Engine lubrication and piston cooling

Variable oil pump for gasoline and diesel engines

PRODUCT BENEFITS
- Lower CO₂ emissions
- Constant and variable delivery pressure over the entire temperature range
- Can be combined with vacuum or water pump
- Wide range of displacements and pump speed
- Optional safety valve for higher cold-start requirements
- High quality (Bosch Production System)

1 Housing
2 Solenoid control valve
3 Drive gear
up to 

−50% CO₂ 

due to the variable oil pump with proportional valve compared to a fix displacement oil pump

**TASK**

For efficient engine lubrication and piston cooling, the variable oil pump supplies exactly the right amount of oil in all situations and minimizes the torque absorption in non-critical operating points. Fuel consumption and CO₂ emissions are reduced by displacement adjustment.

**FUNCTION**

Bosch variable oil pump is based on the multi-vane principle. Its design enables displacement adjustment, in such way the oil pressure level can be freely regulated within a defined pressure range. Hereby, customer- and engine-specific calibration is tuned to ensure a sufficient oil supply at all critical operating points and to minimize the oil pump torque absorption at non-critical operating points.

**VARIANTS**

To meet various customer requests, Bosch offers the variable oil pump in different versions, such as oil pan design, compact front design and engine cover design.

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**3-stages**

*optimization: variable oil pump, oil circuit, and specific driving cycle*

**one solution**

for hardware, software, and calibration to achieve particularly efficient oil circuits and to reduce CO₂ emissions

**TECHNICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Regulation</th>
<th>displacement adjustment through eccentric stator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control strategy</td>
<td>self-regulation, two-pressure level, full-map control</td>
</tr>
<tr>
<td>Pressure level</td>
<td>fully variable from 1 to 5 bar</td>
</tr>
<tr>
<td>Drive</td>
<td>directly by crankshaft or via pulley, gears or chain</td>
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</table>

**Electronic engine control unit**

**Oil pressure sensor**

**Oil filter**

**Solenoid control valve**

**Variable oil pump**

**Oil pan filter**

**Oil pan**

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**Oil consumers**

- Lubricating: crankshaft bearings, camshaft bearings, etc.
- Cooling: piston cooling nozzle, turbocharger, etc.