VACUUM PUMPS

For Diesel and Gasoline Engines

WABCO

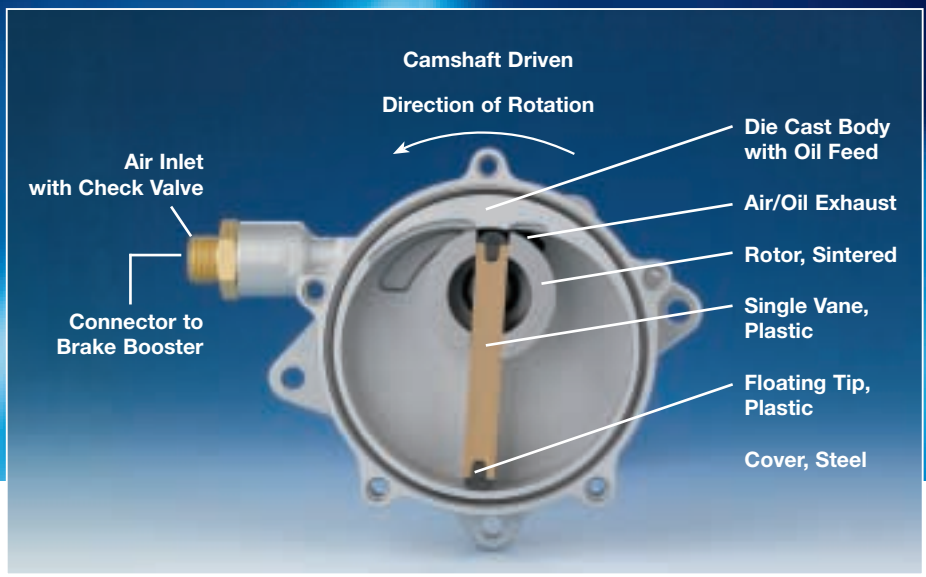
Vacuum pumps for automotive braking applications

Single Vane Vacuum Pump

Single Vane Vacuum Pump

Single Vane Vacuum Pump

Piston Vacuum Pump



Single Vane Vacuum Pump

Multi Vane Vacuum Pump

To provide the required force at the brakes of a passenger car, the assistance of some power device is required. When a driver presses the brake pedal they will 'feel' assistance from the braking system without which the brake pedal would feel very hard. Servo-assisted braking has become almost universal and most brake servos require vacuum for their operation.

Gasoline-engined vehicles have high inlet manifold depression which is used as a source of vacuum. However, Diesel engines, operating under the Compression-ignition cycle (CI), do not produce the same level of manifold depression and Diesel-engined vehicles have to be fitted with auxiliary vacuum pumps. These pumps artificially create, or pump, the required vacuum for the brake servo. Vehicles fitted with Gasoline Direct Injection (GDi) engines, configured to enhance emissions, also do not provide the required level of inlet manifold depression and vacuum pumps are often required on these vehicles.

Vacuum pumps can be reciprocating or rotary devices and are made from a combination of aluminium, steel and plastic parts. Vacuum pumps are usually mounted directly on the vehicle's engine.

Technical Design

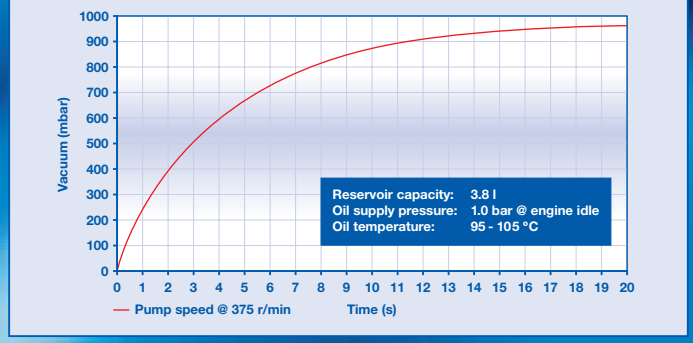
- Single Vane Vacuum Pump driven by camshaft
- Piston Vacuum Pump driven by camshaft
- Multi Vane Vacuum Pump driven by belt, alternator, gear or electric motor

Typical Single Vane Vacuum Pump

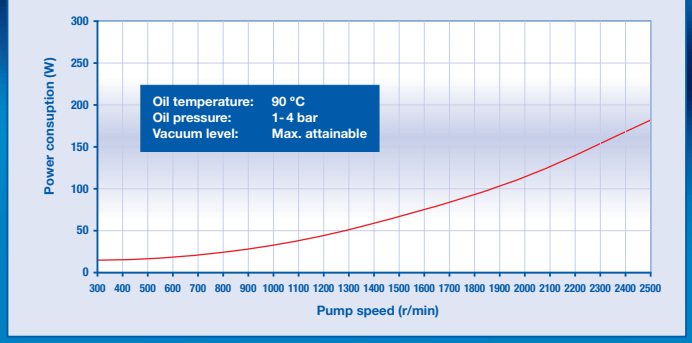
- An eccentrically mounted rotor guides a vane, which rotates around a uni-

Single Vane Vacuum Pump

Performance

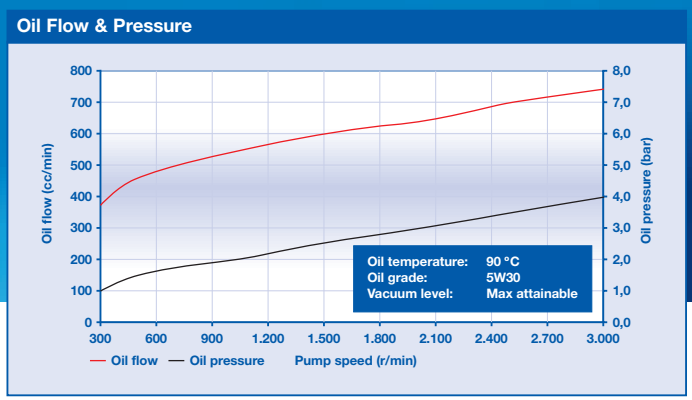


Power Consumption



Pump Capacity = 190 cc, Typical Mass = 750 g

Oil Flow & Pressure



que generated profile. At each end of the vane, floating tips maintain sealing efficiency.

- To lubricate internal components and to ensure sealing of moving parts, the pump requires oil feed via the engine lubrication circuit. The oil is then exhausted back into the engine together with the air from the booster.
- Due to modular design, standard components can be used across different capacity pumps.
- WABCO offers a vacuum pump body design to suit the individual customer application.

Features

- Unique generated profile bore – smooth progression of acceleration and deceleration
- Mounting flange design, connections and actuation specific to customer requirements
- Modular design reduces component cost and tooling investment
- A range of standard components
- Small package size
- Different design and capacity pumps available

Benefits

- Cost efficient design
- Low power consumption
- Efficient vacuum performance across the temperature range
- High durability
- Low oil flow
- Low weight and fewer parts
- Low vibration and noise

WABCO

WABCO, the vehicle control systems business of American Standard Companies, is the world's leading producer of electronic braking, stability, suspension and transmission control systems for heavy duty commercial vehicles. WABCO products are also increasingly used in luxury cars and sport utility vehicles (SUVs). Customers include the world's leading commercial truck, trailer, bus and passenger car manufacturers. Founded in the US 135 years ago as Westinghouse Air Brake Company, WABCO was acquired by American Standard in 1968. Headquartered in Brussels, Belgium, the business today employs nearly 6500 people in 29 office and production facilities worldwide. In 2003, WABCO contributed US$ 1.358 billion to American Standard's total sales of US$ 8.568 billion.

Website: www.wabco-auto.com

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