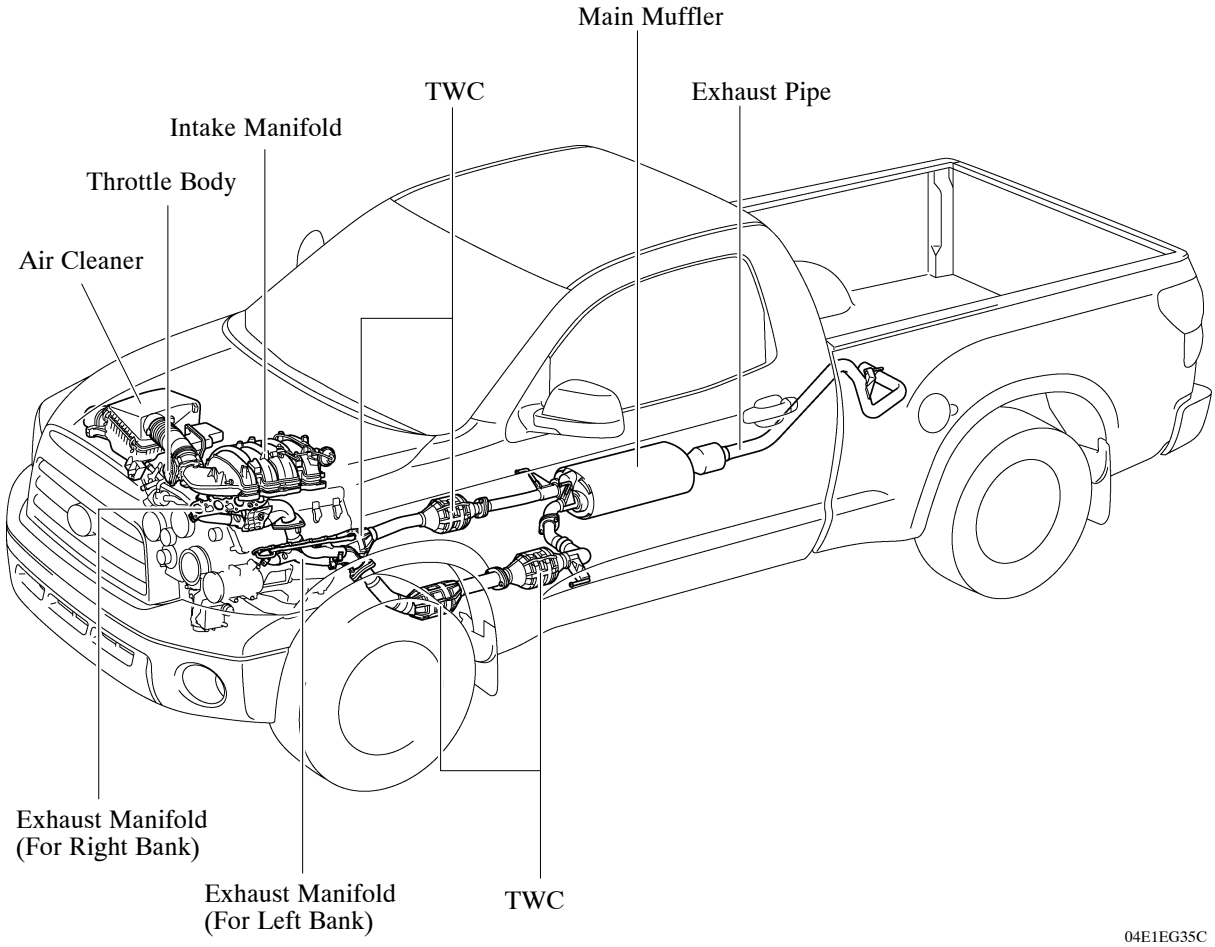
■INTAKE AND EXHAUST SYSTEM

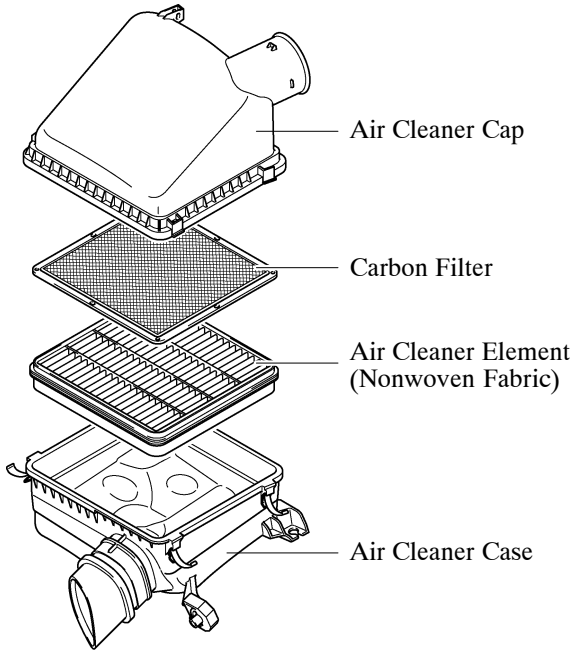
1. General

- A cable-less type throttle body is used and it realizes excellent throttle control.
- The ETCS-i (Electronic Throttle Control System-intelligent) is used to ensure excellent throttle control in all operating ranges. For details, see page EG-218.
- The ACIS (Acoustic Control Induction System) is used to improve the engine performance in all speed ranges. For details, see page EG-226.
- A plastic intake manifold is used.
- Stainless steel exhaust manifolds and exhaust pipes are used.



2. Air Cleaner

- A nonwoven, full-fabric type air cleaner element is used.
- A carbon filter, which adsorbs the HC that accumulates in the intake system when the engine is stopped, is used in the air cleaner case in order to reduce evaporative emissions. This filter is maintenance-free.

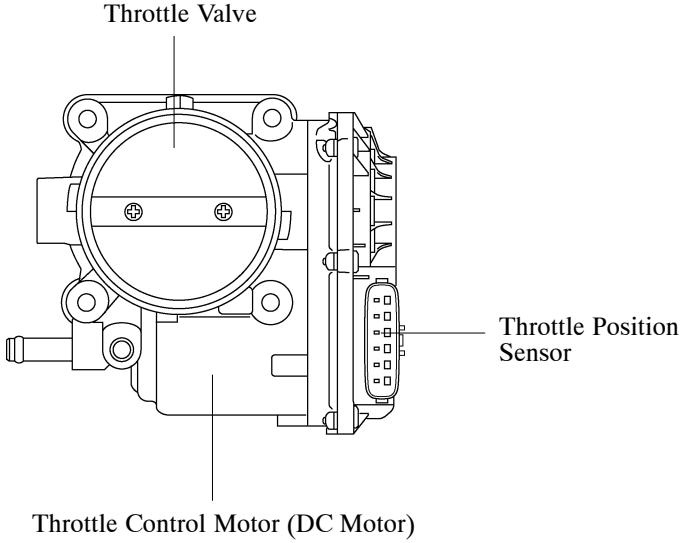


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3. Throttle Body

A cable-less type throttle body in which the throttle position sensor and the throttle control motor are integrated is used. It realizes excellent throttle valve control. For details, see page EG-218.

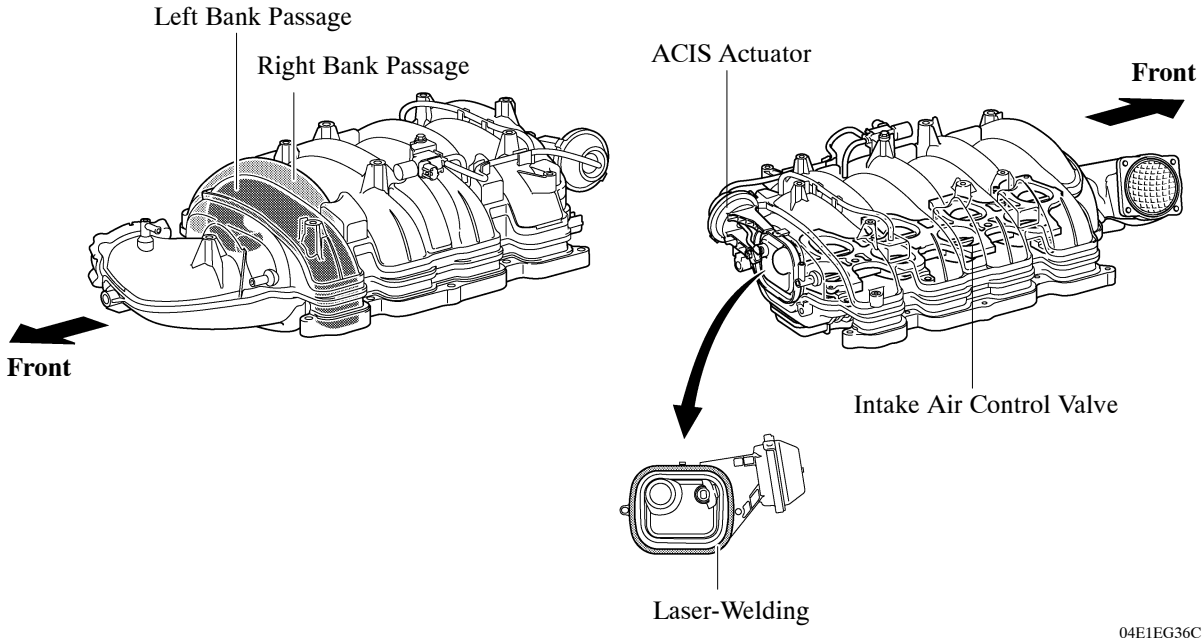
- As a throttle control motor, a DC motor with excellent response and minimal power consumption is used. The ECM performs duty ratio control of the direction and the amperage of the current that is supplied to the throttle control motor in order to regulate the throttle valve angle.



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4. Intake Manifold

- An intake manifold with a built-in plastic surge tank is used for weight reduction.
- The port diameter and length are optimized to achieve high torque in all driving ranges.
- The intake manifold contains valves for the ACIS (Acoustic Control Induction System), and the actuator is laser-welded to the intake manifold. The ACIS actuator actuates the intake air control valve that is used to change the intake pipe length to improve engine performance in all engine speed ranges. For details, see page EG-226.

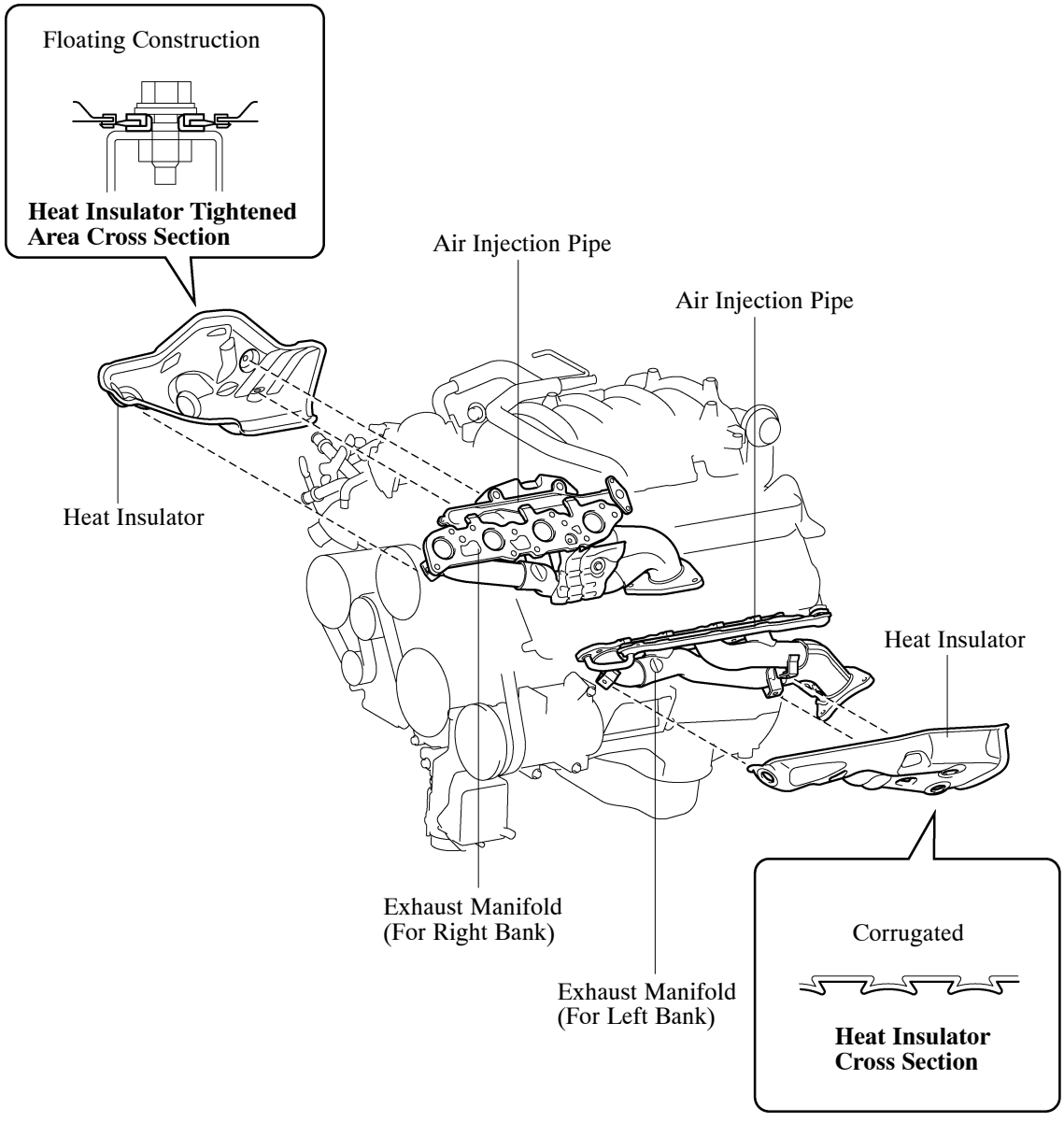


— REFERENCE —

Laser-Welding:
In laser-welding, a laser-absorbing material (the intake air chamber) is joined to a laser-permeable material (the ACIS actuator). Laser beams are then radiated from the laser-permeable side. The beams penetrate the laser-transmitting material to heat and melt the surface of the laser-absorbing material. Then, the heat of the laser-absorbing material melts the laser-permeable material and causes both materials to become welded.

5. Exhaust Manifold

- A stainless steel exhaust manifold is used for weight reduction.
- The exhaust manifold for each bank uses a semi-dual structure (a 4-2-1 grouping). This structure combines the 4 exhaust ports of one bank into 2 groups, then the 2 groups into 1 group, before the exhaust pipe. This reduces exhaust gas interference and improves power output.
- The heat insulator is made of corrugated aluminum. This ensures rigidity, and at the same time, increases the surface area to improve heat dissipation. Furthermore, a floating construction is used at the tightened area to reduce the transfer of heat and vibration to the heat insulator and improve reliability.
- Along with the adoption of the air injection system, air injection pipes are provided for the right and left bank exhaust manifolds.



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6. Exhaust Pipe

- A stainless steel exhaust pipe is used for weight reduction and rust resistance.
- Two ceramic type TWCs (Three-Way Catalytic converter) are provided in the exhaust front pipe for the left bank and also two for the right bank. The exhaust emission performance of the engine is improved as a result of these TWCs.

