

## 02 -Engine

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# دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



# دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

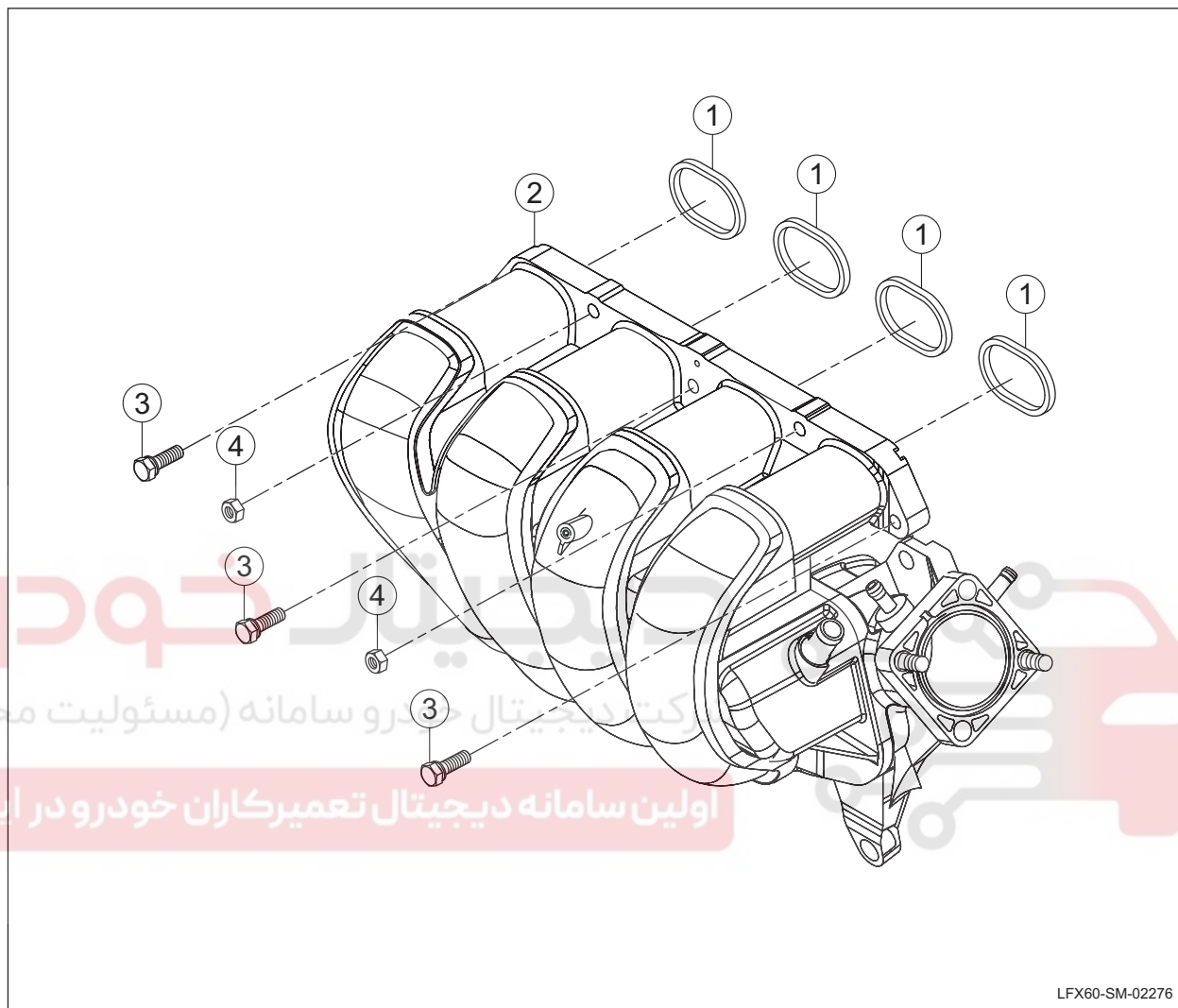
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## Intake system

### Structure and installation location

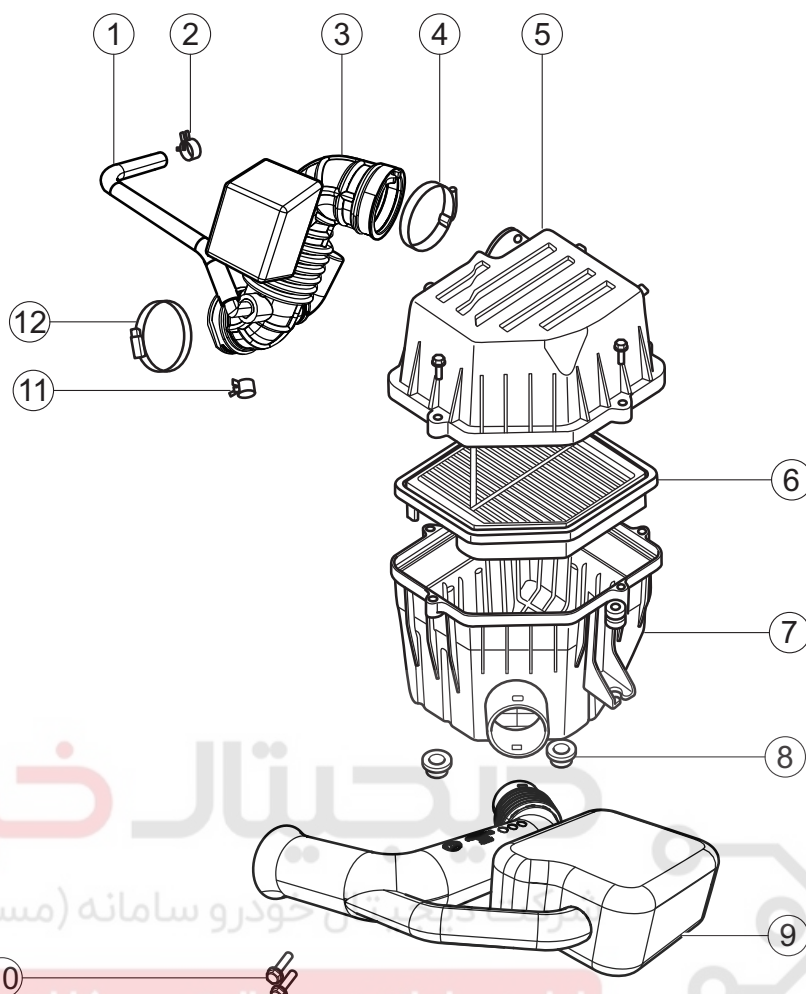
#### Component Location Plan



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No.	Part Name
1	Rubber sealing ring
2	Intake manifold assembly

No.	Part Name
3	Hexagon head bolt and plain washer assembly
4	Hex flange nut

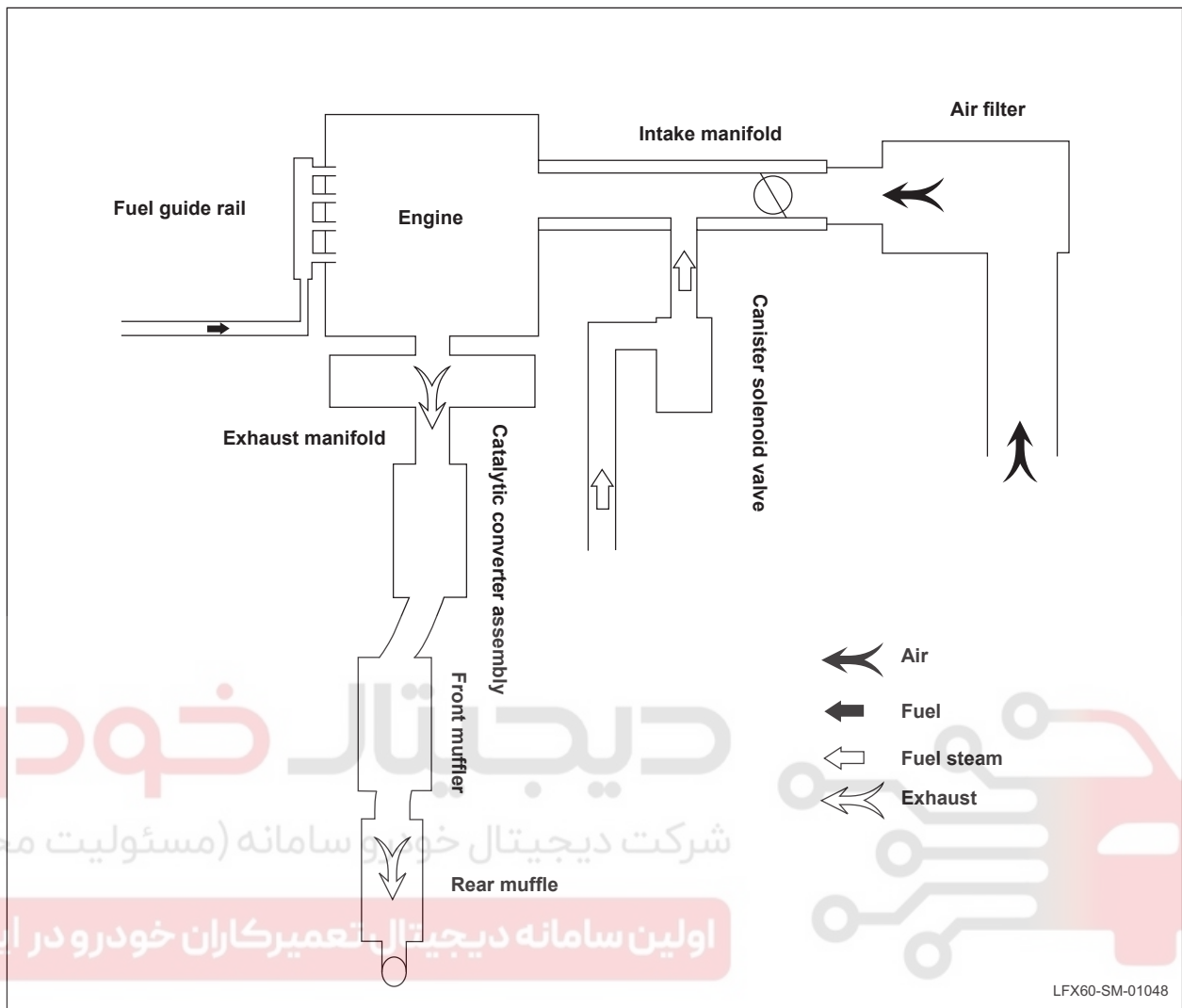


LFX60-SM-02277

No.	Part Name
1	Crankcase ventilation tube
2	Elastic tape hoop
3	intake hose
4	B type worm drive clip
5	Air filter upper housing
6	Air filter cartridge

No.	Part Name
7	air filter lower housing
8	air filter cushion
9	Drain tube
10	Hexagon head bolt and plain washer assembly
11	Elastic tape hoop
12	B type worm drive clip

## Functional diagram



## Operating Principle

### System Overview

The ambient air enters into the air filter and gets into the cylinder through the intake-tube, throttle body and intake manifold after passing the filter element. The crankcase vent-pipe is connected to the intake-tube. The exhaust gas in the crankcase enters into the cylinder through the vent-pipe along with the fresh air.

### Part instructions

#### Air filter

The sub-assembly of air filter consists of:

- assembly of air filter upper housing
- assembly of air filter lower housing
- Assembly of filter element

Dry air enters into the lower housing of air filter and goes through the air filter element. The air after filtering flows out from the air filter upper housing and enters into the cylinder through the throttle body

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## Diagnostic Information and Procedures

### Diagnosis Instructions

Before trouble-shooting, first understand and get familiar with the working principle of induction system. This is helpful to determine the correct procedures of trouble-shooting when the trouble occurs. More important, it is also helpful to determine if the status described by the client is normal operation.

Any trouble-shooting for the induction system shall start from the inspection for the induction system, then guide the maintenance personnel to take next logic procedure to perform trouble-shooting. Comprehend and correctly use the diagnostic flow chart to shorten the diagnosis time and avoid the misjudgement.

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### General equipment

Vacuum gauge
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### Visual Inspection

1. Confirm the customer's question.
2. Visually check for obvious signs of mechanical or electrical damage.

### Visual inspection table

Mechanical
<ul style="list-style-type: none"> <li>• Fixing part of admission passage</li> <li>• Subassembly of air filter</li> <li>• Electronic-controlled throttle body</li> <li>• Intake manifold</li> <li>• Fuel steam intake-tube</li> <li>• Canister solenoid valve</li> </ul>

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

If the vehicle fails, no trouble code is detected by the engine control module (ECM), and no significant fault location is found after visual inspection and general inspection, it is recommended that troubleshooting should be carried out according to diagnostic ideas and processes of the table below.

Symptom	Possible Cause	Recommended Measures
Intake leaking	• Part connection	<b>Refer to: Trouble-shooting for intake leakage</b>
	• Air filter	
	• Intake manifold	
	• Electronic-controlled throttle body	
	• crankcase vent-pipe	
	• Steam ischarge pipe of fuel tank	
Intake blocked	• Air filter cartridge	• Check the air filter and replace it if necessary.
	• Foreign object in the intake tube.	• Check if there is any foreign object in the air filter and intake tube. If yes, eliminate it.

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**Trouble-shooting for intake leakage**

Test condition	Details/results/measures
1. Check if there is a leaking sound.	<p>A. Start the engine.</p> <p>B. Listen carefully if there is a leaking sound If there is a "sizzle" leaking sound? →<b>Yes</b> Check the leaking position and repair the leaking part. →<b>No</b> To step 2.</p>
2. Check all the pipelines connecting to the intake manifold.	<p>A. Check if the vent-pipe of crankcase and steam discharge pipe of fuel tank get aged or are not sealed properly. If all the pipelines are normal? →<b>Yes</b> To step 3. →<b>No</b> Repair relevant pipelines.</p>
3. Check the vacuum degree of air intake system.	<p>A. Perform the inspection procedure for the intake system vacuum degree. If the vacuum degree is normal? →<b>Yes</b> Confirm the system is normal. →<b>No</b> To step 4.</p>
4. Check the intake manifold or electrical throttle body.	<p>A. Check the tightness of intake manifold or electrical throttle body. If the intake manifold or throttle body leaks? →<b>Yes</b> Repair the seal of intake manifold or electrical throttle. →<b>No</b> Check the admission gear of engine. <b>Refer to: Timing gear ( mechanical system, dismounting and installation)</b></p>



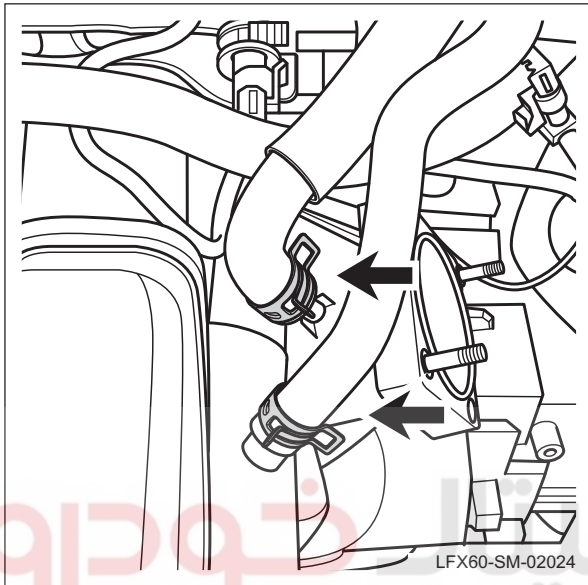
## Removal and Installation

### Replacement of intake manifold assembly

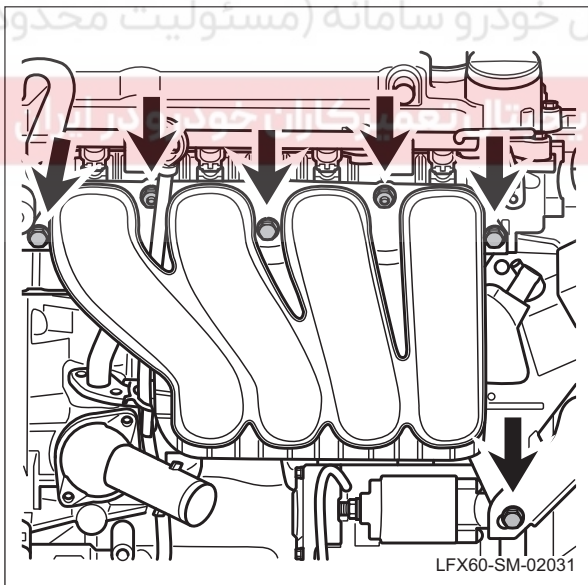
#### Removal

##### 1. Dismount the intake manifold assembly.

- (a). Remove the air filter assembly. Refer to the replacement of air filter assembly.
- (b). Dismount the throttle body assembly. Reference: replacement of throttle body assembly.



- (c). Disconnect the upper passage of intake manifold.
- (d). Pull out the oil scale.



- (e). Dismount the tap bolt and nut of intake manifold.
- (f). Detach the intake manifold assembly.

#### Installation

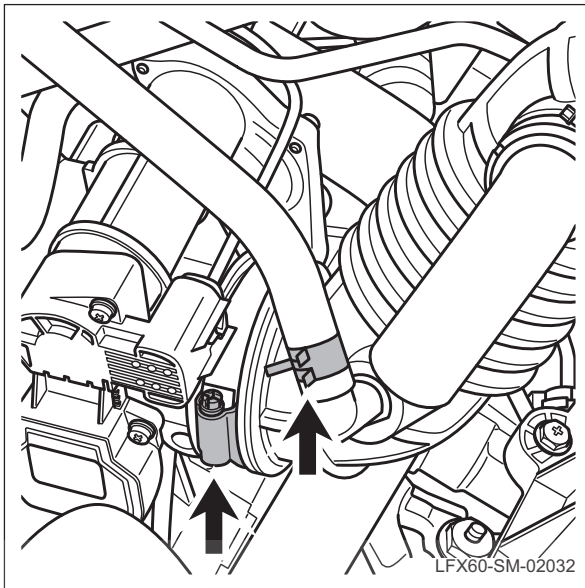
##### 1. Install the intake manifold assembly.

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

## Replacement of air filter assembly

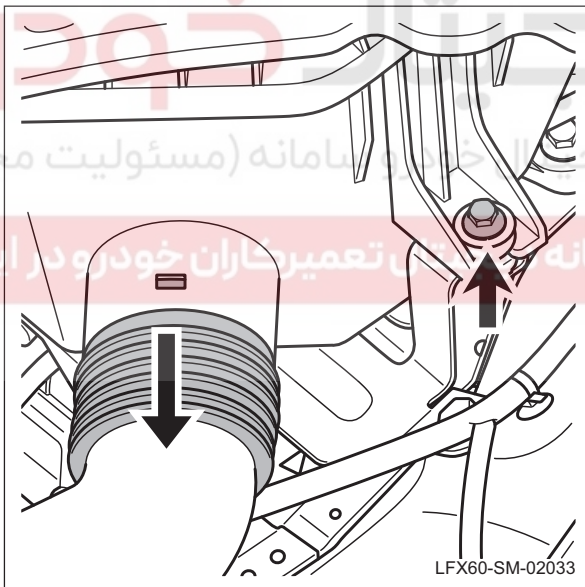
### Removal

#### 1. Dismount the air filter assembly



- (a). Dismount the bar clasp to detach the connection between the throttle and throttle intake pipe.
- (b). Disconnect the upper passage of throttle intake pipe.

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- (c). Dismount the tap bolt of air filter assembly.
- (d). Disconnect the air filter intake pipe.
- (e). Detach the air filter assembly.

### Installation

#### 1. Installation the air filter assembly

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



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