

SECTION 501-17 Roof Opening Panel

VEHICLE APPLICATION: 2011.00 Focus

CONTENTS	PAGE
SPECIFICATIONS	
Specifications.....	501-17-2
DIAGNOSIS AND TESTING	
Roof Opening Panel.....	501-17-3
Roof Opening Panel.....	501-17-3
Inspection and Verification.....	501-17-3
Symptom Chart.....	501-17-3
Pinpoint Tests.....	501-17-4
Components Tests.....	501-17-9
GENERAL PROCEDURES	
Water Drainage System Check and Water Leak Corrections..... (41 002 0)	501-17-11
Roof Opening Panel Alignment..... (41 113 0)	501-17-12
Roof Opening Panel Motor Initialization.....	501-17-14
Updating Roof Opening Panel Motor Initialization.....	501-17-14
Initial Roof Opening Panel Motor Initialization.....	501-17-14
Erasing Roof Opening Panel Motor Initialization.....	501-17-14
REMOVAL AND INSTALLATION	
Roof Opening Panel Glass.....	501-17-16
Roof Opening Panel Shield..... (41 123 0)	501-17-19
Roof Opening Panel.....	501-17-20
Roof Opening Panel Motor.....	501-17-23
Roof Opening Panel Rear Drain Hose — 3-Door/5-Door.....	501-17-26
Driver Side Roof Opening Panel Front Drain Hose.....	501-17-28
Passenger Side Roof Opening Panel Front Drain Hose.....	501-17-31

SPECIFICATIONS**Torque Specifications**

Item	Nm	lb-ft	lb-in
Roof opening panel frame retaining screws	6	-	53
Roof opening panel frame locking clamp retaining screws	6	-	53
Roof opening panel motor retaining screws	3	-	27
Roof opening panel glass retaining screws	3	-	27

DIAGNOSIS AND TESTING

Roof Opening Panel

General Equipment

Worldwide diagnostic system (WDS)

Roof Opening Panel

Refer to Wiring Diagrams Section 501-17, for schematic and connector information.

Inspection and Verification

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

Visual Inspection Chart

Mechanical	Electrical
• Roof opening panel • Seal(s) • Weatherstrip • Alignment	• Fuse(s) • Electrical connector(s)

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.

Symptom Chart

Symptom Chart

Symptom	Possible Sources	Action
• The roof opening panel leaks	• Drain tubes.	• CHECK the drain tubes for blockage or obstruction. CARRY OUT the Water Drainage System Check and Water Leak Corrections. - REFER to: Water Drainage System Check and Water Leak Corrections (501-17 Roof Opening Panel, General Procedures).
• The roof opening panel rattles	• Headliner.	• CHECK the headliner for security. - REFER to: Headliner - 3-Door, Vehicles With: Sliding Roof Opening Panel (501-05 Interior Trim and Ornamentation, Removal and Installation).
	• Guides and track.	• CHECK for worn or damaged components. CARRY OUT the Roof Opening Panel Alignment. - REFER to: Roof Opening Panel Alignment (501-17 Roof Opening Panel, General Procedures).

DIAGNOSIS AND TESTING

Symptom	Possible Sources	Action
The roof opening panel is noisy during operation	- Guides and track. - Motor. - Roof Opening Panel Glass.	CHECK for worn or damaged components. CARRY OUT the Roof Opening Panel Alignment. REFER to: Roof Opening Panel Alignment (501-17 Roof Opening Panel, General Procedures).
The roof opening panel does not open or close	Switch.	CARRY OUT the Roof Opening Panel Control Switch Component Test in this section.
	Motor.	CARRY OUT the Roof Opening Panel Motor Initialization. REFER to: Roof Opening Panel Motor Initialization (501-17 Roof Opening Panel, General Procedures).
	Circuits.	GO to Pinpoint Test A.
The roof opening panel does not stop in flush from any position	Guides and track.	CHECK for worn or damaged components. CARRY OUT the Roof Opening Panel Alignment. REFER to: Roof Opening Panel Alignment (501-17 Roof Opening Panel, General Procedures).
	Motor.	CARRY OUT the Roof Opening Panel Motor Initialization. REFER to: Roof Opening Panel Motor Initialization (501-17 Roof Opening Panel, General Procedures).
The roof opening panel shows unexpected bounce back at high speed	- Motor. - Circuit(s).	GO to Pinpoint Test B.
No communication with the global closing module	- Global closing module. - Motor. - Circuit.	GO to Pinpoint Test C.

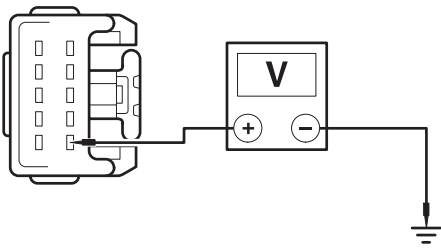
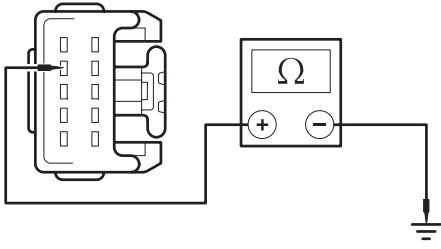
Pinpoint Tests

NOTE: Use a digital multimeter for all electrical measurements.

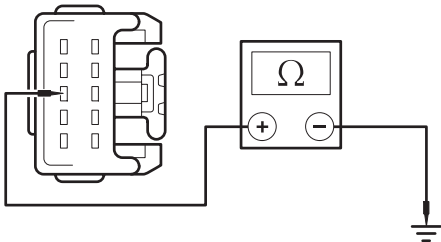
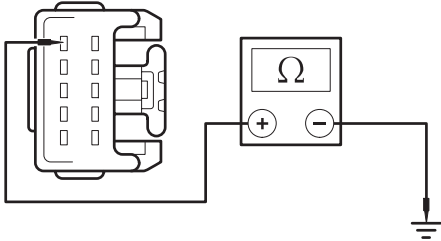
PINPOINT TEST A : THE ROOF OPENING PANEL DOES NOT OPEN OR CLOSE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK FOR VOLTAGE TO THE ROOF OPENING PANEL CONTROL SWITCH	
	1 Ignition switch in position II.

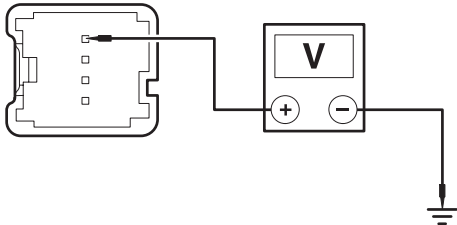
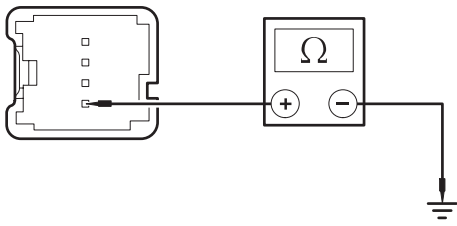
DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	2 CHECK the operation of the roof opening panel control switch lamp. Does the roof opening panel control switch lamp illuminate? → Yes GO to A2. → No GO to A6.
A2: CHECK THE SUPPLY VOLTAGE TO THE ROOF OPENING PANEL CONTROL UNIT, CIRCUIT 29-AG12 (OG/BK)	
	1 Ignition switch in position 0. 2 Disconnect Fuse 40 (20A). 3 Disconnect Roof Opening Panel Control Unit C525. 4 Connect Fuse 40 (20A).
 TIE0020841	5 Measure the voltage between the roof opening panel control unit C525 pin 1, circuit 29-AG12 (OG/BK), harness side and ground. Is the voltage greater than 10 volts? → Yes GO to A3. → No REPAIR circuit 29-AG12 (OG/BK). TEST the system for normal operation.
A3: CHECK THE ROOF OPENING PANEL CONTROL SWITCH DOWN/OPEN GROUND CIRCUIT	
	1 Operate the roof opening panel control switch to the DOWN/OPEN position and keep it pressed.
 TIE0020843	2 Measure the resistance between the roof opening panel control unit C525 pin 9, circuit 31S-AG27 (BK/WH), harness side and ground. Is the resistance less than 100 ohms? → Yes GO to A4. → No REPAIR circuit 31S-AG27 (BK/WH). TEST the system for normal operation.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A4: CHECK THE ROOF OPENING PANEL CONTROL SWITCH UP/CLOSE GROUND CIRCUIT	
 TIE0020842	1 Operate the roof opening panel control switch to the UP/CLOSE position and keep it pressed.
	2 Measure the resistance between the roof opening panel control unit C525 pin 8, circuit 31S-AG7 (BK/BU), harness side and ground. • Is the resistance less than 100 ohms? → Yes GO to A5. → No REPAIR circuit 31S-AG7 (BK/BU). TEST the system for normal operation.
A5: CHECK THE ROOF OPENING PANEL CONTROL UNIT GROUND CIRCUIT	
 TIE0020846	1 Measure the resistance between the roof opening panel control unit C525 pin 10, circuit 31-AG12 (BK), harness side and ground. • Is the resistance less than 5 ohms? → Yes INSTALL a new roof opening panel motor. REFER to: Roof Opening Panel Motor (501-17 Roof Opening Panel, Removal and Installation). TEST the system for normal operation. → No REPAIR circuit 31-AG12 (BK). TEST the system for normal operation.
A6: CHECK THE VOLTAGE TO THE ROOF OPENING PANEL CONTROL SWITCH LAMP, CIRCUIT 15-AG7 (GN/BU)	
	1 Ignition switch in position 0.
	2 Disconnect Roof Opening Panel Control Switch C522.
	3 Ignition switch in position II.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
 TIE0037447	4 Measure the voltage between the roof opening panel control switch C522 pin 1, circuit 15-AG7 (GN/BU), harness side and ground. Is the voltage greater than 10 volts? → Yes GO to A7. → No REPAIR circuit 15-AG7 (GN/BU). TEST the system for normal operation.
A7: CHECK THE ROOF OPENING PANEL CONTROL SWITCH GROUND CIRCUIT	
 TIE0037448	1 Ignition switch in position 0. 2 Measure the resistance between the roof opening panel control switch C522 pin 4, circuit 31-AG7 (BK), harness side and ground. Is the resistance less than 5 ohms? → Yes VERIFY the customer concern. → No REPAIR circuit 31-AG7 (BK). TEST the system for normal operation.

PINPOINT TEST B : THE ROOF OPENING PANEL SHOWS UNEXPECTED BOUNCE BACK AT HIGH SPEED

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: CHECK THE OPERATION OF THE MULTIFUNCTION DISPLAY	
	1 Drive the vehicle. 2 Observe the multi-function display 'Average speed' function. Does the display operate correctly? → Yes GO to B2. → No
B2: CHECK FOR A SHORT TO GROUND	
	1 Disconnect Roof Opening Panel Control Unit C525.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	2 Disconnect Central Junction Box C98. 3 Measure the resistance between the roof opening panel control unit C525 pin 6, circuit 8-GB8 (WH/BU), harness side and ground. - Is the resistance greater than 10,000 ohms? → Yes GO to B3. → No REPAIR circuit 8-GB8 (WH/BU). TEST the system for normal operation.
B3: CHECK FOR CONTINUITY BETWEEN THE CENTRAL JUNCTION BOX (CJB) AND THE ROOF OPENING PANEL CONTROL UNIT	
	1 Ignition switch in position 0. 2 Measure the resistance between the central junction box C98 pin 8, circuit 8-GB8 (WH/BU), harness side and the roof opening panel control unit C525 pin 6, circuit 8-GB8 (WH/BU), harness side. - Is the resistance less than 5 ohms? → Yes Install a new roof opening panel motor. REFER to: Roof Opening Panel Motor (501-17 Roof Opening Panel, Removal and Installation). TEST the system for normal operation. → No REPAIR circuit 8-GB8 (WH/BU). TEST the system for normal operation.

PINPOINT TEST C : NO COMMUNICATION WITH THE GLOBAL CLOSING MODULE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C1: CHECK OPERATION OF THE GLOBAL CLOSING	
	1 Operate the global closing function. - Do the door windows close? → Yes GO to C2. → No Refer to WDS.
C2: CHECK FOR A SHORT TO GROUND	
	1 Disconnect Roof Opening Panel Control Unit C525.

DIAGNOSIS AND TESTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
	2 Disconnect Central Junction Box C98. 3 Measure the resistance between the roof opening panel control unit C525 pin 2, circuit 8-AG12 (WH/GN), harness side and ground. Is the resistance greater than 10,000 ohms? → Yes GO to C3. → No REPAIR circuit 8-AG12 (WH/GN). TEST the system for normal operation.
C3: CHECK FOR CONTINUITY BETWEEN THE CENTRAL JUNCTION BOX (CJB) AND THE ROOF OPENING PANEL CONTROL UNIT	
	1 Measure the resistance between the central junction box C98 pin 2, circuit 8-AG12 (WH/GN), harness side and the roof opening panel control unit C525 pin 2, circuit 8-AG12 (WH/GN), harness side. Is the resistance less than 5 ohms? → Yes Install a new roof opening panel motor. REFER to: Roof Opening Panel Motor (501-17 Roof Opening Panel, Removal and Installation). → No REPAIR circuit 8-AG12 (WH/GN). TEST the system for normal operation.

Components Tests

Roof Opening Panel Control Switch

1. Measure the resistance between the following:

Roof Opening Panel Control Switch Position	Roof Opening Panel Control Switch Terminals		Measurements
	Multimeter Positive Lead	Multimeter Negative Lead	
Neutral	1	2	Greater than 10,000 ohms
Neutral	1	3	Greater than 10,000 ohms
Neutral	1	4	Less than 100 ohms
Neutral	4	1	Greater than 10,000 ohms
First detente Up/Close	2	4	Less than 5 ohms

DIAGNOSIS AND TESTING

Roof Opening Panel Control Switch Position	Roof Opening Panel Control Switch Terminals		Measurements
	Multimeter Positive Lead	Multimeter Negative Lead	
Fully Up/Close	2	4	Less than 5 ohms
First detente Down/Open	2	4	Greater than 10,000 ohms
Fully Down/Open	2	4	Less than 5 ohms
First detente Down/Open	3	4	Less than 5 ohms
Fully Down/Open	3	4	Less than 5 ohms
First detente Up/Close	3	4	Greater than 10,000 ohms
Fully Up/Close	3	4	Less than 5 ohms

2. If all measurements of the roof opening panel control switch are as noted, return to the Pinpoint Test. Otherwise install a new roof opening panel control switch.

GENERAL PROCEDURES

Water Drainage System Check and Water Leak Corrections(41 002 0)

1. If a drain hose blockage or obstruction is suspected, check the drain hoses by pouring 500 ml of water into the drain trough and checking the flow from under the vehicle rocker panels. Attempt to clear any blockage or obstruction using a drain clearing wire (nylon). If the blockage or obstruction cannot be cleared the drain hose must be removed.

For additional information, **refer to Roof Opening Panel Front Drain Hose -**

/ Roof Opening Panel Rear Drain Hose - in this section.

2. If a drain hose leak is suspected the drain hose must be removed and inspected for cracks or splits.

For additional information, **refer to Roof Opening Panel Front Drain Hose -**

/ Roof Opening Panel Rear Drain Hose - in this section.

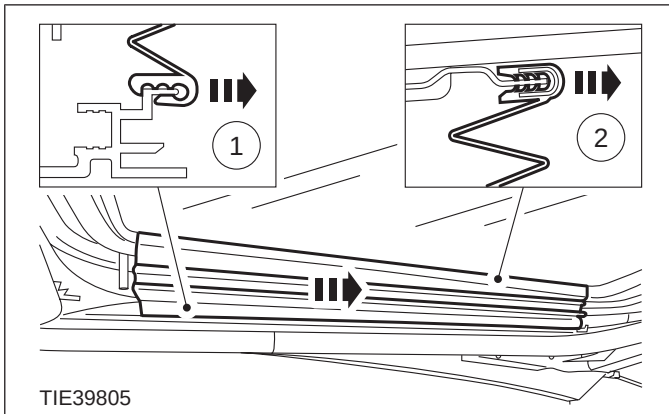
GENERAL PROCEDURES

Roof Opening Panel Alignment(41 113 0)

1. **NOTE:** The roof opening panel must be in the closed position for alignment.

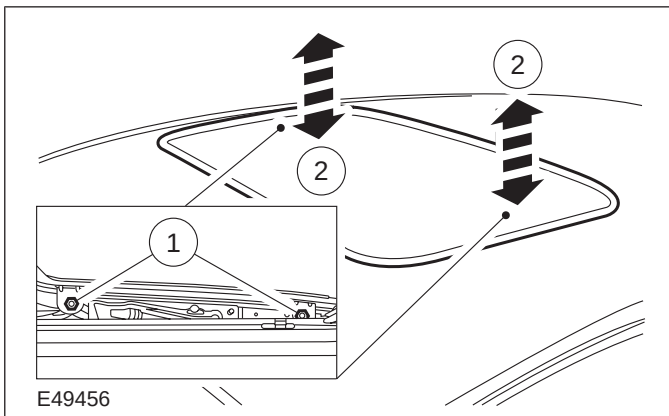
Starting at the rear of the roof opening panel, remove the roof opening panel guide arm covers (left-hand side shown).

1. Release the lower clip.
2. Release the upper clip.



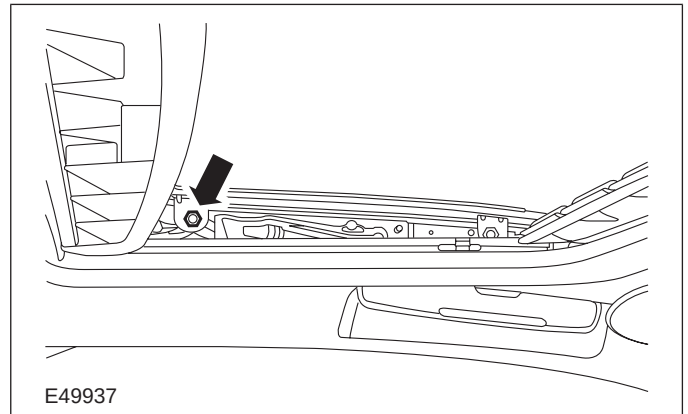
2. **Adjust the rear edge of the roof opening panel glass.**

1. Loosen the retaining screws on both sides (left-hand side shown).
2. Push the rear edge up or down to give the correct alignment (flush to + 1 mm).



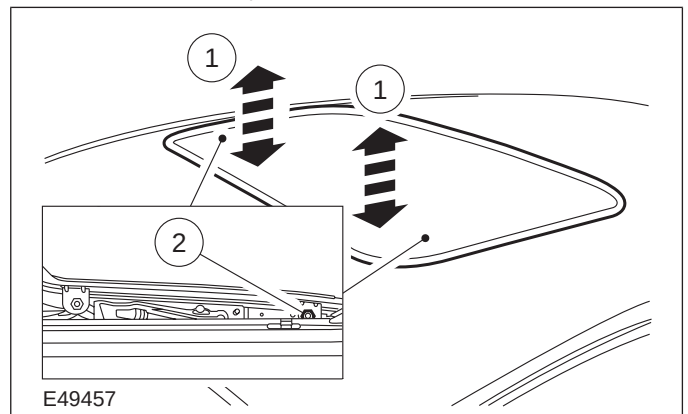
3. **Make sure that the roof opening panel glass is located centrally in the roof panel opening.**

4. **Tighten the roof opening panel glass rear retaining screws (left-hand side shown).**



5. **Adjust the front edge of the roof opening panel glass.**

1. Push the front edge up or down to give the correct alignment (flush to -1 mm).
2. Tighten the front retaining screws (left-hand side shown).



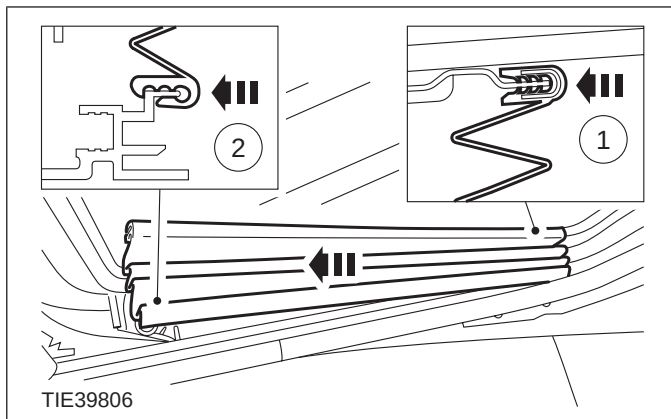
6. **NOTE:** An audible click can be heard when the lower edge of the guide arm cover is correctly located.

Starting at the front of the roof opening panel, install the roof opening panel guide arm covers (left-hand side shown).

1. Install the upper clip.

GENERAL PROCEDURES

2. Install the lower clip.



7. Operate the roof opening panel and check the alignment.

GENERAL PROCEDURES

Roof Opening Panel Motor Initialization

Updating Roof Opening Panel Motor Initialization

 **WARNING:** The roof opening panel anti-trap function will not operate during the updating roof opening panel motor initialization procedure. Make sure that the roof opening panel opening is free of all foreign material. Failure to follow this instruction may result in personal injury.

NOTE: This procedure should only be carried out when the roof opening panel motor has not been disconnected.

NOTE: The roof opening panel alignment must be carried out prior to carrying out roof opening panel motor initialization.

For additional information, **refer to: Roof Opening Panel Alignment** (501-17 Roof Opening Panel, General Procedures).

1. Operate the roof opening panel control switch to the up/close position until the roof opening panel is in the fully vent position.
2. Release the roof opening panel control switch.
3. Operate the roof opening panel control switch to the up/close position and hold for 30 seconds until there is a small movement (approximately 2 mm) and the roof opening panel motor stops.
4. Release the roof opening panel control switch.
5. **NOTE:** In one complete cycle the roof opening panel will close, fully open and return to the fully closed position.

Operate the roof opening panel control switch to the up/close position again within 3 seconds until the roof opening panel stops (one complete cycle).

Initial Roof Opening Panel Motor Initialization

 **WARNING:** The roof opening panel anti-trap function will not operate during the updating roof opening panel motor initialization procedure. Make sure that the roof opening panel opening is free of all foreign material. Failure to follow this instruction may result in personal injury.

NOTE: This procedure must be carried out when installing any roof opening panel motor or roof opening panel.

NOTE: The roof opening panel alignment must be carried out prior to carrying out roof opening panel motor initialization.

For additional information, **refer to: Roof Opening Panel Alignment** (501-17 Roof Opening Panel, General Procedures).

1. Operate the roof opening panel control switch to the up/close position.
2. Release the roof opening panel control switch.
3. **NOTE:** In one complete cycle the roof opening panel will close, fully open and return to the fully closed position.

Operate the roof opening panel control switch to the up/close position again within 3 seconds until the roof opening panel stops (one complete cycle).

Erasing Roof Opening Panel Motor Initialization

NOTE: The erasing procedure is to be carried out only when the roof opening panel motor has been detached from the roof opening panel.

NOTE: This procedure must be carried out before installing a previously used roof opening panel motor.

1. Operate the roof opening panel control switch to the up/close position until the roof opening panel motor stops.
2. Release the roof opening panel control switch.
3. Operate the roof opening panel control switch again to the up/close position and hold for 30 seconds. With the roof opening panel control switch held, the roof opening panel motor will rotate in one direction.
4. Release the roof opening panel control switch.
5. Operate the roof opening panel control switch to the down/open position. If the roof opening panel motor does not rotate, the erasing procedure has been carried out successfully.

GENERAL PROCEDURES

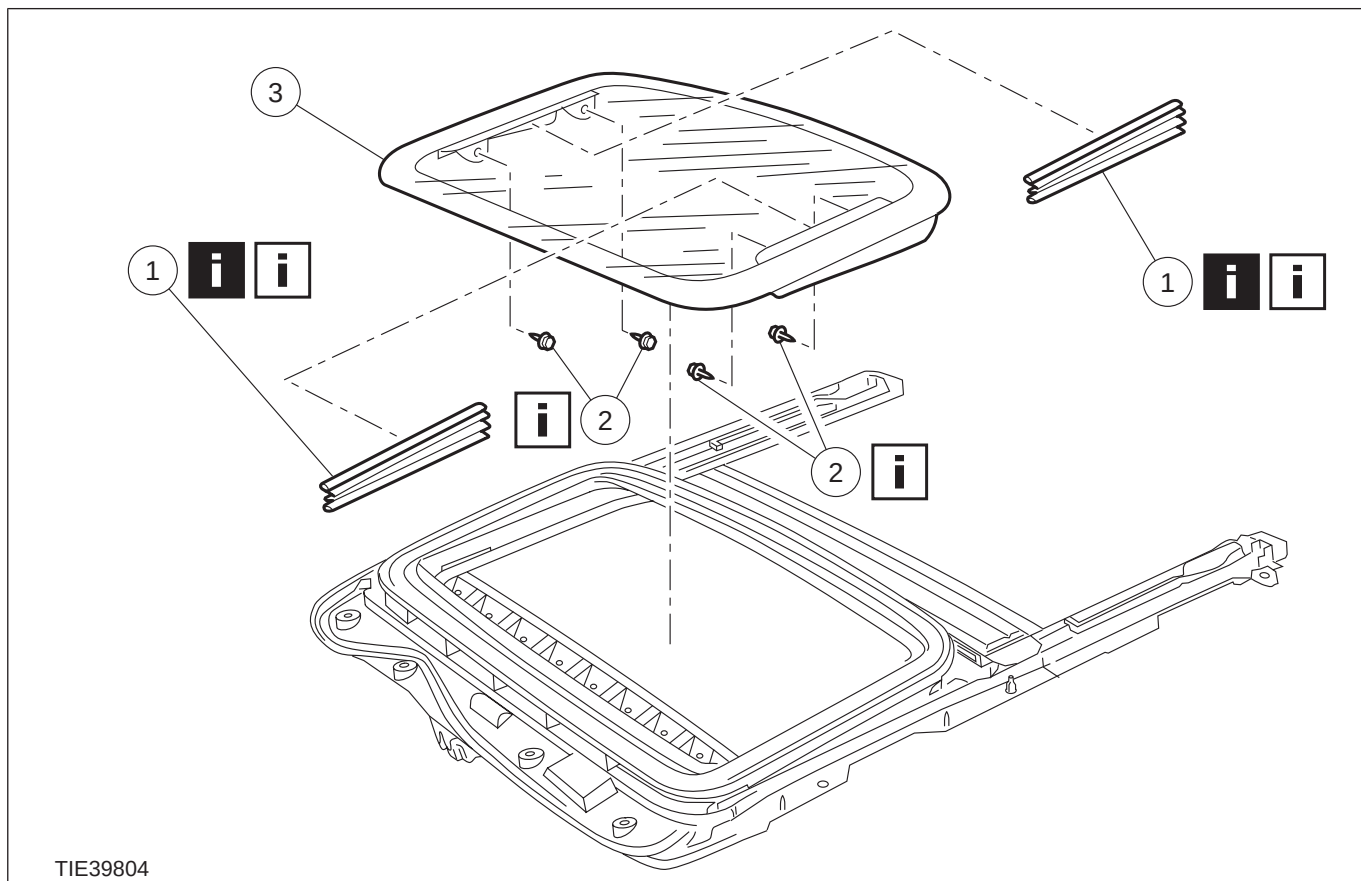
6. If the roof opening panel motor rotates (with the roof opening panel control switch in the down/open position), repeat the procedure.

REMOVAL AND INSTALLATION

Roof Opening Panel Glass

1. Move the roof opening panel shield rearwards.

2. Remove the components in the order indicated in the following illustration(s) and table(s).



TIE39804

Item	Description
1	Roof opening panel guide arm covers See Removal Detail See Installation Detail
2	Roof opening panel glass retaining screws See Installation Detail
3	Roof opening panel glass

3. To install, reverse the removal procedure.

Removal Details

Item 1 Roof opening panel guide arm covers

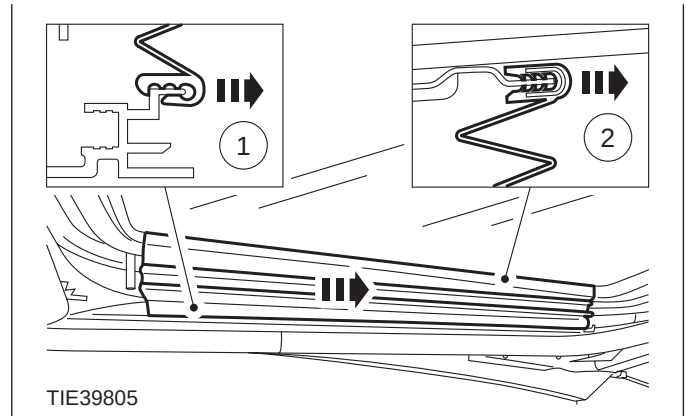
1. **NOTE:** Make sure the roof opening panel is in the closed position.

Starting at the rear of the roof opening panel, remove the roof opening panel guide arm covers (left-hand side shown).

1. Release the lower clip.

REMOVAL AND INSTALLATION

2. Release the upper clip.

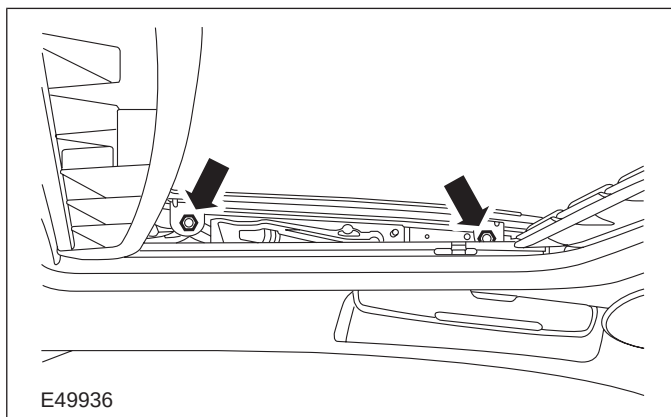


Installation Details

Item 2 Roof opening panel glass retaining screws

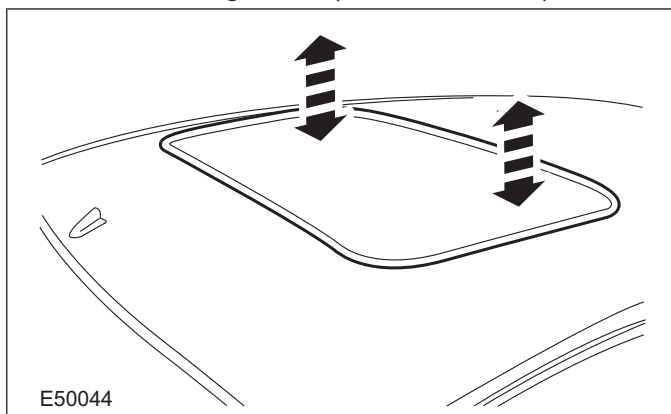
1. **NOTE:** Do not fully tighten the retaining screws at this stage.

Install the roof opening panel glass retaining screws on both sides (left-hand side shown).



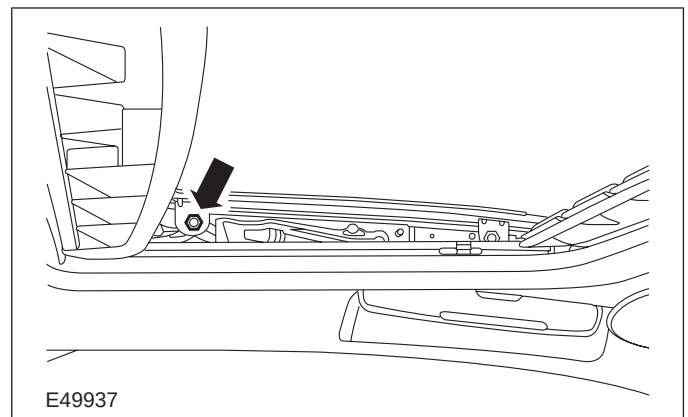
2. Adjust the rear edge of the roof opening panel glass.

- Push the rear edge up or down to give the correct alignment (flush to + 1 mm).



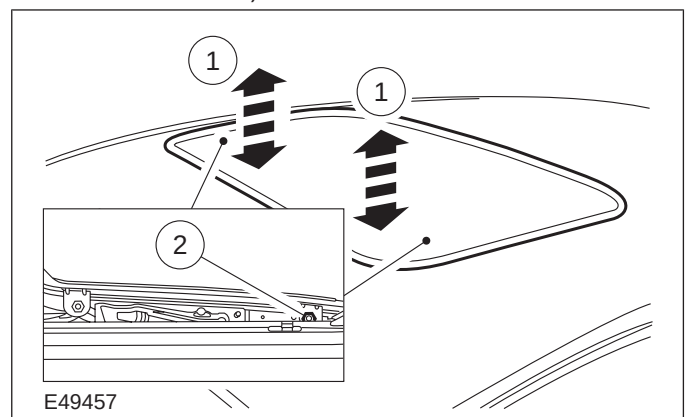
3. Make sure that the roof opening panel glass is located centrally in the roof panel opening.

4. Tighten the roof opening panel glass rear retaining screws (left-hand side shown).



5. Adjust the front edge of the roof opening panel glass.

1. Push the front edge up or down to give the correct alignment (flush to -1 mm).
2. Tighten the front retaining screws (left-hand side shown).



REMOVAL AND INSTALLATION

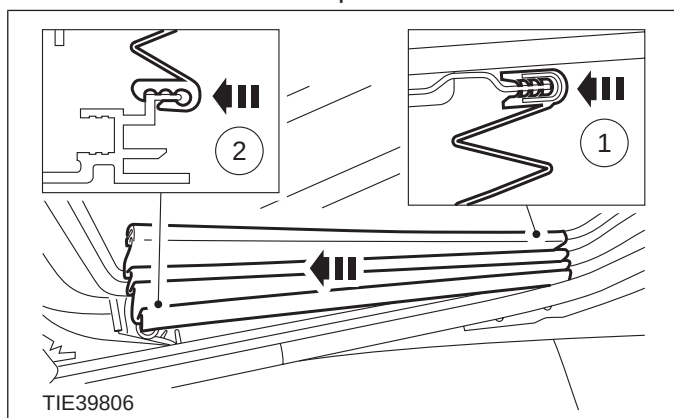
6. Operate the roof opening panel and check the alignment.

Item 1 Roof opening panel guide arm covers

1. **NOTE:** An audible click can be heard when the lower edge of the guide arm cover is correctly located.

Starting at the front of the roof opening panel, install the roof opening panel guide arm covers (left-hand side shown).

1. Install the upper clip.
2. Install the lower clip.

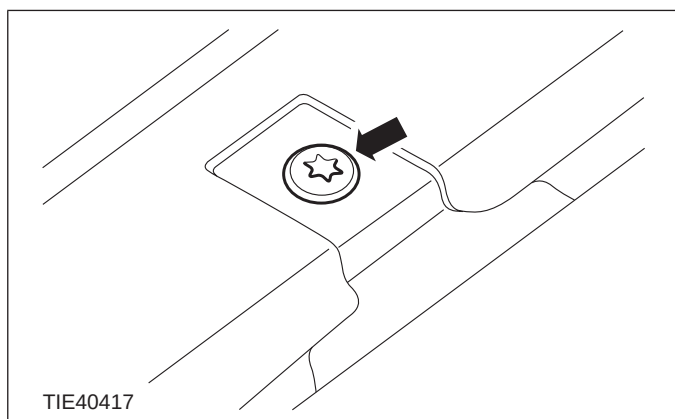


REMOVAL AND INSTALLATION**Roof Opening Panel Shield(41 123 0)****Removal**

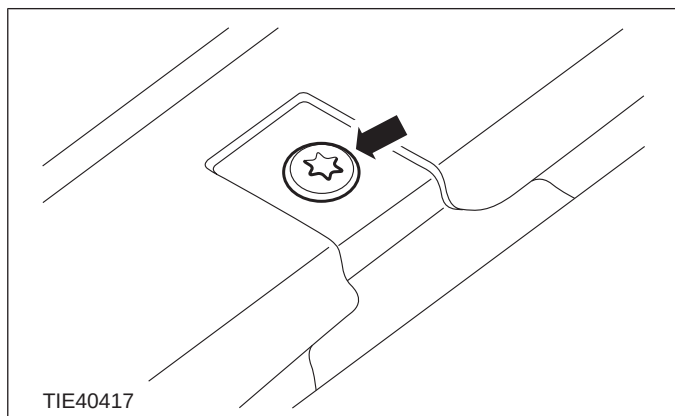
1. Remove the roof opening panel glass.

For additional information, **refer to: Roof Opening Panel Glass** (501-17 Roof Opening Panel, Removal and Installation).

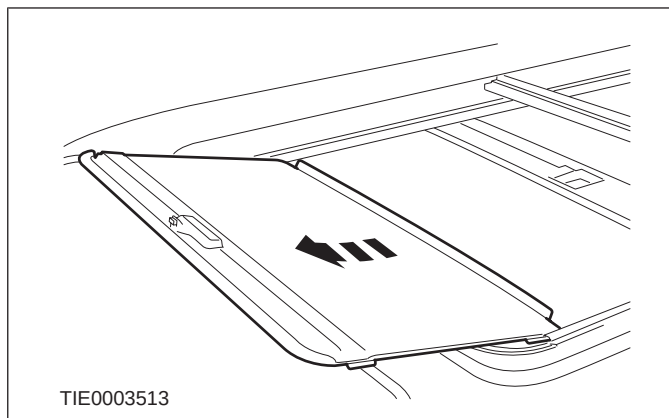
2. Close the roof opening panel shield.
3. Remove the roof opening panel shield front retaining screws on both sides.



4. Move the roof opening panel shield forwards to gain access to the roof opening panel shield rear retaining screws.
5. Remove the roof opening panel shield rear retaining screws on both sides.



6. Remove the roof opening panel shield.

**Installation**

1. To install, reverse the removal procedure.

REMOVAL AND INSTALLATION

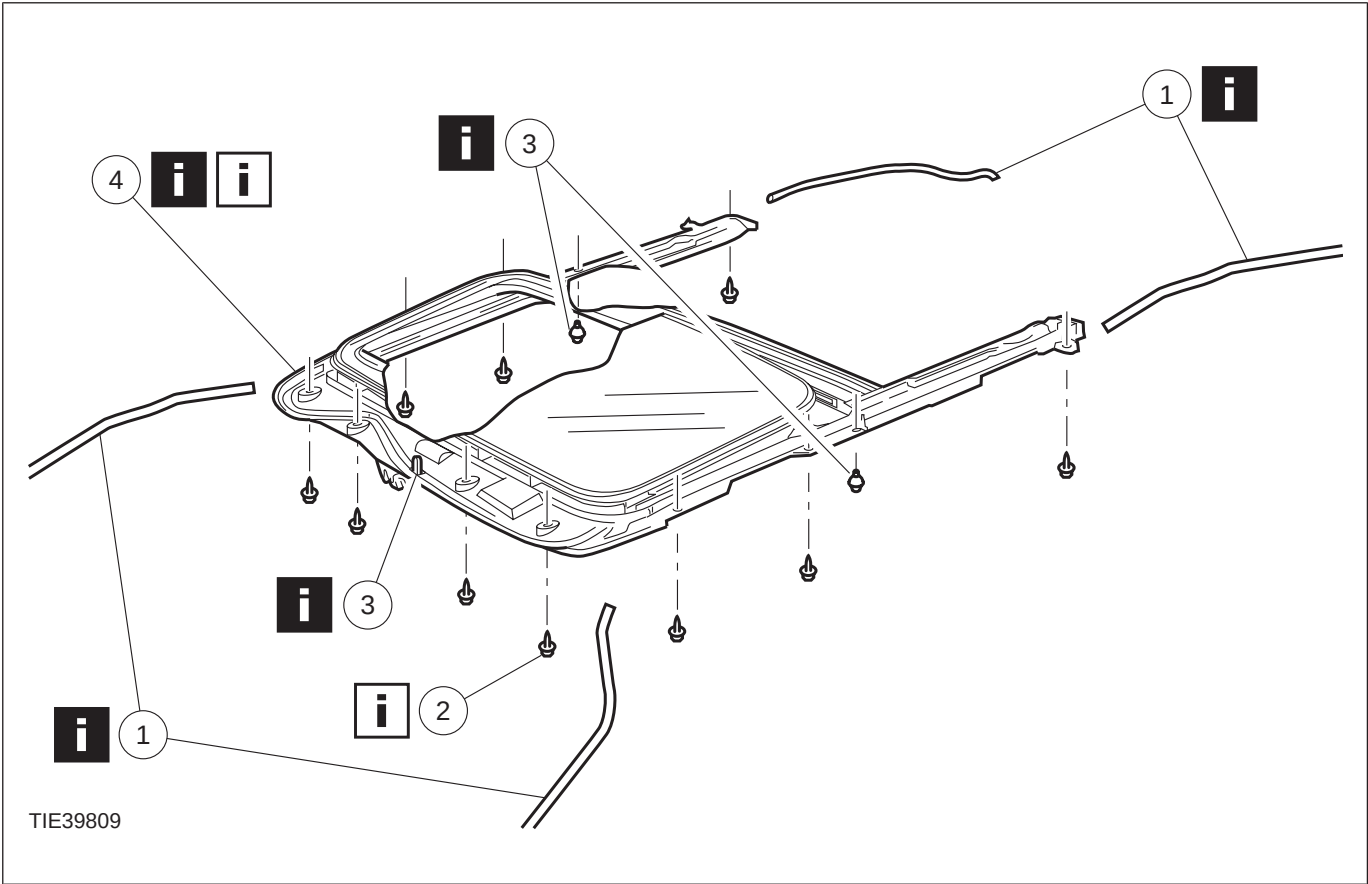
Roof Opening Panel

NOTE: Make sure the roof opening panel is in the closed position.

1. Remove the headliner. For additional information, refer to: (501-05 Interior Trim and Ornamentation)

Headliner - 3-Door, Vehicles With: Sliding Roof Opening Panel (Removal and Installation),

2. Remove the components in the order indicated in the following illustration(s) and table(s).



TIE39809

Item	Description
1	Roof opening panel drain hoses See Removal Detail
2	Roof opening panel retaining bolts See Installation Detail

Item	Description
3	Roof opening panel retaining clips See Removal Detail
4	Roof opening panel See Removal Detail See Installation Detail

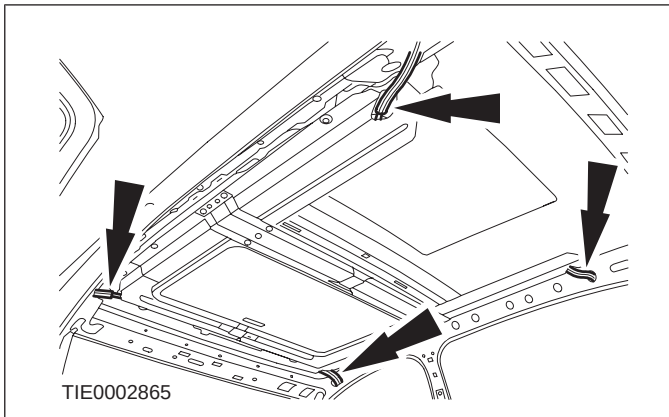
3. To install, reverse the removal procedure.

Removal Details

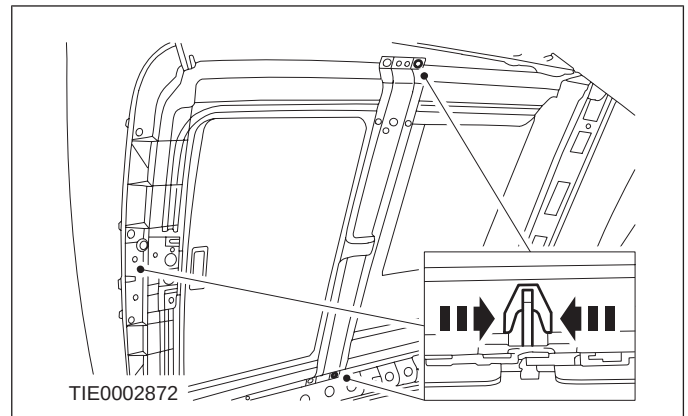
REMOVAL AND INSTALLATION

Item 1 Roof opening panel drain hoses

1. Detach the roof opening panel drain hoses from the roof opening panel.



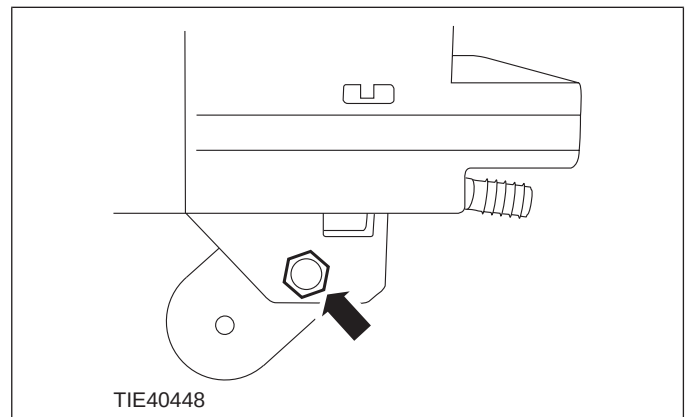
With the aid of another technician, compress the legs of the roof opening panel retaining clips and lower the roof opening panel.

**Item 3** Roof opening panel retaining clips

1. **CAUTION:** The roof opening panel front retaining clip is fixed to the roof opening panel frame and is not a service item.

Item 4 Roof opening panel

1. Loosen the roof opening panel locking clamp retaining bolt by two turns on both sides.

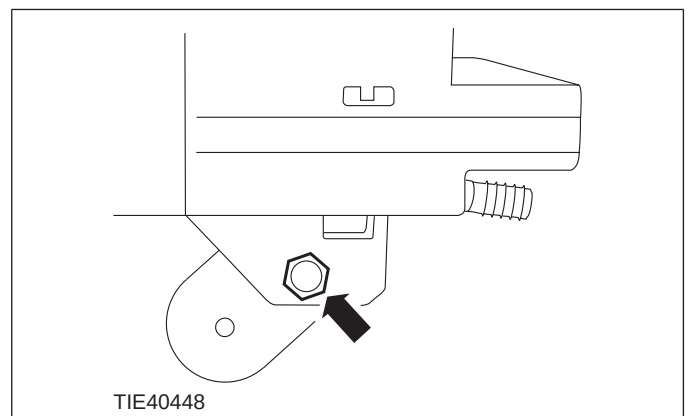


Installation Details

Item 4 Roof opening panel

1. **NOTE:** This step should only be carried out if installing a new roof opening panel.

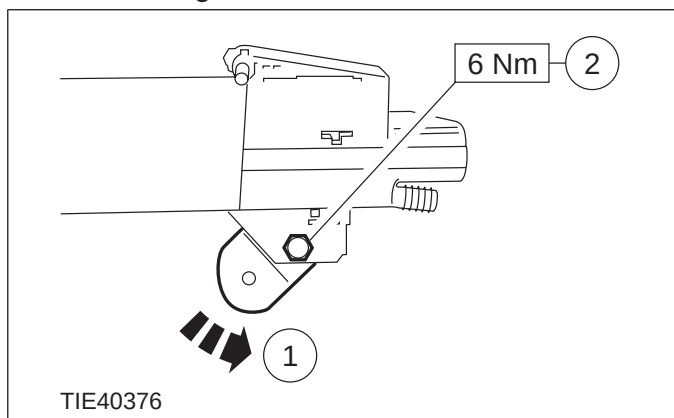
Loosen the roof opening panel locking clamp retaining bolt by two turns on both sides.



2. Tighten the roof opening panel locking clamp retaining bolt on both sides.

REMOVAL AND INSTALLATION

1. Position the roof opening panel locking clamp.
2. Tighten the roof opening panel locking clamp retaining bolt.



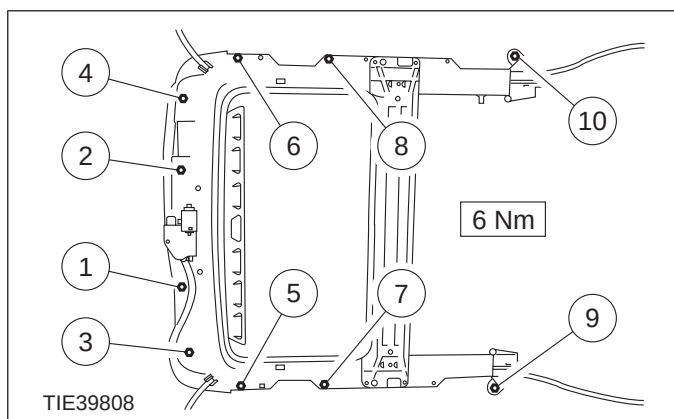
Item 2 Roof opening panel retaining bolts

1. **NOTE: Do not fully tighten the roof opening panel retaining bolts at this stage.**

NOTE: The roof opening panel must be correctly located on the retaining clips before tightening the roof opening panel retaining bolts.

With the aid of another technician, install the roof opening panel.

2. **Tighten the roof opening panel retaining bolts in the sequence shown.**



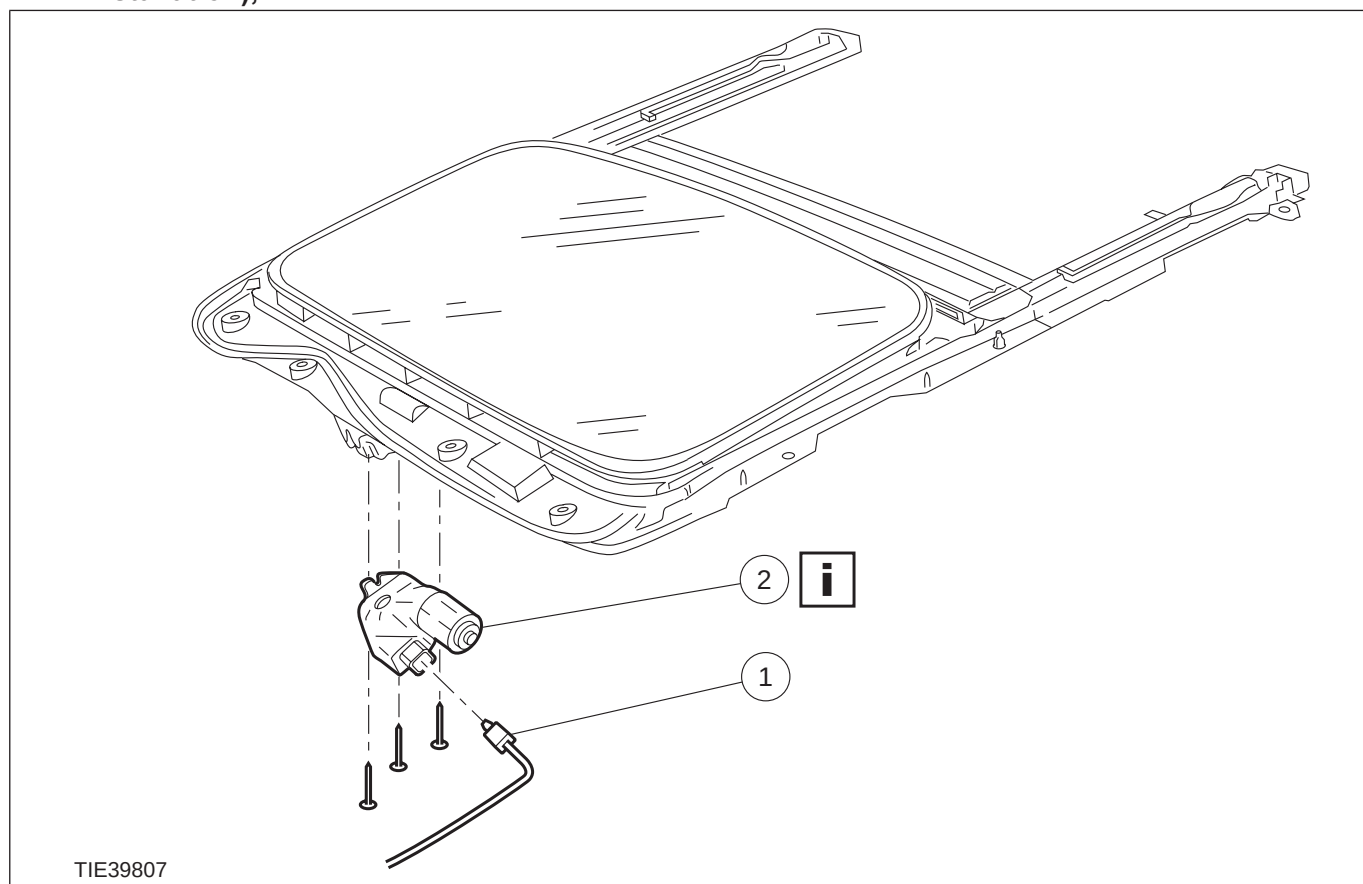
REMOVAL AND INSTALLATION

Roof Opening Panel Motor

1. Remove the headliner. For additional information, refer to: (501-05 Interior Trim and Ornamentation)

Headliner - 3-Door, Vehicles With: Sliding Roof Opening Panel (Removal and Installation),

2. Remove the components in the order indicated in the following illustration(s) and table(s).



Item	Description
1	Roof opening panel motor electrical connector
2	Roof opening panel motor See Installation Detail

3. To install, reverse the removal procedure.

4. Carry out the initial roof opening panel motor initialization procedure.

For additional information, refer to: **Roof Opening Panel Motor Initialization** (501-17 Roof Opening Panel, General Procedures).

Installation Details

Item 2 Roof opening panel motor

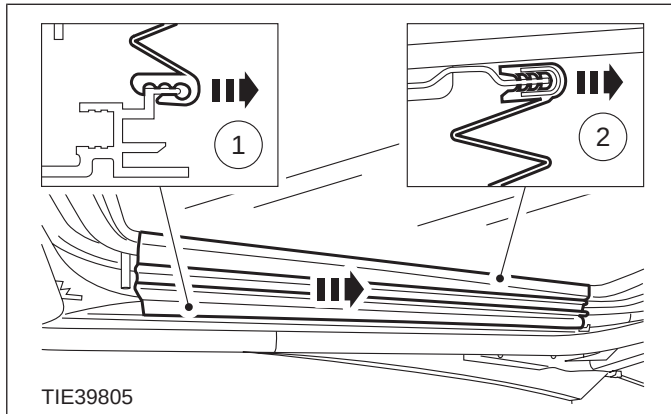
CAUTION: The roof opening panel motor must not be installed at this stage.

1. Starting at the rear of the roof opening panel, remove the roof opening panel guide arm covers (left-hand side shown).

1. Release the roof opening panel guide arm cover lower clip.

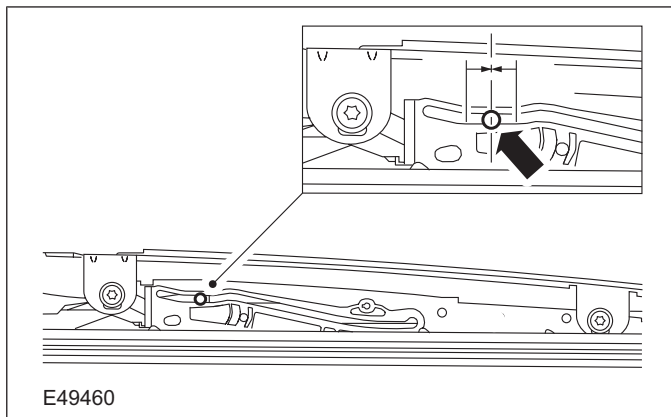
REMOVAL AND INSTALLATION

2. Release the roof opening panel guide arm cover upper clip.



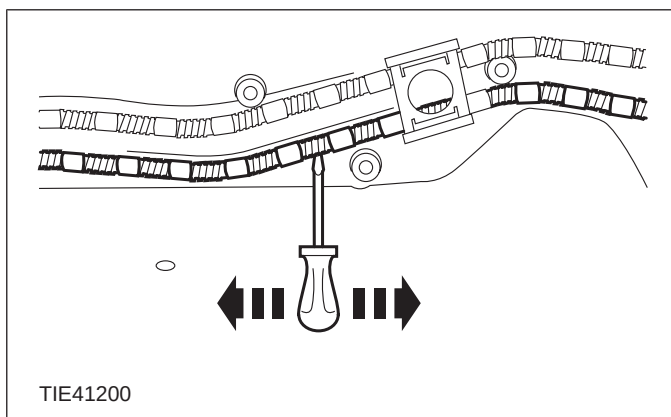
2. **CAUTION:** The roof opening panel guide pins must be aligned centrally in the flat area of the roof opening panel guide arm as shown.

Check the alignment of the left-hand and right-hand roof opening panel guide pins (left-hand side shown).



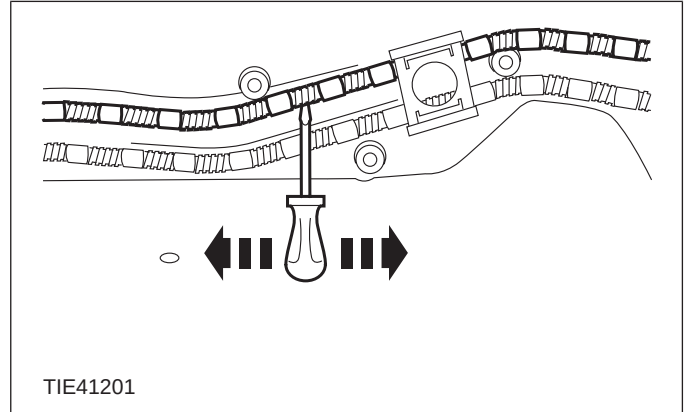
3. Adjust the left-hand roof opening panel guide pin if necessary.

- Using a suitable screwdriver, move the roof opening panel operating cable in the required direction.



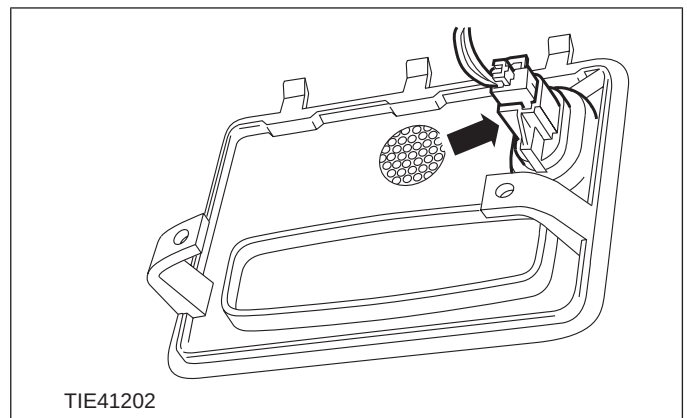
4. Adjust the right-hand roof opening panel guide pin if necessary.

- Using a suitable screwdriver, move the roof opening panel operating cable in the required direction.



5. **NOTE:** This step is not necessary when installing a new roof opening panel motor.

With the aid of another technician, support the overhead console and connect the roof opening panel control switch electrical connector.



6. **NOTE:** This step is not necessary when installing a new roof opening panel motor.

Connect the battery ground cable.

For additional information, refer to: **Battery Disconnect and Connect** (414-01 Battery, Mounting and Cables, General Procedures).

7. **CAUTION:** This step must be carried out if installing a previously used roof opening panel motor.

NOTE: This step is not necessary when installing a new roof opening panel motor.

REMOVAL AND INSTALLATION

Carry out the erasing roof opening panel motor initialization procedure.

For additional information, refer to: **Roof Opening Panel Motor Initialization** (501-17 Roof Opening Panel, General Procedures).

8. **NOTE:** This step is not necessary when installing a new roof opening panel motor.

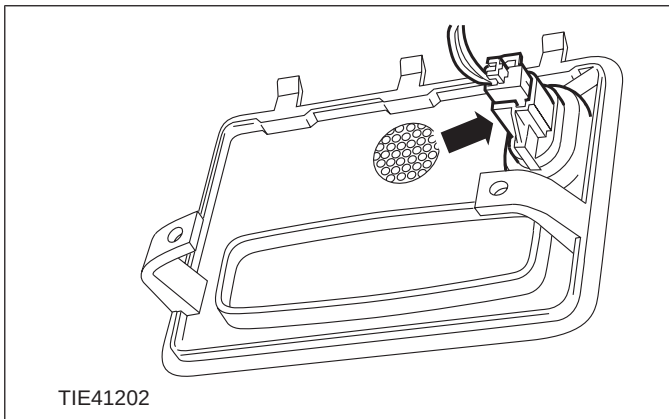
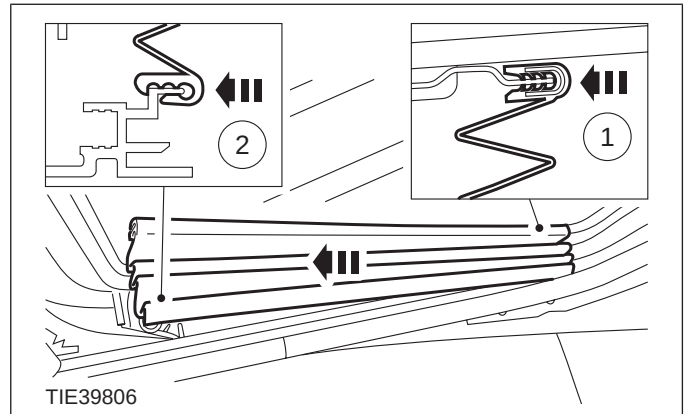
Disconnect the battery ground cable.

For additional information, refer to: **Battery Disconnect and Connect** (414-01 Battery, Mounting and Cables, General Procedures).

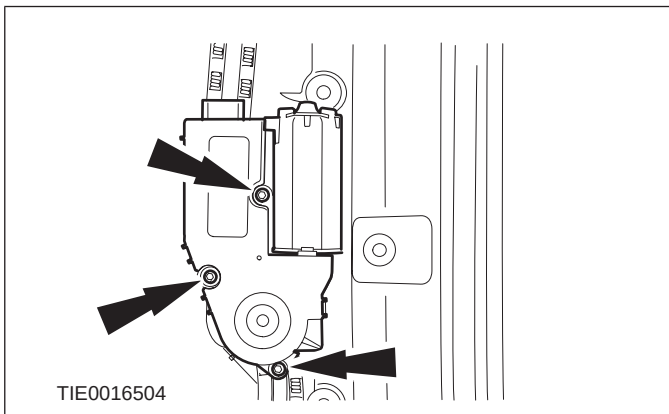
9. **NOTE:** This step is not necessary when installing a new roof opening panel motor.

Disconnect the roof opening panel control switch electrical connector.

2. Install the roof opening panel guide arm cover lower clip.



10. Install the roof opening panel motor.



11. **NOTE:** An audible click can be heard when the lower edge of the roof opening panel guide arm cover is correctly located.

Starting at the front of the roof opening panel, install the roof opening panel guide arm covers (left-hand side shown).

1. Install the roof opening panel guide arm cover upper clip.

REMOVAL AND INSTALLATION

Roof Opening Panel Rear Drain Hose — 3-Door/5-Door

Removal

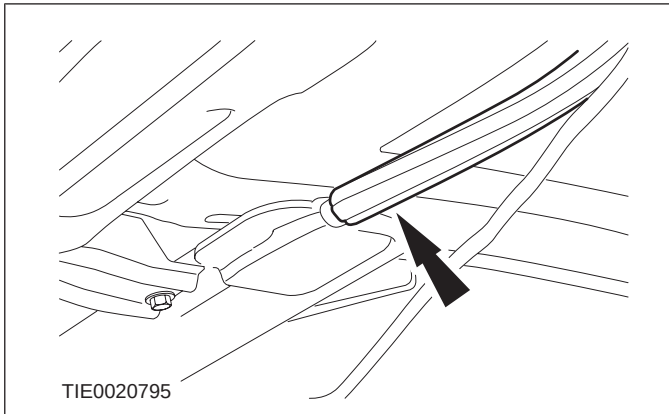
1. Remove the headliner.

For additional information, refer to: **Headliner - 3-Door, Vehicles With: Sliding Roof Opening Panel** (501-05 Interior Trim and Ornamentation, Removal and Installation)

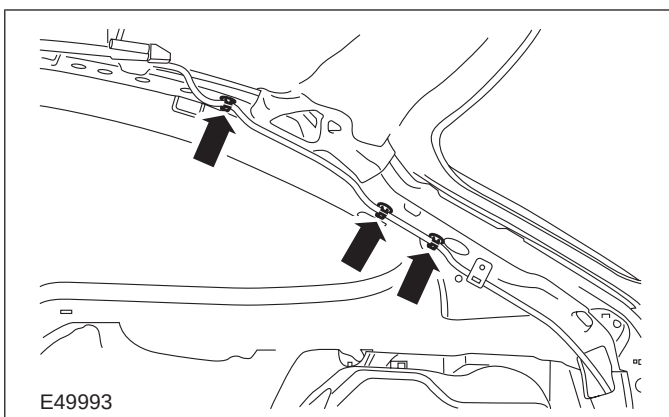
2. Remove the load space trim panel.

For additional information, refer to: **Loadspace Trim Panel - 3-Door** (501-05 Interior Trim and Ornamentation, Removal and Installation)

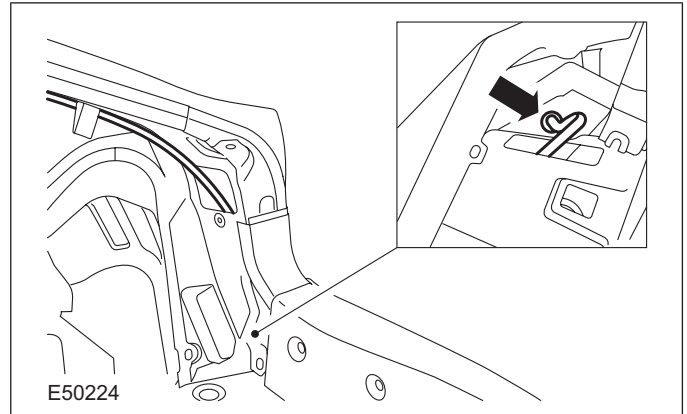
3. Detach the roof opening panel rear drain hose from the roof opening panel.



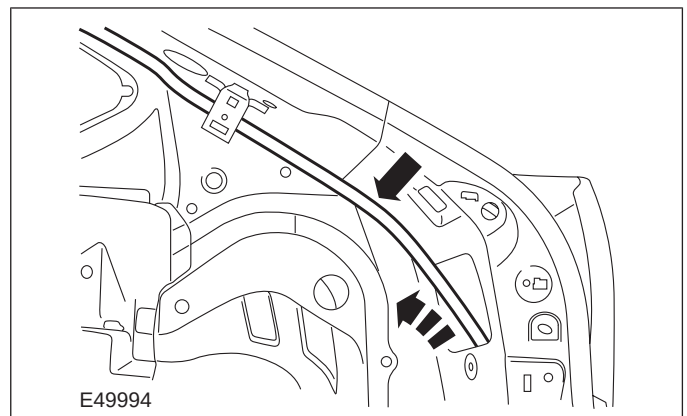
4. Detach the roof opening panel rear drain hose from the retaining clips (3 door shown).



5. Detach the roof opening panel rear drain hose from the drain bung.



6. Remove the roof opening panel rear drain hose.



Installation

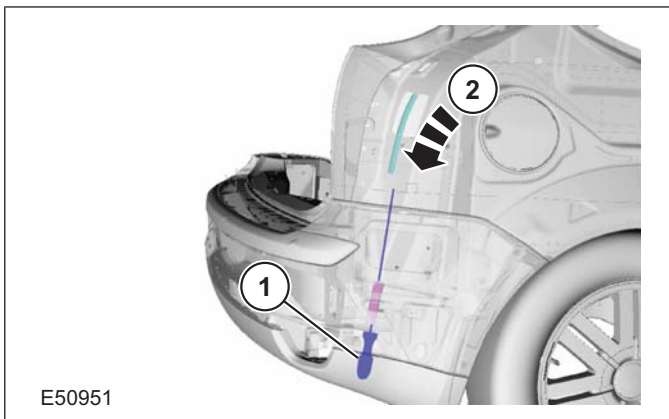
1. NOTE: Make sure that the drain bung is free of foreign material before installing the roof opening panel rear drain hose.

Attach the roof opening panel rear drain hose to the drain bung.

1. With the aid of another technician, position a suitable long bladed screwdriver in the drain bung from the underside of the vehicle.
2. Push the drain hose over the screwdriver to position it in the drain bung.

REMOVAL AND INSTALLATION

- Remove the screwdriver.



2. To install, reverse the removal procedure.

REMOVAL AND INSTALLATION

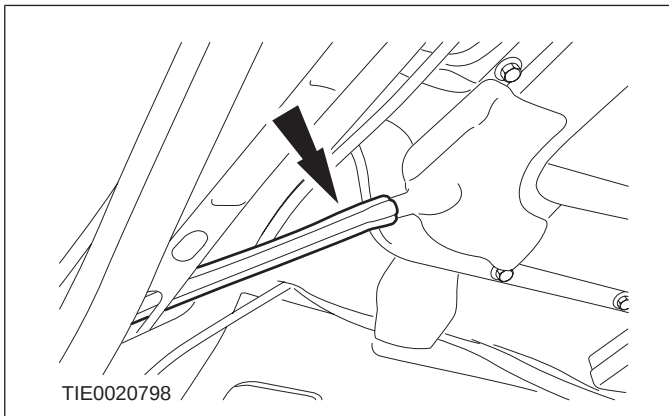
Driver Side Roof Opening Panel Front Drain Hose

Removal

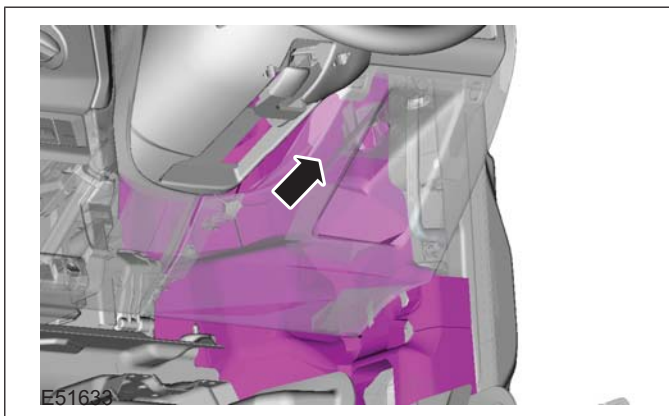
1. Remove the headliner.

For additional information, refer to: **Headliner - 3-Door, Vehicles With: Sliding Roof Opening Panel** (501-05 Interior Trim and Ornamentation, Removal and Installation)

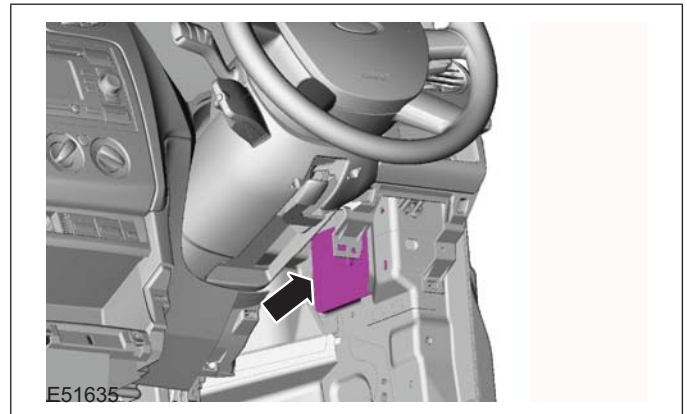
2. Detach the roof opening panel front drain hose from the roof opening panel.



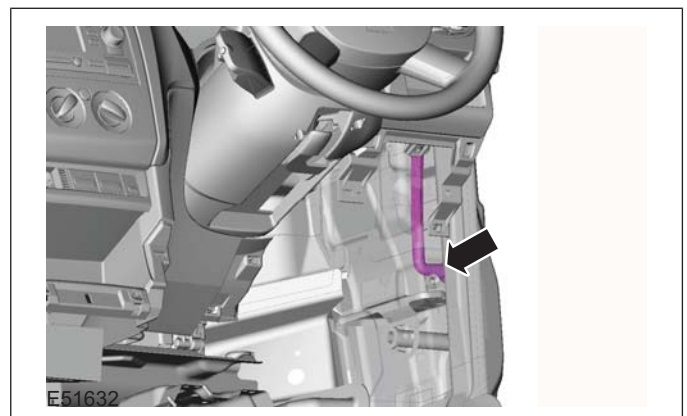
3. Detach the driver side footwell noise, vibration and harshness (NVH) insulation material from the A-pillar to gain access to the A-pillar access hole.



4. Remove the NVH insulation material from the A-pillar access hole (part of instrument panel removed for clarity).



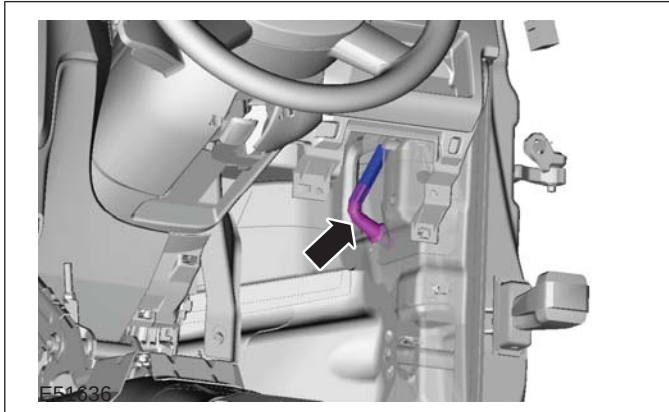
5. Detach the roof opening panel front drain hose and drain hose valve from the A-pillar and position them in the A-pillar access hole (part of the instrument panel removed for clarity).

6. **NOTE:** Do not remove the roof opening panel front drain hose at this stage.

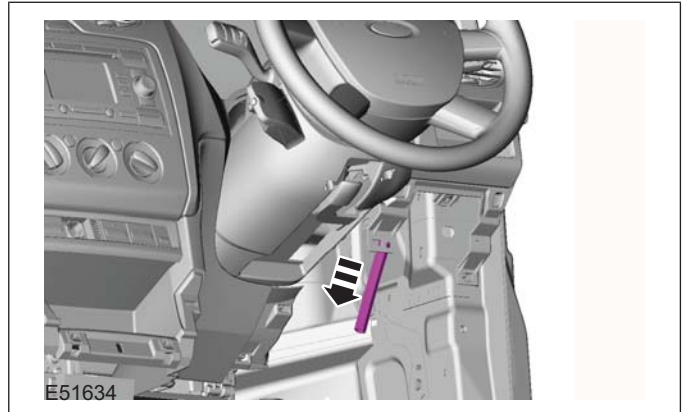
NOTE: The new and the original roof opening panel drain hoses must be connected before the original roof opening panel front drain hose is removed from the A-pillar, to aid installation.

REMOVAL AND INSTALLATION

Remove the drain hose valve (part of the instrument panel removed for clarity).



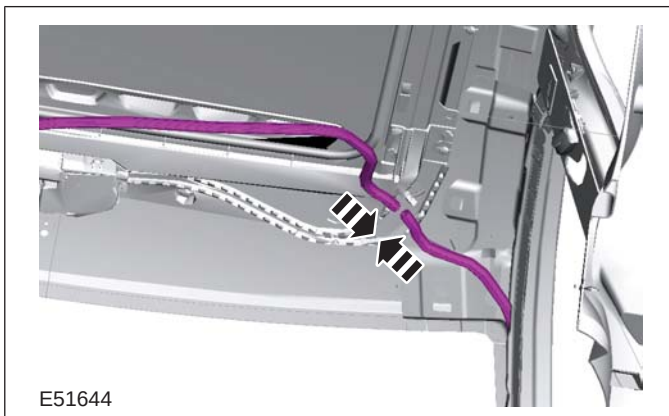
- Pull the drain hose into the driver footwell through the A-pillar access hole.



Installation

1. **NOTE:** Apply a suitable lubricant to the new roof opening panel front drain hose, to aid installation.

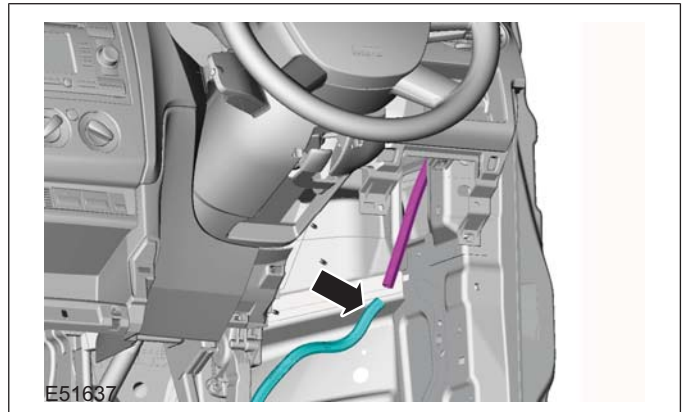
Using suitable tape, attach the new roof opening panel front drain hose to the original roof opening panel front drain hose at the roof opening panel.



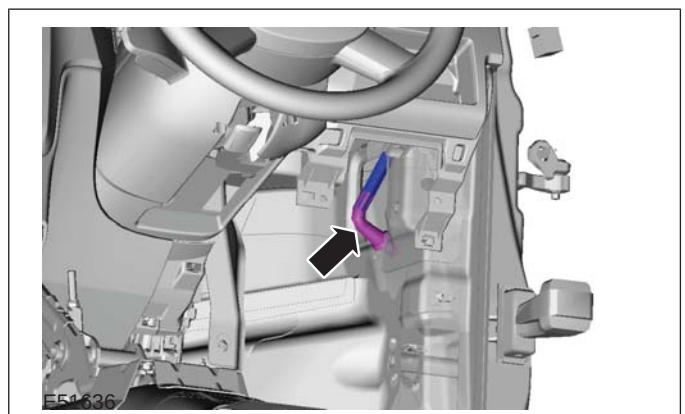
2. **NOTE:** Make sure that a minimum of 200 mm of the new roof opening panel front drain hose remains at the roof opening panel.

With the aid of another technician, detach the original roof opening panel front drain hose from the A-pillar (part of the instrument panel removed for clarity).

3. Remove the original roof opening panel front drain hose (part of the instrument panel removed for clarity).

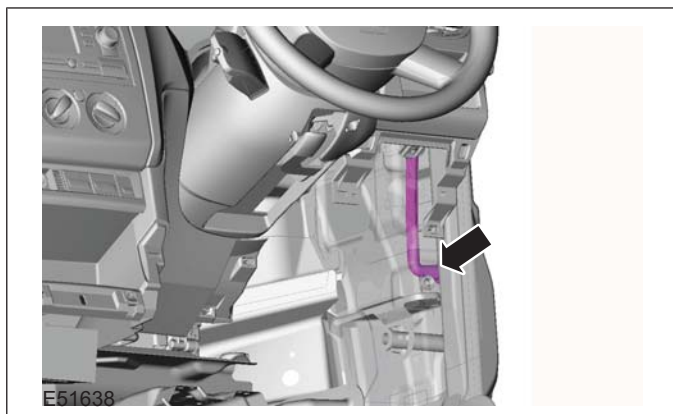


4. Attach the drain hose valve to the roof opening panel front drain hose (part of the instrument panel removed for clarity).

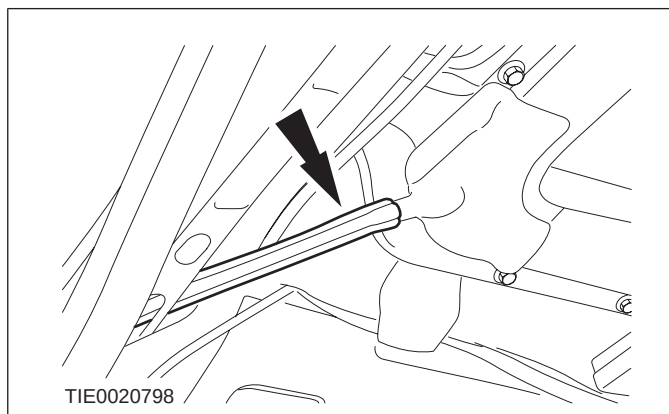


REMOVAL AND INSTALLATION

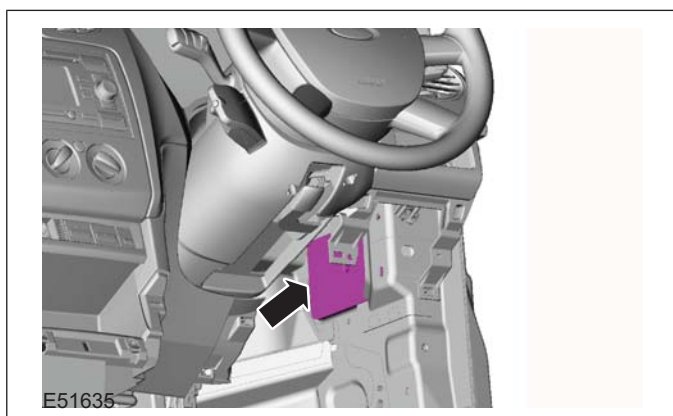
5. Install the roof opening panel front drain hose and drain hose valve (part of the instrument panel removed for clarity).



8. Attach the roof opening panel front drain hose to the roof opening panel.



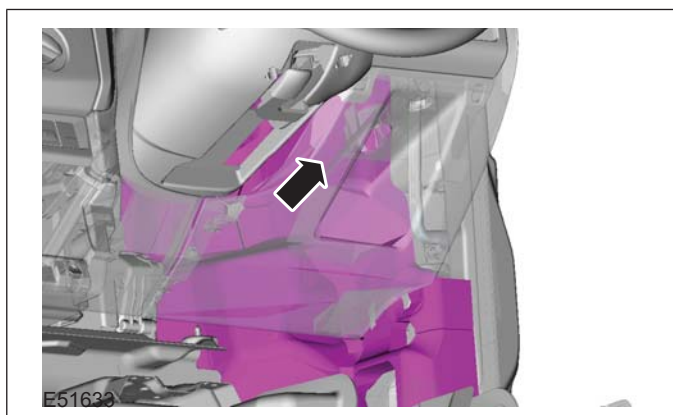
6. Install the NVH insulation material to the A-pillar access hole (part of the instrument panel removed for clarity).



9. Install the headliner.

For additional information, refer to: **Headliner - 3-Door, Vehicles With: Sliding Roof Opening Panel** (501-05 Interior Trim and Ornamentation, Removal and Installation)

7. Attach the driver side footwell NVH insulation material to the A-pillar.



REMOVAL AND INSTALLATION

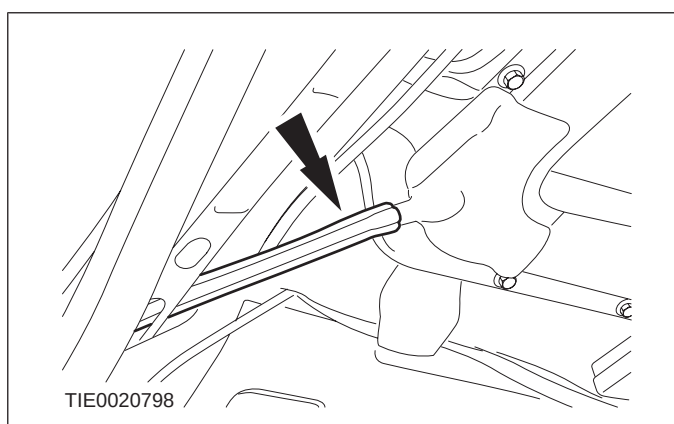
Passenger Side Roof Opening Panel Front Drain Hose

Removal

1. Remove the headliner. For additional information, refer to: (501-05 Interior Trim and Ornamentation)

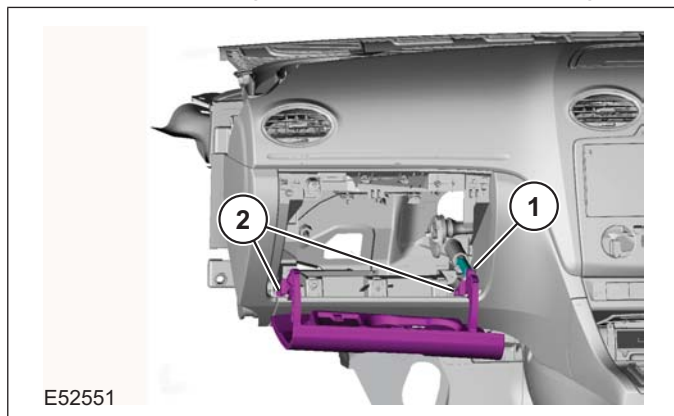
Headliner - 3-Door, Vehicles With: Sliding Roof Opening Panel (Removal and Installation),

2. Detach the roof opening panel front drain hose from the roof opening panel.



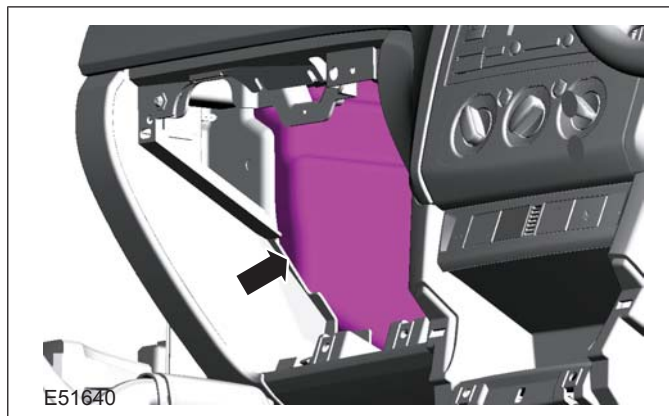
3. Remove the glove compartment lid.

1. Detach the glove compartment lid damper from the glove compartment lid hinge (if equipped).
2. Detach the glove compartment lid hinges.

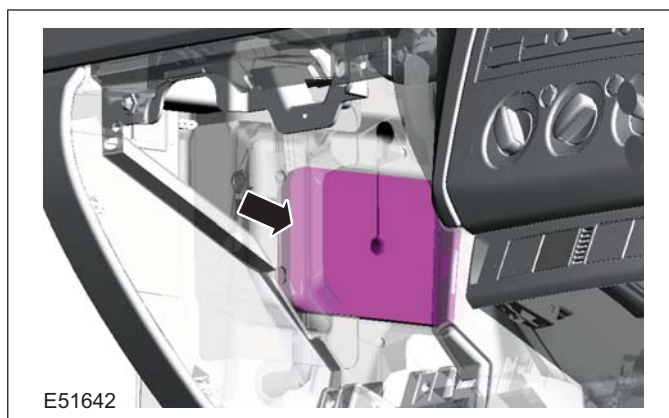


4. Detach the passenger side footwell noise, vibration and harshness (NVH) insulation

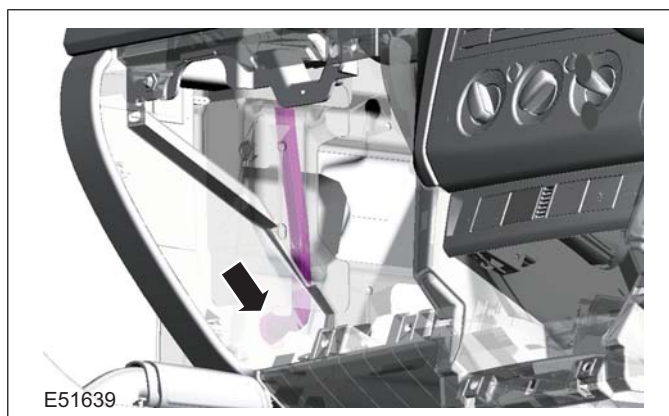
material from the A-pillar to gain access to the A-pillar access hole.



5. Remove the NVH insulation material from the A-pillar access hole.



6. Detach the roof opening panel front drain hose and roof opening panel front drain hose valve from the A-pillar and position them in the A-pillar access hole.

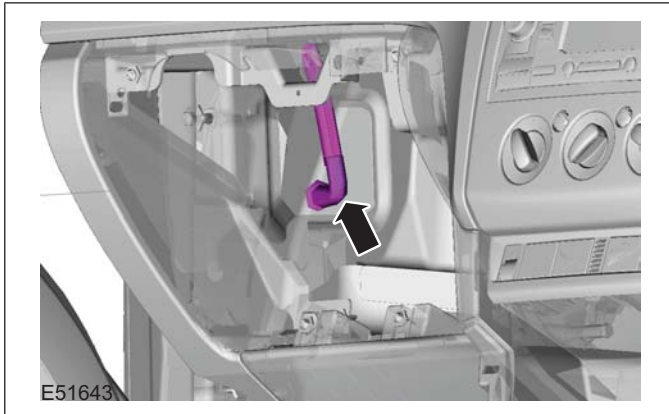


REMOVAL AND INSTALLATION

- 7. NOTE: Do not remove the roof opening panel front drain hose at this stage.**

NOTE: The new and the original roof opening panel drain hoses must be connected together before the original roof opening panel front drain hose is removed from the A-pillar, to aid installation.

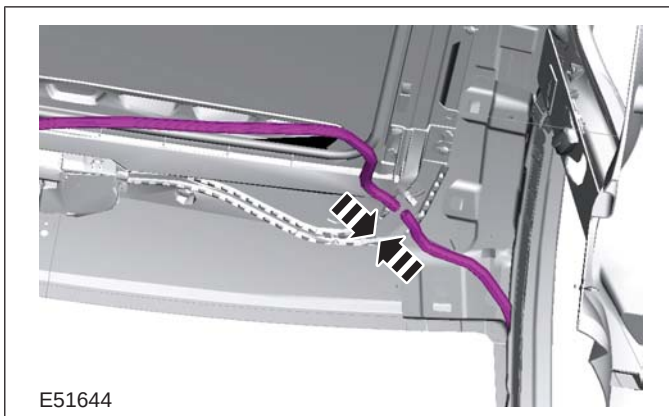
Remove the roof opening panel front drain hose valve.



Installation

- 1. NOTE: Apply a suitable lubricant to the new roof opening panel front drain hose, to aid installation.**

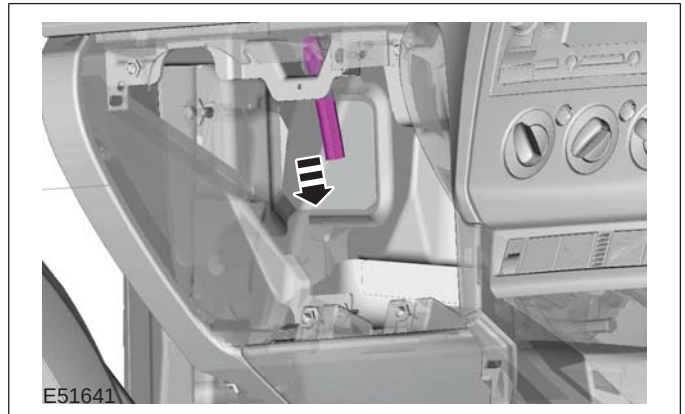
Using suitable tape, attach the new roof opening panel front drain hose to the original roof opening panel front drain hose at the roof opening panel.



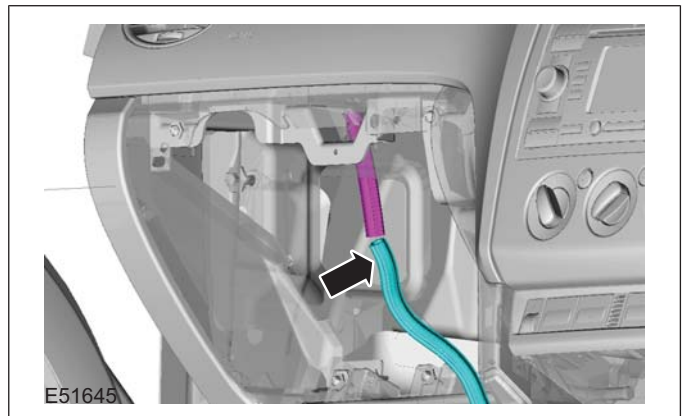
- 2. NOTE: Make sure that a minimum of 200 mm of the new roof opening panel front drain hose remains at the roof opening panel.**

With the aid of another technician, detach the original roof opening panel front drain hose from the A-pillar.

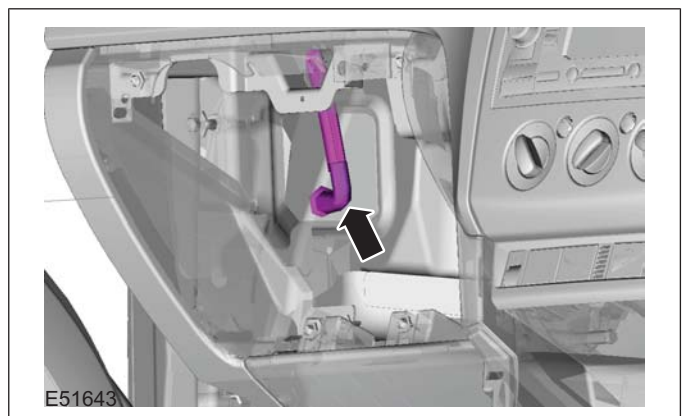
- Pull the roof opening panel front drain hose into the passenger footwell through the A-pillar access hole.



- 3. Remove and discard the original roof opening panel front drain hose and tape.**

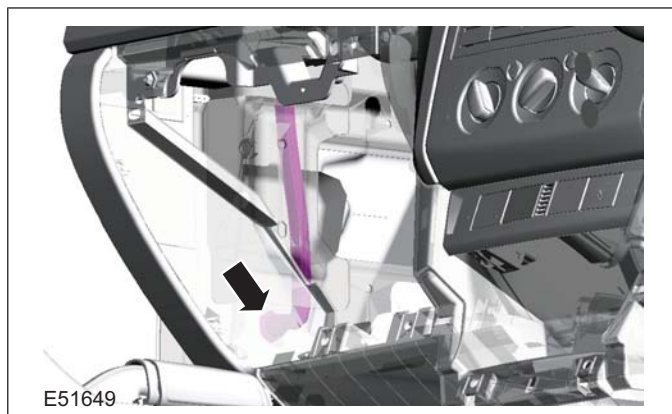


- 4. Install the roof opening panel front drain hose valve.**

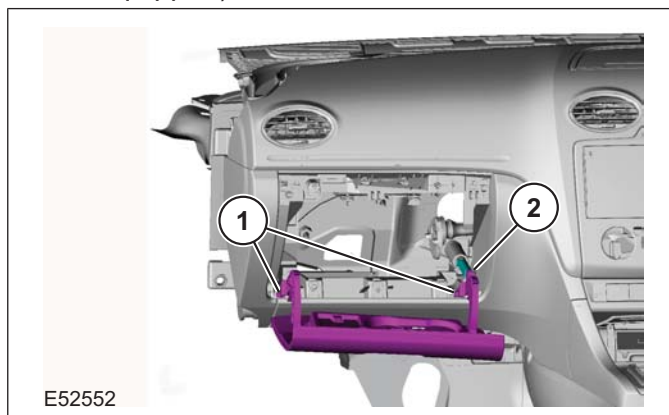


REMOVAL AND INSTALLATION

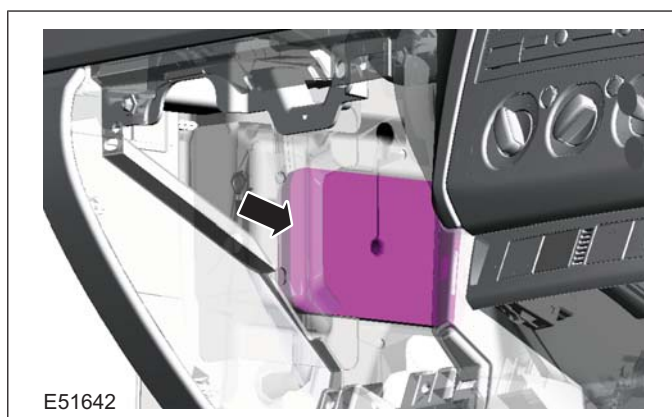
5. Attach the roof opening panel front drain hose and roof opening panel front drain hose valve to the A-pillar.



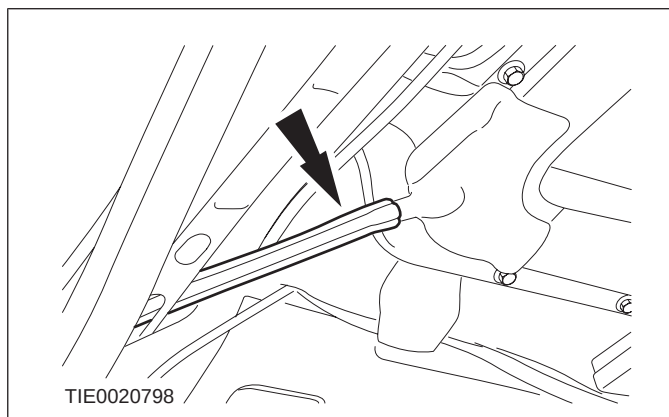
2. Attach the glove compartment lid damper to the glove compartment lid hinge (if equipped).



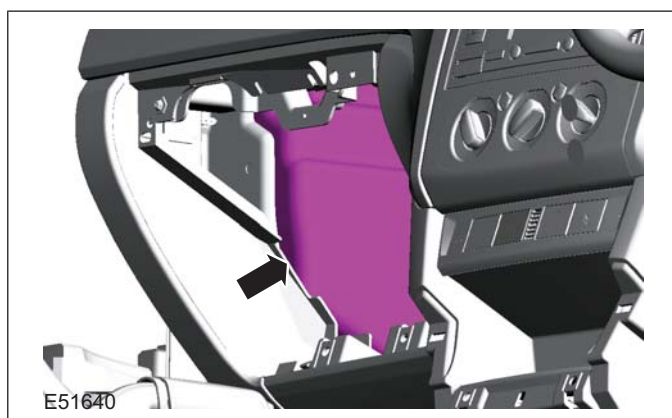
6. Install the NVH insulation material to the A-pillar access hole.



9. Attach the roof opening panel front drain hose to the roof opening panel.



7. Attach the passenger side footwell NVH insulation material to the A-pillar.



10. Install the headliner. For additional information, refer to: (501-05 Interior Trim and Ornamentation)

Headliner - 3-Door, Vehicles With: Sliding Roof Opening Panel (Removal and Installation),

8. Install the glove compartment lid.

1. Attach the glove compartment lid hinges.