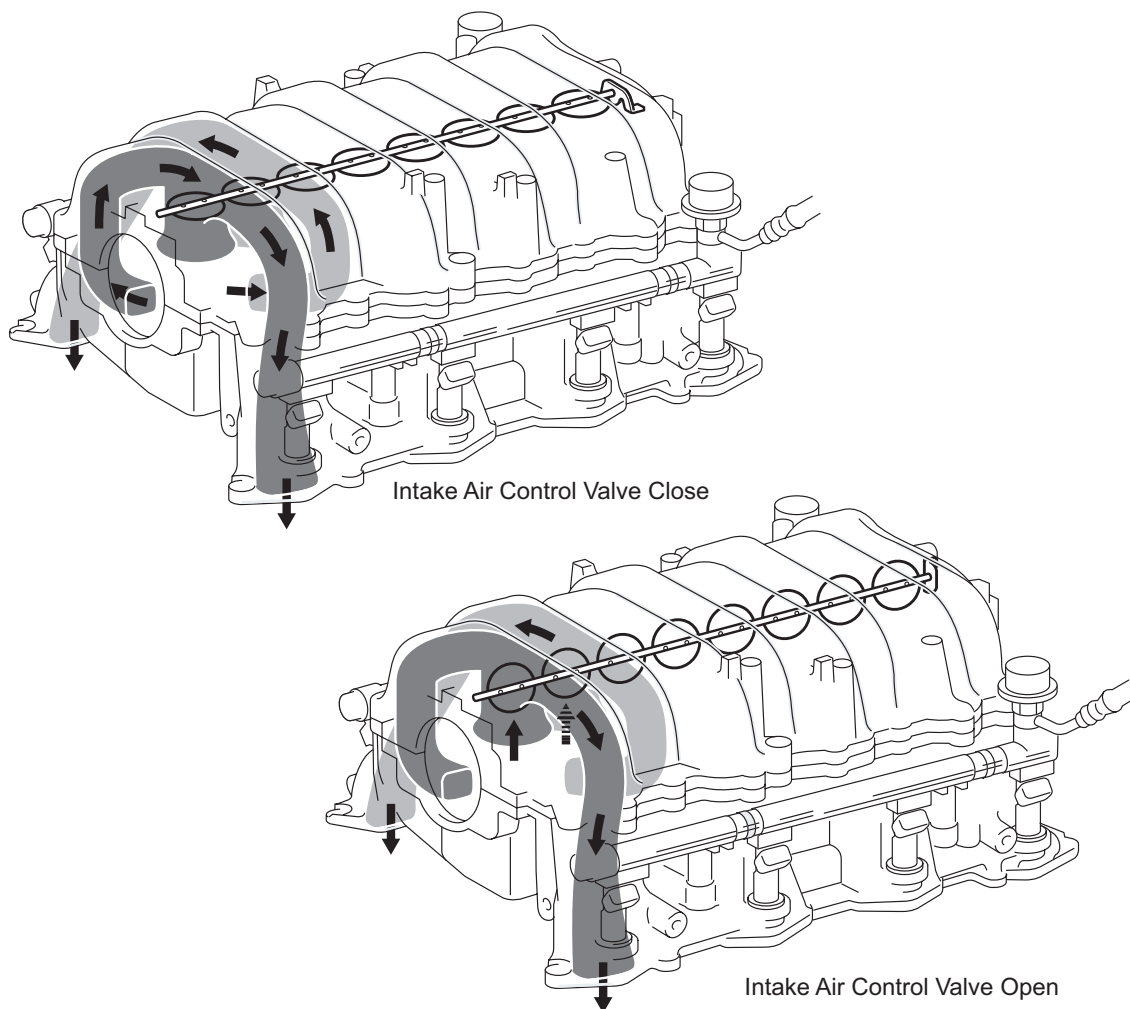


ACIS (Acoustic Control Induction System)

- ACIS (Acoustic Control Induction System) is used.
- The ACIS (Acoustic Control Induction System) is realized by using a bulkhead to divide the intake manifold into 2 stages, with an intake air control valve in the bulkhead being opened and closed to vary the effective length of the intake manifold in accordance with the engine speed and throttle valve opening angle. This increases the power output in all ranges from low to high speed.

Construction

- A pressure fluctuation is indirectly created in the intake manifold by the intake stroke. The pressure fluctuation that remains in the intake manifold even after the intake valve has closed exerts an influence on the subsequent intake stroke, a phenomenon known as a pulsation effect. When the pressure fluctuation that remains after the intake valve has closed coincides with the subsequent intake stroke, the pressure increases at the time the valve opens, thus increasing the intake air volume and increasing the torque.
- To positively utilize the pulsation effect, the acoustic control induction system switches the effective intake manifold length in two stages in accordance with the cycle of the pulsation flow, which changes with the engine speed. Thus, this system increases the torque in all ranges.

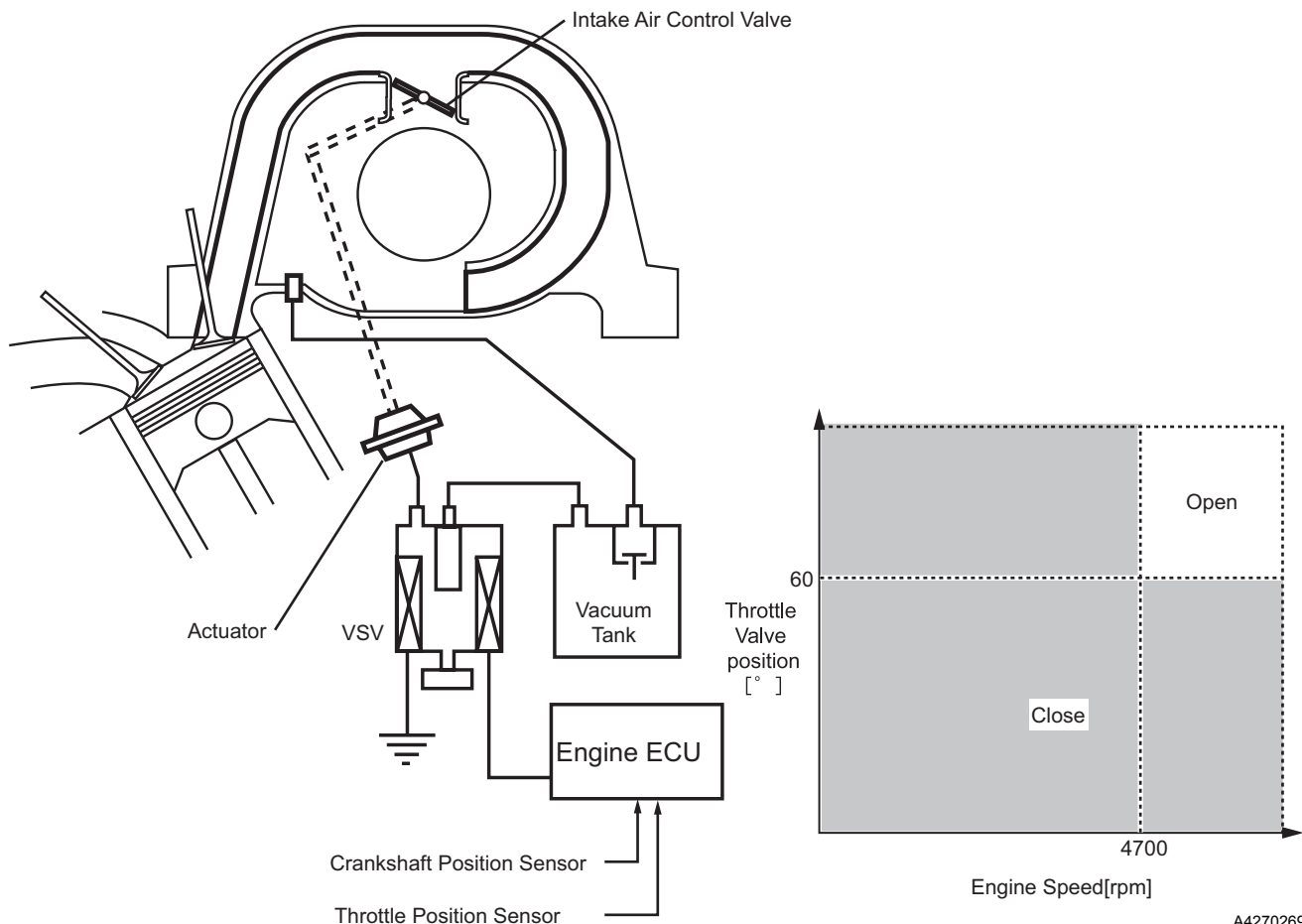


List of Functions

Device Name	Function
Crankshaft Position Sensor	Detects engine speed.
Throttle Position Sensor	Detects throttle valve position.
Intake Air Control Valve	The intake air control valve, which is provided in the middle of the intake manifold in the intake air chamber, opens and closes to change the effective length of the intake manifold in two stages.
VSV (Vacuum Switching Valve)	Controls the vacuum that is applied to the actuator by way of the signal (ACIS) that is output by the engine ECU.
Vacuum Tank	Equipped with an internal check valve, the vacuum tank stores the vacuum that is applied to the actuator in order to maintain the intake air control valve fully closed even during low-vacuum conditions.
Engine ECU	Sends a signal to the VSV(For ACIS) at an appropriate timing in accordance with the signals received from the sensors.

Operation

- The engine ECU opens and closes the intake air control valve in accordance with the engine speed and the throttle valve position. Accordingly, it ensures torque while the vehicle operates in the medium-speed range, under high-load conditions.



When the Intake Control Valve Closes (VSV ON)	The engine ECU activates the VSV to match the longer pulsation cycle so that the negative pressure acts on the diaphragm chamber of the actuator. This closes the control valve. As a result, the effective length of the intake manifold is lengthened and the intake efficiency in the low-to-medium speed range is improved due to the dynamic effect of the intake air, thereby increasing the power output.
When the Intake Control Valve Open (VSV OFF)	The engine ECU deactivates the VSV to match the shorter pulsation cycle so that atmospheric air is led into the diaphragm chamber of the actuator and opens the control valve. When the control valve is open, the effective length of the intake air chamber is shortened and peak intake efficiency is shifted to the high engine speed range, thus providing greater output at high engine speeds.