

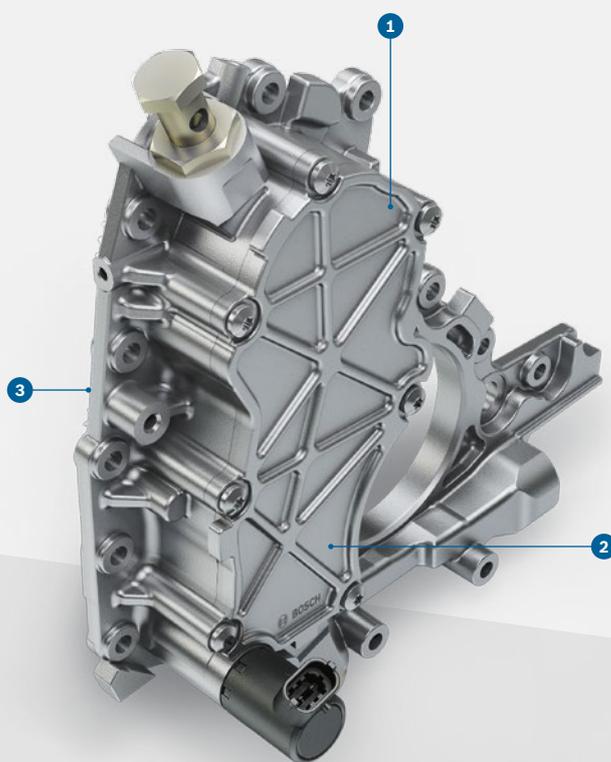
# Braking system and engine lubrication

Combined vacuum and engine oil pump



**BOSCH**

Invented for life



## PRODUCT BENEFITS

- ▶ Combination of vacuum pump and oil pump; option to integrate high-pressure fuel pump
- ▶ Compact design to meet challenging packaging requirements
- ▶ High performance and CO<sub>2</sub> efficiency with modular design
- ▶ Optional measures for higher cold-start requirements
- ▶ High quality (Bosch Production System)

- 1 Vacuum pump
- 2 Oil pump
- 3 Engine cover



# -50% CO<sub>2</sub>

reduction compared to average market vacuum pumps and fixed-displacement oil pumps (NEDC)

## TASK

Bosch combined pump ensures two functions with a single component. In diesel and modern gasoline engines with low intake-manifold vacuum, the mechanical vacuum pump supplies the vacuum required for pneumatic operation, e.g. brake booster, exhaust-gas recirculation valve, swirl actuator, wastegate valve on the exhaust-gas turbocharger and central locking system. The variable oil pump performs engine lubrication and provides the circuit with the right amount of oil in all situations with low torque absorption. It allows fuel consumption and CO<sub>2</sub> emission reduction by displacement adjustment.

## FUNCTION

The vacuum pump generates vacuum in the pump housing by a rotating, eccentrically mounted single vane. This alternately creates a suction and a compression chamber, thus generating vacuum. At the same time the variable oil pump, which is also based on the vane principle, ensures the efficient engine lubrication by means of self-regulation, two-pressure level or full map-based control. The pump suctions the right oil quantity from the oil pan and delivers it to the oil circuit taking into account the right oil pressure.

# one solution

to fulfill several functions and complex installation space requirements

## VARIANTS

The pump can be manufactured in different drive and control concepts. High-pressure fuel pumps (gasoline and diesel) and pre-supply pumps can also be integrated as options.

## TECHNICAL CHARACTERISTICS

Individual components	vacuum pumps, oil pumps (standard or variable), low-pressure fuel pumps, high-pressure gasoline and diesel pumps
External drive	directly by crankshaft or by gear, chain or pulley
Internal drive	coupling or through shaft
Installation position	in the oil pan, as part of the engine cover or as an engine component

- 1 Electronic engine control unit
- 2 Pressure sensor
- 3 Filter/cooler
- 4 Variable oil pump (+ solenoid valve)
- 5 Oil pan
- 6 Brake booster
- 7 Vacuum pump

