

INTAKE SYSTEM

1742-01/2313-01/2313-04/2313-07/

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INTAKE SYSTEM

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دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



INTAKE SYSTEM**1742-01****GENERAL INFORMATION****1. SPECIFICATIONS**

Category		Specifications	Remarks
Intake system		Variable control system	
Air cleaner element	Filter type	Dry, filter element	-
	Filtering area	0.3 m ²	
	Service interval	Clean every 15000 km, change every 30000 km (But, shorten the service interval under severe conditions)	
Air cleaner assembly	Weight	1.5 kg	
	Operating temperature	-30 to 100°C	
	Capacity	9 L	

* Service more frequently under severe conditions, such as driving on a dusty road or off-road.

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Modification basis	
Application basis	
Allocated VIN	

INTAKE SYSTEM

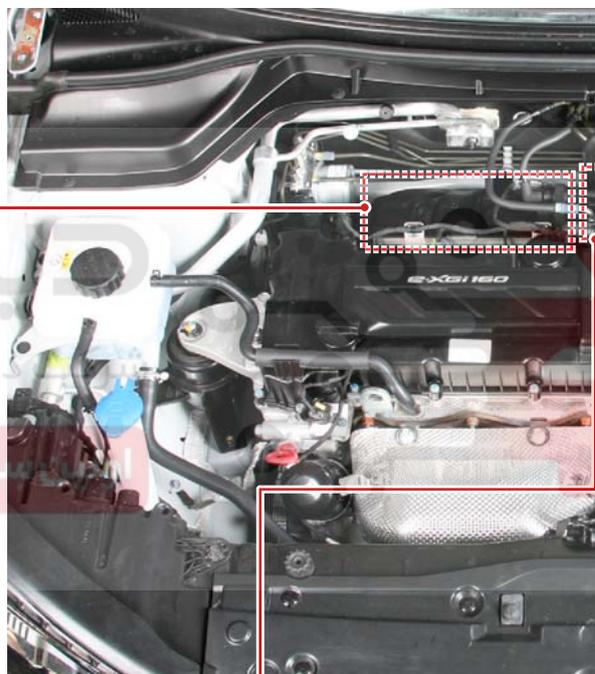
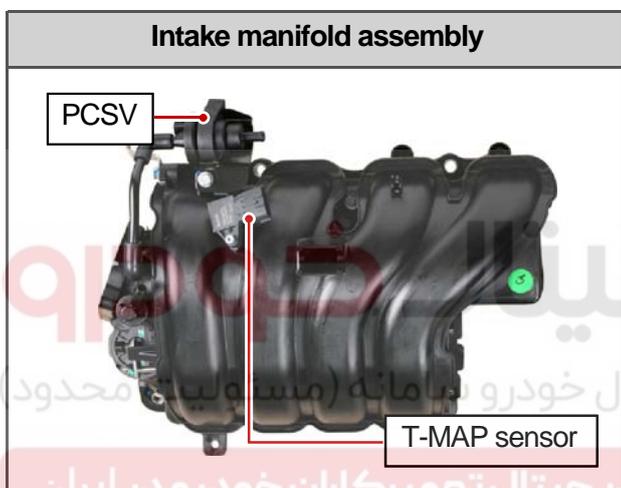
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OVERVIEW AND OPERATING PROCESS

1. OVERVIEW

The intake system filters the air and supplies this to the engine. This system assures the engine performance and the lifetime of the engine. The intake system is equipped with electronic throttle body. The flap of the electronic throttle body is operated by the electric signals to improve the engine performance. The system is also equipped with variable induction system (VIS) which improves engine power across the whole driving conditions by controlling the inlet passage based on the engine rpm and engine load.

2. COMPONENTS

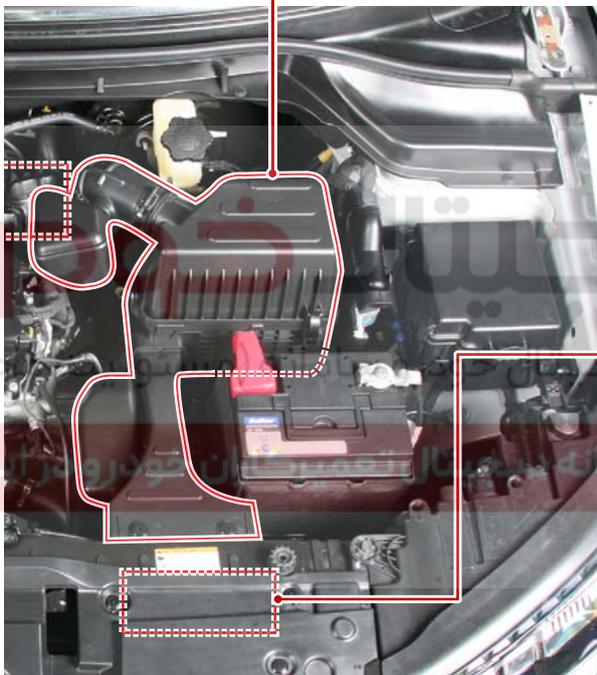


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Air cleaner assembly & Snorkel



Air cleaner element



Water protector



VIS solenoid valve



VIS actuator



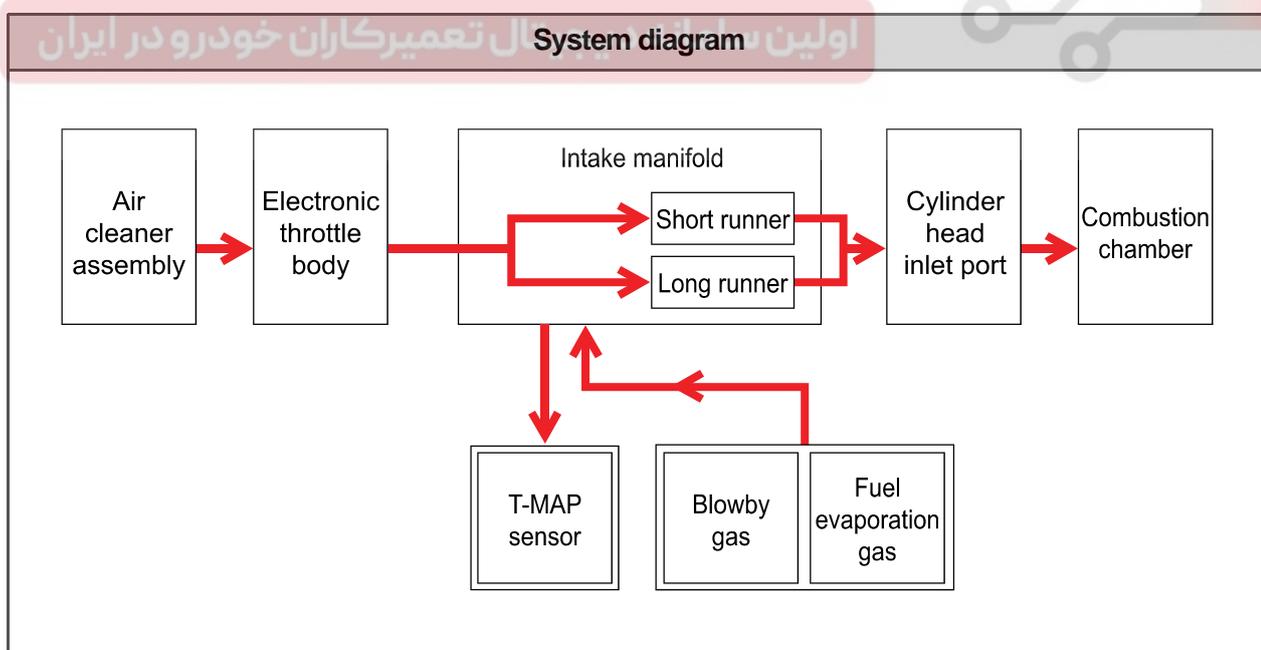
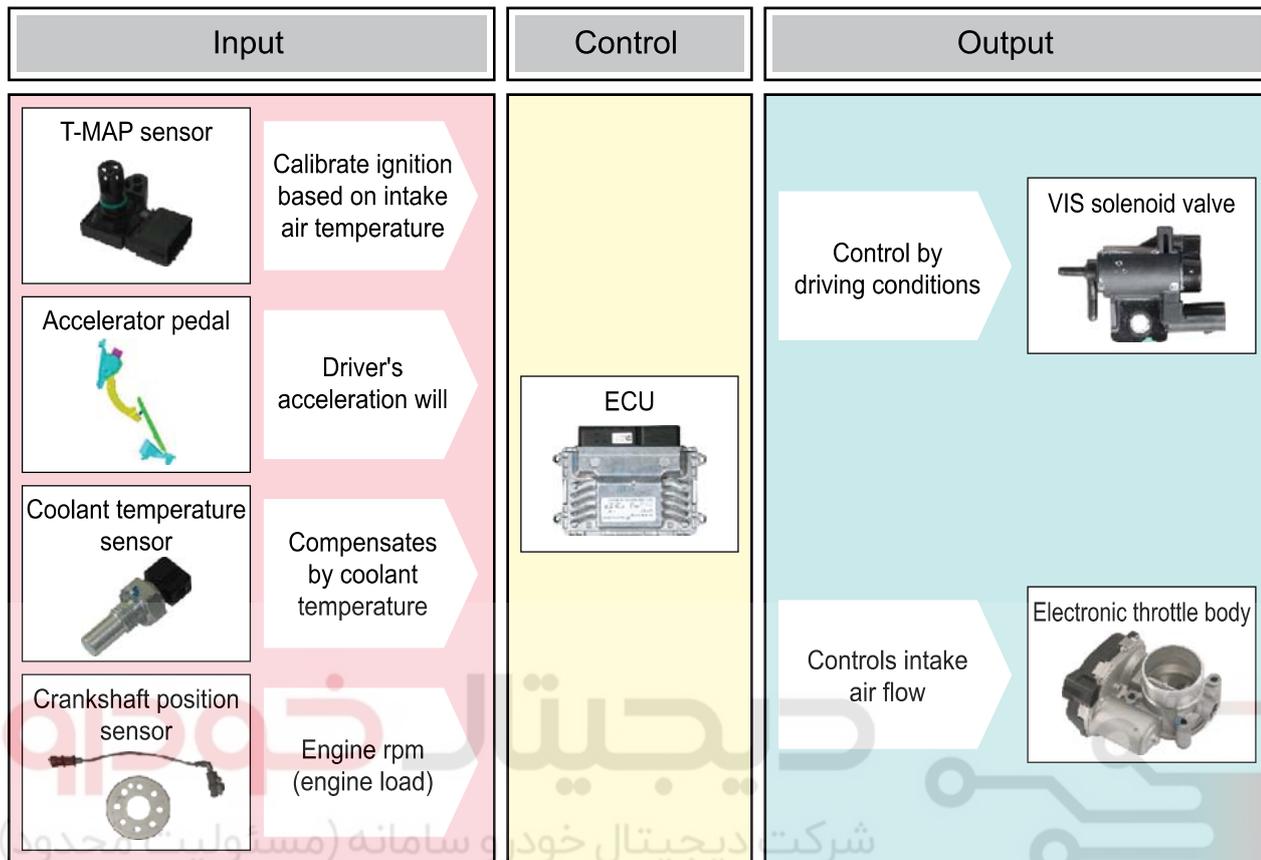
- ENGINE GENERAL
- ENGINE ASSEMBLY
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- COOLING SYSTEM
- CHARGING
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Modification basis	
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INTAKE SYSTEM

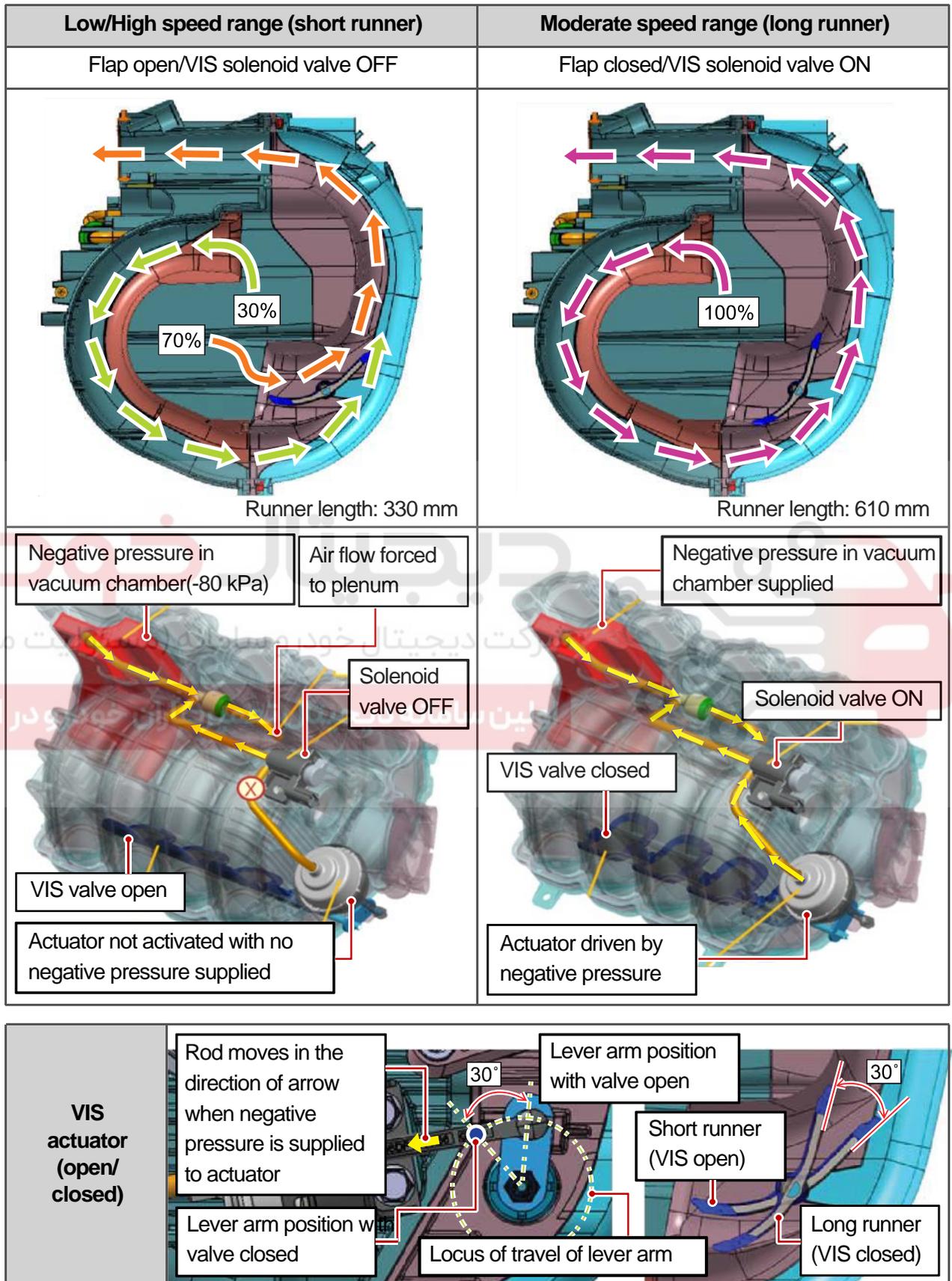
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3. INPUT/OUTPUT DIAGRAM



Modification basis	
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► Operating process



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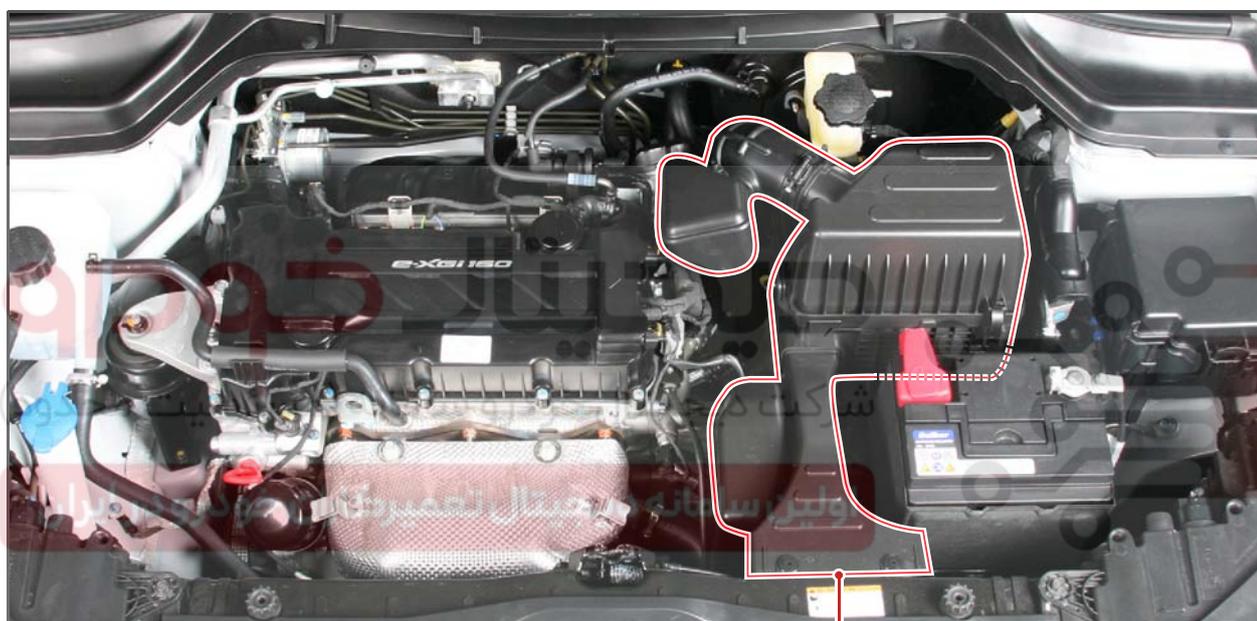
CONFIGURATION AND FUNCTIONS

2313-01 AIR CLEAR ASSEMBLY

1) Overview

The air cleaner assembly consists of snorkel, 2 resonators, upper and lower air cleaner housings, air cleaner element. The air cleaner element filters fine dirt and foreign materials in the air before it enters the combustion chamber. Therefore, it needs to be checked, cleaned, and changed regularly. The air cleaner element is a dry paper filter type.

2) Mounting Location and Components



Air cleaner assembly

Resonator
(High frequency)

Air cleaner hose

Air cleaner element

Resonator
(Low frequency)

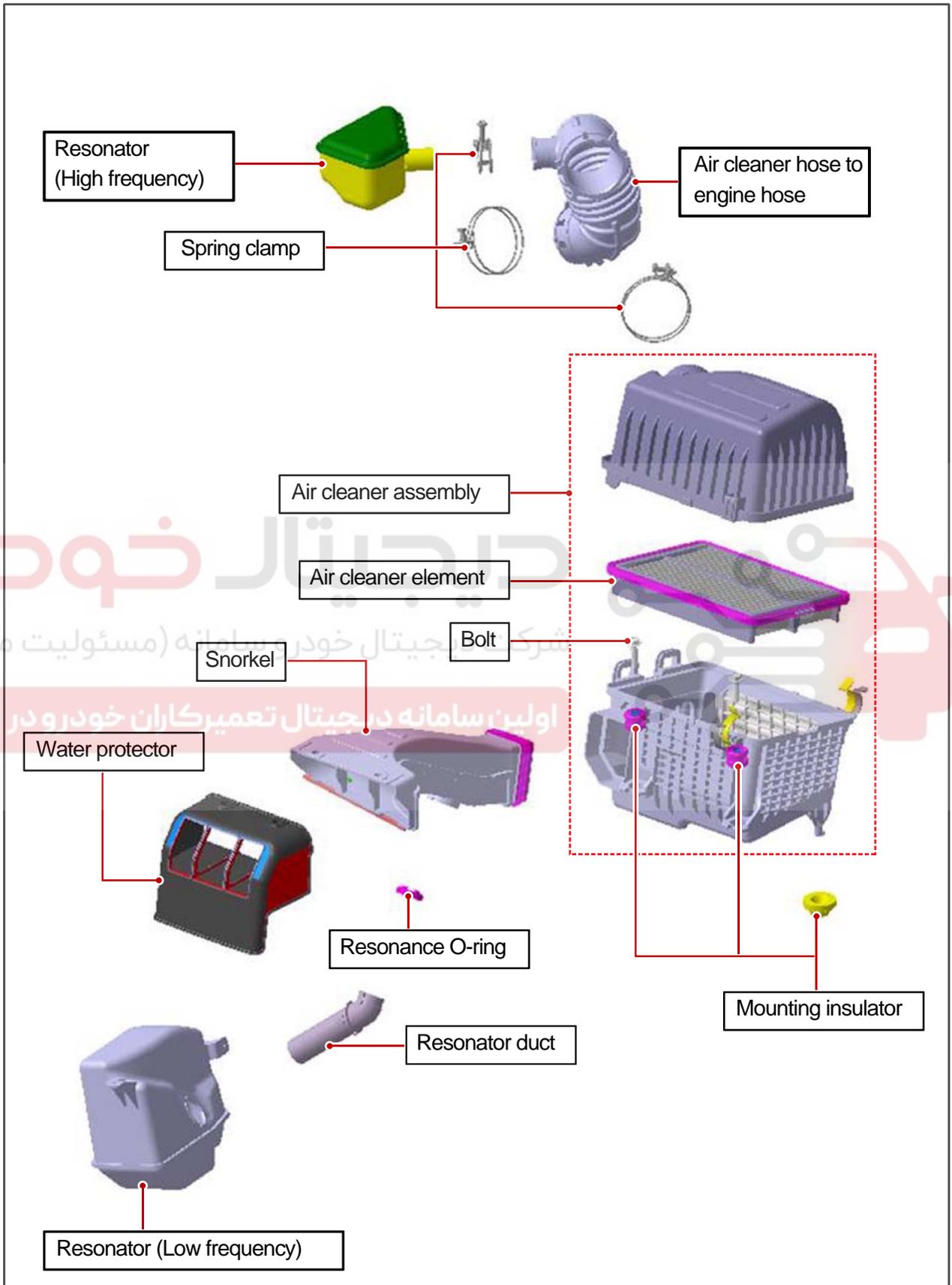
Snorkel



* Service more frequently under excessive use or severe conditions, such as driving on a dusty road or off-road, or driving in the rain for a long period of time.

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► Configuration



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E.E.M

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S.G.N. 1742-01 INTAKE MANIFOLD ASSEMBLY

1) Overview

The intake manifold assembly transmits the air drawn by the air cleaner to the intake port. It has a tilted electronic throttle body (about 16.8°) to minimize the inertia and pulsation, resulting in optimized performance. The intake manifold is equipped with variable induction system (VIS) which improves engine power across the whole driving conditions by controlling the inlet passage based on the engine rpm and engine load. Also, the intake manifold is equipped with a vacuum reservoir tank. This tank holds the vacuum enough to operate VIS actuator 4 to 5 times.

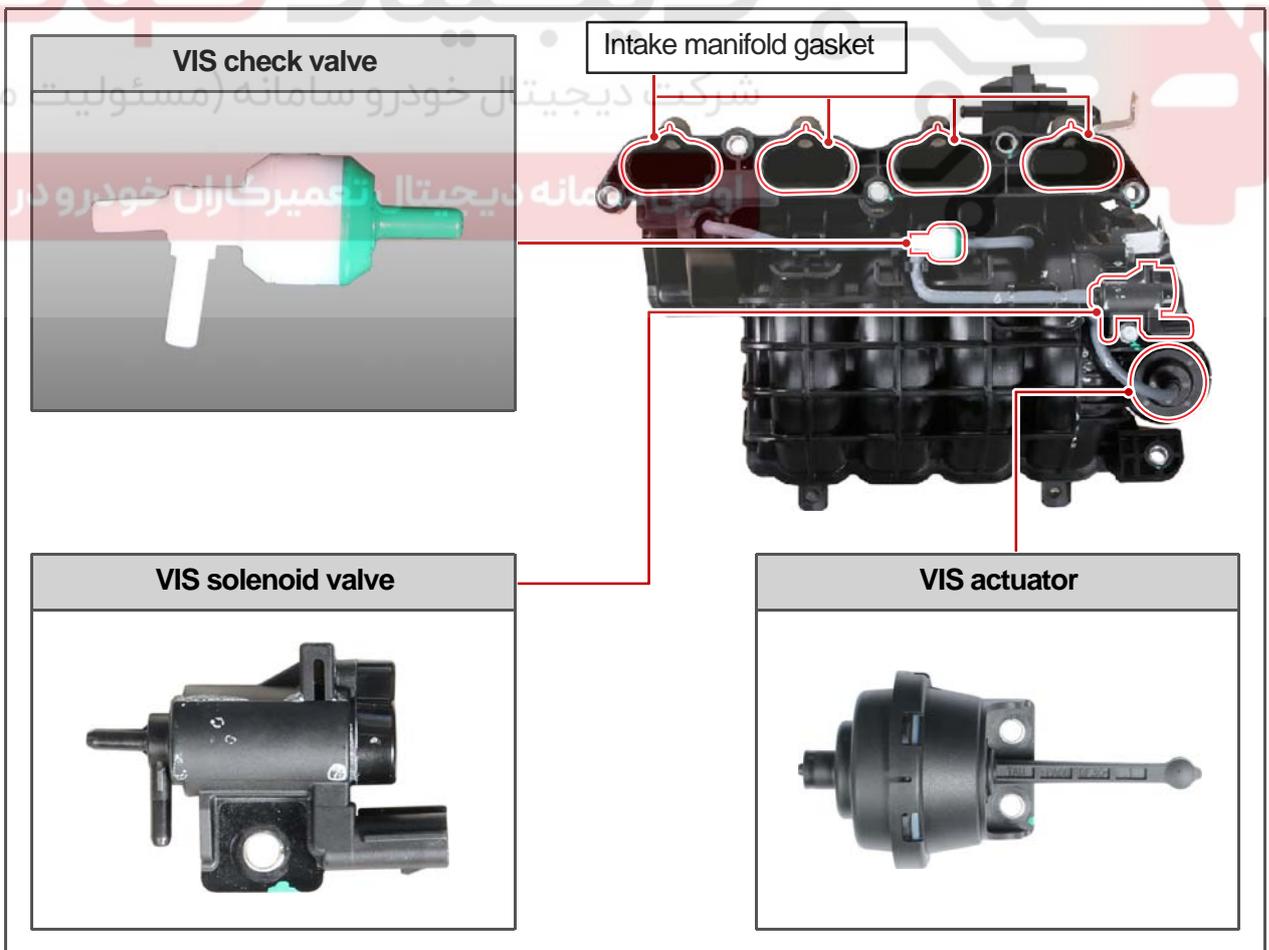
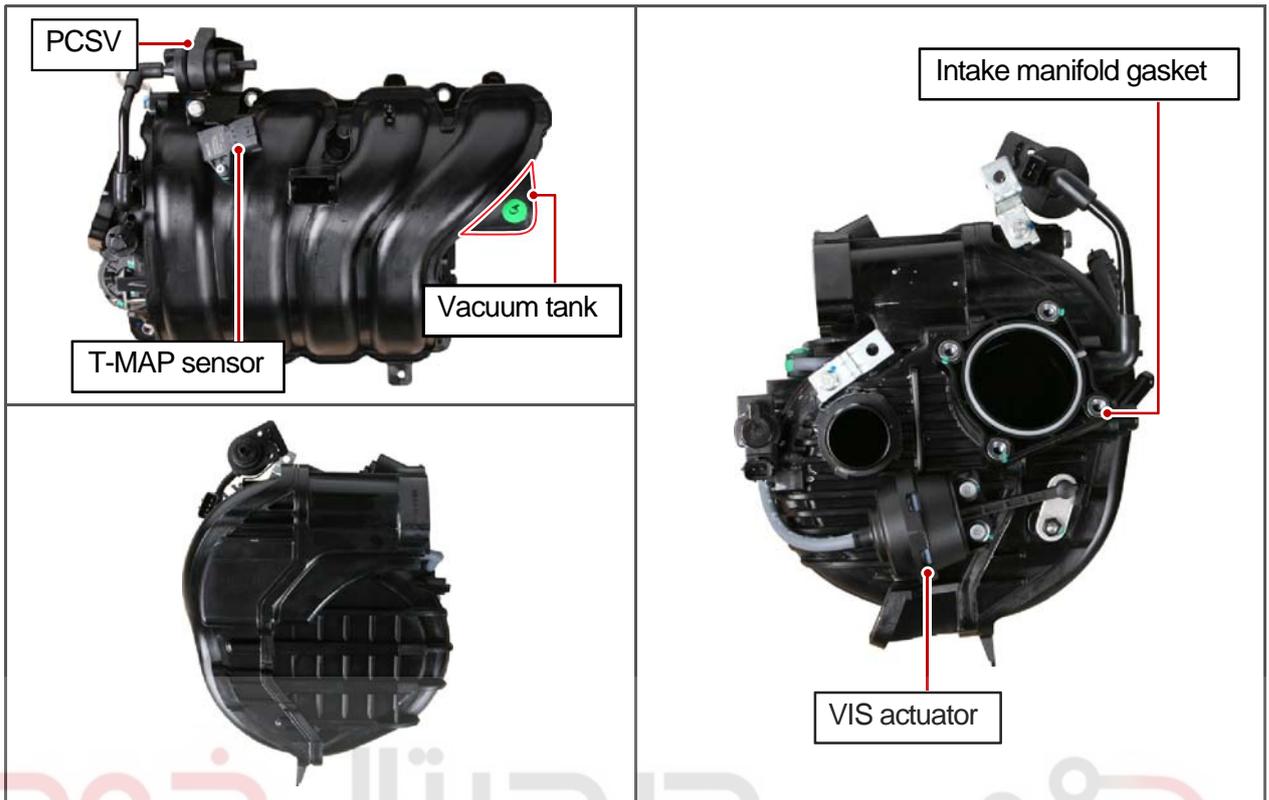
2) Mounting Location and Components

The diagram illustrates the installation of the intake manifold assembly on an engine. It is divided into four quadrants:

- Top Left:** Shows the intake manifold damper mounting being positioned on the engine block. A red outline highlights the damper's shape, and a green dot indicates a specific mounting point.
- Top Right:** Shows the intake manifold assembly being held in place. A red outline highlights the manifold's shape, and a green dot indicates a specific mounting point. A label 'Damper mounting' points to the damper's location on the engine.
- Bottom Left:** Shows the intake manifold damper mounting with a callout box showing a close-up of the mounting hardware, which includes a bolt and a bracket.
- Bottom Right:** Shows the intake manifold assembly with four red dashed circles highlighting the mounting holes for injectors. A label 'Mounting holes for injectors' points to these holes.

CAUTION
Never disassemble the intake manifold since it is sealed with sealing.

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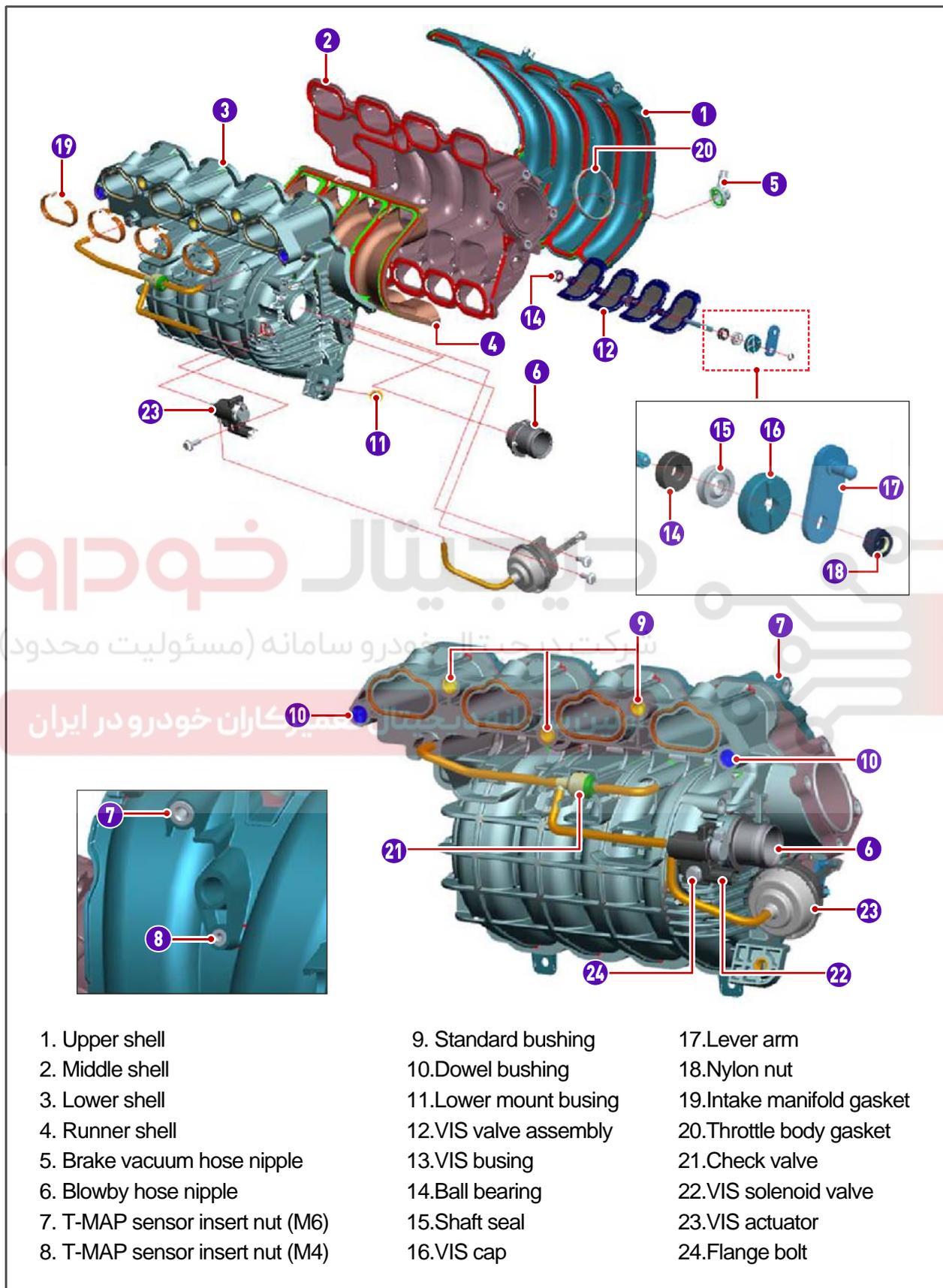
E.E.M

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INTAKE SYSTEM

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► Configuration



- 1. Upper shell
- 2. Middle shell
- 3. Lower shell
- 4. Runner shell
- 5. Brake vacuum hose nipple
- 6. Blowby hose nipple
- 7. T-MAP sensor insert nut (M6)
- 8. T-MAP sensor insert nut (M4)

- 9. Standard bushing
- 10. Dowel bushing
- 11. Lower mount busing
- 12. VIS valve assembly
- 13. VIS busing
- 14. Ball bearing
- 15. Shaft seal
- 16. VIS cap

- 17. Lever arm
- 18. Nylon nut
- 19. Intake manifold gasket
- 20. Throttle body gasket
- 21. Check valve
- 22. VIS solenoid valve
- 23. VIS actuator
- 24. Flange bolt

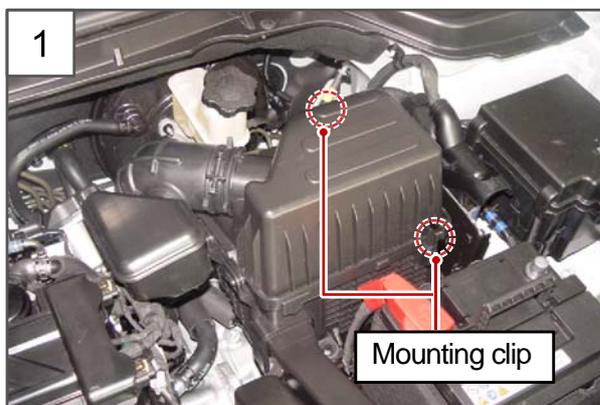
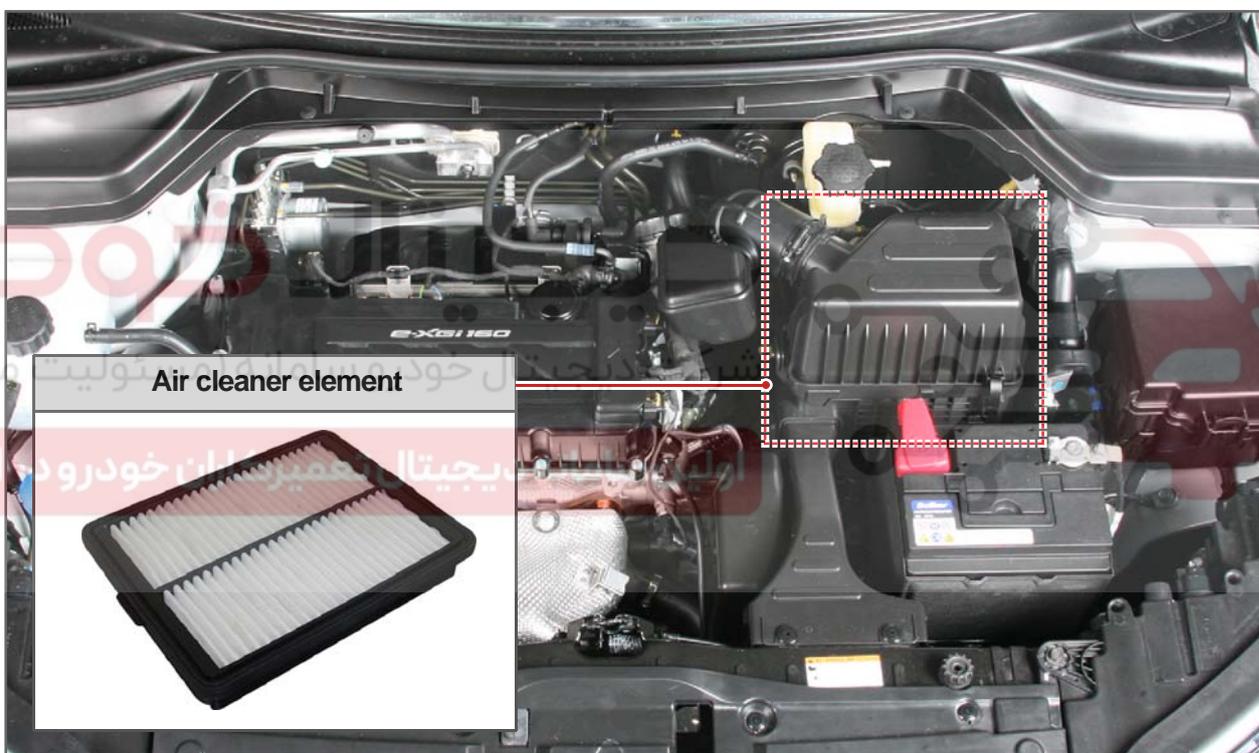
Modification basis	
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REMOVAL AND INSTALLATION

2313-04 AIR CLEANER ELEMENT

 **NOTE**

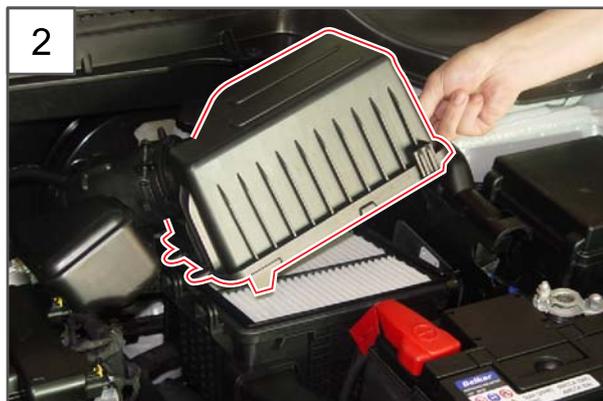
- ▶ Changing/Cleaning interval: Clean at every 15,000 km of driving. Change at every 30,000 km.
- ▶ Service more frequently under excessive use or severe conditions, such as driving on a dusty road or off-road, or driving in the rain for a long period of time.
- ▶ Failure to follow the changing interval may cause:
 - Insufficient engine power
 - Excessive emissions
 - Prematurely worn engine cylinder walls, pistons, piston rings and intake valves



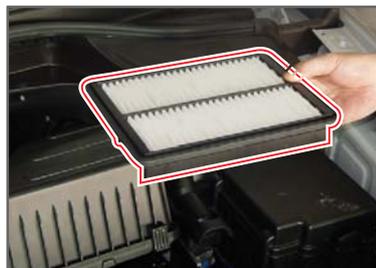
1. Remove the mounting clips for the air cleaner upper cover.



Modification basis	
Application basis	
Allocated VIN	



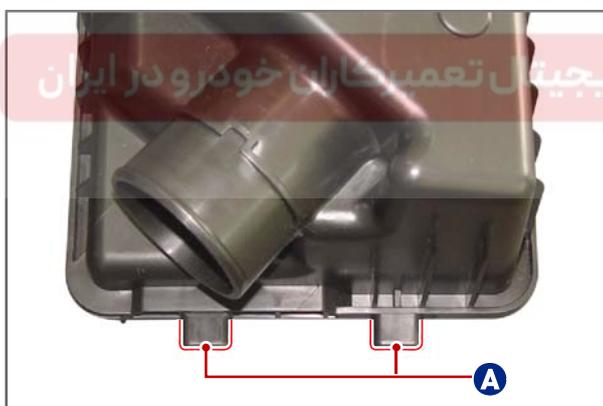
2. Lift off the air cleaner upper cover, and remove the air cleaner element.



3. Install in the reverse order of removal.

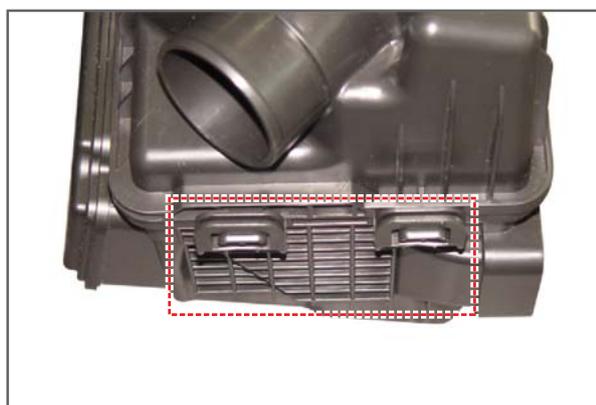
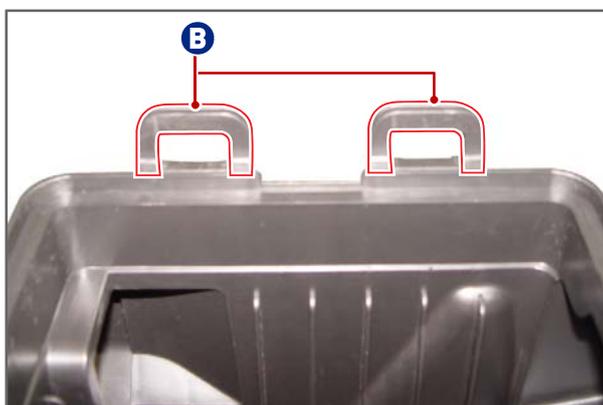
CAUTION

Check if the air cleaner element is clogged, contaminated, or damaged. If the element is clogged a little bit, remove the foreign materials by blowing the compressed air from the back side of the element. Replace the element if it is excessively contaminated. Do not allow any foreign matters to enter into the system when replacing.



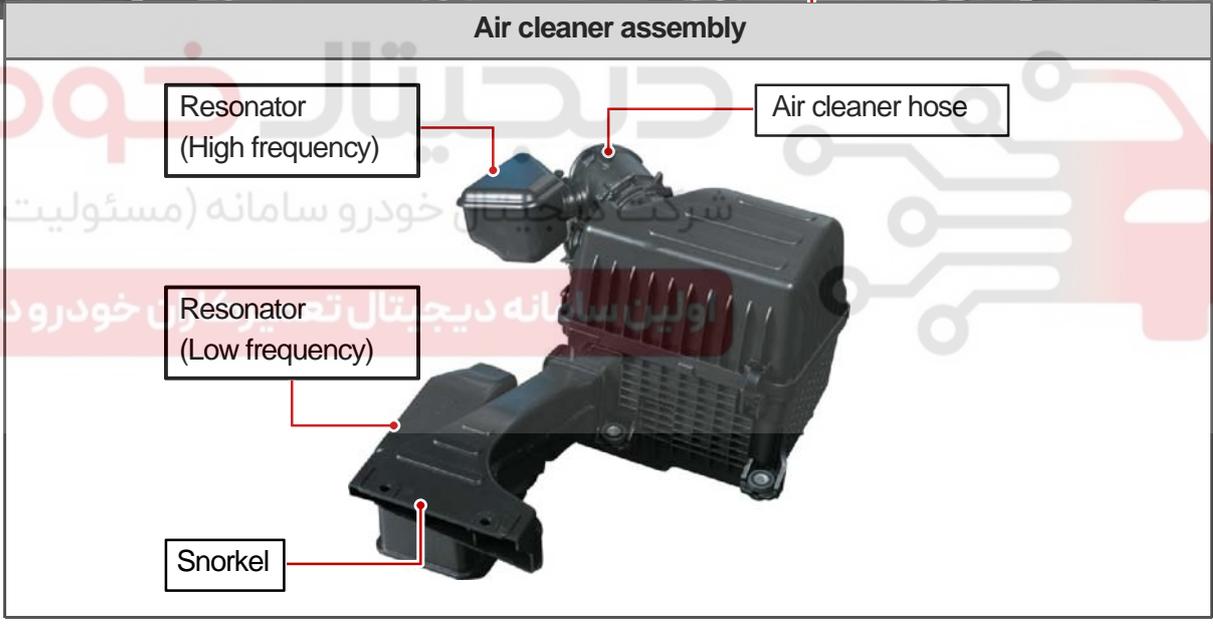
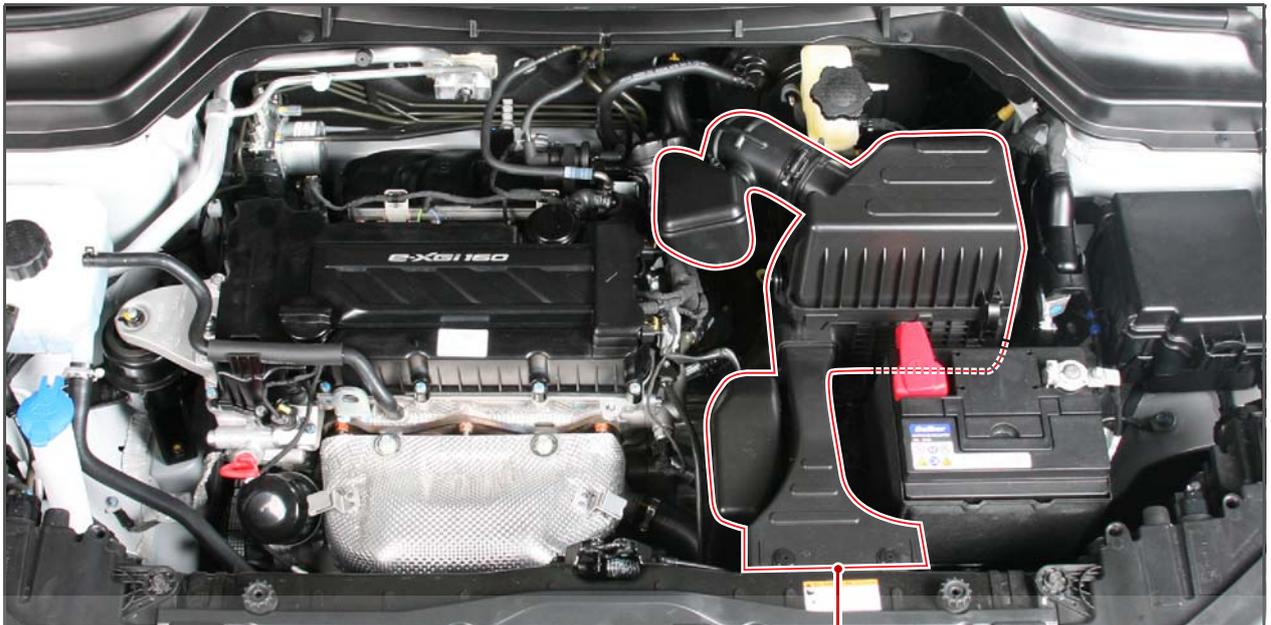
CAUTION

When installing, make sure that the mounting bosses of the air cleaner upper cover (A) are engaged correctly on the mounting brackets of the air cleaner lower cover (B).



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S.G.N.
2313-01 AIR CLEANER ASSEMBLY



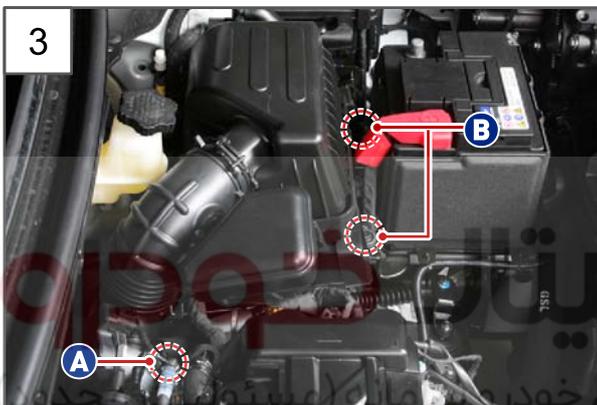
1. Remove the 2 screw rivets securing the snorkel assembly.

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2. Remove the snorkel assembly.



3. Remove the spring clamp (A, 10 mm) for the air cleaner hose and 2 mounting bolts (B, 12 mm) for the air cleaner assembly.

Tightening torque (A) 6 to 7 Nm
(B) 25 ± 2.5 Nm



4. Remove the air cleaner assembly.

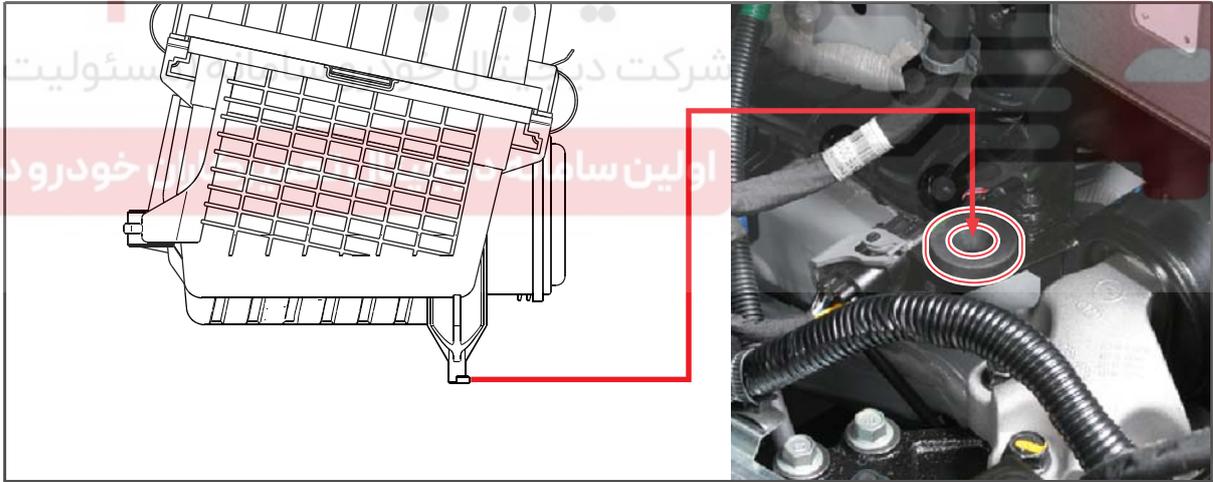
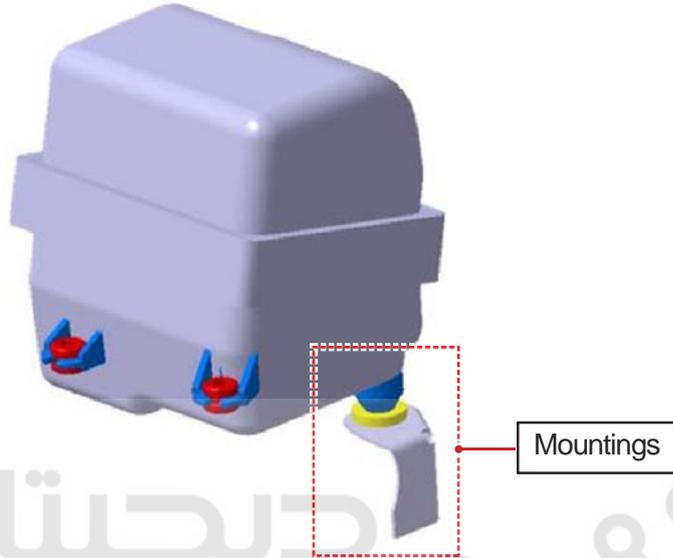


5. Install in the reverse order of removal.

Modification basis	
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Cautions for fitting air cleaner assembly

- When installing the air cleaner housing, make sure that the retaining key at the bottom of the housing is seated correctly on the recessed area of the engine compartment.



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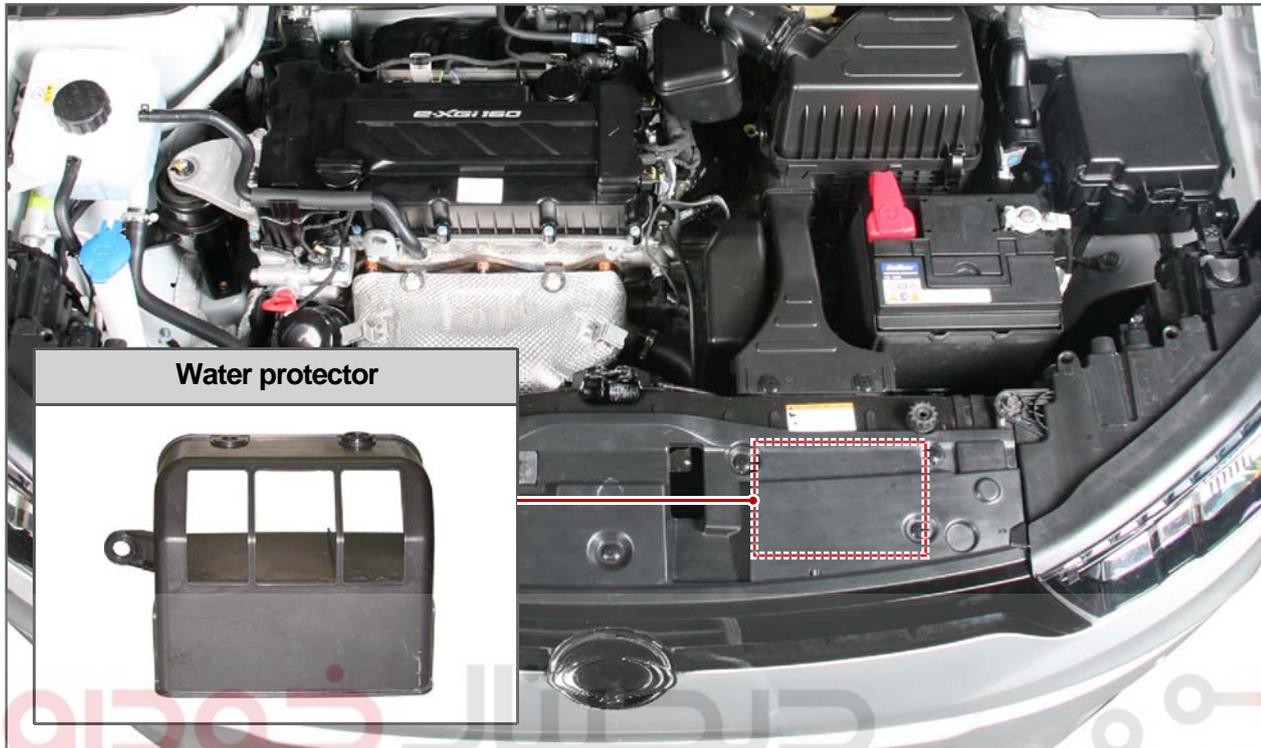
CRUISE CONTROL

ENGINE CONTROL

EEM

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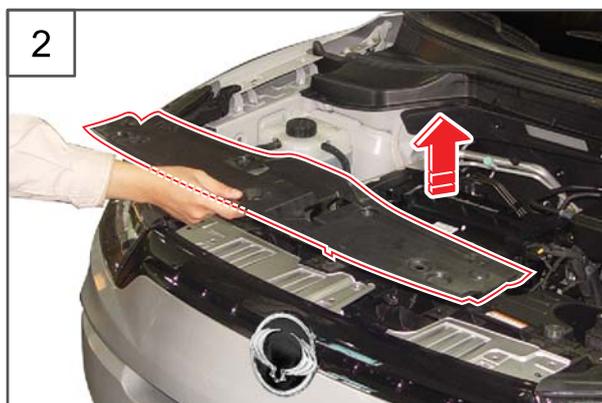
S.G.N. 2313-07 WATER PROTECTOR



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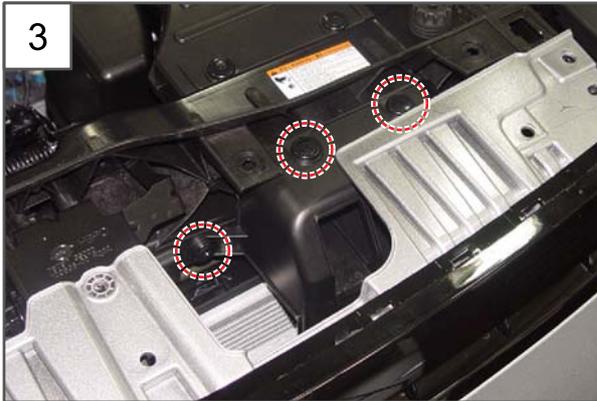


1. Remove the 7 front end cover mounting screw rivets.

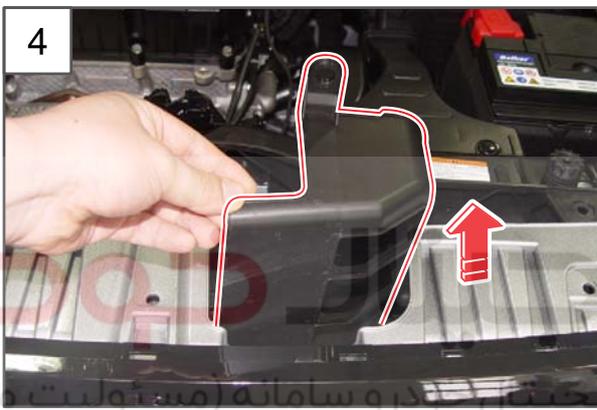


2. Remove the front end cover.

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3. Remove the 3 screw rivets securing the water protector.



4. Remove the water protector.



5. Install in the reverse order of removal.

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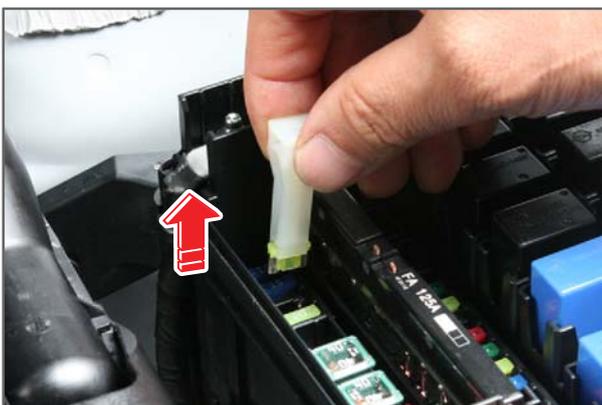
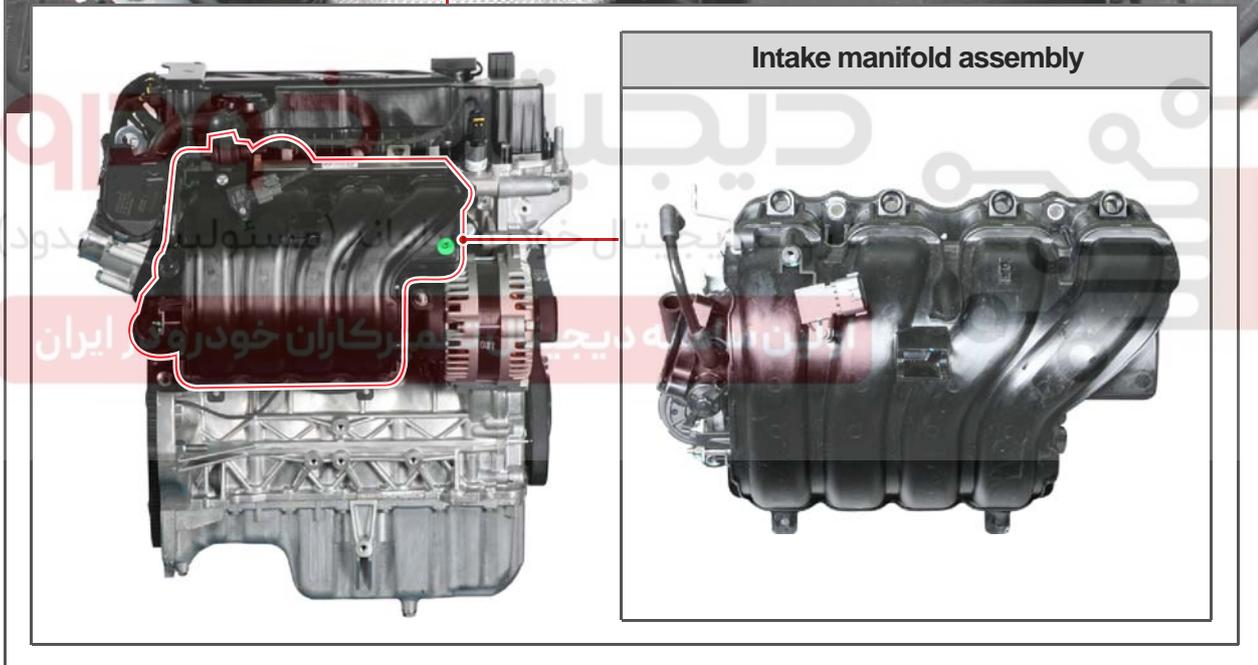
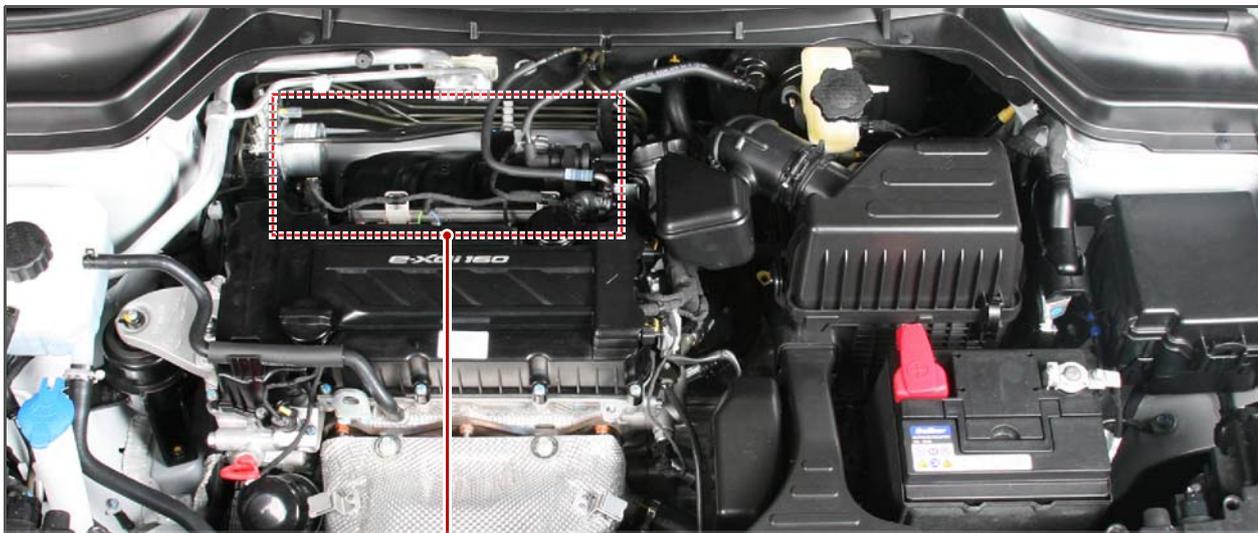
E.E.M



Modification basis	
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S.G.N. 1742-01 INTAKE MANIFOLD ASSEMBLY

Preceding work - Disconnect the negative cable from the battery.



NOTE
 To remove the intake manifold, the fuel supply tube should be disconnected. Therefore, remove the fuel pump fuse from the engine compartment fuse box and rotate the engine to drain the fuel lines.

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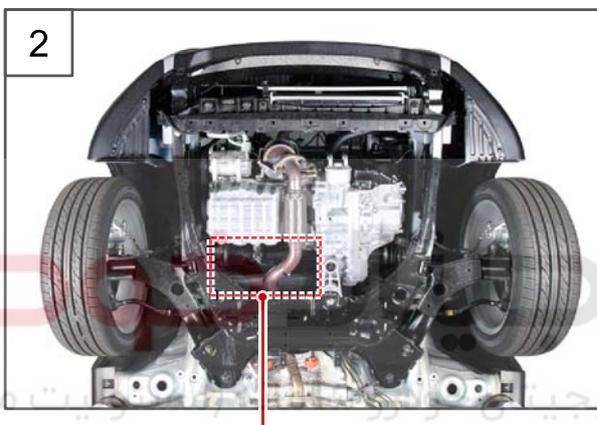


1. Remove the rear under cover under the vehicle.

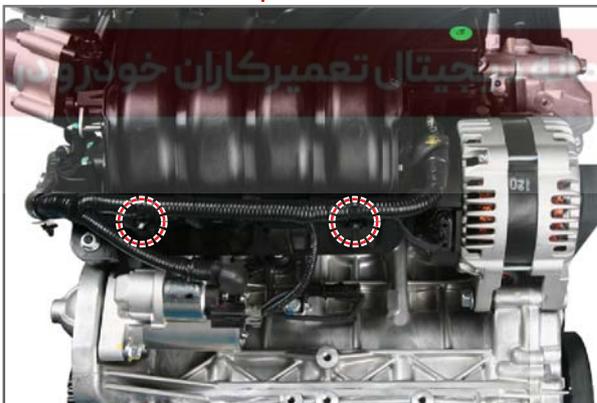
Tightening torque 13.8 to 17.6 Nm

CAUTION

Tighten the mounting bolt to the specified torque. Excessive tightening torque can cause damage to the rear under cover.



2. Disconnect the 2 battery positive cable wiring cables connected to the intake manifold from the underside of the vehicle.



3. Remove the air cleaner assembly from the engine compartment.

NOTE

Refer to "AIR CLEANER ASSEMBLY" under this subsection.

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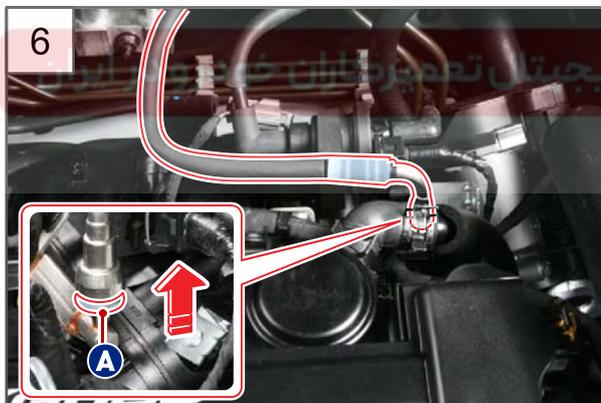
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4. Remove the blowby hose clamp.



5. Disconnect the blowby hose.



6. Disconnect the fuel supply tube from the fuel rail.



NOTE

Push up the part (A) of the fuel supply tube in the direction of the arrow to remove the tube.



CAUTION

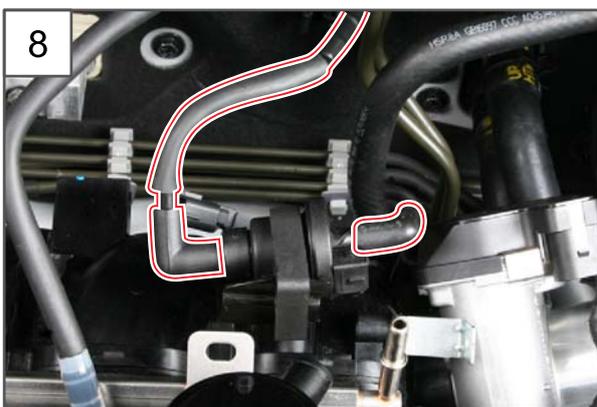
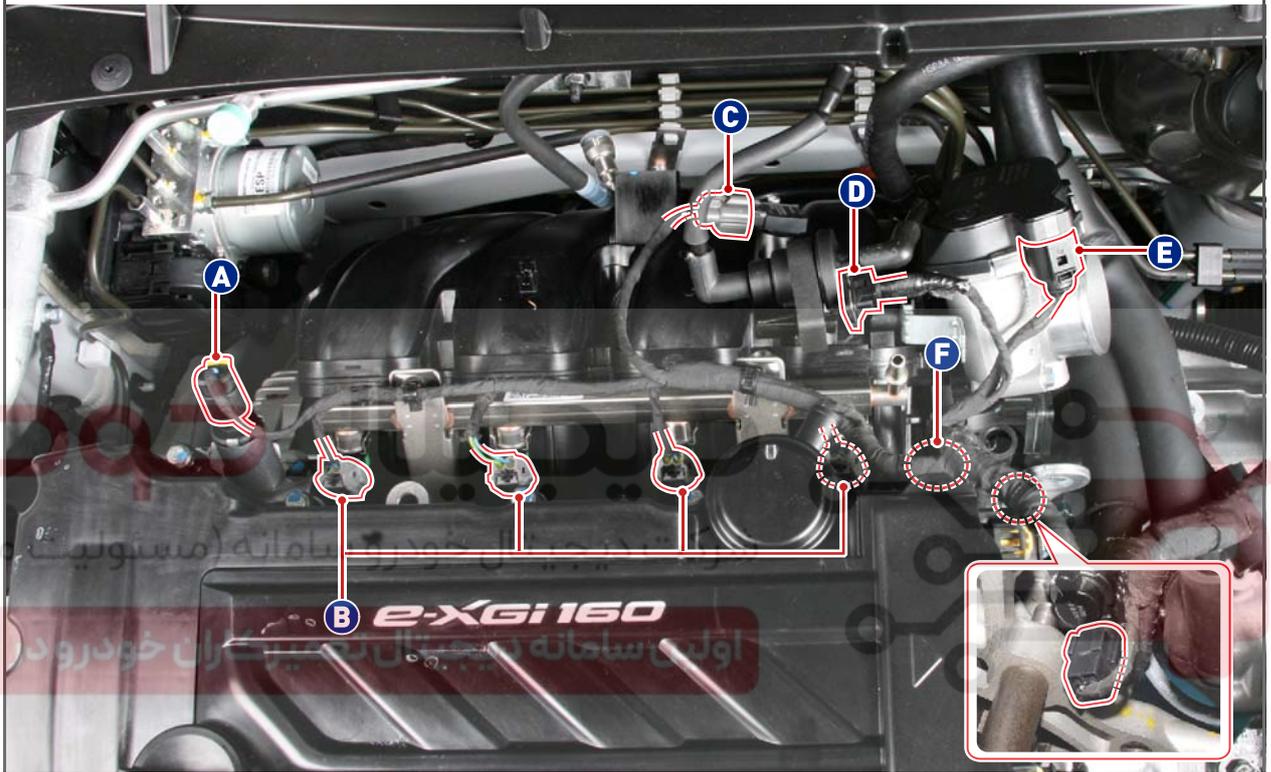
Be careful not to fold the fuel supply tube to prevent damage to the tube.

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7. Disconnect the connectors and disengage the wiring clamps to free the engine main wiring.

- A. OCV connector to intake side
- B. Injector connector
- C. T-MAP sensor connector
- D. PCSV connector

- E. Electronic throttle body connector
- F. Wiring clamp
- G. VIS solenoid valve connector



8. Disconnect the 2 hoses to the PCSV.

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9. Unscrew the PCSV mounting bolt (10 mm).

Tightening torque 10 ± 1,0 Nm



10. Remove the PCV.



11. Unscrew the 2 mounting bolts (13 mm) securing the fuel rail assembly on the top of the intake manifold.

Tightening torque 25 ± 2,5 Nm



12. Remove the fuel rail with injectors from the intake manifold by grasping and pulling it with both hands as shown in the picture.

⚠ CAUTION

Make sure to use both hands to pull it out as the fuel rail and injector can break.

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13. Unscrew the 4 mounting bolts (10 mm) for the electronic throttle body.

Tightening torque 10 ± 1.0 Nm



14. Remove the electronic throttle body.



CAUTION

- When installing the electronic throttle body, replace the gasket (A) with a new one.
- Cover the opening of the intake manifold by using, for example, a rag to prevent dirt from entering.



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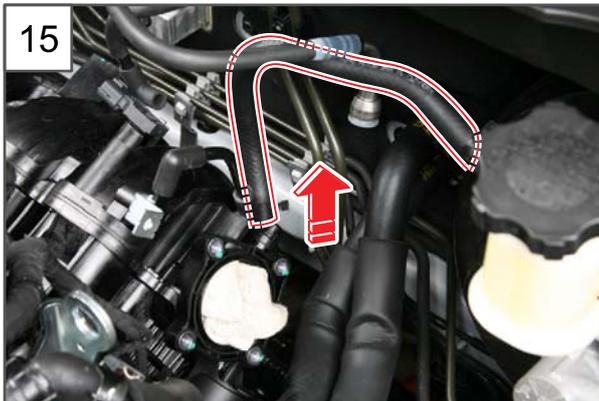
STARTING

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15. Disconnect the brake vacuum hose from the intake manifold.

16. Follow the below procedure to make a room for removal of the intake manifold assembly.

a

a. Position the floor jack under the oil pan.

b

b. Remove the 4 mounting bolts/nuts (17 mm) for the RH engine mounting insulator bracket.

Tightening torque 68.6 to 88.2 Nm

c

c. Remove the RH engine mounting insulator bracket.

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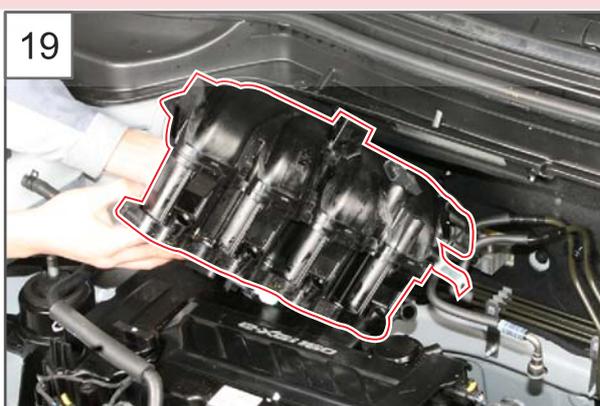
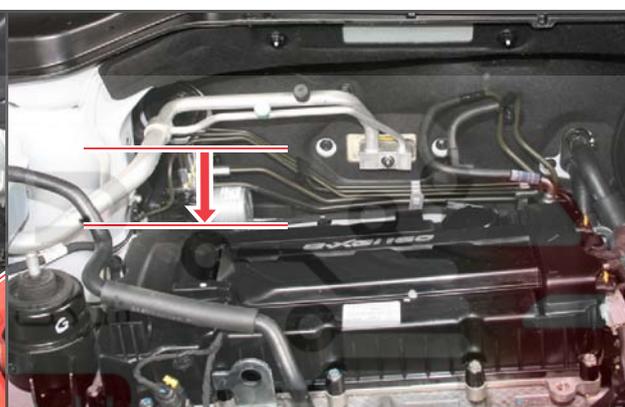
17. Unscrew the 4 mounting bolts/nuts (13 mm) for the intake manifold from the outside to the inside in sequence.

Tightening torque 25 ± 2,5 Nm

NOTE

When installing, tighten the bolts from the inside to the outside in sequence.

18. Lower the floor jack to make room for removal of the intake manifold assembly.



19. Remove the intake manifold assembly.

CAUTION

Make sure that the lines including the fuel hose, PCV pipe, A/C pipe do not interfere with other parts.

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20. Install in the reverse order of removal.



NOTE

Replace the intake manifold gasket with a new one when installing.

Removing intake manifold damper mounting

Remove the intake manifold damper mounting by rotating it counterclockwise using a 24 mm spanner.



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