



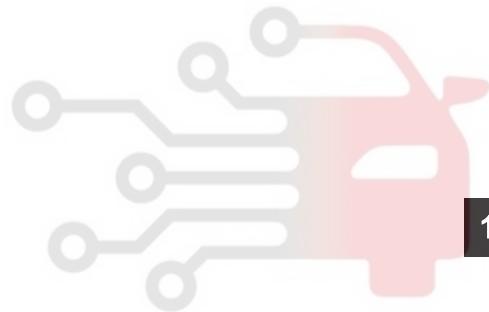
12 - Electrical system

Audio system	12-1741
Preparation	12-1741
Precautions	12-1742
Structure and installation location..	12-1743
Diagnostic Information and Procedures	12-1744
Removal and installation..	12-1752

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



12

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



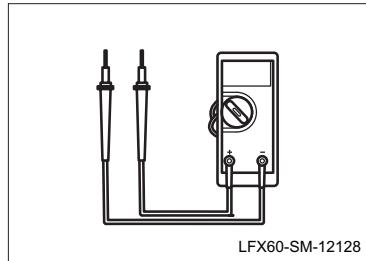
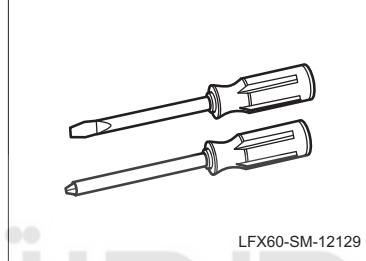
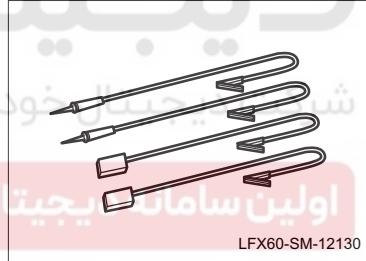
Audio system



Audio system

Preparation

General Maintenance Tools

No.	Tool name	Tool figure	Tool code	Remarks
1	Digital universal meter	 LFX60-SM-12128	-	Measure the voltage and resistance
2	Screw driver	 LFX60-SM-12129	-	For screw and panel removal
3	Conductor assembly	 LFX60-SM-12130	-	Testing circuit



Precautions

Radio wave received by the antenna

1. Coverage area

Coverage range of AM broadcast is significantly large than that of FM broadcast system. High resolution AM broadcast can be received in areas where there is no FM signal. Beside smaller reception area, there always is squelch and other noise in stereo FM signal in some location.

2. Receiving problems

Besides squelch, the interference, multiplex transmission and attenuation exists too. This is due to problem of radio wave itself, that is irrelevant to electrical noise.

a. Disturbances

Besides squelch, the AM broadcast receives other type of noise, especially at night. This is due to reflection of AM radio wave by the Ionosphere. The reflected wave interferes with that the antenna received directly from the same signal source. This is known as Interference.

b. Multi-path transmission

The radio reflected by obstacles is known as multiplex transmission. When the radio signals from the broadcasting transmission antenna are reflected by high buildings or high mountains, the directly received signals will be disturbed and multi-path transmission occurs.

c. Attenuation

The FM wave is more likely be reflected by high buildings or mountain due to its higher frequency than AM wave. For this reason, always the FM is likely to disappear gradually, or can not be received due to blockage of vehicle by obstacles. This is known as attenuation.

3. Information of AM/FM broadcast channel will be eliminated when negative cable of battery disconnected. Before disconnect negative cable of battery, you can record channel informations for resetting after the cable would be connected.

4. Make sure the ground cable is fixed securely after removal and installation of the antenna assembly.

△ Tips:

Poor ground link of antenna may cause noise in broadcast signal reception. A new antenna can not even correct this problem

5. Don't touch paper basin of the speaker.

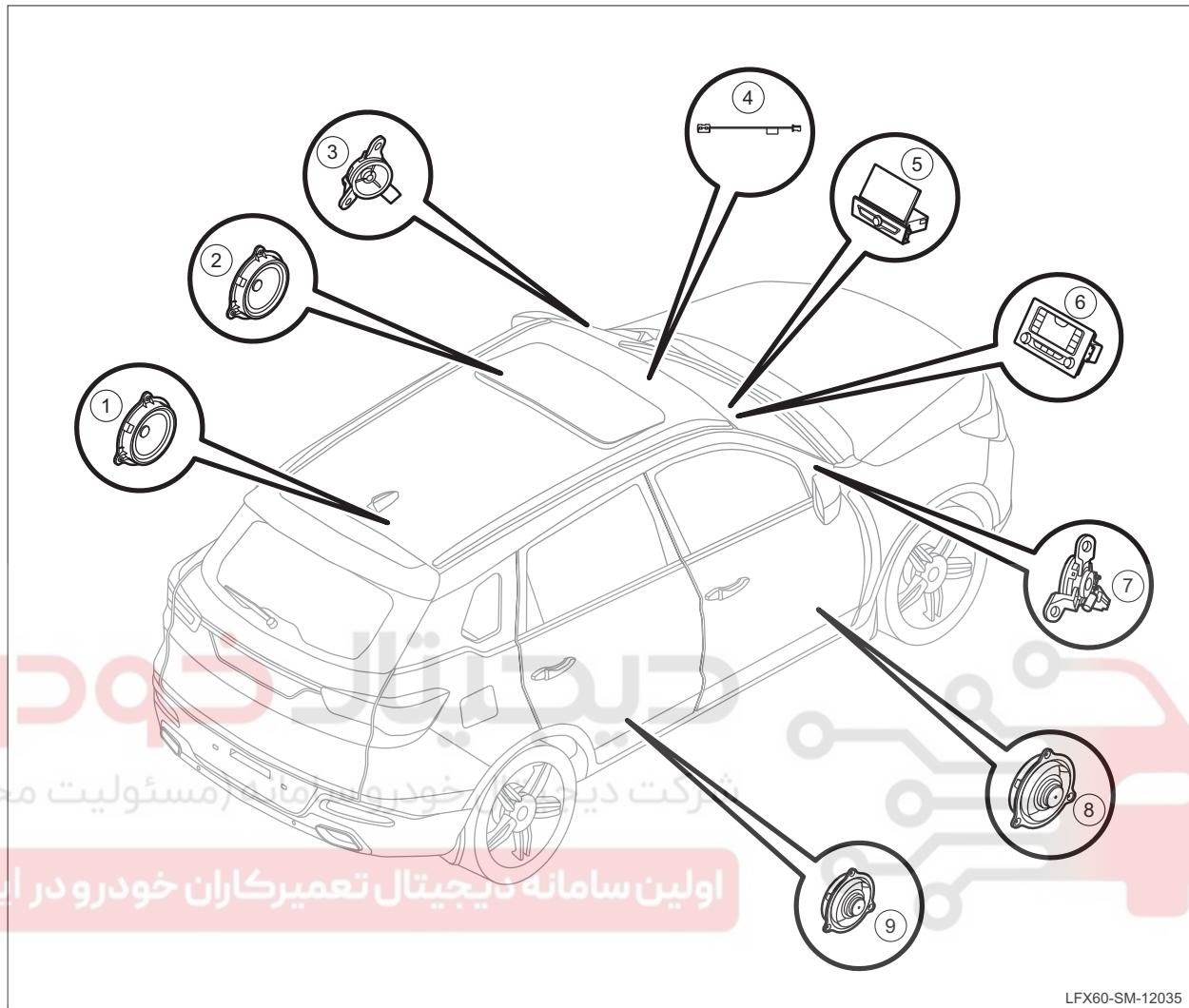


Audio system



Structure and installation location

Component Location Plan



No.	Part name
1	Left rear door loadspeaker
2	Left front door loadspeaker
3	Left front high pitch horn
4	Microphone
5	Radio/MP5 player display screen

No.	Part name
6	Radio assembly
7	Right front high pitch horn
8	Right front door loadspeaker
9	Right rear door loadspeaker

12-1743



Diagnostic Information and Procedures

Diagnosis Instructions

Before the sound system failure is diagnosed, please first read the system overview to know and familiarize the working principle of the sound system and then start the sound system diagnosis. When a failure occurs, these knowledge can assist you to identify correct failure diagnosis steps. More importantly, these knowledge can assist you to check if conditions described by the customer are normal.

Any failure diagnosis of the sound system should start with sound system check. It can guide repairers to take next logic step and diagnose failures. Comprehend and correctly use the diagnostic flow chart to shorten the diagnosis time and avoid the misjudgment.

General equipment

Digital multimeter

Visual Inspection

Note:

When the signal receiving or noise disturbance of the sound system is tested, the vehicle should be parked at a place which keeps away from buildings and power supply line and the engine hatch and all doors should be closed.

1. Confirm the problem of the customer.
2. Visually check whether there is any obvious mechanical or electrical damage sign.

Visual inspection table

Electrical
<p>• Fuse</p> <p>• Harness or plug</p> <p>• Dashboard fuse box</p> <p>• Microphone</p> <p>• Antenna amplifier</p> <p>• Speaker</p> <p>• Radio assembly</p> <p>• Radio/MP5 player display</p>

3. Check the system lines easy to see or can be seen.

Note:

The twisted pair cable can effectively shield sensitive electronic components and make them be free of electric appliance disturbances. If the shielding layer of the lead is destructed, it should be replaced.

4. If the observed or raised problem is the evident and the cause has been found, ensure to fix this fault before proceeding with the next step.
5. If for the problem, there are no obvious findings, then confirm the fault and refer to the symptom table.

Audio system

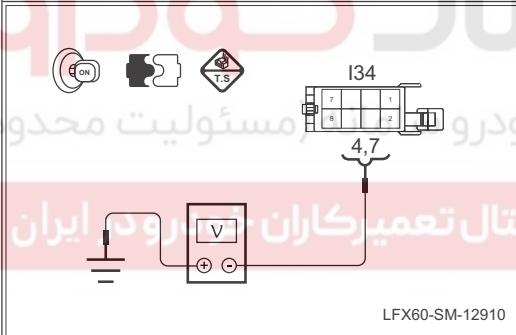
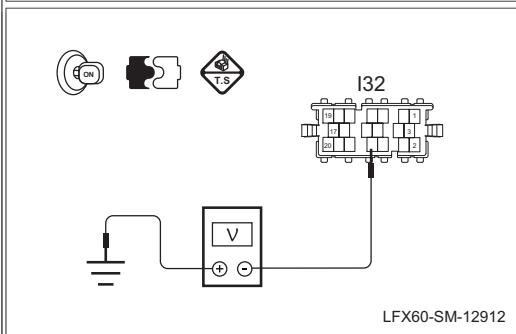


List of fault symptoms

Symptom	Possible point of failure	Recommended Measures
The power indicator is no on	<ul style="list-style-type: none"> Fuse Dashboard fuse box Harness or plug Radio/MP5 player display Radio assembly 	<ul style="list-style-type: none"> Replace the fuse. Repair the electric appliance box of the dashboard. Repair or replace the harness Radio/MP5 player display Refer to: Replace radio/MP5 player display
Do not display, do not work and failed to power on	<ul style="list-style-type: none"> Fuse Dashboard fuse box Harness or plug Radio/MP5 player display Radio assembly 	Refer to: Diagnosis flow for no display, malfunction and booting failure
The radio cannot lock a channel	<ul style="list-style-type: none"> Radio assembly 	<ul style="list-style-type: none"> Replace the radio assembly Refer to: Replacement of the radio assembly
The radio signals cannot be received well or cannot be received	<ul style="list-style-type: none"> Signal disturbance or shielding Harness or plug Antennae Radio assembly Radio/MP5 player display 	Refer to: Diagnosis flow for bad receiving or no receiving of radio signals
Unclear sound	<ul style="list-style-type: none"> Line disturbance Antennae Speaker Radio assembly 	<ul style="list-style-type: none"> Repair system line Replace the antenna Replace a loadspeaker Replace the radio assembly Refer to: Replacement of the radio assembly
Single loadspeaker does not work	<ul style="list-style-type: none"> Harness or plug Speaker Radio/MP5 player display Radio assembly 	Refer to: Diagnosis flow for single failed loadspeaker
The microphone does not work	<ul style="list-style-type: none"> Harness or plug Microphone Radio/MP5 player display Radio assembly 	Refer to: Diagnosis of failed microphone
The steering wheel switch does not work	<ul style="list-style-type: none"> Harness or plug Steering wheel switch Clock spring 	<ul style="list-style-type: none"> Repair or replace the harness Replace the steering wheel switch Replace the clock spring. Refer to: Replacement of the clock spring.

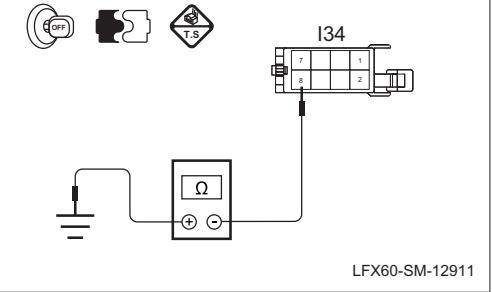


Diagnosis flow for no display, malfunction and booting failure

Test condition	Details/results/measures
1. General inspection.	<p>A. Check if the harness plug of the sound system display assembly are loose, aging and fall off. Is it OK after checking? →Yes To step 2. →No Repair the fault position.</p>
2. Check the fuse.	<p>A. Check the fuse FS30, FS31, FS24. Fuse rated capacity: FS30(25 A), FS31(25 A), FS24(10 A) Is it OK after checking? →Yes To step 3. →No Replace the fuse.</p>
3. Check the power line of the sound system display assembly.	<p>A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the audio system display assembly harness plug I34. D. Disconnect the audio system display assembly harness plug I32. E. Connect the battery negative terminal. F. Operate the ignition switch to turn the power to ON state. G. Measure the voltage between the terminal 4 and 7 of the sound system display assembly harness plug I34 and reliable grounding by using a multimeter. Standard value: 11 ~ 14 V H. Measure the voltage between the terminal 11 of the sound system display assembly harness plug I32 and reliable grounding by using a multimeter. Standard value: 11 ~ 14 V Is the voltage normal? →Yes To step 4. →No Repair power line failures of the sound system display assembly. If necessary, replace the harness.</p>  

Audio system



Test condition	Details/results/measures
<p>4. Check the grounding line of the sound system display assembly.</p> 	<p>A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the audio system display assembly harness plug I34. D. Measure the resistance between the terminal 8 of the sound system display assembly harness plug I34 and reliable grounding by using a multimeter. Standard value: less than 5Ω Is the resistance normal? →Yes To step 5. →No Repair grounding line failures of the sound system display assembly. If necessary, replace the harness.</p>
<p>5. Check the audio system display assembly.</p>	<p>A. Replace the audio system display assembly. Refer to: Replacement of radio/MP5 player display Confirm that the fault has been ruled out.</p>





Diagnosis flow for bad receiving or no receiving of radio signals

Test condition	Details/results/measures
1. General inspection.	<p>A. Check if the display assembly of the sound system and the harness plug of the antenna amplifier are loose, aging and fall off. Is it OK after checking? →Yes To step 2. →No Repair the fault position.</p>
2. Check signal disturbances.	<p>A. Move the vehicle to the open field without disturbances. B. Check if the radio can receive signals. Is it OK after checking? →Yes The system works normally under signal disturbance environment. →No To step 3.</p>
3. Check the antenna amplifier line.	<p>A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the audio system display assembly harness plug I34. D. Disconnect the harness plug R08 of the antenna amplifier. E. Measure the resistance between the terminal 1 of the sound system display assembly harness plug I34 and the terminal 4 of the antenna amplifier harness plug R08 by using a multimeter. Standard value: less than 5Ω Is the resistance normal? →Yes To step 3. →No Repair the antenna amplifier line failures. If necessary, replace the harness.</p>
3. Check the antenna.	<p>A. Replace the antenna. Is the troubleshooting successful? →Yes Replace the antenna. →No To step 4.</p>

Audio system

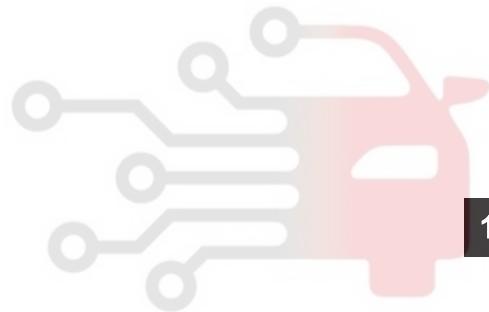


Test condition	Details/results/measures
4. Check the audio system display assembly.	<p>A. Replace the audio system display assembly. Refer to: Replacement of radio/MP5 player display Refer to: Replacement of radio assembly Confirm that the fault has been ruled out.</p>

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



12

12-1749



Diagnosis flow for single failed loadspeaker

Test condition	Details/results/measures
1. General inspection.	<p>A. Check if the display assembly of the sound system and the harness plug of the loadspeaker are loose, aging and fall off.</p> <p>Is it OK after checking?</p> <p>→Yes To step 2. →No Repair the fault position.</p>
2. Check the speaker line (with the left front door loadspeaker as one example)	<p>A. Operate the ignition switch to turn the power to OFF state.</p> <p>B. Disconnect the battery negative connector.</p> <p>C. Disconnect the harness plug D01 of the left front door loadspeaker.</p> <p>D. Disconnect the harness plug I33 of the sound system display assembly.</p> <p>E. Measure the voltage between the terminal 1 of the left front door speaker harness plug D01 and the terminal 6 of the sound system display assembly harness plug I33 by using a multimeter.</p> <p>Standard value: less than 5Ω</p> <p>F. Measure the resistance between the terminal 2 of the left front door speaker harness plug D01 and the terminal 5 of the sound system display assembly harness plug I33 by using a multimeter.</p> <p>Standard value: less than 5Ω</p> <p>Is the resistance normal?</p> <p>→Yes To step 3. →No Repair the front left door speaker line fault and replace the harness if necessary.</p>
3. Check the loadspeaker.	<p>A. Replace the loadspeaker.</p> <p>Refer to: Replace the front loadspeaker.</p> <p>Is the troubleshooting successful?</p> <p>→Yes Replace the loadspeaker. →No To step 4.</p>
4. Check the audio system display assembly.	<p>A. Replace the audio system display assembly.</p> <p>Refer to: Replacement of radio/MP5 player display</p> <p>Refer to: Replacement of radio assembly</p> <p>Confirm that the fault has been ruled out.</p>

Audio system



Diagnosis of failed microphone

Test condition	Details/results/measures
1. General inspection.	<p>A. Check if the display assembly of the sound system and the harness plug of the microphone are loose, aging and fall off. Is it OK after checking? →Yes To step 2. →No Repair the fault position.</p>
2. Check the microphone line.	<p>A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the harness plug R04 of the microphone. D. Disconnect the audio system display assembly harness plug I32. E. Measure the resistance between the terminal 1 of the left front door speaker harness plug R04 and the terminal 5 of the sound system display assembly harness plug I32 by using a multimeter. Standard value: less than 5Ω</p> <p>F. Measure the resistance between the terminal 2 of the left front door speaker harness plug R04 and the terminal 2 of the sound system display assembly harness plug I32 by using a multimeter. Standard value: less than 5Ω</p> <p>Is the resistance normal? →Yes To step 3. →No Repair the front left door speaker line fault and replace the harness if necessary.</p>
3. Check the microphone.	<p>A. Replace a microphone. Is the troubleshooting successful? →Yes Replace a microphone. →No To step 4.</p>
4. Check the audio system display assembly.	<p>A. Replace the audio system display assembly. Refer to: Replacement of radio/MP5 player display Refer to: Replacement of radio assembly Confirm that the fault has been ruled out.</p>



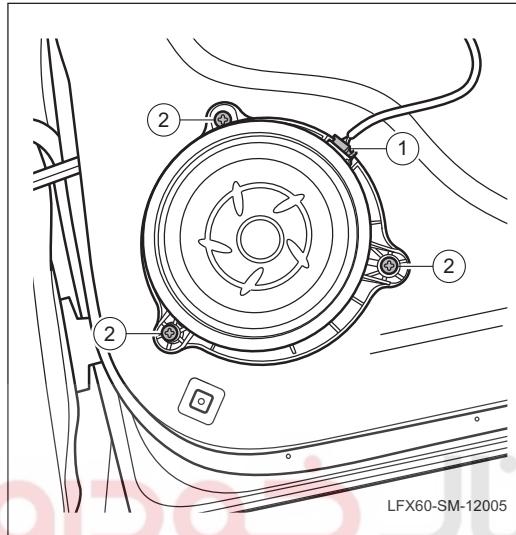
Removal and installation

Replace the front low pitch loadspeaker

Removal

1. Disassemble front low pitch loadspeaker.

- (a). Disconnect the battery negative connector.
- (b). Remove the front door interior trim board. Refer to the replacement of front door interior trim board.



- (c). Disconnect the harness plug 1 of the front low pitch loadspeaker.
- (d). Disassemble the fixing screw 2 of the front low pitch loadspeaker.
- (e). Remove the front low pitch loadspeaker.

Installation

1. Install front high pitch loadspeaker.

- (a). The installation sequence is the reverse of the disassembly order.



اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

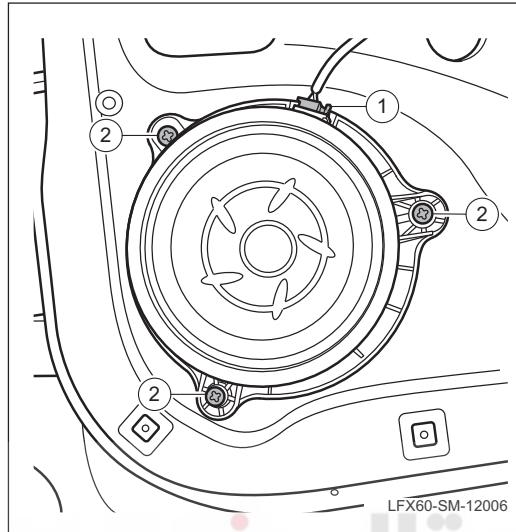
Audio system



Replace the rear low pitch loadspeaker

Removal

1. Disassemble rear low pitch loadspeaker.
- (a). Disconnect the battery negative connector.
- (b). Remove the front door interior trim board. **Refer to the replacement of front door interior trim board.**



- (c). Disconnect the harness plug 1 of the rear low pitch loadspeaker.
- (d). Disassemble the fixing screw 2 of the rear low pitch loadspeaker.
- (e). Remove the rear low pitch loadspeaker.

Installation

1. Install rear high pitch loadspeaker.

- (a). The installation sequence is the reverse of the disassembly order.

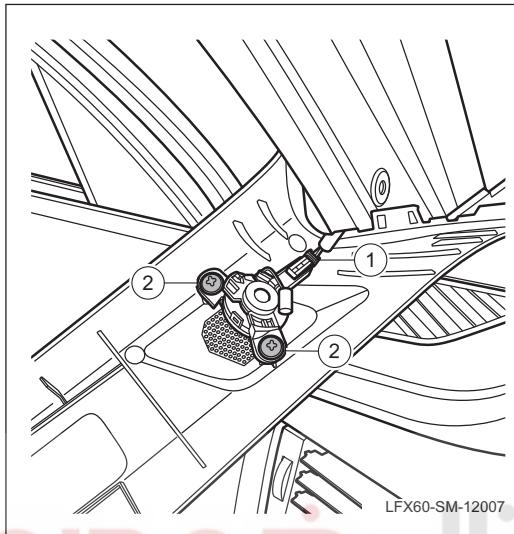
اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Replace the high pitch loadspeaker

Removal

1. **Disassemble the front high pitch loadspeaker.**
 - (a). Disconnect the battery negative connector.
 - (b). Remove the A pillar upper trim board. **Refer to the replacement of A pillar upper trim board.**



- (c). Disconnect the harness plug 1 of the front high pitch loadspeaker.
- (d). Disassemble fixing screw 2 of the front high pitch loadspeaker.
- (e). Remove the front high pitch loadspeaker.

Installation

1. **Install the front treble speaker.**
 - (a). The installation sequence is the reverse of the disassembly order.

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Audio system

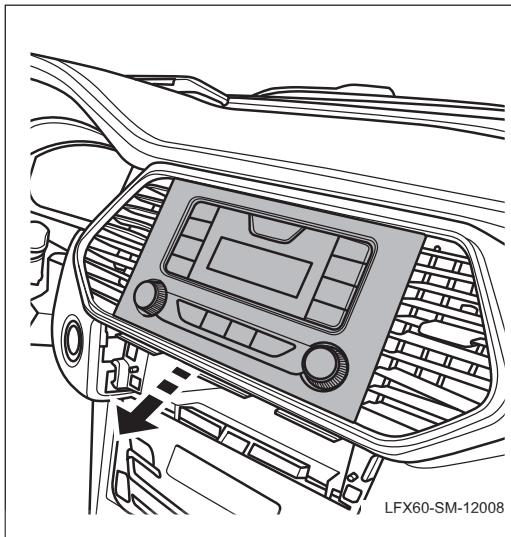


Replace the radio assembly

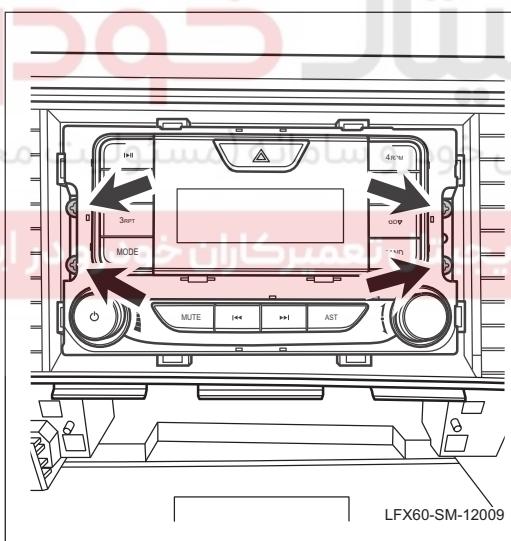
Removal

1. Disassemble the radio assembly.

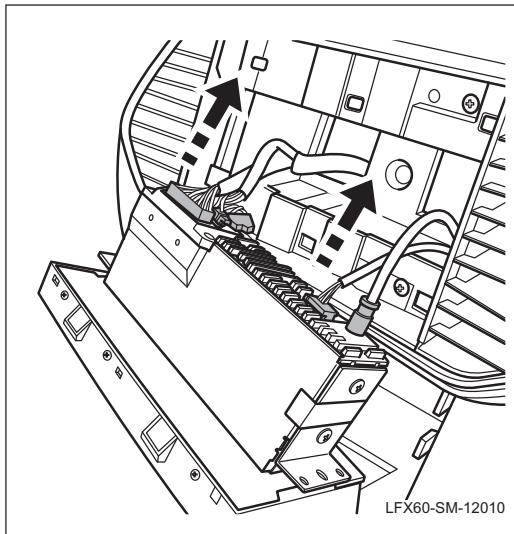
(a). Disconnect the battery negative connector.



(b). Disassemble the decorative cover plate on the radio assembly.



(c). Disassemble fixing screws of the radio.



- (d). Disconnect the harness plug of the radio assembly.
- (e). Remove the radio assembly.

Installation

1. Install the front treble speaker.

- (a). The installation sequence is the reverse of the disassembly order.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



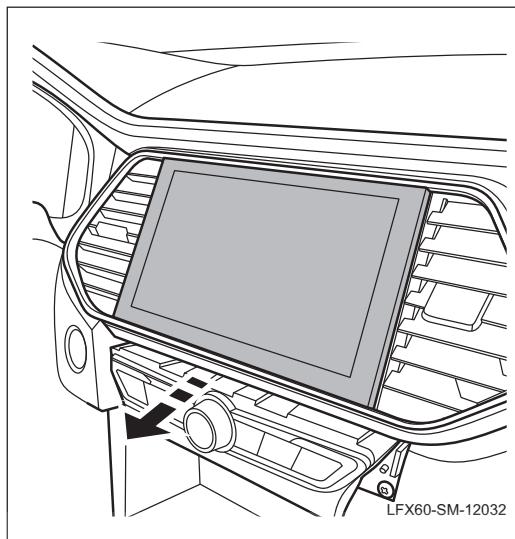
Audio system



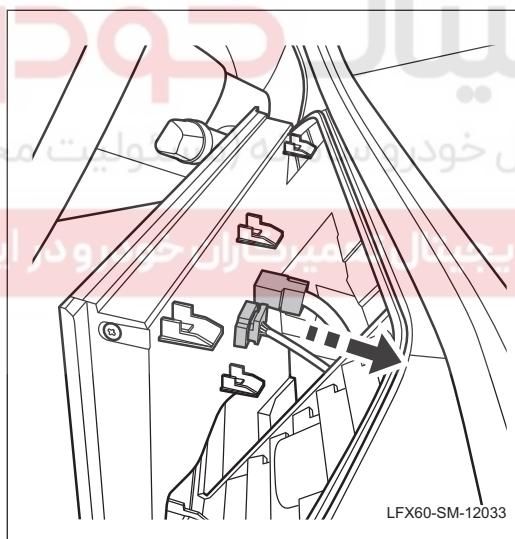
Replacement of radio/MP5 player display

Removal

1. Disassemble the radio/MP5 player display screen.
- (a). Disconnect the battery negative connector.



- (b). Disassemble the radio/MP5 player display screen by using a proper tool.



- (c). Disconnect the harness plug of the radio/MP5 player display screen.
- (d). Remove the radio/MP5 player display screen.

12

Installation

1. Install radio/MP5 player display panel.
- (a). The installation sequence is the reverse of the disassembly order.

12-1757

Replace radio/MP5 player key panel

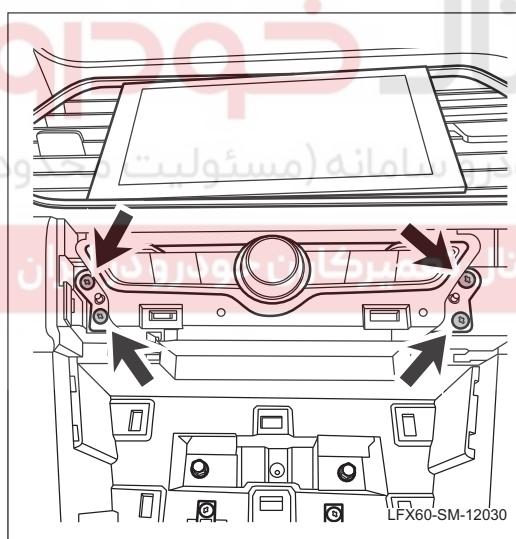
Removal

1. Disassemble the radio/MP5 player key panel.

(a). Disconnect the battery negative connector.

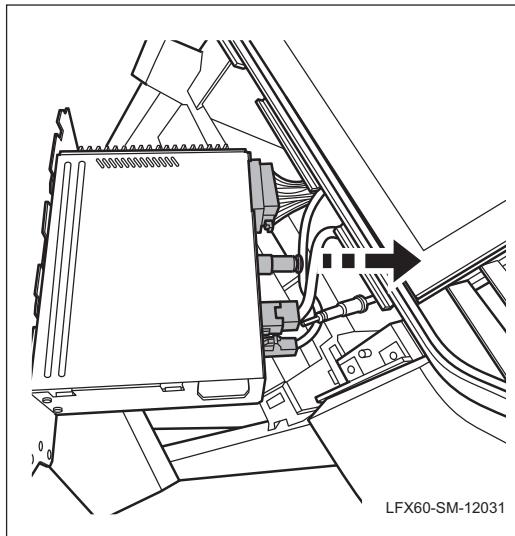


(b). Disassemble decorative cover plate of the radio/MP5 player key panel.



(c). Disassemble fixing screws of the radio/MP5 player key panel.

Audio system



- (d). Disconnect the harness plug of the radio/MP5 player key panel.
- (e). Remove the radio/MP5 player key panel.

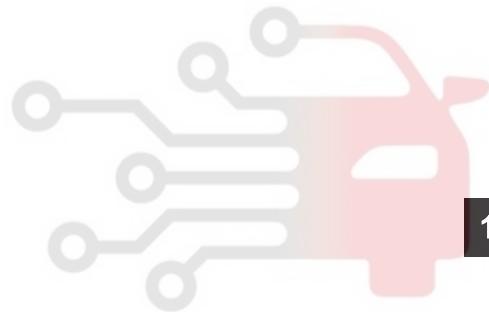
Installation**1. Install a radio/MP5 player key panel**

- (a). The installation sequence is the reverse of the disassembly order.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



12

12-1759



- Memo -

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

