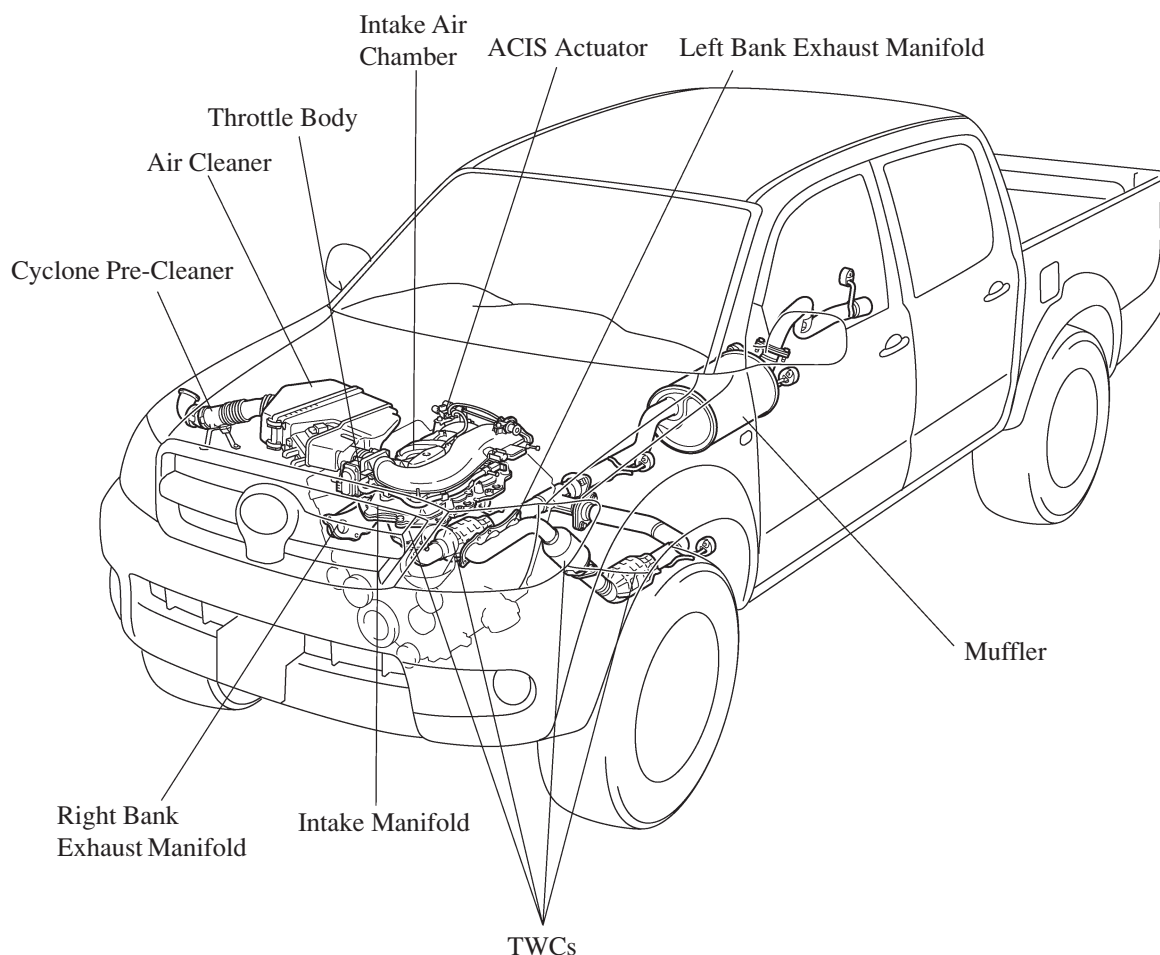


■ INTAKE AND EXHAUST SYSTEM

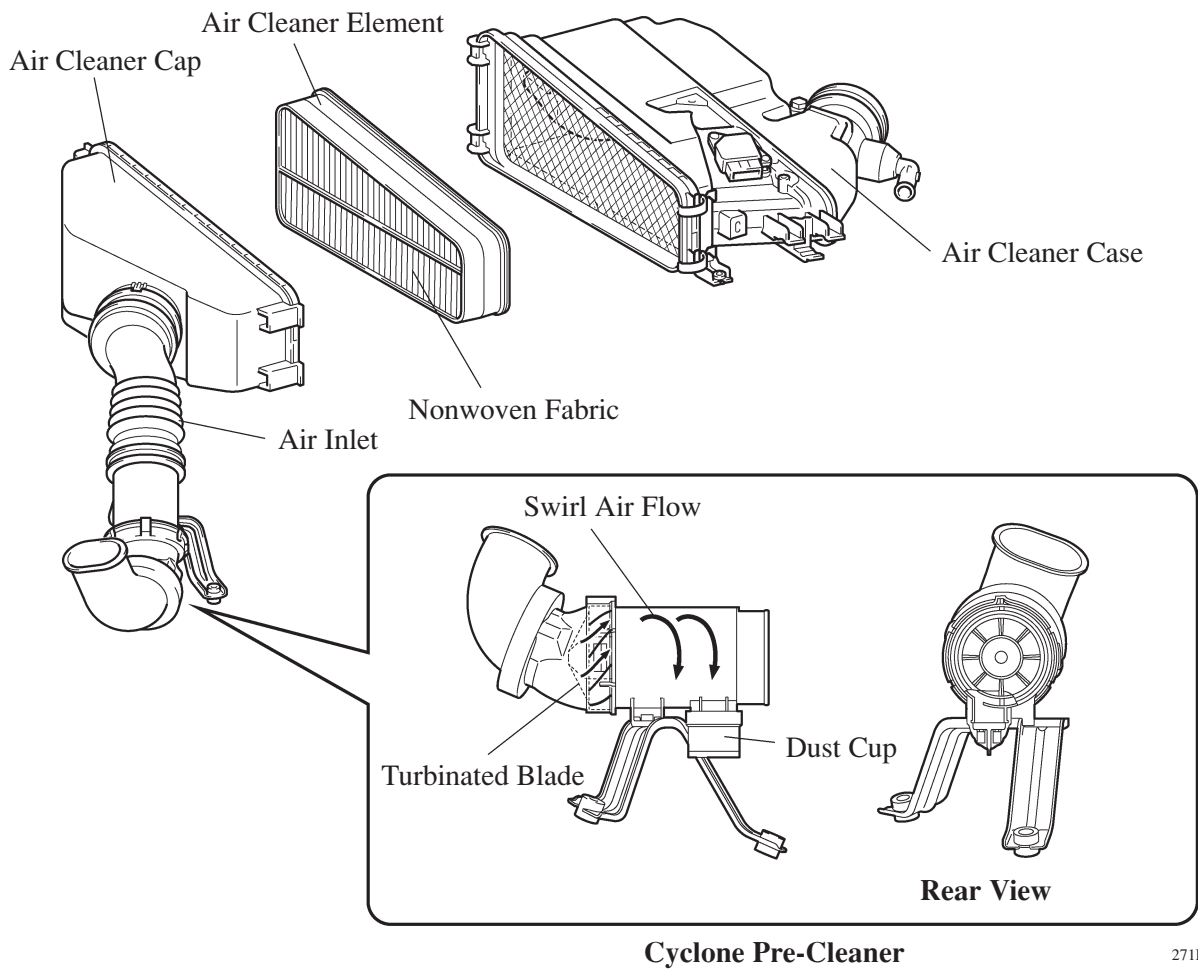
1. General

- A cyclone pre-cleaner has been provided in the air cleaner inlet.
- The link-less type throttle body is used.
- A plastic intake air chamber is used for weight reduction.
- A stainless steel exhaust manifold and exhaust pipe are used for weight reduction and improved rust resistance.
- TWCs (Three-Way Catalytic Converters) have been provided in the exhaust manifold of each bank and in the front exhaust pipe.
- The ETCS-i (Electronic Throttle Control System-intelligent) has been adopted to ensure excellent throttle control in all operating ranges. For details of ETCS-i control, [see page EG-101](#).
- The ACIS (Acoustic Control Induction System) has been adopted to improve the engine performance in all speed range. For details of ACIS control, [see page EG-108](#).



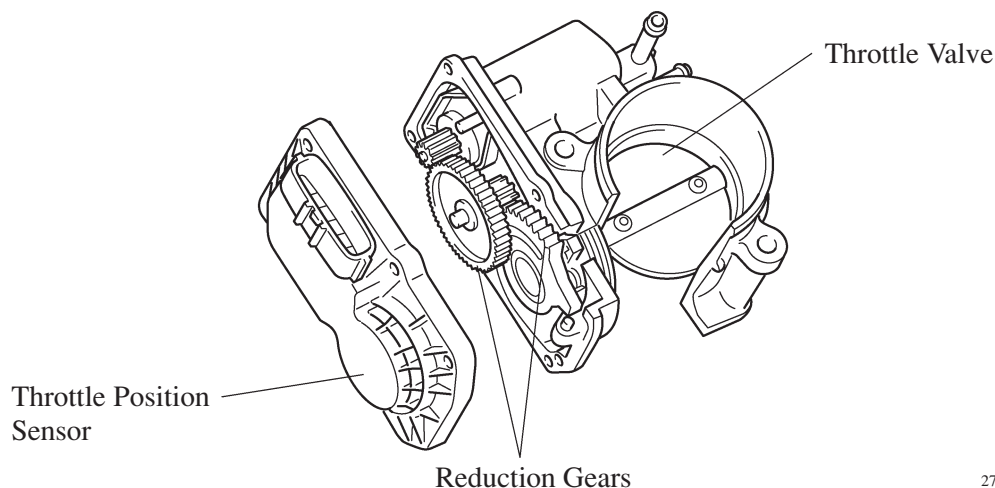
2. Air Cleaner

- A nonwoven full-fabric type air cleaner element has been adopted.
- A resonator has been provided in the air cleaner case to reduce the amount of intake air sound.
- A cyclone pre-cleaner has been provided in the air cleaner inlet. This cyclone pre-cleaner has a screw shape and gathers dusts which has rather big size in a dust cup by swirling the inlet air. The dust cup is removable, so the dust gathered can be disposed.



3. Throttle Body

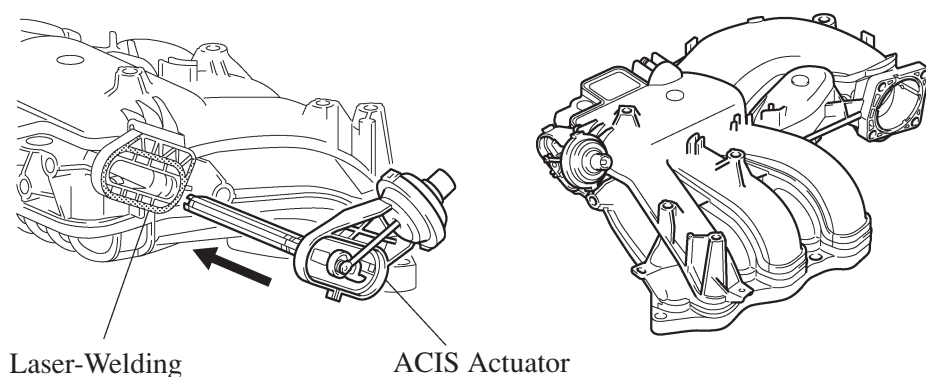
- A DC motor with excellent response and minimal power consumption is used for the throttle control motor. The engine ECU performs the duty ratio control of the direction and the amperage of the current that flows to the throttle control motor in order to regulate the opening angle of the throttle valve.
- The link-less type throttle body has adopted and it realizes excellent throttle control.



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4. Intake Air Chamber

- The intake air chamber is made of plastic to realize lightweight.
- The air intake chamber consists of upper and lower section and contains an intake air control valve. This valve is activated by ACIS (Acoustic Control Induction System) and is used to alter the intake pipe length to improve the engine performance in all speed range.
- The ACIS actuator is laser-welded onto the intake air chamber. Many of the components are made of plastic for weight reduction.



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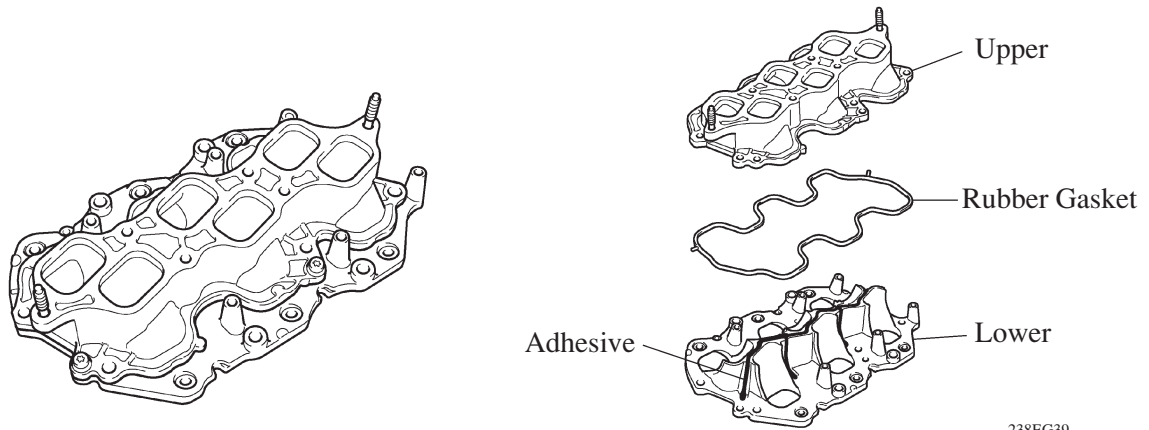
— REFERENCE —

Laser-Welding:

In laser-welding, a laser-absorbing material (for the intake air chamber) is joined to a laser-transmitting material (for the ACIS actuator). Laser beams are then irradiated from the laser-transmitting 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-transmitting material and causes both materials to become welded.

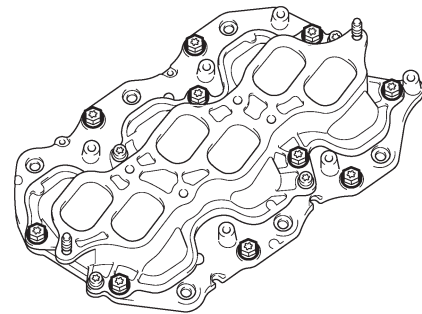
5. Intake Manifold

- Light weight aluminum alloy is used for the intake manifold.
- This intake manifold consists of two pieces, the upper and lower, which are sealed with a rubber gasket and adhesive.



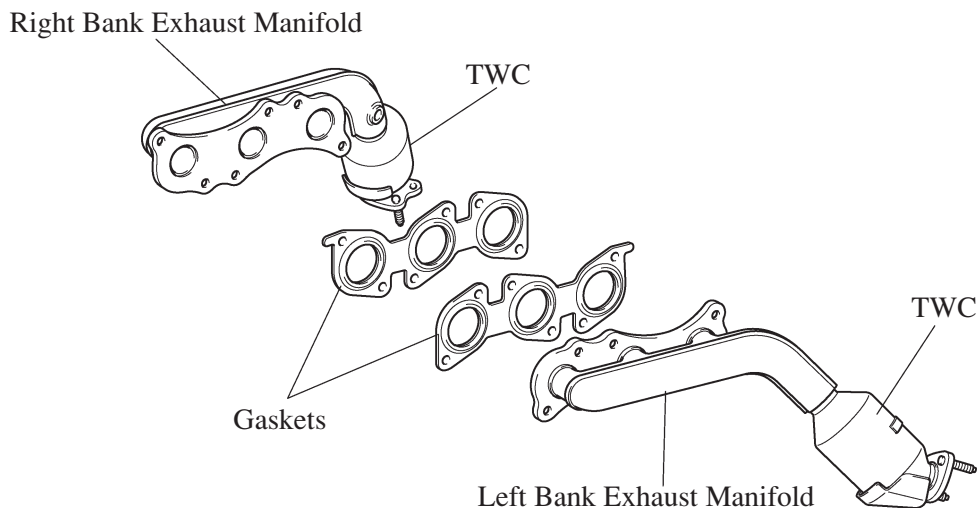
Service Tip

- 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 the illustration.
- These bolts have the head of hexagon shape.



6. Exhaust Manifold

- The exhaust manifolds are made of stainless steel for weight reduction.
- A ceramic type TWC (Three-Way Catalytic Converter) has been adopted. This TWC is incorporated on each of the right and left banks.



7. Exhaust Pipe

- A stainless steel exhaust pipe is used for weight reduction and rust resistance.
- The ceramic type TWC has been adopted.
- A ball joint is used to join the exhaust front pipe and exhaust center pipe. As a result, a simple and reliable construction for reducing vibration has been realized.

