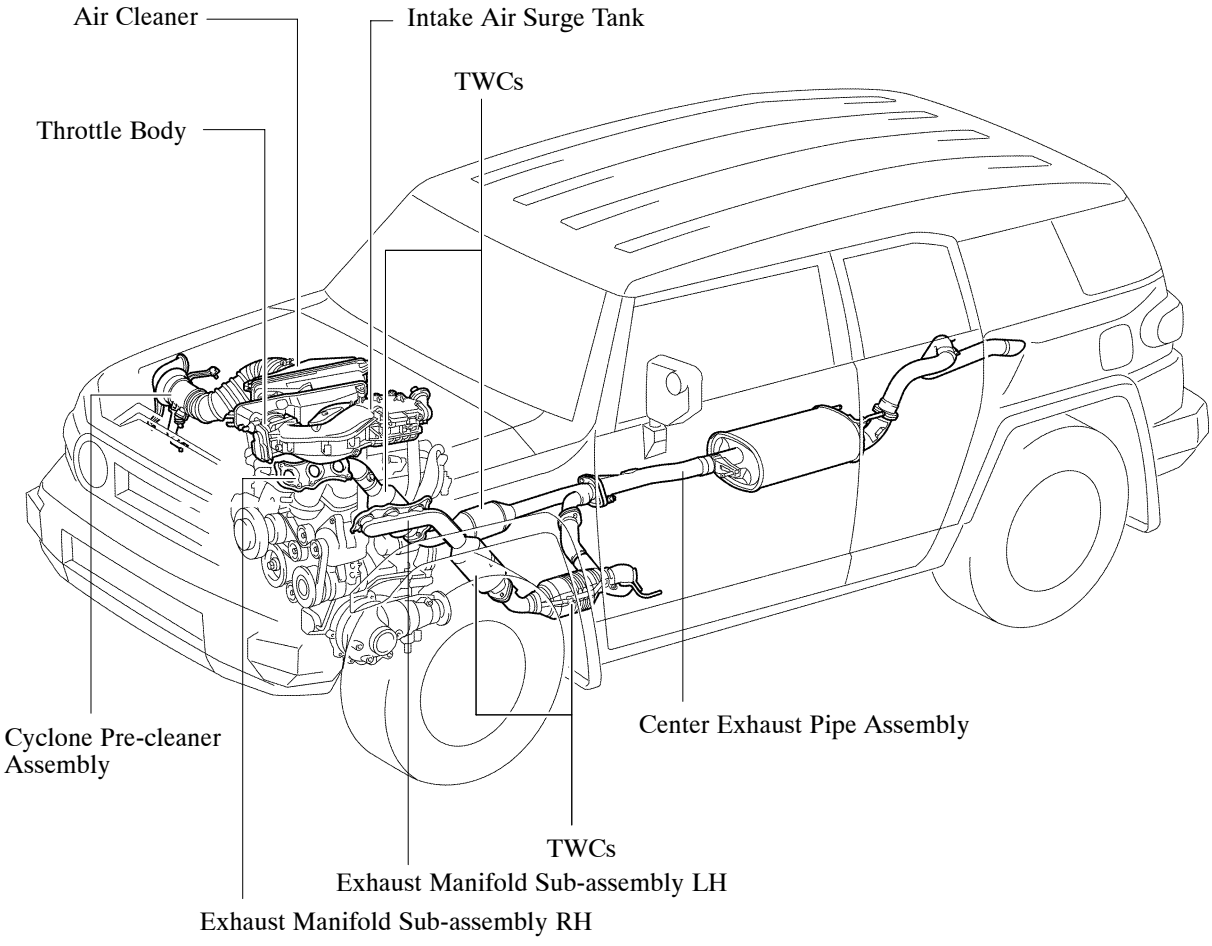
■INTAKE AND EXHAUST SYSTEM

1. General

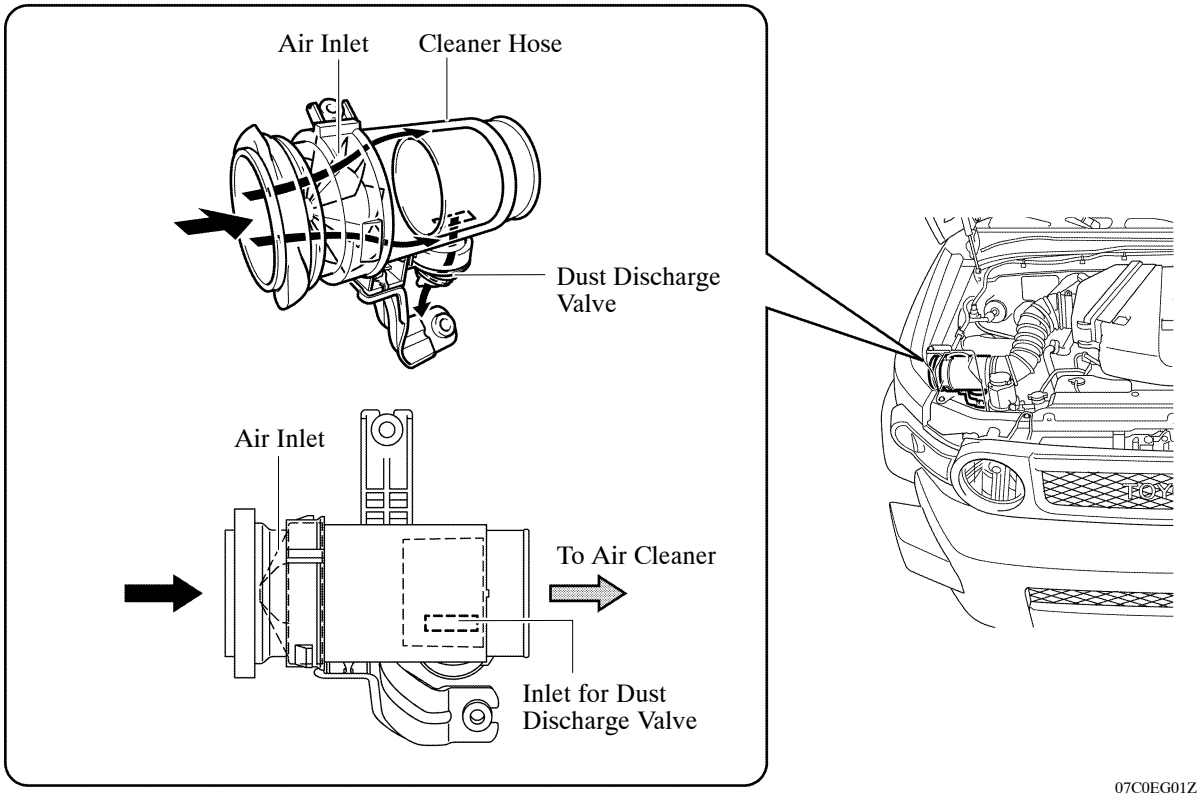
- A full-fabric type air cleaner element is used.
- A cyclone pre-cleaner assembly that separates dust from intake air is used.
- A cable-less type throttle body is used and it realizes excellent throttle control.
- The ETCS-i (Electronic Throttle Control System-intelligent) is used to ensure excellent throttle control in all operating ranges. For details, see page EG-57.
- The ACIS (Acoustic Control Induction System) is used to improve the engine performance in all speed ranges. For details, see page EG-64.
- An intake air surge tank made of plastic is used for weight reduction.
- A lightweight aluminum alloy is used for the intake manifold.
- Stainless steel exhaust manifolds and exhaust pipes are used.



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2. Cyclone Pre-cleaner Assembly

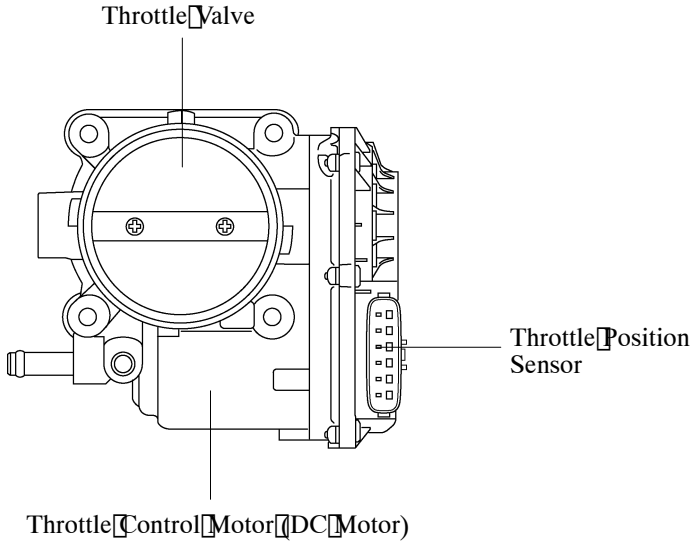
The cyclone pre-cleaner assembly consists of an air inlet, cleaner hose, and dust discharge valve. Dust is separated from the air at the air inlet, and is collected for disposal via the dust discharge valve inlet located on the cleaner hose periphery.



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-57.

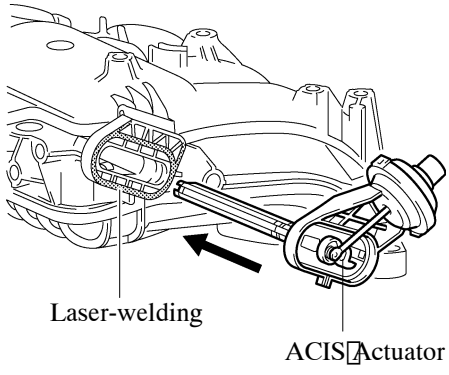
- As a throttle control motor, a DC motor with excellent response and minimal power consumption is used. The ECM performs duty ratio control of the direction and the amperage of the current that is supplied to the throttle control motor in order to regulate the throttle valve angle.



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4. Intake Air Surge Tank

- The intake air surge tank contains an ACIS (Acoustic Control Induction System) actuator. 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-64.
- The ACIS actuator is laser-welded onto the intake air surge tank.



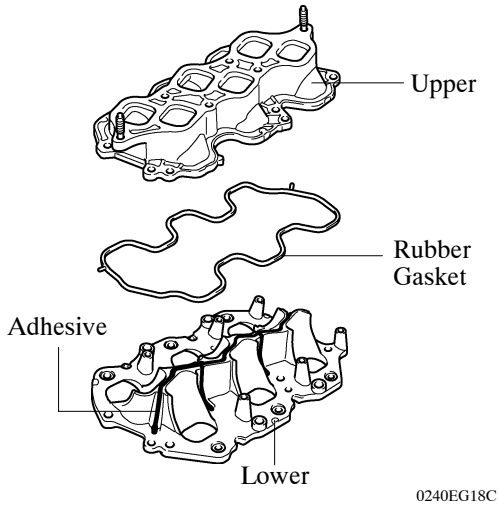
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— REFERENCE —

Laser-welding:
In laser-welding, a laser-absorbing material (the intake air surge tank) 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. Intake Manifold

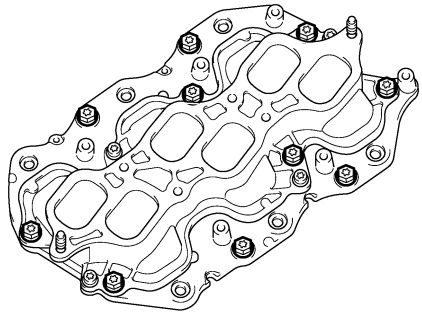
This intake manifold consists of two pieces, the upper and lower parts, which are sealed with a rubber gasket and adhesive.



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Service Tip

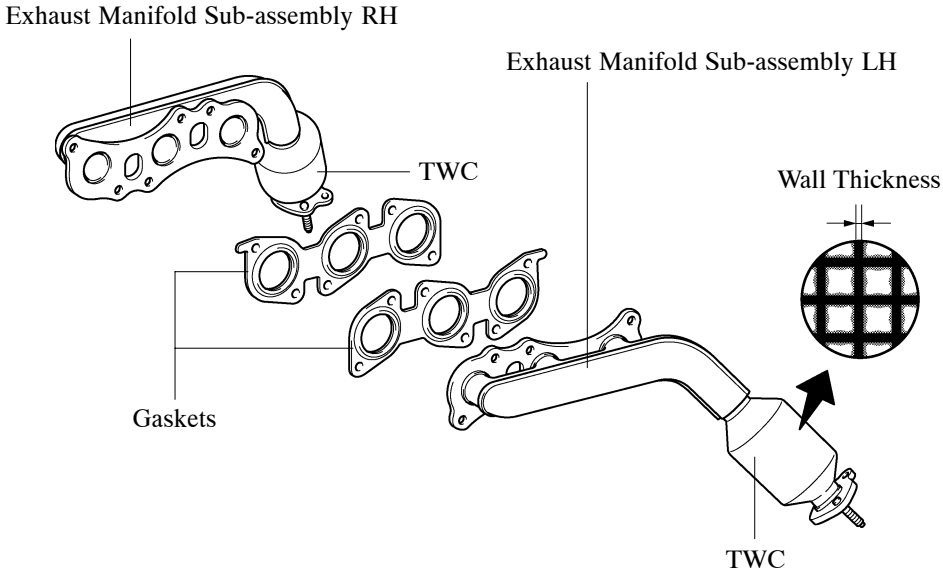
- Do not disassemble the upper and lower portions of the two-piece intake manifold, which are sealed with a rubber gasket and adhesive. To remove the intake manifold, remove the 10 bolts that are shown in illustration.
- These bolts have hexagonally shaped heads.



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6. Exhaust Manifold Sub-assembly (LH and RH)

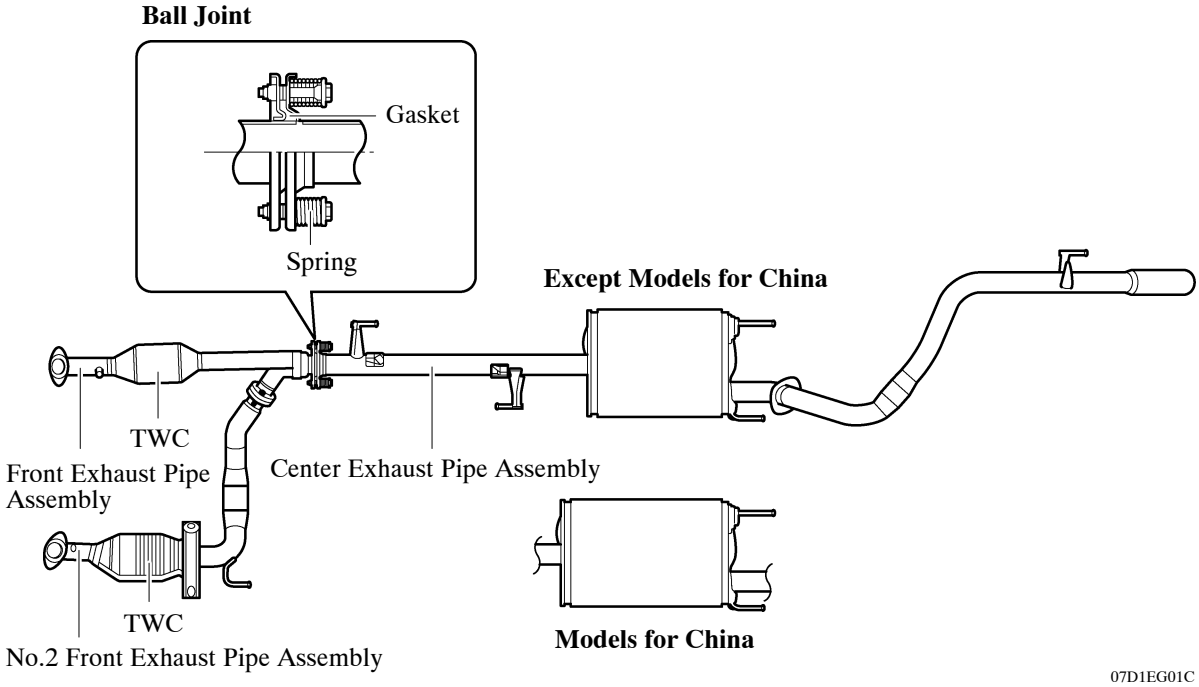
- A stainless steel exhaust manifold sub-assembly with an integrated TWC (Three-Way Catalytic converter) is used for warm-up of the TWC and for weight reduction.
- An ultra thin-wall, high-cell density, ceramic type TWC is used. One of this type of TWC is incorporated for each of the right and left banks. The TWC enables an improvement in the reduction of exhaust emissions by optimizing the cell density and the cell wall thickness.



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7. Exhaust Pipe

- A stainless steel front exhaust pipe assembly and No.2 front exhaust pipe assembly with an integrated TWC (Three-Way Catalytic converter) are used.
- A ball joint is used to join the front exhaust pipe assembly and center exhaust pipe assembly. As a result, in-vehicle sound is muffled and vibration is minimized.



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