12 - Electrical system

Electric rearview mirror

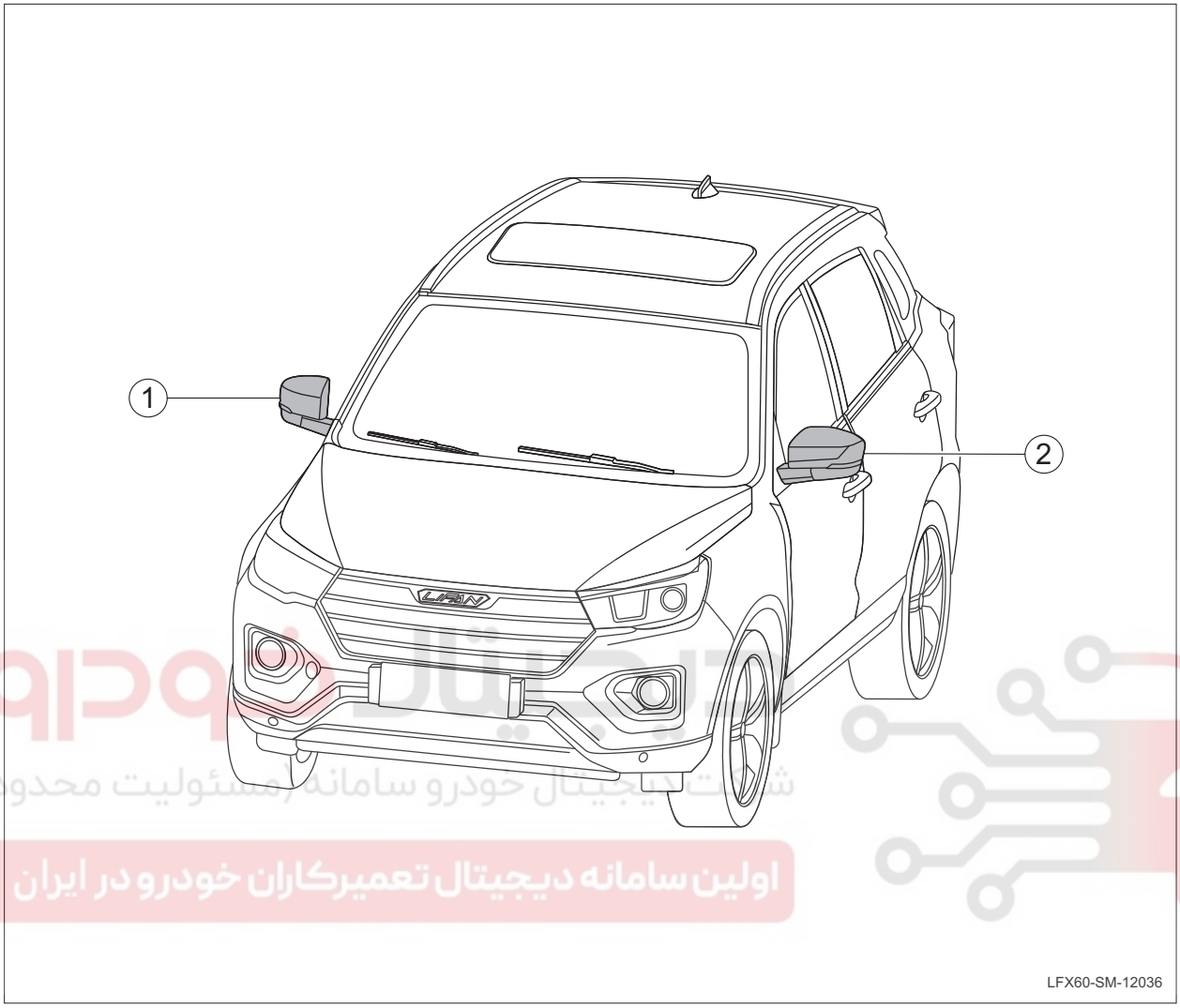
Precautions

Precautions

1. After the electric rearview mirrors are folded due to external force impact or manual folding, to reset the internal gearing, it should be electrified and reset.
2. When the electrice rearview mirrors are not used (namely in the initial position), do not electrify electric rear mirrrors. If it is electrified, the use life of the motor and line board will reduce.
3. When the product is electrified and folded to the internal folding position from the initial position and then is electrified and folded to the initial position from the internal folding position. After the product is folded in place, the electric rear mirrrors should power off as quickly as possible. The electric rearview mirrors shoud not be electrified for more than 30s, so it can protect the line board via two mechanisms.

Structure and installation location

Component Location Plan



No.	Part name
1	Outer rear view mirror RH

No.	Part name
2	Outer rear view mirror LH

Operating Principle

System description

1. The external rearview mirrors of this vehicle integrate electric regulation function, which are suitable for different configurations of this model.
2. The external rearview mirrors are the internally adjustable electric rearview mirrors and include build-in motor. The external rearview mirrors can be adjusted by operating the regulation switches of the external rearview mirrors on the driver's switch panel. When the exteranl rearview mirrors reach the maximal regulation angle, stop operation. When the motor's switch is pressed, it will continue oepration. The pressing duration should not exceed the necessary time. Otherwise, it will damage the motor.

Diagnostic Information and Procedures

Diagnosis Instructions

Before the electric rearview mirror system failure is diagnosed, please first read the system overview to know and familiarize the working principle of the electric rearview mirror systen and then start electric rearview mirror 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 diagnisis of the electric rearview mirror system should start with electric rearview mirror system check. It can guide repairers to take enxt logic step and diagnose failures. Comprehend and correctly use the diagnostic flow chart to shorten the diagnosis time and avoid the misjudgement.

General equipment

Digital multimeter
Diagnostic equipment of vehicle

Visual Inspection

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

Visual inspection table

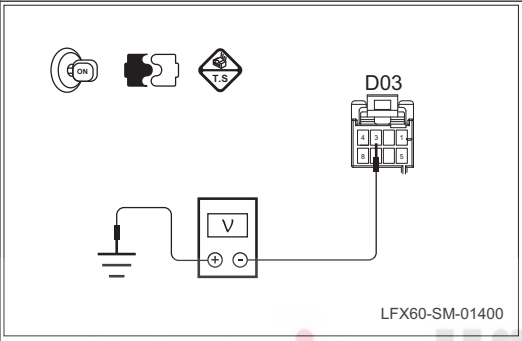
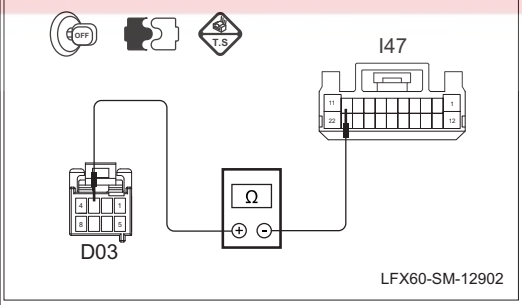
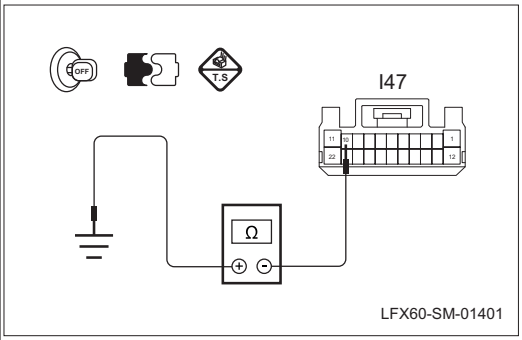
Mechanical	Electrical
• Electric rearview mirror	• Fuse • Harness or plug • Dashboard switch • Electric rearview mirror • BCM

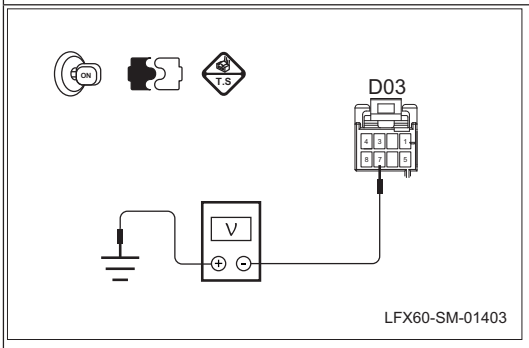
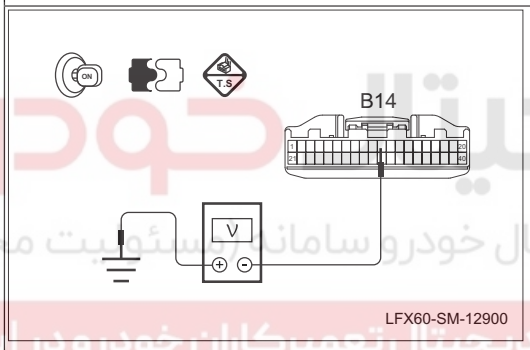
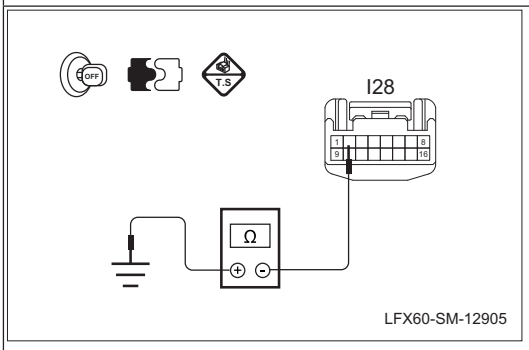
3. If the observed or raised problem is the evident and the cause has been found, ensure to fix this fault before proceeding with the next step.
4. If for the problem, there are no obvious findings, then confirm the fault and refer to the symptom table.

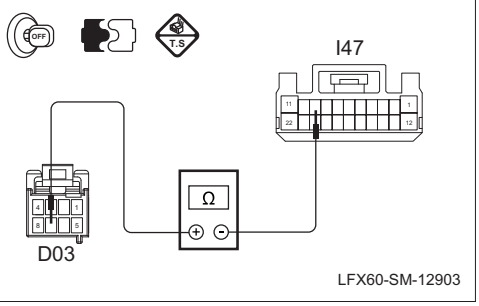
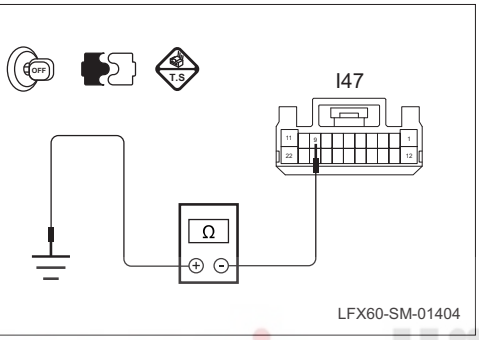
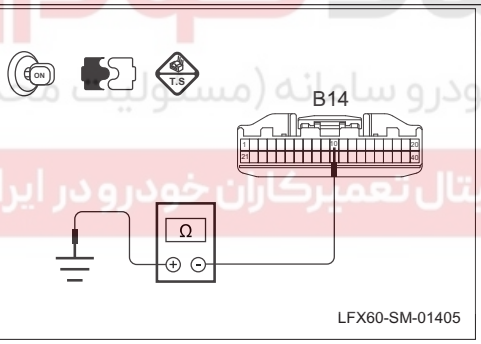
List of fault symptoms

Symptom	Possible point of failure	Recommended Measures
The rearview mirrors can not be folded	• Fuse	**Refer to: Diagnosis flow for no folding failure of rearview mirror**
	• Dashboard fuse box	
	• Harness or plug	
	• Dashboard switch	
	• Electric rearview mirror	
	• BCM	
All rearview mirrors cannot be adjusted	• Fuse	**Refer to: Diagnosis flow for no regulation failure of all rearview mirrors**
	• Harness or plug	
	• Dashboard fuse box	
	• Dashboard switch	
Single rearview mirror cannot be adjusted	• Harness or plug	**Refer to: Diagnosis flow for no regulation failure of single rearview mirrors**
	• Dashboard switch	
	• Electric rearview mirror	
No in-place regulation of rearview mirrors	• Mechanical failure of rearview mirrors	• Replace rearview mirrors **Refer to: Replacement of the rearview mirrors**

Diagnosis flow for no folding failure of rearview mirror

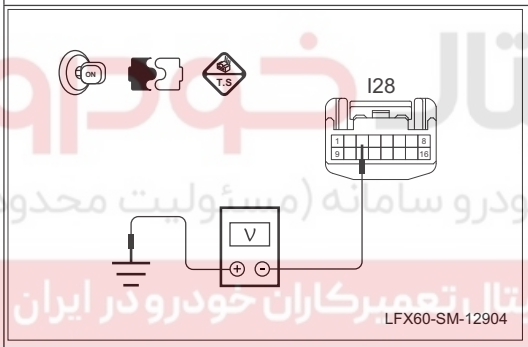
Test condition	Details/results/measures
1. General inspection.	
	A. Check if the rearview mirror, BCM and dashboard switch harness plug are loose, aging and fall off. Is it OK after checking? →**Yes** To step 2. →**No** Repair the fault position.
2. Check folding signal power circuit of the rearview mirrors. (with left rearview mirrors as one example)	
 LFX60-SM-01400	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the left exterior rearview mirror harness plug D03. D. Connect the battery negative terminal. E. Operate the ignition switch to turn the power to ON state. F. Operate switch folding function of the instrument board and measure the voltage between the terminal 3 of the left external rearview mirror harness plug D03 and reliable grounding by using a multimeter. **Standard value: 11 ~ 14 V** Is the voltage normal? →**Yes** To step 4. →**No** To step 3.
3. Chec the folding signal lines of the BCM rearview mirrors.	
 LFX60-SM-12902  LFX60-SM-01401	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the BCM harness plug I47. D. Disconnect the left exterior rearview mirror harness plug D03. E. Measure the resistance between the BCM harness plug I47 terminal 10 and left exterior rearview mirror harness plug D03 terminal 3 with the multimeter. **Standard value: less than 5Ω** F. Measure the resistance between the BCM harness plug I47 terminal 10 and the fixed ground point with the multimeter. **Standard value: 10MΩ or higher** Is it OK after checking? →**Yes** To step 5. →**No** Repair folding output signal line failures of the BCM rearview mirror. If necessary, replace the harness.

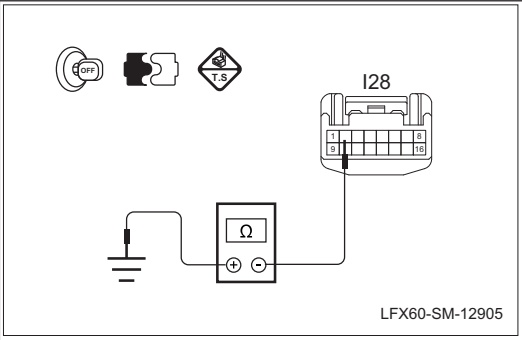
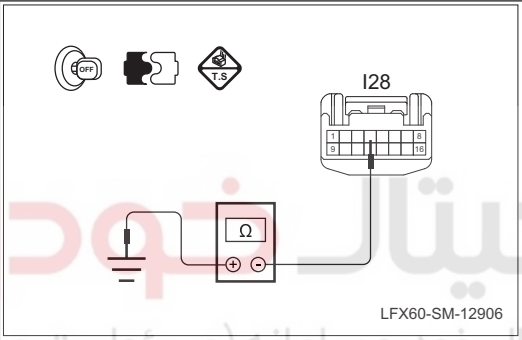
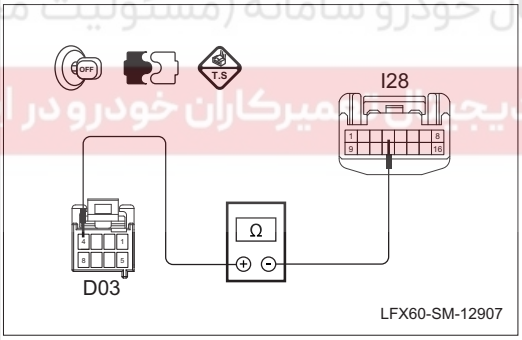
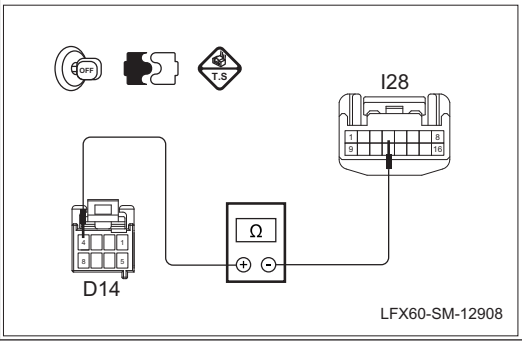
Test condition	Details/results/measures
4. Check the BCM rearview mirror deployment output signal line.	
	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the left exterior rearview mirror harness plug D03. D. Connect the battery negative terminal. E. Operate the ignition switch to turn the power to ON state. F. Operate the switch expansion function of the instrument board and measure the voltage between the terminal 7 of the left external rearview mirror harness plug D03 and reliable grounding by using a multimeter. **Standard value: 11 ~ 14 V** Is the voltage normal? →**Yes** To step 8. →**No** To step 7.
5. Check folding grounding signal circuit of the electric rearview mirrors.	
	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the BCM harness plug B14. D. Operate switch folding function of the instrument board and measure the resistance between the terminal 11 of the BCM harness plug B14 and reliable grounding point by using a multimeter. **Standard value: less than 5Ω** Is the resistance normal? →**Yes** To step 6. →**No** Repair folding grounding signal circuit failures of the electric rearview mirror. If necessary, replace the harness.
6. Check the switch grounding line of the dashboard.	
	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the switch harness plug I28 of the dashboard. C. Measure the resistance between the terminal 2 of the dashboard switch harness plug I28 and reliable grounding by using a multimeter. **Standard value: less than 5Ω** Is the resistance normal? →**Yes** Replace the dashboard switch. →**No** Repair switch grounding circuit failures of the instrument board. If necessary, replace the harness.

Test condition	Details/results/measures
7. Check the BCM rearview mirror deployment output signal line.	
	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the BCM harness plug I47. D. Disconnect the left exterior rearview mirror harness plug D03. E. Measure the resistance between the BCM harness plug I47 terminal 9 and left exterior rearview mirror harness plug D03 terminal 7 with the multimeter. **Standard value: less than 5Ω** F. Measure the resistance between the BCM harness plug I47 terminal 9 and the fixed ground point with the multimeter. **Standard value: 10MΩ or higher** Is it OK after checking? →**Yes** To step 8. →**No** Repair expansion output signal line failures of the BCM rearview mirror. If necessary, replace the harness.
	
8. Check expansion grounding signal line of the electric rearview mirrors.	
	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the BCM harness plug B14. D. Operate the switch expansion function of the dashboard and measure the resistance between the terminal 10 of the BCM harness plug B14 and reliable grounding by using a multimeter. **Standard value: less than 5Ω** Is the resistance normal? →**Yes** To step 9. →**No** Repair expansion grounding signal line failures of the electric rearview mirror. If necessary, replace the harness.
9. Check electric rearview mirrors.	
	A. Replace electric rearview mirrors. **Refer to: Replacement of the electric rearview mirrors.** Is the troubleshooting successful? →**Yes** Replace electric rearview mirrors. →**No** To step 10.

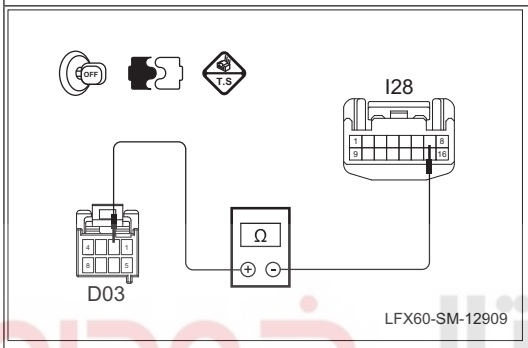
Test condition	Details/results/measures
10. Check the BCM.	
	A. Replace BCM. **Refer to: Replacement of BCM.** Confirm that the fault has been ruled out.

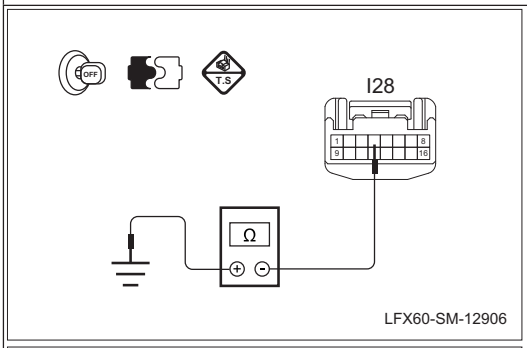
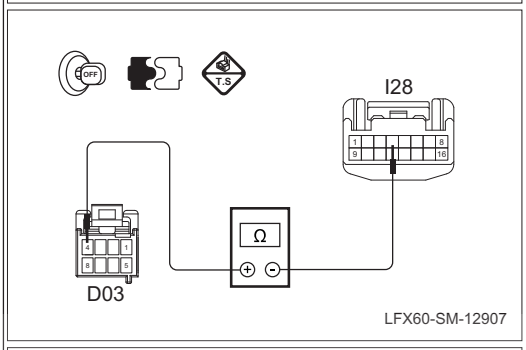
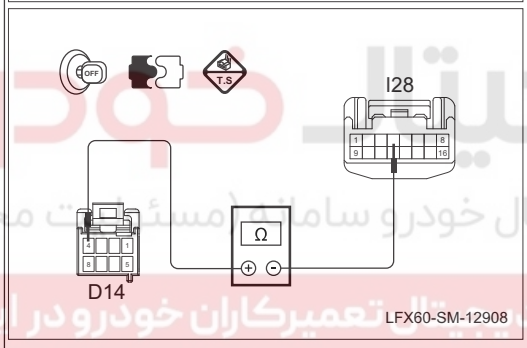
Diagnosis flow for no regulation failure of all rearview mirrors

Test condition	Details/results/measures
1. General inspection.	
	A. Check the rearview mirror and dashboard switch harness plug for looseness, aging or falling. Is it OK after checking? →**Yes** To step 2. →**No** Repair the fault position.
2. Check the fuse.	
	A. Check the fuse FS29. **Fuse rated capacity: 15A** Is it OK after checking? →**Yes** To step 3. →**No** Replace the fuse.
3. Check the switch power line of the dashboard.	
	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the switch harness plug I28 of the dashboard. D. Connect the battery negative terminal. E. Operate the ignition switch to turn the power to ON state. F. Measure the voltage between the terminal 3 of the dashboard switch harness plug I28 and reliable grounding by using a multimeter. **Standard value: 11 ~ 14 V** Is the voltage normal? →**Yes** To step 4. →**No** Repair the switch power line failures of the dashboard. If necessary, replace the electric appliance box of the dashboard.

Test condition	Details/results/measures
4. Check the dashboard switch ground line.	
	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the switch harness plug I28 of the dashboard. D. Measure the resistance between the terminal 3 of the dashboard switch harness plug I28 and reliable grounding by using a multimeter. **Standard value: less than 5Ω** Is the resistance normal? **→Yes** To step 5. **→No** Repair switch electric grounding line failures of the instrument board. If necessary, replace the harness.
5. Check the rearview mirror common line.	
  	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the switch harness plug I28 of the dashboard. D. Disconnect the left exterior rearview mirror harness plug D03. E. Disconnect the right exterior rearview mirror harness plug D14. F. Measure the resistance between the dashboard switch harness plug I28 terminal 4 and fixed ground point with the multimeter. **Standard value: 10MΩ or higher** G. Measure the resistance between the dashboard switch harness plug I28 terminal 4 and left exterior rearview mirror harness plug D03 terminal 4 with the multimeter. **Standard value: less than 5Ω** H. Measure the resistance between the dashboard switch harness plug I28 terminal 4 and right exterior rearview mirror harness plug D14 terminal 4 with the multimeter. **Standard value: less than 5Ω** Is it OK after checking? **→Yes** To step 6. **→No** Repair switch electric public line failures of the instrument board. If necessary, replace the harness.
6. Check the dashboard switch.	
	A. Replace the dashboard switch. **Refer to: Replacement of the dashboard switch.** Confirm that the fault has been ruled out.

Diagnosis flow for no regulation failure of single rearview mirrors

Test condition	Details/results/measures
1. General inspection.	
	A. Check the rearview mirror and dashboard switch harness plug for looseness, aging or falling. Is it OK after checking? →**Yes** To step 2. →**No** Repair the fault position.
2. Check up and down regulating motor line of the rearview mirrors. (with up and down regulation of left external rearview mirrors as one example).	
	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the left exterior rearview mirror harness plug D03. D. Disconnect the dashboard switch harness plug I28. E. Measure the resistance between the terminal 2 of the left external rearview mirror harness plug D03 and the terminal 7 of the dashboard switch harness plug I28 by using a multimeter. **Standard value: less than 5Ω** Is the resistance normal? →**Yes** To step 3. →**No** Repair up and down regulating motor line failures of the rearview mirror. If necessary, replace the harness.

3. Check the rearview mirror common line.	
  	A. Operate the ignition switch to turn the power to OFF state. B. Disconnect the battery negative connector. C. Disconnect the switch harness plug I28 of the dashboard. D. Disconnect the left exterior rearview mirror harness plug D03. E. Disconnect the right exterior rearview mirror harness plug D14. F. Measure the resistance between the dashboard switch harness plug I28 terminal 4 and fixed ground point with the multimeter. **Standard value: 10MΩ or higher** G. Measure the resistance between the dashboard switch harness plug I28 terminal 4 and left exterior rearview mirror harness plug D03 terminal 4 with the multimeter. **Standard value: less than 5Ω** H. Measure the resistance between the dashboard switch harness plug I28 terminal 4 and right exterior rearview mirror harness plug D14 terminal 4 with the multimeter. **Standard value: less than 5Ω** Is it OK after checking? →**Yes** To step 4. →**No** Repair public line failures of the rearview mirror. If necessary, replace the harness.
4. Check the dashboard switch.	
	A. Replace the dashboard switch. **Refer to: Replacement of the dashboard switch.** Is the troubleshooting successful? →**Yes** Replace the dashboard switch. →**No** To step 5.
5. Check rearview mirrors	
	A. Replace the rearview mirror. **Refer to: Replacement of the rearview mirror.** Confirm that the fault has been ruled out.

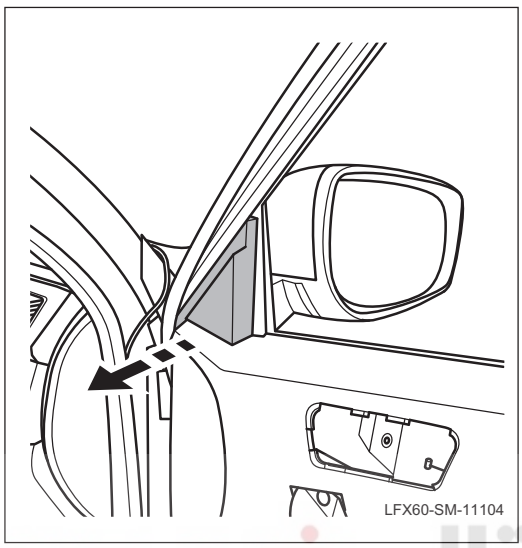
Removal and installation

Replace the electric rearview mirror

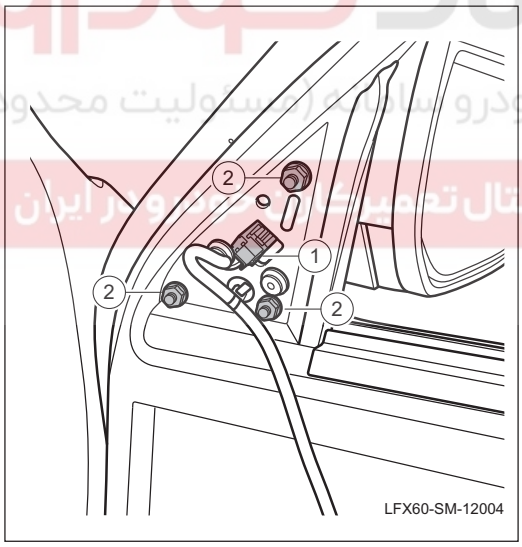
Removal

1. Disassemble electric rearview mirror.

(a). Disconnect the battery negative connector.



(b). Disassemble the front door triangular decorative board by using a proper tool.



(c). Disconnect the harness plug 1 of the electric rearview mirror.

(d). Disassemble the fixing nut 2 of the electric rearview mirror.

(e). Remove the electric rearview mirror.

Installation

1. Install the electric rearview mirror.

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

Replace electric rearview mirror lens

Removal

1. Disassemble electric rearview mirror lens.

(a). Disassemble electric rearview mirror lens by using a proper tool.

ℹ Note:

Electric rearview mirror lens are fragile. Wrap the disassemble end with soft cloth, carefully remove electric rearview mirror lens, properly handle and recycle them, and do not injure anyone.

Installation

1. Install the electric rearview mirror lens.

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