

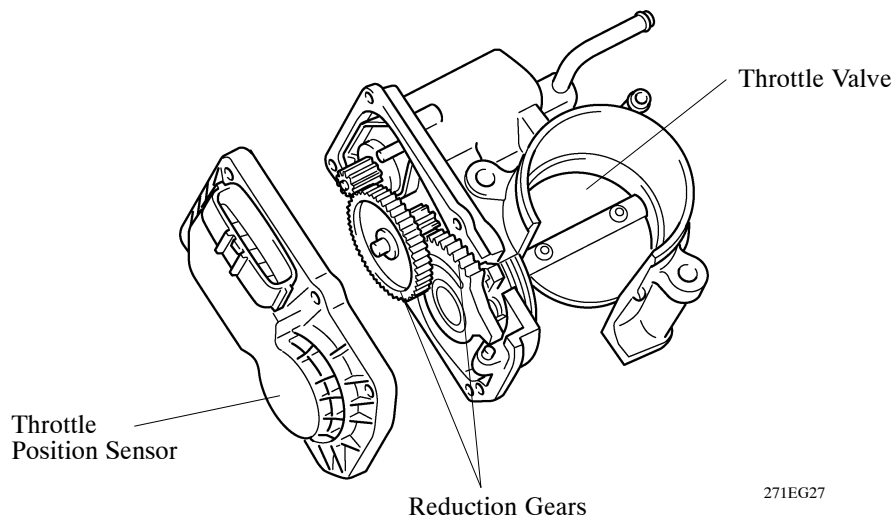
7. Intake and Exhaust System

General

- A plastic intake manifold is used for weight reduction.
- The link-less type throttle body is used.
- A stainless steel exhaust manifold and exhaust pipe are used for weight reduction and improved rust resistance.
- Two TWCs (Three-Way Catalytic Converters) have been provided in the exhaust pipe of all unleaded gasoline engine models.
- 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-139](#).
- An air injection system has been adopted on the unleaded gasoline model to ensure the proper warm-up performance of the TWC when starting a cold engine. For details on the air injection system control, [see page EG-148](#).

Throttle Body

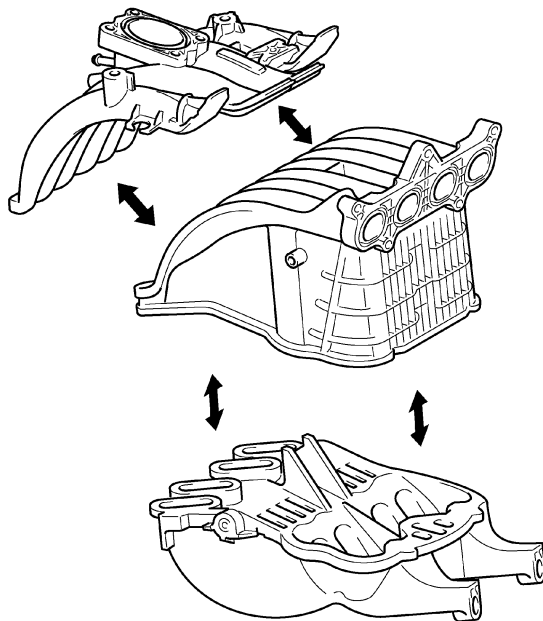
- A DC motor with excellent response and minimal power consumption is used for the throttle control motor. The engine ECU performs the duty ratio control of the direction and the amperage of the current that flows to the throttle control motor in order to regulate the opening angle of the throttle valve.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



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Intake Manifold

- The intake manifold has been made of plastic to reduce the weight and the amount of heat transferred from the cylinder head. As a result, it has become possible to reduce the intake air temperature and improve the intake volumetric efficiency.
- This intake manifold consists of three parts, which are integrated through vibration welding.



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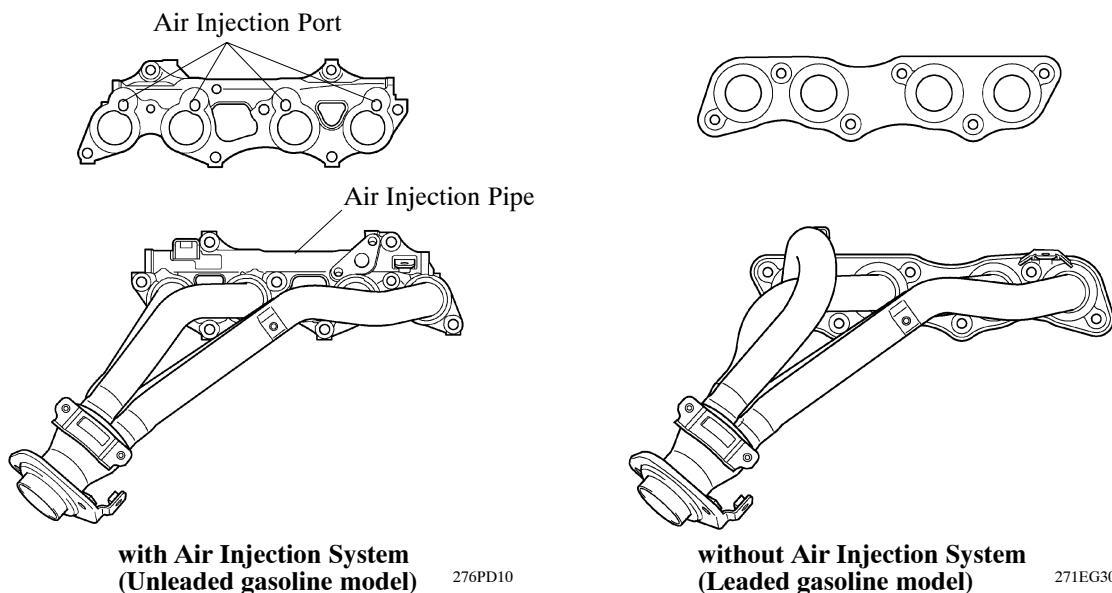
— REFERENCE —

Vibration Welding:

Vibration welding is a type of friction welding. In this process, one part of the work to be welded remains stationary while vibration and pressure are applied to the other part, thus causing the joining surfaces to melt and become welded. This method creates a joint that is stronger than other joining methods, such as those using adhesives.

Exhaust Manifold

- A stainless steel exhaust manifold is used for weight reduction.
- An air injection pipe, which directs the air from an electric air pump to the air injection port on the cylinder head, has been provided on the models with the air injection system.



Exhaust Pipe

- Two TWCs of a ceramic type have been provided in the exhaust pipe of all unleaded gasoline engine models. The exhaust emission performance of the engine is improved as a result of these TWCs. On the leaded gasoline engine models, a sub muffler is provided in place of the TWC.
- A stainless steel exhaust pipe is used for weight reduction and rust resistance.
- A ball joint is used to join the exhaust front pipe and exhaust manifold. As a result, a simple and reliable construction for reducing vibration has been realized.

