

Roof Opening Panel -

Torque Specifications

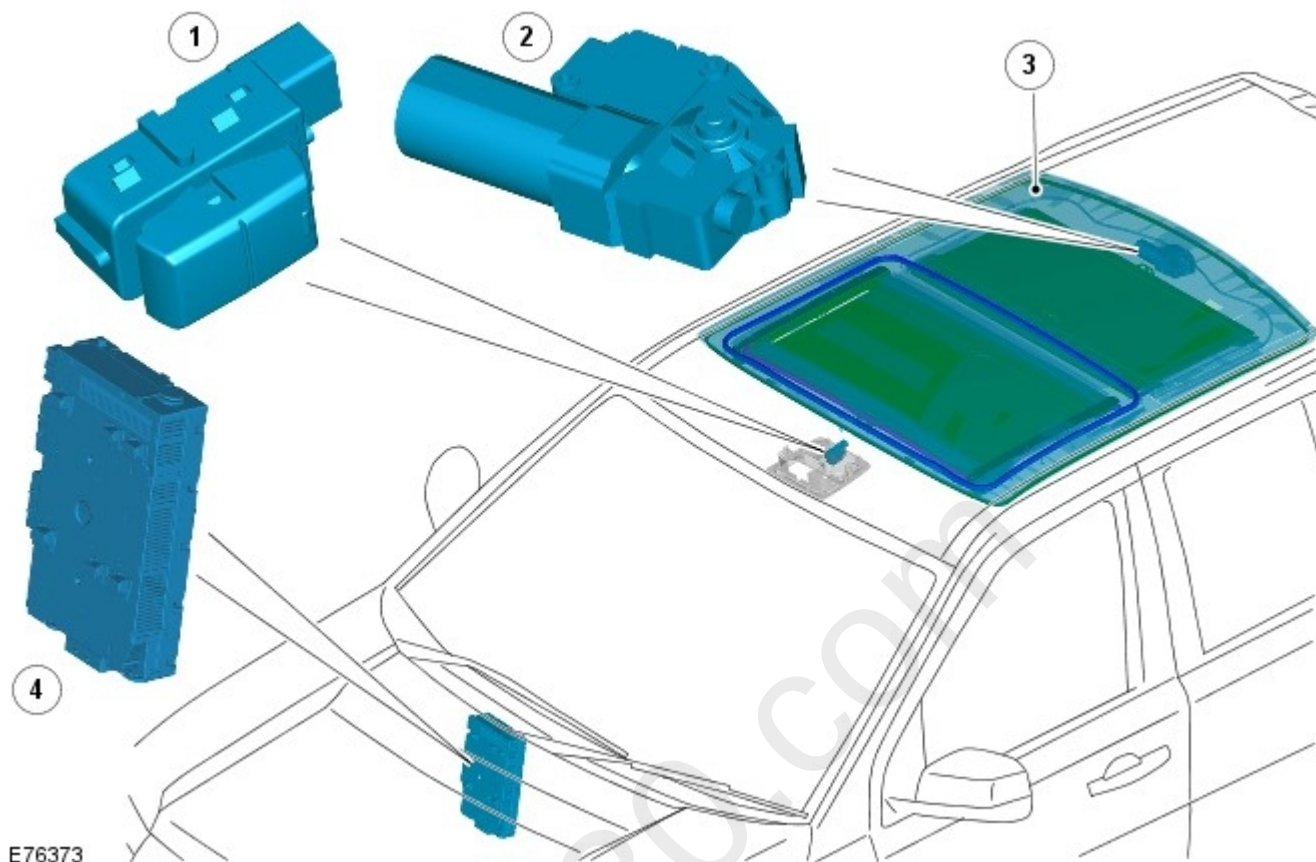
Description	Nm	lb-ft
Roof opening panel motor Torx screws	5	4
Roof opening panel alignment Torx screws	3	2
Roof opening panel bolts	3	2
Roof opening panel motor tether	4	4

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Roof Opening Panel - Roof Opening Panel

Description and Operation

COMPONENT LOCATION



E76373

Item	Part Number	Description
1	-	Switch
2	-	Control unit/motor
3	-	Roof opening panel
4	-	Central Junction Box (CJB)

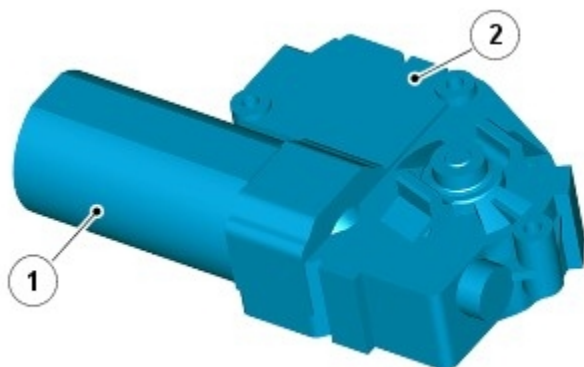
OVERVIEW

The roof opening panel is a double length glass unit, with the rear half being fixed in position.

The front half of the roof opening panel is electrically operated through a 2 way rocker switch located in the roof console. An electric motor, attached to the rear of the roof opening panel frame, drives the front glass panel to the tilt, open or closed position. The glass panel is operated by 2 cables, which are driven by the motor.

Operation of the roof opening panel is controlled by the roof opening panel control unit, which is integral with the motor. The control unit receives inputs from the CJB and the switch to control roof opening panel operation accordingly. The CJB also provides a vehicle speed signal to the control unit, which is used to calibrate the anti-trap feature.

CONTROL UNIT/MOTOR



E84954

Item	Part Number	Description
1	-	Motor
2	-	Control unit

The combined control unit and motor assembly is mounted behind the headlining, to the rear of the roof opening panel. The control unit uses inputs from the CJB and the roof opening panel switch to control operation of the motor.

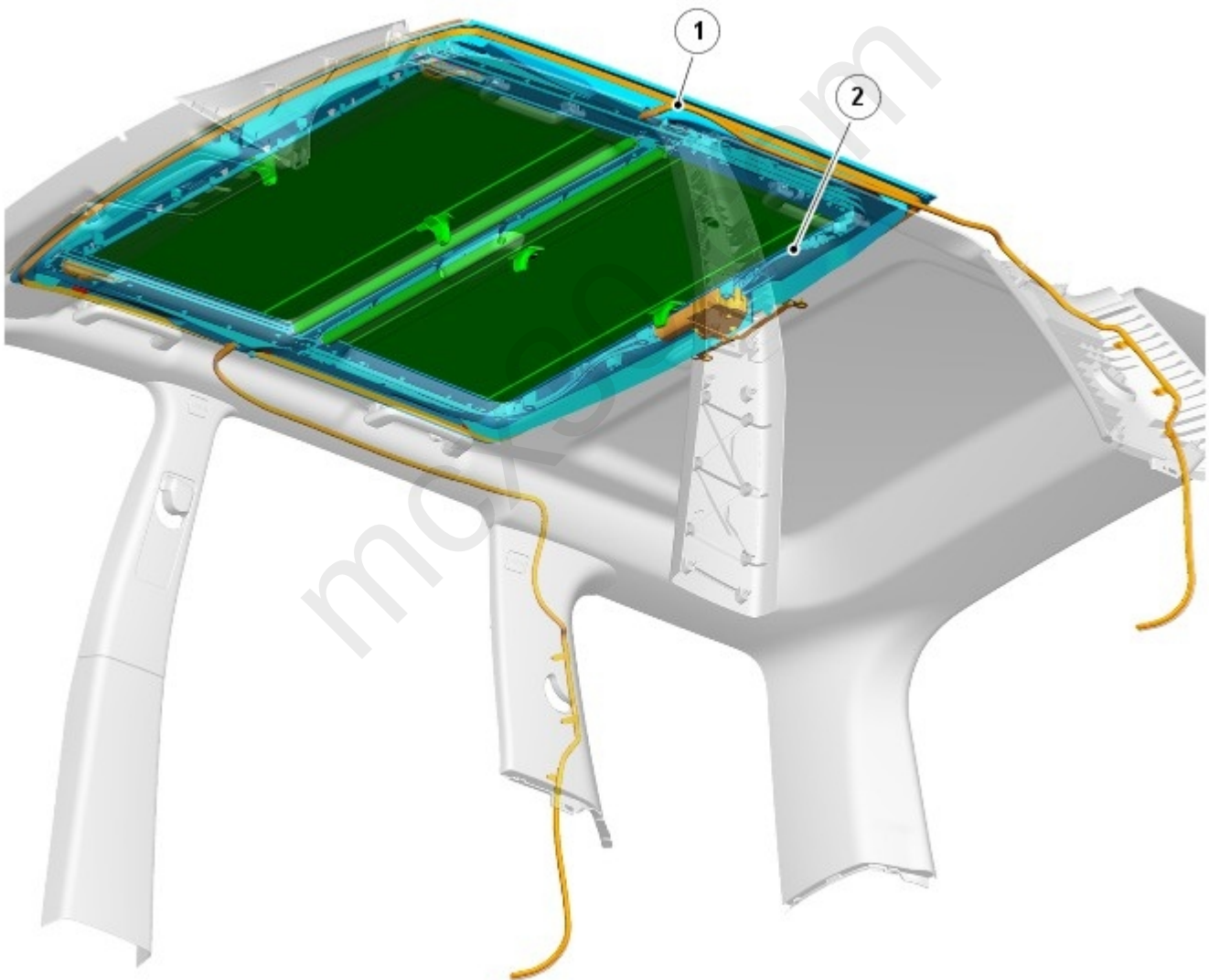
The end of the motor armature is formed as a worm drive, which drives a gear attached to the end of the motor assembly. The gear engages with helixed cables in the roof opening panel frame to form a rack and pinion drive.

The control unit incorporates a Hall effect sensor which is used to count the revolutions made by the motor armature. By counting the revolutions the control unit can accurately determine when the glass panel has reached its fully open, closed or tilt position by comparing the armature rotation value against values stored in its memory. The values are stored in the control unit's memory when the initialization routine has been carried out.

The control unit also monitors the temperature of the motor and will suspend operation if an overheat situation is likely to occur. The thermal protection function has 2 levels of operation.

- Level 1 - The control unit will only allow the roof opening panel to be closed
- Level 2 - All operation is suspended except 'Anti-Trap'.

ROOF OPENING PANEL



E84955

Item	Part Number	Description
1	-	Drain hose (2 off)
2	-	Helixed drive cable (2 off)

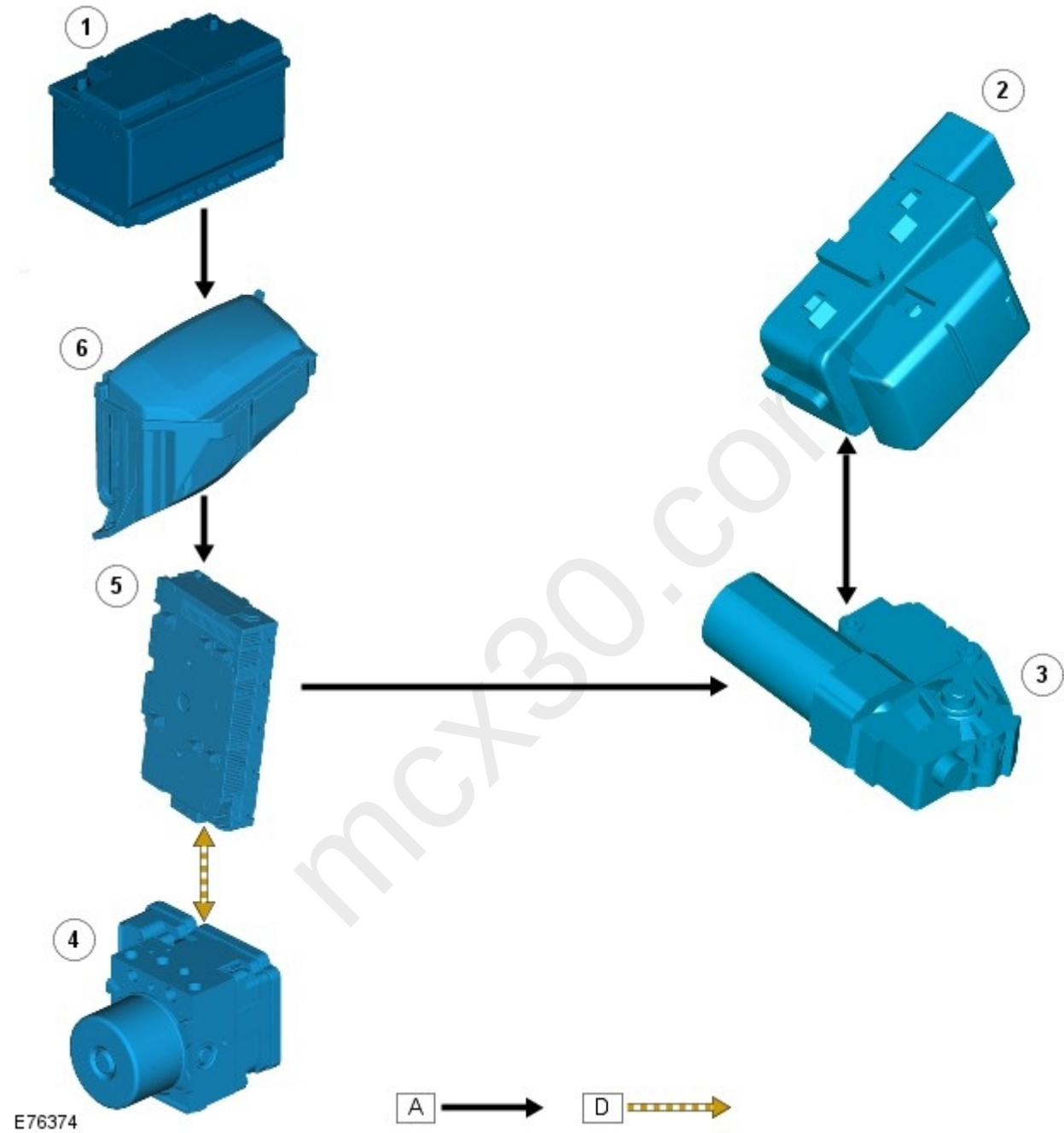
The roof opening panel is attached to the outside of the body side panels, the front roof panel and the rear roof panel with a Polyurethane (PU) adhesive. The roof panel comprises a plastic one piece frame housing 2 glass panels.

The rear glass panel is fixed in position and bonded to the roof opening panel frame using a PU adhesive. The forward glass panel is driven into position by a pair of helixed cables. The helixed cables are able to push or pull the forward glass panel into the required position.

The roof opening panel also contains 2 integral, manually operated sunblinds and 2 drain hoses. The drain hoses are connected to the center of the frame above the B pillars. The drain hoses run through the cant rails and down the C pillars to allow water collected in the frame to escape.

CONTROL DIAGRAM

• NOTE: **A** = Hardwired; **D** = High speed Controller Area Network (CAN) bus



Item	Part Number	Description
1	-	Battery
2	-	Switch
3	-	Control unit/motor
4	-	Anti-lock Brake System (ABS) module
5	-	CJB
6	-	Battery Junction Box (BJB)

PRINCIPLES OF OPERATION

The roof opening panel will only operate when the vehicle is in power mode 6 (ignition on). Power is supplied to the roof opening panel control unit/motor by the CJB, which supplies both a permanent battery and ignition power supply. The CJB also provides a vehicle speed signal to the control unit.

For details on how to operate the roof opening panel, refer to the 'Owners Handbook'.

Switch Inputs

The roof opening panel rocker switch is mounted in the roof console and is provided 2 signal feeds by the control unit. When the switch is in the rest (central) position, both connections from the control unit are open circuit. When the switch is pressed to open the glass panel, the signal feed from pin 4 of the control unit electrical connector is provided a ground path through the switch contacts. When the switch is pressed to close the glass panel, the switch grounds the signal feed from pin 8 of the control unit electrical connector.

When tilt operation is requested, the switch grounds the signal feed from pin 8 of the control unit electrical connector as described for 'close' operation.

Anti-Trap

The roof opening panel motor is calibrated to detect a blockage that will prevent the glass panel from closing. The force required to close the glass panel on a stationary vehicle will not exceed approximately 100 Newtons (N). If this limit is reached, the control unit will power the motor in the opposite direction to reverse the position of the glass panel by 200 mm.

The control unit also monitors external forces which may increase the force required to close the glass panel. The control unit bases this figure on vehicle speed, rough road conditions, and extreme ambient air temperatures and may increase the maximum force applied by the motor to approximately 150 N if required.

Vehicle Speed Signal

The vehicle speed signal is used by the roof opening panel control unit to adjust the sensitivity of the anti-trap feature. This signal allows the control unit to take into account wind resistance when closing the roof opening panel at vehicle speeds higher than 2.5 mph (4 kph).

The vehicle speed signal originates in the ABS module, and is broadcast over the high speed CAN bus. The CJB converts the vehicle speed signal into a pulsed voltage signal for delivery to the control unit. This signal pulses at a rate of 8,000 pulses per mile (5,000 pulses per kilometer), and has a duty cycle of 50% on 50% off.

Calibration

If the battery is disconnected, or the power supply is interrupted, whilst the sunroof is partially open it will need to be recalibrated.

Once the battery is reconnected, or the power supply is restored, recalibrate the sunroof as follows:

- Switch the ignition on.
- With the sunroof closed, press and release the front of the switch. The sunroof will move to the tilted position ready for calibration.
- Press the front of the sunroof switch, and hold for twenty seconds.
- After twenty seconds the sunroof will begin to move. Keep the front of the switch pressed until the sunroof has fully opened, then closed.
- Once the open/close cycle has completed and the sunroof has stopped moving, release the switch.

The sunroof can now be operated as normal.

Roof Opening Panel - Roof Opening Panel

Diagnosis and Testing

Principles of Operation

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

Roof Opening Panel Diagnostic Symptom Chart

Symptom	Probable Cause	Action
Roof opening panel - noise during operation	- Noise produced during roof opening panel operation - Side acoustic seal(s) adrift or damaged - Front acoustic seal adrift or damaged - Glass seal adrift or damaged - Drip lip adrift or damaged - Air deflector adrift or damaged - Roof opening panel motor fault	GO to Pinpoint Test A .
One-touch operation - inoperative	- Loss of switch one-touch function - initialization required	GO to Pinpoint Test B .
Roof opening panel - inoperative	- Does not close - Does not open - Does not tilt - Jammed / stuck in one position - Roof opening panel motor fault	GO to Pinpoint Test C .
Roof opening panel - unnecessary bounce back	- Side acoustic seal(s) adrift or damaged - Front acoustic seal adrift or damaged - Glass seal adrift or damaged - Drip lip adrift or damaged - Air deflector adrift or damaged - Roof opening panel motor fault	NOTE: Unnecessary bounce-back refers to the unintentional operation of the anti trap feature GO to Pinpoint Test D .
Roof opening panel - blind	- Noise produced during roof opening panel blind operation - Not latching - Not retracting - Handle adrift	GO to Pinpoint Test E .
Water ingress	- Drain tubes blocked - Seals adrift - Air deflector location	GO to Pinpoint Test F .
Wind noise	- Side acoustic seal(s) adrift or damaged - Front acoustic seal adrift or damaged - Glass seal adrift or damaged - Drip lip adrift or damaged - Air deflector adrift or damaged	GO to Pinpoint Test G .
Seals loose or adrift	- Side acoustic seal(s) adrift or damaged - Front acoustic seal adrift or damaged - Glass seal adrift or damaged - Drip lip adrift or damaged - Air deflector adrift or damaged	GO to Pinpoint Test H .

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 tested and/or the donor vehicle.

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

Visual Inspection

Mechanical	Electrical
- Roof opening panel - Helixed drive cables - Switch - Roof opening panel motor	- Fuses/relays (refer to electrical guide) - Wiring harness - Correct engagement of electrical connectors - Loose or corroded connections

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, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

DTC Index

• **NOTE:** If the control module or a component is suspect and the vehicle remains under manufacturer warranty, refer to the Warranty Policy and Procedures manual (section B1.2), or determine if any prior approval programme is in operation, prior to the installation of a new module/component.

• **NOTE:** Generic scan tools may not read the codes listed, or may read only five digit codes. Match the five digits from the scan tool to the first five digits of the seven digit code listed to identify the fault (the last two digits give extra information read by the manufacturer-approved diagnostic system).

• **NOTE:** When performing voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places and with a current calibration certificate. When testing resistance, always take the resistance of the DMM leads into account.

• **NOTE:** Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.

• NOTE: If DTCs are recorded and, after performing the pinpoint tests, a fault is not present, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

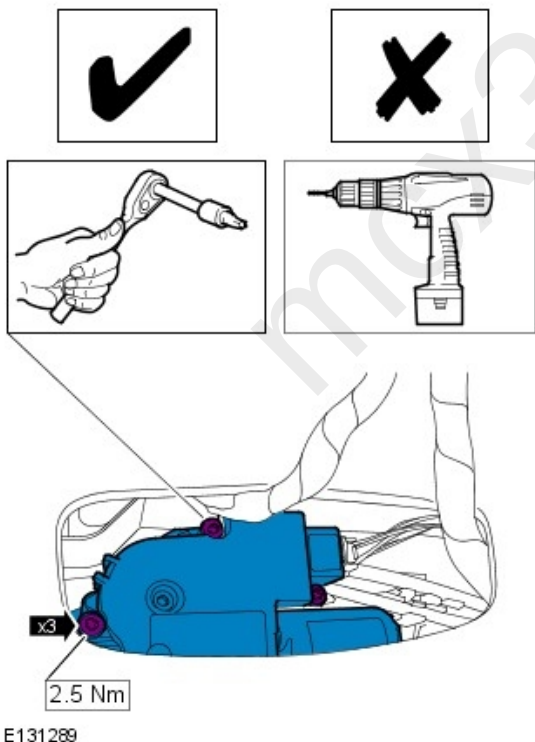
DTC	Description	Possible Cause	Action
B10EF-12	Sunroof Speed Output - circuit short to power	Roof opening panel motor speed output circuit short to power	Refer to electrical circuit diagrams and check the (speed output) circuit between the central junction box and the roof opening panel motor for short to power. Repair as required
B10EF-14	Sunroof Speed Output - circuit short to ground or open	Roof opening panel motor speed output circuit short to ground or open circuit	Refer to electrical circuit diagrams and check the (speed output) circuit between the central junction box and the roof opening panel motor for short to ground or open circuit. Repair as required
B10F2-12	Sunroof control - circuit short to power	Roof opening panel motor (ACC) circuit short to power	Refer to the electrical circuit diagrams and check the (ACC) circuit between the central junction box and the roof opening panel motor for circuit short to power. Repair as required
B10F2-14	Sunroof control - circuit short to ground or open	Roof opening panel motor (ACC) circuit short to ground or open circuit	Refer to the electrical circuit diagrams and check the (ACC) circuit between the central junction box and the roof opening panel motor for circuit short to ground or open circuit. Repair as required
B113D-12	Sunroof Global Open/Close Control - circuit short to power	Roof opening panel motor global open/close control circuit short to power	Refer to electrical circuit diagrams and check the (global close) circuit between the central junction box and the roof opening panel motor for circuit for short to power. Repair as required
B113D-14	Sunroof Global Open/Close Control - circuit short to ground or open	Roof opening panel motor global open/close control circuit short to ground or open circuit	Refer to electrical circuit diagrams and check the (global close) circuit between the central junction box and the roof opening panel motor for circuit for short to ground or open circuit. Repair as required

Roof Opening Panel Diagnostic Pinpoint

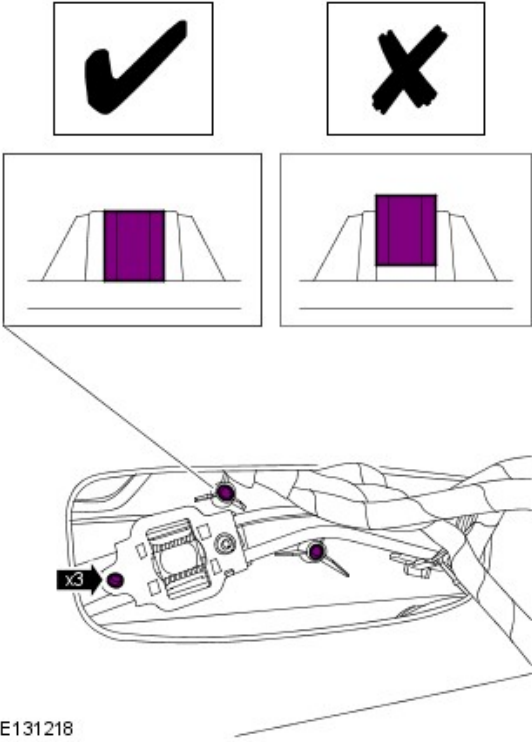
PINPOINT TEST A : ROOF OPENING PANEL - NOISE DURING OPERATION

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: MOTOR - NOISE DURING OPERATION	
• NOTE: These tests are to be carried out to determine the cause of the noise during roof opening panel operation.	
	Operate the roof opening panel through all possible positions (slide open / slide close / tilt open / tilt close) using the roof mounted switch.
	Is the roof opening panel motor noisy during operation when compared to another vehicle? Yes GO to A2. No GO to A4.

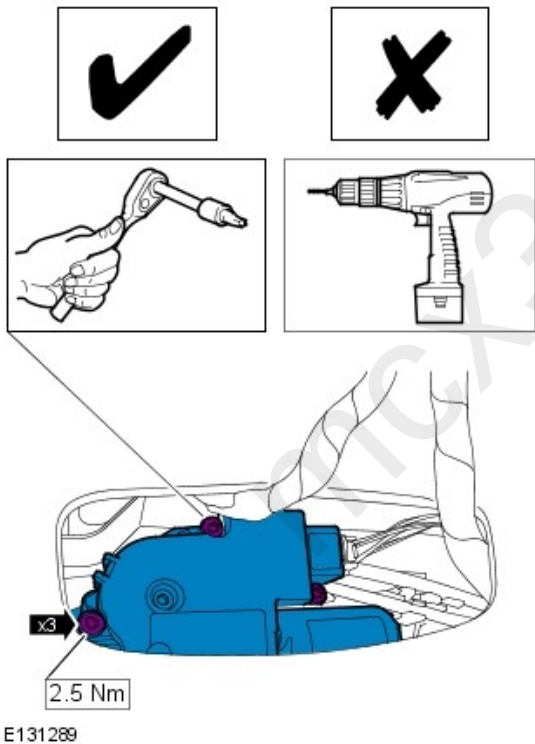
A2: MOTOR FIXING - SECURITY, LOCATION AND TORQUE

 E131289	- Access the roof opening panel motor. - Check the roof opening panel motor is correctly located and securely installed.
	Is the roof opening panel motor correctly located and securely installed? Yes GO to A3. No Correctly locate and secure the roof opening panel motor. Check for correct roof opening panel operation. If the concern persists, GO to A1.

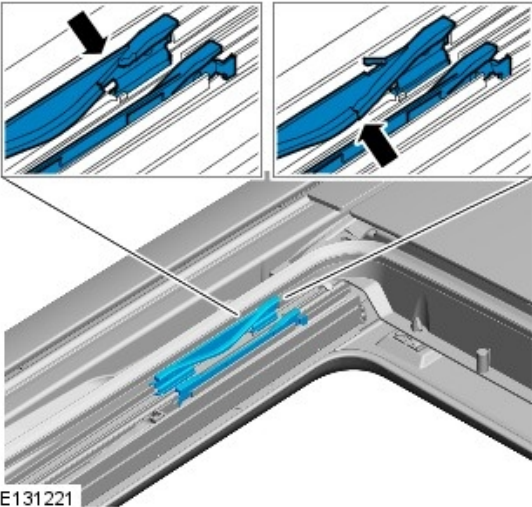
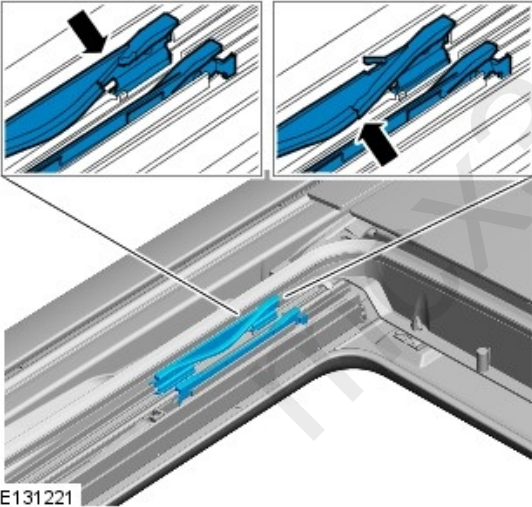
A3: MOTOR FIXINGS - HEXAGONAL MOTOR MOUNTING INSERTS

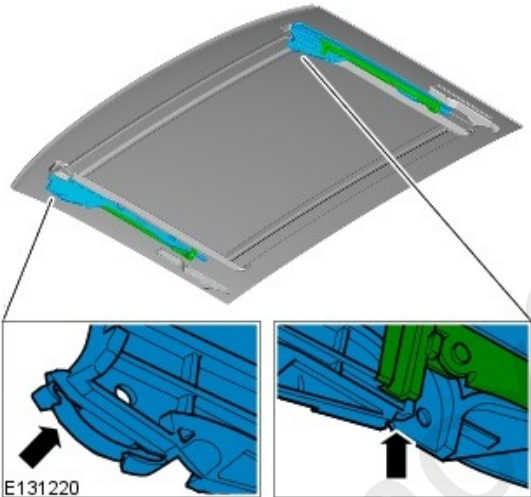
 E131218	1 Remove the roof opening panel motor from the roof opening panel and confirm the 3 brass hexagonal motor mounting inserts on the roof opening panel are correctly located and secure. REFER to: Roof Opening Panel Motor (501-17 Roof Opening Panel, Removal and Installation).
	Are the 3 brass hexagonal motor mounting inserts correctly located and securely installed? Yes Install a new roof opening panel motor. REFER to: Roof Opening Panel Motor (501-17 Roof Opening Panel, Removal and Installation). No Replace the roof opening panel. REFER to: Roof Opening Panel (501-17 Roof Opening Panel, Removal and Installation).
A4: AIR DEFLECTOR - NOISE	1 Operate the roof opening panel using the roof mounted switch to determine the cause of the noise during the roof opening panel operation.
	Is the air deflector causing the noise during movement of the roof opening panel? Yes GO to A5. No GO to A6.
A5: AIR DEFLECTOR - ALIGNMENT	1 Check the alignment of the air deflector spring.
PINPOINT TEST B : ROOF OPENING PANEL - ONE TOUCH SWITCH OPERATION INOPERATIVE	TEST CONDITIONS B1: ROOF OPENING PANEL - OPERATION • NOTE: These tests are to be carried out to determine the cause of the loss of one touch operation.
Operate the roof opening panel through all possible positions (slide open / slide close / tilt open / tilt close) without using one touch operation. Does the roof opening panel operate through all possible positions correctly? Yes Perform the manual roof opening panel initialization procedure. REFER to: Motor Synchronization (501-17 Roof Opening Panel, General Procedures). Check for correct roof opening panel operation. If the concern persists, use the manufacturer approved diagnostic system to perform the "roof opening panel initialization procedure" including "vehicle hard reset procedure as required". Check for correct roof opening panel operation. GO to B2. No GO to Pinpoint Test C.	DETAILS/RESULTS/ACTIONS
B2: ONE TOUCH SWITCH OPERATION Operate one touch function the roof opening panel using the roof mounted switch. Does the one touch function of the roof opening panel switch operate correctly? Yes No further action required. No Install a new roof opening panel motor. REFER to: Roof Opening Panel Motor (501-17 Roof Opening Panel, Removal and Installation).	DETAILS/RESULTS/ACTIONS
PINPOINT TEST C : ROOF OPENING PANEL - INOPERATIVE TEST CONDITIONS C1: ROOF OPENING PANEL - FUSE • NOTE: These tests are to be carried out to determine the cause of the loss of roof opening panel functionality.  E131209	DETAILS/RESULTS/ACTIONS 1 Refer to the electrical circuit diagrams and check the fused link to the roof opening panel motor.

	Is the fused link (VBATT) circuit to the roof opening panel motor intact? Yes GO to C2. No The fused link to the roof opening panel motor has failed. Refer to the electrical circuit diagrams and check the (VBATT) circuit between the fused link and the roof opening panel motor for short circuit to ground. Replace the fused link or repair the circuit as required. Check for correct roof opening panel operation.
C2: VEHICLE - AUTHORIZATION • NOTE: With the ignition state ON the authorization signal voltage is supplied on the (ACC) circuit of the roof opening panel motor, and should be greater than 7volts when the roof panel authorization signal is active and less than 1volt when the roof panel authorization signal is inactive .	
	1 Access the roof opening panel switch. REFER to: Overhead Console (501-12 Instrument Panel and Console, Removal and Installation). 2 Refer to the electrical circuit diagrams and check the (ACC) circuit to the roof opening panel motor for correct operation (see note above).
	Does the (ACC) circuit to the roof opening panel motor show the expected voltages? Yes GO to C3. No Confirm DTC B10F2-14 (Sunroof control - circuit short to ground or open) has been stored, refer to the electrical circuit diagrams and check the (ACC) circuit between the central junction box and the roof opening panel motor for fault. Repair as required. If the DTC has not been stored, investigate the central junction box (ACC) circuit operation.
C3: ROOF OPENING PANEL - SWITCH CONNECTOR	
	1 Refer to the electrical circuit diagrams and check the roof opening panel switch terminals and housing for location and condition.
	Are the roof opening panel switch terminals and housing located correctly and in good condition? Yes GO to C4. No Correctly relocate or replace any roof opening panel switch connector terminals as required. Check for correct roof opening panel operation.
C4: ROOF OPENING PANEL - MOTOR CONNECTOR	
	1 Access the roof opening panel motor. REFER to: Roof Opening Panel Motor (501-17 Roof Opening Panel, Removal and Installation). 2 Refer to the electrical circuit diagrams and check the roof opening panel motor terminals and housing for location and condition.
	Are the roof opening panel motor connector terminals and housing located correctly and in good condition? Yes GO to C5. No Correctly relocate or replace any roof opening panel motor connector terminals as required. Check for correct roof opening panel operation.
C5: SWITCH - CIRCUIT CHECK 1	
• NOTE: The roof opening panel motor gives a voltage out on the open and close circuits which is grounded when the switch is operated, this voltage should be greater than 7volts (switch inactive) and less than 1volt (switch active) with the ignition state switched to on.	
	1 Refer to the electrical circuit diagrams and locate the open and close circuits between the roof opening panel motor and the roof opening panel switch, monitor the voltage on each circuit as the switch is operated
	Do both open and close switch circuit voltages change from greater than 7volts to less than 1volt when the roof opening panel open or close switches are operated? Yes GO to C8. No GO to C6.
C6: SWITCH - CIRCUIT CHECK 2	
• NOTE: During the previous check, if the voltage remained high (greater than 7volts), refer to the electrical circuit diagrams and check the switch circuit for fault. • NOTE: During the previous check, if the voltage remained low (less than 1volt), refer to the electrical circuit diagrams and check the roof opening panel motor circuit for fault.	
	1 Refer to notes above.
	Did the voltage remain low (less than 1volt)? Yes GO to C7. No The voltage remained high (above 7volts) refer to the electrical circuit diagrams and check the roof opening panel switch circuit for fault.
C7: MOTOR SUPPLY - VOLTAGE	
	1 Refer to the electrical circuit diagrams and check the voltage between the power (VBATT) and ground (GND) circuits to the roof opening panel motor for battery supply voltage (approx. 12volts).

	Do the (VBATT) and (GND) circuits to the roof opening panel motor have battery supply voltage? Yes GO to C8. No Check the (VBATT) and (GND) circuits to the roof opening panel motor for fault. Repair as required. Check for correct roof opening panel operation.
C8: MOTOR - FAILURE	
	1 Operate the roof opening panel using the roof mounted switch.
	When operating the roof opening panel using the roof mounted switch does the motor click? Yes GO to C9. No Replace the roof opening panel motor. REFER to: Roof Opening Panel Motor (501-17 Roof Opening Panel, Removal and Installation). Perform the manual roof opening panel initialization procedure. REFER to: Motor Synchronization (501-17 Roof Opening Panel, General Procedures). Check for correct roof opening panel operation.
C9: MOTOR TEST - REMOVED	
• NOTE: Ensure the roof opening panel motor weight is supported to avoid damage while any electrical connectors are attached.	
	1 Remove the 3 roof opening panel motor fixings, carefully lower the motor from the roof opening panel. REFER to: Roof Opening Panel Motor (501-17 Roof Opening Panel, Removal and Installation).
	2 Operate the roof opening panel switch.
	Does the roof opening panel motor operate? Yes GO to C11. No GO to C10.
C10: VEHICLE - HARD RESET	
 E131289	1 Reinstall the roof opening panel motor to the roof opening panel frame.
	2 Using the manufacturer approved diagnostic system carry out the vehicle hard reset procedure.
	3 Using the manufacturer approved diagnostic system perform the roof opening panel initialization procedure.
	4 Operate the one touch function of the roof opening panel using the roof mounted switch.
	Does the one touch function of the roof opening panel switch operate correctly? Yes No further action required. No Replace the roof opening panel motor. Using the manufacturer approved diagnostic system perform the roof opening panel initialization procedure. Check for correct roof opening panel operation.
C11: MANUAL - ROOF OPERATION	
	1 Reinstall the roof opening panel motor to the roof opening panel frame.

E131217	2 Manually operate the roof opening panel through all possible positions (slide open / slide close / tilt open / tilt close).
	Can the roof opening panel be manually operated through all possible positions? Yes Contact dealer technical support. No GO to C12.
C12: GLASS PANEL - REMOVAL	
E131213	1 Remove the glass panel from the roof opening panel. REFER to: Roof Opening Panel Glass (501-17 Roof Opening Panel, Removal and Installation).
	Can the glass panel be removed? Yes GO to C13. No If the glass panel can not be removed by the standard R&I procedure, remove the 20 machine screws that secure the glass panel guide(s), then push the glass panel outward, manually operate the roof opening panel to the glass (slide open) position and remove the front glass guide locators. Manually operate the roof opening panel to the closed position and remove the roof opening panel. If removal is not possible contact dealer technical support. GO to C13.
C13: GLASS PANEL REMOVED	
E131215	1 Carry out visual and manual inspection of the rail(s) for debris.

	Are the rail(s) obstructed by debris? Yes Clear any obstruction from the rail(s). Refer to illustration E131215, prior to reassembly apply grease (KP 1N-30 or ISO-L-X-CDBE1) to the areas marked in black. GO to C14. No GO to C14.
C14: RAIL MOUNTED GUIDE BRACKETS - CONDITION  E131221	1 Carry out visual and manual inspection of the rail mounted guide brackets for cracks or damage (pieces broken).
	Are the rail mounted guide brackets cracked or damaged? Yes Replace the rail mounted guide bracket(s) as required. GO to C15. No Correctly re-assemble the rail mounted guide bracket(s). GO to C15.
C15: RAIL MOUNTED GUIDE BRACKETS - LOCATION  E131221	1 Carry out visual and manual inspection of the rail mounted guide brackets.
	2 Confirm that the rail mounted guide brackets are correctly located, with no movement in any direction.
	Are the rail mounted guide brackets correctly located, with no movement in any direction? Yes GO to C16. No Correctly re-assemble or if required replace the rail mounted guide bracket(s) as required. GO to C16.
C16: REAR SLIDERS - CONDITION AND LOCATION	

 E131219	1 Carry out visual and manual inspection of the rear sliders and the connecting bar for damage (pieces broken) and correct location.
	Are the rear sliders or connecting bar damaged / jammed? Yes Replace the damaged rear slider(s) or connecting bar as required. No GO to C17.
C17: GLASS MOUNTED GUIDE BRACKETS	
 E131220	1 Visually inspect the glass mounted guide brackets on the glass panels for damage.
	Are the glass mounted guide brackets damaged? Yes Install a new opening panel glass. REFER to: Roof Opening Panel Glass (501-17 Roof Opening Panel, Removal and Installation). No GO to C18.
C18: GLASS PANEL - REASSEMBLY	
	1 Install the rails using the 20 machine screws that secure the glass panel guide(s) if previously removed. 2 Re-assemble the glass panel onto the roof opening panel. REFER to: Roof Opening Panel Glass (501-17 Roof Opening Panel, Removal and Installation). 3 Perform the manual roof opening panel initialization procedure. REFER to: Motor Synchronization (501-17 Roof Opening Panel, General Procedures). 4 Check for correct roof opening panel operation.
	Does the roof opening panel operate correctly? Yes No further action required. No Contact dealer technical support.

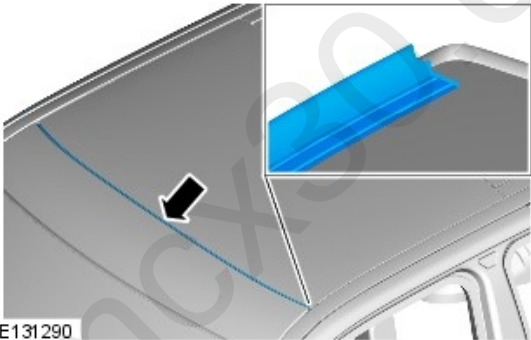
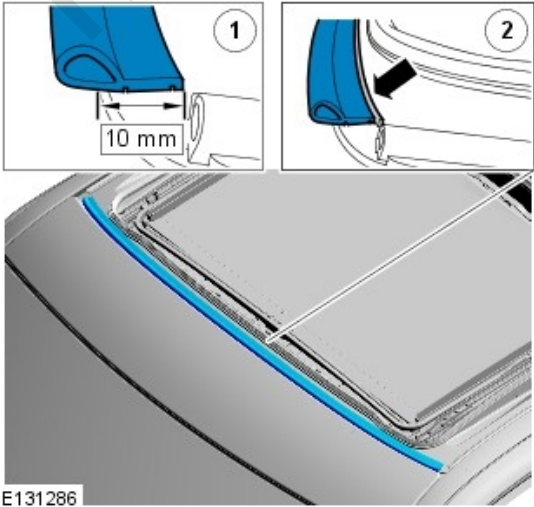
PINPOINT TEST D : ROOF OPENING PANEL - BOUNCE BACK TEST CONDITIONS

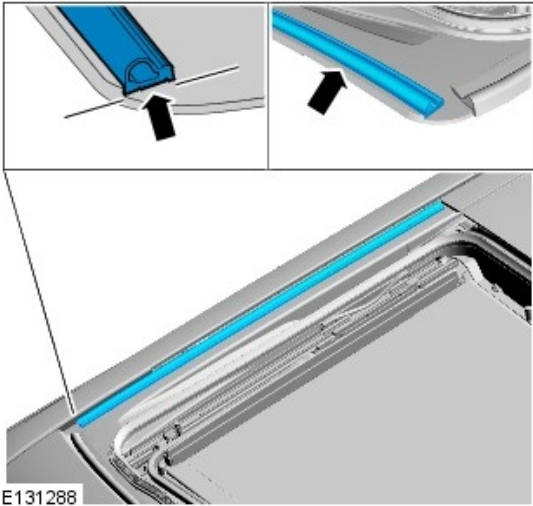
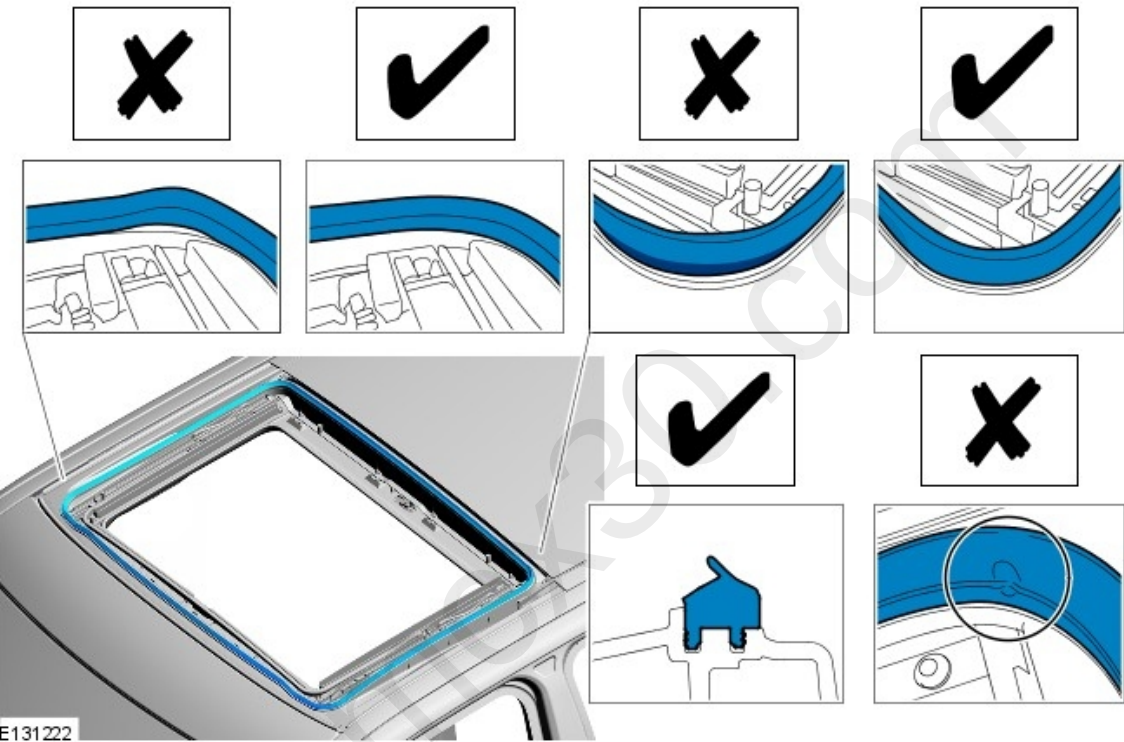
DETAILS/RESULTS /ACTIONS

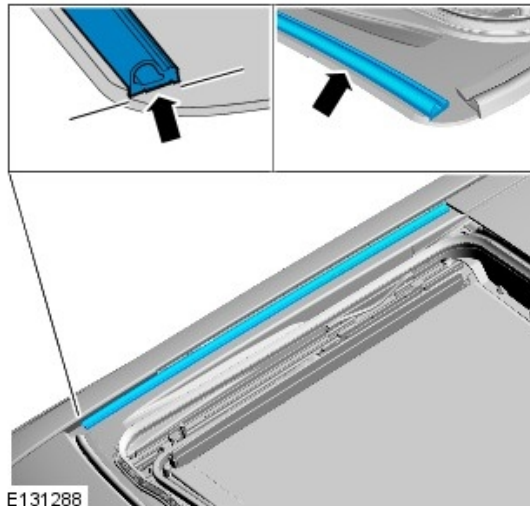
D1: INITIALIZATION

• NOTE: These tests are to be carried out to determine the cause of the unnecessary roof opening panel bounce back.

- 1** Perform the manual roof opening panel initialization procedure.

	REFER to: Motor Synchronization (501-17 Roof Opening Panel, General Procedures). 2 Operate the roof opening panel through all possible positions (slide open / slide close / tilt open / tilt close) using the roof mounted switch. 3 Operate the roof opening panel one touch function five times in succession using the roof mounted switch.
	Does the roof opening panel operate correctly five times in succession? Yes No further action required. No GO to D2.
D2: INCORRECT SEAL LOCATION CAUSING BOUNCE-BACK	
	1 Visually inspect the location of the roof opening panel seals. 2 Drip Lip
 E131290	
 E131286	3 Front Acoustic Seal • Vehicles built up to VIN 154971. • Vehicles built from VIN 154972.

 E131288	4 Side Acoustic Seal
 E131222	5 Aperture Seal Are any of the seals causing the bounce back? Yes GO to D3. No GO to D8.
D3: SIDE ACOUSTIC SEAL - LOCATION	



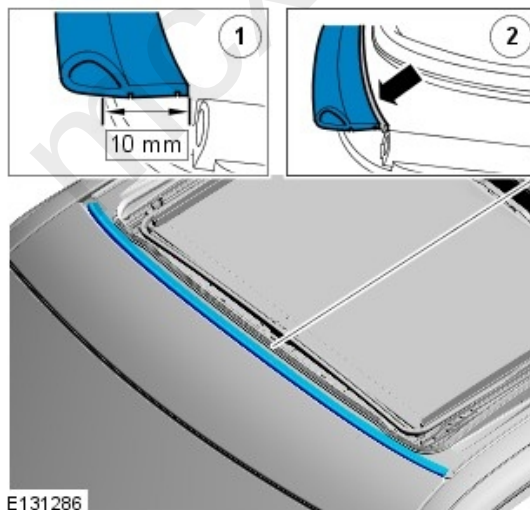
- 1** Visually inspect the roof opening panel side acoustic seals.

Is the bounce back caused by either of the roof opening panel side acoustic seals?

Yes
Replace the side acoustic seals. Clean all relevant surfaces then correctly position and bond the new side acoustic seals to the roof opening panel. [GO to D4.](#)

No
[GO to D4.](#)

D4: FRONT ACOUSTIC SEAL - LOCATION



- 1** Visually inspect the roof opening panel front acoustic seal.

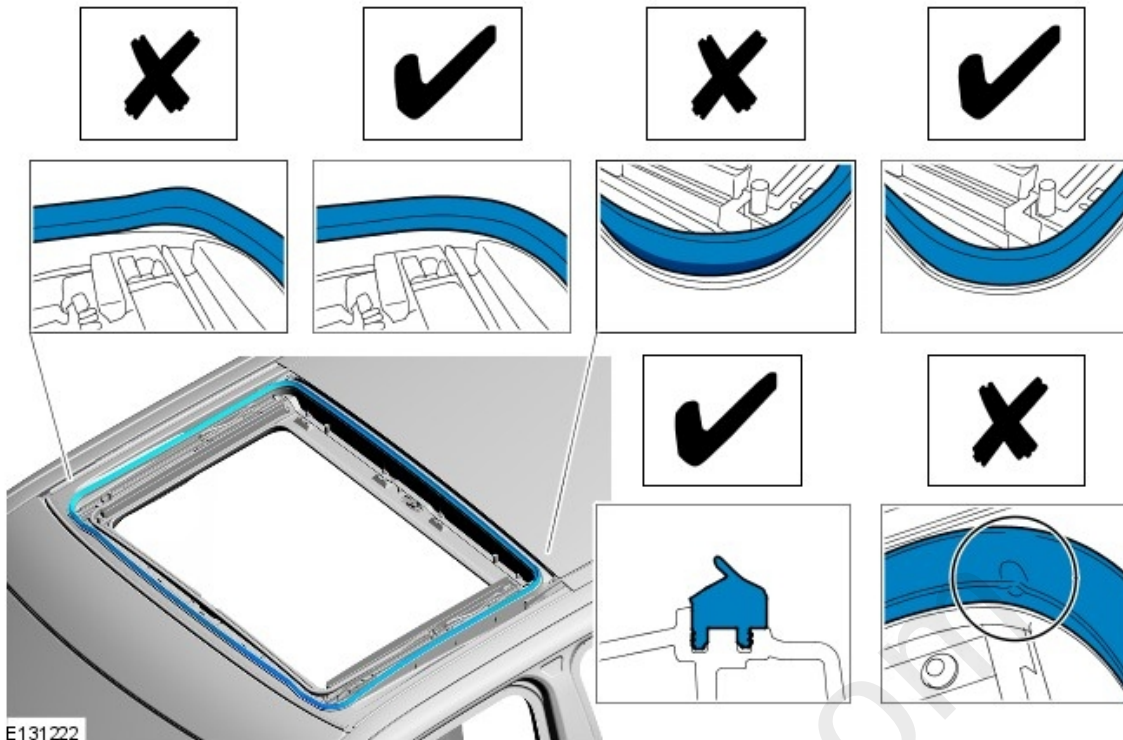
- Vehicles built up to VIN 154971.
- Vehicles built from VIN 154972.

Is the bounce back caused by the roof opening panel front acoustic seal?

Yes
Replace the front acoustic seal. Clean all relevant surfaces then correctly position and bond the front acoustic seal to the roof opening panel.

No [GO to D5.](#)
[GO to D5.](#)

D5: GLASS SEAL - LOCATION



- 1 Visually inspect the roof opening panel glass seal.

Is the bounce back caused by the roof opening panel glass seal?

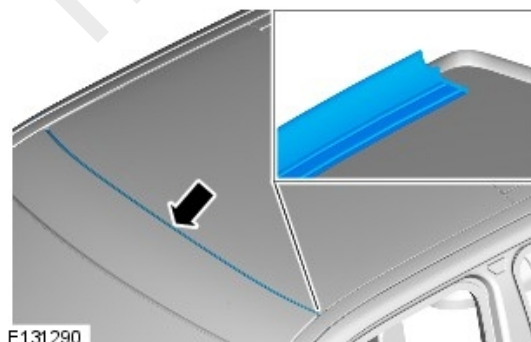
Yes

Install a new roof opening panel glass seal.
REFER to: [Roof Opening Panel Seal](#) (501-17 Roof Opening Panel, Removal and Installation).
[GO to D6.](#)

No

[GO to D6.](#)

D6: DRIP LIP ON THE GLASS PANEL - LOCATION

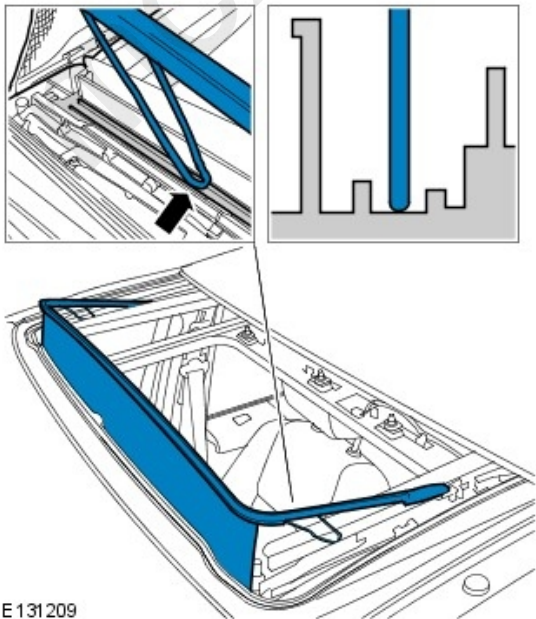


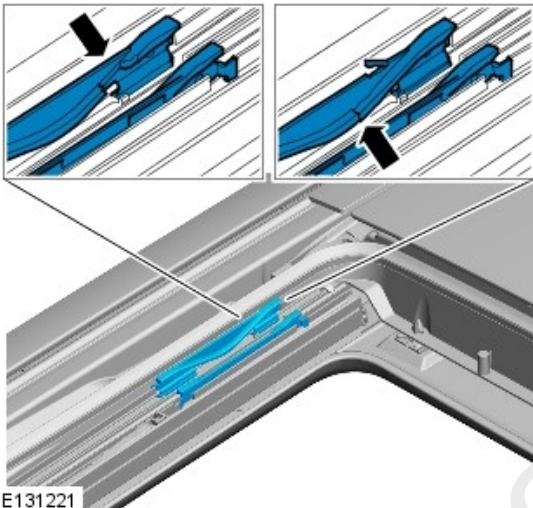
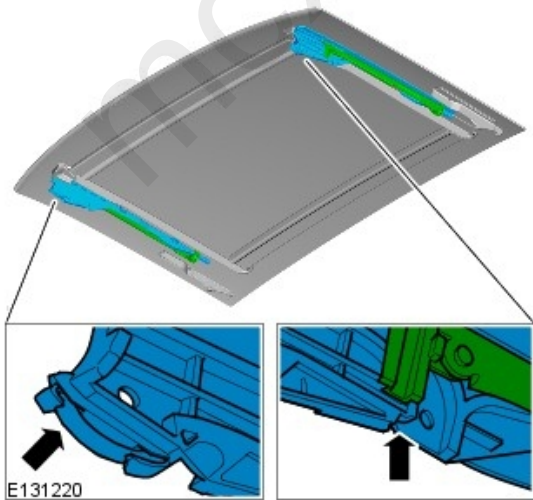
- 1 Visually inspect the roof opening panel glass drip lip.

Is the bounce back caused by the roof opening panel glass drip lip?

Yes

Replace the glass panel (The drip lip is not a serviceable item).
REFER to: [Roof Opening Panel Glass](#) (501-17 Roof Opening

		Panel, Removal and Installation). GO to D7. No GO to D7.
D7: CORRECT OPERATION		
	1 Perform the manual roof opening panel initialization procedure. REFER to: Motor Synchronization (501-17 Roof Opening Panel, General Procedures). 2 Operate the roof opening panel through all possible positions (slide open / slide close / tilt open / tilt close) using the roof mounted switch. 3 Operate the roof opening panel one touch function five times in succession using the roof mounted switch.	
	Does the roof opening panel operate correctly five times in succession? Yes No further action required. No GO to D8.	
D8: AIR DEFLECTOR - LOCATION		
 E 131209	1 Visually inspect the roof opening panel air deflector.	
	Is the bounce back caused by the roof opening panel air deflector? Yes Correctly relocate and secure, or	

	replace if required the roof opening panel air deflector. REFER to: Air Deflector (501-17 Roof Opening Panel, Removal and Installation). GO to D7. No GO to D9.
D9: GLASS PANEL - REMOVED  E131221	1 Carry out visual and manual inspection of the glass panel guides for debris.
	Are the guide(s) obstructed by debris? Yes Clear any obstruction from the glass panel guide(s). GO to D10. No GO to D10.
D10: GLASS MOUNTED GUIDE BRACKETS - CONDITION  E131220	1 Carry out visual and manual inspection of the glass mounted guide brackets for cracks or damage.
	Are the glass mounted guide brackets cracked or damaged? Yes Replace the glass panel (The guide brackets are non serviceable). GO to D11. No GO to D11.

D11: REAR SLIDERS - CONDITION

E131219

- 1** Carry out visual and manual inspection of the rear sliders and the connecting bar for damage (pieces broken) and correct location.

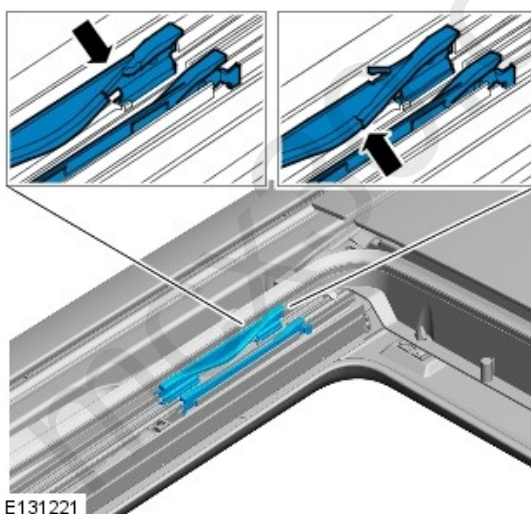
Are the rear sliders or connecting bar damaged / jammed?

Yes

Replace the damaged rear slider(s) or connecting bar as required. [GO to D12.](#)

No

[GO to D12.](#)

D12: RAIL MOUNTED GUIDE BRACKETS - CONDITION

E131221

- 1** Carry out visual and manual inspection of the rail mounted guide brackets for cracks or damage (pieces broken).

Are the rail mounted guide brackets cracked or damaged?

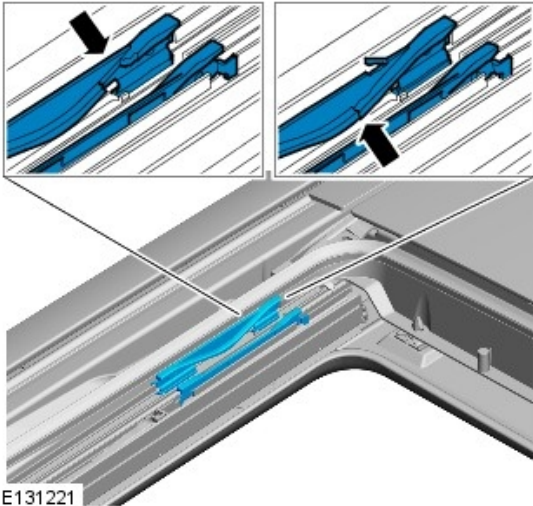
Yes

Replace the rail mounted guide bracket(s) as required. [GO to D13.](#)

No

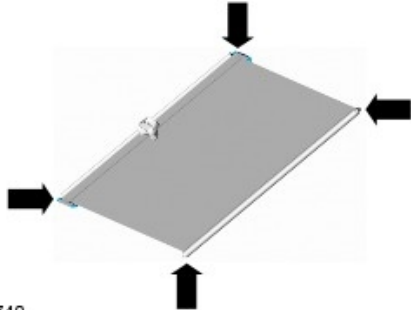
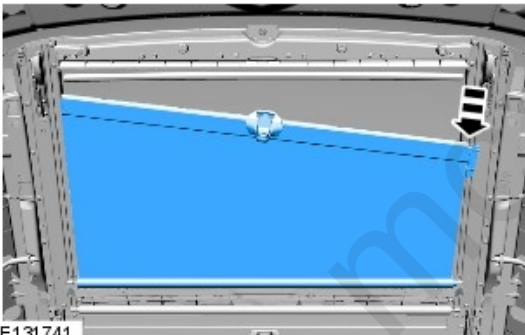
[GO to D13.](#)

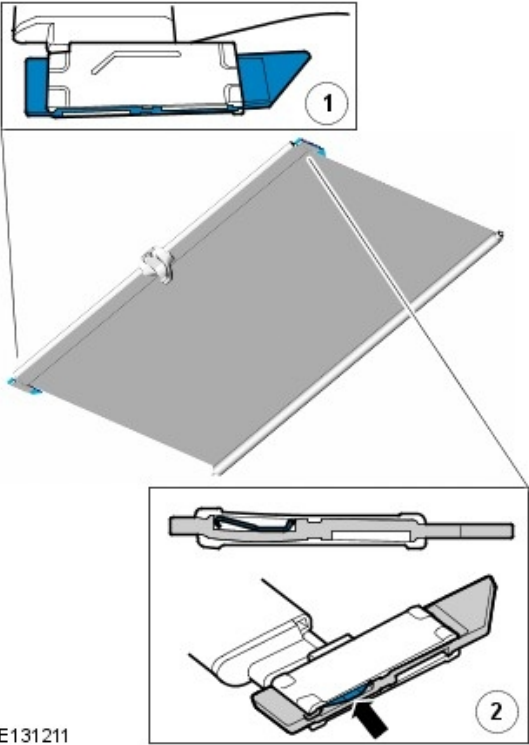
D13: RAIL MOUNTED GUIDE BRACKETS - LOCATION

 E131221	1 Carry out visual and manual inspection of the rail mounted guide brackets.
	2 Confirm that the rail mounted guide brackets are correctly located, with no movement in any direction.
	Are the rail mounted guide brackets correctly located, with no movement in any direction? Yes GO to D14. No Correctly re-assemble or if required replace the rail mounted guide bracket(s). GO to D14.
D14: GLASS PANEL - REASSEMBLY	
	1 Re-assemble the glass panel onto the roof opening panel. 2 Perform the manual roof opening panel initialization procedure. REFER to: Motor Synchronization (501-17 Roof Opening Panel, General Procedures). 3 Check for correct roof opening panel operation.
	Does the roof opening panel operate correctly? Yes No further action required. No Contact dealer technical support.

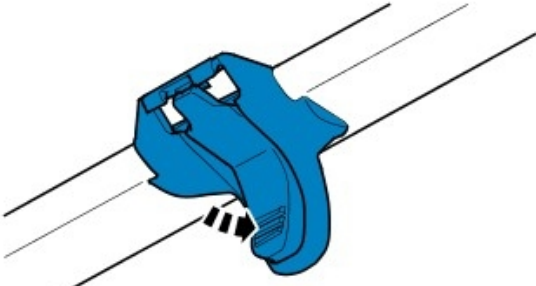
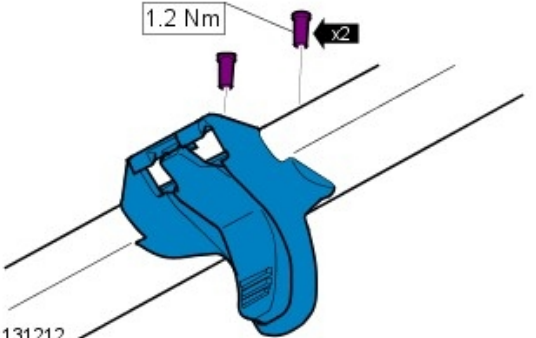
PINPOINT TEST E : ROOF OPENING PANEL BLIND

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: ROOF OPENING PANEL BLIND - OPERATION	
• NOTE: These tests are to be carried out to determine the cause of the roof opening panel blind noisy operation, not latching or not retracting.	
	1 Operate the roof opening panel blind through all movements and latch to the frame.
	Does the roof opening panel blind operate through all movements and latch correctly? Yes GO to E2. No

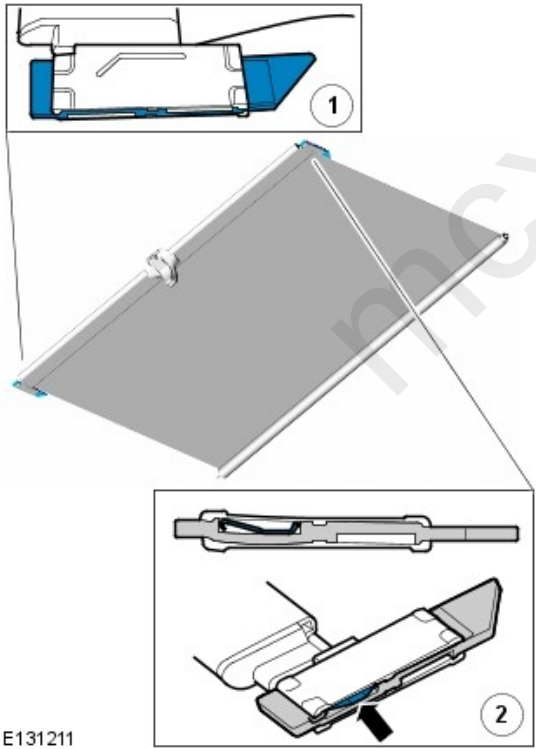
		GO to E8.
E2: ROOF OPENING PANEL BLIND - NOISE DURING OPERATION		
	1	Operate the roof opening panel blind through all movements and latch to the frame.
	Is the roof opening panel blind noisy during operation when compared to another vehicle?	
	Yes GO to E3.	
	No GO to E8.	
E3: ROOF OPENING PANEL BLIND - ASSEMBLY		
 E131740	1	Carry out visual checks of the roof opening panel blind assembly.
	2	Confirm the correct location of the mounting pins and the slide shoe(s).
	Are the mounting pins and the slide shoe(s) correctly located?	
	Yes GO to E4.	
	No Correctly reassemble the mounting pins or slide shoe(s). GO to E2.	
E4: ROOF OPENING PANEL BLIND - SLIDE SHOES		
	1	Operate the roof opening panel blind through all movements and latch to the frame.
	2	Carry out visual, manual and audible checks of the roof opening panel blind assembly during operation.
	Is the noise caused by the slide shoe(s) in the guide(s)?	
	Yes GO to E5.	
	No GO to E7.	
E5: SLIDESHOE / GUIDES - CONTAMINATION		
 E131741	1	Remove the leading edge of the roof opening panel blind, dismantle the slide shoe(s) from the guide(s).
	2	Inspect the guide(s) for debris.
	Are the guide(s) contaminated with debris?	
	Yes Clear any debris from the guide(s). Reassemble the slide shoe(s) into the guide(s), Reinstall the roof opening panel blind. GO to E1.	
	No GO to E6.	
E6: SLIDE SHOE(S) / RUBBERS / SPRINGS - ASSEMBLY		

 E131211	1 Check that the slide shoe rubbers and springs are correctly assembled.
	Are the slide shoe rubbers and springs correctly assembled? Yes Replace the roof opening panel blind. GO to E7. No Correctly reassemble the slide shoe rubbers and springs into the slide shoes, reassemble the slide shoes into the guides. GO to E1.
E7: ROOF OPENING PANEL BLIND - MECHANISM NOISE	
	1 Operate the roof opening panel blind through all movements and latch to the frame.
	Is the noise caused by the roof opening panel blind mechanism? Yes Replace the roof opening panel blind. GO to E1. No GO to E1.
E8: ROOF OPENING PANEL BLIND - LATCH OPERATION	
	1 Operate the roof opening panel blind through all movements and latch correctly to the frame.
	Does the roof opening panel blind latch correctly? Yes GO to E9. No GO to E12.
E9: ROOF OPENING PANEL BLIND - RETRACTION	
	1 Operate the roof opening panel blind through all movements and then retract.
	Does the roof opening panel blind retract correctly? Yes GO to E1. No GO to E10.
E10: ROOF OPENING PANEL BLIND - REWIND PROCEDURE	
	1 Remove the roof opening panel blind from the roof opening panel.
	2 Rewind the roof opening panel blinds mechanism referring to the roof opening panel blind rewind procedure in this procedure.
	3 Reassemble the roof opening panel blind and reinstall.
	Could the rewind procedure be completed correctly? Yes GO to E11. No Replace the roof opening panel blind. GO to E1.
E11: ROOF OPENING PANEL BLIND - REINSTALL	
	1 Reinstall the roof opening panel blind to the roof opening panel. REFER to: Roof Opening Panel Blind (501-17 Roof Opening Panel, Removal and Installation).
	2 Operate the roof opening panel blind through all movements and then retract.
	Does the roof opening panel blind retract correctly? Yes No further action required. No Replace the roof opening panel blind.
E12: VISUAL INSPECTION	
	1 Carry out visual inspection of the roof opening panel blind.
	Is the roof opening panel blind handle installed? Yes GO to E13. No Reinstall the roof opening panel blind handle. Check for correct operation.

E13: HANDLE REPLACEMENT

 E131210	1 Blind (check)
 E131212	2 Carry out visual inspection of the roof opening panel blind.
	Is the roof opening panel blind handle damaged? Yes Replace the damaged roof opening panel blind handle. GO to E15. No GO to E14.

E14: BLIND - MOUNTING PINS / SLIDE SHOES - LOCATION

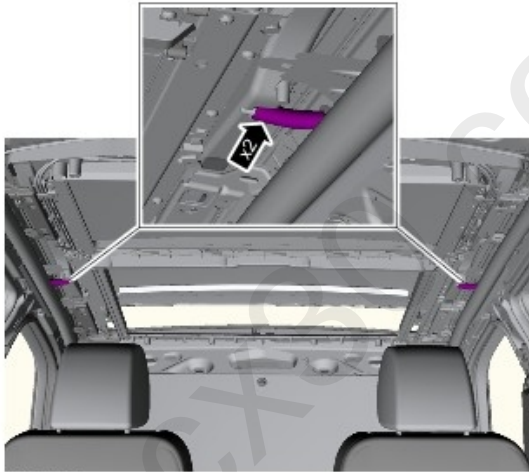
 E131211	1 Carry out visual and manual inspection of the roof opening panel blind mounting pins and slide shoe(s).
	Are the mounting pins and slide shoe(s) intact and correctly located? Yes GO to E15. No Correctly reassemble the mounting pins and slide shoe(s) reinstall the roof opening panel blind. Check for correct operation.

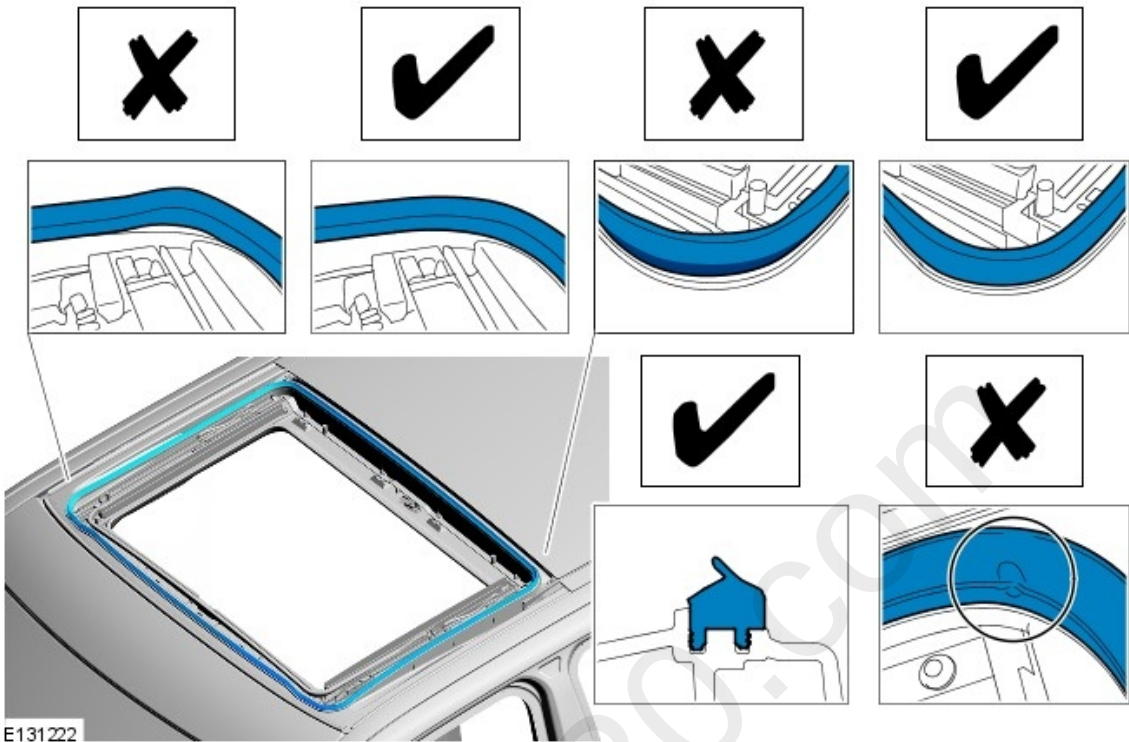
E15: ROOF OPENING PANEL BLIND - DAMAGED

	1 Carry out visual inspection of the roof opening panel blind. Is the roof opening panel blind beam miss-shaped in such a way that the handle latching feature is no longer in line with the frame latching feature? Yes Replace the roof opening panel blind.
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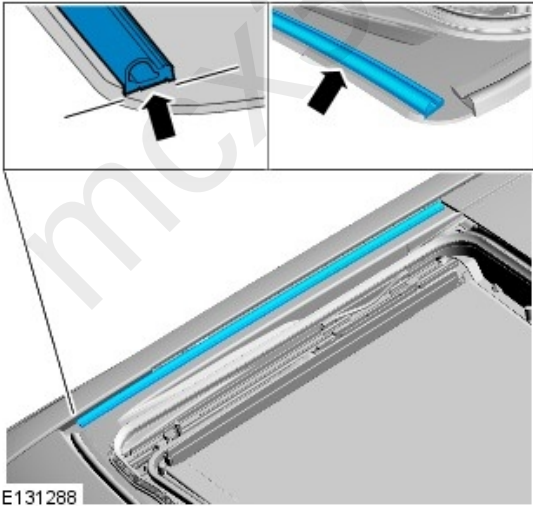
No
Contact dealer technical support.

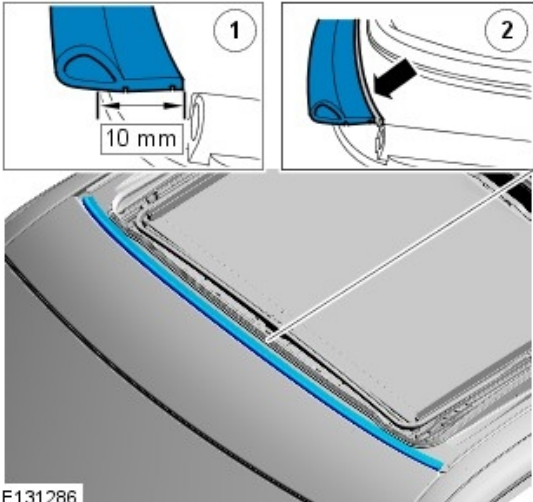
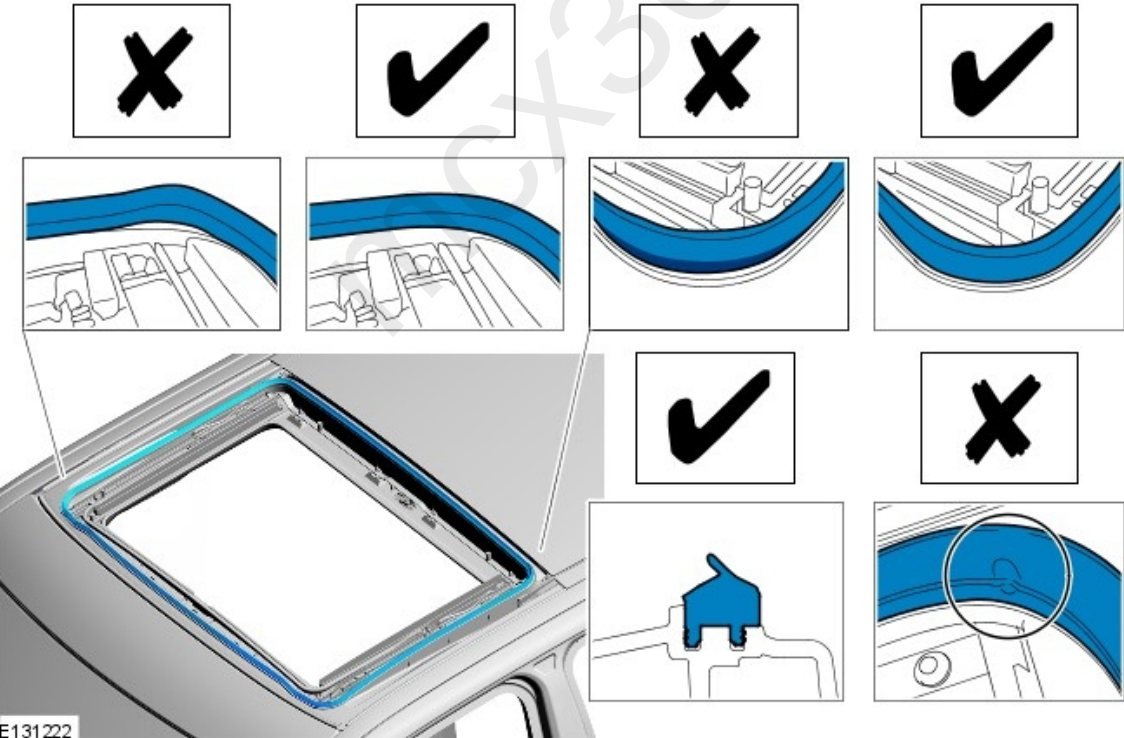
PINPOINT TEST F : WATER INGRESS

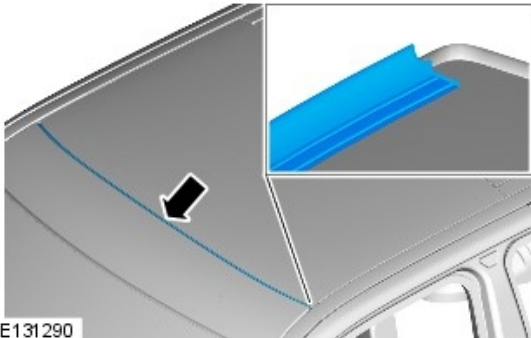
TEST CONDITIONS		DETAILS/RESULTS /ACTIONS
F1: DRAIN TUBE - INSPECTION		
• NOTE: These tests are to be carried out to determine the cause of the water ingress around the roof opening panel.		
• NOTE: Using the manufacturer approved process carry out a water leak test to locate the point of water ingress, often visual inspection of the suspect area including studying any water staining is the best method to pinpoint the water entry point.		
		1 Fully retract the roof opening panel.
		2 Carry out visually inspection of the roof opening panel water drain tube openings and confirm that they are not obstructed by debris.
		Are the water drain tubes obstructed by debris? Yes Remove any obstructions. No GO to F2.
F2: DRAIN TUBE - LOCATION		
 E131293		1 Gain access to the drain tubes at the roof opening panel stub. REFER to: Headliner - Vehicles With: Tilting Roof Opening Panel (501-05 Interior Trim and Omamentation, Removal and Installation).
		2 Ensure that the drain tubes are not kinked or twisted.
		3 Check that the drain tubes are correctly attached.
		Are the drain tubes correctly attached to the roof opening panel? Yes GO to F3. No Correctly reinstall the water drain tubes, ensure that there are no kinks or twists.
F3: AIR DEFLECTOR - FOLDED POSITION		
		1 Operate the roof opening panel using the roof mounted switch.
		During closing of the roof opening panel glass, does the wind deflector net fold forwards and become trapped between the glass panel and the glass

	seal? Yes Install a new wind deflector. REFER to: Air Deflector (501-17 Roof Opening Panel, Removal and Installation). No GO to F4.
F4: GLASS PANEL SEAL - LOCATION  E131222	1 Confirm that the roof opening panel, glass panel seal is correctly located, secure with no kinks.
F5: ROOF OPENING - APERTURE • NOTE: The previous steps have confirmed that the route of the water ingress is not through the roof opening panel but through the bonded seal between the vehicle body the roof opening panel frame.	Is the roof opening panel glass panel seal correctly located and secure with no kinks. REFER to: Roof Opening Panel Seal (501-17 Roof Opening Panel, Removal and Installation). Yes GO to F5. No Install a new glass panel seal. REFER to: Roof Opening Panel Seal (501-17 Roof Opening Panel, Removal and Installation).
	1 Carry out a water leak test of the bonded seal between the vehicle body the roof opening panel frame to locate the point of water ingress.
	Can the water ingress point be located on the bonded seal between the vehicle body the roof opening panel frame?

	Yes Using the manufacturer approved process apply sealer to the point of water ingress. No The water ingress point has not been located or the roof opening panel frame requires removal to enable a water tight seal to be established. Contact dealer technical support
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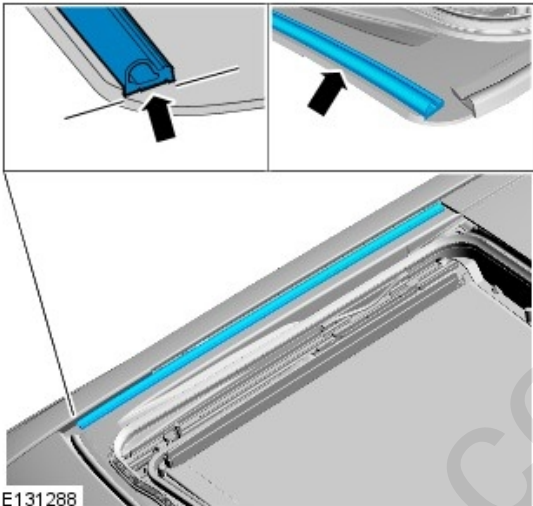
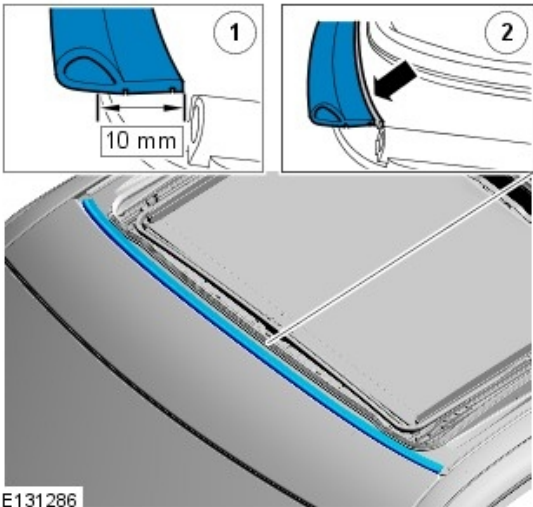
PINPOINT TEST G : ROOF OPENING PANEL - WIND NOISE	
TEST CONDITIONS	DETAILS/RESULTS /ACTIONS
G1: ROOF OPENING PANEL - OPERATION	
• NOTE: These tests are to be carried out to determine the cause of the wind noise around the roof opening panel area.	
	1 Operate the roof opening panel through all possible positions (slide open / slide close / tilt open / tilt close) using the roof mounted switch.
	Does the roof opening panel operate correctly? Yes GO to G2. No GO to Pinpoint Test C.
G2: SIDE ACOUSTIC SEAL - LOCATION	
 E131288	1 Carry out a visual inspection of the side acoustic seals for location and security.
	Are the side acoustic seals correctly located and bonded to the roof opening panel frame? Yes GO to G3. No Correctly relocate and bond the side acoustic seals to the roof opening panel frame. GO to G3.
G3: FRONT ACOUSTIC SEAL - LOCATION	

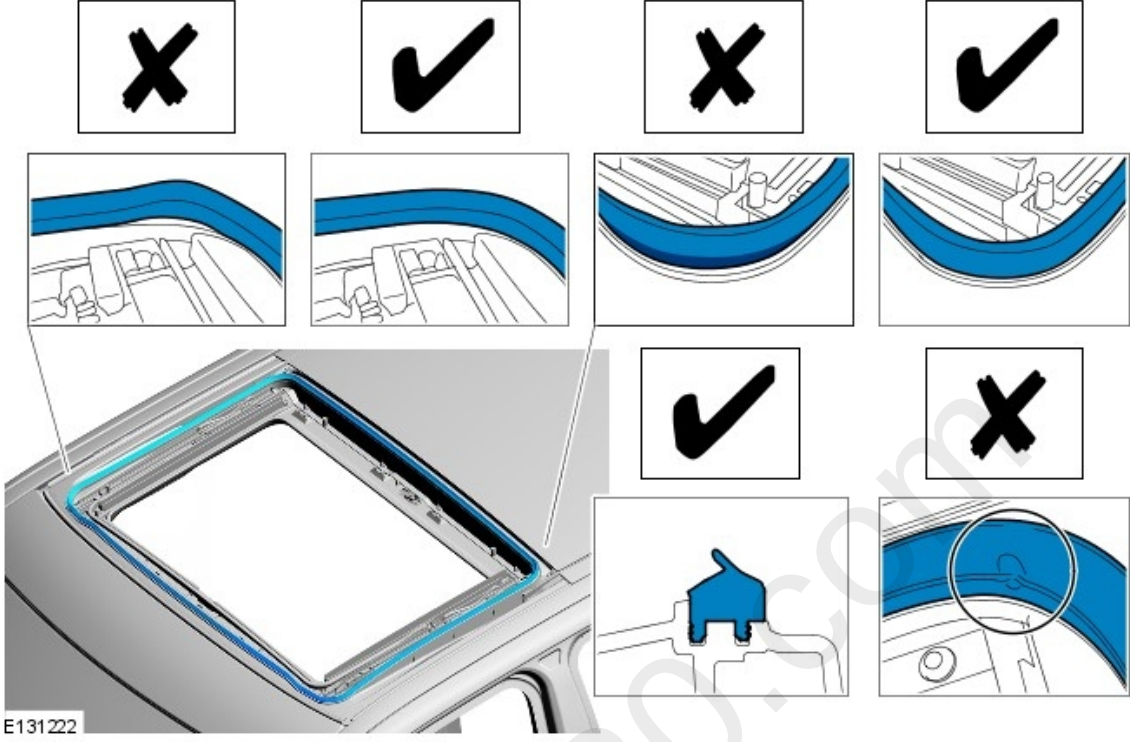
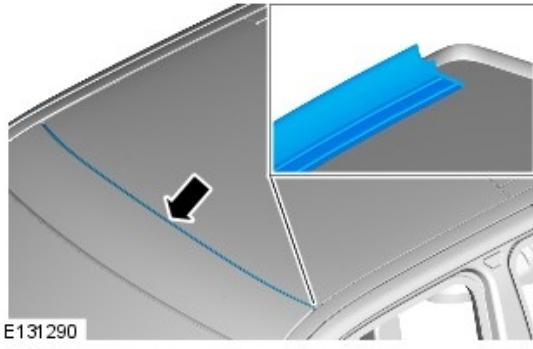
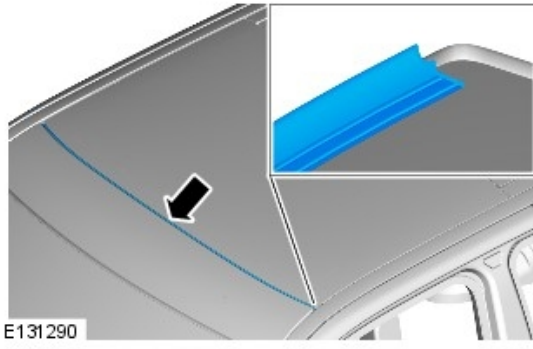
 E131286	1 Carry out a visual inspection of the front acoustic seals for location and security. • Vehicles built up to VIN 154971. • Vehicles built from VIN 154972.
	Is the front acoustic seal correctly located and bonded to the roof opening panel frame? Yes GO to G4. No Replace the front acoustic seal. Clean all relevant surfaces then correctly position and bond the front acoustic seal to the roof opening panel. GO to G4.
G4: GLASS SEAL - LOCATION	
 E131222	1 Carry out a visual inspection of the glass seal for location and security.
	Is the glass seal correctly located and bonded to the roof opening panel frame? Yes GO to G5. No Replace the glass seal.

		Clean all relevant surfaces then correctly position and bond the glass seal to the roof opening panel. GO to G5.
G5: DRIP LIP - LOCATION		
 E131290	1 Carry out a visual inspection of the drip lip on the glass panel for location and security.	
		Is the drip lip correctly located on the glass panel? Yes GO to G7. No Replace the glass panel (The drip lip is not a serviceable part). GO to G6.
G6: INITIALIZATION		
	1 Perform the manual roof opening panel initialization procedure. REFER to: Motor Synchronization (501-17 Roof Opening Panel, General Procedures). 2 Operate the roof opening panel through all possible positions (slide open / slide close / tilt open / tilt close) using the roof mounted switch. 3 Check the vehicle for wind noise from the roof opening panel.	
		Is the wind noise still evident? Yes Contact dealer technical support. No No further action required.
G7: INITIALIZATION		
	1 Perform the manual roof opening panel initialization procedure. REFER to: Motor Synchronization (501-17 Roof Opening Panel, General Procedures).	

	2 Check the vehicle for wind noise from the roof opening panel.
	Is the wind noise still evident? Yes Contact dealer technical support. No No further action required.

PINPOINT TEST H : SEALS LOOSE OR ADRIFT

TEST CONDITIONS	DETAILS/RESULTS /ACTIONS
H1: SIDE ACOUSTIC SEAL - LOCATION  E131288	1 Carry out a visual inspection of the side acoustic seals for location and security.
	Are the side acoustic seals correctly located and bonded to the roof opening panel frame? Yes GO to H2. No Correctly relocate and bond the side acoustic seals to the roof opening panel frame. GO to H2.
H2: FRONT ACOUSTIC SEAL - LOCATION  E131286	1 Carry out a visual inspection of the front acoustic seals for location and security. • Vehicles built up to VIN 154971. • Vehicles built from VIN 154972.
	Is the front acoustic seal correctly located and bonded to the roof opening panel frame?

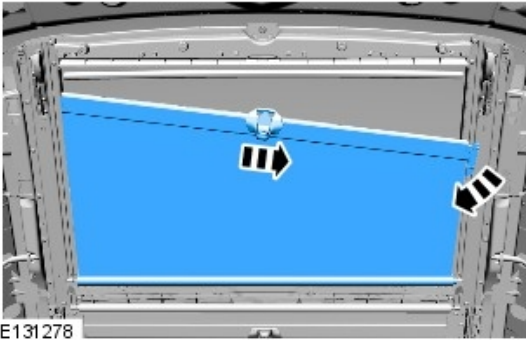
	Yes GO to H3. No Correctly relocate and bond the front acoustic seal to the roof opening panel frame. GO to H3.
H3: GLASS SEAL - LOCATION  E131222	1 Carry out a visual inspection of the glass seal for location and security.
H4: DRIP LIP - LOCATION  E131290	Is the glass seal correctly located and bonded to the roof opening panel frame? Yes GO to H4. No Replace the glass seal and bond the four corners of the glass seal to the roof opening panel frame. GO to H4.
H4: DRIP LIP - LOCATION  E131290	1 Carry out a visual inspection of the drip lip on the glass panel for location, condition and security.
	Is the drip lip correctly located on the glass panel and in good condition? Yes The drip lip is correctly located on the glass panel. No

	further action required.
No	Replace the glass panel (The drip lip is not a serviceable part).

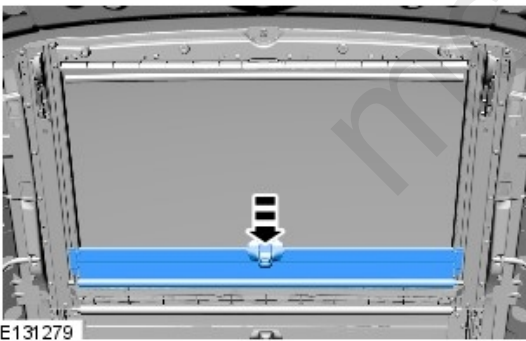
Roof opening panel blind rewind procedure - Vehicles built up to VIN 154971



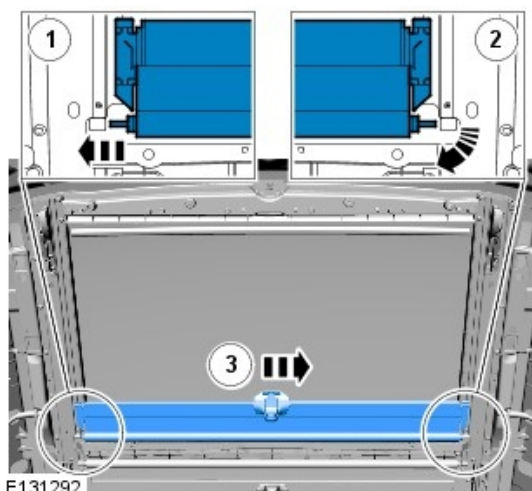
1. Close the roof opening panel blind (but do not latch the handle to the frame) .



2.
 - **NOTE:** Rotate the roof opening panel in the directions illustrated.
2. Release the roof opening panel blind from the runners.
 - Rotate the left-hand edge counter clockwise and release the right-hand edge from the frame.

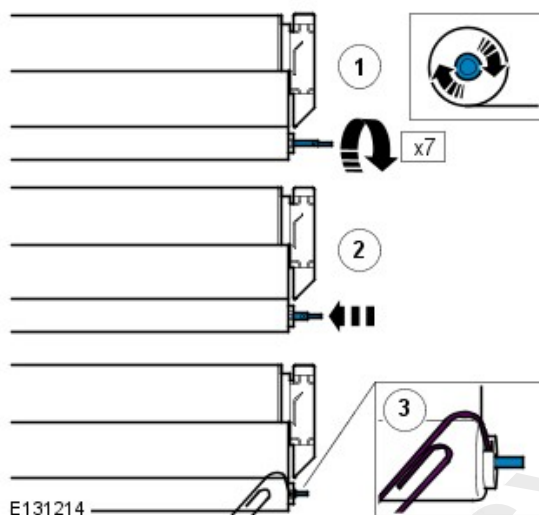


3. Open the roof opening panel blind.



4. **4.** Release the roof opening panel blind from the mounting bracket and remove the roof opening panel blind from the vehicle.

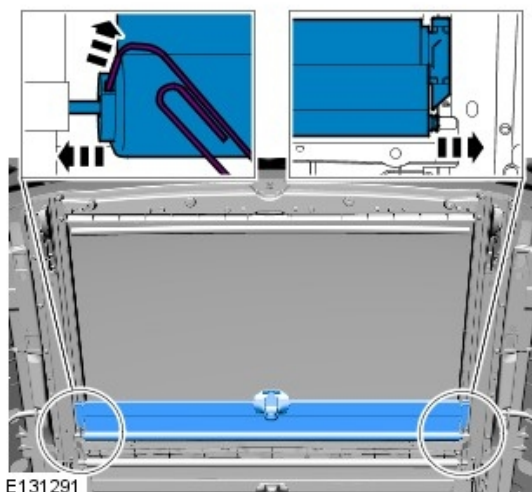
1. Push the roof opening panel blind in to the frame to release the left-hand spring axle.
2. Rotate the roof opening panel blind counter clockwise.
3. Remove the roof opening panel blind.



5. • **NOTE:** The roof opening panel must be rewound 7 rotations.

5. Rewind the roof opening panel.

1. Using a suitable tool, hold and rotate the spring axle.
2. Push the spring axle in to the roof opening panel blind and align the spring axle locking holes.
3. Using suitable pin or paperclip (as illustrated), lock the spring axle.

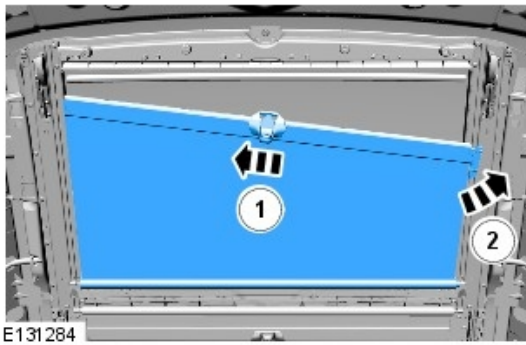


6. • **NOTE:** Make sure that the spring axle is correctly located into the roof opening panel frame.

• **NOTE:** Make sure that the suitable pin or paperclip remains in place while installing the roof opening panel blind.

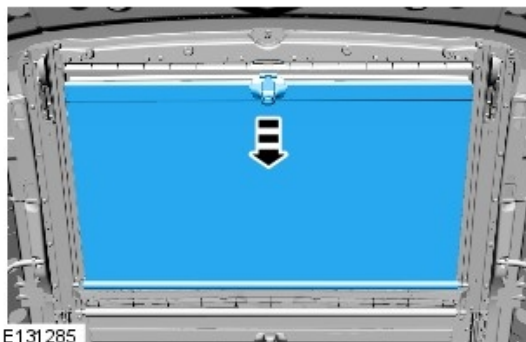
6. Install the roof opening panel blind to the frame.

- Remove the suitable pin or paperclip from the roof opening panel blind once the roof opening panel has been correctly installed.



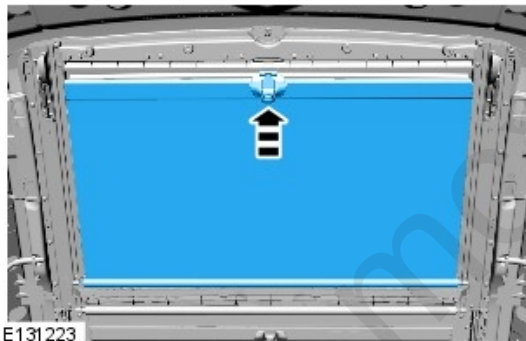
7. **7.** Install the roof opening panel blind sliders to the runners.

1. Push the roof opening panel blind right-hand slider in to the runner.
2. Install the left-hand slider clockwise to the runner.

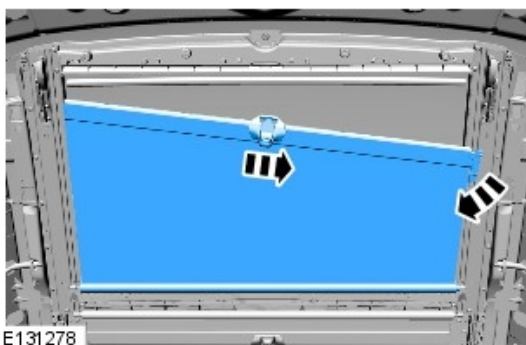


8. **8.** Open the roof opening panel blind and check for correct operation.

Roof opening panel blind rewind procedure - Vehicles built from VIN 154972



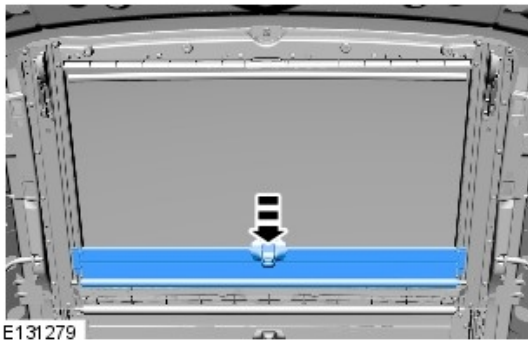
1. **1.** Close the roof opening panel blind.



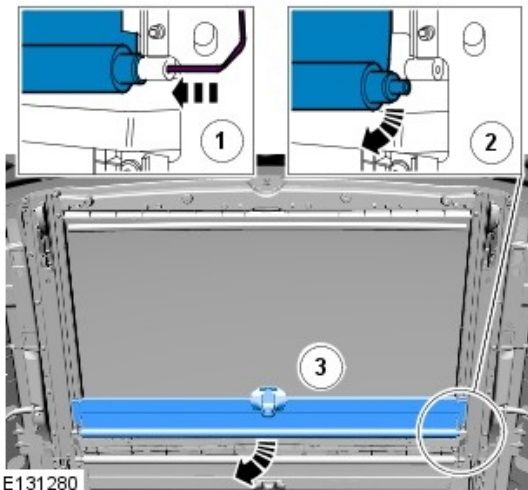
2. • **NOTE:** Rotate the roof opening panel in the directions illustrated.

2. Release the roof opening panel blind from the runners.

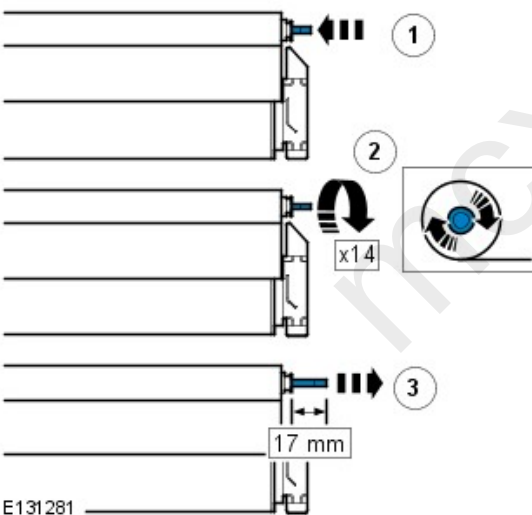
- Rotate the left-hand edge counter clockwise and release the right-hand edge from the frame.



3. **3.** Open the roof opening panel blind.



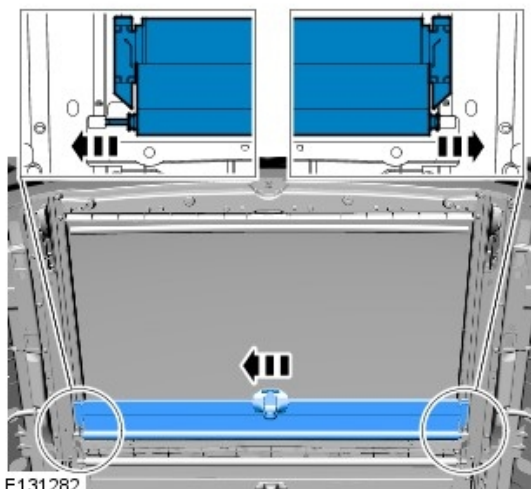
4. **4.** Using a suitable pin or paperclip (as illustrated), release the roof opening panel blind from the mounting bracket and remove the roof opening panel blind from the vehicle.



5. **• NOTE:** The roof opening panel must be rewound 14 rotations.

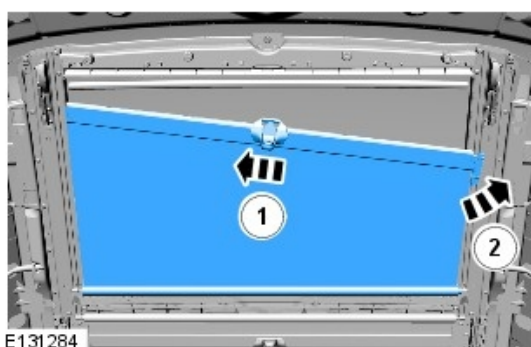
5. Rewind the roof opening panel.

1. Push the spring axle in to the roof opening panel blind.
2. Using a suitable tool, hold and rotate the spring axle.
3. Release the spring axle 17 mm from the roof opening panel blind once after the 14 rotations have been achieved.



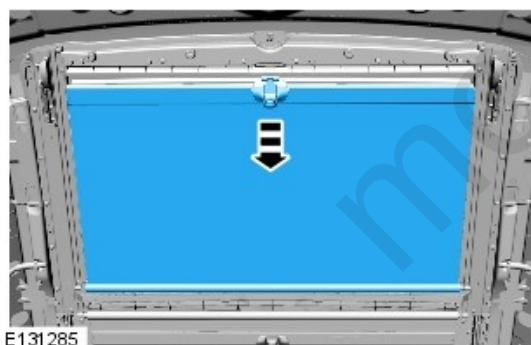
6. • **NOTE:** Make sure that the spring axle is correctly located into the roof opening panel frame.

6. Install the roof opening panel blind to the frame.



7. 7. Install the roof opening panel blind sliders to the runners.

1. Push the roof opening panel blind right-hand slider in to the runner.
2. Install the left-hand slider clockwise to the runner.



8. 8. Open the roof opening panel blind and check for correct operation.

Roof Opening Panel - Motor Synchronization

General Procedures

1.

- Set the ignition to the ON position.
- With the roof opening panel closed, press and hold the front of the roof opening panel switch until the roof opening panel has moved to the tilted open position.
- Release the roof opening panel switch.

2.

- Press the front of the roof opening panel switch.
- After 20 seconds the roof opening panel will begin to move.
- Keep the front of the roof opening panel switch pressed until the roof opening panel have fully opened, then closed.

3.

- Once the open/close cycle has completed and the roof opening panel has stopped moving, release the switch.
- The roof opening panel is now synchronized.
- The roof opening panel can now be operated as normal.

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Roof Opening Panel - Roof Opening Panel

Removal and Installation

Removal

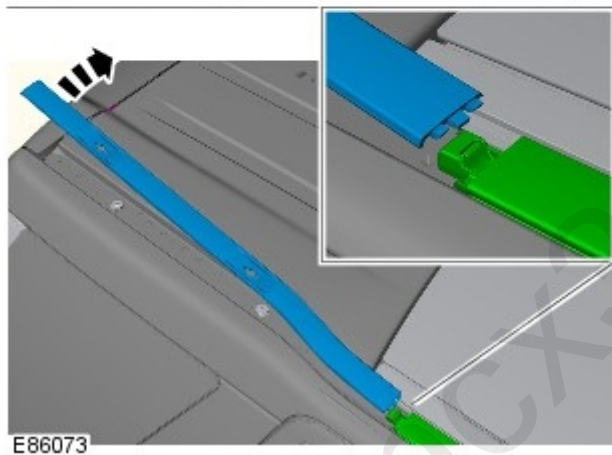
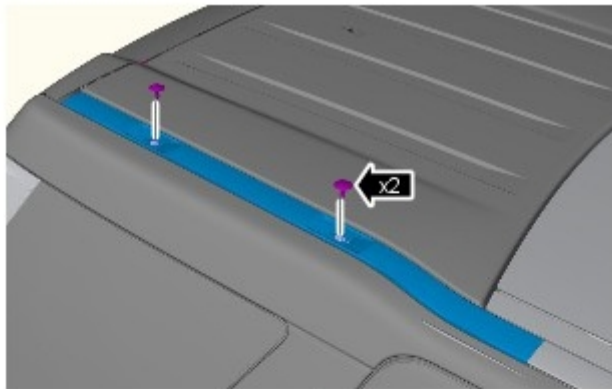
• CAUTIONS:



Protect the surrounding paintwork to avoid damage.



Protect the surrounding trim to avoid damage.

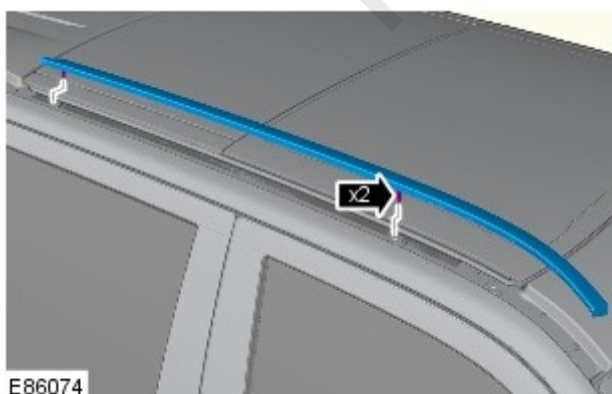


1.

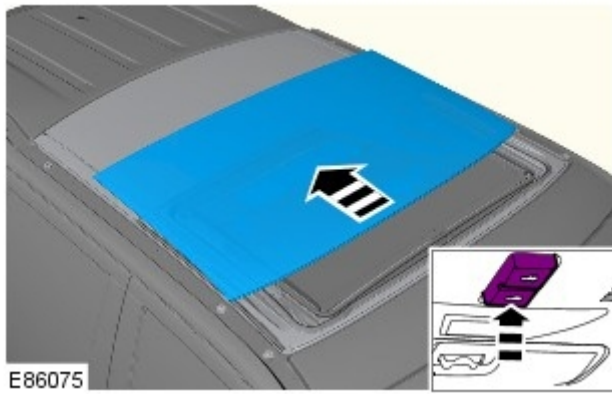
- Remove the rear section of the roof moulding.
- Remove the 2 clips.
- Working from the rear end, carefully release the moulding.

2.

- Remove the front section of the roof moulding.
- Working from the rear end, carefully release the moulding.
- Release the 2 clips.



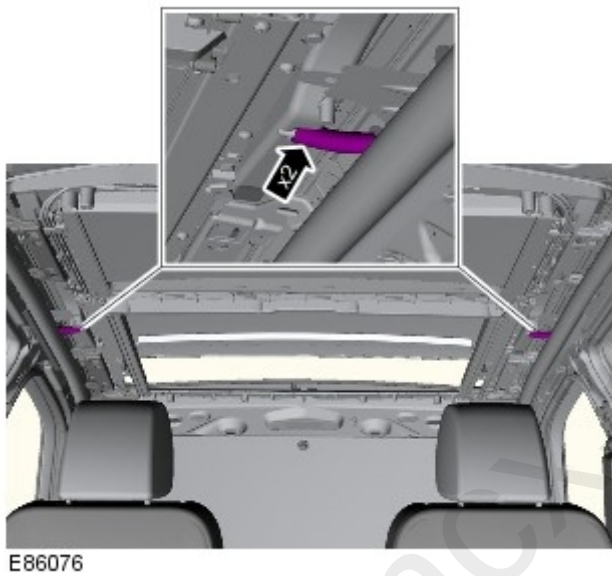
3. Repeat steps 1 and 2 for the other side.



4. Partially open the roof opening panel glass for access.

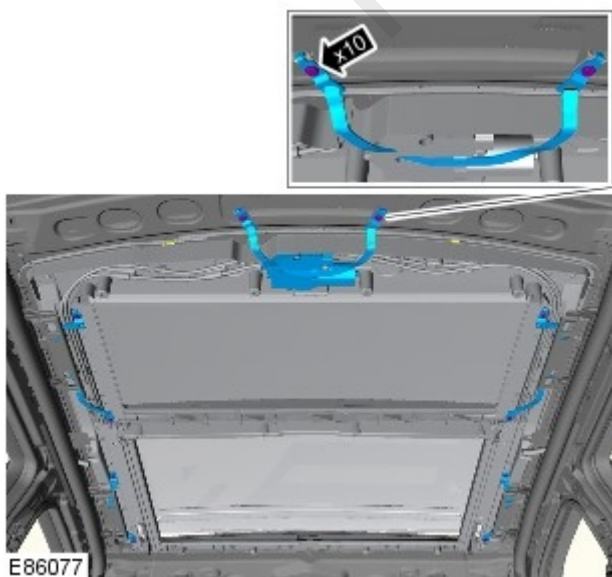
5. Remove the headliner.

Refer to: [Headliner - Vehicles With: Tilting Roof Opening Panel](#)
(501-05 Interior Trim and Ornamentation, Removal and Installation).

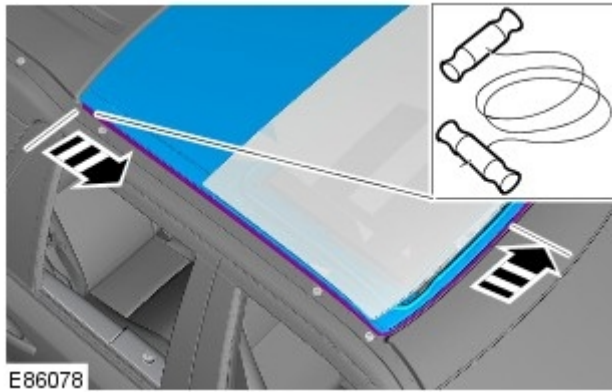


6.

- Disconnect the drain tubes.



7. Release the roof opening panel tethers.



8.  **WARNING:** Wear safety goggles and protective gloves.

• **CAUTIONS:**

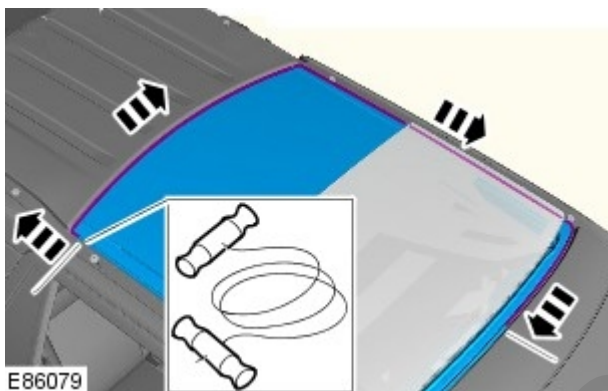
 Protect the surrounding paintwork to avoid damage.

 Protect the surrounding trim to avoid damage.

 If the original roof opening panel is to be installed, take care not to damage the locating pegs.

• **NOTE:** This step requires the aid of another technician.

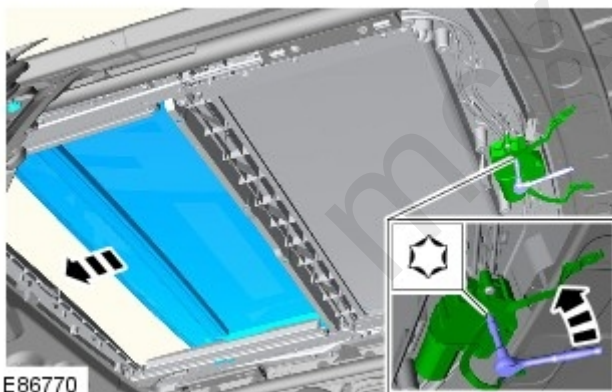
- Feed the glazing wire through the roof opening panel sealant to the inside of the vehicle.
- Working in a counter clockwise direction, cut the sealant upto the front locating peg.



9.  **CAUTION:** If the original roof opening panel is to be installed, take care not to damage the locating pegs.

• **NOTE:** This step requires the aid of another technician.

- Working in a clockwise direction, cut the sealant upto the front locating peg.

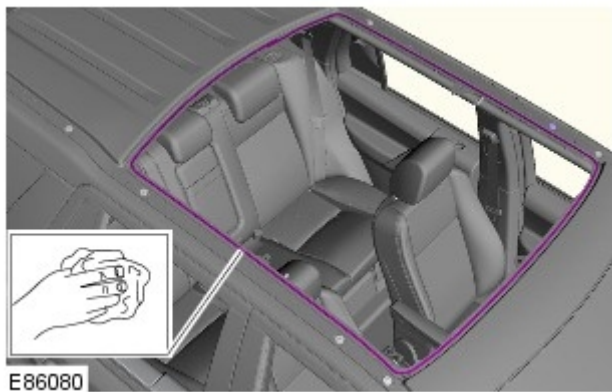


10. Close the roof opening panel glass.

11.  **CAUTION:** Do not lift the roof opening panel by the blinds.

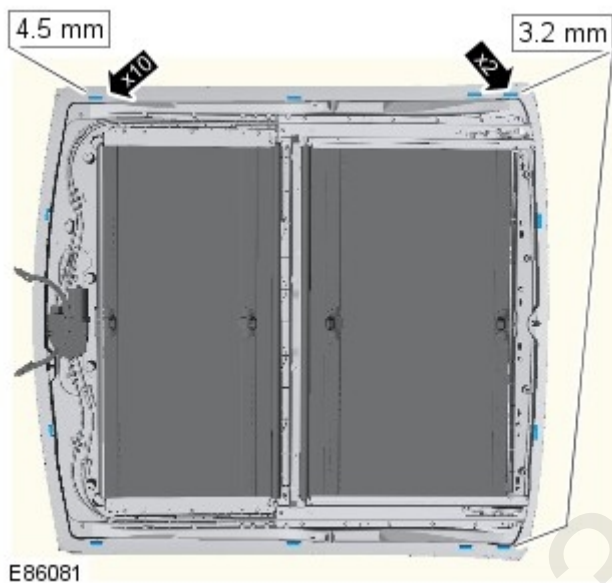
• **NOTE:** This step requires the aid of another technician.

With assistance, remove the roof opening panel assembly.



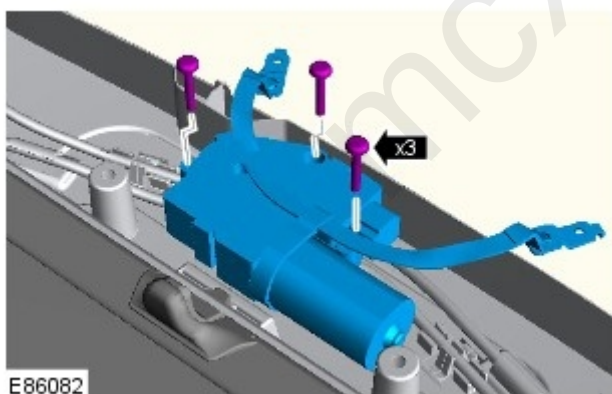
12.

- Carefully remove the sealant from the body to leave a smooth surface.



13. **13.** NOTE: Note the location of the rubber spacers.

- Remove the 12 rubber spacers.
- Carefully remove the sealant from the roof opening panel to leave a smooth surface.



14. **14.** NOTE: Do not disassemble further if the component is removed for access only.

Remove the roof opening panel motor.

Installation

1. Install the roof opening panel motor.

Torque: 2.5 Nm

2. **2.**  CAUTION: Make sure that the surface is clean and free of foreign material.

- Apply primer of the correct specification to the sealant face on the body and allow to cure.

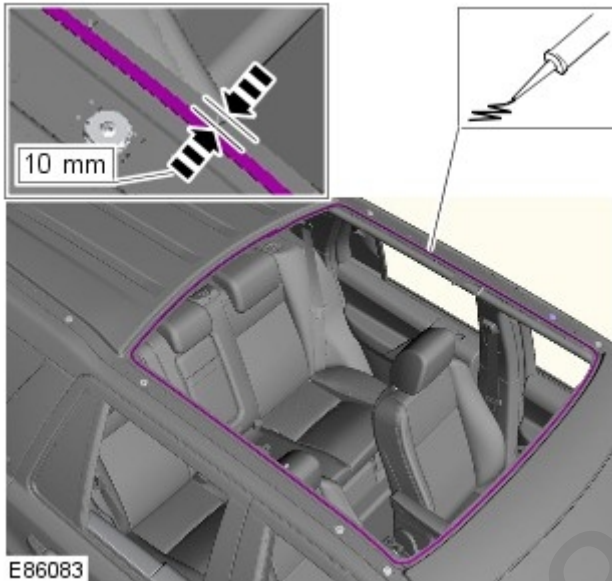
3.  **CAUTION:** Make sure that the surface is clean and free of foreign material.

- Apply primer of the correct specification to the sealant face on the roof opening panel and allow to cure.

4.
 - Install new rubber spacers to the roof opening panel.

5.
 - Fit a pre-cut nozzle to the sealer cartridge, remove the lid, shake out the crystals and fit the cartridge to the applicator gun.

6.
 - Apply a continuous bead of sealant to the body.
 - Apply additional sealant to the body flanges.



7.
 - With assistance, install the roof opening panel assembly.
 - Lightly press the roof opening panel assembly to seat the sealant.

8.
 - Connect the drain tubes.

9.
 - Test the sealant for leaks, apply additional sealant if necessary. If water is used, allow sealant to dry before testing. Spray water around the roof opening panel assembly and check for leaks. Mark any area that leaks. Dry the assembly and sealant then apply additional sealant.

10. Secure the roof opening panel tethers.

Torque: 4 Nm

11. Install the headliner.

Refer to: [Headliner - Vehicles With: Tilting Roof Opening Panel](#)
(501-05 Interior Trim and Ornamentation, Removal and Installation).

12. **12. CAUTIONS:**



Make sure that the surface is clean and free of foreign material.



Extreme cleanliness must be exercised when handling this component.

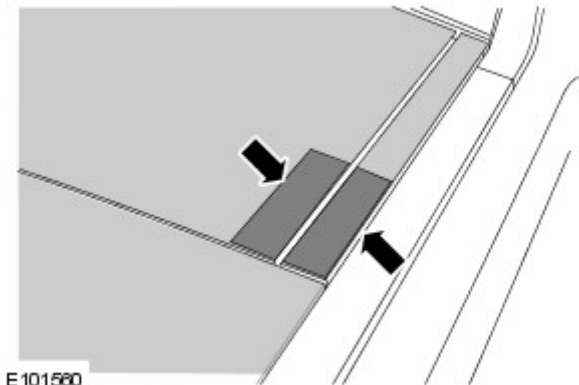
- Install the roof mouldings.
- Spirit wipe the body mating face.
- Remove the protective tape.
- Align the clips.
- Align and secure the mouldings.

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Roof Opening Panel - Roof Opening Panel Glass

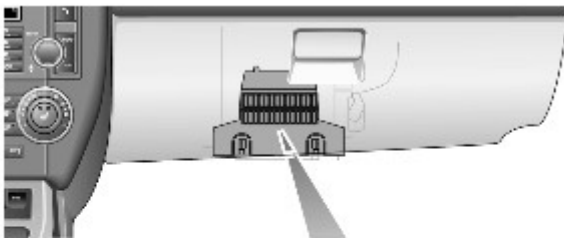
Removal and Installation

Removal



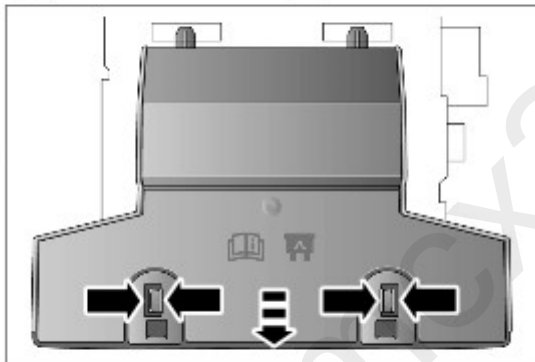
1. **1.** NOTE: Left-hand shown, right-hand similar.

- Apply strips of masking tape to the front edge of the fixed rear glass to prevent damage when lifting the glass panel.



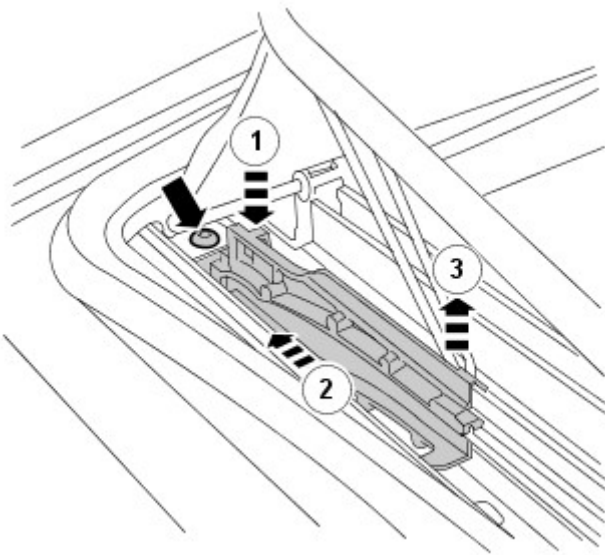
2. **2.** NOTE: This step requires the aid of another technician.

- Disable the one-touch operation.
- Open the roof panel, while the roof opening panel is moving remove fuse F10.
- Replace fuse F10 and make sure the roof opening panel functions without the one-touch operation.



3. Open the roof opening panel blind.

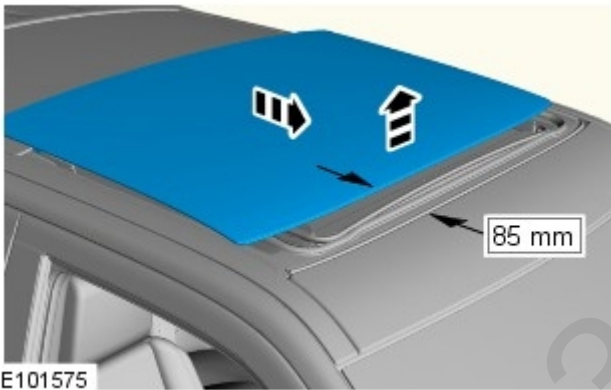
4. Fully open the roof opening panel glass.



E101561

5. **5. NOTE:** Left-hand shown, right-hand similar.

- Remove the roof opening panel glass guide locators.
- Remove the Torx screw (TX15).
- Apply pressure downwards (1) and slide forward (2) and then remove the guide locator (3).
- Repeat the operation for the other side.



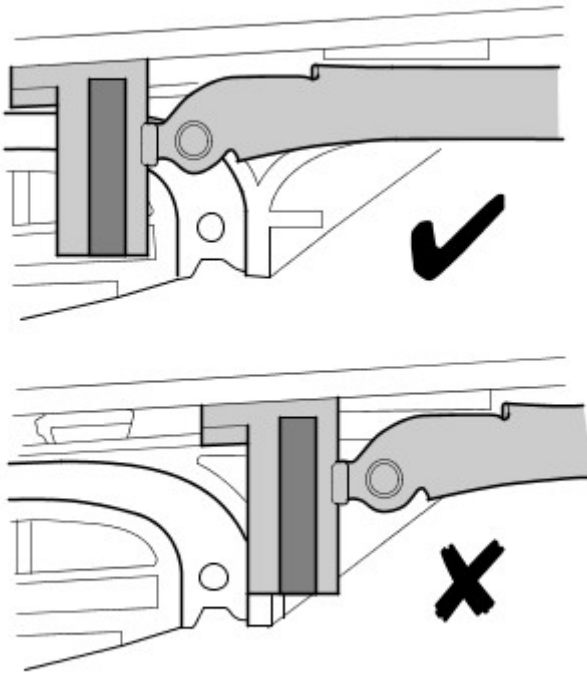
E101575

6. **6. CAUTION:** Do not raise the front end of the roof opening panel glass by more than 100 mm with the rear end located as damage may occur.

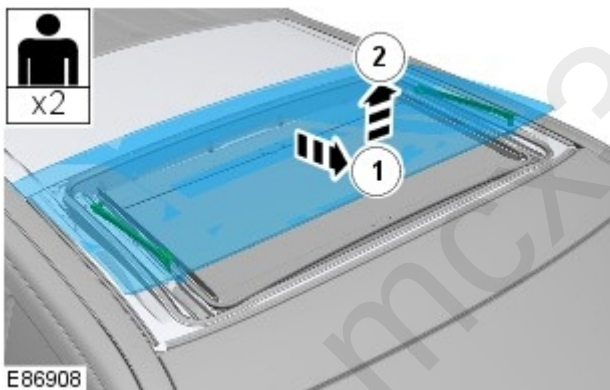
- NOTE: This will release the front of the glass panel.
- Close the roof opening panel glass to 85 mm and apply upwards pressure to release the front of the glass.

7. **7.** NOTE: Left-hand shown, right-hand similar.

- Slide the connecting bars forward 20 mm.



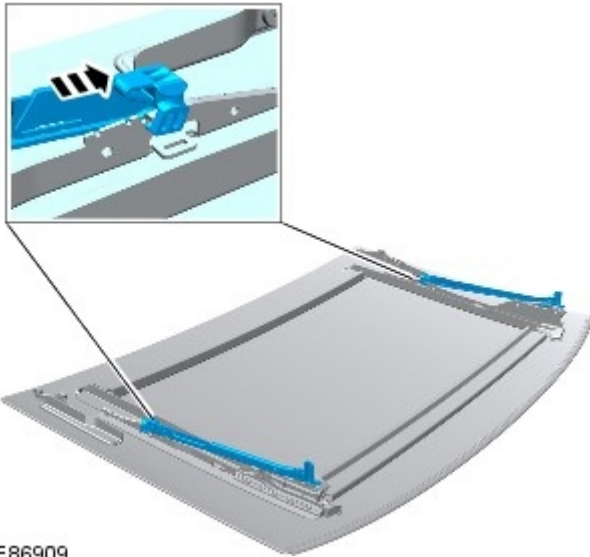
E101562



E86908

8. **8.** NOTE: This step requires the aid of another technician.

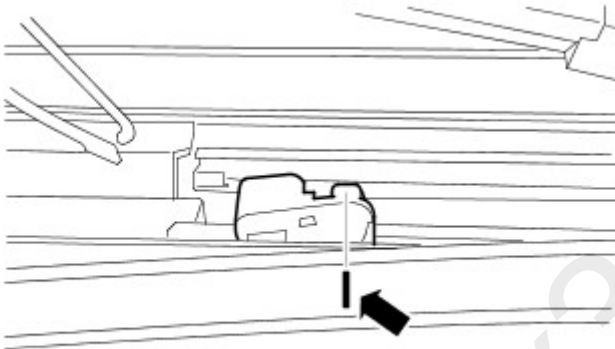
- Remove the roof opening panel glass.



E86909

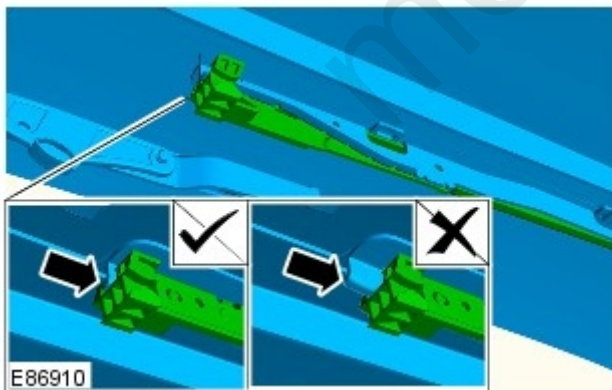
9. **9. NOTE:** Do not disassemble further if the component is removed for access only.
 - Remove the roof opening panel glass connecting bars.

Installation



E100482

1. **1. ⚠ CAUTION:** Make sure that the roof opening panel motor is not operated at any time until instructed.
 - **NOTE:** Left-hand shown, right-hand similar.
 - Using a non-permanent marker, mark the seal to show the roof opening panel glass driving slider position.

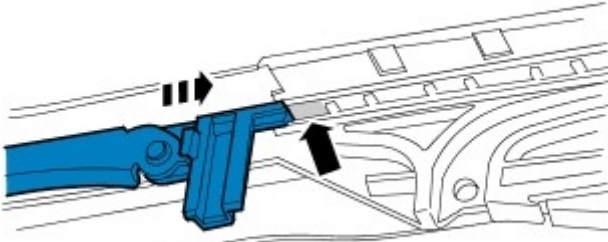


E86910

2. **2. NOTE:** This step is only required if previously removed.
 - Locate the connecting bar rear guide.

3. **3.** NOTE: This step is only required if previously removed.

- Locate the connecting bar front guide.

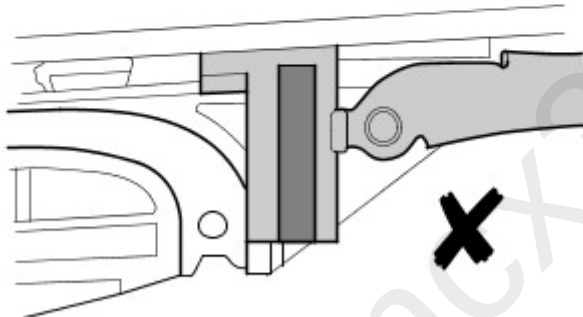
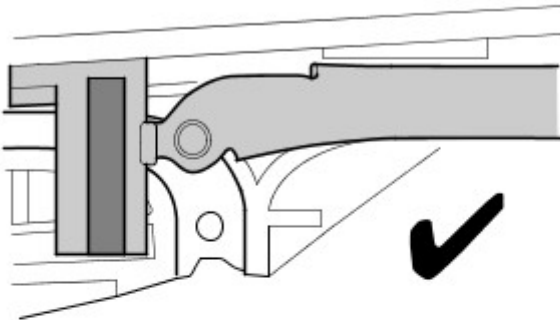


E100717

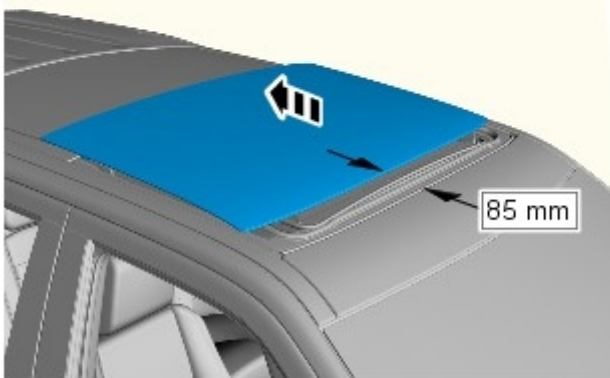
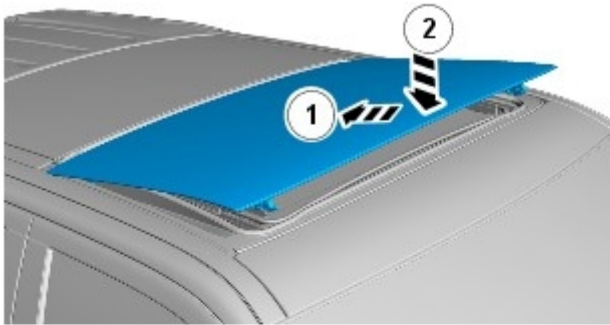
4. **4.** NOTE: Left-hand shown, right-hand similar.

- NOTE: This step is only required if previously removed.

- Slide the connecting bars forward 20 mm.



E101562



E86911

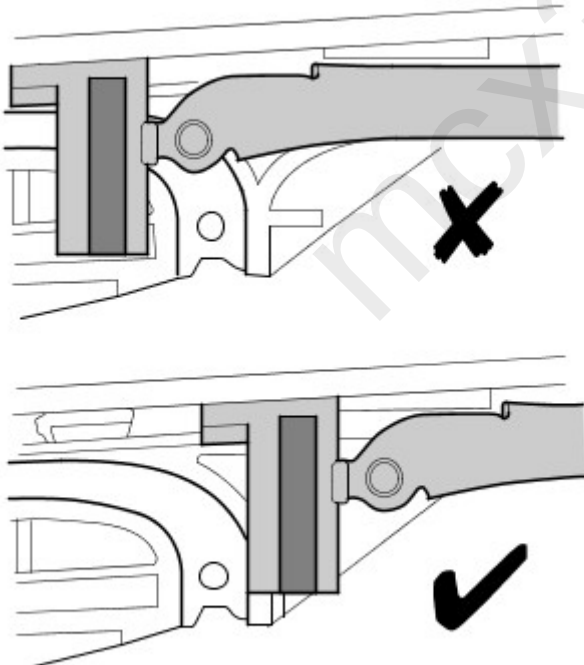
5. **5.**  **CAUTION:** Do not raise the front end of the roof opening panel glass by more than 100 mm with the rear end located as damage may occur.

• **NOTE:** This step requires the aid of another technician.

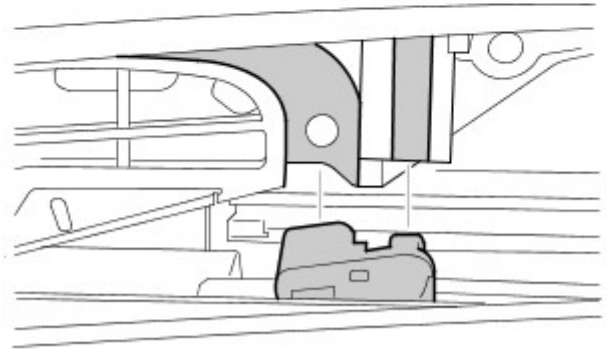
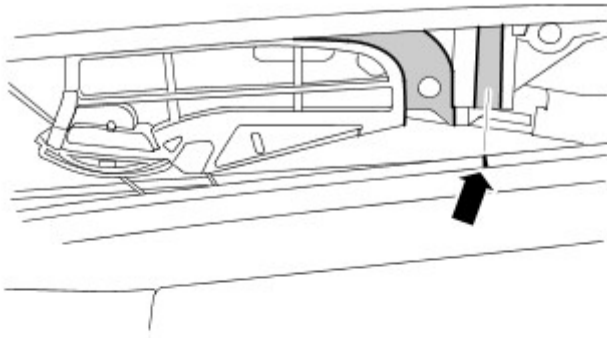
- Align the rear runners to the roof opening panel channels.
- Carefully slide the roof opening panel glass rearward, so that a 85 mm opening is achieved.

6. **6.** **NOTE:** Left-hand shown, right-hand similar.

- Align the connecting bar with the roof opening panel guide.



E101576



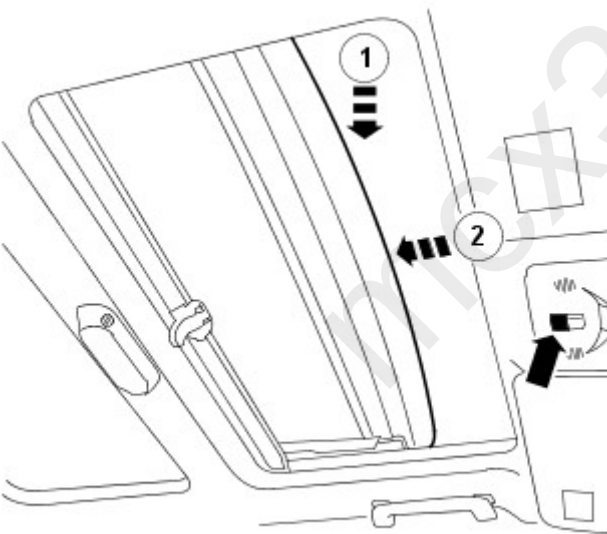
E102784

7. **⚠ CAUTION:** Damage will occur if the roof opening glass panel is not aligned correctly.

• **NOTE:** This step requires the aid of another technician.

• **NOTE:** Left-hand shown, right-hand similar.

- Carefully align and locate the roof opening panel glass to the driving slider.
- If resistance is encountered, realign the roof opening panel glass to the driving slider.

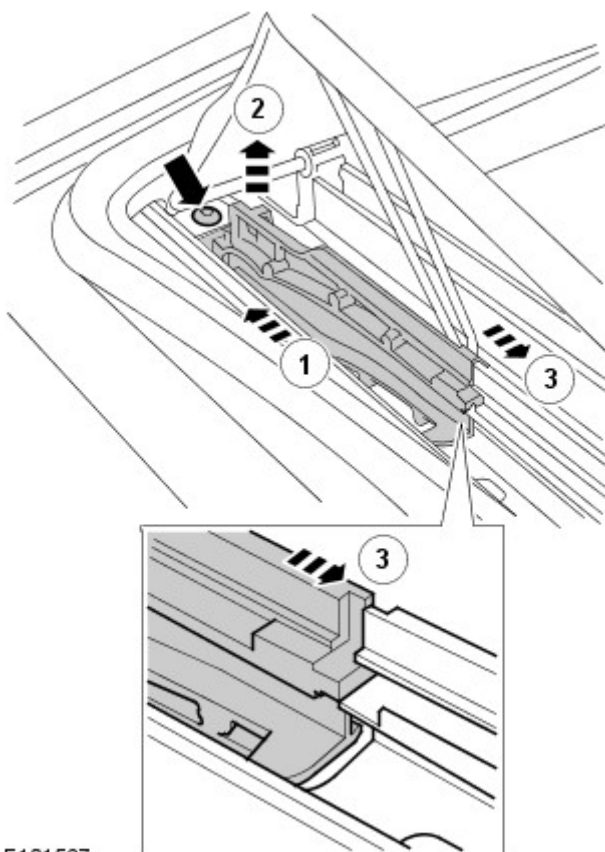


E100486

8. **⚠ CAUTION:** Do not apply downward pressure whilst operating the roof opening panel.

• **NOTE:** A slight noise may be heard when the roof opening panel is operated for the first time.

- Carefully retract the roof panel glass rearwards for 50 mm to make sure the roof panel glass is correctly located in the guide rails.
- If the roof panel glass is correctly located, fully open the roof panel glass.



E101567

9.

- Install the panel glass guide locator.
- Locate the front of the guide locator (1) and raise upwards (2) and then locate onto the rail and slide forwards (3).
- Tighten the Torx screw to 2.5 Nm.
- Repeat procedure for the other side.

10. **10.**  **CAUTION:** Make sure the net deflector folds protrude rearwards when closing the roof opening panel glass. If the net deflector is folded forwards water leakage from the roof panel may occur.

- Close the roof opening panel glass.

11. Remove the protective tape.

12. Manually initialize the roof opening panel motor.

13.

- Switch the ignition on.
- Press the front leading edge of the roof opening panel switch and move the roof opening panel glass to the full tilt position.
- Release the switch.
- Press and hold the front leading edge of the switch.
- After 20 seconds the roof opening panel glass will perform the following: stall in the tilt mode causing a noise, a full open and close cycle.
- Do not release the switch until the roof opening panel glass has completed the above step.
- Release the switch.
- The roof panel will now operate one-touch open (tilt and fully open) and one-touch close (from the fully open position).
- One touch close is inoperable from tilt.

14. Close the roof opening panel glass.

15. Close the roof opening panel blind.

Roof Opening Panel - Roof Opening Panel Motor

Removal and Installation

Removal

• NOTE: It is possible to gain access to the roof opening panel motor by partially releasing the headliner, the motor is situated above the rear interior lamp.

1. Remove the interior mirror.

Refer to: [Interior Rear View Mirror](#) (501-09 Rear View Mirrors, Removal and Installation).

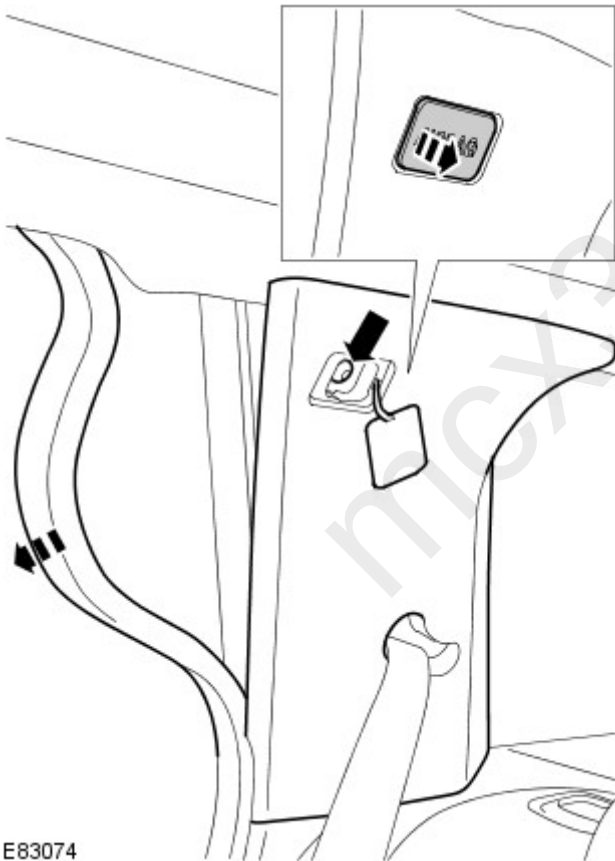
2. Remove both A-pillar trim panels.

Refer to: [A-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

3. Remove both B-pillar upper trim panels.

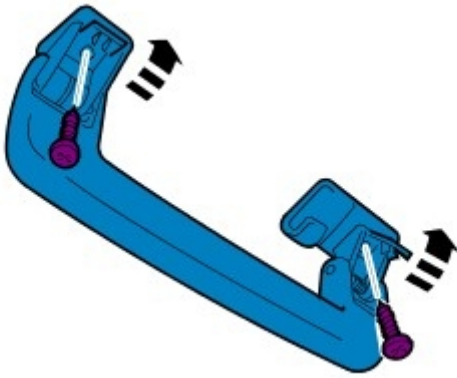
Refer to: [B-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

4. Carefully release both C-pillar upper trim panels.



E83074

5. Remove the passenger assist handles.



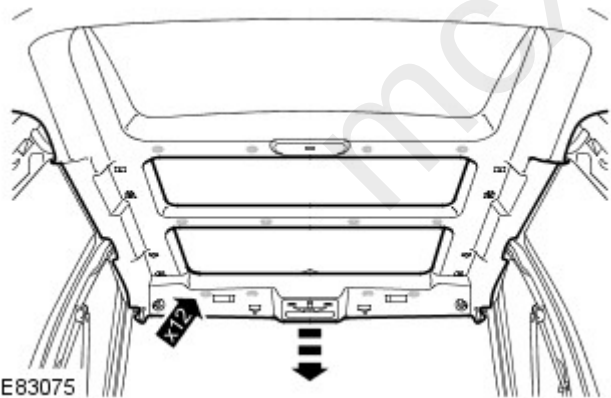
E49689

6. Remove both sun visors.

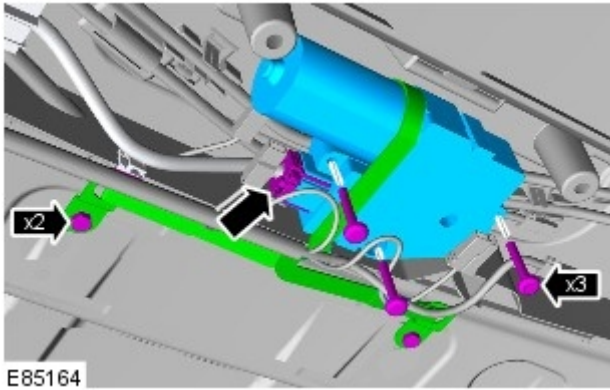


E77865

7. With assistance starting from the front edge, carefully release the headliner for access. Support the headliner after release to prevent damage.



E83075



8. Remove the roof opening panel motor.

Installation

1. Install the roof opening panel motor.

Torque: 2.5 Nm

2. Secure the roof opening panel motor tether.

Torque: 4 Nm

3. Connect the roof opening panel motor electrical connector.

4. With assistance, carefully install the headliner.

5. Install the sun visors.

6. Install the passenger assist handles.

7. Install both C-pillar upper trim panels.

8. Install both B-pillar upper trim panels.

Refer to: [B-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

9. Install both A-pillar upper trim panels.

Refer to: [A-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

10. Install the interior mirror.

Refer to: [Interior Rear View Mirror](#) (501-09 Rear View Mirrors, Removal and Installation).

11. Manually initialize the roof opening panel motor.

12.

- Switch the ignition on.
- Press the front leading edge of the roof opening panel switch and move the roof opening panel glass to the full tilt position.
- Release the switch.
- Press and hold the front leading edge of the switch.
- After 20 seconds the roof opening panel glass will perform the following: stall in the tilt mode causing a noise, a full

- open and close cycle.
- Do not release the switch until the roof opening panel glass has completed the above step.
- Release the switch.
- The roof panel will now operate one-touch open (tilt and fully open) and one-touch close (from the fully open position).
- One touch close is inoperable from tilt.

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Roof Opening Panel - Air Deflector

Removal and Installation

Removal

1. Open the roof opening panel.

2. Remove the interior mirror.

Refer to: [Interior Rear View Mirror](#) (501-09 Rear View Mirrors, Removal and Installation).

3. Remove both A-pillar trim panels.

Refer to: [A-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

4. Remove both B-pillar upper trim panels.

Refer to: [B-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

5. Remove both front passenger assist handles.



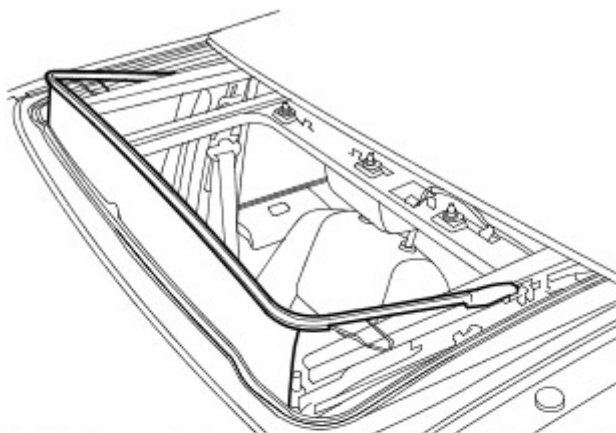
E49689



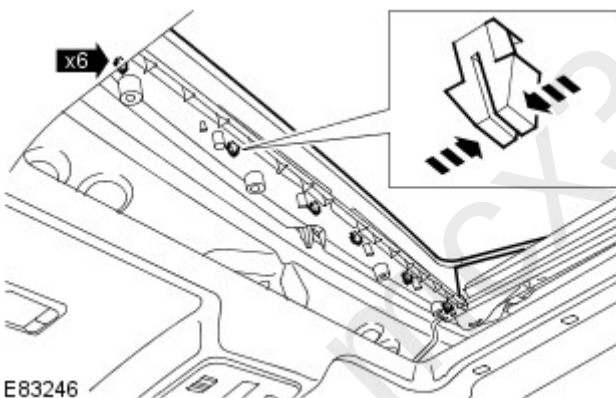
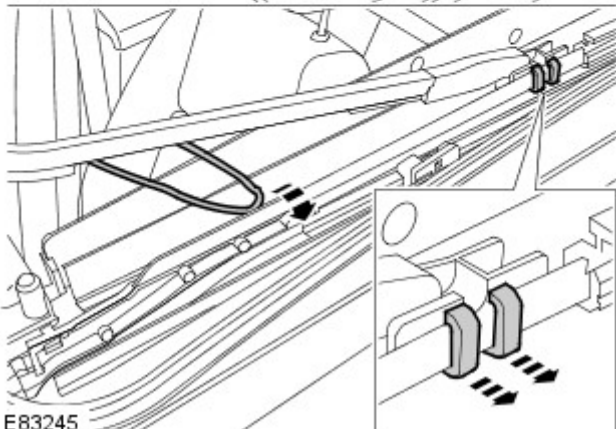
E77865

6. Remove both sun visors.

7. Starting from the front edge, carefully release the headliner for access.



8.  **CAUTION:** Protect the surrounding paintwork to avoid damage.



9.

Installation

1. Install the air deflector.
2.
 - Install the hinge pivots to the air deflector.
 - Tension both springs.
 - Locate and secure the air deflector hinge pivots.
3. Carefully install the headliner.
4. Install the sun visors.
5. Install the passenger assist handles.
6. Install both B-pillar upper trim panels.

Refer to: [B-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

7. Install both A-pillar upper trim panels.

Refer to: [A-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

8. Install the interior mirror.

Refer to: [Interior Rear View Mirror](#) (501-09 Rear View Mirrors, Removal and Installation).

9. Manually check the operation of the air deflector.

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Roof Opening Panel - Roof Opening Panel Seal

Removal and Installation

Removal

1. Remove the roof opening panel glass.

Refer to: [Roof Opening Panel Glass](#) (501-17 Roof Opening Panel, Removal and Installation).



2.  **CAUTION:** Note the fitted position of the component prior to removal.

Installation

1. To install, reverse the removal procedure.

Roof Opening Panel - Glass Roof Panel Blind

Removal and Installation

Removal

1. Remove both A-pillar trim panels.

Refer to: [A-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

2. Remove both B-pillar upper trim panels.

Refer to: [B-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

3. Remove both C-pillar trim panels.

Refer to: [C-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

4. Remove both D-pillar upper trim panels.

Refer to: [D-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

5. Remove the interior rear view mirror.

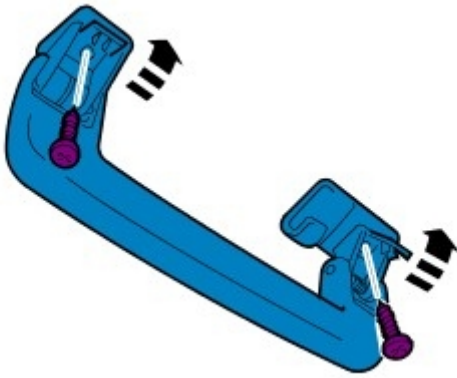
Refer to: [Interior Rear View Mirror](#) (501-09 Rear View Mirrors, Removal and Installation).

6. Remove both sun visors.



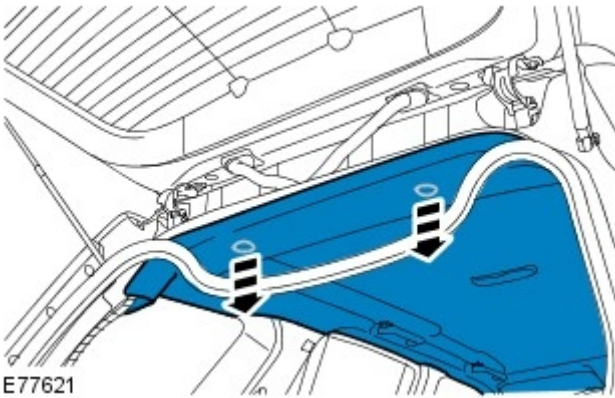
E77865

7. Remove the 4 passenger assist handles.



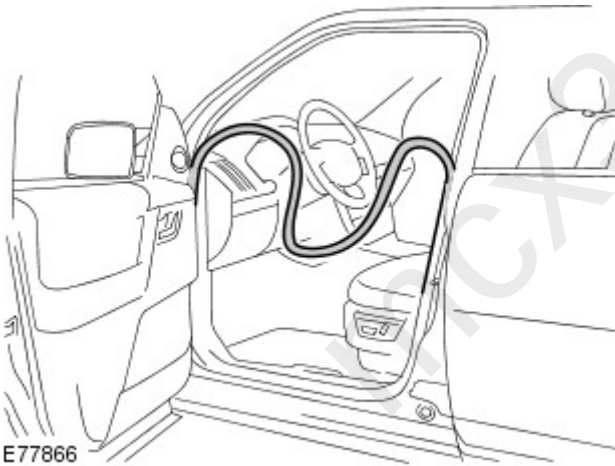
E49689

8. Release the rear of the headliner.



E77621

9. Release the front door seals.

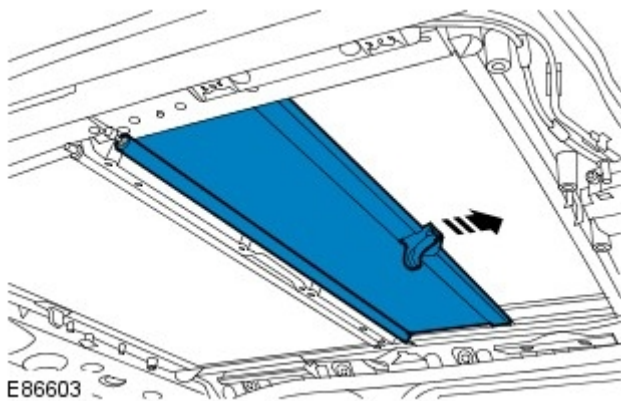


E77866

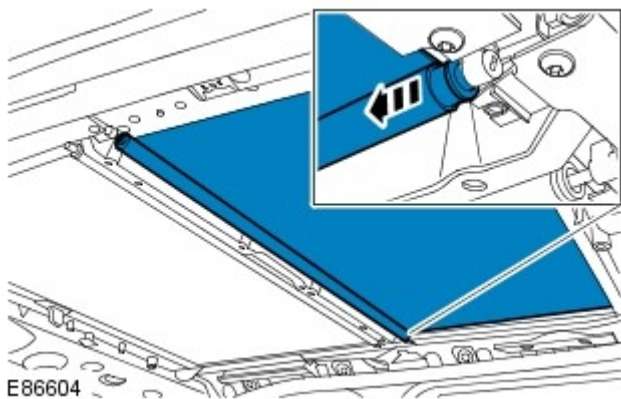
10. Release the headliner.



E79518



11. Close the glass roof panel blind.



12. **12. CAUTIONS:**

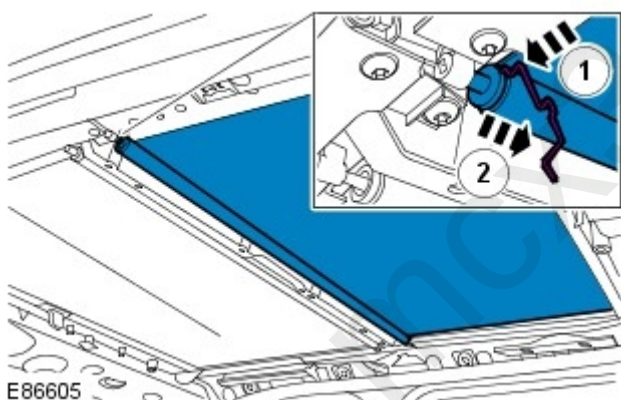


Do not allow the glass roof panel blind tube to rotate.



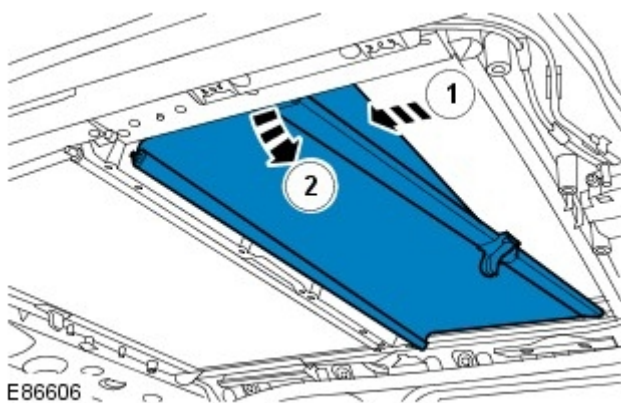
Do not release the metal pin from its locator until the locking pin is in place.

- Carefully slide the glass roof panel blind tube to the left.
- Release the plastic pin from its locator.



13.

- Using a suitable pin (1mm diameter), lock the glass roof panel blind.
- Release the metal pin from its locator.



14. Remove the glass roof panel blind.

Installation

1. Install the glass roof panel blind slider feet to the guides.

2.  **CAUTION:** Do not allow the glass roof panel blind tube to rotate until the plastic pin is secure in its locator.
- Secure the metal pin to its locator.
 - Remove the locking pin from the glass roof panel blind.

- 3.
- Carefully slide the glass roof panel blind tube to the left.
 - Align and secure the plastic pin to its locator.

4. Open the glass roof panel blind.

5. Secure the headliner.

6. Attach the front door seals.

7. Attach the rear of the headliner.

8. Install the passenger assist handles.

9. Install the sun visors.

10. Install the interior rear view mirror.

Refer to: [Interior Rear View Mirror](#) (501-09 Rear View Mirrors, Removal and Installation).

11. Install the D-pillar trim panels.

Refer to: [D-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

12. Install the C-pillar trim panels.

Refer to: [C-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

13. Install the B-pillar trim panels.

Refer to: [B-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

14. Install the A-pillar trim panels.

Refer to: [A-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

Roof Opening Panel - Roof Opening Panel Blind

Removal and Installation

Removal

1. Remove both A-pillar trim panels.

Refer to: [A-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

2. Remove both B-pillar upper trim panels.

Refer to: [B-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

3. Remove both C-pillar trim panels.

Refer to: [C-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

4. Remove both D-pillar upper trim panels.

Refer to: [D-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

5. Remove the interior rear view mirror.

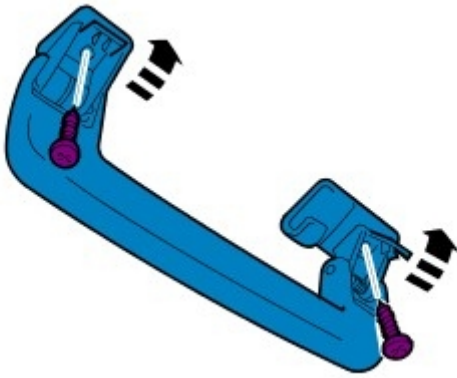
Refer to: [Interior Rear View Mirror](#) (501-09 Rear View Mirrors, Removal and Installation).

6. Remove both sun visors.



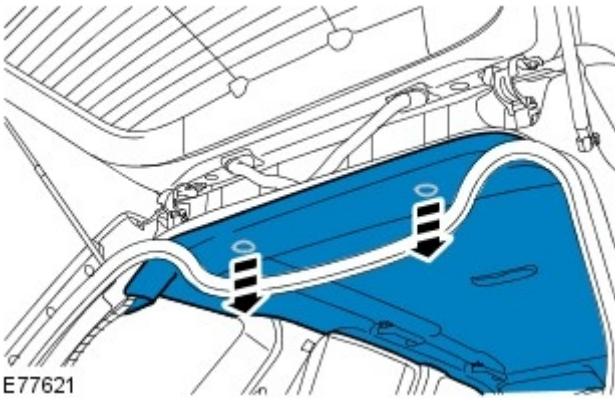
E77865

7. Remove the 4 passenger assist handles.



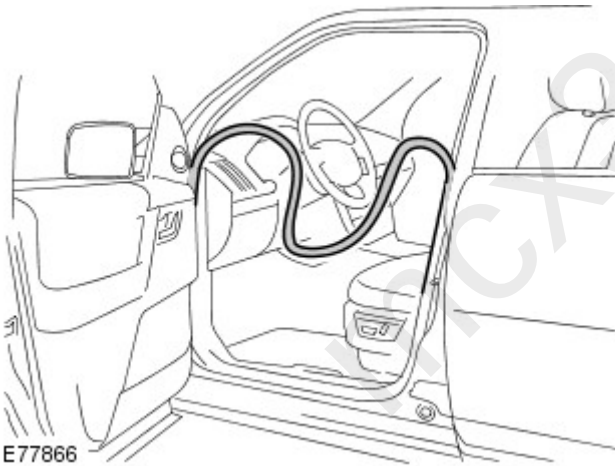
E49689

8. Release the rear of the headliner.



E77621

9. Release the front door seals.

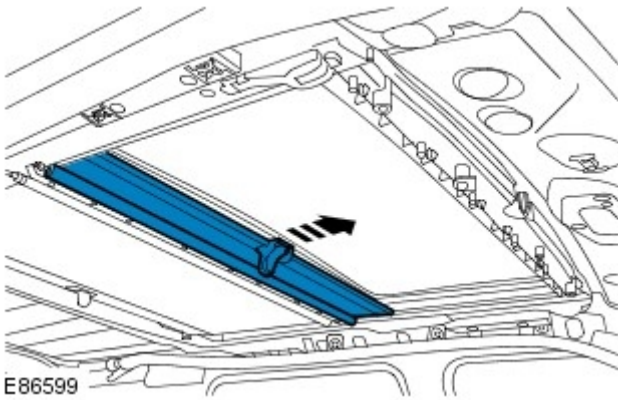


E77866

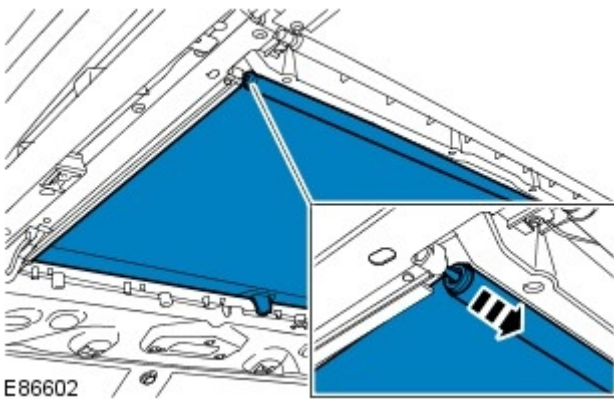
10. Release the headliner.



E79518



11. Close the roof opening panel blind.



12. **12. CAUTIONS:**

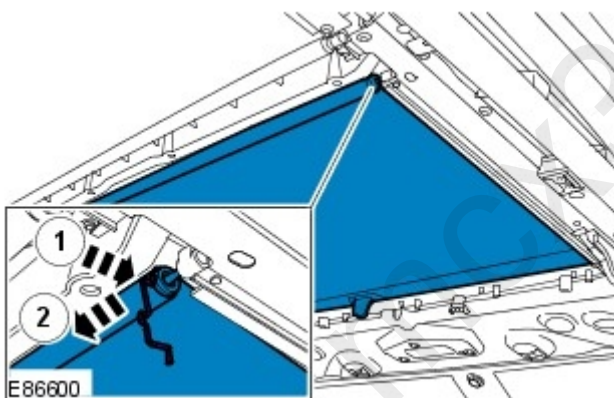


Do not allow the roof opening panel blind tube to rotate.



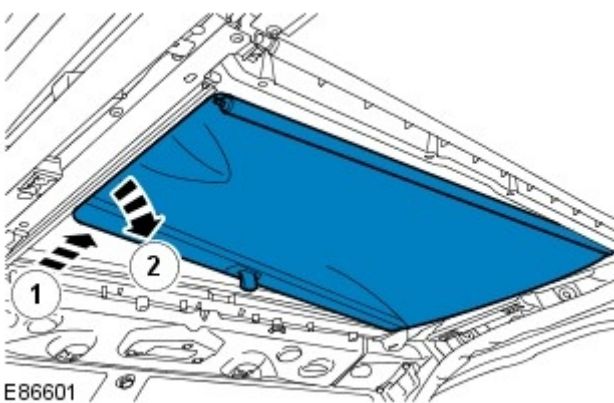
Do not release the metal pin from its locator until the locking pin is in place.

- Carefully slide the roof opening panel blind tube to the right.
- Release the plastic pin from its locator.



13.

- Using a suitable pin (1 mm diameter), lock the roof opening panel blind.
- Release the metal pin from its locator.



14. Remove the roof opening panel blind.

Installation

1. Install the roof opening panel blind slider feet to the guides.

2.  **CAUTION:** Do not allow the roof opening panel blind tube to rotate until the plastic pin is secure in its locator.
- Secure the metal pin to its locator.
 - Remove the locking pin from the roof opening panel blind.

- 3.
- Carefully slide the roof opening panel blind tube to the right.
 - Align and secure the plastic pin to its locator.

4. Open the roof opening panel blind.

5. Secure the headliner.

6. Attach the front door seals.

7. Attach the rear of the headliner.

8. Install the passenger assist handles.

9. Install the sun visors.

10. Install the interior rear view mirror.

Refer to: [Interior Rear View Mirror](#) (501-09 Rear View Mirrors, Removal and Installation).

11. Install the D-pillar trim panels.

Refer to: [D-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

12. Install the C-pillar trim panels.

Refer to: [C-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

13. Install the B-pillar trim panels.

Refer to: [B-Pillar Upper Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).

14. Install the A-pillar trim panels.

Refer to: [A-Pillar Trim Panel](#) (501-05 Interior Trim and Ornamentation, Removal and Installation).