

ENGINE 113.967 in MODEL 219

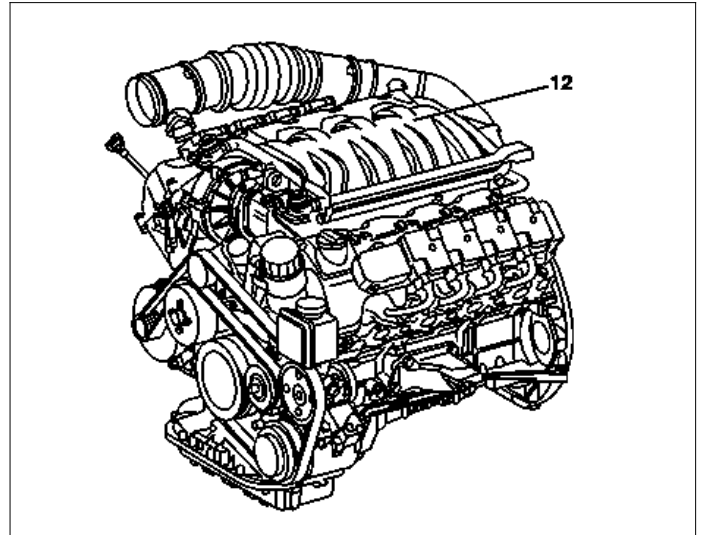
ENGINE 113.964 in MODEL 164.1 up to Model Year 8

ENGINE 113.971 in MODEL 251 up to Model Year 8

12 Intake manifold

Location

The intake manifold is located between the cylinder banks.



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12 Intake manifold

22 Variable flap

A Short intake route with switch flap open

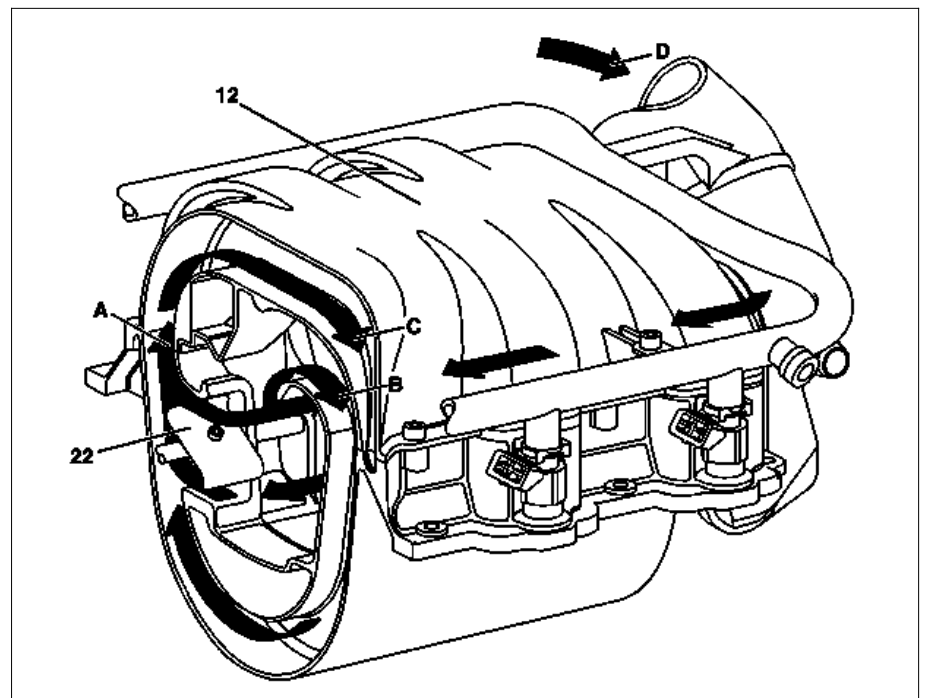
B Long intake route with switch flap closed

C to engine

D Intake air from air cleaner

Task

Optimizes engine torque curve by means of two different intake manifold lengths



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Design

The intake manifold is assembled out of several pressure castings. When fitted together, they produce the individual intake manifolds and the air collecting volume. The parts are sealed off to each other by plastic. **The intake manifold cannot be disassembled.**

The individual intake manifolds each approx. 800 mm long, are arranged in a spiral shape around the air collecting volume. A single intake manifold is assigned to each cylinder.

Each single intake manifold has a further opening to the air collecting volume in the middle. These can be opened or closed by means of variable flaps which pivot through approx. 60°.

The variable flaps are attached to steel shafts. One shaft is installed for each bank of cylinders. The flap shafts which are connected together are turned by the aneroid capsule for intake manifold switchover in such a way that the variable flaps close (the longer air intake way).

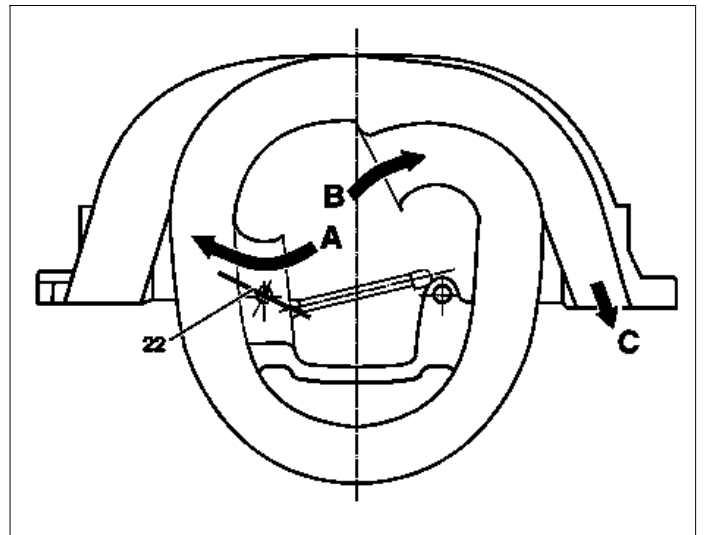
When the variable intake manifold switchover valve is open, the vacuum is supplied from a vacuum reservoir with check valve in the intake manifold. The reservoir volume is designed for about 5 operations without renewed evacuation.

The switch flaps open due to spring force (short intake route).

Section through variable intake manifold in cylinder plane

22 Variable flap (one variable flap for each cylinder)

- A Short intake route with switch flap open
(variable intake manifold switchover valve de-energized)
- B Long intake route with switch flap closed
to engine
- C



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Function

When the engine is started and at low engine speeds the variable flaps are open. The intake air flows along the shortest path and thus reaches the cylinder with low friction losses from the distributor volume.

At an engine load of more than 50% from approx. 1750 rpm up to approx. 3900 rpm the variable flaps are closed. The intake air must flow through the whole intake pipe. Its length is selected in such a way that the pressure waves produced by the inducting pistons, arrive at the right moment at the open inlet valves for the next induction stroke. The result is improved cylinder charge and thus an increase in torque.

At higher engine speeds (e.g. from 3900 rpm) the actuation to the variable intake manifold switchover valve is interrupted - the variable flaps open as a result of the spring force. Through the shortened route the pressure waves arrive in time even at higher rotational speeds before the closing of the intake valves to the combustion chamber.