

Description

AVN system

The AVN system has improved information search and easiness of manipulation for the driver by simplifying the system operation experience and unifying the display of the user information such as multimedia and car information.

–The system is basically composed of a keyboard for the operation of combined function, LCD monitor, a head unit with Bluetooth handsfree calling, voice recognition and navigation, music amplifier and the media unit that connects with other outside devices.

1. Simplification of user interface : the multimedia and car information are displayed on the monitor.
2. Networked electronic parts : Efficient information transmission through CAN communications.
3. Up-to-date technologies integrated :
 - Voice recognition : This function recognizes the user's voice commands to manipulate the system. The user can issue voice commands to operate AV system, Bluetooth phone and navigation and connect to Cubis call center.
 - Bluetooth hands-free calling : This is compliant with the international wireless communication standards and uses bluetooth technology adopted in most currently launched mobile phones. Once connected, it is automatically linked to the driver's cell phone whenever the driver gets in the car.
 - USB connectivity : External music devices like USB memory stick, are connected and played through the car speakers.

System Block Diagram



Limitations Of The Navigation system

GPS Signal Reception State

As the GPS satellite frequency is received/transmitted in straight lines, reception may not work if hiding devices are placed on or near the GPS antenna or when traveling through the following locations.

- Tunnels
- Basement parking structures
- Underneath an overpass
- Roads within forested areas
- Areas near high rise buildings
- Roads within canyons

Vehicle Position Display

1. If multipass errors occur due to reflections from buildings or related causes, the current position mark on the navigation may differ from the actual position of the vehicle.

2. The position of the vehicle on the navigation may be different from the actual position if the vehicle is under the occur, driving for a short period of time will vehicle through map matching or GPS information (several minutes may be necessary in certain cases).

- When driving on a Y-shaped road with a narrow angle, the current position may be displayed in the opposite direction.
- If the vehicle is loaded onto a car transport vehicle, the current position mark may be stalled on the last position prior to loading.
- When driving on a spiral-shaped road.
- When driving in mountain regions with sharp turns or sudden brakes.
- When entering a road after having been in an underground parking structure, building parking structure, or turnable with many rotations.
- When the tires have recently been replaced (Especially upon use of spare or studless tires)
- If the battery terminal is removed.
- When driving in city streets, the current position may be displayed on the opposite side or on an off-road position.
- When changing the zoom level from the maximum zoom in level to a different zoom level, the current position mark may be displayed on a different road.
- When driving in heavy traffic with frequent go · stops in traffic or intersections.
- When driving under slippery conditions, such as heavy sand, snow, etc.
- When driving with the tire chain in place.
- When using a tire with an incorrect size specification.
- When the tire pressure for the 4 tires are different.
- When the replacement tire is a worn or used tire (Especially studless tires having passed a 2nd seasons, etc.)
- When driving near high-rise buildings
- If a roof carrier has been installed
- When driving under high speeds or having calculated a long-distance route.

Route Guidance

Suitable route guidance may not occur caused by search conditions or the driving position.

- Guidance to go straight may be given while driving on a straight road.
- Guidance may not be given even when having turned at an intersection.
- There are certain intersections in which guidance may not occur.
- A route guidance signaling entrance into a no enter zone may occur (No enter zone, road under construction, etc.)
- Guidance may be given to a position removed from the actual destination if roads to reach the actual destination do not exist or are too narrow.
- Faulty voice guidance may be given if the vehicle breaks from the designated route (ex : if a turn is made at an intersection while the navigation provided guidance to go straight).
- Map Data may be missing or incorrect causing route guidance to not be given.

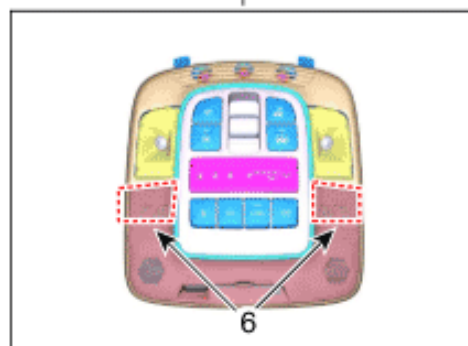
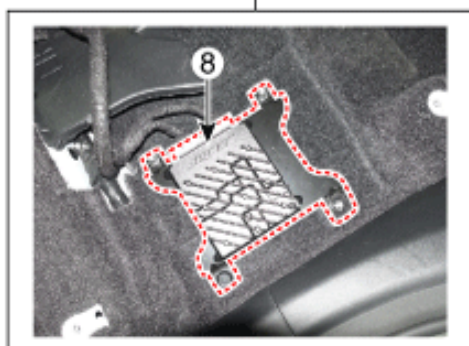
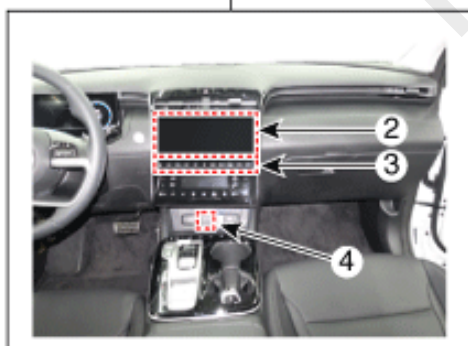
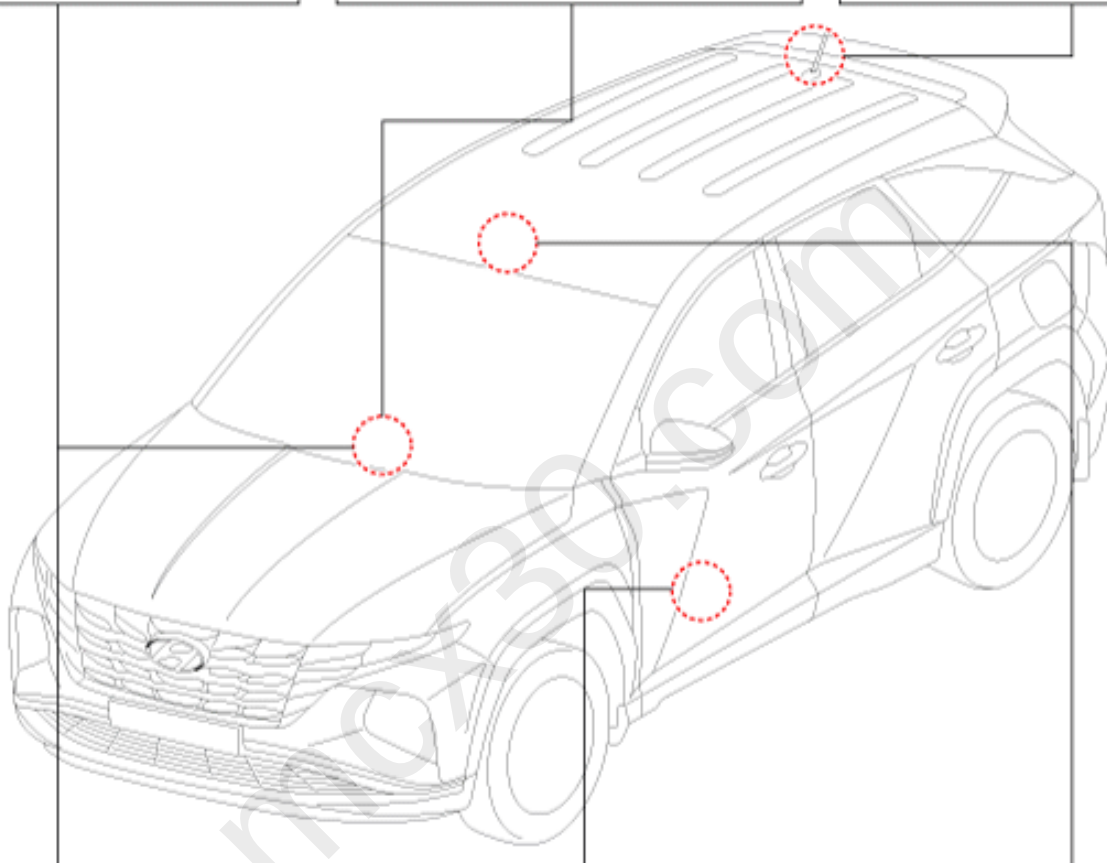
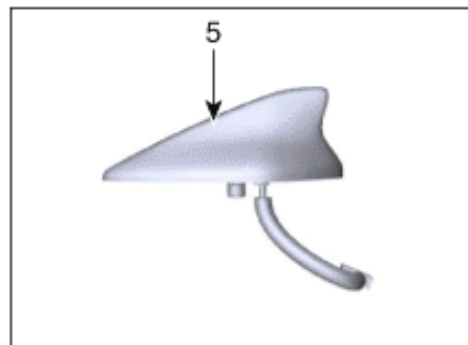
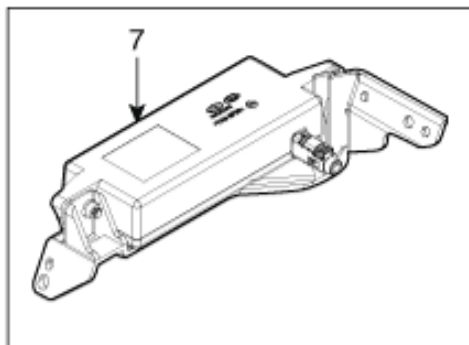
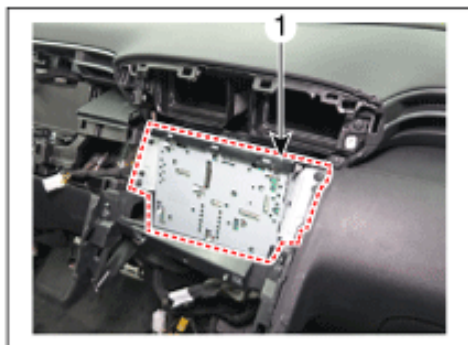
Route Re-calculation

The following phenomena may occur after conducting route recalculation.

- When turning at an intersection, the navigation system gives wrong information on the current position.
- Route recalculation may take a longer period of time when driving under high speeds.
- A route guidance signaling for a U-Turn in a No U-Turn location may occur.
- A route guidance signaling entrance into a no enter zone may occur (No enter zone, road under construction, etc).
- Guidance may be given to a position removed from the actual destination do not exist or are too narrow.
- Faulty voice guidance may be given if the vehicle breaks from the designated route (ex : if a turn is made at an intersection while the navigation provided guidance to go straight)

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Components
Location



1. AVN (A/V & Navigation head unit)
2. Front monitor
3. AVN switch
4. USB jack

5. Roof antenna
6. Mic
7. Crash pad antenna
8. External amplifier

Specifications

Item	Specification
Power source	DC 14.4V (-) ground
Frequency range / Channel space	FM : 87.5 - 108.0 MHz / 100 KHz AM : 531 - 1602 KHz / 9 KHz
Tuning type	PLL SYNTHESIZED TUNING
Impedance	2 ohm x 4
Antenna	80 pF 75 ohm
parastic current	MAX 2mA (Head unit only)
S/N	FM : MIN 50 dB AM : MIN 45 dB

Components



No	Connector A (External Amplifier)	Connector A (Internal Amplifier)	Connector B	Connector C
1	-	Rear door speaker LH (+)	Mic2 (+)	-
2	-	Rear door speaker LH (-)	Mic1 (+)	I -CAN (High)
3	Navigation voice (+)	-	-	-
4	External amplifier SPDIF (+)	-	-	-
5	Reset	Reset	-	-
6	Camera power	Camera power	Illumination (+)	-
7	Camera video	Camera video	M-CAN (High)	-
8	-	-	-	-
9	-	-	-	I -CAN (Low)
10	-	-	Battery (+)	-
11	DETECT	DETECT	Battery (+)	-
12	Steering wheel remote	Steering wheel remote	Ground	-
13	-	Front door speaker LH (+)	Ground	-
14	-	Front door speaker LH (-)	Mic2 (-)	-
15	-	Front door speaker RH (-)	Mic1 (-)	-
16	-	Front door speaker RH (+)	-	MTS
17	Navigation voice (-)	-	-	-
18	External amplifier SPDIF (-)	-	-	-

19	External amplifier SPDIF (Ground)	-	Illumination (-)	-
20	Camera power ground	Camera power ground	M-CAN (Low)	-
21	Camera video ground	Camera video ground	-	-
22	-	-	ACC	
23	-	-	Keyboard power	
24	-	-	Front monitor power	
25	-	-	-	
26	Steering wheel remote ground	Steering wheel remote ground	-	
27	-	Rear door speaker RH (-)	-	
28	-	Rear door speaker RH (+)	-	
29	-	-	-	
30	-	-	-	
31	-	-	-	
32	Camera Detect (RVM : - / SVM : Ground)	Camera Detect (RVM : - / SVM : Ground)	-	
33	Camera shield ground	Camera video shield	IGN 1	
34	-	-	Keyboard ground	
35	-	-	Front motor ground	
36	-	-		
37	-	-		
38	Vehicle speed	Vehicle speed		



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Removal

1. Disconnect the negative (-) battery terminal.
2. Remove the front monitor lower cover (A).

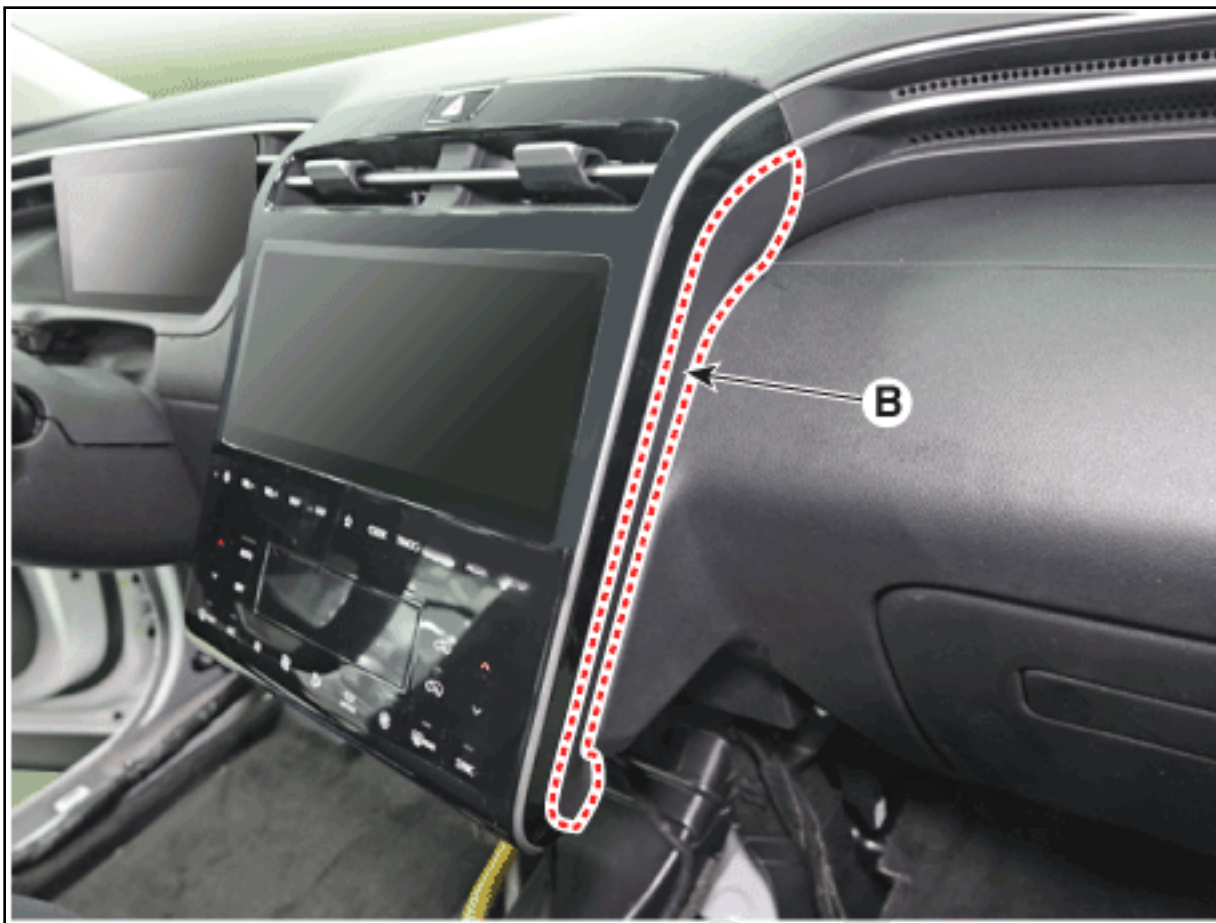


3. Remove the front monitor lower cover after disconnecting the mood lamp connector (A).



4. Remove front monitor side cover (A) and (B).

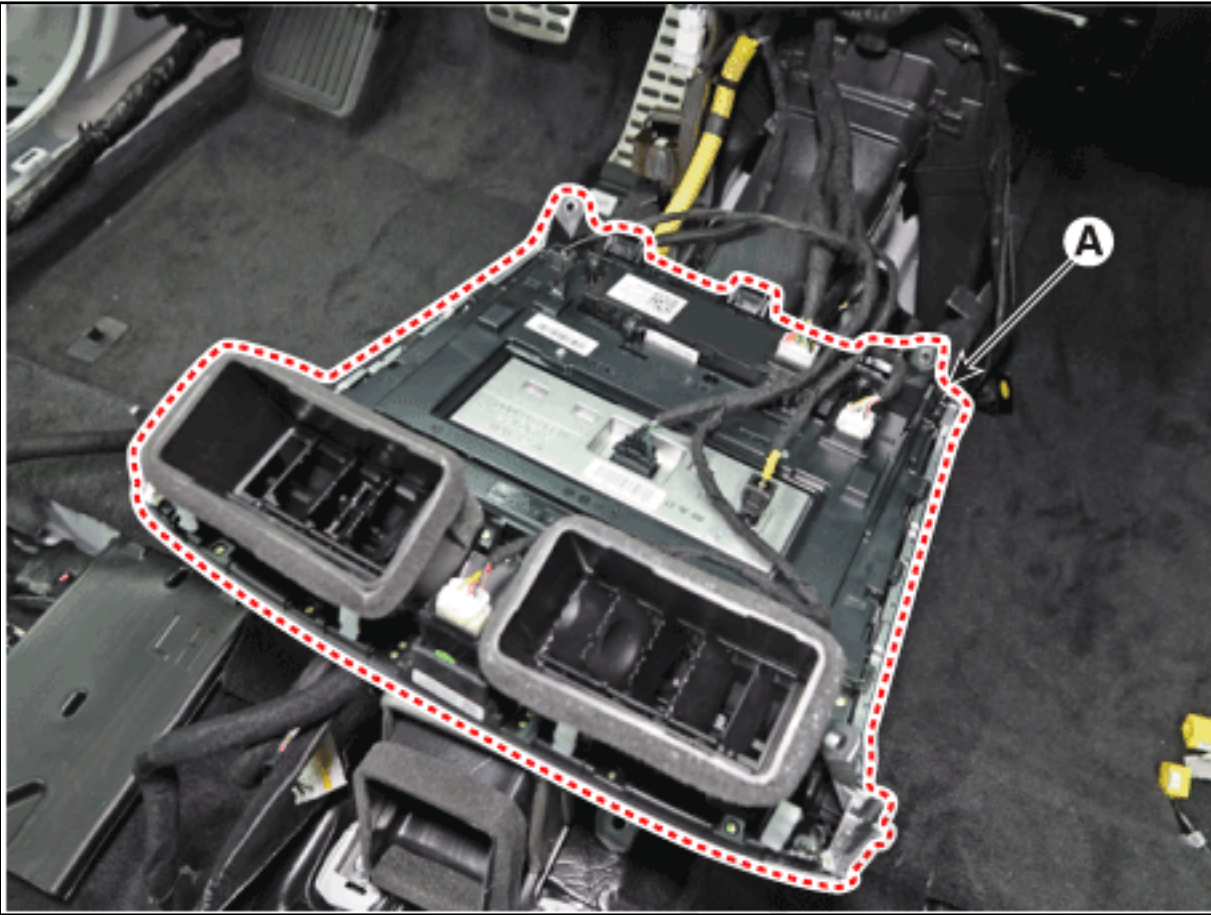




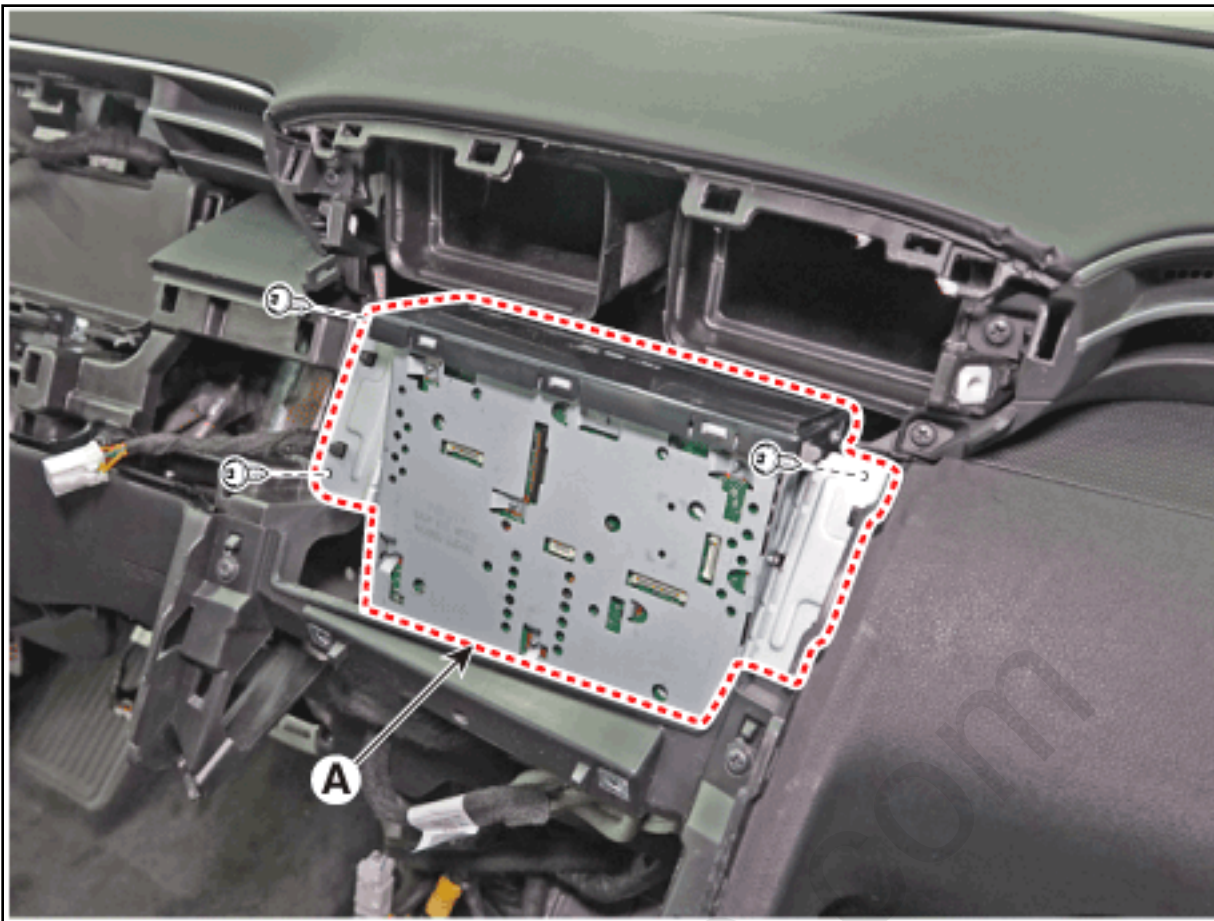
5. Remove the front monitor assembly (A).



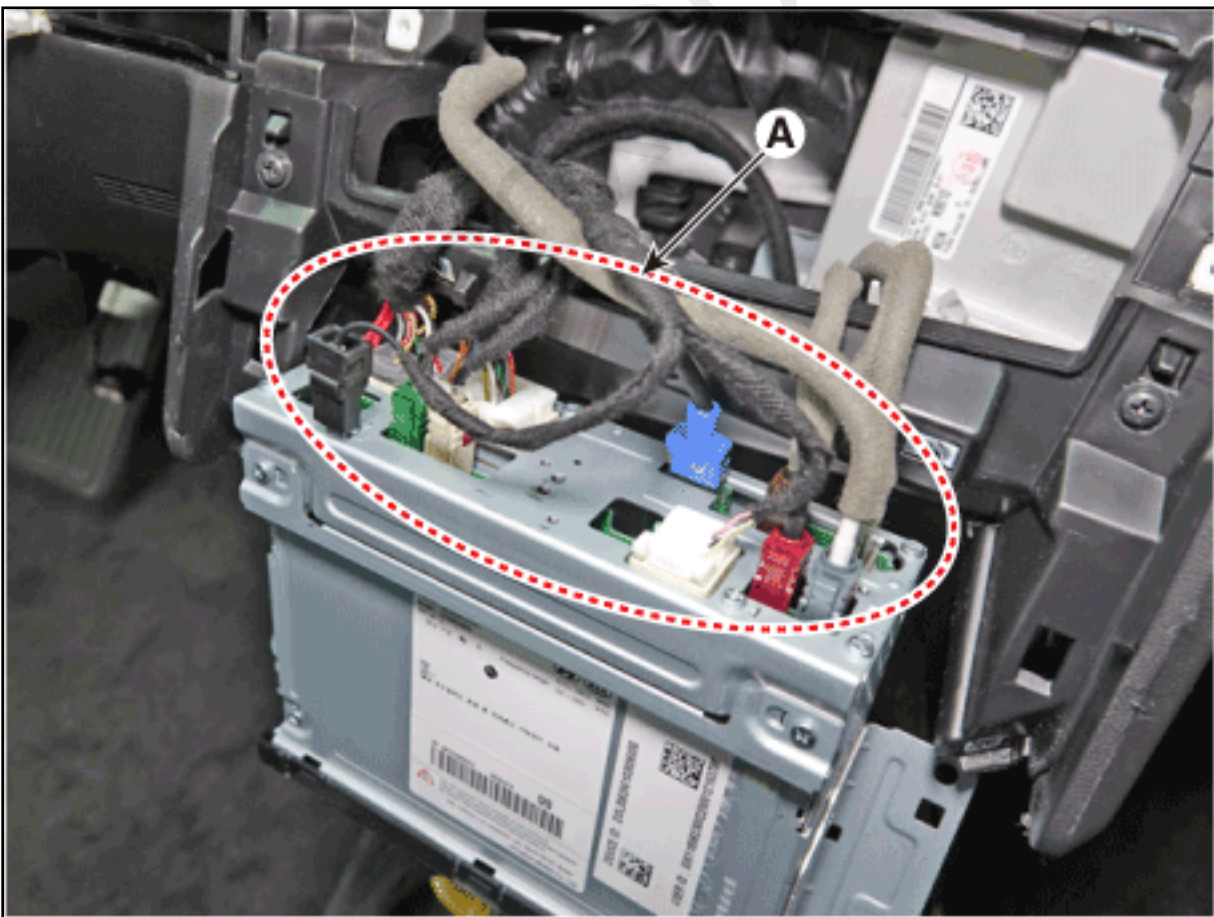
6. Remove the front monitor assembly (A) after disconnecting monitor connectors.



7. Remove the AVN head unit after loosening mounting screws.



8. Remove the AVN head unit after disconnect audio connectors (A).



Installation

1. Install AVN head unit connectors and antenna connectors.
2. Install the AVN head unit.
3. Install the front monitor assembly.
4. Install the front monitor side cover.
5. Install the front monitor lower cover.
6. Connect the negative (-) battery terminal.



- Make sure the connectors are connected properly.
- Check the AVN system for normal operation.

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Components



Connector Pin Information

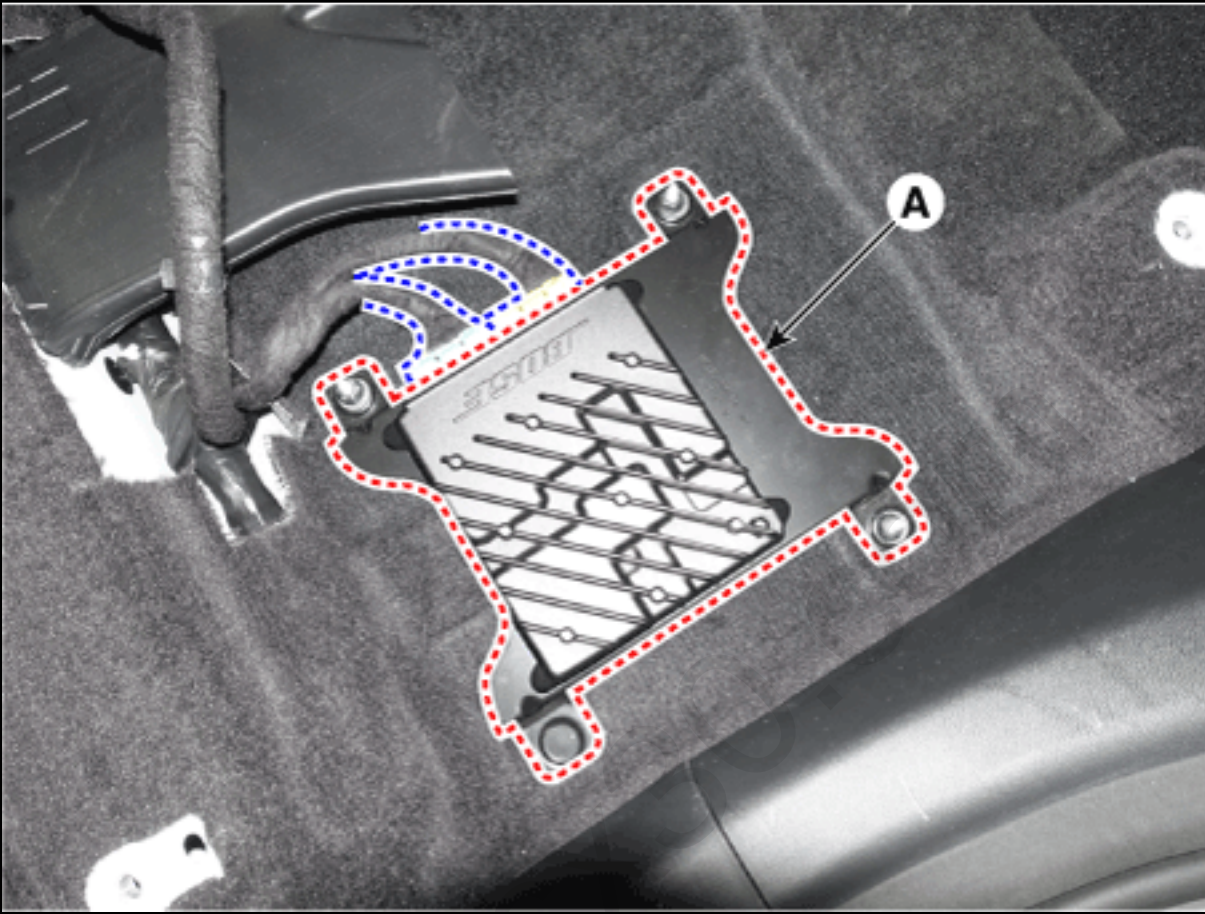
No	Connector A	Connector B
1	Battery (+)	Front right door tweeter speaker (+)
2	Battery (+)	Front left door tweeter speaker (+)
3	Battery (+)	Sub woofer speaker (+)
4	Battery (+)	-
5	-	-
6	-	-
7	-	Navigation voice (+)
8	ACC	-
9	-	-
10	M- CAN (High)	-
11	M- CAN (Low)	-
12	-	Rear right door speaker (+)
13	-	Rear left door speaker (+)
14	-	Front center speaker (+)
15	-	-
16	Ground	Front right door tweeter speaker (-)
17	Ground	Front left door tweeter speaker (-)
18	Ground	Sub woofer speaker (-)
19	Ground	-
20	SPDIF (High)	-
21	SPDIF (Low)	Navigation voice (-)
22	SPDIF (GND)	-
23	-	-
24	IGN 1	-

25	-	Rear right door speaker (-)
26	-	Rear left door speaker (-)
27	-	Front center speaker (-)
28		-

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Removal

1. Disconnect the negative (-) battery terminal.
2. Remove the passenger seat assembly.
(Refer to Body - "Front Seat Assembly")
3. Remove the external amplifier (A) after disconnecting connectors and loosening mounting bolts.



Installation

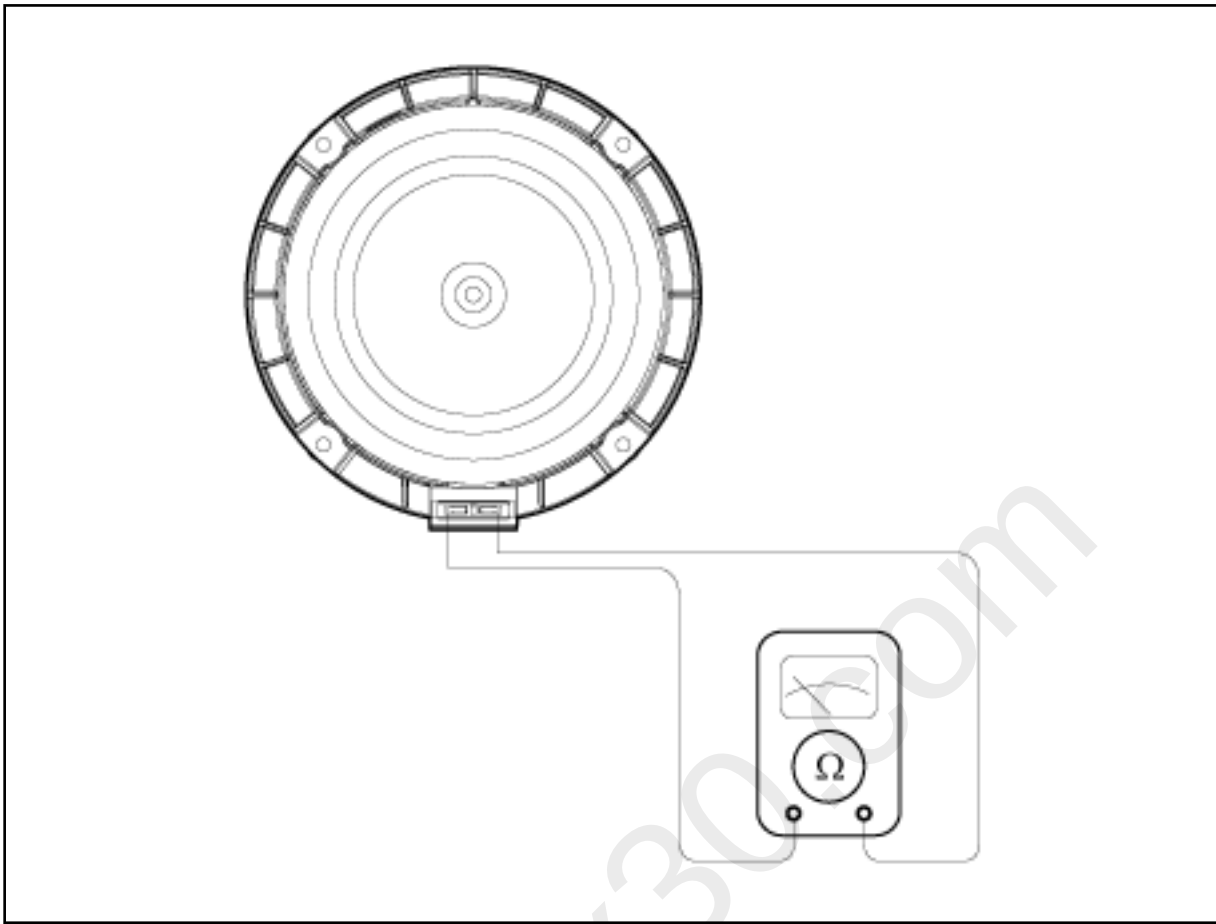
1. Install the external amplifier after connecting connectors.
2. Install the passenger seat assembly.
3. Connect the negative (-) battery terminal.



- Make sure the connector are connected in properly.
- Check the AVN system for normal operation.

Inspection

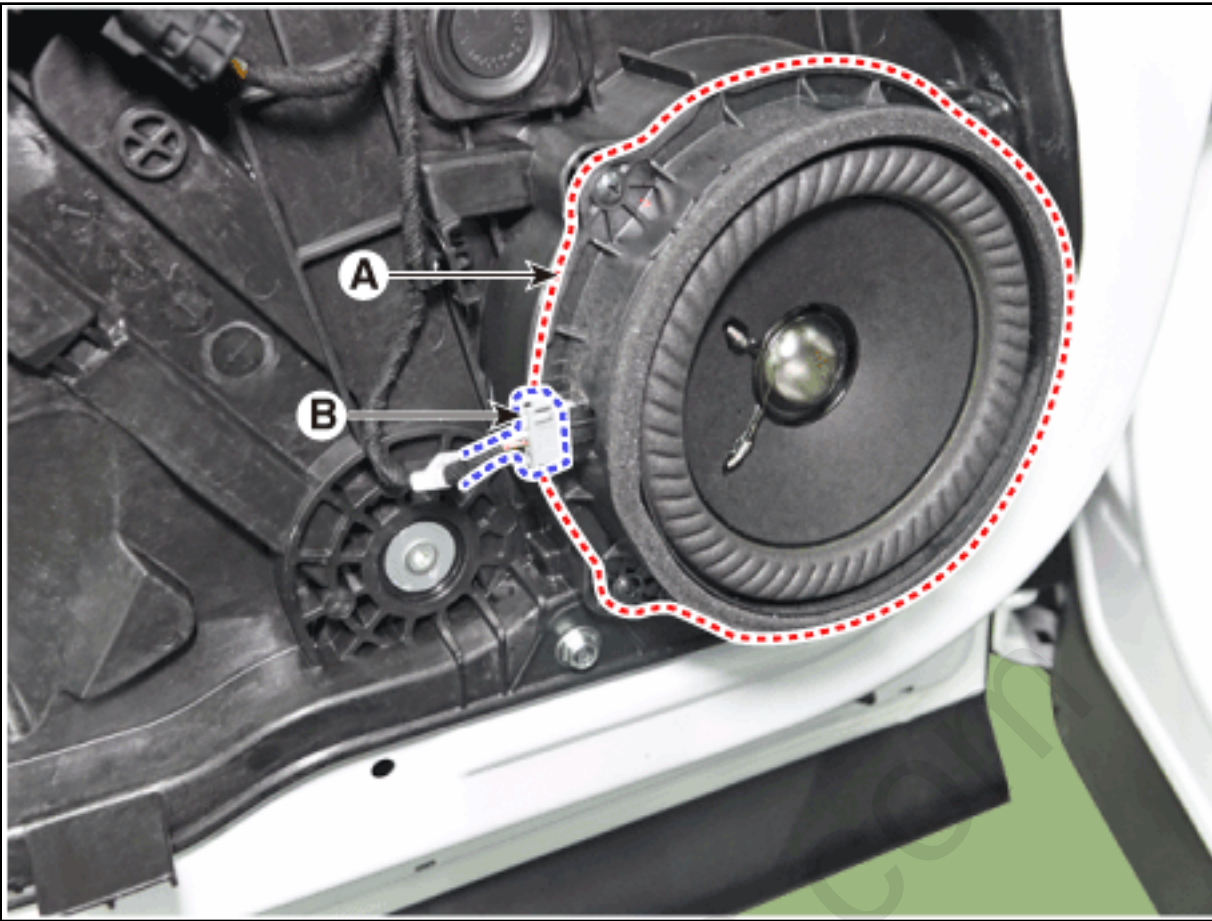
1. Check the plus (+) and negative (-) speaker terminals using an ohmmeter.
2. Check the supply power to the speaker and the resistance, then inspect the sound quality.



Removal

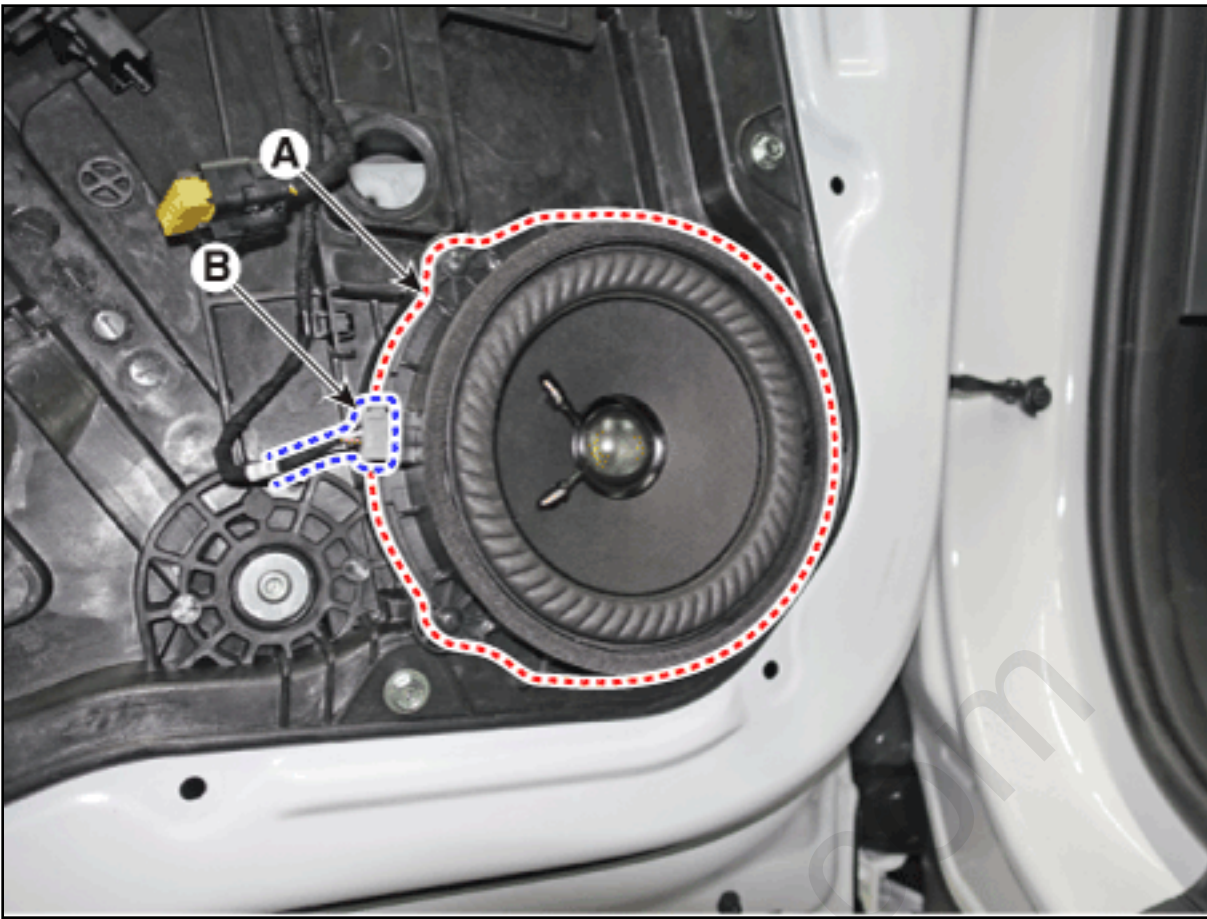
Front Door Speaker

1. Remove the front door trim.
(Refer to Body - "Front Door Trim")
2. Disconnecting the connector (B) and then remove the front speaker (A) after loosening screws.



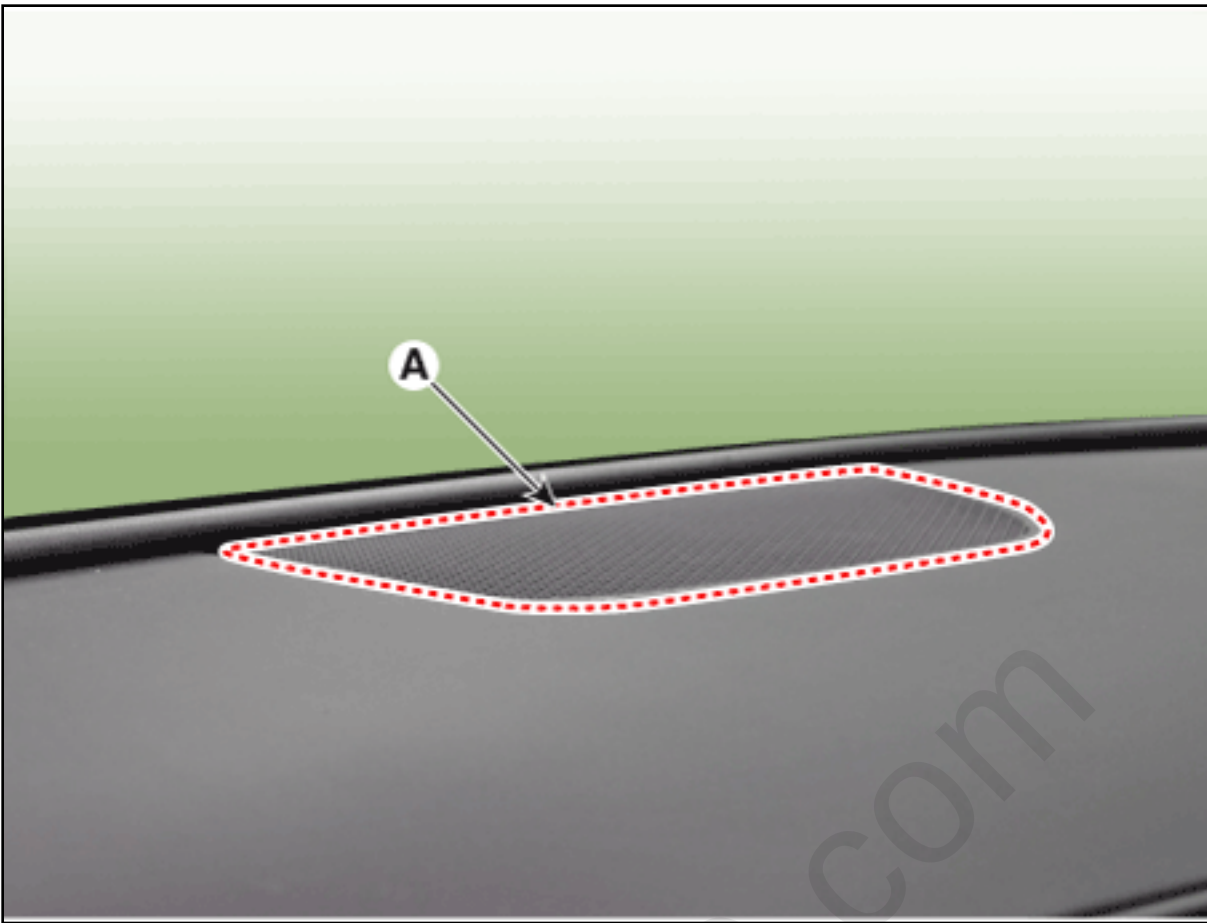
Rear Door Speaker

1. Remove the rear door trim.
(Refer to Body - "Rear Door Trim")
2. Disconnecting the connector (B) and then remove the rear speaker (A) after loosening screws.

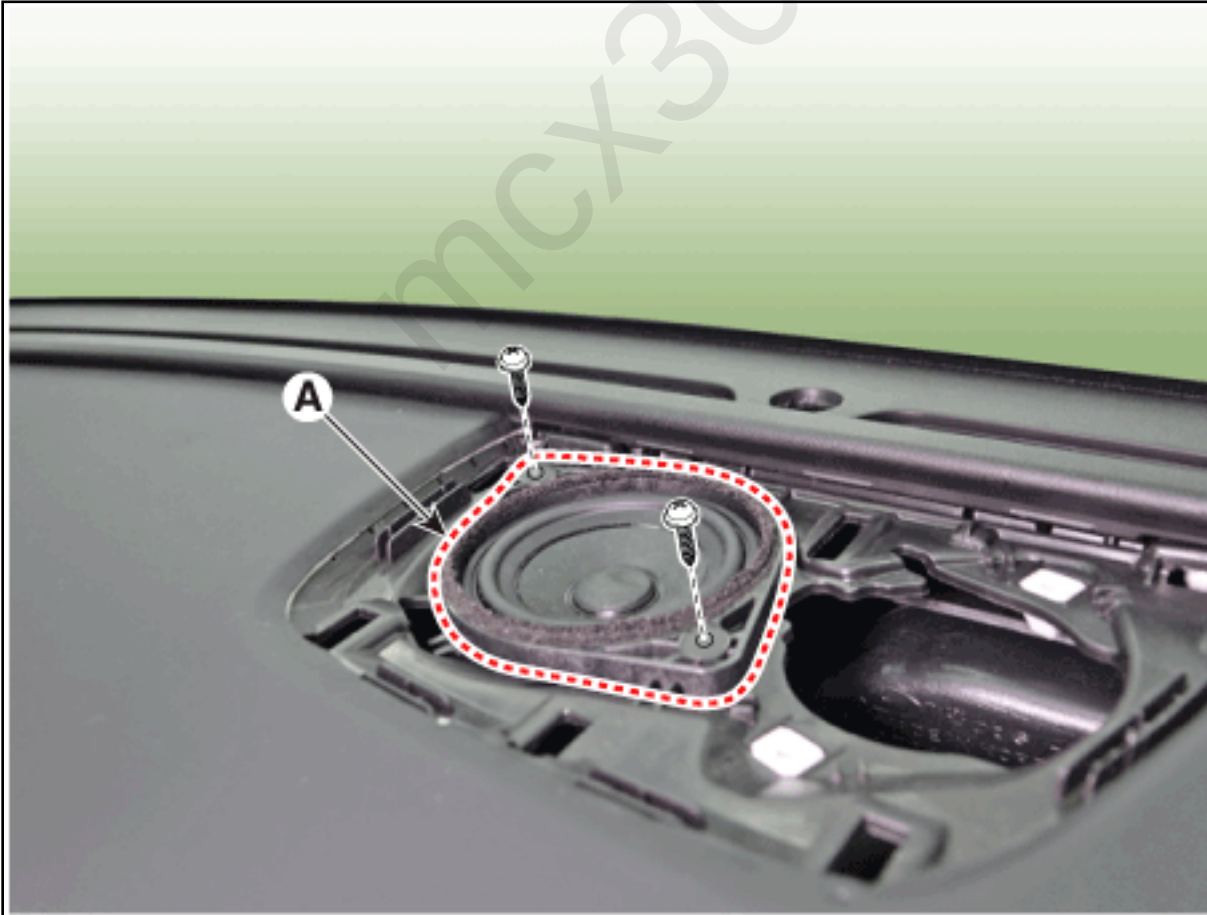


Front Center Speaker

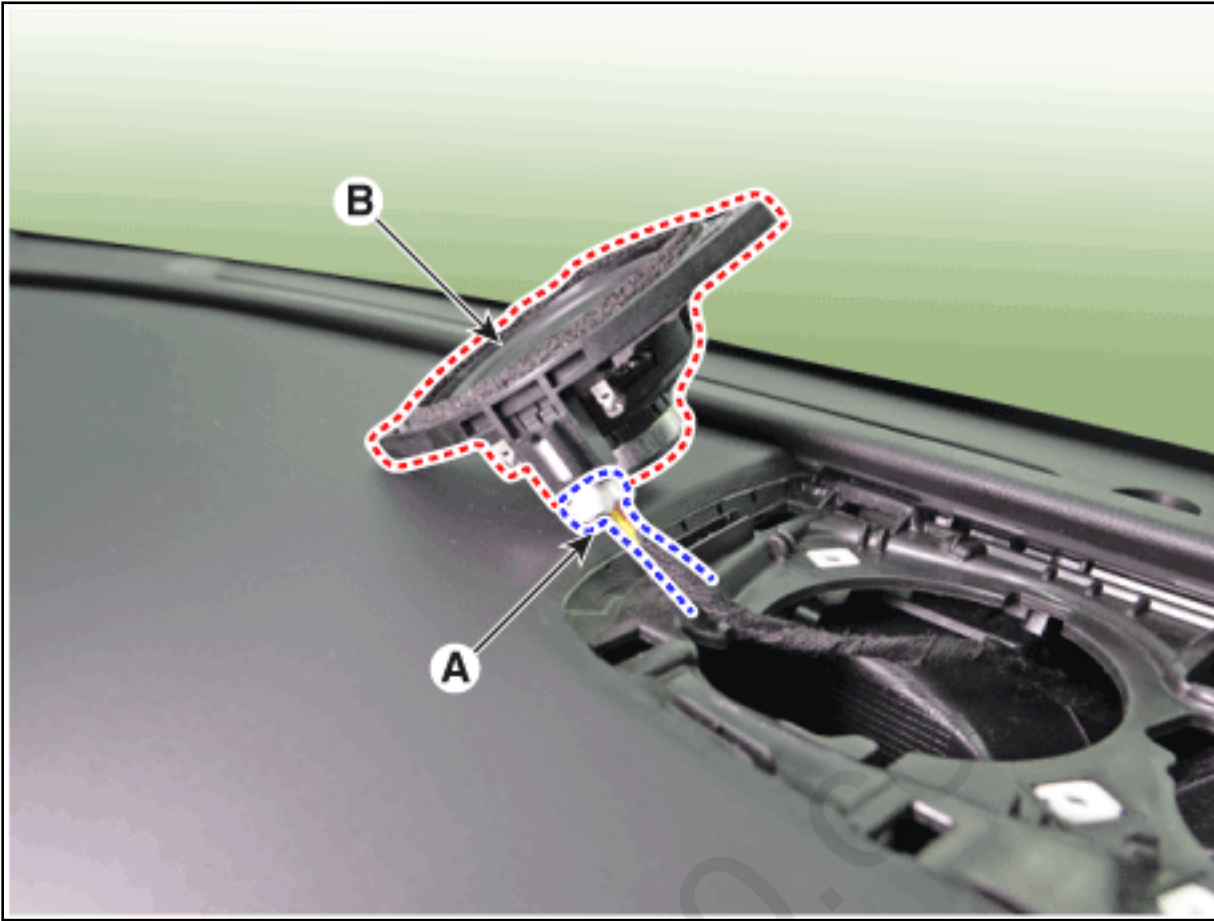
1. Using a screwdriver or remover, remove the front center speaker cover (A).



2. Remove the front center speaker (A) after loosening mounting screws.



3. Remove the front center speaker (B) after disconnecting speaker connector (A).



Tweeter Speaker

1. Using a screwdriver or remover, remove the front door quadrant inner cover (A).



2. Remove the tweeter speaker connector (A).



3. Remove the tweeter speaker (A) after loosening mounting screws.

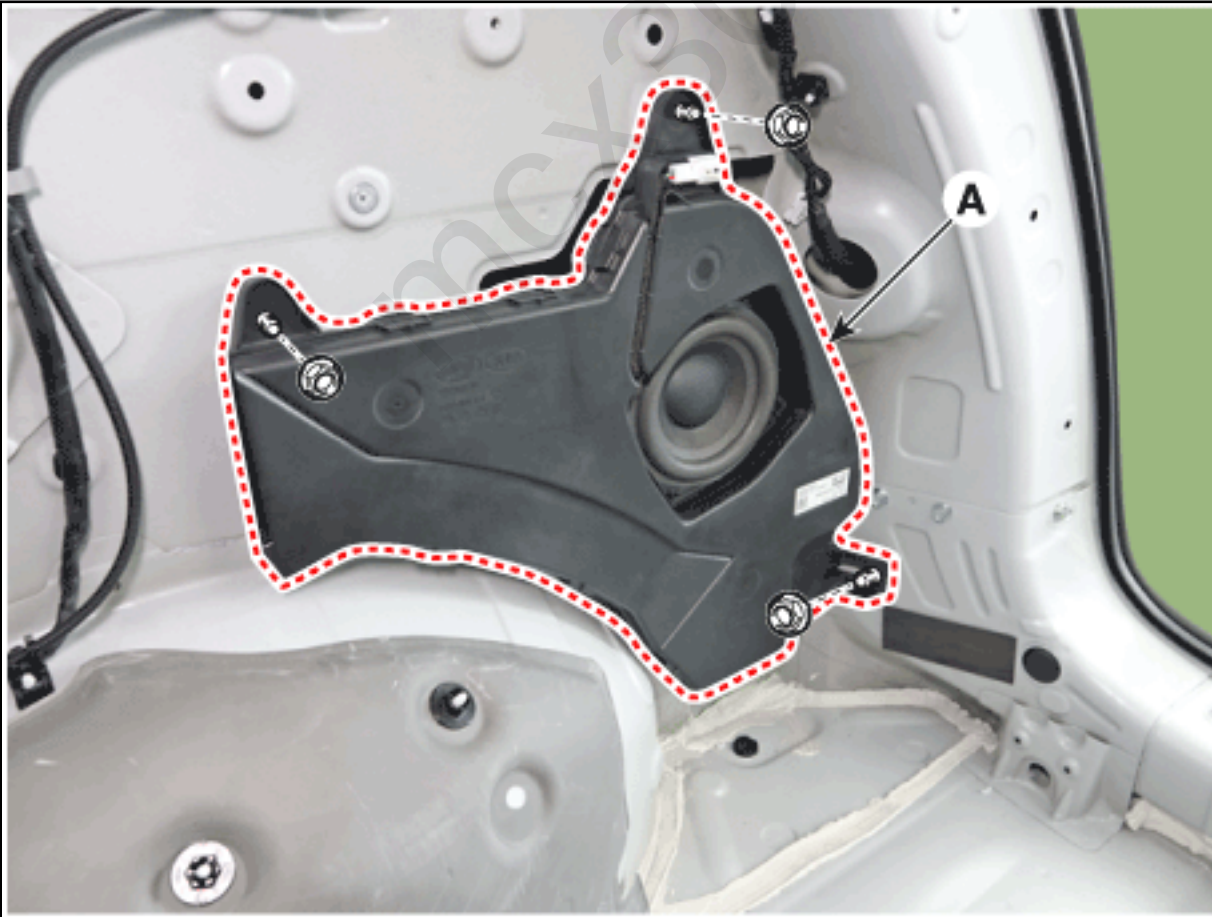


Sub Woofer Speaker

1. Remove the luggage side trim RH.
(Refer to Body - "Luggage Side Trim")
2. Disconnect the sub woofer speaker connector (A).



3. Remove the sub woofer speaker (A) after loosening mounting nuts.



Installation

Front Door Speaker

1. Install the front speaker.
2. Install the front door trim.

Rear Door Speaker

1. Install the rear speaker.
2. Install the rear door trim.

Front Center Speaker

1. Install the front center speaker after connecting the speaker connenctor.
2. Install the center speaker cover.

Tweeter Speaker

1. Install the tweeter speaker.
2. Install the front door quadrant inner cover.

Sub Woofer Speaker

1. Install the sub woofer speaker and then connect the speaker connector.
2. Install the luggage side trim RH.



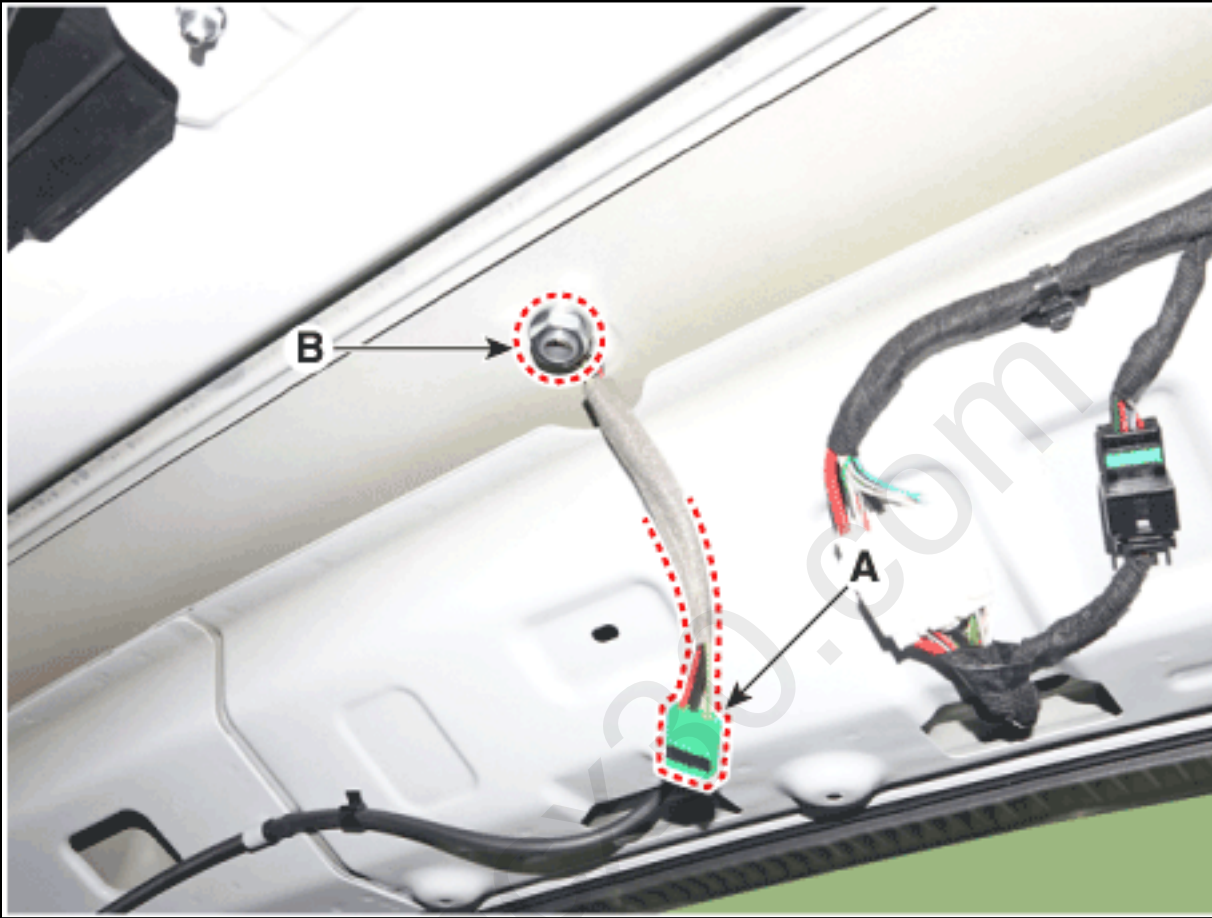
- Make sure the connector are connected in properly.
- Check the AVN system for normal operation.

Removal

1. Disconnect the negative (-) battery terminal.
2. Remove the roof trim.

(Refer to Body - "Roof Trim Assembly")

3. Disconnect the antenna connector (A) and then remove the roof antenna after loosening mounting nut (B).



Installation

1. Install the roof antenna and then connecting the antenna connector.
2. Install the rear roof trim.
3. Connect the negative (-) battery terminal.



- Make sure that the cables and connectors are plugged in properly.
- Check the AVN system for normal operation.

Description

The USB jack on the console tray assembly is for customers who like to listen to external portable music players like the MP3, earphone, USB memory stick through the vehicle's sound system when it is linked to this jack. If sound distortion occurs it may be due to a mismatch of specifications between units.



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Circuit
Diagram



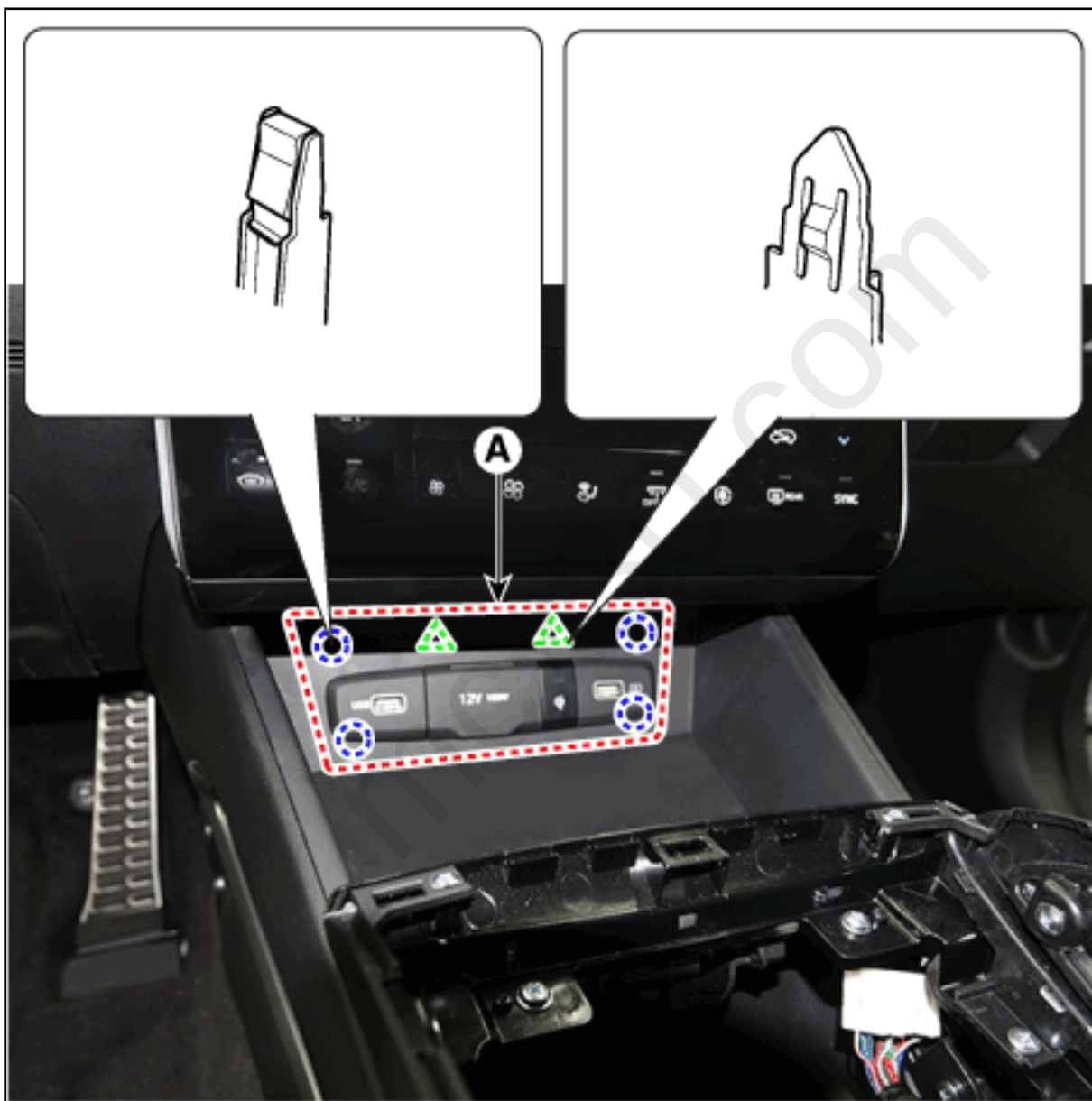
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Removal



- When removing with a flat-tip screwdriver or remover, wrap protective tape around the tools to prevent damage to components.
- Put on gloves to prevent hand injuries.

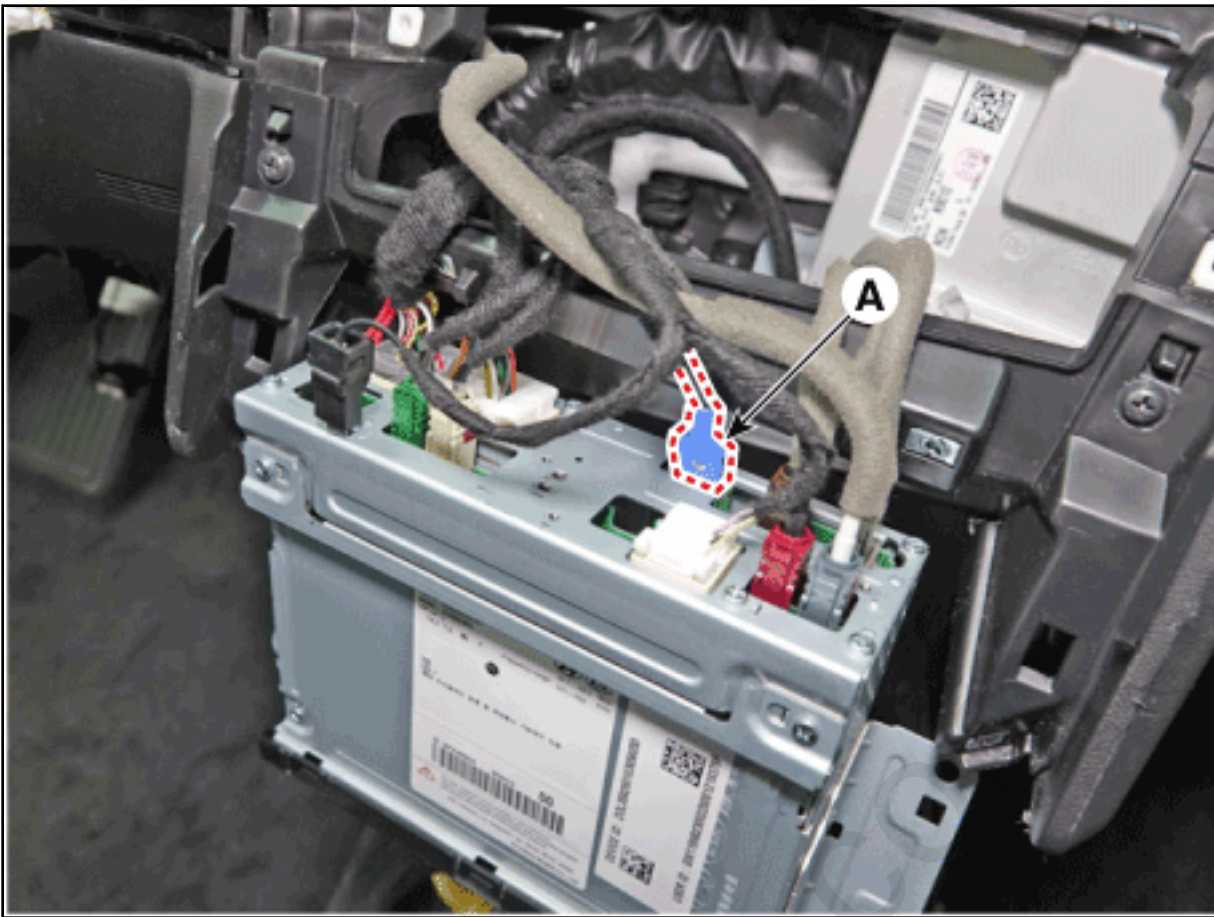
1. Disconnect the negative (-) battery terminal.
2. Using a screwdriver or remover, remove the floor console trya assembly (A).



3. Remove the USB (A) by pulling the fixed clip in the direction of the arrow as lillustration below.



4. Remove the AVN head unit.
(Refer to AVN System - "AVN Head Unit")
5. Disconnect the connector (A) and then remove the AVN head unit.



Installation

1. Install the USB.
2. Install the floor console tray assembly.
3. Connect the negative (-) battery connector.



- Make sure the connector are connected in properly.
- Check the AVN system for normal operation.

Components



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Removal

1. Disconnect the negative (-) battery terminal.
2. Remove the front monitor lower cover (A).

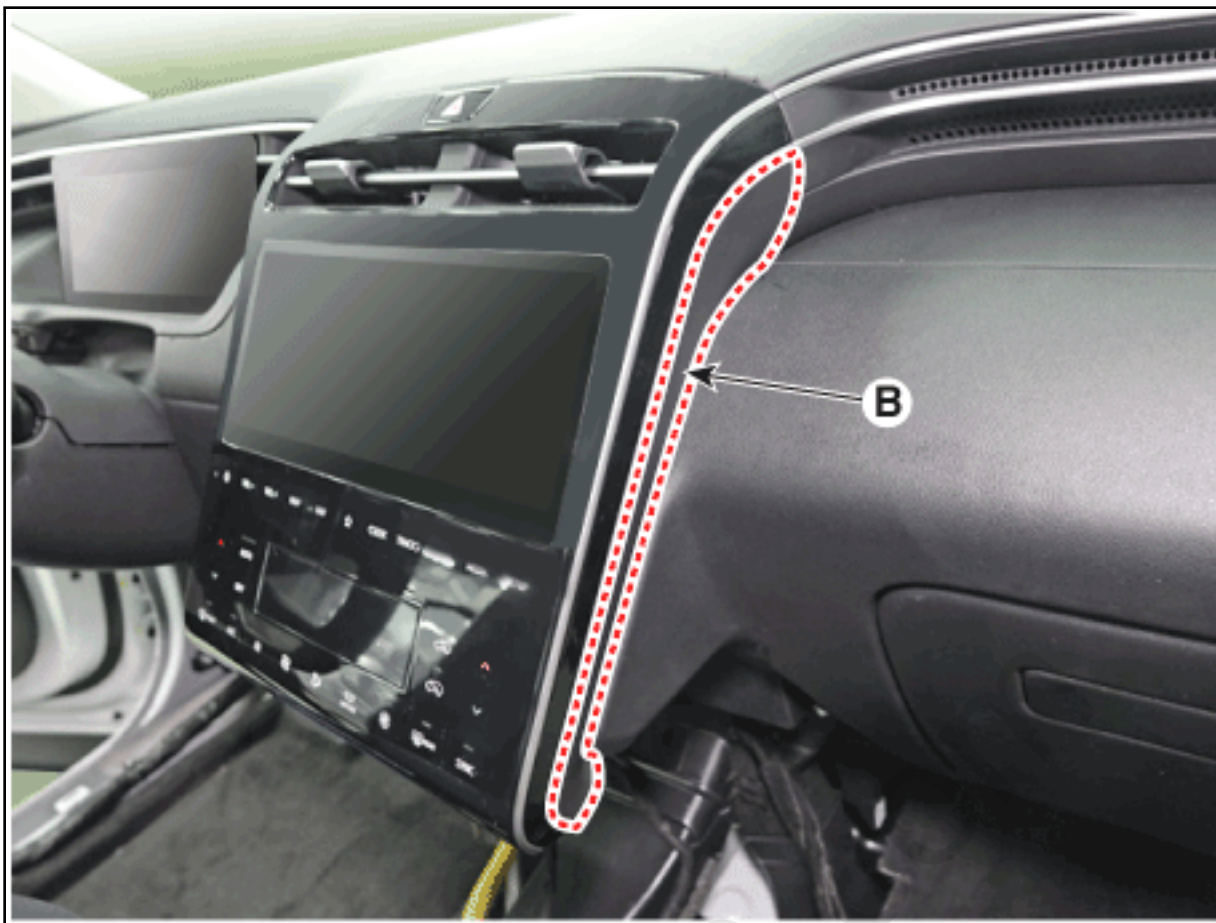


3. Remove the front monitor lower cover after disconnecting the mood lamp connector (A).



4. Remove front monitor side cover (A) and (B).

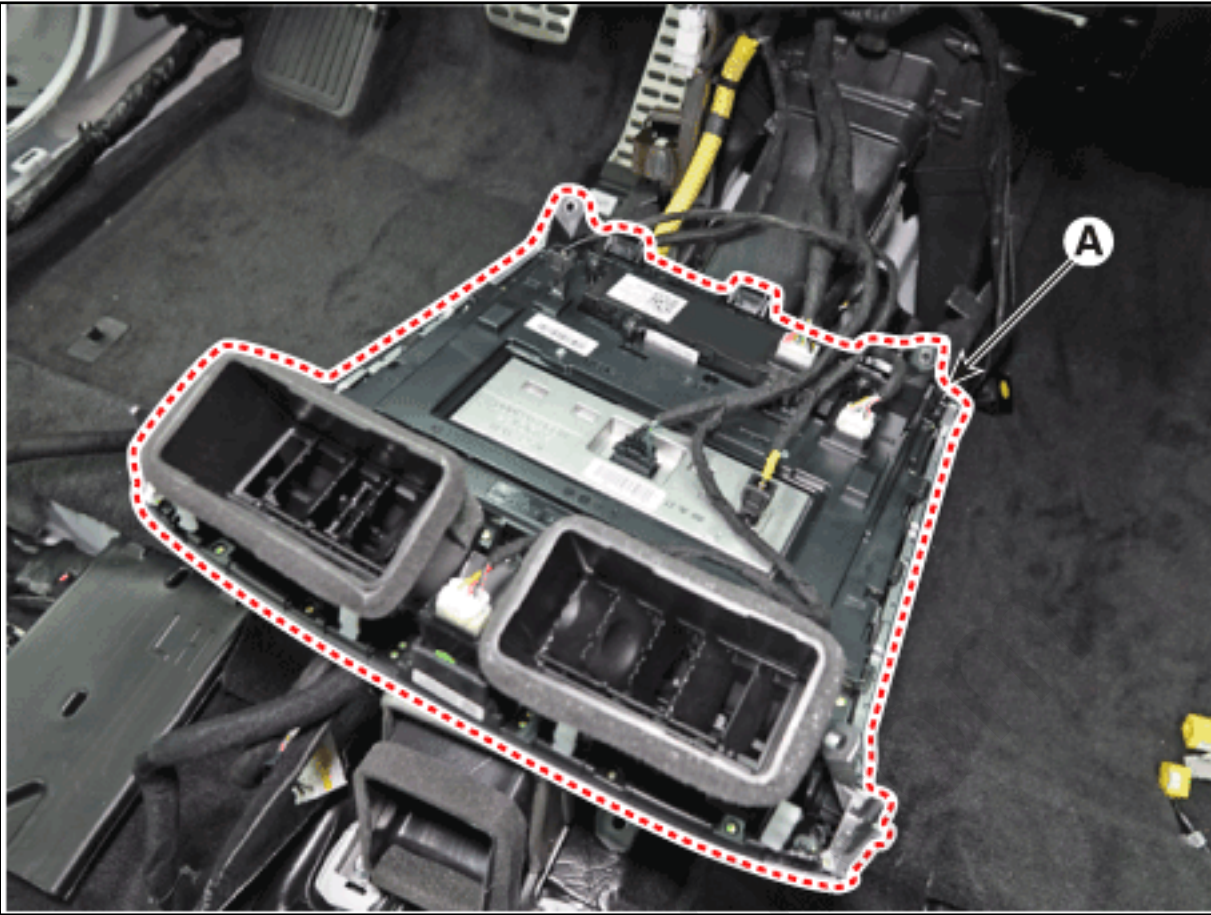




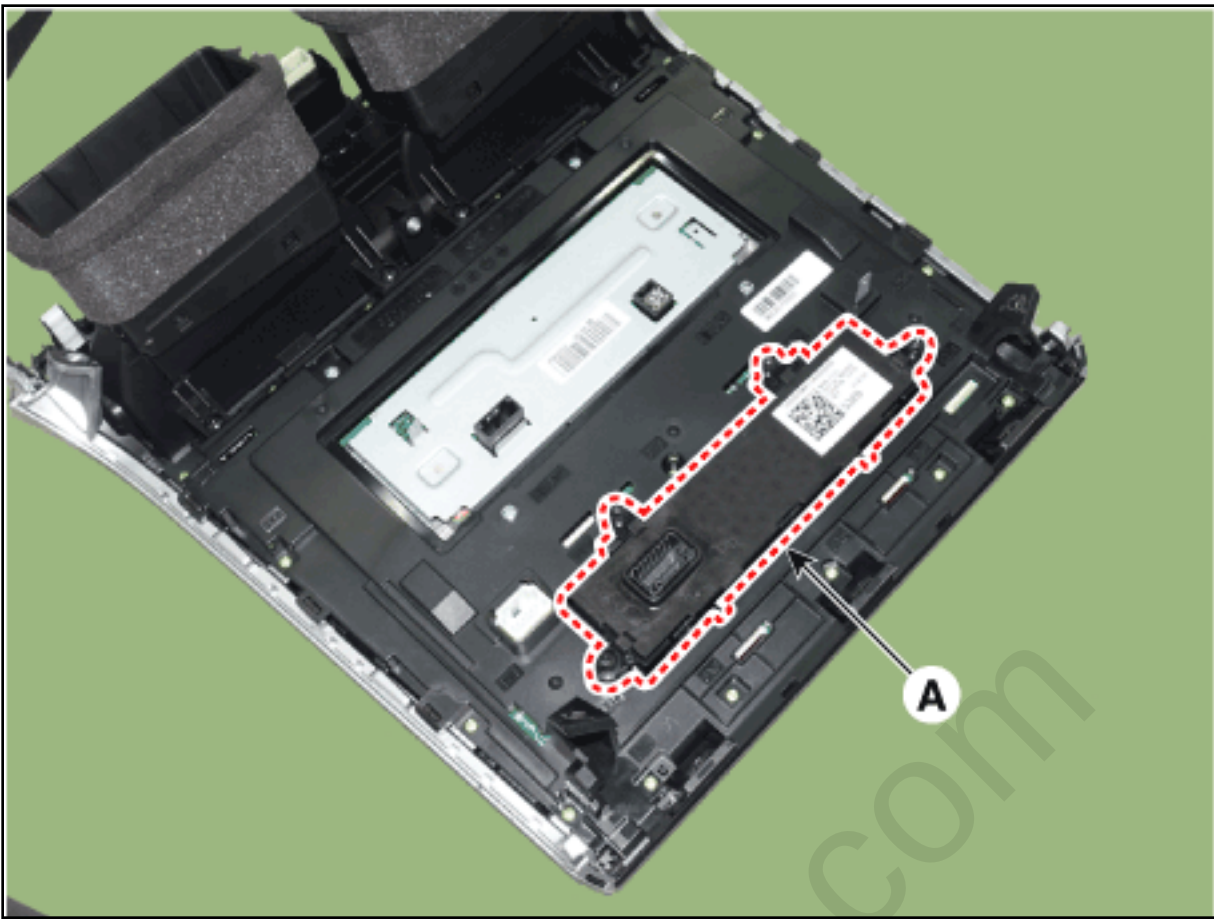
5. Remove the front monitor assembly (A).



6. Remove the front monitor assembly (A) after disconnecting monitor connectors.



7. Remove the AVN keyboard assembly (A) after loosening mounting screws.



Installation

1. Install the AVN keyboard assembly.
2. Install the front monitor assembly.
3. Install the front monitor side cover.
4. Install the front monitor lower cover.
5. Connect the negative (-) battery terminal.



- Make sure that the cables and connectors are plugged in properly.
- Check the AVN system for normal operation.

Removal

1. Disconnect the negative (-) battery terminal.
2. Remove the front monitor lower cover (A).

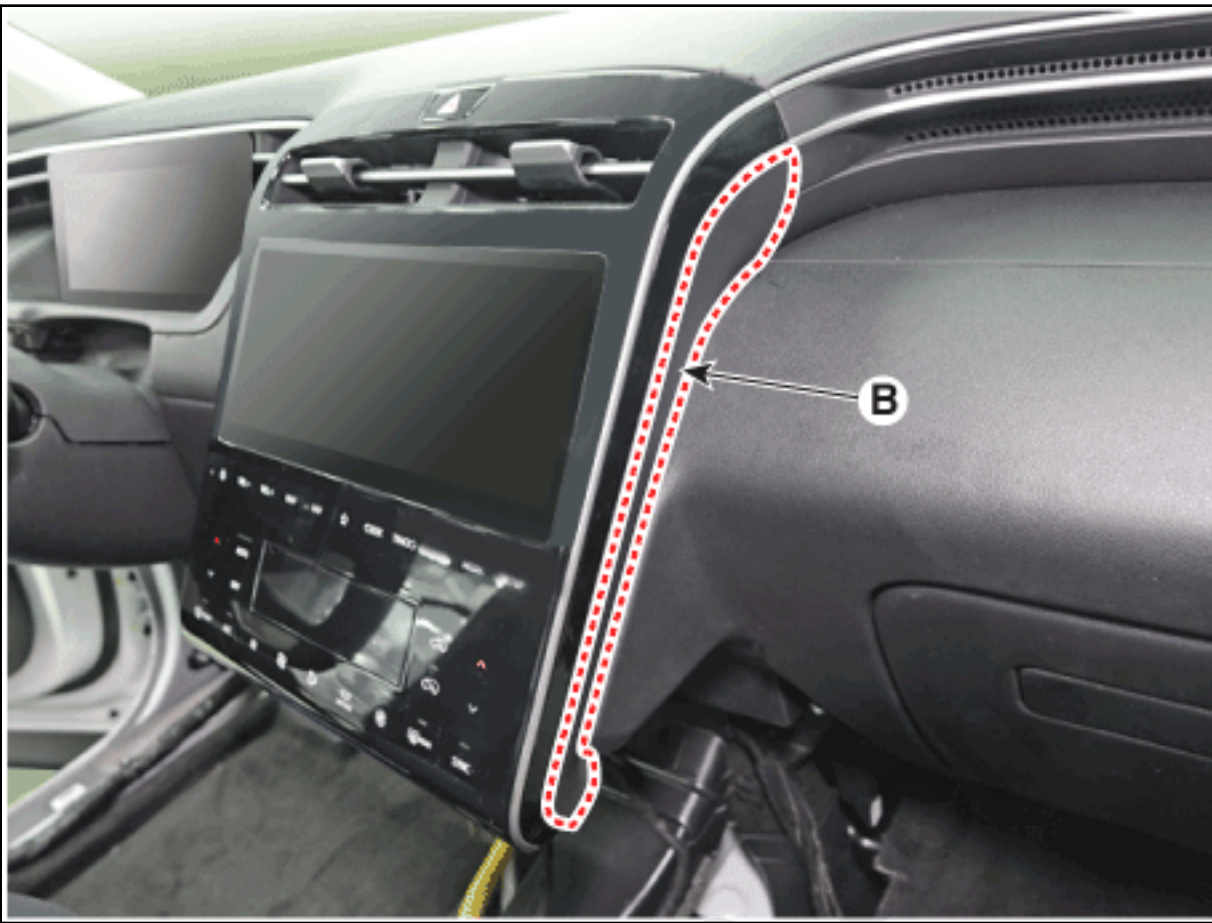


3. Remove the front monitor lower cover after disconnecting the mood lamp connector (A).



4. Remove front monitor side cover (A) and (B).

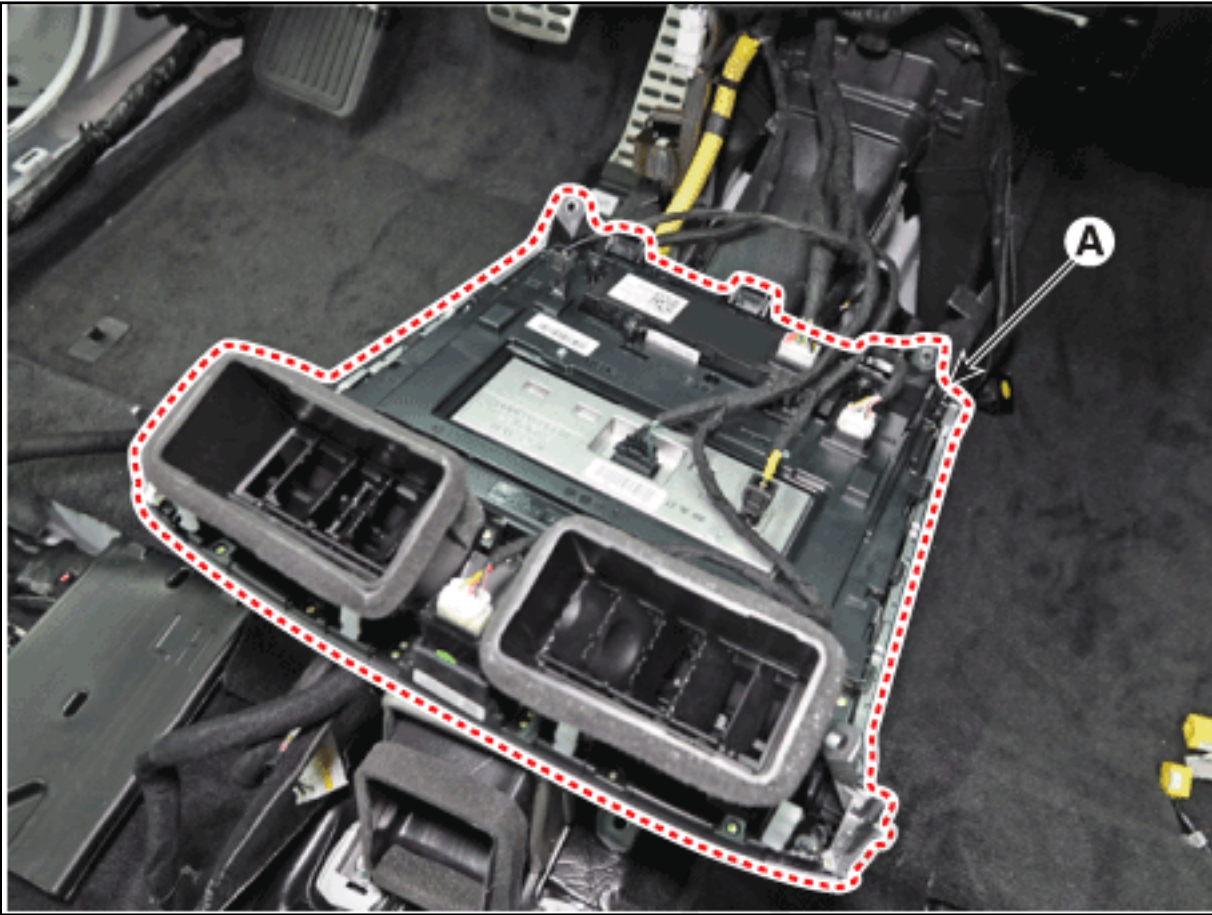




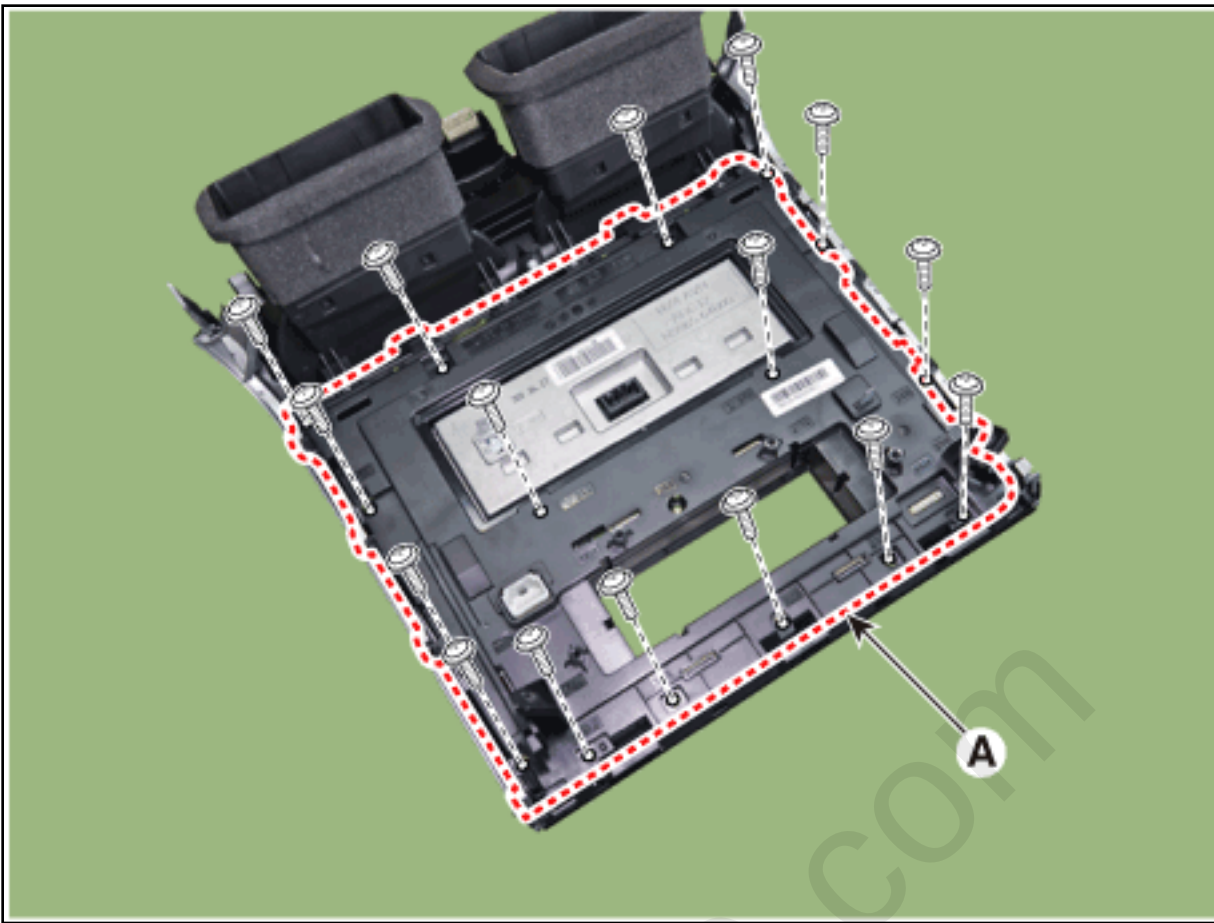
5. Remove the front monitor assembly (A).



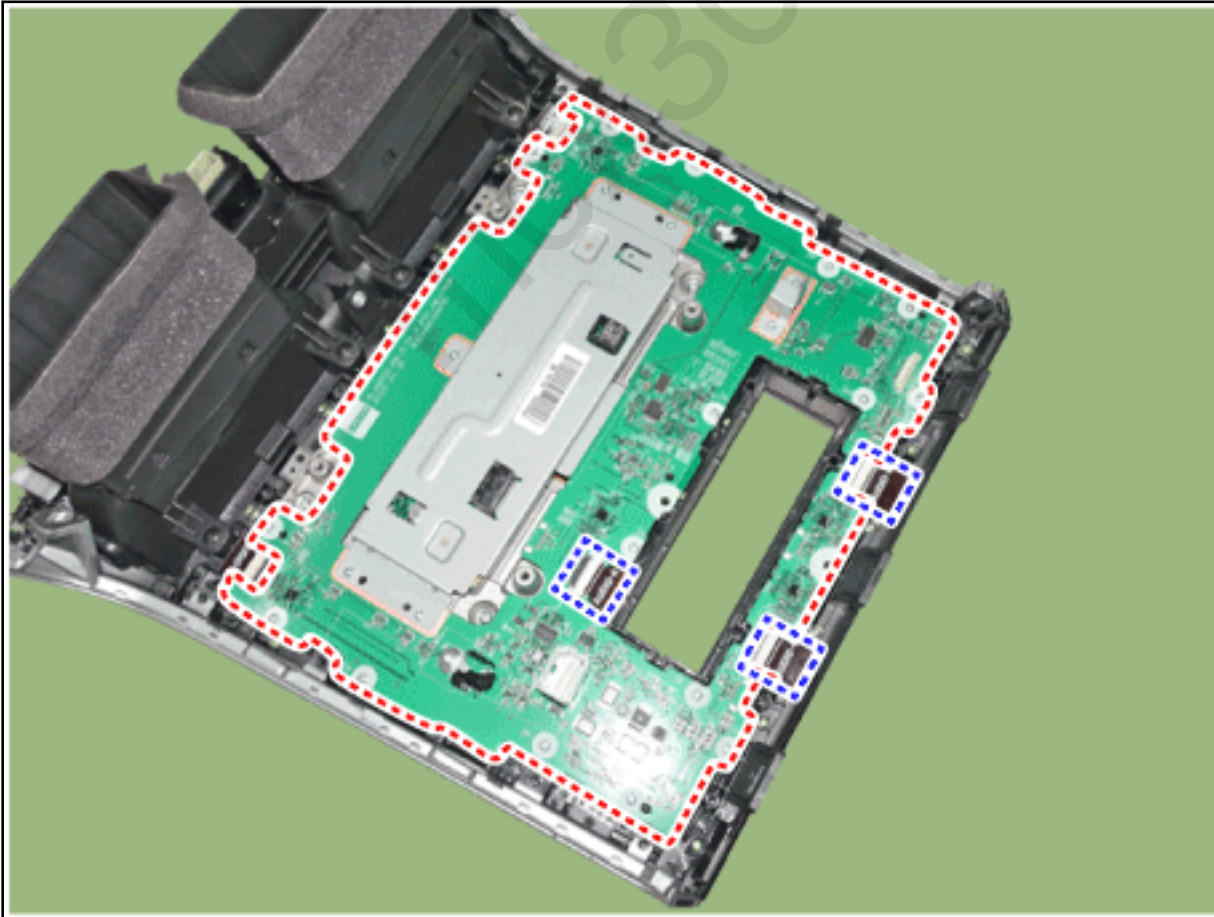
6. Remove the front monitor assembly (A) after disconnecting monitor connectors.



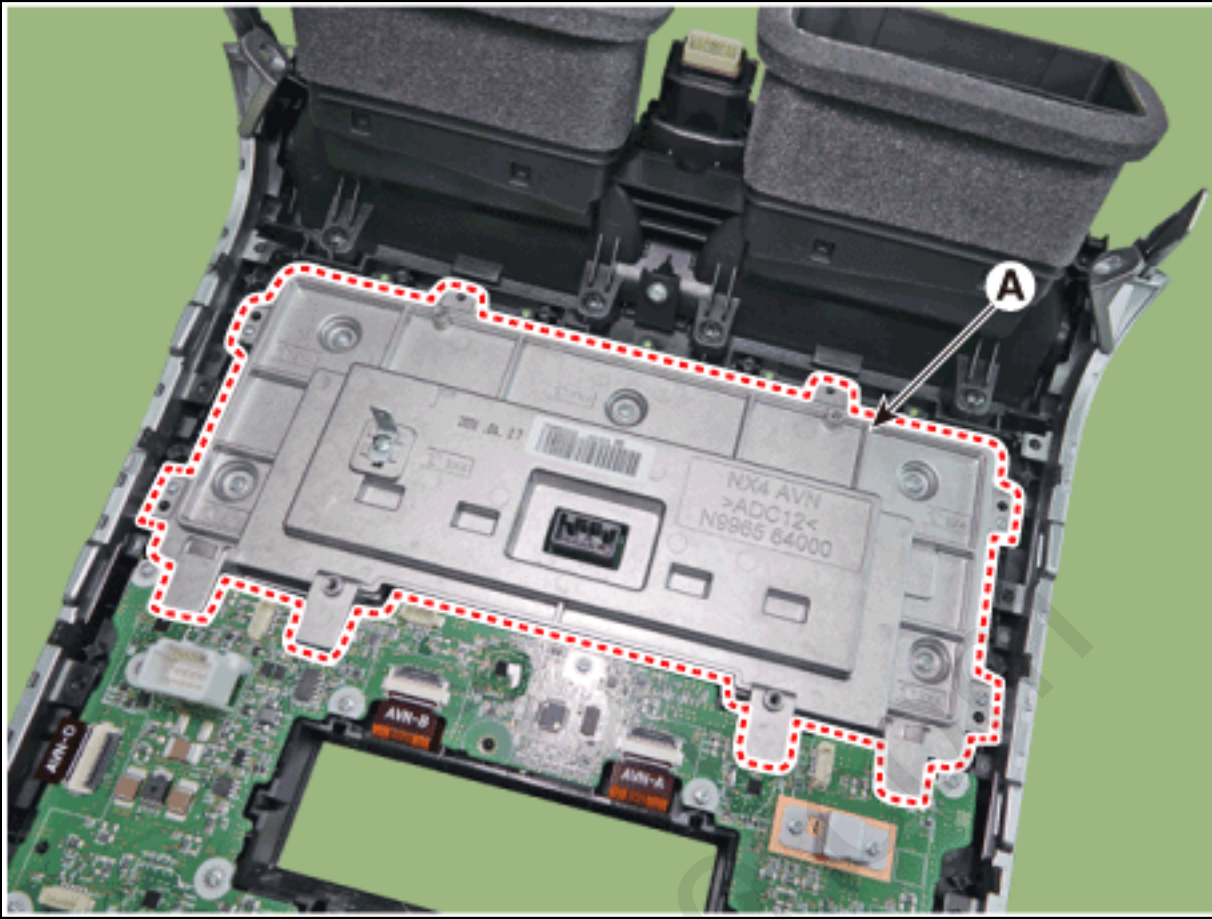
7. Remove the front monitor cover (A) after loosening mounting screws.



8. Remove the front monitor cover after loosening mounting screws.



9. Loosen the mounting screws and remove the front monitor (A).



Installation

1. Install the front monitor.
2. Install the front monitor cover.
3. Install the front monitor assembly.
4. Install the front monitor side cover.
5. Install the front monitor lower cover.
6. Connect the negative (-) battery terminal.



- Make sure that the cables and connectors are plugged in properly.
- Check the AVN system for normal operation.

Components

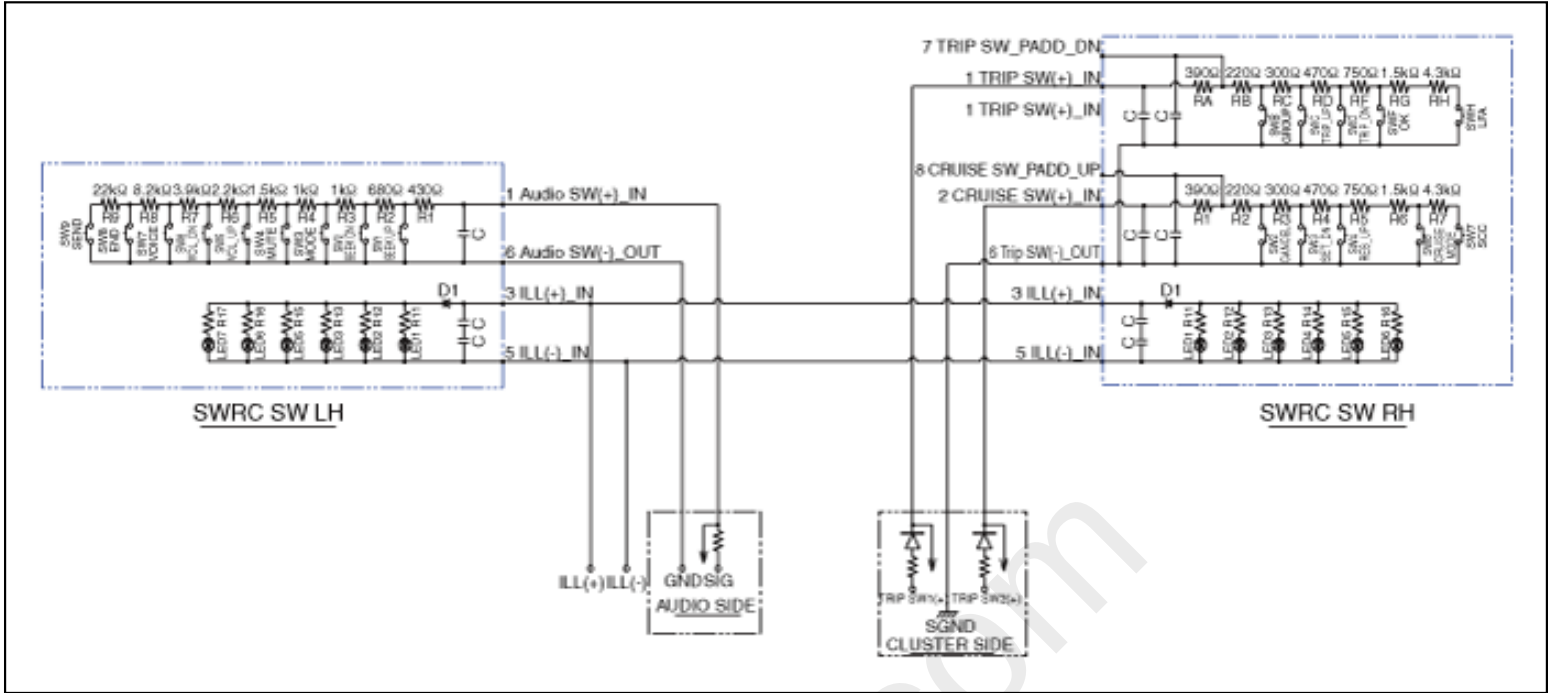


1. Left Remote Control Switch (Audio)

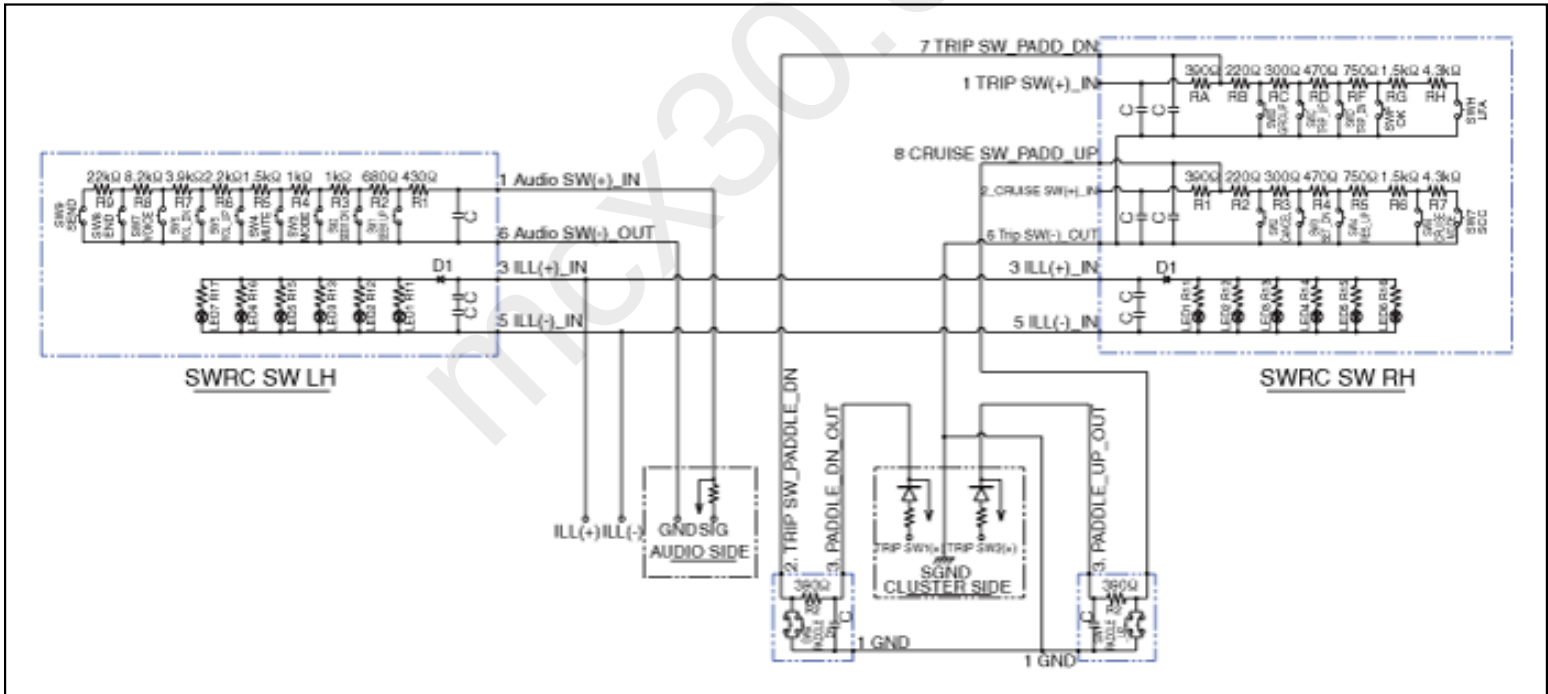
2. Right Remote Control Switch (Cruise)

Circuit
Diagram

Audio+Bluetooth+Voice+TRIP+SCC+MSLA+LFA



Audio+Bluetooth+Voice+TRIP+SCC+MSLA+LFA+Paddle Shift



Audio+Bluetooth



Audio+Bluetooth+Voice



Trip+CC+MSLA+LFA



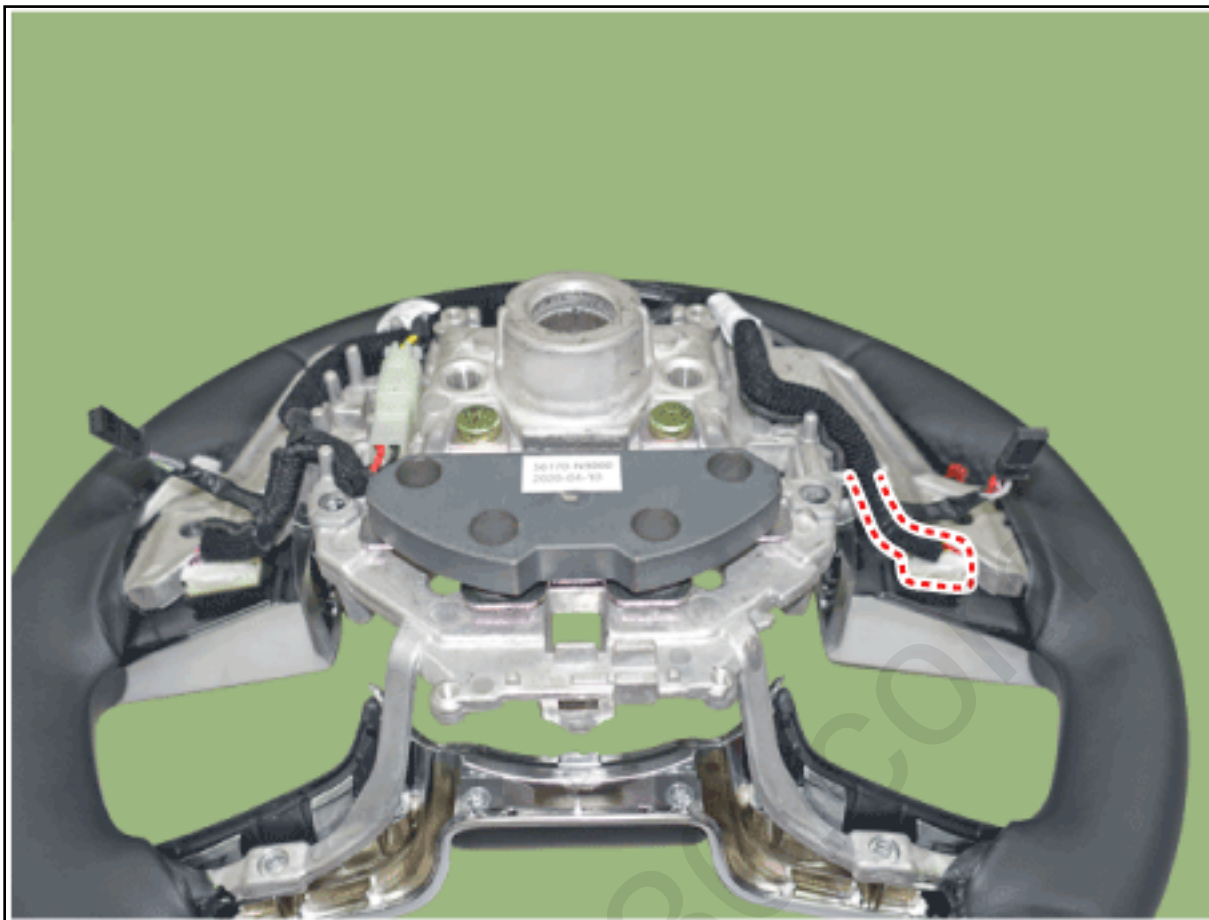
Trip+SCC+MSLA+LFA



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Inspection

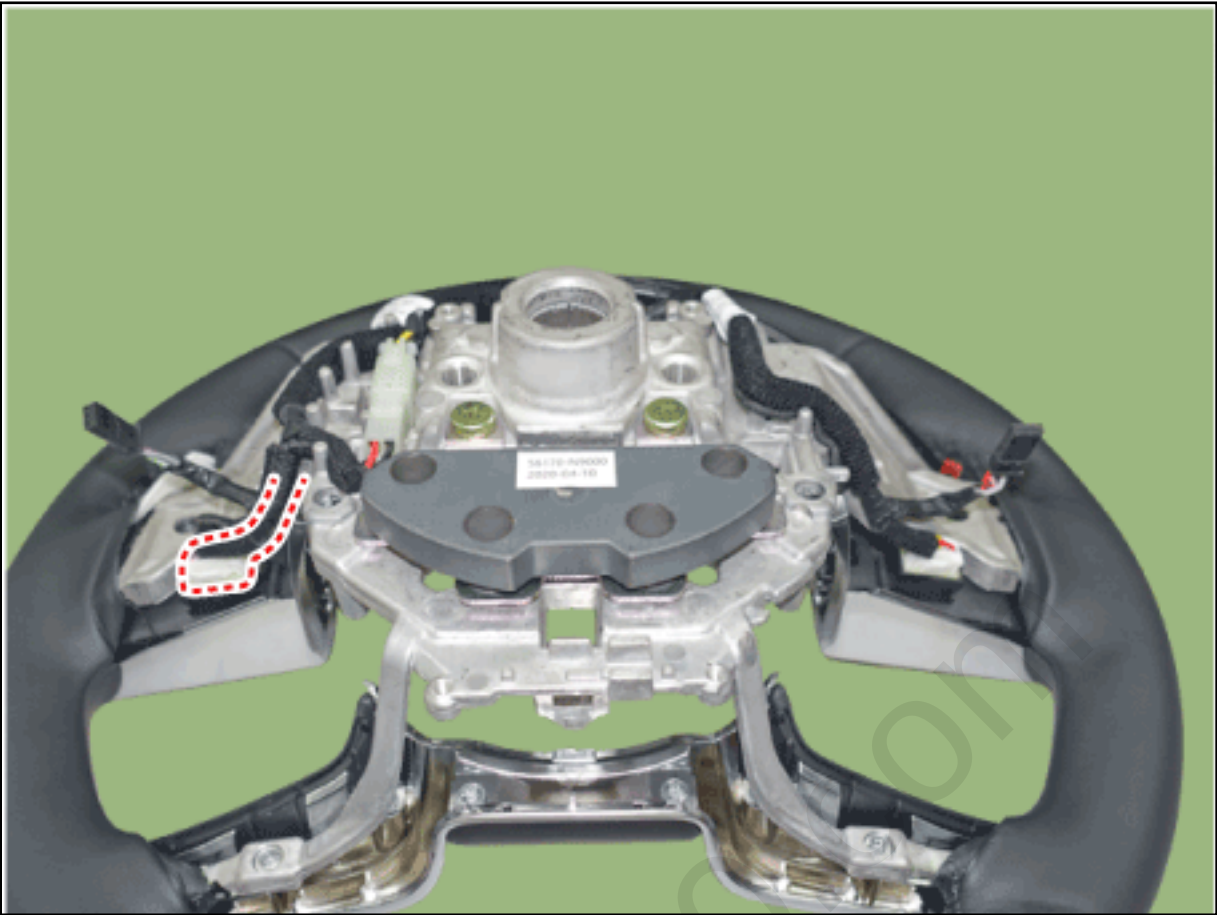
1. Check for resistance between terminals in left switch position.



[Audio/Voice]

Switch	Connector terminal	Resistance ($\pm 3\%$)
SEEK Up	1 ~ 6	430 Ω
SEEK Down	1 ~ 6	1.1 k Ω
MODE	1 ~ 6	2.11 k Ω
MUTE	1 ~ 6	3.11 k Ω
Volume (+)	1 ~ 6	4.61 k Ω
Volume (-)	1 ~ 6	6.81 k Ω
Voice	1 ~ 6	10.71 k Ω
END	1 ~ 6	18.91 k Ω
SEND	1 ~ 6	40.91 k Ω
Paddle shift (Up)	1 ~ 8	390 Ω

2. Check for resistance between terminals in right switch position.



[Trip/Cruise]

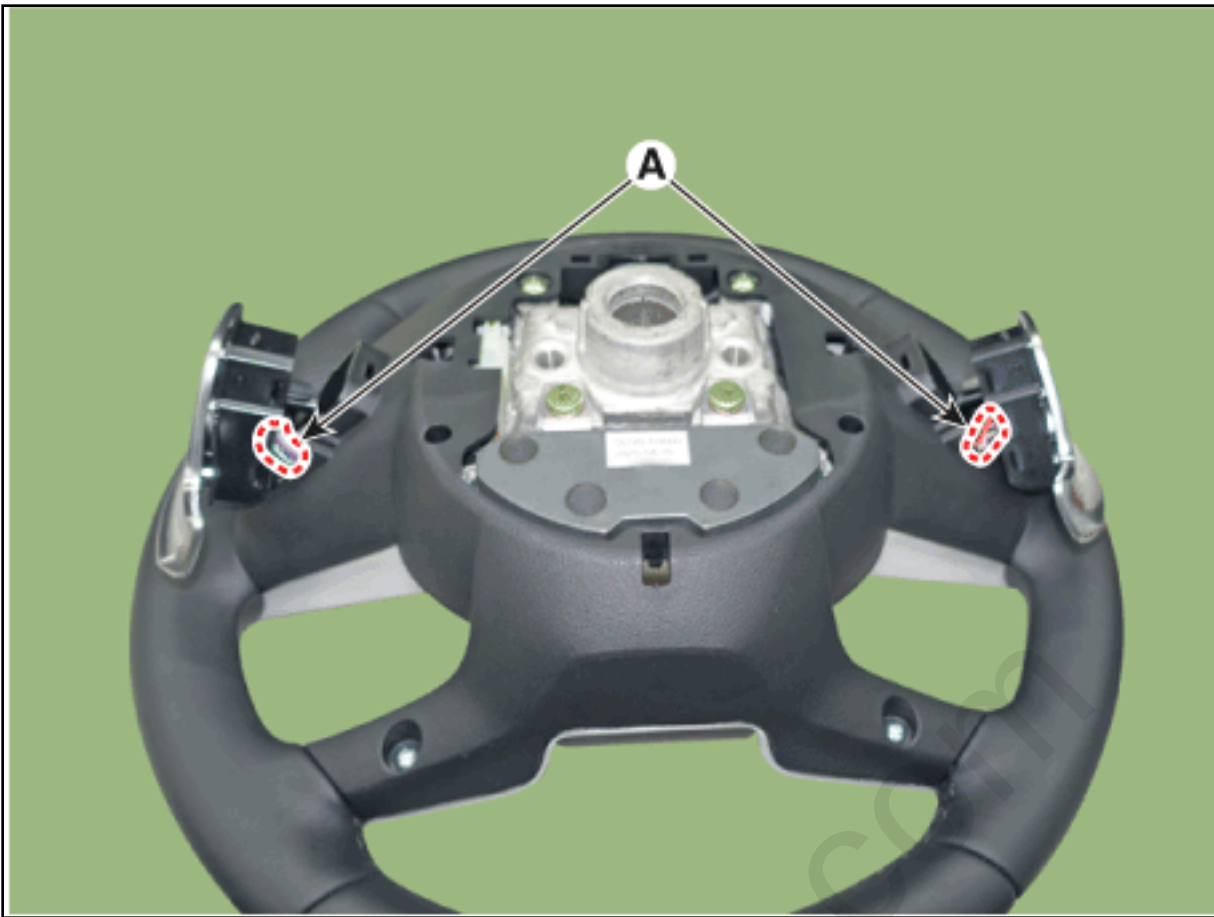
Switch	Connector terminal	Resistance (± 3%)
CANCEL	2 ~ 6	610 Ω
SET (-)	2 ~ 6	910 Ω
RES (+)	2 ~ 6	1.38 kΩ
Cruise ON/OFF	2 ~ 6	2.13 kΩ
Cruise & MSLA ON/OFF	2 ~ 6	3.63 kΩ
Smart Cruise	2 ~ 6	7.93 kΩ
Paddle shift (Down)	1 ~ 7	390 Ω
Trip Group	1 ~ 6	610 Ω
Trip Up	1 ~ 6	910 kΩ
Trip Down	1 ~ 6	1.38 kΩ
Trip OK	1 ~ 6	2.13 kΩ

Removal

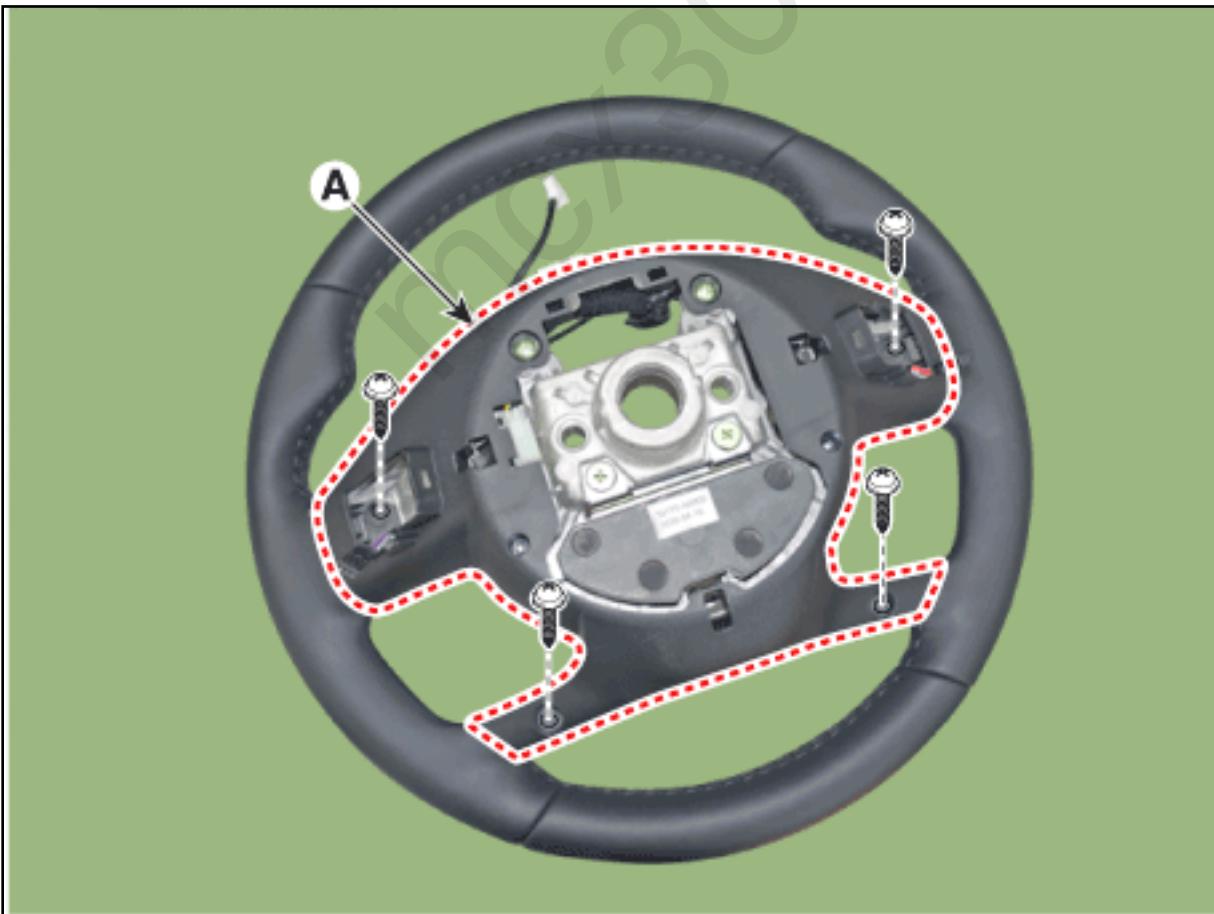
1. Disconnect the negative (-) battery terminal.
2. Remove the steering wheel.
(Refer to Steering System - "Steering Wheel")
3. Remove the paddle shift lever (A).



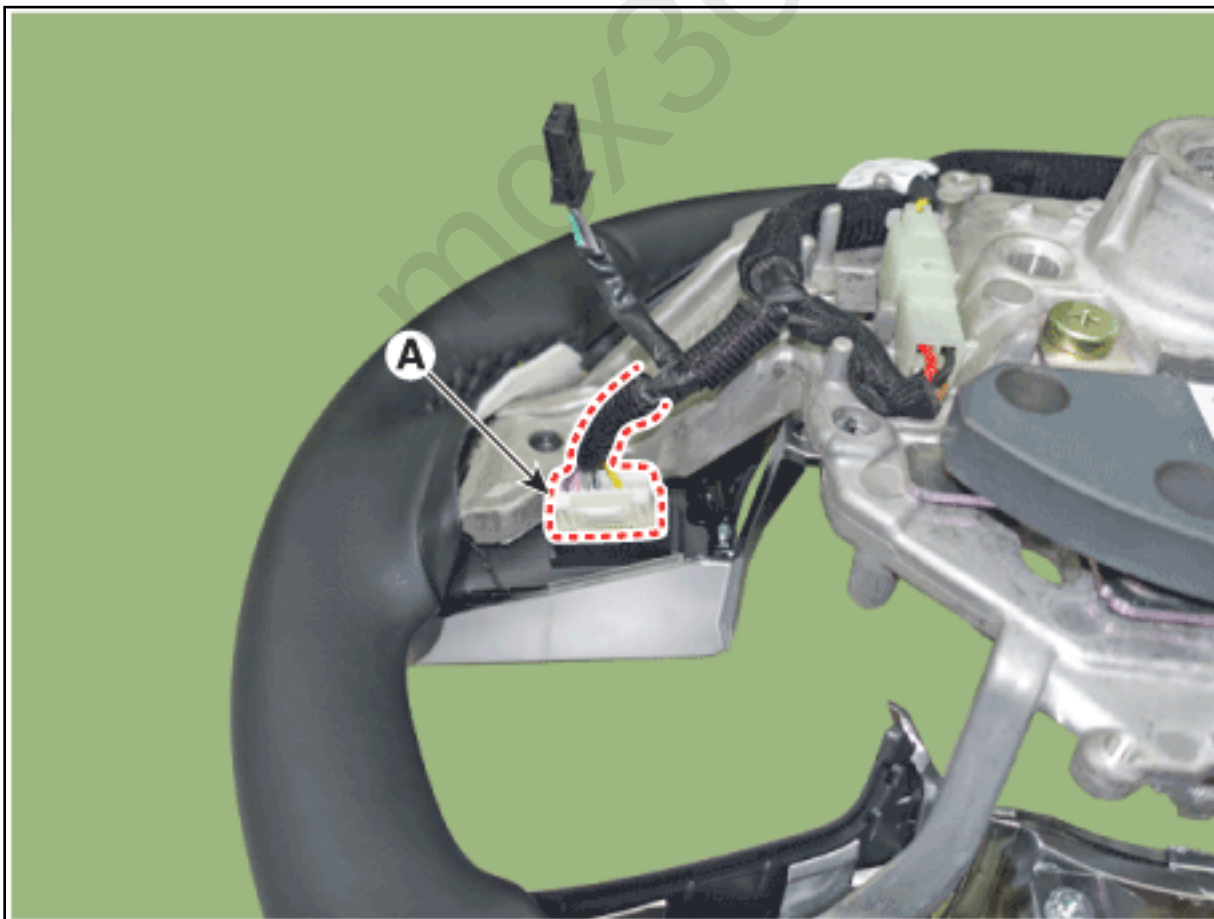
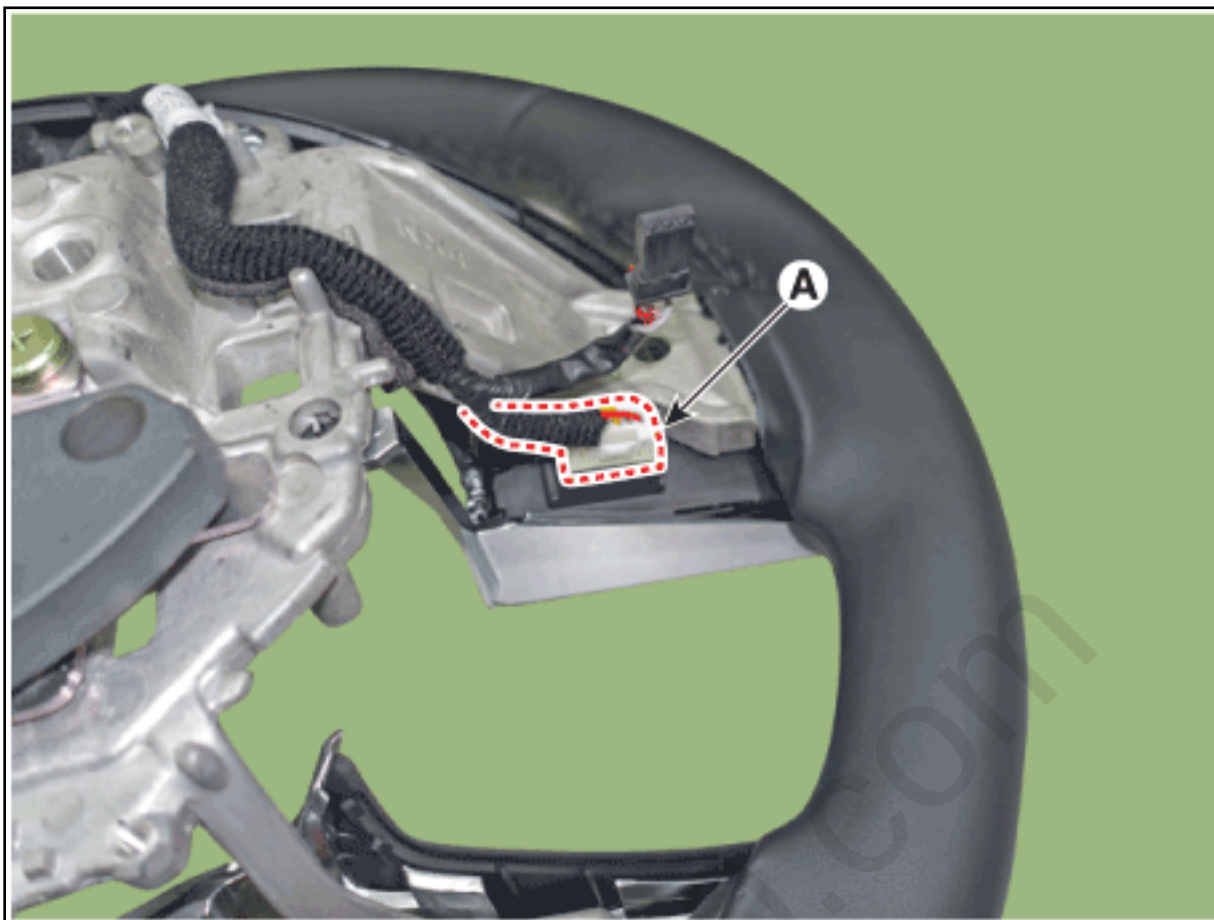
4. Disconnect paddle shift lever connector (A).



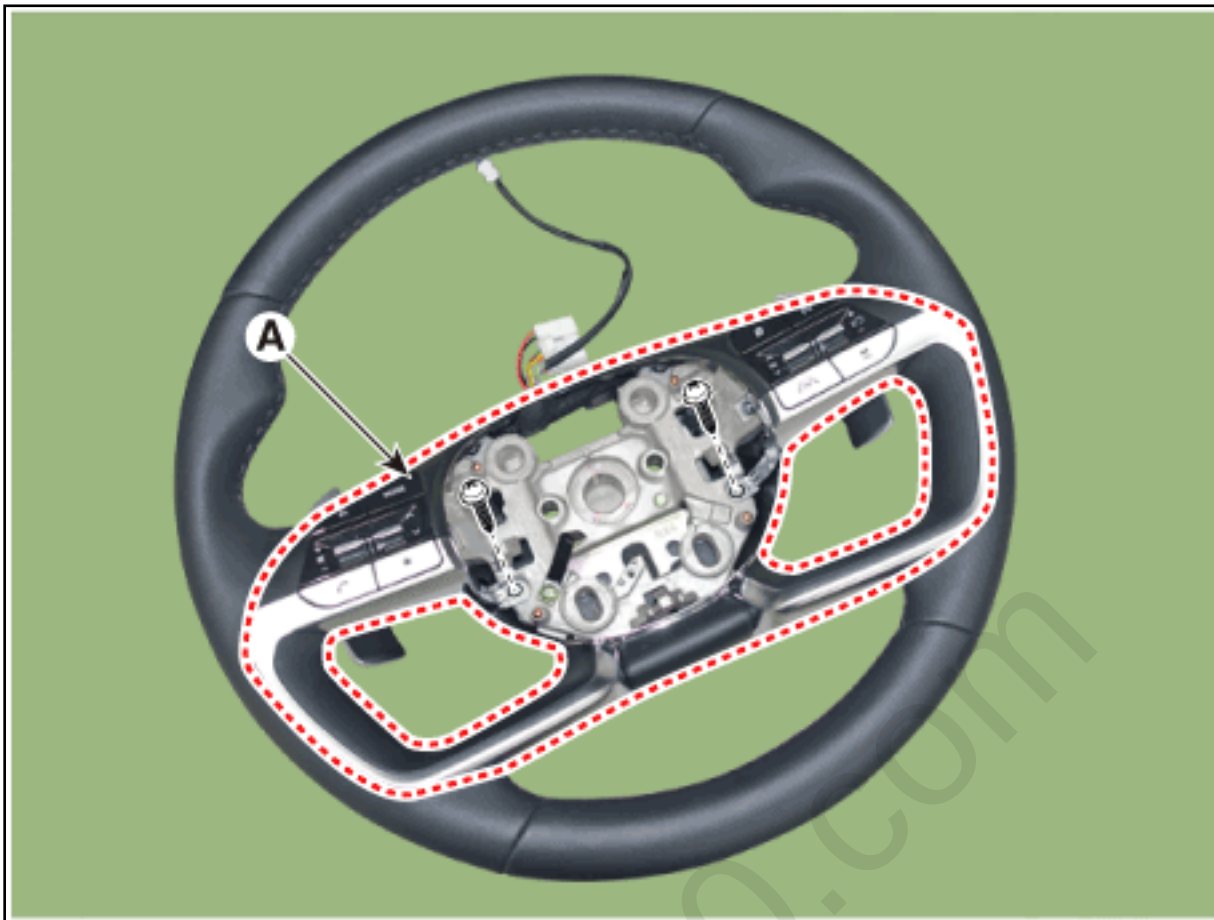
5. Remove the steering wheel cover (A) after loosening mounting screws.



6. Disconnect remote control switch connector (A) after loosening mounting screws.



7. Remove the remote control switch (A) after loosening mounting screws.



Installation

1. Install the remote control switch on the steering wheel.
2. Install the steering wheel lower cover.
3. Install the paddle shift lever.
4. Install the steering wheel.
5. Connect the negative (-) battery terminal.



- Make sure that the cables and connectors are plugged in properly.
- Check the AVN system for normal operation.