

SUNROOF SYSTEM

7340-00/7340-01/7340-02/7340-03/7340-04/7770-20/

INDEX

SUNROOF SYSTEM

GENERAL INFORMATION

1. SPECIFICATIONS.....	3
2. CAUTIONS.....	3

OVERVIEW AND OPERATING PROCESS

1. SYSTEM LAYOUT.....	4
2. OPERATING PROCESS.....	5
3. SUNROOF OPEN WARNING.....	9
4. CIRCUIT DIAGRAM.....	10

REMOVAL AND INSTALLATION

7340-00 TROUBLESHOOTING.....	17
7770-20 OVERHEAD CONSOLE SWITCH ASSEMBLY.....	33
7340-02 SUNROOF CONTROL UNIT (SCU) & MOTOR.....	35
7340-03 WIND DEFLECTOR.....	37
7340-04 SUNROOF GLASS PANEL.....	39
7340-01 SUNROOF ASSEMBLY.....	44
7340-02 SUN SHADE PANEL ASSEMBLY.....	48
7340-00 DRAIN CHANNEL ASSEMBLY.....	51

CONFIGURATION AND FUNCTIONS

7340-00 COMPONENTS.....	11
7340-02 SUNROOF CONTROL UNIT (SCU).....	12
7340-02 SUNROOF MOTOR.....	15

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



SUNROOF SYSTEM**7340-00****GENERAL INFORMATION****1. SPECIFICATIONS**

Operating voltage	9 ~ 16V
Operating current (open & close)	Max. 6A
At no load	Approx. 3A
Leakage current	Max. 1 mA
Roof motor operating speed (at opening and closing)	1.1 ± 0.5 sec./100 mm
Motor overload stop conditions	At current of max. 25 A and torque (load) of 7.0 Nm or above
2-step opening amount	1st step sliding open: 330 ± 5 mm
	2nd step sliding open: 428 ± 5 mm
Vertical/horizontal tolerance for sunroof glass panel	± 2 mm

2. CAUTIONS

► Cautions during work

**CAUTION**

- Wear a clean work clothes and gloves.
- Any unauthorized modification or operational test is not allowed since the sunroof motor and control unit are preset at the factory.
- Take care not to drop or stack vertically when removing the sunroof. This may cause the moving parts to be damaged.

Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03

OVERVIEW AND OPERATING PROCESS

1. SYSTEM LAYOUT



2. OPERATING PROCESS

1) Sunroof Switch

► Sunroof switch

The sunroof switches are included in the overhead console switches and consists of the TILT, CLOSE and OPEN switches.



▷ TILT

Opens only rear section of the sunroof.

▷ CLOSE

Closes the sunroof.

▷ OPEN

Opens the sunroof.



► Sunroof glass

The sunroof glass can be open in two steps and can be tilted by the switch operation.

► Sun shade panel

This can be closed or open manually to block sunlight when the sunroof function is not in use.

Modification basis	
Application basis	
Affected VIN	

2) Sunroof Sliding Opening/Closing

Opening sunroof (sliding open: 2-stage)



- Push up the switch

- Push up the switch briefly: 2-step auto sliding open

When pushing up the switch briefly, the sunroof is automatically opened. Opening is carried out in 2 steps. In first step, the area 10cm behind the sunroof is not opened. Push up the switch once again in order to open the sunroof completely. The sunroof operation stops if you operate the switch during its operation.

- Push up and hold the switch: manual sliding open

The sunroof is opened as long as pushing up the switch.

Closing sunroof (Sliding close)



- Pull down the switch

- Pull down the switch briefly: auto sliding close

When pulling down the switch briefly, the sunroof is automatically closed. To stop the closing sunroof, operate the switch to either direction.


- Pull down and hold the switch: manual sliding close

The sunroof is closed as long as pulling down the switch.

3) Sunroof Tilt Up/Down

This function is to raise or lower the rear section of the sunroof.


Tilt Up



- Pull down the switch

- The rear side of the sunroof is tilted up when pulling down the sunroof switch with the sunroof closed.

Tilt Down



- Push up the switch

- The rear side of the sunroof is tilted down when pushing up the sunroof switch with the sunroof tilted up.

Modification basis	
Application basis	
Affected VIN	

4) Sunroof Safety Function

To prevent any body parts from being trapped by the sliding sunroof, an Anti-Pinch Function automatically opens the sunroof when an object is trapped.

CAUTION

The anti-pinch function does not work for the area of 20 mm before the sunroof closes.

The sunroof safety function is just a safety supplementary system which cannot replace driver's care and caution. Moreover, it may not be able to operate due to electric part or other conditions.

► Wind buffeting

- When you drive this vehicle with the window or sunroof open at a certain position, you may feel some pressure upon your ears or hear some noises similar to those from a helicopter. This happens because of an influx in air through the window or sunroof and its resonance effect. If this happens, adjust by opening the window or sunroof.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



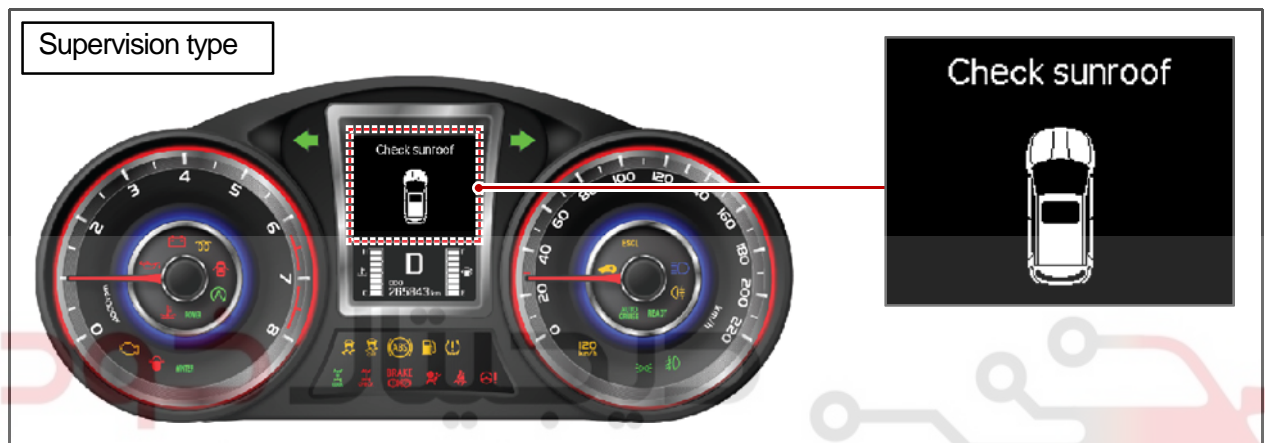
3. SUNROOF OPEN WARNING

1) Warning Sound

When turning the ignition off and then opening the driver door for the first time with the sunroof open, the warning sound (one-time warning) is heard. Closing the door stops the warning sound.

2) Message on Instrument Panel (Supervision Type)

The following message is displayed on the screen in the instrument panel.



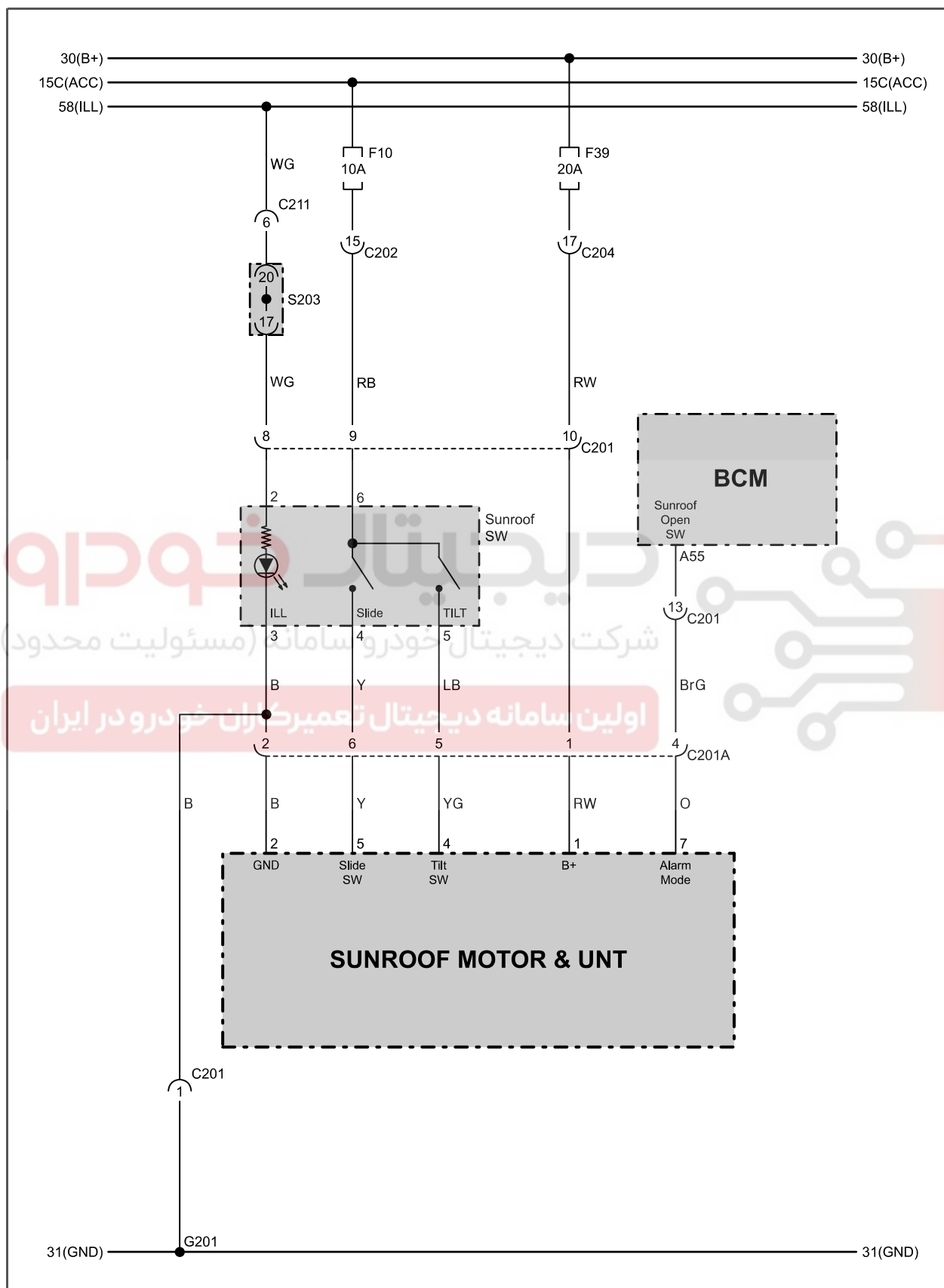
⚠ CAUTION

General precaution for sunroof

- Even though the sunroof can be operated when the engine is not running, operating the sunroof repeatedly with the engine turned off will run down the battery. Operate the sunroof while the engine is running.
- When the sunroof operation is completed, release the switch. Keeping pressing the switch can result in malfunction.
Especially in winter, never operate the sunroof if operation areas are iced. Wait until melted.
- Make sure that the sunroof is completely closed when leaving the vehicle. Leaving the vehicle with the sunroof open result in a theft. In addition, rain or snow can get into the vehicle through the open sunroof.
- When the sunroof is fully open, wind buffeting symptom can be worse. In this case, try to adjust the sunroof position manually or open the sunroof into first step until the wind buffeting is disappeared. Parts of the body can be trapped in the sunroof and can be struck by passing objects. Do not stick hands, head or anything else out of the openings.
Remove any dirt and foreign material stuck on the edge of the sunroof glass periodically.
- Noise can occur due to friction when operating the sunroof.

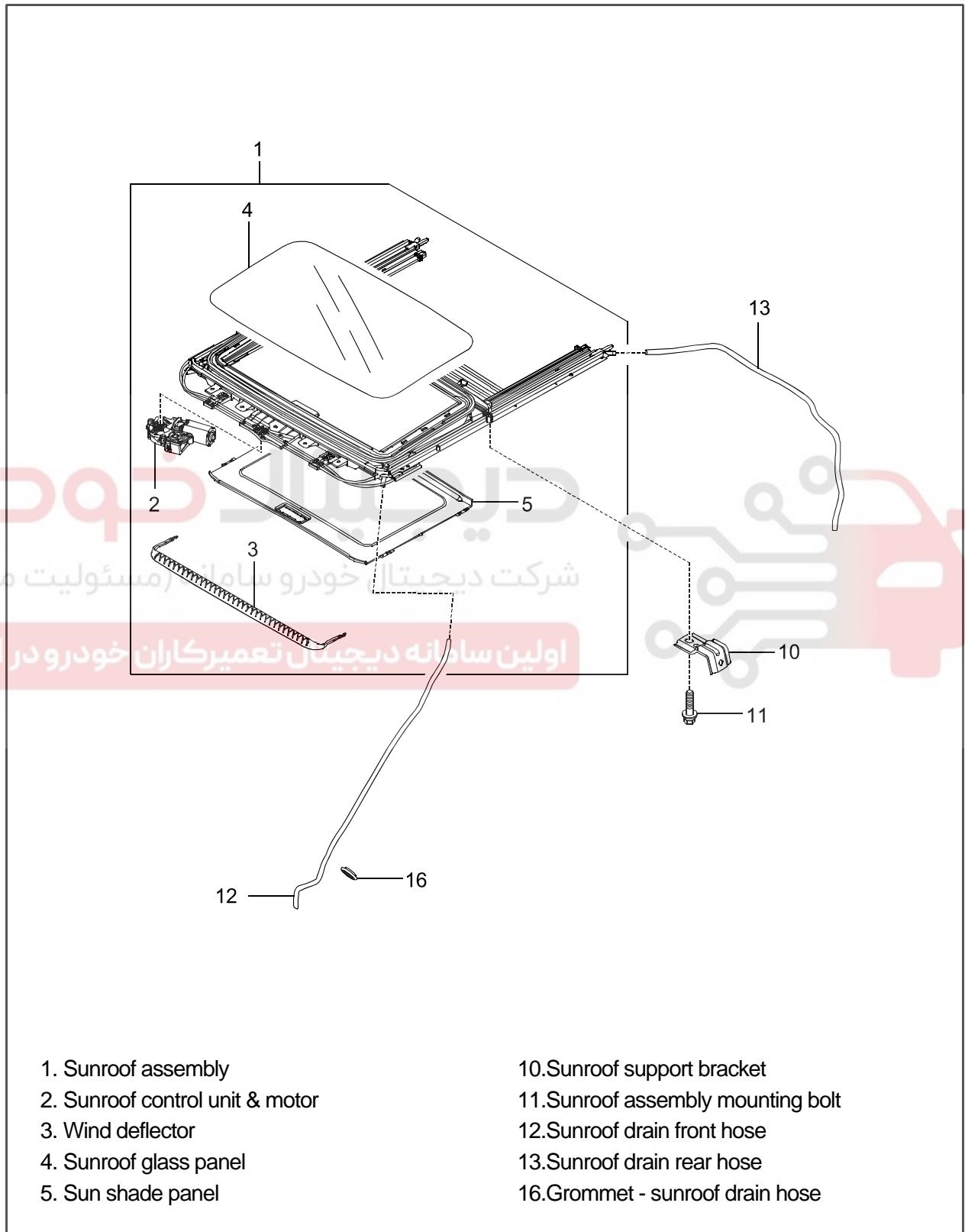
Modification basis	
Application basis	
Affected VIN	

4. CIRCUIT DIAGRAM



CONFIGURATION AND FUNCTIONS

7340-00 COMPONENTS



Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03

7340-02 SUNROOF CONTROL UNIT (SCU)

1) Mounting Locations



2) Functions

(1) Sunroof switch & rest position

	OPEN switch	TILT switch	X: inoperative Auto: one-touch Manual: as long as switch is pressed	Position
Sliding stop	X	Auto, Manual		428 mm
Slide	Auto, Manual	Auto, Manual		0 ~ 428 mm
Close	Auto, Manual	Auto, Manual		0 mm
Tilt	Manual	Auto, Manual		-38 ~ 0 mm
Tilt stop	Manual	X		-38mm

(2) General conditions

► Switch debounce time (time in which switch operation is overridden)

- Operating the switch for less than 40 msec (± 5 msec) is overridden.

► Automatic stop position

- The sunroof automatically stops at the following positions:
Slide 1st stop (330 mm), slide 2nd stop (428 mm), Close and Tilt stop

► Restriction

- If the running speed drops below the set value due to restriction or overload during operation, the motor is stopped for protection.

► Overload

- If the motor does not rotate for certain period of time after power is supplied, the motor is stopped for protection.

► Limitation of max. operating time

- If the motor operates to one direction for over 20 seconds, the unit considers this as malfunction and stops the motor.

► Initialization**- Clearing position information**

When pressing and holding the TILT switch for over 5 seconds (reset) provided that the sunroof panel does not move any longer, the position information is cleared and the sunroof moves towards the tilt direction.

- Zero-point setting

When the position information is cleared and the motor is restrained at the end of the tilting position, the relay is automatically cut off and the zero-point setting is carried out. After that, the sunroof is reversed to the tilting position, stops automatically, and then operates normally.

(3) Normal mode operation

- When the switch is pressed for more than 500 msec (± 50 msec), the sunroof is operated until the switch is released.

(4) One-touch operation

- If the switch is pressed for more than 40 msec (± 5 msec) of debounce time and less than 500 msec (± 50 msec), the sunroof keeps moving even without pressing the switch. When the sunroof reaches the soft stop position or any switch is pressed while the sunroof is operating, it will stop.

If the sunroof is closed in this mode, anti pinch function is activated.

(5) 1st Stop

- The sunroof stops at 330 mm automatically during opening.

(6) Sunroof open warning

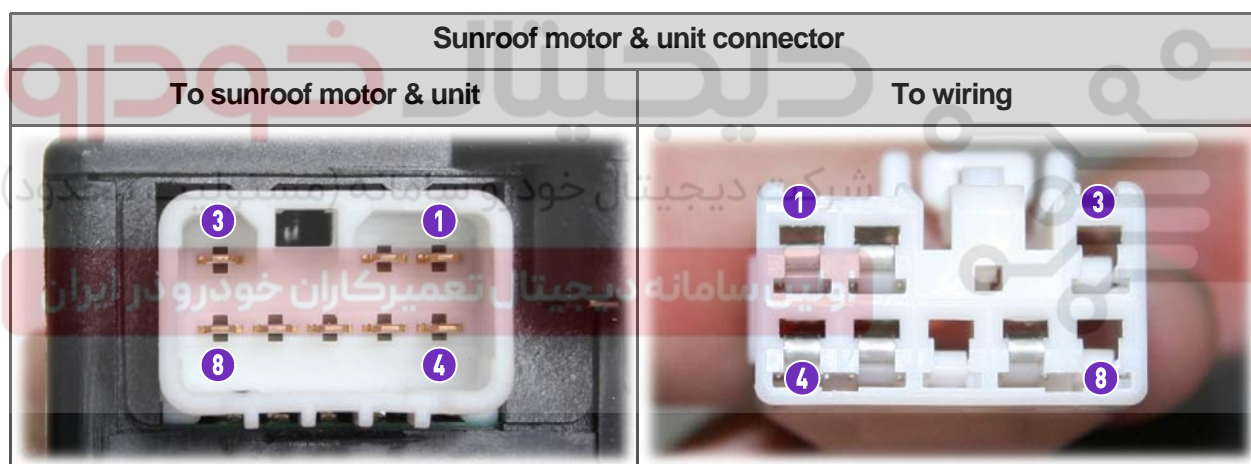
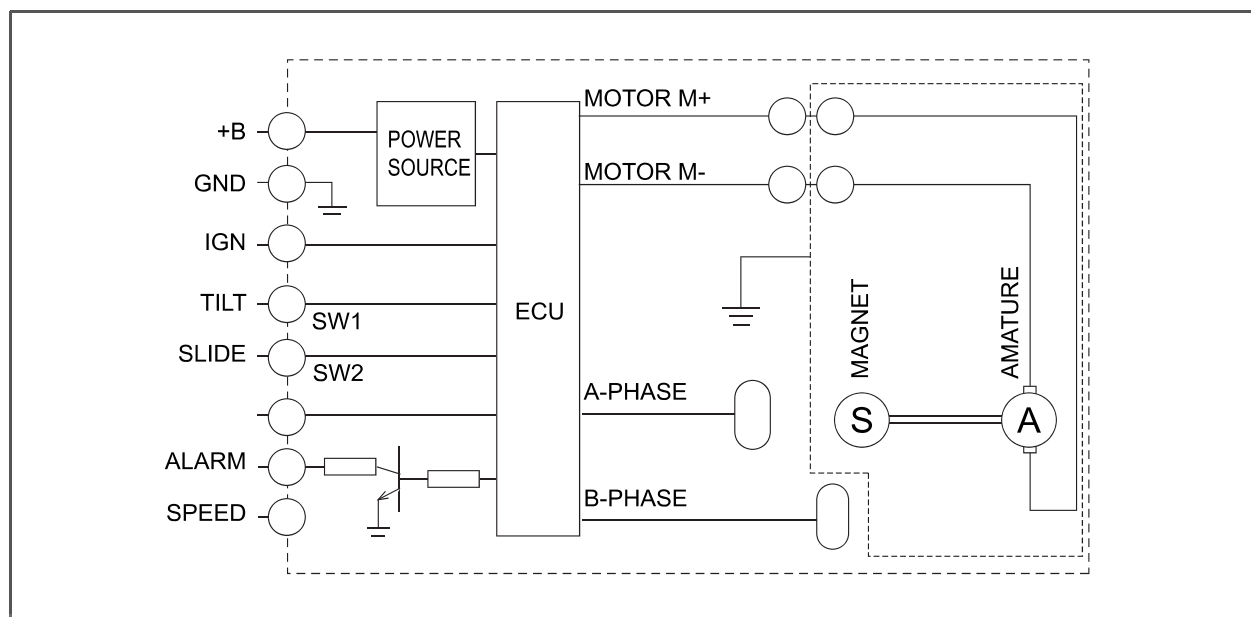
- When the sunroof is opened, the alarm signal is sent to the instrument panel and a buzzer sounds to inform the driver of this.

(7) Anti pinch mode

- The sunroof stops automatically and then moves to the original position when an obstacle is detected while the sunroof is being closed.

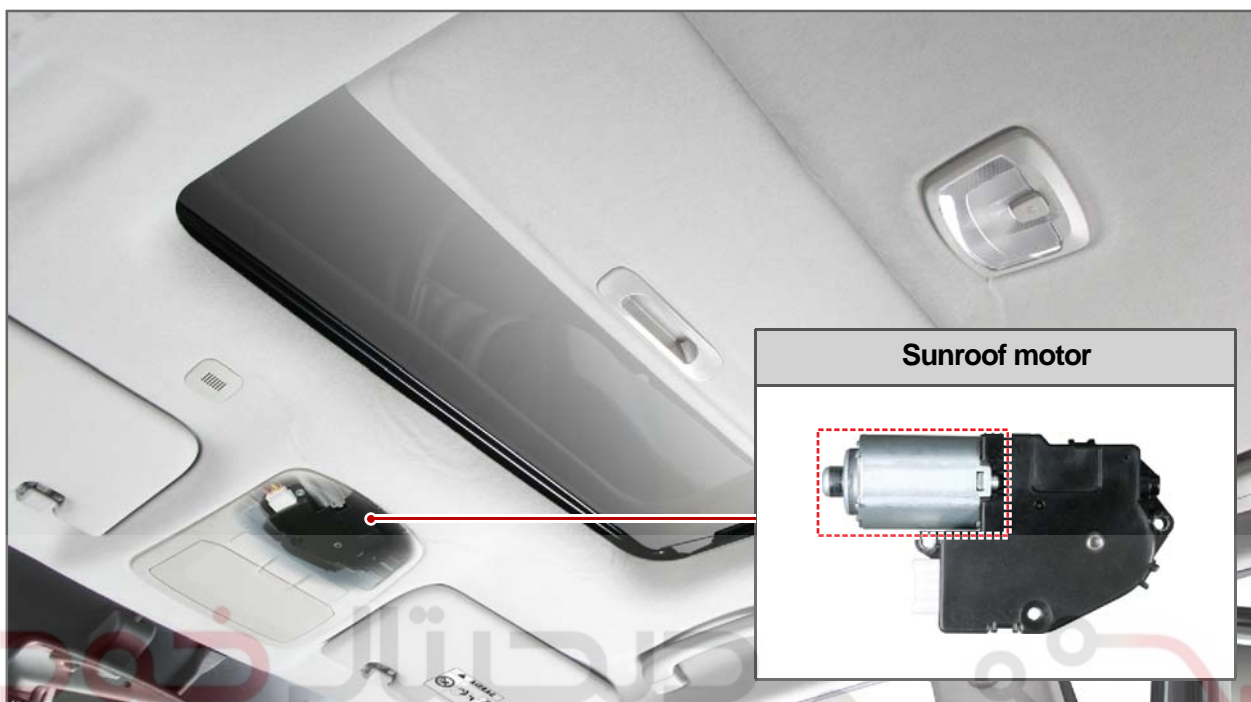
Modification basis	
Application basis	
Affected VIN	

3) Internal Circuits of Sunroof Motor & Unit

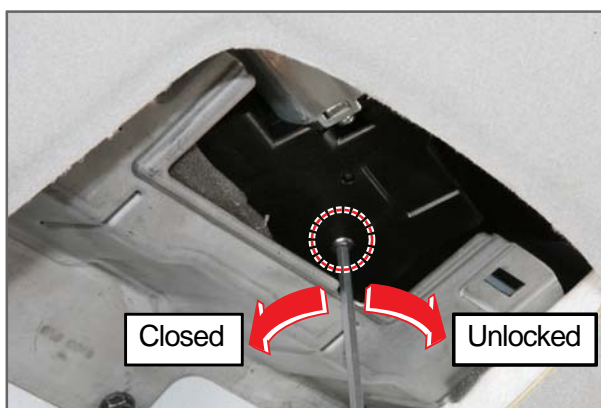


Pin No.	Function
1	Battery (+)
2	Ground (-)
3	-
4	Tilt
5	Slide
6	-
7	Alarm signal
8	-

S.G.N.

7340-02 SUNROOF MOTOR**1) Mounting Location****2) Function****NOTE**

The sunroof motor moves the glass panel to the certain position according to the input signal (open, close and tilt) from the sunroof switch.

(1) Emergency Operation

If the sunroof fails while it is open or tilted, the sunroof can be operated through the motor operating hole of the sunroof motor using an Allen wrench (4 mm).

- Close: anti-clockwise
- Open: clockwise

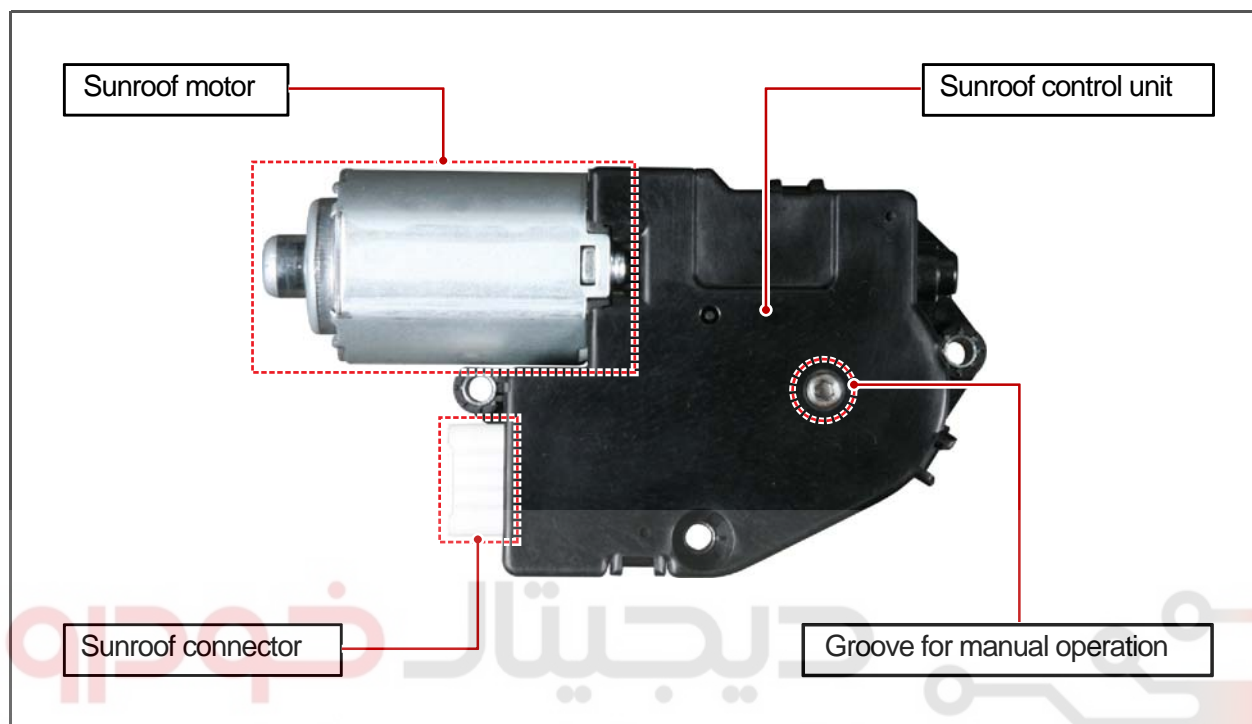
Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03

4) Configuration

The sunroof motor has the worm gear type reduction gear. It has also the hall type position sensor which detects the position of the sunroof glass.



NOTE

Hall sensor

This is the sensor using the hall effect, in which a potential difference is formed in a direction perpendicular to that of the current flow depending on the change of magnetic field.

REMOVAL AND INSTALLATION

7340-00 TROUBLESHOOTING

Symptom	Detailed symptom	Cause	Action	Remarks
Malfunction	1. Sunroof inoperable or difficult to operate 2. Forget its position during operation	Defective motor	Perform initialization and if problem persists, replace motor.	Exact diagnosis is required when servicing since SCU and motor have similar types of malfunction.
	Same symptoms as above	Defective sunroof control unit	Perform initialization and if problem persists, replace sunroof control unit.	Exact diagnosis is required when servicing since SCU and motor have similar types of malfunction.
	Re-opens during close operation	ATS malfunction	- Remove any foreign materials in rail working area - Perform motor self-learning	See Motor Self-Learning.
	1. Sunroof operates intermittently 2. Sunroof malfunction	Defective sunroof switch	Replace sunroof switch.	This may be confused with defective sunroof. Exact diagnosis is required when servicing.

Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03

04-18

7340-00

T I V O L I

Symptom	Detailed symptom	Cause	Action	Remarks
Water leakage	1. Broken seal 2. Broken glass encapsulation 3. Broken glass	Broken glass	Replace glass.	-
	Glass leans to any direction with sunroof closed	Poor clearance and level difference	Adjust clearance and level difference.	See "Adjusting gap and level difference" under "REMOVAL AND INSTALLATION" in "SUNROOF GLASS PANEL ASSEMBLY".
	Water leakage at rear of glass while washing	Water leakage	Check if water enters normal drain system.	Structurally, when water enters between the body roof and the glass, it is supposed to be drained out of the vehicle.
	Water leakage on pillar	Poor connection of drain hose	Check drain hose.	-

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03

Symptom	Detailed symptom	Cause	Action	Remarks
Abnormal noise while driving	Abnormal noise occurs from sunroof	- Abnormal noise from headlining - Abnormal noise from body	Check the harness around the headlining and the dual lock.	Abnormal noise from near the sunroof is always not caused by the sunroof.
	"clicking" and other noises occur while driving	Abnormal noise from body	Check body reinforcement part.	Abnormal noise also occurs at mounting connected to sunroof.
	1. Juddering occurs at sunroof while driving. 2. Malfunction occurs due to rail interference.	Broken sun shade shoe	Replace sun shade panel.	See "SUNROOF ASSEMBLY" under "REMOVAL AND INSTALLATION"
	1. "Rattling" noise occurs while driving 2. Malfunction occurs due to interference between drain channel and mechanism.	Drain channel	Insert drain channel into mechanism.	-
	"Grinding" noise occurs when driving on bumps and rough road - Occurs with sunroof closed	Friction noise between glass and body	Remove the foreign materials on the glass panel sealing parts and the body roof.	Take care not to remove urethane coating of glass panel sealing parts when removing foreign materials.
	Improper level difference between glass and body roof	Wind noise	Adjust level difference.	See "Adjusting level difference" in "GLASS PANEL" under "REMOVAL AND INSTALLATION".
	"Cracking" noise occurs when driving on bumps and rough road	- Loosened sunroof bracket - Abnormal noise from body	Refit sunroof.	Reassemble the sunroof mounting parts.

Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03

Symptom	Detailed symptom	Cause	Action	Remarks
Abnormal noise when driving	"Popping" noise occurs due to improper gap when tilting sunroof.	"Popping" noise when tilting	Adjust gap.	See "Adjusting gap" under "REMOVAL AND INSTALLATION" in "GLASS PANEL ASSEMBLY".
	Noise resulting from interferences between body roof and wind deflector when closing sunroof	Interference noise from wind deflector	Check wind deflector for deformation and proper installation.	-
	"Grinding" noise occurs due to friction with body roof.	Friction noise between glass and body roof	Remove the foreign materials on the glass panel sealing parts and the body roof.	Take care not to remove urethane coating of glass panel sealing parts when removing foreign materials.
	Burping noise while operating	Abnormal noise occurs because of foreign materials (e.g. sand and dust) stuck in guide rail.	Remove any foreign material in mechanism operating range.	-
	"Rattling" noise during operation	Cable noise	Check motor and cable for connection.	Check sunroof for proper installation.
	Abnormal noise from faulty motor	Noise from motor	Replace motor.	- Stop sunroof and check for abnormal noise again after about 30 minutes. - Abnormal noise may occur due to overload when sunroof is operated too many times.

1) Emergency Action

If the sunroof becomes out of order while it is open or tilted, the sunroof can be operated through the motor operating hole of the sunroof motor.

(1) Causes for malfunction

- Failure of sunroof motor or sunroof control unit
- Broken sunroof cable and faulty mechanical parts
- Open or short circuit in sunroof switch and corresponding wiring

(2) Symptoms

- Sunroof does not operate.
- Sunroof does not tilt down or close when operating it.

(3) Action required

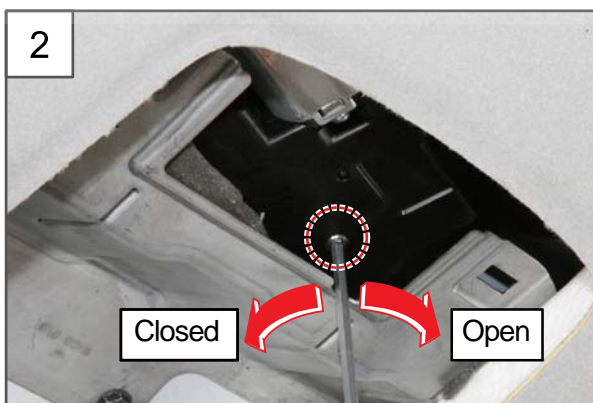


1. Remove the overhead console.



NOTE

See "OVERHEAD CONSOLE" under "REMOVAL AND INSTALLATION" in "LAMP SYSTEM" chapter.



2. Turn the groove for manual operation of the sun roof motor clockwise using a Allen wrench (4 mm).

- Close: Anti-clockwise
- Open: Clockwise

Modification basis	
Application basis	
Affected VIN	

2) Zero-Point Setting of Motor

This allows you to operate the sunroof normally when the motor needs to be replaced due to malfunction or deactivation after setting the zero point or when the operation error occurs due to an unauthorized mechanic's operation.

(1) Zero point setting cleared when:

- Any component of the sunroof (e.g. motor, SCU) is faulty
- Setting off by the operator with poor operational test when replacing the sunroof assembly or components (e.g. motor, SCU)
- The components are damaged due to short circuit and electric leak caused by traffic accident, etc.

(2) Symptoms when zero point setting cleared:

- The one-touch operation cannot be activated even after the sunroof setting has been calibrated.
- The sunroof is tilted or slide even after the sunroof setting has been calibrated.
- The sunroof opening and tilting level is significantly low even after the sunroof setting has been calibrated.
- The sunroof does not operate properly or operates only during the switch operation even after the sunroof setting has been calibrated.

(3) How to set zero-point of motor

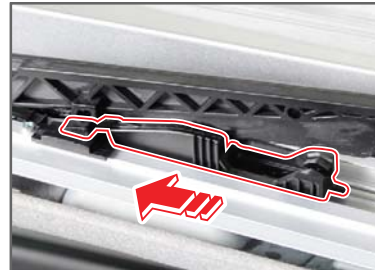


- Press the CLOSE switch so that the sunroof glass is in the tilt up position.
- Press and hold the CLOSE switch for more than 5 seconds.
- If so, the gear on the motor moves slightly while knocking.
- This indicates that zero-point setting is completed.
- After the reset is completed, check that the sunroof operates normally.

(4) How to set zero-point of mechanism



- A. Remove the sunroof motor.
B. Push the mechanism forwards all the way.



(5) Actions after setting

- If the sunroof malfunctions as before, replace the sunroof control unit and motor.
- If the sunroof does not operate at all, check the power supply system.
- If the power supply is normal but the sunroof does not operate at all, replace the sunroof control unit and motor.
- If the sunroof operates only during the switch operation, check if the ground circuit of switch is proper and reset the sunroof system.



NOTE

- The malfunction can be rectified by resetting the sunroof. The motor is usually replaced when the sunroof does not work at all due to its fault.
- Do not turn the switch on with only the sunroof control unit connected in order to check if the sunroof operates properly. To prevent this, it is recommended to avoid operating the sunroof without permission when replacing the motor.
- When the motor is removed, the glass panel on the sunroof may be moved with some force. Therefore, never touch any components of the sunroof under any circumstances, if the motor has been removed.

Modification basis	
Application basis	
Affected VIN	

3) Motor Self-Learning

Preceding work

- Park the vehicle in a safe place.
- Start the engine to prevent battery discharge.

(1) Perform motor self-learning when:

- Sunroof complete is replaced due to malfunction, damaged parts or other causes.
- Problem with ATS (Force, reverse) occurs.

(2) Reasons to perform motor self-learning

- To set the optimized ATS Force value for current condition of vehicle
- * ATS Force (Anti-Trap System Force): speed (load) value for each operation section of sunroof
- * Principle: When you perform the full cycle of the sunroof at the vehicle with the sunroof, the system recognizes the speed (load) value for each position and set the ATS Force automatically according to the speed.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



(3) How to perform motor self-learning



1. Move the sunroof glass panel to the tilt-up position using a CLOSE button.

2. When you press and hold the CLOSE button for 20 seconds or longer, the motor moves slightly with a sound of "click" after approx. 5 seconds (motor zero-position setting). After approx. 20 seconds, the motor moves slightly with a sound of "click" again (ready for self-learning).

3. After self-learning, when you press the OPEN switch shortly with a single touch, the sunroof will open and close automatically. (performs self-learning)

WARNING

Do not operate the sunroof during self-learning. And do not operate it for about 5 seconds after it is closed.

4. Check that the sunroof is working correctly.

Modification basis	
Application basis	
Affected VIN	

4) Abnormal Noise From Dual Lock

The following action can be used when the rattling noise is heard while driving on the rough roads.

(1) Causes for rattling noise

- Poor assembly - when the dual lock attached to the headlining is not fully inserted to the dual lock attached to the sunroof.

(2) Symptoms

- Intermittent noise - when driving on rough roads.
- When the mechanic pulls out or pushes the end of the headlining in contact with the end of the sunroof.
- Similar to the sounds from steel plate hitting by wire.

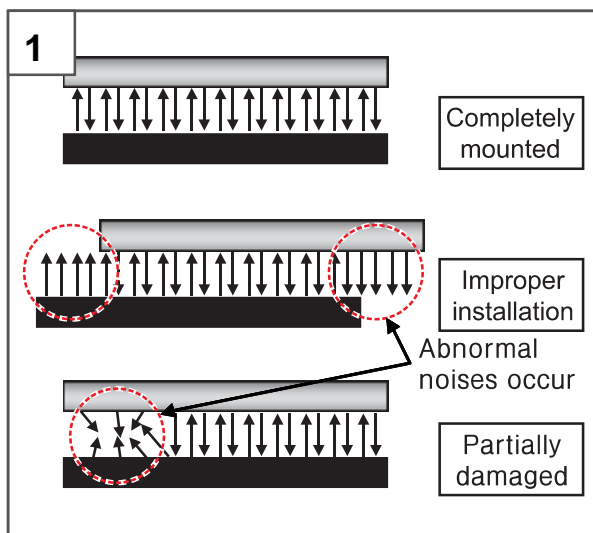
(3) Action required

- Reassemble dual lock - Reassemble head lining by checking attach points.
Do not remove the head lining completely, reassemble the edge (dual lock mounting part) of the sunroof glass only.
- If the noise can't be eliminated due to partial damage, apply spray adhesive and press it to in place securely.



NOTE

- When the entire or some part of the dual lock is broken due to improperly assembled headlining, the same abnormal noise can also be heard. So, you should assemble the dual lock very carefully. Since the position can be changed while assembling, you should tighten it point by point.



1. Remove the headlining (dual lock mounting part).

- Check service history: replacement history of head lining
- Check attachment (Red dotted line in the figure)



2. After removing, attach it point by point.

- Attach it point by point completely with some space left over.



NOTE

- Many breakaways occur in the areas shown with dotted lines.

Modification basis	
Application basis	
Affected VIN	

5) Friction Noise Between Glass Panel Seal and Body Roof

The following action can be used when it seems that the noise is heard from the glass panel seal during the sunroof is closed from tilting.

(1) Causes for abnormal noise from seal

- Foreign materials - abnormal noise due to interference caused by foreign materials caught between the glass panel seal and the roof panel.
- Improper installation - abnormal noise due to excessive interference caused by incorrect installation when fitting or replacing the sunroof.
- Exterior coating - when exterior coating has been applied excessively between the seal and the body.

(2) Symptoms

- Intermittent noise - when driving on rough roads (similar to the sounds from steel plate hitting by wire). Symptom reproduced when the operator pulls out or pushes glass panel by hand.
- Rubbing sound during operation.
-

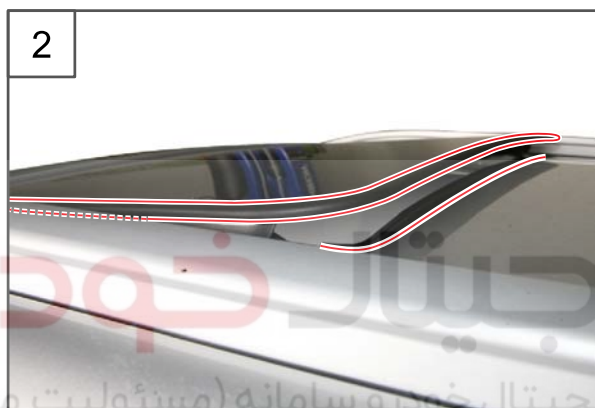
(3) Action required

- Wipe off the glass panel seal and the interfered roof panel with clean cloth.



NOTE

- Do not apply the grease to the glass panel seal to eliminate the noise since it could be damaged.
- For the vehicle with the glass panel replaced, wash the roof surface before fitting it.
- Do not wipe off the seal using a cloth with an excessive force as this may cause coating to peel.



1. Check that the noise is heard from the glass panel seal.
 - a. Check service history: replacement history of glass panel
 - b. Check abnormal noise: Opening the glass panel can solve the problem, if the noise is heard from the glass panel seal.
2. Wipe off the glass panel seal and contact surfaces between the roof panel and glass panel seal.
 - a. Wipe off any foreign material in glass panel seal and contact surfaces between the roof panel and glass panel seal by opening or tilting the glass panel.
3. Inform the customer that the noise can be occurred by the foreign materials in the glass panel seal.
 - a. Encourage the customer to maintain the glass panel seal and roof panel while washing at ordinary times.

CAUTION

Do not clean the glass panel seal too hard as this may cause the urethane coating to peel.

Modification basis	
Application basis	
Affected VIN	

6) Foreign Materials In Guide Channel

The following action can be used when the foreign materials in the guide prevent proper operation or make abnormal noise.

(1) Possible causes

- Owner's fault: When you throw out the waste material through the sunroof, it might be caught in the operation resulting in limited operation or abnormal noise.
- Leaves or other things brought inside: The branches, leaves or similar can be brought into the vehicle when the sunroof is open.
- External contaminants: When driving on the off-road with the sunroof opened or driving on a dusty road, the dust is accumulated on the operation part, which can make abnormal noise during operation.

(2) Symptoms

- Malfunction: Does not work properly (poor action or malfunction)
Ex) Does not work when the CLOSE switch is pressed
- Noise: Same type of noises such as squeak are repeated from the same position.

(3) Action required

- Remove foreign materials

It is not advisable to apply the grease or similar when an abnormal noise is heard. Doing so only causes the damage since the oils in those materials attract the foreign materials.

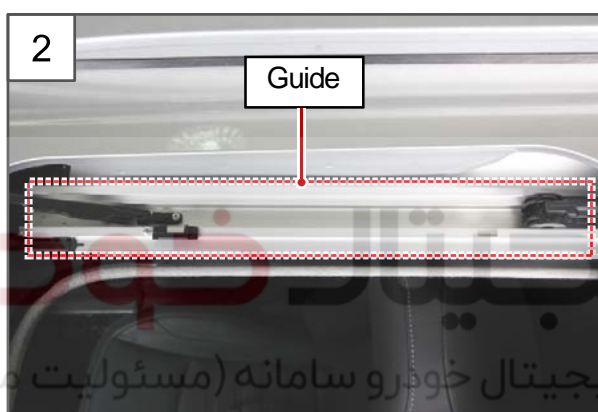


1. Remove the glass panel.



NOTE

See "SUNROOF GLASS PANEL ASSEMBLY" under "REMOVAL AND INSTALLATION".



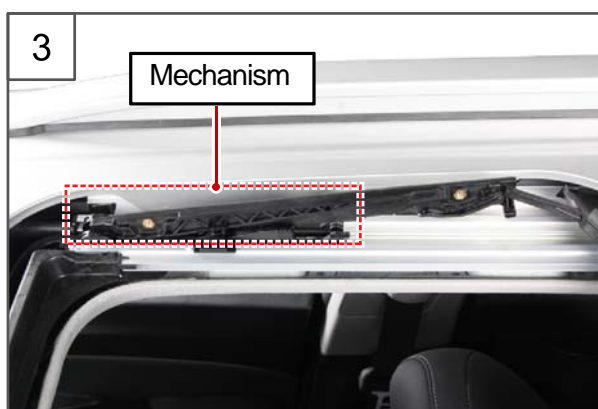
2. Remove the foreign materials in the guide by operating the sunroof switch (opening the sunroof).

- a. The center part (i.e. mechanism's moving part) does not need lubricant. Check it for any oil, grease or other lubricants, and remove it if any. (Do not use any cleaning agent.)
- b. For the inner side shown with the arrow, remove the foreign materials using the small swab but leave the charged oil.



CAUTION

- Avoid using the cleaning agent such as WD40.



3. Remove the foreign materials in the mechanism.

- a. Press the sunroof switch so that the sunroof is in the tilted position. Then, remove the foreign materials in the mechanism.

4. Install the glass panel.

Modification basis	
Application basis	
Affected VIN	

7) Juddering Of Drain Channel

The following can be used in the event of the drain channel juddering when driving on the rough roads or opening and closing the door.

(1) Possible causes

- Incorrect drain channel dimensions: If the drain channel dimensions are not correct, there is clearance between the guide and drain channel, which results in juddering.
- Poor assembly: Defective mechanism or twist when assembling the sunroof

(2) Symptoms

- Juddering occurs at the top when driving on rough roads
- Juddering occurs due to impact when opening and closing door

(3) Action required

- Replace the drain channel if its dimensions are not correct.
- If the sunroof is not assembled correctly, remove and reassemble it.

دیجیتال خودرو
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



S.G.N.

7770-20

OVERHEAD CONSOLE SWITCH ASSEMBLY

Preceding work

- Disconnect the negative battery cable.



1. Unscrew the 2 mounting bolts (10 mm) on the overhead console.



2. Detach the overhead console from the clip section (A).



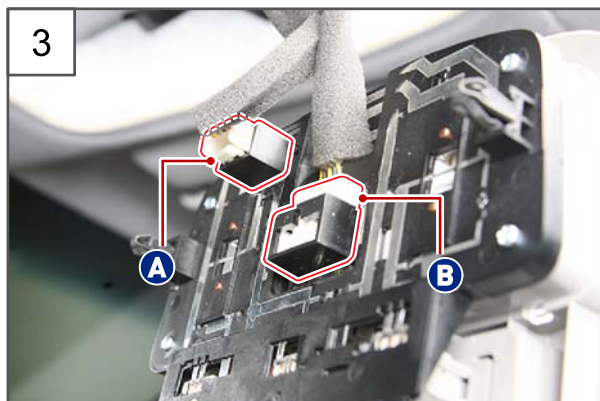
Mounting clip section (A)



Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03



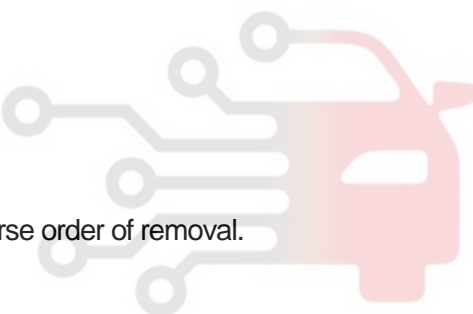
3. Disconnect the front room lamp connector (A) and the sunroof switch connector (B).



4. Remove the overhead console switch assembly.



5. Install in the reverse order of removal.

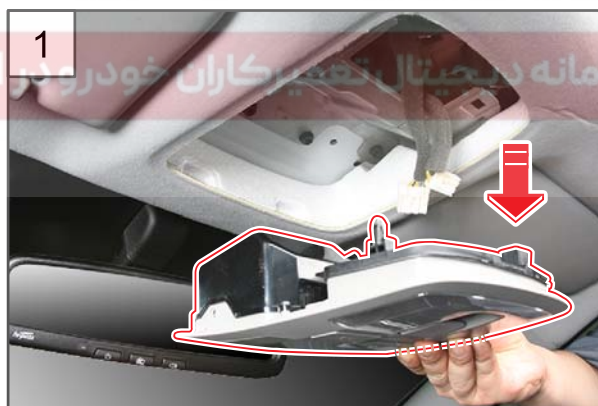


7340-02

SUNROOF CONTROL UNIT (SCU) MOTOR

Preceding work

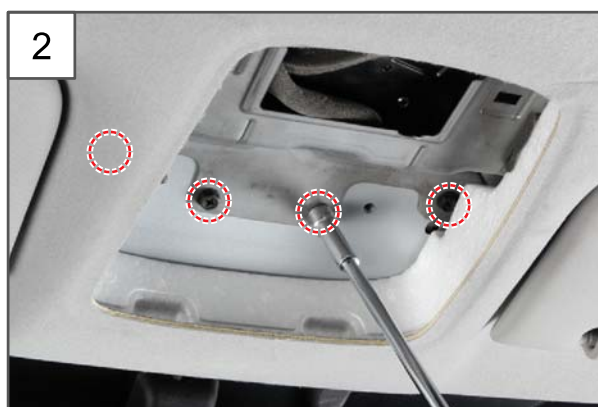
- Disconnect the negative battery cable.



1. Remove the overhead console switch.

**NOTE**

See "OVERHEAD CONSOLE SWITCH" under "REMOVAL AND INSTALLATION".



2. Unscrew the 4 mounting bolts (10 mm) to remove the overhead console mounting bracket.



Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03



3. Unscrew the 3 mounting bolts (T25) for the sunroof control unit & motor.

Tightening torque 2.9 ~ 3.1Nm



4. Disconnect the sunroof control unit & motor connector.



5. Remove the sunroof control unit & motor from the sunroof rail.

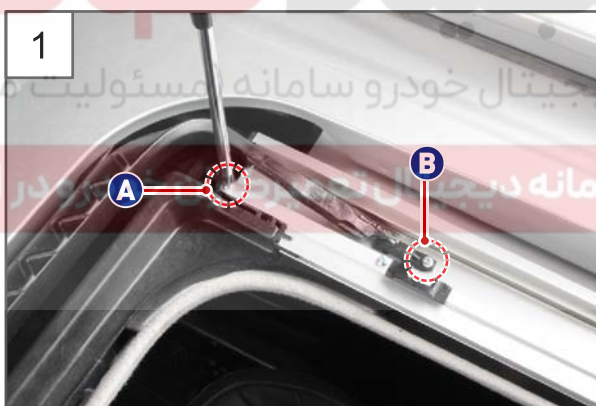
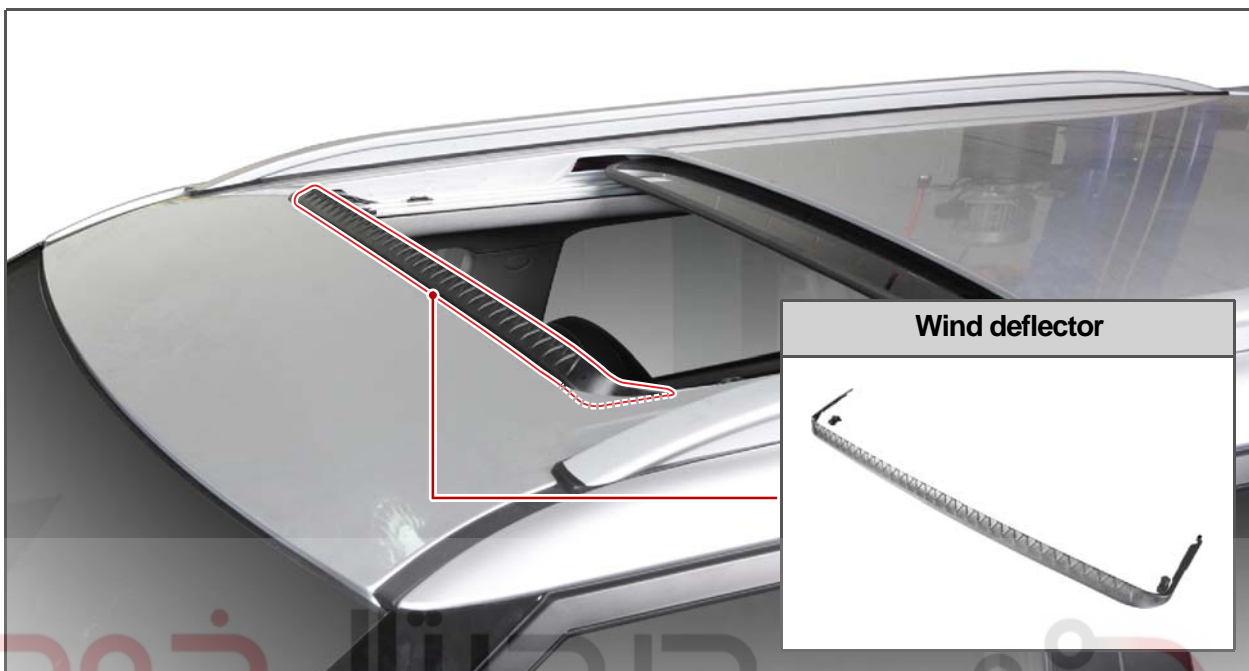


6. Install in the reverse order of removal.

S.G.N.

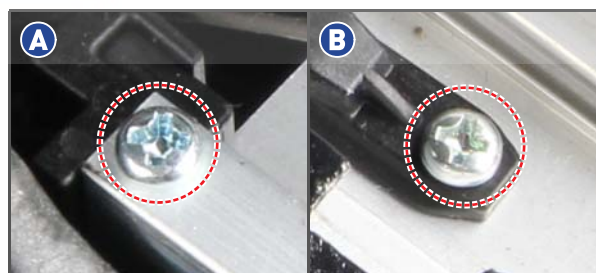
7340-03 WIND DEFLECTOR**Preceding work**

- Open the sunroof in the sliding way.



1. Unscrew the spring mounting screw (A) and mounting screw (B) for the wind deflector mounting bracket.

Tightening torque (A): 0.9 ~ 1.1 Nm
(B): 0.6 ~ 0.8 Nm



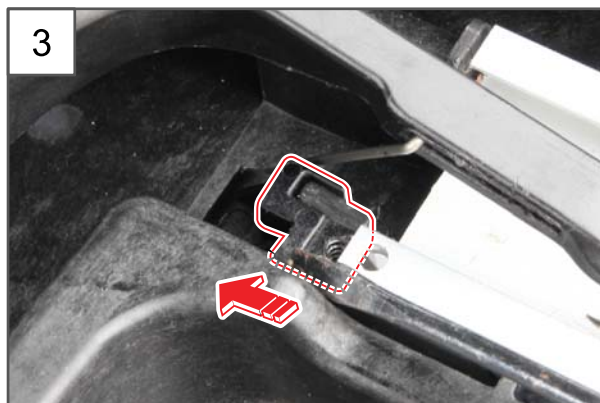
2. Remove the wind deflector mounting bracket by pushing it to the arrow (A) direction and lifting it up to the arrow (B) direction.



Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03



3. Remove the spring mounting bracket by pushing it to the arrow direction.



4. Remove the wind deflector.



5. Install in the reverse order of removal.

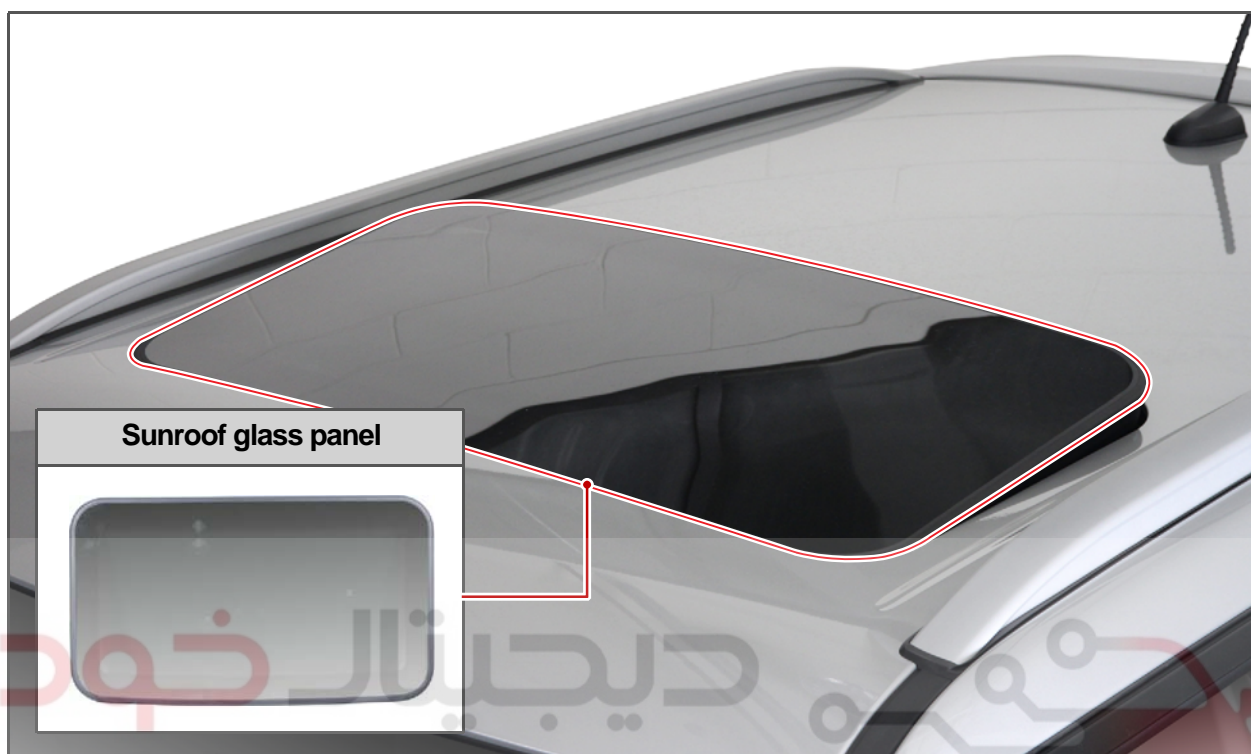
S.G.N.

7340-04

SUNROOF GLASS PANEL ASSEMBLY

Preceding work

- Disconnect the negative battery cable.



1. Move the sunroof glass panel to the tilt-up position using a CLOSE button.



2. Unscrew the 4 mounting bolts (T25, two on both sides) on the sunroof glass panel inside the vehicle.

Tightening torque 4.85 ~ 5.15Nm

Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

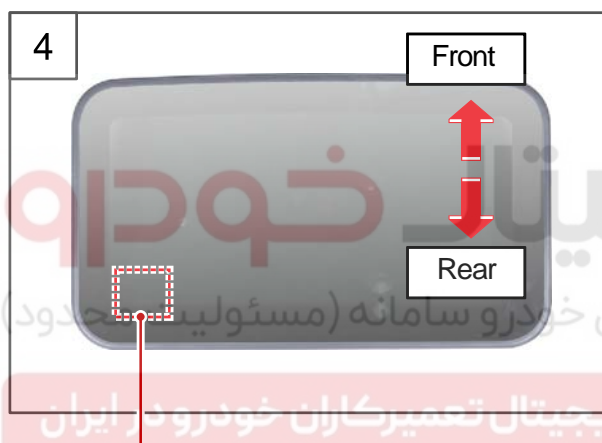
TIVOLI 2015.03



3. Remove the sunroof glass panel.

⚠ CAUTION

- It is recommended that two people are worked together to remove the sunroof glass panel. If the work should be done by one person, lift up the sunroof glass panel from the mechanic side.
- The glass reinforcement attached to the glass panel is made of the steel. Be careful during the work as it can scratch the exterior paint.



4. Install in the reverse order of removal.

⚠ CAUTION

Make sure that you do not change the installation direction of the sunroof glass panel. The side with the logo must be facing rearwards when fitting.



► Installation (adjusting gap and level difference)

reference Two people is required to fit the sunroof glass panel and adjust the gap and level difference.



1. When fitting the sunroof glass panel, put down the glass panel softly from the opposite side of the mechanic.



2. Screw on the 4 mounting bolts (T25, two on both sides) for the sunroof glass panel inside the vehicle temporarily and adjust the level difference.

⚠ CAUTION

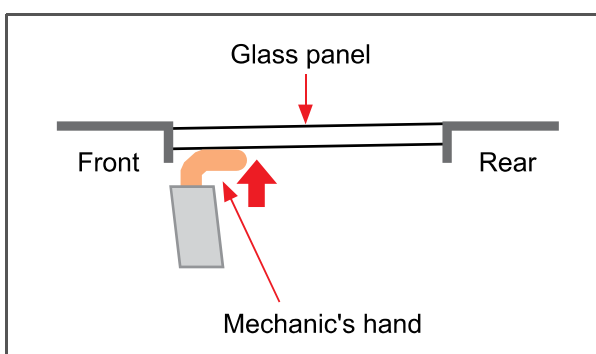
- It is convenient to use a magnet tool when installing the glass panel bolt.
- Be careful not to drop the bolt between the mechanisms.



3. Tighten the bolts from the front while securing the sunroof glass panel by hand as shown in the figure.

⚠ CAUTION

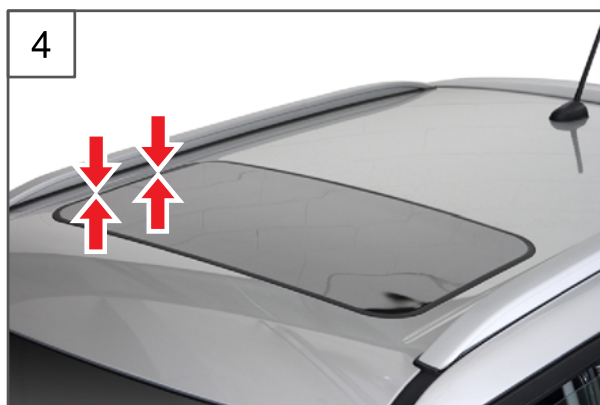
Tighten the bolts from the front.



⚠ CAUTION

Tighten the glass panel mounting bolts to the specified torque while correcting the sunroof glass panel by your hands as shown in the figure.

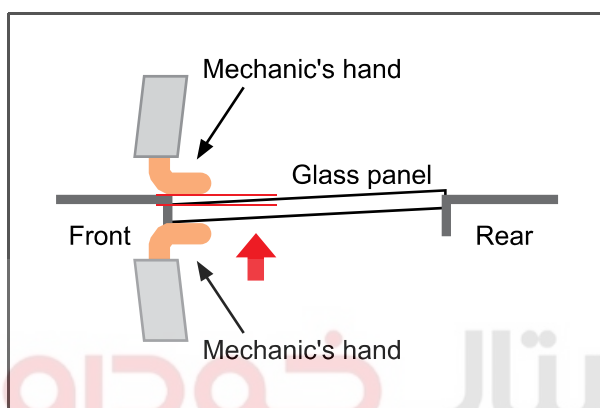
Modification basis	
Application basis	
Affected VIN	



4. Adjust the level difference between the roof panel and sunroof glass panel.

► **Level difference**

Front	0 ~ -1.5 mm
Rear	0 ~ 1.5 mm



► **How to adjust**

- Slacken the 2 LH or RH bolts fitted.
- One person adjust the upside of the glass panel with one hand and underside with other hand so that there is no level difference between the front edge and body and other person tighten the bolts to the specified torque.
- Same method applies to the rear side.
- Perform the same procedures to the other side.



CAUTION

- It is OK to adjust the height difference several times, but only one bolt of the 4 mounting bolts should be removed at a time.
- When you remove more than one bolt, there is a risk that the height difference adjusted in the step 3 is changed.



6. Check the clearance using a card or similar.

- Check that the same clearance is maintained at 4 to 8 sites by inserting and moving the card.

If there is a difference between those clearances, set the clearance and height difference exactly by working again from the step 6.

- The ratio of clearance in the left and right sides should be 5:5. If the clearance is not the same, it means that you fitted the sunroof assembly incorrectly, so you can't adjust the clearance by moving the glass only.

► How to adjust

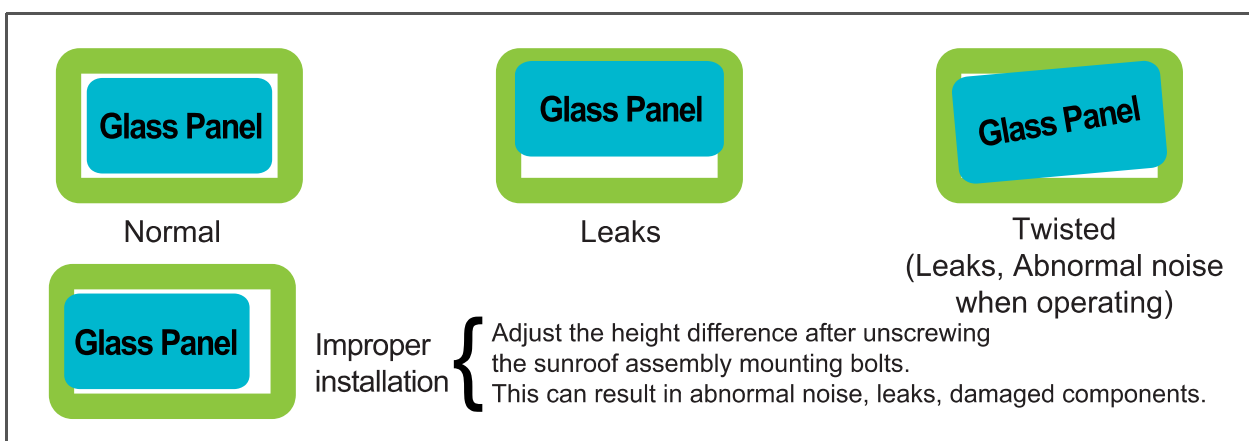


7. Check the clearance using a card or similar.

- Make sure that the clearance ratio between front and rear sides is 4:6.
- The ratio of clearance in the left and right sides should be 5:5. If the clearance is not the same, it means that you fitted the sunroof assembly incorrectly, so you can't adjust the clearance by moving the glass only.

► Operation test

- Check for abnormal noise by carrying out the operation test.
- If the noise is heard when closing the tilted sunroof, work again from the step 3.



Modification basis	
Application basis	
Affected VIN	

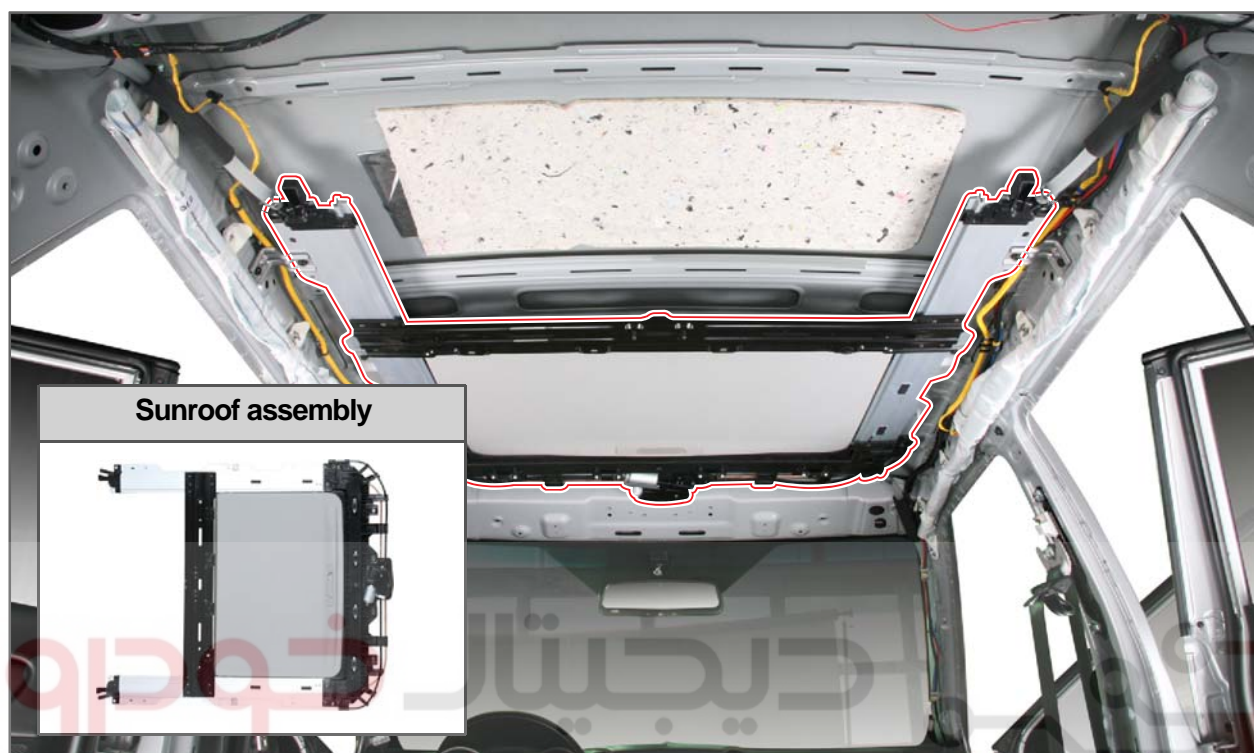
S.G.N.

7340-01

SUNROOF ASSEMBLY

Preceding work

- Disconnect the negative battery cable.



1. Remove the sunroof glass panel.

**NOTE**

See "SUNROOF GLASS PANEL ASSEMBLY" under "REMOVAL AND INSTALLATION".



2. Remove the headlining.

**NOTE**

Refer to "HEADLINING" under "REMOVEAL AND INSTALLATION" in "BODY INTERIOR" chapter.

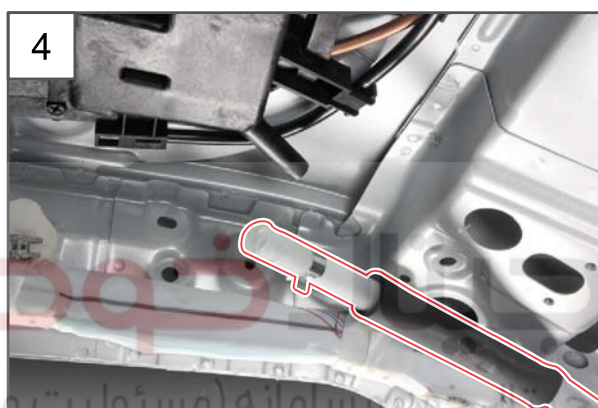
Modification basis	
Application basis	
Affected VIN	



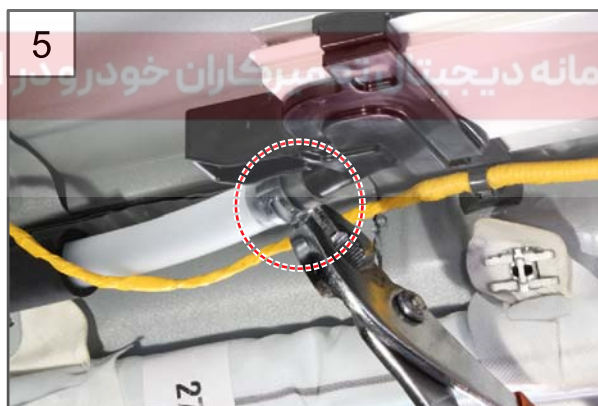
3. Undo the sunroof drain hose mounting clamp at the front.

CAUTION

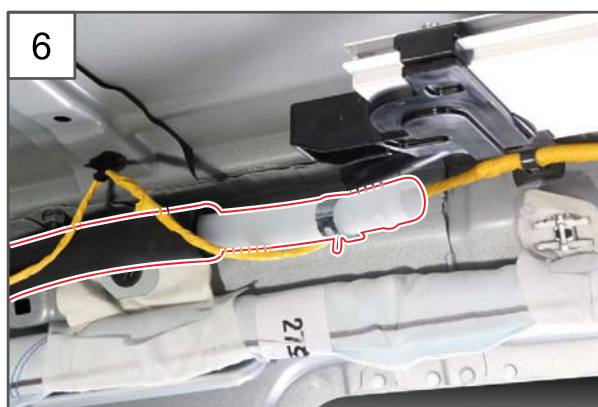
When connecting or disconnecting the sunroof drain hose, make sure it is not bent and damaged by the panel or vehicle body.



4. Disconnect the front sunroof drain hose from the sunroof assembly.

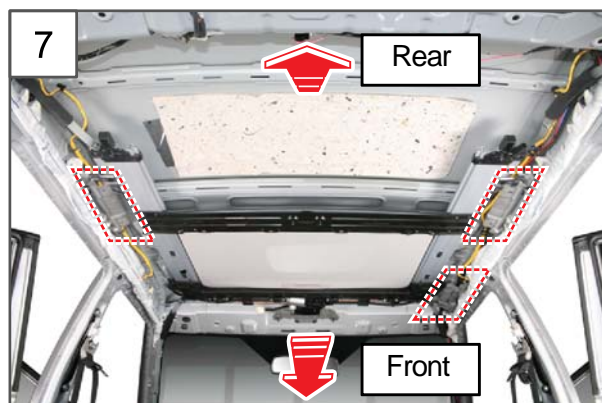


5. Undo the sunroof drain hose mounting clamp at the rear.

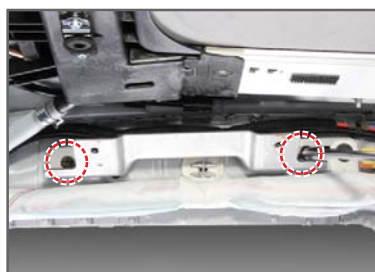


6. Disconnect the sunroof drain hose from the sunroof assembly.

Modification basis	
Application basis	
Affected VIN	



7. Unscrew the 2 mounting bolts (10 mm) for the grip assembly mounting bracket (one for front, two for rear).



8. Remove the grip assembly mounting bracket.

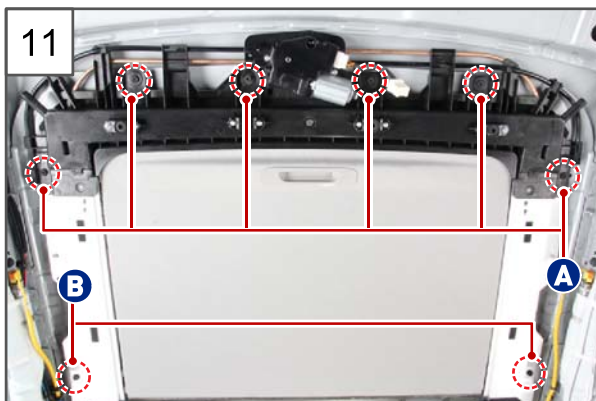


9. Unscrew the 2 sunroof support bracket mounting bolts (10 mm) at the rear of the sunroof assembly. (same for both sides)

Tightening torque 5.8~9.8 Nm



10. Remove the sunroof support bracket.



11. Unscrew the 6 mounting bolts (A, 10 mm) and 2 mounting bolts (B, 10 mm) at the front and center of the sunroof assembly.

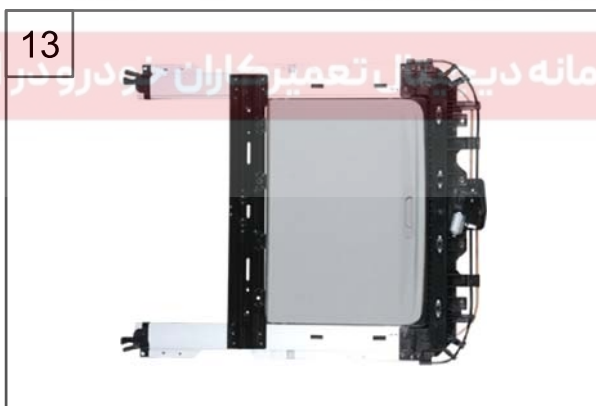
Tightening torque 5.8~9.8Nm

⚠ CAUTION

Other person should support the sunroof assembly to prevent it from falling.



12. Remove the sunroof assembly.



13. Install in the reverse order of removal.

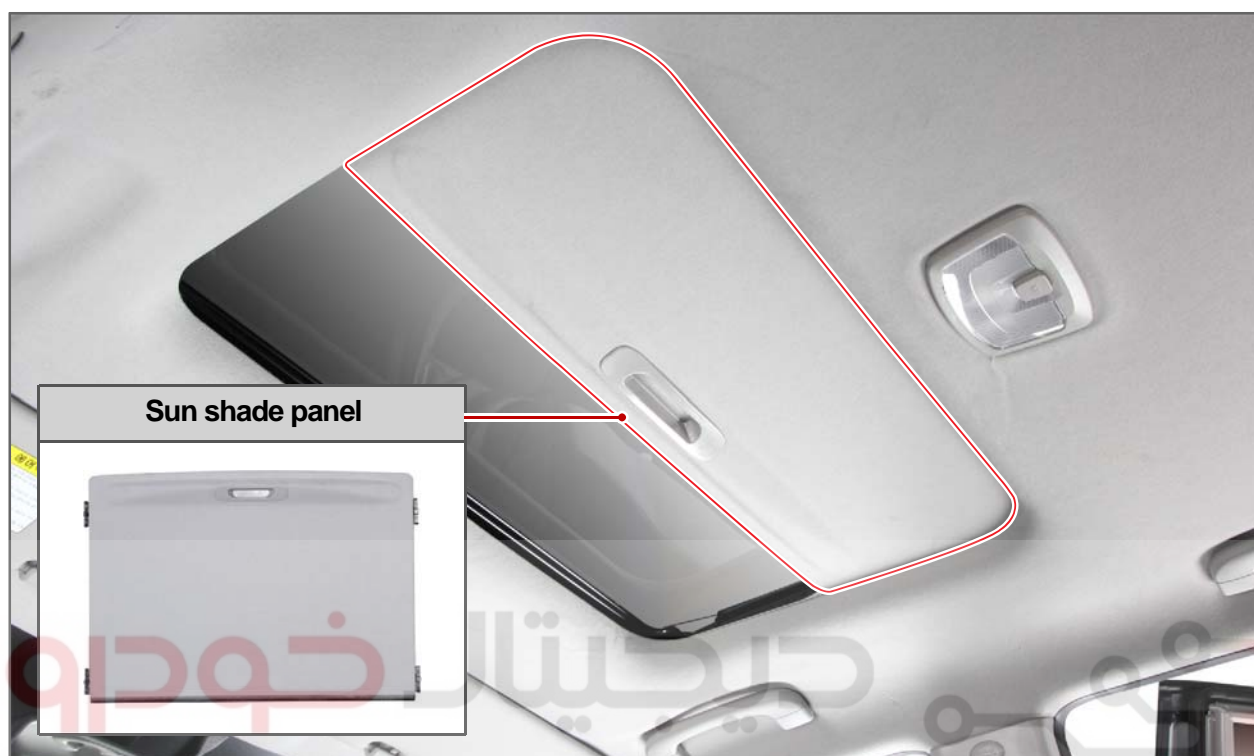
Modification basis	
Application basis	
Affected VIN	

S.G.N.

7340-02 SUN SHADE PANEL ASSEMBLY

Preceding work

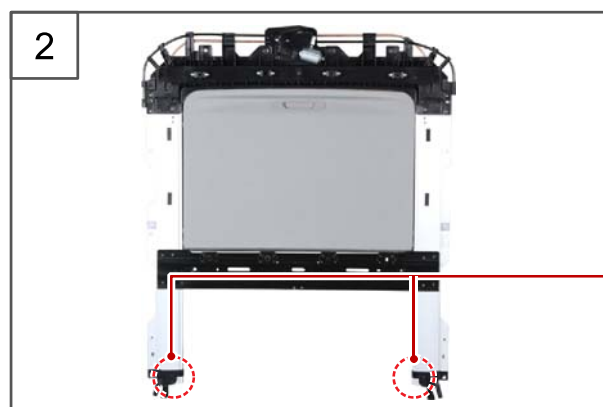
- Disconnect the negative battery cable.



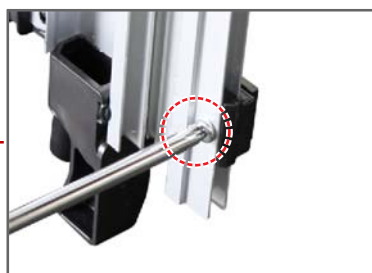
1. Remove the sunroof assembly.

**NOTE**

See "SUNROOF ASSEMBLY" under "REMOVAL AND INSTALLATION".



2. Unscrew the mounting screws for the sun shade panel stopper at rear of the sunroof.

Tightening torque 0.6 ~ 0.8 Nm

Modification basis	
Application basis	
Affected VIN	



3. Remove the sun shade panel stopper.

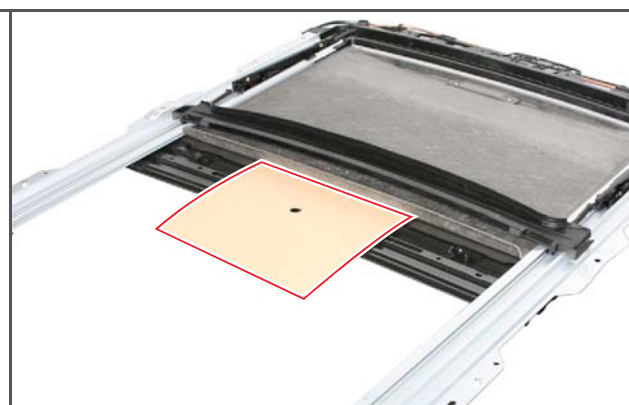
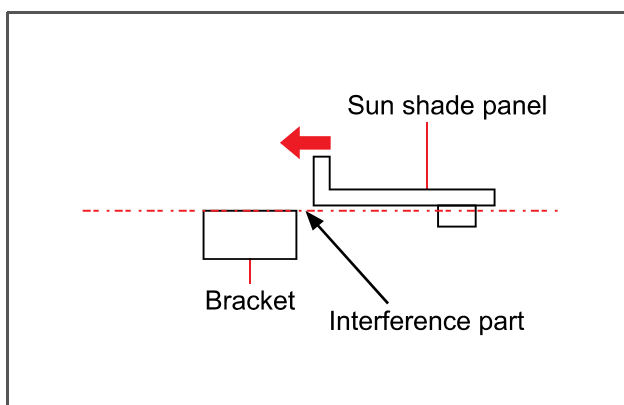


4. Pull out the sun shade panel to the arrow direction.



CAUTION

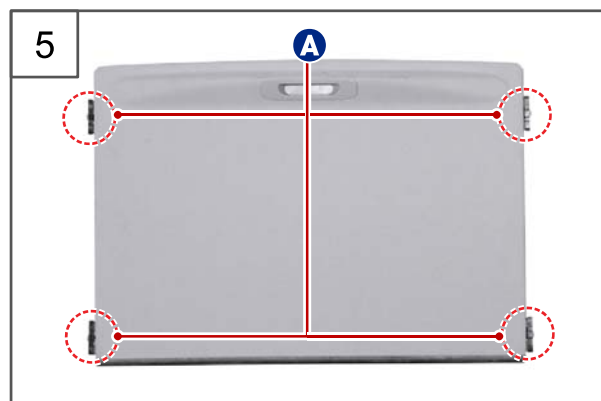
Slide the paper box or something similar into between the center bracket and sun shade panel as shown in the picture, since the interference occurs between the center bracket and sun shade panel when removing the sun shade panel.



Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03

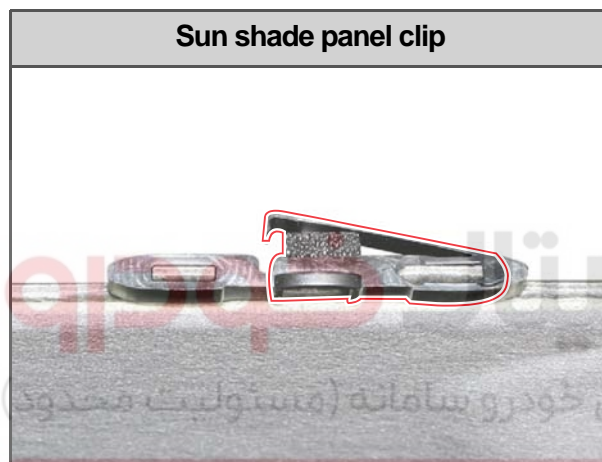


5. Install in the reverse order of removal.

CAUTION

Take care not to damage the clips (A) when fitting the sun shade panel.

Sun shade panel clip



اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



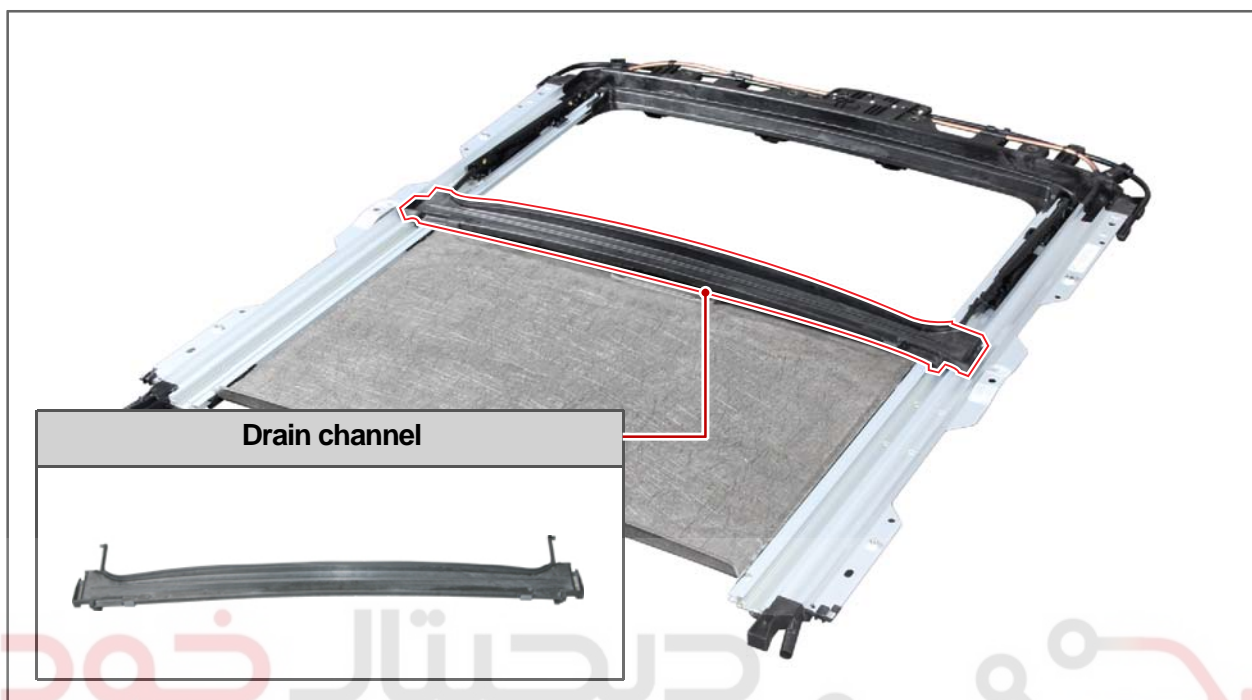
S.G.N.

7340-00

DRAIN CHANNEL ASSEMBLY

Preceding work

- Disconnect the negative battery cable.



1. Remove the sunroof assembly.



NOTE

See "SUNROOF ASSEMBLY" under "REMOVAL AND INSTALLATION".



2. Open the sun shade panel completely.

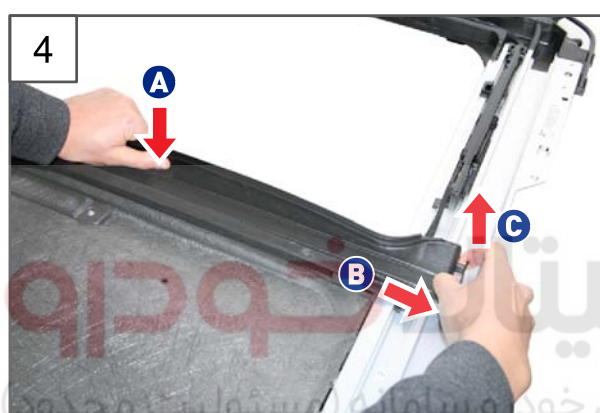
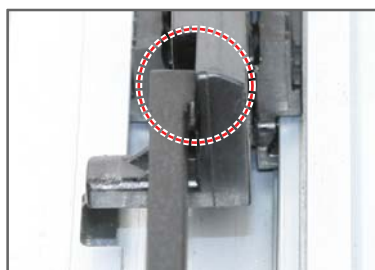
Modification basis	
Application basis	
Affected VIN	

SUNROOF SYSTEM

TIVOLI 2015.03



3. Remove the drain channel from the mechanism.



4. Remove the drain channel by pressing down the center of the drain channel to the arrow (A) direction, by pulling the one end of the drain channel to the arrow (B) direction and by lifting it up to the arrow (C) direction.



5. Push the drain channel to the arrow direction to remove its opposite side.

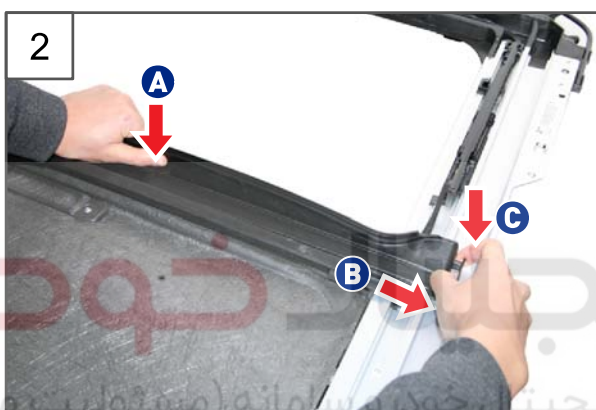


6. Remove the drain channel.

► Installation



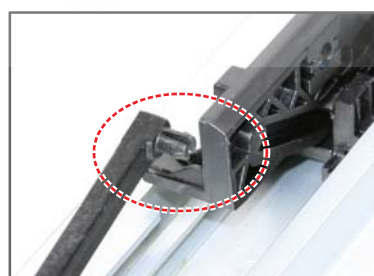
1. Place the one end of the drain channel onto the sunroof, press it down to the arrow (A) direction gently and push it into the arrow (B) direction.



2. Install the drain channel by pressing down the center of it to the arrow (A) direction, by pulling the one end of it to the arrow (B) direction and by pushing it down to the arrow (C) direction, in the same way as for removal.



3. Fit the drain channel into mechanism.



4. Close the sun shade panel and check the drain channel for installation.

Modification basis	
Application basis	
Affected VIN	

Memo

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

