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Roof Opening Panel - Roof Opening Panel

Diagnosis and Testing

Principle of Operation

For a detailed description of the roof opening panel system and operation, refer to the relevant Description and Operation section of the workshop manual. REFER to: (501-17 Roof Opening Panel)

Roof Opening Panel (Description and Operation),
Roof Opening Panel (Description and Operation),
Roof Opening Panel (Description and Operation).

Inspection and Verification

CAUTION: Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault and may also cause additional faults in the vehicle being checked and/or the donor vehicle.

1. Verify the customer concern.

2. Visually inspect for obvious signs of damage and system integrity.

Visual Inspection

Mechanical	Electrical
• Glass panel assembly • Glass panel seal • Frame assembly • Roller blind(s) • Deflector • Access panel • Roof opening panel cables	• Fuses • Battery Junction Box (BJB) • Central Junction Box (CJB) • Wiring harness • Loose or corroded connector(s) • Roof opening panel motor and control module • Roof opening panel switch

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. If the cause is not visually evident verify the symptom and refer to the Symptom Chart, alternatively check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

Symptom Chart

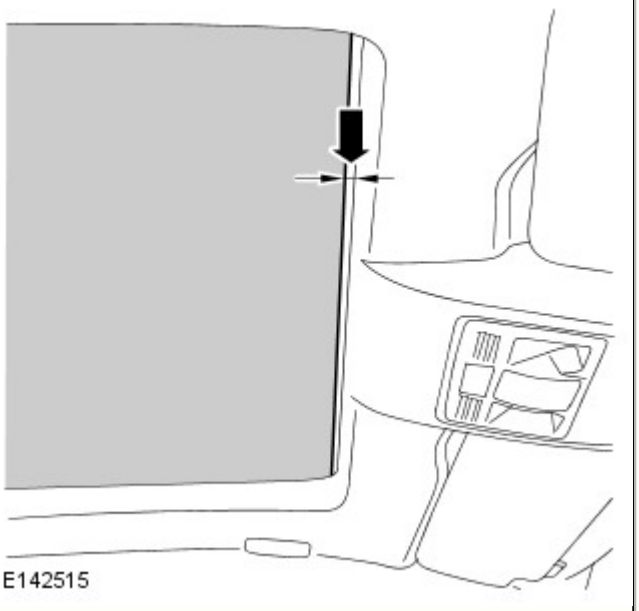
Symptom	Possible Cause	Action
Roof opening panel inoperative	• Roof opening panel calibration lost • Fuse(s) blown • Control circuit fault • Supply circuit fault • Motor fault	• Calibrate the roof opening panel REFER to: Motor Synchronization (501-17 Roof Opening Panel, General Procedures). • Check the fuse(s) • Check the roof opening panel circuits • Carry out hard battery reset • Check the switch and motor function
Roof opening panel creak	• Contact between sunroof frame seal and vehicle body • Sunroof frame twist • Moving panel contact to sunroof frame • Ice formation between the body and sunroof	• GO to Pinpoint Test F.
Roof opening panel sticking or juddering	• Debris in the channels/guides • Cable(s) sticking/damaged • Roof opening panel incorrectly aligned • Switch fault • Motor fault	• Check for general debris • Inspect, clean and lubricate the cable(s) and guides • Check the roof opening panel alignment. REFER to: Roof Opening Panel Alignment (501-17 Roof Opening Panel, General Procedures). • Check the switch and motor function
	• Debris in the channels/guides • Damage to the glass panel seal	• Check for general debris • Inspect, clean and lubricate the cable(s) and guides • Check the glass panel seal

Water ingress from roof opening panel	• Roof opening panel incorrectly aligned • Failed bond of sunroof frame to body • Failed bond of fixed glass panels to sunroof frame	• Check the roof opening panel alignment REFER to: Roof Opening Panel Alignment (501-17 Roof Opening Panel, General Procedures).
Roof opening panel blind - gap to headliner	• Miss-alignment of blind closing position • Broken / incorrectly installed headliner clips	• GO to Pinpoint Test A.
Roof opening panel blind noise	• Broken / incorrectly installed blind feet • Warped blind drive mechanism casting • Blind spring rattle	• GO to Pinpoint Test B.
Wind noise	• Damage to the glass panel seal • Cable(s) sticking/damaged • Roof opening panel incorrectly aligned	• Check the glass panel seals • Inspect, clean and lubricate the cable(s) and guides • Check the roof opening panel alignment REFER to: Roof Opening Panel Alignment (501-17 Roof Opening Panel, General Procedures).

DTC Index

For a list of Diagnostic Trouble Codes (DTCs) that could be logged on this vehicle, please refer to Section 100-00.
REFER to: Diagnostic Trouble Code (DTC) Index - DTC: Central Junction Box (BCM) (100-00 General Information, Description and Operation).

PINPOINT TEST A : ROOF OPENING PANEL BLIND GAP	
TEST CONDITIONS	**DETAILS/RESULTS/ACTIONS**
A1: BLIND OPERATION	
	1 Operate the roof opening panel blind from open to closed **twice** , using the console mounted switch
	Does the roof opening panel blind operate correctly? **Yes** GO to A2 . **No** GO to Pinpoint Test B.
A2: BLIND TO HEADLINER GAP	
	1 Carry out a visual inspection of the condition of the closed blind to the headliner
	Is there an excessive or abnormal gap between the blind and headliner? **Yes** GO to A3 . **No** No further action required
A3: GAP ORIENTATION	
	1 Carry out a visual inspection of the condition of the closed blind to the headliner



	Is the gap from the leading edge of the blind to the edge of the headliner in the X-direction (fore/aft)? **Yes** Calibrate the roof opening panel REFER to: Motor Synchronization (501-17 Roof Opening Panel, General Procedures). Then GO to A4 . **No** Check headliner is correctly retained. Re-secure as required. If customer concern is still evident follow the procedure REFER to: Headliner (501-05 Interior Trim and Ornamentation, Removal and Installation). Replace the headliner clips. Then GO to A5 .
A4: BLIND - FEET	
	1 Operate the roof opening panel blind from open to closed **twice** , using the console mounted switch
	2 Carry out a visual inspection of the condition of the closed blind to the headliner
	Is the customer concern still evident? **Yes** Carry out visual inspection of the blind feet for correct installation and damage, re-install or replace as required REFER to: Roof Opening Panel Blind Feet (501-17 Roof Opening Panel, Removal and Installation). Then GO to A5 . **No** No further action required
A5: CLEARANCE APERTURE - VISUAL CHECK	
	1 Operate the roof opening panel blind from open to closed **twice** , using the console mounted switch
	2 Carry out a visual inspection of the condition of the closed blind to the headliner
	Is the customer concern still evident? **Yes** If customer concern is still evident contact dealer technical support **No** No further action required

PINPOINT TEST B : ROOF OPENING PANEL BLIND - MOTOR – NOISE OR INOPERATIVE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: MOTOR OPERATION	
	1 Operate the roof opening panel blind using the console mounted switch
	2 Listen for noise that would indicate that the motor is operating
	Is there a noise generated when the blind switch is pressed? **Yes** GO to B2 . **No** GO to Pinpoint Test E.

B2: HIGH LEVEL NOISE	
	1 Operate the roof opening panel blind using the console mounted switch
	Does the blind make a loud ratcheting noise when the switch is pressed? **Yes** Replace the glass panel blind drive assembly **(Front)** REFER to: Roof Opening Panel Blind Drive Assembly (501-17 Roof Opening Panel, Removal and Installation). **(Rear)** REFER to: Glass Roof Panel Blind Drive Assembly (501-11 Glass, Frames and Mechanisms, Removal and Installation). **No** Carry out visual inspection of the blind feet for correct installation and damage, replace as required REFER to: Roof Opening Panel Blind Feet (501-17 Roof Opening Panel, Removal and Installation). Then GO to B3 .
B3: HIGH LEVEL NOISE - CHECK	
	1 Operate the roof opening panel blind using the console mounted switch
	Is the customer concern still evident? **Yes** If customer concern is still evident contact dealer technical support **No** No further action required

PINPOINT TEST C : ROOF OPENING PANEL BLIND – NOISE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C1: BLIND - FEET	
	1 Operate the roof opening panel blind using the console mounted switch
	Is the noise only present during operation of the blind **Yes** Carry out visual inspection of the blind feet for correct installation and damage, replace as required, as per procedure REFER to: Roof Opening Panel Blind Feet (501-17 Roof Opening Panel, Removal and Installation). Then GO to C2 . **No** GO to Pinpoint Test D.
C2: BLIND - RETENSION	
	1 Operate the roof opening panel blind using the console mounted switch
	Is the customer concern still evident? **Yes** Re-tension the blind REFER to: Roof Opening Panel Blind Rewind Procedure (501-17 Roof Opening Panel, General Procedures). Then GO to C3 . **No** No further action required
C3: REPLACEMENT	
	1 Operate the roof opening panel blind using the console mounted switch
	Is the customer concern still evident? **Yes** Replace the blind assembly REFER to: Roof Opening Panel Blind (501-17 Roof Opening Panel, Removal and Installation). Then GO to C4 . **No** No further action required
C4: AUDIBLE NOISE - CHECK	
	1 Operate the roof opening panel blind using the console mounted switch
	Is the customer concern still evident? **Yes** If customer concern is still evident contact dealer technical support **No** No further action required

PINPOINT TEST D : ROOF OPENING PANEL BLIND – NOISE / RATTLE	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D1: RATTLE - VEHICLE IN MOTION	
	1 Verify the customer concern by performing a road test (Observe the road test safety guidelines)
	2 Check if the concern is evident with the blind in open and closed positions
	Is the noise present when the blind is closed? **Yes** Contact dealer technical support **No** GO to D2 .

D2: RATTLE - VEHICLE IN MOTION	
	1 Confirm the vehicle identification number
	Is the VIN number below V17000 **Yes** Replace the blind assembly REFER to: Roof Opening Panel Blind (501-17 Roof Opening Panel, Removal and Installation). If customer concern is still evident contact dealer technical support **No** Contact dealer technical support

PINPOINT TEST E : ROOF BLIND OPERATION

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: OPERATION	
	1 Operate the opening panel using the roof mounted switch
	Does the opening panel operate correctly? **Yes** GO to E2 . **No** Refer to the electrical circuit diagrams. Check the fused links to the roof opening panel, roof blinds module and the front overhead console. Replace as required. If the fused link is intact refer to **(roof opening panel inoperative)** in the symptom chart above
E2: VOLTAGE TO BLIND MOTORS	
NOTE: Blind motor + (red wire) should be at battery voltage during opening movement, blind motor – (black wire) should be at battery voltage during closing movement	
	1 Lower the headliner REFER to: Headliner (501-05 Interior Trim and Ornamentation, Removal and Installation).
	2 **Front** blind failure. Operate to roof blind switch. Refer to the electrical circuit diagrams check for voltage between connector **- C9PR153A/5 -** and **- C9PR153A/1 -**
	3 **Rear** blind failure. Operate to roof blind switch. Refer to the electrical circuit diagrams check for voltage between connector **- C9PR155A/1 -** and **- C9PR155A/5 -**
	Does the supply circuit operate as expected? **Yes** Suspect blind motor internal failure. Replace the glass panel blind drive assembly **(Front)** REFER to: Roof Opening Panel Blind Drive Assembly (501-17 Roof Opening Panel, Removal and Installation). **(Rear)** REFER to: Glass Roof Panel Blind Drive Assembly (501-11 Glass, Frames and Mechanisms, Removal and Installation). GO to E6 . **No** GO to E3 .
E3: SENSOR AND SUPPLY CIRCUIT CHECKS	
	1 **Front** blind failure. Refer to the electrical circuit diagrams check the circuit for continuity and for short to power, ground or open circuit between connectors **- C9PR32A -** and **- C9PR153A -**
	2 **Rear** blind failure. Refer to the electrical circuit diagrams check the circuit for continuity and for short to power, ground or open circuit between connectors **- C9PR32A -** and **- C9PR155A -**
	Did the circuit pass the tests? **Yes** GO to E4 . **No** Repair or replace the blind harness. Then GO to E6 .
E4: SWITCH CIRCUIT CHECK	
	1 Refer to the electrical circuit diagrams check the circuit for continuity and for short to power, ground or open circuit between connectors **- C9PR32A -** and **- C9LN28 -**
	Did the circuit pass the tests? **Yes** GO to E5 . **No** Repair or replace the switch circuit harness. Then GO to E6 .
E5: SWITCH PACK	
NOTE: Blind circuit operation (one touch), a ground is supplied while the switch is pressed	
	1 Refer to the electrical circuit diagrams and monitor voltage on the blind open / close circuits as the switch is pressed
	Did the switch circuits pass the tests? **Yes** GO to E6 . **No**

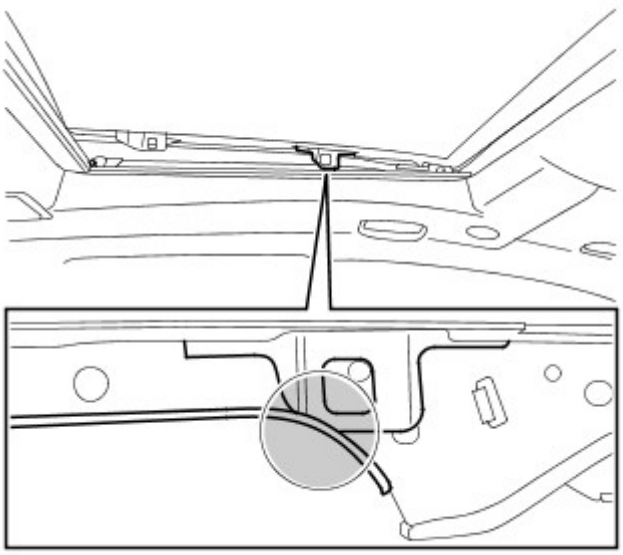
	If the blind operation is the only fault suspect the front overhead console switch replace as required. Then GO to E6 .
E6: CORRECT OPERATION	
	1 Operate the moving panel using the roof mounted switch
	Does the moving panel operate correctly? **Yes** No further action required **No** If customer concern is still evident contact dealer technical support

PINPOINT TEST F : ROOF OPENING PANEL - FRAME CREAK

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
F1: NOISE - WHEN PANEL IN VENT POSITION	
	NOTE: These tests are to be carried out to determine the cause of the sunroof based creak noises
	1 Verify the customer concern by performing a road test (Observe the road test safety guidelines)
	2 Determine if the issue is present: • When the opening panel is in the vent position • When the opening panel is in the closed position • On flat roads • When the car is under torsion (e.g. driving slowly up a curb, or turning onto an inclined drive-way)
	Is the noise present when the sunroof panel is in the vent position? **Yes** GO to F2 . **No** GO to Pinpoint Test G.
F2: NOISE - WHEN VEHICLE UNDER TORSION	
	1 Using the results obtained
	Is the noise present on flat roads as well as when the vehicle is under torsion? **Yes** GO to F5 . **No** GO to F3 .
F3: VIN RANGE	
	1 Check the vehicle VIN (vehicle identity number).
	Is vehicle VIN below **V25000** ? **Yes** GO to F4 . **No** Contact dealer technical support
F4: FRAME WASHERS - CHECK	
	1 Operate the roof opening panel using the roof mounted switch to the fully open position
	2 Carry out visual inspection of the front corners fixings to confirm the presence of the frame washers
	Are the frame washers present? **Yes** Contact dealer technical support **No** Install frame washers REFER to: (501-17 Roof Opening Panel) Roof Opening Panel Frame Washers - Front (Removal and Installation), Roof Opening Panel Frame Washers - Centre (Removal and Installation), Roof Opening Panel Frame Washers - Rear (Removal and Installation). If the customer concern is still evident contact dealer technical support
F5: REAR PANEL SEAL LUBRICATION	
	1 Lubricate the rear fixed panel seal REFER to: Rear Glass Roof Panel Lubrication (501-11 Glass, Frames and Mechanisms, General Procedures).
	Is the customer concern still evident? **Yes** Contact dealer technical support **No** No further action required

PINPOINT TEST G : ROOF OPENING PANEL - GLASS PANEL CREAK

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G1: GLASS PANEL PROFILE	

	1 With the glass panel in the closed position. Check the roof opening panel alignment. REFER to: Roof Opening Panel Alignment (501-17 Roof Opening Panel, General Procedures).
	Is the profile correct? **Yes** GO to G2 . **No** Check the roof opening panel alignment REFER to: Roof Opening Panel Alignment (501-17 Roof Opening Panel, General Procedures). If the concern persists, GO to G2 .
G2: MECHANISM - CLEARANCE TO FRAME	
	1 Remove the side covers from the glass panel
 E142516	2 With the glass panel in the tilt position carry out a visual inspection of the mechanism clearance to the frame on both left and right side of the vehicle
	Does the mechanism contact the frame? **Yes** Contact dealer technical support **No** GO to G3 .
G3: MECHANISM ARM CREAK	
	1 Remove the moving glass panel REFER to: Roof Opening Panel Glass (501-17 Roof Opening Panel, Removal and Installation).
	2 Close the mechanism and gently flex the rear end of the mechanism arm inboard – both left side and right side arms
	Does this produce a creaking noise? **Yes** If customer concern is still evident contact dealer technical support **No** GO to G4 .
G4: DEBRIS IN WIND NOISE SEAL	
	1 Compress the side wind noise seals along their length to check for any debris contaminating the section area
	Is there any debris? **Yes** Remove any debris from the section area by sliding a suitable tool inside the seal GO to G5 . **No** GO to G5 .
G5: MOVING PANEL SEAL LUBRICATION	
	1 Clean all moving panel seals using a damp cloth
	2 Apply AC602/2 lubricant to the all moving panel seals using a suitable clean cloth
	Is the customer concern still evident? **Yes** If customer concern is still evident contact dealer technical support **No**

	No further action required