

Intake Manifold Flaps

The intake manifold flaps are controlled according to a characteristic map in the Engine Control Module. They are activated in lower engine load and RPM ranges.

The flaps are brought into contact with the port baffles in the cylinder head and seal the lower part of the intake port. The intake air mass now flows through the upper section of the intake port and induces a tumbling charging motion inside the cylinder.

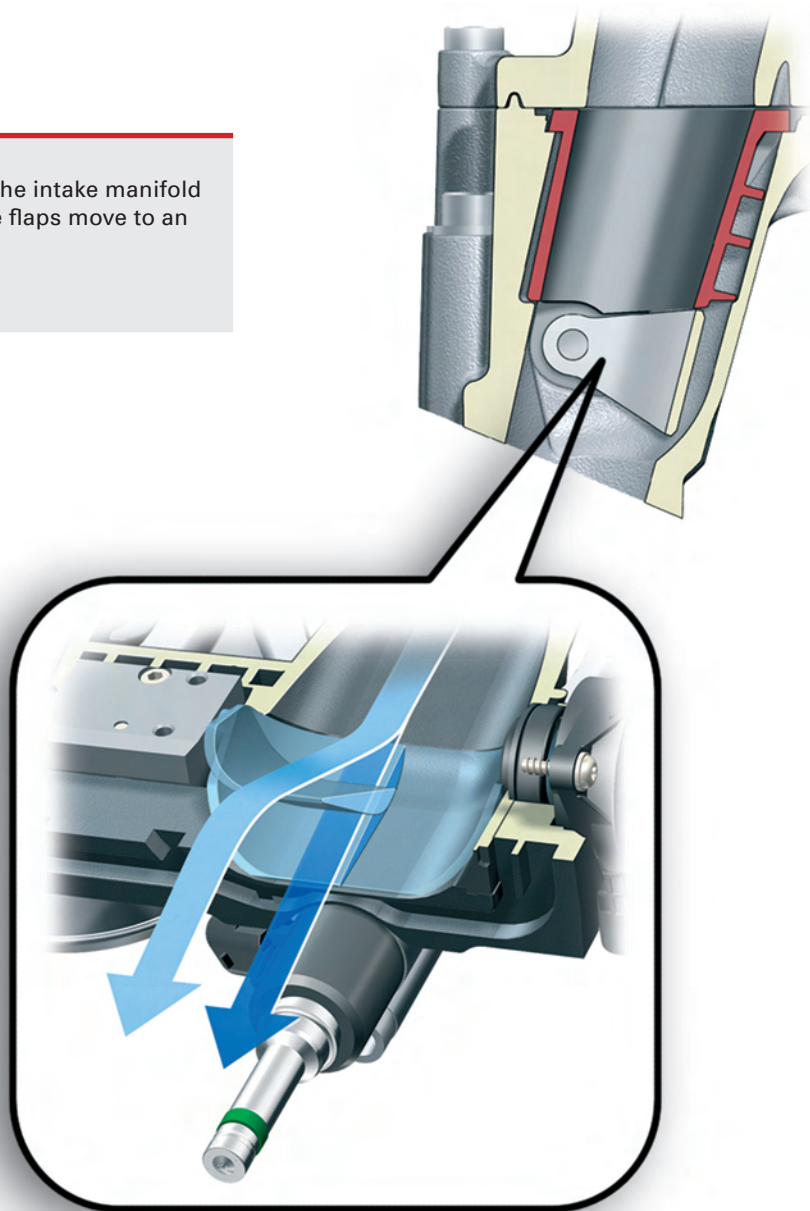
When not activated, the intake manifold flaps are open and the cross-sectional area of the port is maximized.

All flaps in a cylinder bank are attached to a common shaft. The flaps are activated through an electrical actuator. For each cylinder bank, the position of the intake manifold flaps is monitored by a Hall sensor.



Note

If the power supply to the intake manifold flaps is interrupted, the flaps move to an opened position.



Air Intake System (S8)

Dual Path Intake Manifold

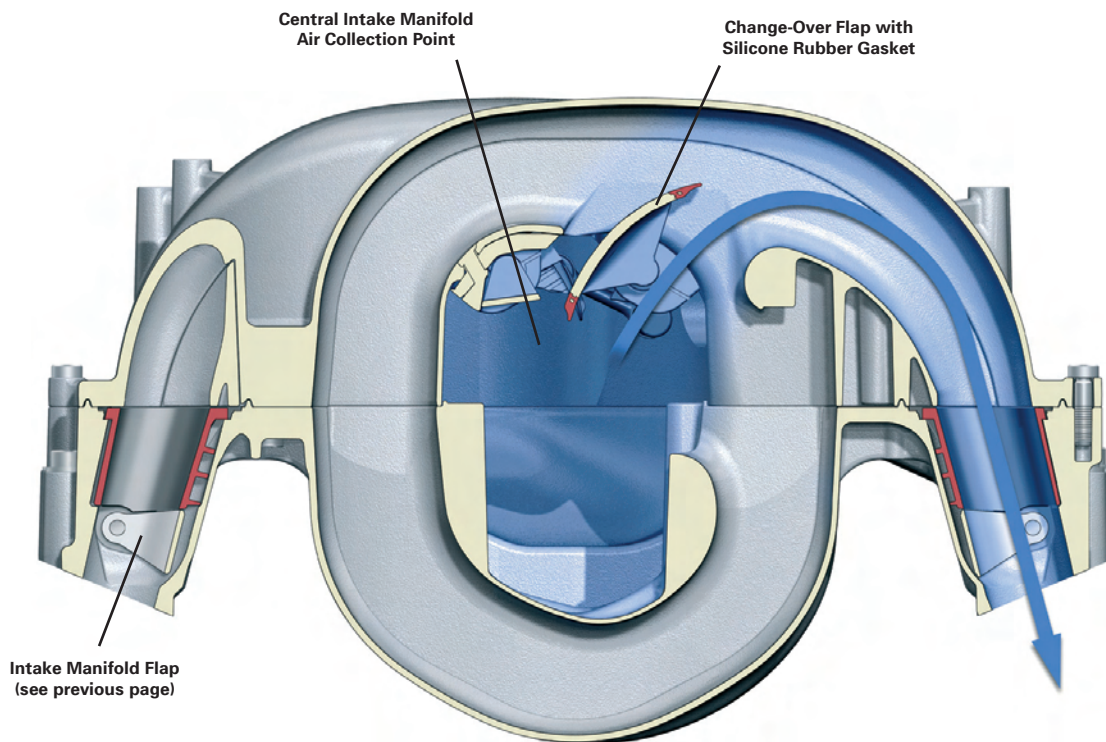
The 5.2L V10 FSI engine uses a dual path intake manifold made of cast magnesium. Change-over flaps in the intake manifold direct the air flow through either a long or short intake intake path depending on load and RPM operating conditions of the engine. The change-over is map-controlled by the engine control module (ECM). The change over flaps are actuated by the Variable Intake Manifold Runner Motor V183. No feedback of position is given to the ECM.

The flaps are precision fit in the upper part of the intake manifold. A silicone rubber seal is used on each flap to reduce the possibility of leakage due to air turbulence.

When the engine is operating under low load and RPM conditions, the intake manifold is switched to the short intake runners.

In the lower RPM range, a long intake manifold path is opened in order to increase torque. In the upper RPM range, a short intake manifold path is opened. This position produces an increase in engine power output.

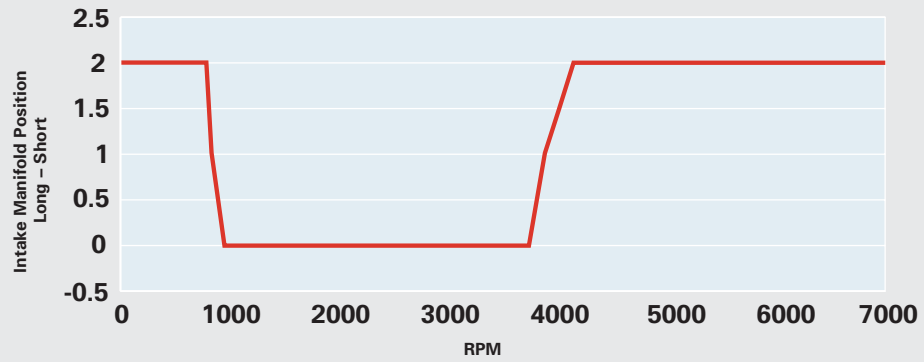
Short Intake Path, Change-Over Flaps Open



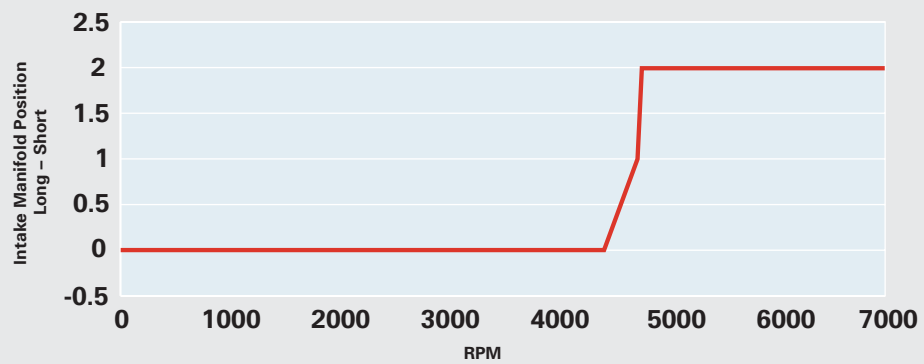
The Intake Manifold Length When in the Power Position (short path) is 12.1 in (307 mm)

Air Intake System (S8)

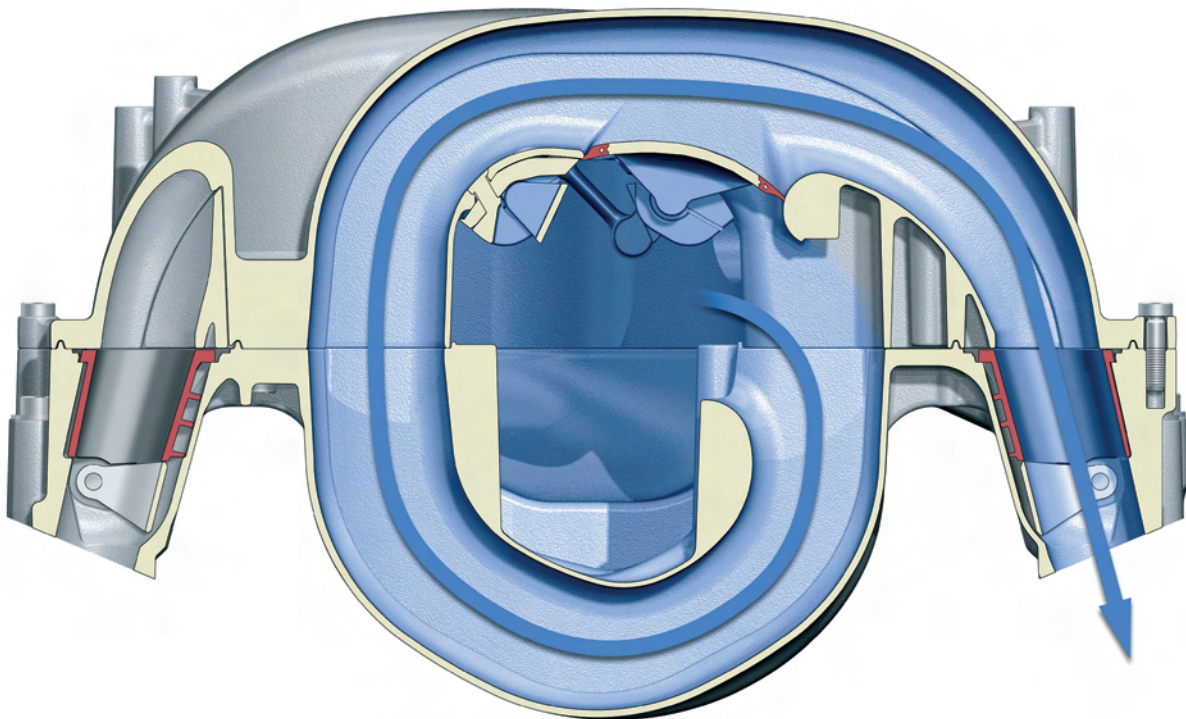
Intake Manifold Change-Over at Low Load



Intake Manifold Change-Over at High Load



Long Intake Path: Change-Over Flaps Closed



The Intake Manifold Length When in the Torque Position (longer path) is 26.6 in (675 mm)

In the middle load and RPM ranges, the intake manifold is switched to the long intake runners. This provides better cylinder filling.