltage (accessory delay) from BCM fuse F23 (10A). The roof opening panel motor and switch are grounded at G303. When the roof opening panel open switch is pressed, a ground signal is sent to the roof opening panel motor on the sunroof open circuit. When the roof opening panel close switch is pressed, a ground signal is sent to the roof opening panel motor on the sunroof close circuit. When the roof opening panel tilt switch is pressed, a ground signal is sent to the roof opening panel motor on the tilt/vent switch circuit. The motor responds to these signals dependant on the sliding glass panel positions. One touch operation is accomplished by pressing any of the switches for less than 1 second. For more information on the operation.

REFER to: [Roof Opening Panel - System Operation and Component Description](#) (501-17A Roof Opening Panel, Description and Operation).

Possible Causes

- Fuses
- Wiring, terminals or connectors
- Roof opening panel motor/module assembly
- Roof opening panel control switch

Visual Inspection and Diagnostic Pre-checks

- BCM fuse F23 (10A)
- BCM fuse F27 (30A)

PINPOINT TEST E : THE ROOF OPENING PANEL DOES NOT OPEN, CLOSE OR VENT

E1 CHECK THE POWER WINDOW OPERATION

- Ignition ON.
- Attempt to operate the power windows.

Do the power windows operate properly?

Yes	GO to E2
No	Diagnose the accessory delay relay circuit. REFER to: Glass, Frames and Mechanisms (501-11 Glass, Frames and Mechanisms, Diagnosis and Testing).

E2 CHECK THE ROOF OPENING PANEL GLASS OPERATION

- Check the roof opening panel glass operation.
 - Press and release the glass open switch. The glass should fully open in the one-touch open mode. If not, press and hold the glass open switch to fully open the glass.
 - Press and release the glass close switch. The glass should close fully in the one-touch close mode. If not, press and hold the glass close switch to fully close the glass.
 - Press and hold the vent switch. The glass should move to the vent position.

Does the glass operate as expected?

Yes	The roof opening panel is operating correctly at this time.
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No	• If the glass does not open or close with one-touch operation, but does open and close with press and hold, REFER to: Power Roof Opening Panel Initialization (501-17A Roof Opening Panel, General Procedures). • If the glass does not open, close or vent with a switch pressed and held, GO to E3
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E3 CHECK THE ROOF OPENING PANEL MOTOR VOLTAGE CIRCUITS

- Ignition OFF.
- Disconnect Roof Opening Panel Motor C921.
- Ignition ON.

Are the voltages greater than 11 volts?

Yes	GO to E4
No	VERIFY BCM fuses F23 (10A) and F27 (30A) are OK. If the fuses are OK, REPAIR the affected circuit for high resistance or an open. If the fuses are not OK, REFER to the Wiring Diagrams manual to identify the cause of the circuit short.

E4 CHECK THE ROOF OPENING PANEL MOTOR GROUND CIRCUIT

- Ignition OFF.

Is the resistance less than 3 ohms?

Yes	GO to E5
No	REPAIR the circuit.

E5 CHECK THE ROOF OPENING PANEL SWITCH GROUND CIRCUIT

- Disconnect Roof Opening Panel Control Switch C912.

Is the resistance less than 3 ohms?

Yes	GO to E6
No	REPAIR the affected circuit for high resistance or an open.

E6 CHECK THE SUNROOF CONTROL CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition ON.

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to E7

E7 CHECK THE SUNROOF CONTROL CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.

Are the resistances greater than 10,000 ohms?

Yes	GO to E8
No	REPAIR the circuit.

E8 CHECK THE SUNROOF CONTROL CIRCUITS FOR AN OPEN

Is the resistance less than 3 ohms?

Yes	GO to E9
No	REPAIR the circuit.

E9 CHECK THE SUNROOF CONTROL CIRCUITS FOR A SHORT TOGETHER

Are the resistances greater than 10,000 ohms?

Yes	GO to E10
No	REPAIR the circuit.

E10 CHECK THE ROOF OPENING PANEL MOTOR/MODULE FOR CORRECT OPERATION

- Ignition OFF.
- Disconnect All sunroof system and related in-line connectors.
- Check for:
 - corrosion – install new connector or terminals and clean module pins
 - damaged or bent pins – install new terminals or pins
 - pushed-out pins – install new pins as necessary
- Connect all sunroof system and related in-line connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new roof opening panel motor/module. REFER to: Roof Opening Panel Motor (501-17A Roof Opening Panel, Removal and Installation). TEST the system for normal operation. If the concern is still present, TEST the system for normal operation. If the concern is still present, INSTALL a new roof opening panel control switch. REFER to: Roof Opening Panel Control Switch (501-17A Roof Opening Panel, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

The One-Touch Open/Close Is Inoperative

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

Normal Operation and Fault Conditions

When the sunroof OPEN, CLOSE, or VENT switch is pressed and immediately released in less than 1 second (one touch operation) a signal is sent to the sunroof motor to operate the request on one touch mode. The sunroof must be in the fully closed position for the vent one touch mode to activate.

Possible Causes

- Roof opening panel initialization
- Roof opening panel control switch
- Roof opening panel motor/module assembly

PINPOINT TEST F : THE ONE-TOUCH OPEN/CLOSE IS INOPERATIVE

F1 CHECK THE ROOF OPENING PANEL MOTOR FOR INITIALIZATION	
• Carry out the roof opening panel motor initialization procedure. REFER to: Power Roof Opening Panel Initialization (501-17A Roof Opening Panel, General Procedures). • Operate the system using one touch operation.	
Is the concern still present?	
Yes	GO to F2
No	The system is operating normally at this time. The roof opening panel motor was not initialized.
F2 CHECK THE ROOF OPENING PANEL MOTOR/MODULE AND SWITCH FOR CORRECT OPERATION	

- Ignition OFF.
- Disconnect All sunroof system and related in-line connectors.
- Check for:
 - corrosion – install new connector or terminals and clean module pins
 - damaged or bent pins – install new terminals or pins
 - pushed-out pins – install new pins as necessary
- Connect all sunroof system and related in-line connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no Technical Service Bulletins (TSBs) address this concern, INSTALL a new roof opening panel motor/module. REFER to: Roof Opening Panel Motor (501-17A Roof Opening Panel, Removal and Installation). TEST the system for normal operation. If the concern is still present, TEST the system for normal operation. If the concern is still present, INSTALL a new roof opening panel control switch. REFER to: Roof Opening Panel Control Switch (501-17A Roof Opening Panel, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.