

SPOTLIGHT

SYSTEM COMPONENTS IN THE SPOTLIGHT

OUR **HEART** BEATS FOR YOUR ENGINE.



MOTORSERVICE
RHEINMETALL AUTOMOTIVE



HISTORY

1909



Bernhard Pierburg founded the steel trading company Gebr. Pierburg OHG in Berlin

1928



The first Solex carburettor from Gebr. Pierburg OHG is installed in the engine of the Hanomag P 2/10

1969



Pierburg constructs **Europe's most cutting edge R&D centre** in Neuss, Germany, for the purpose of reducing pollutant emissions

1970



Development of the first **exhaust gas recirculation valves (EGR)** by Pierburg

1989



Start of **oil and water pump production** by Pierburg

MOTORSERVICE GROUP

QUALITY AND SERVICE FROM A SINGLE SOURCE

The Motorservice Group is the sales organisation for the worldwide aftermarket activities of Rheinmetall Automotive. It is a leading supplier of engine components for the independent aftermarket. With the premium brands Kolbenschmidt, Pierburg, TRW Engine Components and the BF brand, Motorservice offers its customers a wide and comprehensive range of top quality products from a single source. As a problem solver for trade and repair shops, the corporation also offers an extensive service package. Motorservice customers benefit from the combined technical know-how of a large international automotive supplier.

RHEINMETALL AUTOMOTIVE

RENOWNED SUPPLIER TO THE INTERNATIONAL AUTOMOTIVE INDUSTRY

Rheinmetall Automotive is the mobility division of the technology corporation Rheinmetall Group. With its premium brands Kolbenschmidt, Pierburg and Motorservice, Rheinmetall Automotive is a global leader in the relevant markets for air supply systems, emission control and pumps and in the development, manufacture and spare-parts supply of pistons, engine blocks and plain bearings. Low pollutant emissions, good fuel economy, reliability, quality and safety are the main driving forces behind the innovations of Rheinmetall Automotive.



1998



The two companies, Kolbenschmidt and Pierburg, are merged into **Kolbenschmidt Pierburg AG**, forming the automotive division of the Rheinmetall group

2000



Consolidation of Pierburg and Kolbenschmidt's spare parts business

2012



Joint venture with SAIC/Hasco, PHP in China

2014



75-millionth EGR valve produced in Spain

Production record
35-millionth water circulating pump produced in Hartha, Germany



Opening of Niederrhein/Neuss plant in Germany

2016

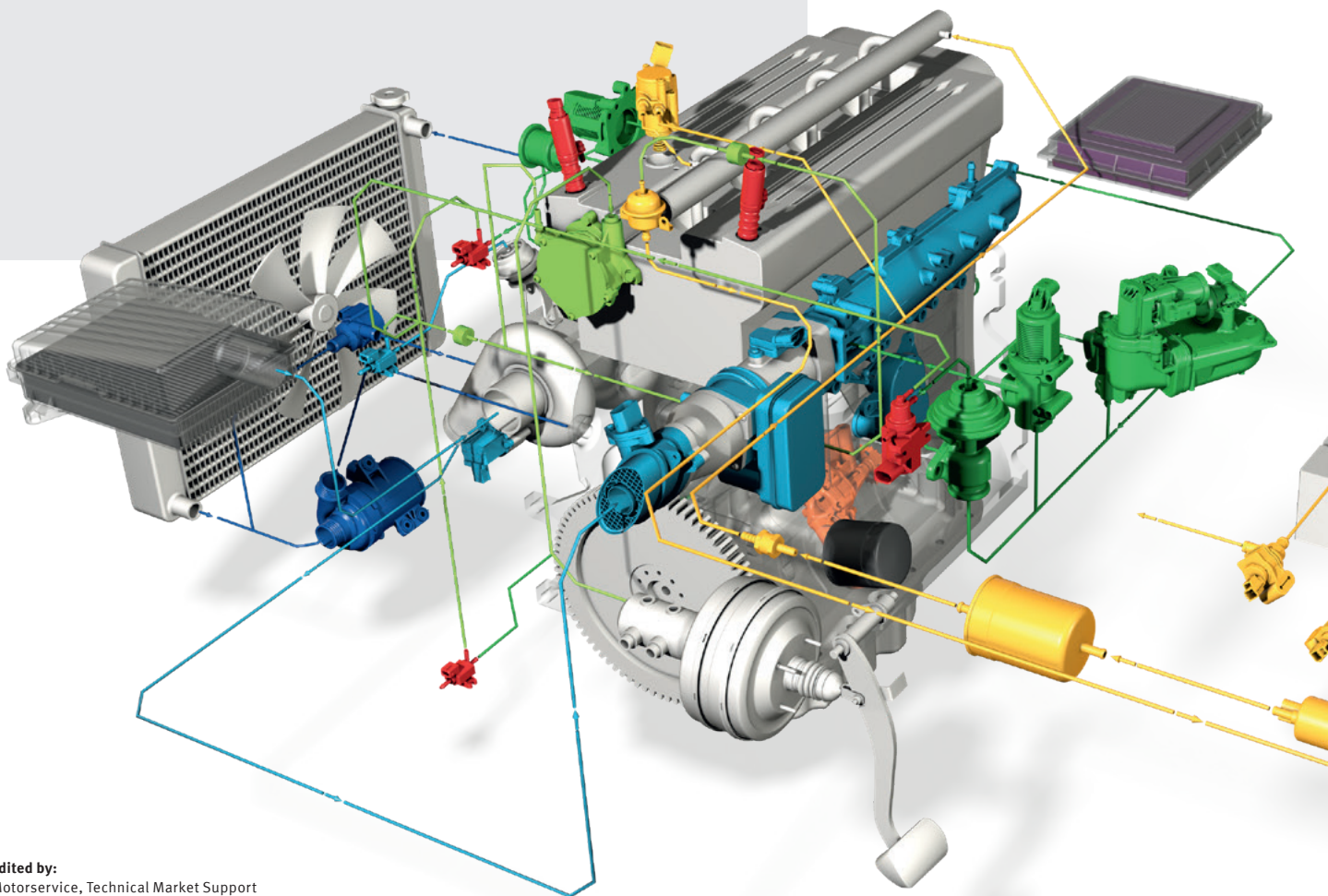


KSPG Automotive becomes **Rheinmetall Automotive**

SPOTLIGHT

OUR PRODUCTS FOR ALL ASPECTS RELATED TO THE ENGINE

Our products stand for low pollutant emission, economical fuel consumption, reliability, quality and safety. They are used in a diverse range of systems for all aspects related to the engine.



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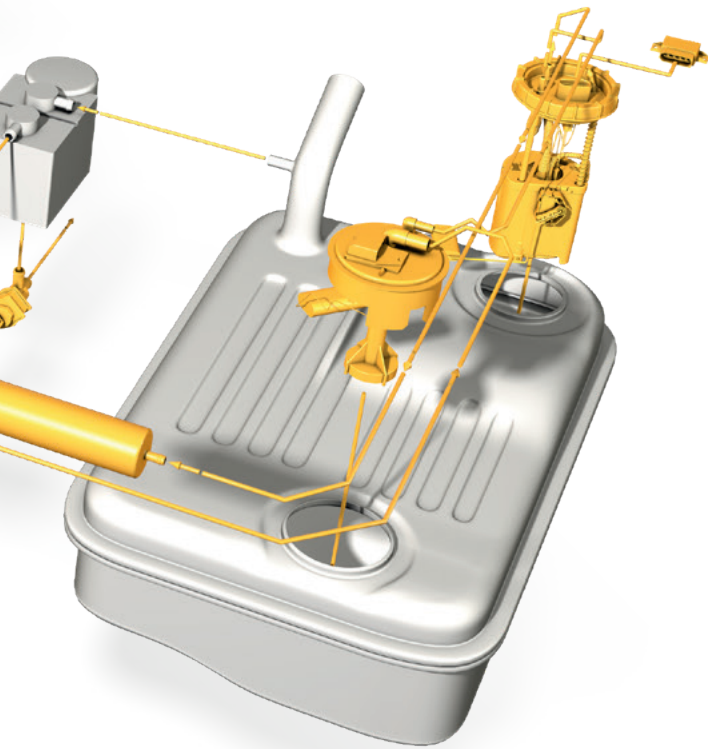
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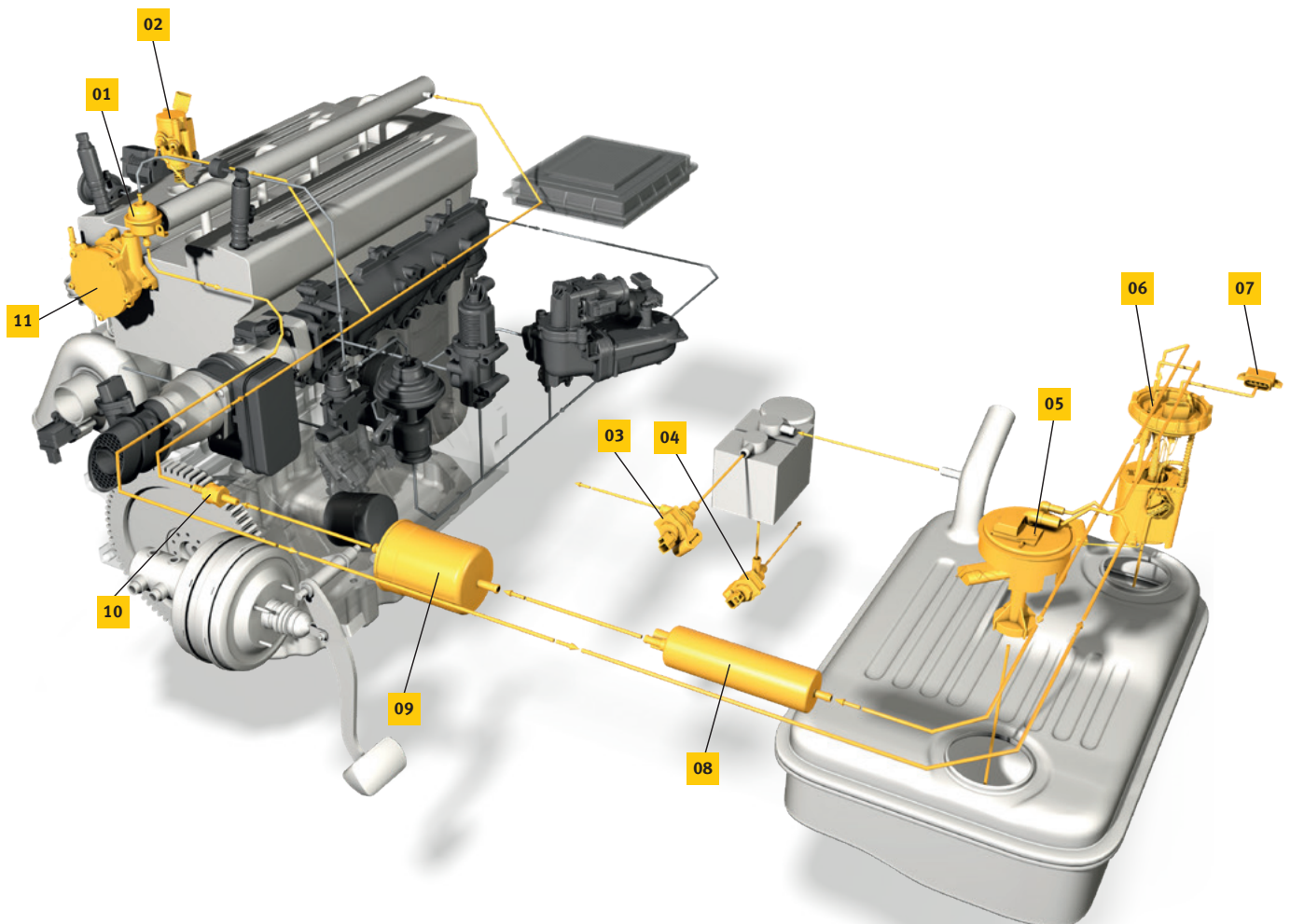
FUEL SUPPLY

AN EXTENSIVE PRODUCT RANGE IN TRIED-AND-TESTED QUALITY

From fuel pumps, pump modules, sender units, system-pressure regulators and non-return valves to regeneration valves and ACF valves – Motorservice offers a wide range of components that are indispensable in the fuel system – in tried-and-tested Pierburg quality.

PRODUCT RANGE

- 01 Fuel pressure regulator
- 02 High-pressure fuel pump
- 03 Activated carbon filter regeneration valve
- 04 Active carbon filter shut-off valve
- 05 Fuel tank sender unit
- 06 Fuel delivery module (in-tank)
- 07 Fuel pump control unit
- 08 Fuel pump (in-line)
- 09 Fuel filter (Kolbenschmidt)
- 10 Fuel check valve
- 11 Tandem pump, fuel/vacuum





FUEL DELIVERY MODULES

Fuel delivery modules are located in the fuel tank. They consist of the flange cover, the fuel pump in the swirl pot and other possible attachments such as a sender unit or pressure regulator.

In addition to complete fuel delivery modules, Motorservice also has attachments such as sender units, gaskets and service-friendly repair kits in the product range.



FUEL PUMP CONTROL UNITS

The control unit is a part of the demand-based fuel supply in modern engines. This means that, in contrast to unregulated fuel supply, only the required amount of fuel is supplied. This reduces power consumption and saves fuel. In each case, the characteristic curve is specific to the vehicle engine and model.

With our range of 19 control units in OE quality, you can achieve market coverage of over 10 million vehicles.



ELECTRIC FUEL PUMPS

Electric fuel pumps deliver the fuel to the injection valves with a defined pressure. They are available both for specific vehicles and for universal use in various pressure and output levels.

Inline fuel pumps are situated in the fuel line. In-tank fuel pumps are installed in the fuel tank.

Motorservice is a leading supplier of electric fuel pumps in the aftermarket.



FUEL PRESSURE REGULATORS

Fuel pressure regulators are used in petrol engines with fuel injection. They maintain the fuel at the constant pressure necessary for the injection nozzles.



MECHANICAL FUEL PUMPS

Classic mechanical fuel pumps are often installed in older vehicles. They are driven directly by the engine by means of tappets or levers. Motorservice has included various types for use in older vehicles in its product range.

For FSI, TFSI and TSI engines from VAG, mechanical high-pressure pumps ensure the necessary injection pressure of approx. 120 to 200 bar. Tandem pumps fulfil the function of a mechanical vacuum pump and are also used for the fuel feed.



FUEL CHECK VALVES

Fuel check valves are installed in fuel lines.

They allow fuel to flow in one direction only and prevent the fuel tank from draining or lines from running dry.

Motorservice offers fuel check valves with connection diameters of 6, 8, 10 and 12 mm.

OIL SUPPLY

OIL PUMPS – PERFECTED

OIL SUPPLY

Oil pumps deliver oil from the oil pan through the oil filter and oil cooler to the lubricating points of the engine. This ensures that engine parts are supplied with a sufficient quantity of lubricating oil.

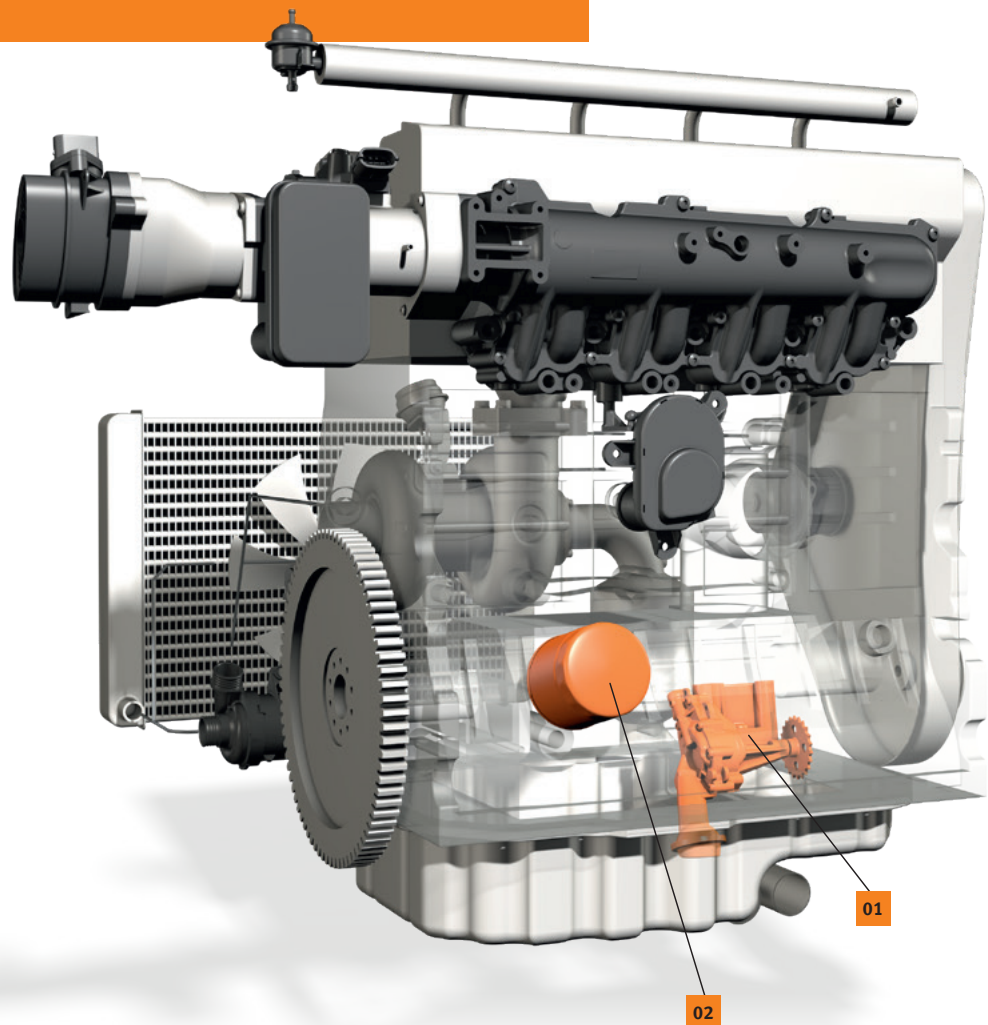
Rheinmetall Automotive is the OE supplier for all reputable engine manufacturers of the automotive and light utility vehicle industry, has numerous patents for oil pumps and produces tens of millions of oil pumps worldwide each year.

Based on this know-how, Motorservice offers a wide product range for over 3,000 engine applications from the renowned Kolbenschmidt, Pierburg and BF brands.

Benefit from this experience at a fair price/performance ratio.

PRODUCT RANGE

- 01 Oil pumps (unregulated, variable and tandem pumps for passenger cars and utility vehicles)
- 02 Oil filters (Kolbenschmidt)





UNREGULATED OIL PUMPS

Oil pumps ensure that engine parts are supplied with a sufficient quantity of lubricating oil. For sufficient cooling and lubrication, the total oil volume must be pumped 4 to 6 times per minute through the engine.

Moreover, the oil pump design must ensure that the lubricating points are supplied with fresh oil as fast as possible after cold starting, and the flow rate is always adequate even at low engine speeds.



VARIABLE OIL PUMPS

To reduce CO₂ emissions, Pierburg has developed variable oil pumps. With oil-hydraulic tasks, which are in part new, such as hydraulic valve clearance and camshaft compensation, piston cooling and many more, modern engines in the lower engine speed range require disproportionately large oil volumetric flows.

The delivery rate of the variable oil pumps can be adapted flexibly to the required oil volumetric flow, depending on the temperature, speed and load state of the engine. They help to deliver the oil when required, and thus save fuel.



TANDEM PUMPS VACUUM/OIL

In tandem pumps, supply pumps for different media are combined on a common axle. While the single-vane vacuum pump generates the vacuum for the brake booster, the connected oil pump takes over either the function of the main oil pump or draws in excess oil from the cylinder head as an oil suction pump.



The quality of an oil pump in terms of design and workmanship contributes significantly to a long and efficient engine life. Don't take any chances and choose one of the renowned pumps from the Pierburg or BF brands.

ELECTRIC VALVES

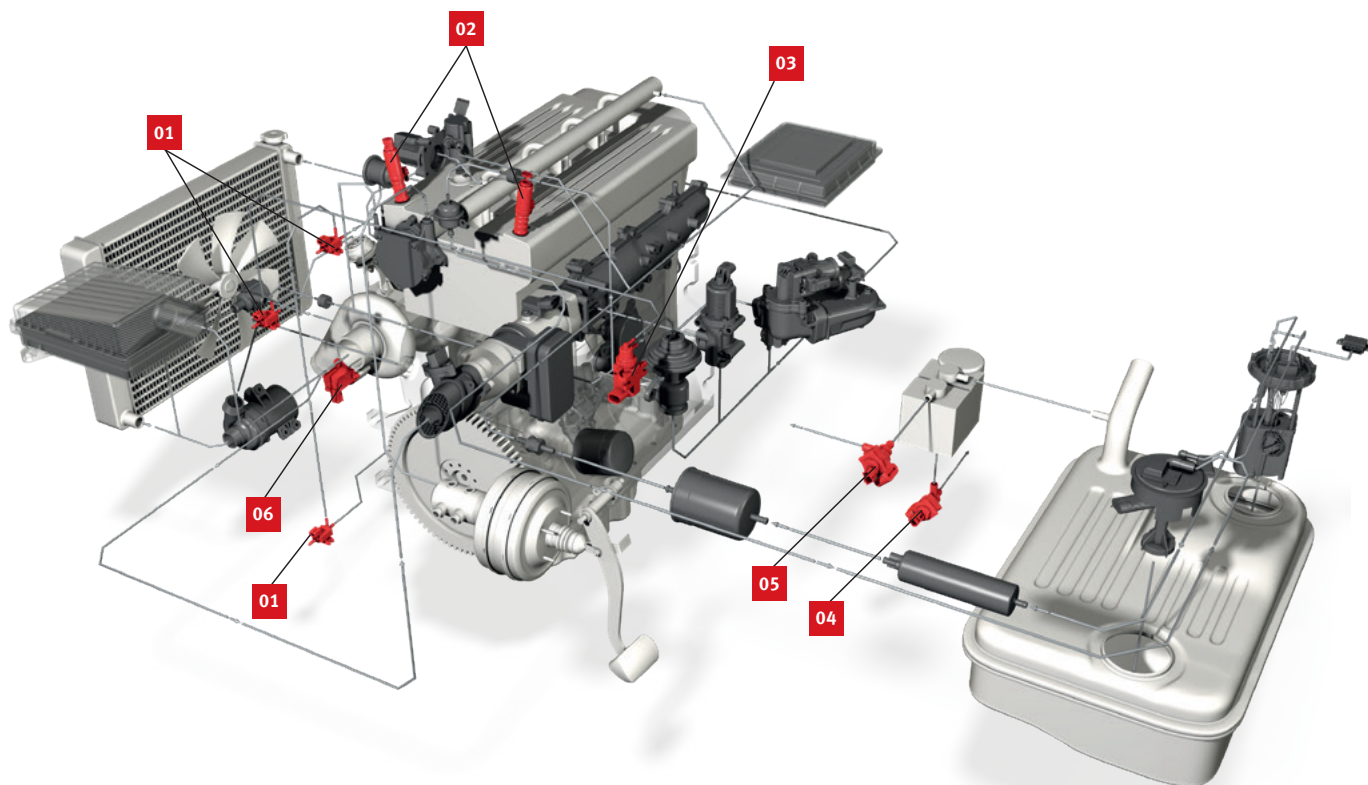
SMALL COMPONENTS WITH A BIG IMPACT

Electric valves are important components for switching and controlling as well as for implementing comfort and safety functions. They are used for the purposes of operating pneumatic actuators or for switching between two or more states.

Valves offer great potential for the independent spare parts trade, since they can be monitored by the OBD system either directly or indirectly. If these valves fail, replacement is essential. Trust the OE quality of Pierburg, the market leader with an OE production of over 125,000 valves a day and more than 350 valves in series production.

PRODUCT RANGE

- 01 Switchover valve
- 02 Control valves and central magnets for camshaft adjustment
- 03 Pressure transducer
- 04 ACF shut-off valve (activated carbon filter valve)
- 05 ACF regeneration valve (activated carbon filter valve)
- 06 Recirculating air valve





PRESSURE TRANSDUCERS

For continuous control of pneumatic EGR valves, VTG turbochargers and bypass EGR cooler switching.



SWITCHOVER VALVES

Switchover valves are used wherever a simple open-close function of the pneumatic actuators is needed, for e.g. for controlling boost pressure valves (wastegate), secondary air valves, intake manifold flaps and bypass flaps on EGR coolers.



ACTIVATED CARBON FILTER VALVES (ACF VALVES)

ACF valves are important components in the fuel tank ventilation system as well as the fuel tank leakage diagnosis.

The fuel tank ventilation system stops fuel vapours containing harmful hydrocarbons from escaping into the atmosphere. It also provides air to the fuel tank, for example if a vacuum forms in the tank when fuel levels fall or the ambient temperature is low.



RECIRCULATING AIR VALVES

The recirculating air valve for boost pressure control prevents the turbocharger from slowing down unnecessarily when the throttle valve closes suddenly. This reduces the turbo lag effect significantly.



CONTROL VALVES AND CENTRAL MAGNETS FOR CAMSHAFT ADJUSTMENT

Depending on the engine speed, the control valves guide the oil flow through various oil channels to the respective chambers in the hydraulic camshaft adjuster. As a result, the camshaft is turned relative to the camshaft gear and the control times are altered. This improves operating behaviour under full load and part load, and reduces fuel consumption.



Vehicle and valve manufacturers sometimes use different designations for these components.

Here is a selection of alternative designations for the respective names:

- **Pressure transducer:**
Electropneumatic pressure transducers (EPW), electric pressure transducer
- **Switchover valve:**
Electric switchover valve (EUV), solenoid valve boost pressure limitation N75 (VW), solenoid switchover valve (VW), electric valve (BMW)
- **Electric pressure transducer:**
Pressure transducer, valve (VW), electric valve (BMW), EDW, DW

KOLBENSCHMIDT FILTERS KEEP DIRT AT BAY

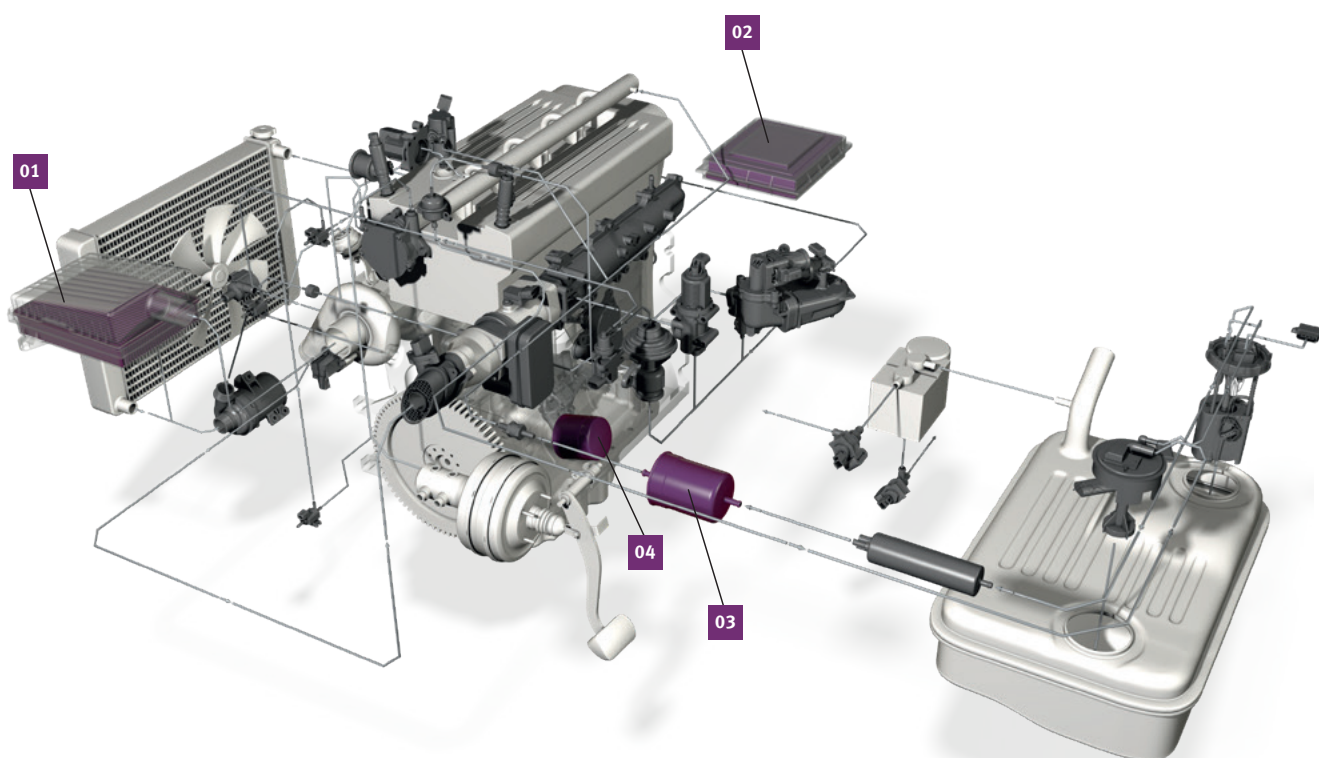
Engine filters protect the engine against impurities in the oil, air and fuel. High-quality filters are essential for ensuring long durability and for minimising wear on engine parts.

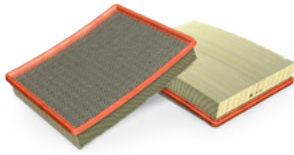
PRODUCT RANGE

- 01 Air filters
- 02 Cabin filters
- 03 Fuel filters
- 04 Oil filters

Not listed in the graph:

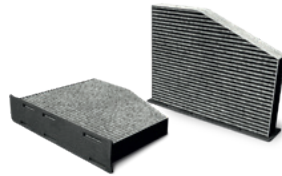
- Coolant filters
- Urea filters
- Gear oil filters
- Air dryers for brake systems
- Special filters
- Oil centrifuge filters





AIR FILTERS

The optimised particulate separation efficiency of the air filter minimises the wear on pistons, piston rings and the running surface of cylinder liners. The air filter, adapted to the engine characteristics and installation space, effectively suppresses disruptive intake noises.



CABIN FILTERS

Cabin filters prevent foreign particles such as dust, pollen, spores and soot from entering the passenger compartment via the ventilation system. Cabin filters with activated carbon are not only fine filters for solid particles, they also absorb unpleasant odours, harmful gases, such as nitrogen oxides, sulphur dioxide, ozone and hydrocarbons, and prevent them from entering the passenger compartment at a rate of 95 %.



FUEL FILTERS

Even minor impurities in the fuel system can lead to severe malfunctions. Modern injection systems, in particular, require an extremely clean, pulsation-free and homogeneous fuel supply.



OIL FILTERS

Foreign bodies that get into the engine via the fuel or intake air and metal abrasion that arises in the engine are filtered out of the oil circuit and retained by the oil filter.



COOLANT FILTERS

Coolant filters protect the engine cooling system by filtering out impurities. The additives in the filter are also released into the cooling system at a controlled rate.



UREA FILTERS

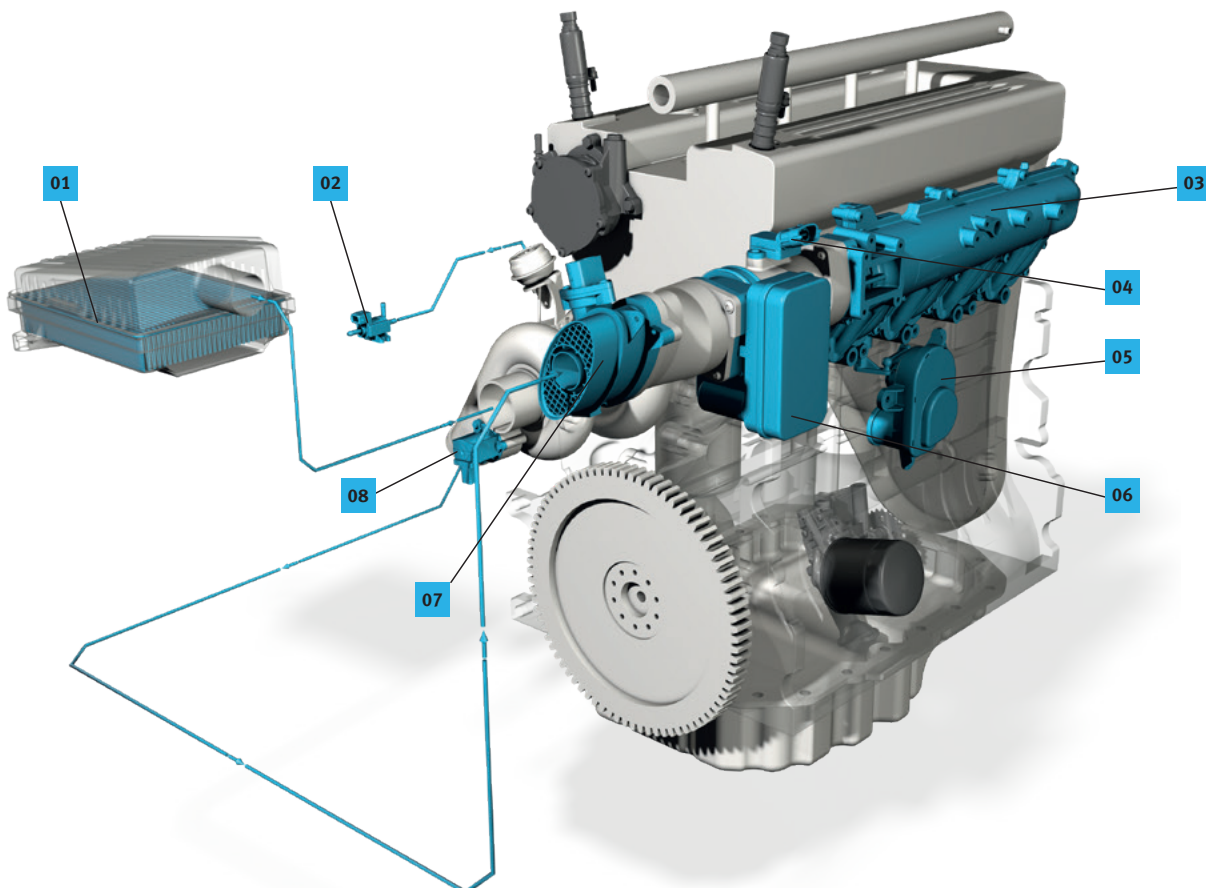
In modern exhaust treatment systems with SCR (selective catalytic reduction) catalytic converters, urea filters filter the urea solution, thereby protecting system components against wear.

AIR SUPPLY FOR INCREASED EFFICIENCY AND MORE DRIVING ENJOYMENT

Throttle valves, intake manifolds and drive modules for controlling the optimal air quantity – due to their sophisticated quality, these products guarantee optimal performance, driving comfort and the correct torque, with the lowest possible fuel consumption.

PRODUCT RANGE

- 01 Air filter (Kolbenschmidt)
- 02 Pressure transducer (for controlling the VTG turbocharger)
- 03 Intake manifold/variable intake manifold
- 04 Pressure sensor
- 05 Electric drive module
- 06 Throttle valve/regulating throttle (as well as attachments such as idle controllers)
- 07 Air mass sensor
- 08 Recirculating air valve





THROTTLE VALVES

In petrol engines, the throttle valve controls the quantity of air fed to the engine. The position of the throttle valve determines the performance of the engine.

Pierburg's (the European market leader) extensive product range of throttle valves extends from mechanical to fully electronic "drive-by-wire" E-Gas valves. Motorservice also offers attachments, such as throttle potentiometers and idle controllers, as replacements in its product range.



REGULATING THROTTLES

The regulating throttle on a diesel engine creates a vacuum in the intake air system. This vacuum is required to increase and control the exhaust gas recirculation rate. It is additionally an essential component for regenerating the diesel particulate filter.

Pierburg regulating throttles cannot be replaced by regulating throttles from other suppliers.



AIR MASS SENSORS

Air mass sensors record the air mass flowing into the engine. Its signal is used to calculate the injected fuel quantity, and in diesel engines also for regulating the exhaust gas recirculation.

Motorservice offers Pierburg air mass sensors with a flow pipe or as a separate plug-in probe.



INTAKE MANIFOLDS

Their original task was to distribute the air-fuel mixture amongst the individual cylinders. However, intake manifolds have been continuously developed since then and nowadays are crucial for increasing performance and efficiency while reducing pollutants and fuel consumption.

Pierburg has a 90 % market share in Europe for aluminium or magnesium intake manifolds.



PRESSURE SENSORS

Pressure sensors supply important input parameters for the engine control system. The commonly used abbreviation "MAP sensors" is derived from "manifold absolute pressure".

With around 60 OE references, these sensors cater for almost 700 applications in Audi, VW, Škoda, Seat, Opel, Vauxhall, Fiat and PSA.



ELECTRIC DRIVE MODULES

Electric drive modules are used whenever fast, precise adjustment of passages or angles is required. A typical application is adjusting flaps on an intake manifold.

ENGINE COOLING WATER PUMPS – COOLING FOR A LONG ENGINE LIFE

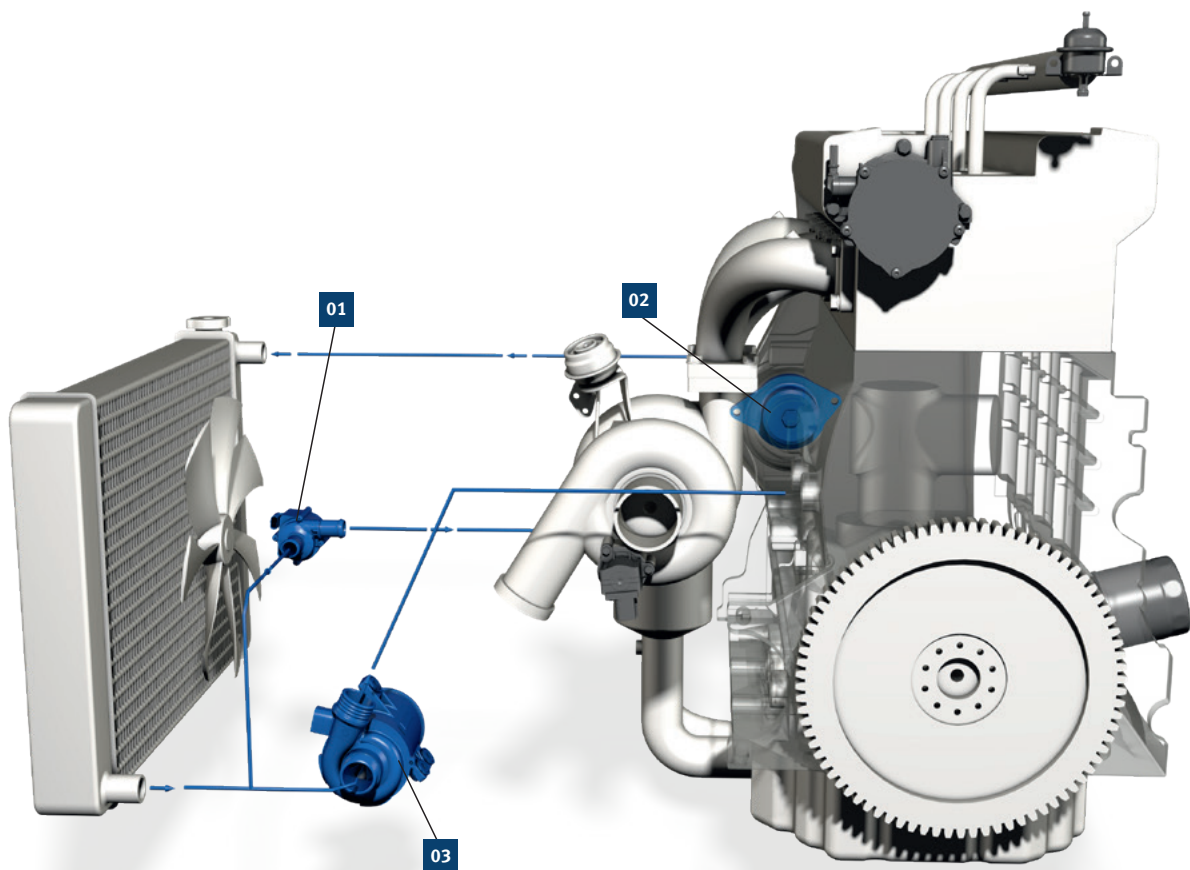
The water pump is the central component in the coolant circuit. Mechanical water pumps are a well-established solution.

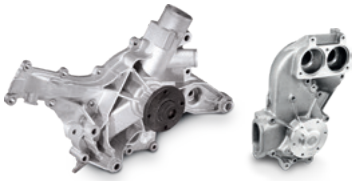
The electrically driven coolant pumps provide demand-based engine cooling, reduce power requirements and cut frictional losses, fuel consumption and pollutant emissions.

Pierburg production sites produce more than seven million mechanical and electrical water pumps for motor vehicles and utility vehicles every year.

PRODUCT RANGE

- 01 Water circulating pump
- 02 Mechanical water pump
- 03 Electrical water pump (coolant pump)





MECHANICAL WATER PUMPS

The cooling liquid of the water pump absorbs the heat from the engine block and cylinder head and releases it into the ambient air through the cooler. Depending on their design, mechanical water pumps are located either externally on the engine in their own pump housing or are flanged directly on the crankcase and are driven by a V-belt, toothed belt or the engine directly.

Quality features of our water pumps:

- High-quality sliding ring sealing cartridge
- Maintenance-free, long-life rolling bearings
- Flow-optimised impellers made from plastic, steel, aluminium or brass
- Gaskets and O-rings are included in the scope of supply



ELECTRICAL WATER PUMPS

Electrical water pumps make a significant contribution to emission control on modern engine designs.

A delivery rate that is not dependent on the engine speed enables demand-based cooling. This reduces the power requirements whilst also cutting down on frictional loss, fuel consumption and pollutant emissions.

Pierburg has made this technology ready for series production and is the world's first series-production supplier of electrical water pumps.



WATER CIRCULATING PUMPS

Water circulating pumps are used where cooling or heating functions need to be performed independently of the coolant circuit. In independent heating systems, water circulating pumps are used for quickly heating the passenger compartment, for example.

Ever since they were launched on the market in 1996, more than 50 million water circulating pumps have been produced in Pierburg's plants.

VACUUM PUMPS

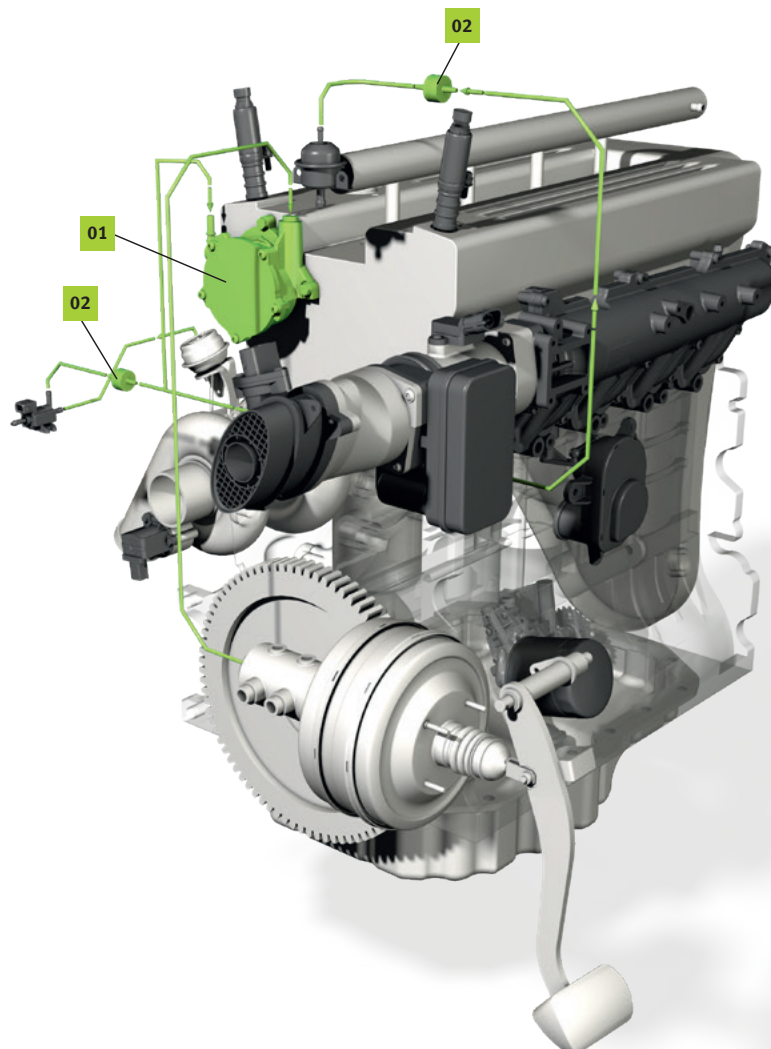
FORCE INCREASE FOR MANY APPLICATIONS

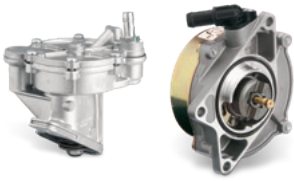
Vacuum pumps produce the required vacuum for the brake boosters, as well as for controlling the functions of the central locking system, air conditioning, automatic transmission unit, emission control systems and other control elements. Due to the hydraulic principle, this allows for high adjusting forces in a small installation space.

As an OEM, Pierburg boasts decades of expertise in development and manufacturing, and its innovative concepts have made significant contributions to the state of the art.

PRODUCT RANGE

- 01 Vacuum pumps
- 02 Non-return valves (vacuum)

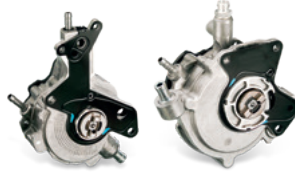




MECHANICAL VACUUM PUMPS

Mechanical vacuum pumps can be driven by means of cams, tappets, chains, belts, or cam discs. Pumps that move a piston or diaphragm back and forth and generate a vacuum are well established in the field.

A newer development is vane pumps with a rotary drive. Here, a rotor with one or more vanes forms compartments, the size of which varies during the work cycle.



TANDEM PUMPS FUEL/VACUUM

In "tandem pumps", vacuum pumps are combined with other supply pumps on a common axle. In the fuel/vacuum combination, they fulfil the functions of mechanical vacuum pumps and are also used for fuel feed.



TANDEM PUMPS, VACUUM/OIL

While the single-vane pump generates the vacuum for the brake booster, the connected G-rotor oil pump draws in excess oil from the cylinder head and conveys it back to the crankcase sump.



ELECTRICAL VACUUM PUMPS

Electric vacuum pumps can be switched on independently of the vehicle engine, and on demand. This saves fuel and reduces emissions.

In hybrid vehicles, electric vacuum pumps maintain brake boosters when the combustion engine is switched off.

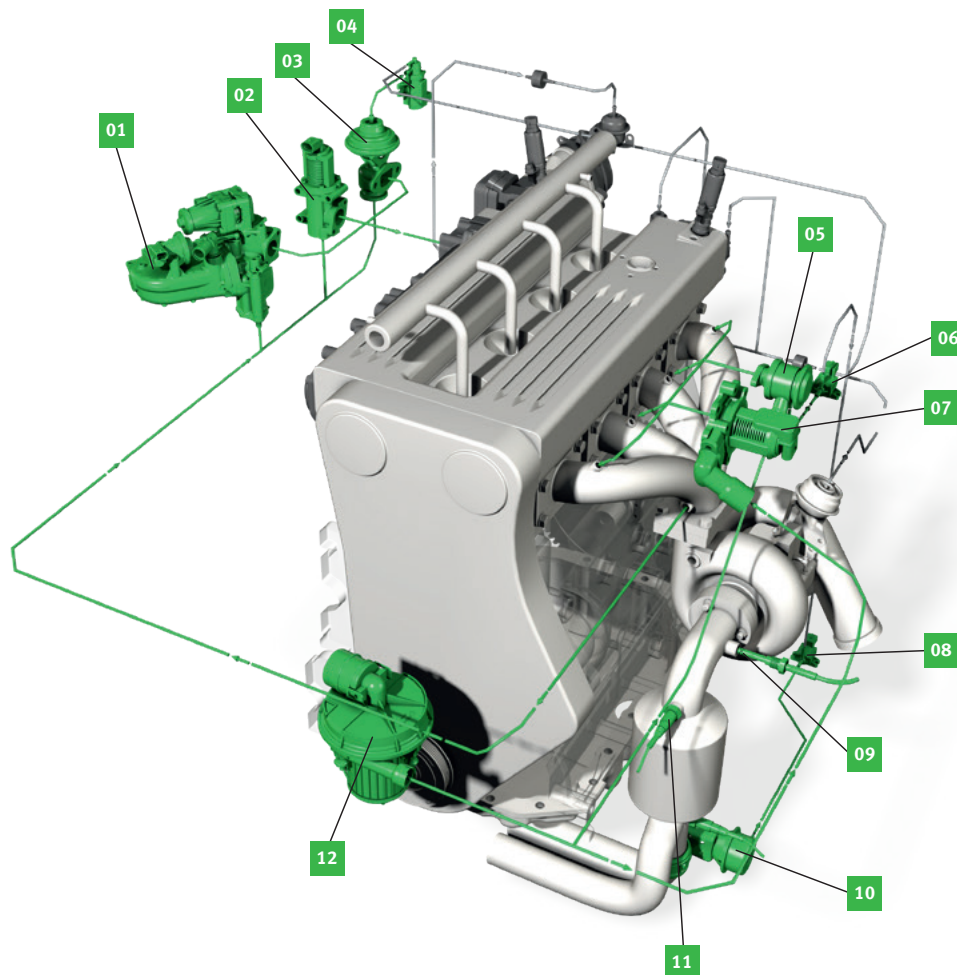
EMISSION CONTROL

50 % FEWER POLLUTANTS BEFORE REACHING THE CATALYTIC CONVERTER

There's a reason why Pierburg is represented as the OEM in a large number of modern vehicles with EGR valves and EGR coolers. The corrosion and temperature-resistant materials used in the Pierburg products guarantee lasting function under the harshest conditions, e.g. aggressive exhaust gas condensate, temperatures up to 700°C and pressures up to 3 bar.

PRODUCT RANGE

- 01 EGR cooler module
- 02 EGR valve (electrical)
- 03 EGR valve (pneumatic)
- 04 Pressure transducer for controlling pneumatic EGR valves
- 05 Secondary air valve (pneumatic)
- 06 Switchover valve for controlling pneumatic secondary air valves
- 07 Secondary air valve (electrical)
- 08 Switchover valve for controlling the exhaust gas flap
- 09 Exhaust temperature sensor
- 10 Exhaust gas flap
- 11 Lambda sensor
- 12 Secondary air pump





EGR VALVES

Nowadays all modern diesel engines must be fitted with EGR systems in order to comply with exhaust gas regulations.

Exhaust gas is removed immediately after the cylinder and mixed with the intake air. This means that less oxygen reaches the cylinder, which results in a lower combustion temperature. As a result, the amount of nitrogen oxides in the exhaust gas can be reduced by up to 50 %. In petrol engines, this can also reduce carbon dioxide emissions and fuel consumption.



EGR COOLERS

In order to keep up with the increasingly strict emissions regulations, exhaust gas recirculation systems are required.

Cooled exhaust gas reduces the peak combustion temperature. This significantly reduces the amount of nitrogen oxides. Additionally, cooled gases are denser than warmer ones. This means that at the same boost pressure, a larger volume of gas fits into one cylinder filling. This produces a “leaner” combustion which also improves fuel consumption and particulate emissions.



EXHAUST GAS FLAPS

Exhaust gas flaps are an important element in modern engines for emission control and increased comfort. They direct the exhaust gas into different exhaust tracts depending on the operating state.

Fields of application for areas close to the engine:

- DeNO_x catalytic converters
- Low-pressure exhaust gas recirculation
- HC absorbers

Motorservice’s product range encompasses pneumatic and electrical exhaust gas flaps as well as exhaust gas flaps for motorcycles. All flaps are designed for extreme gas temperatures from –40°C to +950°C and a durability of over 1,000,000 switching cycles.



Pierburg has been developing these systems since the 70s up to present day, and have therefore made a significant contribution to the current state of the art.



LAMBDA SENSORS

Lambda sensors measure the residual oxygen in the exhaust gas. This produces a lambda value, which the engine management system uses to regulate the mixture composition for the most optimal combustion possible.

Lambda sensors are the most important element in engine management systems in terms of ensuring perfect engine running with low emissions.

High operating temperatures and aggressive exhaust gas place high demands on lambda sensors. You should therefore choose specialist products for emission control.



EXHAUST GAS TEMPERATURE SENSORS

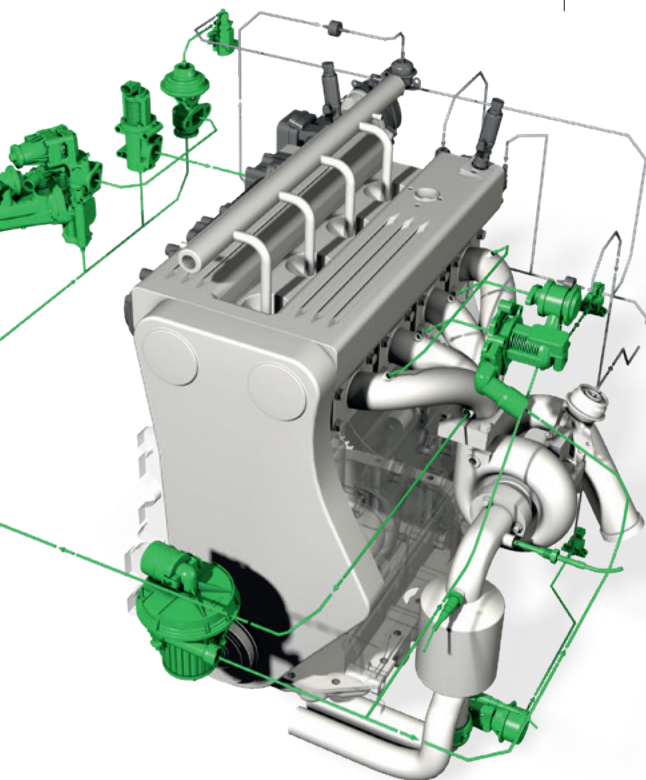
Exhaust gas temperature sensors monitor the hot exhaust gas flow and protect components from overheating. Typical applications include protecting components which are sensitive to temperatures, such as turbochargers and all forms of catalytic converters, monitoring the free-burning process of the diesel particulate filter, controlling the optimal temperature range for catalytic converters and measuring the EGR exhaust gas temperature as part of on-board diagnostics (OBD). In the event of critical overheating, the control unit responds with suitable measures to reduce the temperature, e.g. through reduced performance (limp home function).

Motorservice covers around 1,400 vehicle types with 30 exhaust gas temperature sensors.



SECONDARY AIR PUMPS

Secondary air pumps are high-speed one or two-stage blowers. These draw in ambient air and inject them into the exhaust manifold downstream of the exhaust valves. In petrol engines this ensures a noticeable reduction of a large amount of carbon monoxide and unburnt hydrocarbons during the cold start phase – when the catalytic converter has not yet reached working temperature.



SECONDARY AIR VALVES

The secondary air valves are located between the secondary air pump and the exhaust manifold. The secondary air valve performs multiple tasks:

- The non-return function stops exhaust gas, condensate or pressure peaks in the exhaust tract from causing damage to the secondary air pump.
- The shut-off function ensures that secondary air is only routed to the exhaust manifold in the cold start phase.



IN MOTORSERVICE'S EXTENSIVE PRODUCT PORTFOLIO ARE THREE DIFFERENT TYPES OF PIERBURG SECONDARY AIR VALVES:



ELECTRICAL

Electrical secondary air valves have shorter opening and closing times and are more resistant against sticking due to soot or dirt.



PNEUMATIC

Pneumatic secondary air valves have proven their worth over decades. They need to be actuated by a switchover valve.



PRESSURE-CONTROLLED

This type of secondary air valve opens due to pressure from the secondary air pump.

TOOLS AND TEST DEVICES BY PROFESSIONALS FOR PROFESSIONALS

For professional and quick mounting of their products,
Motorservice offers a range of useful tools.



QUICK COUPLERS DISASSEMBLY TOOL

Motorservice offers an eight-part tool set to facilitate the release of quick couplers (quick connectors). The curved tools make reaching the connectors easier.



PRESSURE/VACUUM HAND PUMPS

Pressure/vacuum hand pumps can be used for checking and adjusting pressure-related functions directly on the vehicle, practically anywhere that engine-independent pressure or vacuum generation is needed.



FUEL PRESSURE TEST KIT

The contents of this fuel pressure test kit enable the pressure and flow rate to be measured without dismantling the fuel pumps. All common fuel delivery systems can be checked for faults with the fuel pressure test kit.



REPAIR KIT FOR FUEL LINES

By means of the repair kit, smaller defective spots on fuel lines can be repaired quickly and efficiently.



REPAIR KIT FOR AIR CONDITIONING LINES

For repairing smaller defective spots on air conditioning lines made from aluminium and galvanised steel with external diameters of 8, 10, 12, 16 or 18 mm in passenger cars and utility vehicles.

- Suitable for R12, R134a and R1234yf refrigerants
- Operating pressure: max. 35 bar
- Burst pressure: over 60 bar



REPAIR KITS FOR COOLANT HOSES

Coolant hoses that have been damaged in individual spots can be repaired quickly and inexpensively with this repair kit; the damaged piece of tubing is removed and replaced with a new piece of tubing using the included hose connections and connectors (0° and 90°). Motorservice's range offers two different repair kits for passenger cars and utility vehicles.



REPAIR KIT FOR COMPRESSED AIR LINES

Smaller defective spots on compressed air lines made from polyamide (PA) and with external diameters of 4, 6, 8, 10, 12 or 16 mm can now be quickly and inexpensively repaired with this repair kit. It is suitable for passenger cars and utility vehicles.

- Operating pressure: max. 10 bar absolute
- Burst pressure: 15 bar



SPECIAL TOOL FOR REPLACING AIR MASS SENSORS

The replacement of series-mounted air mass sensors is complicated due to the use of special screws (5-tooth or 6-tooth star-type inserts) with a central pin. Motorservice provides the appropriate aftermarket special tool for air mass sensors.



FUEL PUMP FITTING TOOL

With this low-cost tool for mounting and removing fuel pumps, you no longer need to replace the entire fuel pump including its mounting. Now only the fuel pump itself is replaced.



MINI-AMMETER

Using the mini-ammeter, power consumption can be measured simply and quickly, directly on the affected fuse in the vehicle's fuse box. There are two versions of the mini-ammeter for the most common flat fuses found in vehicles.

KNOW-HOW TRANSFER

PROFESSIONAL KNOWLEDGE FROM THE EXPERTS

WORLDWIDE TRAINING

Direct from the manufacturer

Each year, around 4,500 mechanics and engineers benefit from our training courses and seminars, which we hold on-site in locations across the world or in our training centres in Neuenstadt, Dormagen and Tamm (Germany).

TECHNICAL INFORMATION

From practical experience for practical use

Our Product Information and Service Information publications, technical brochures and posters keep you at the forefront of the latest technological developments.

TECHNICAL VIDEOS

Knowledge transfer via video

Our videos provide you with useful information on our products, such as hands-on fitting instructions and system descriptions.



PRODUCTS IN FOCUS ONLINE

Our solutions explained clearly

Interactive elements, animations and video clips provide interesting information about our products in and around the engine.

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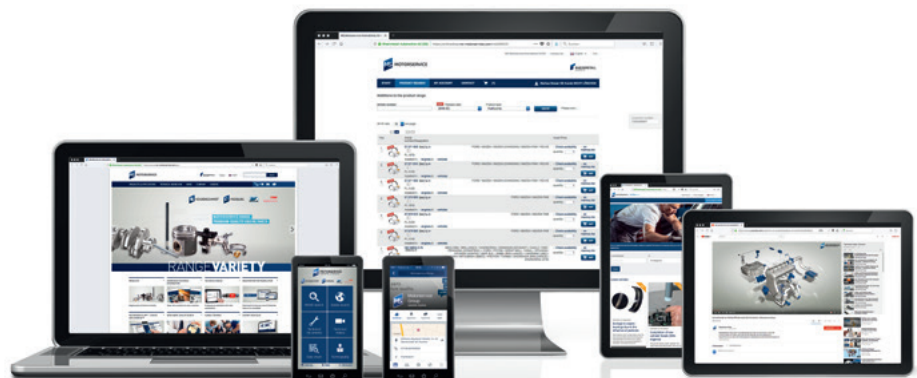
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