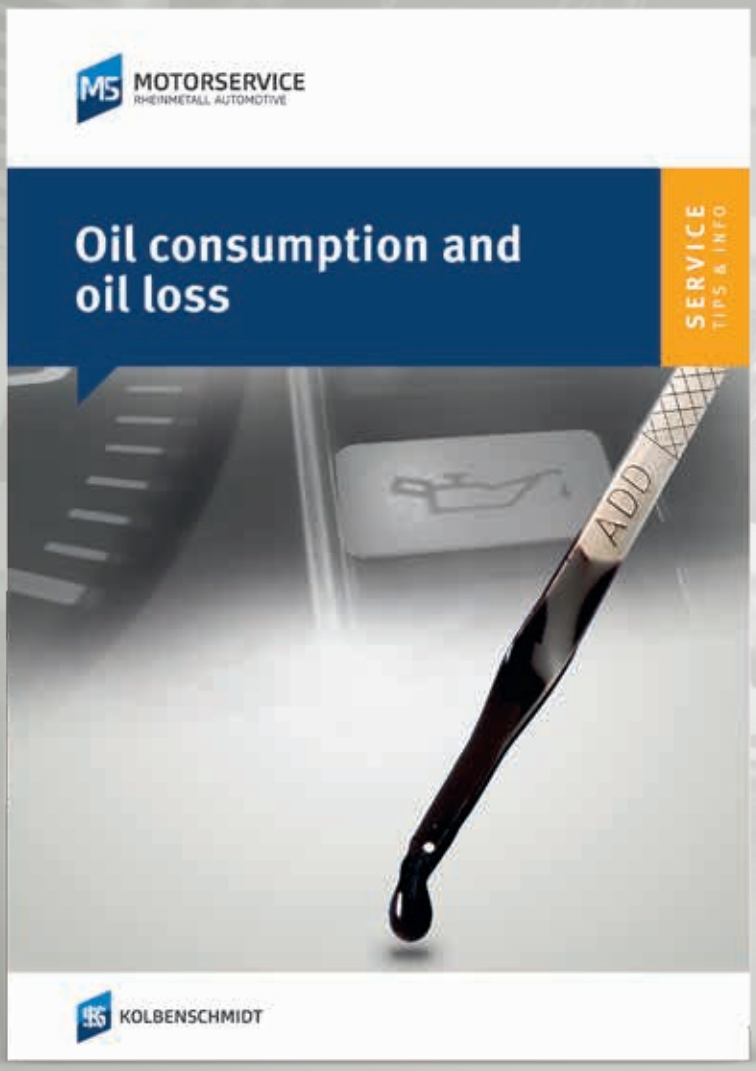
MOTORSERVICE
RHEINMETALL AUTOMOTIVE

Practical skills

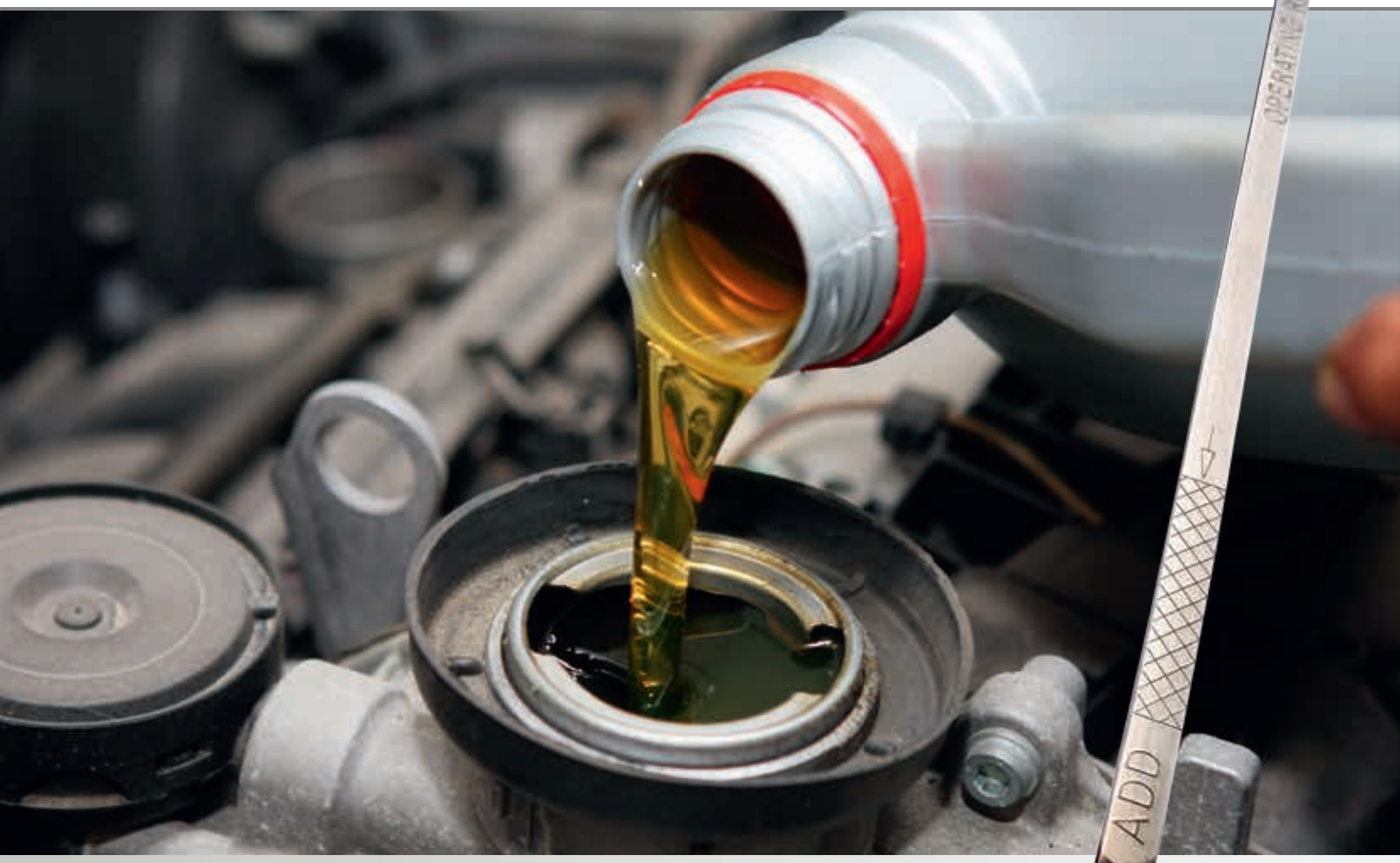
Our knowledge for your work

SERVICE
TIPS & INFO



POSTER
INSIDE

KOLBENSCHMIDT



Oil consumption and oil loss?

As most motorist know, an engine needs oil for a long and healthy life. However, we tend to worry less about the importance of regular oil level checks. The question of oil consumption tends to take us by surprise, and usually only arises when you check the oil level and the dipstick indicates close to the minimum mark.

Before we can start to look for the reasons behind the oil loss, it is first necessary to define various terms in more detail. Normally, the term “oil consumption” is always used in a very general sense. However, in the workshop it is necessary to make a distinction between the oil loss and the actual oil consumption.

MOTORSERVICE
RHEINMETALL AUTOMOTIVE

Oil consumption caused by ... | 2

2.4 ... unfavourable operating conditions for turbocharger

In contrast to other parts of the engine, turbochargers do not have radial oil seals made of elastomer material. This is because of the high temperatures and high engine speeds (up to 330,000 rpm) they are subject to.

A labyrinth seal is located behind the turbine and compressor impeller which not only inhibits escape of engine oil, but also the entry of compressed air and hot exhaust gases into the bearing housing. The gas pressures at the turbine impeller and compressor impeller end prevent engine oil from escaping.
The washers on the turbocharger shaft have the effect of forcing engine oil escaping from the bearing positions out from the shaft by centrifugal force.

Engine oil escaping from the radial bearings as well as intake air and exhaust gases that find their way into the inside of the turbocharger are taken back to the oil pan via the return line.

If the turbocharger is losing engine oil via the intake or exhaust gas port, this usually means the pressure equilibrium is impaired due to problems with the oil/gas return line.

Reasons for oil leakage:
- Blocked, kinked, constricted or carbonised return line
- Oil level too high
- Internal pressure in crankcase too high due to excessive wear on pistons, piston rings and cylinder bores (excessive blow-by gases)
- Internal pressure in crankcase too high due to crankcase ventilation failure

Note:
Due to the much more widespread use of turbocharged engines, oil consumption caused by unfavourable turbocharger operating conditions occurs much more commonly than in the past.

Fig. 3

1 Fresh air inlet
2 Compressor impeller
3 Fresh air outlet (compressed)
4 Axial shaft bearing (thrust washer)
5 Oil supply connection
6 Radial shaft bearing
7 Return side
8 Turbocharger shaft
9 Turbine impeller
10 Exhaust gas outlet
11 Exhaust gas inlet

KOLBENSCHMIDT

Oil consumption and oil loss | 9

Fig. 2

Extract from the brochure

Further details on the topic can be found in our brochure „Oil consumption and oil loss“, Reference number 50 003 605-02 (English) or at www.ms-motorservice.com

MOTORSERVICE
RHEINMETALL AUTOMOTIVE

OUR HEART BEATS FOR YOUR ENGINE.

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.

Motorservice Partner:

Headquarters:
MS Motorservice International GmbH
Wilhelm-Maybach-Straße 14–18
74196 Neuenstadt, Germany
www.ms-motorservice.com

4 028977 611735
50 003 800-02 – EN – 05/15 (072017)

MOTORSERVICE
RHEINMETALL AUTOMOTIVE

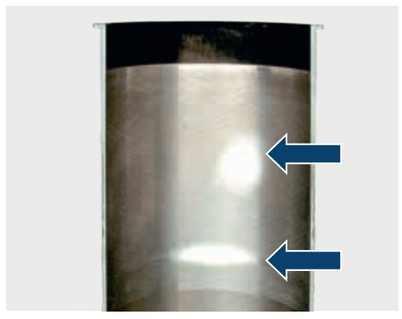
Oil consumption and oil loss

Oil consumption caused by:

Distortion of cylinder bores

Distortion of cylinder bores is easy to identify from individual, bright areas on the cylinder sliding surface. As a result, piston rings are not able to reliably seal distorted or deformed cylinder bores to prevent the ingress of engine oil or combustion gases.

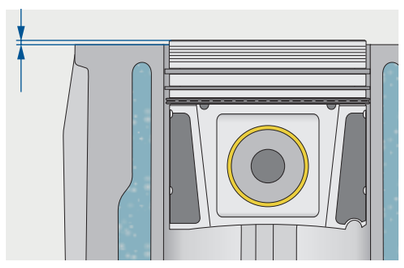
The engine oil can therefore enter the combustion chamber, where it is burned off.



Piston protrusion too great

If the piston protrusion is too great on a diesel engine, the pistons will strike against the cylinder head and jolt the injection nozzles. Additional fuel is injected and degrades the lubricating film on the cylinder surfaces.

This results in a high degree of mixed friction on the pistons, piston rings and the cylinder sliding surfaces.



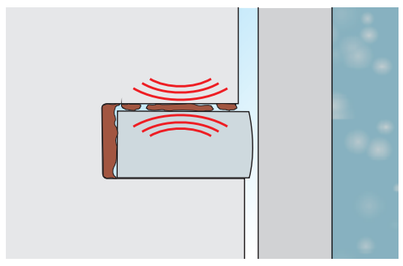
Faults in cylinder machining

Faulty machining of cylinder bores results in problems with the "cylinder bore-piston-piston rings" sealing system.

If the topography of the cylinder surface is incorrect, mixed friction may occur and therefore significantly increased wear and oil consumption.

Blocked piston rings

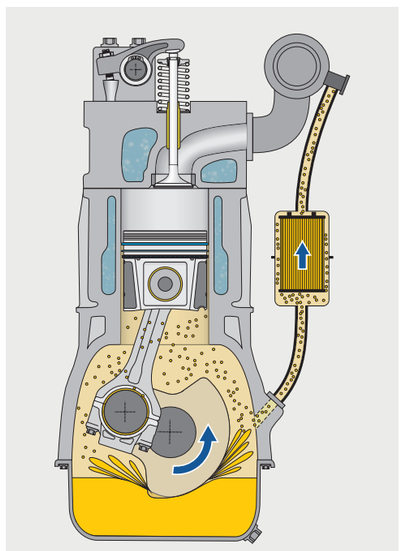
If the piston rings in a four-stroke engine are not able to run freely in the ring grooves, problems with sealing and therefore increased oil consumption will arise.



Oil level too high

If the oil level is too high the crankshaft will be immersed in the crankcase sump and ultimately additional oil mist will form. This will swamp the oil separator system for the crankcase ventilation and render it ineffective.

Engine oil together with the blow-by gases will enter the intake air system via the crankcase bleed valve. These are then drawn in and burned off in the next combustion cycle.



Oil consumption caused by:

Unfavourable operating conditions and usage errors

In addition to technical causes, unfavourable operating conditions for the vehicle may also result in increased oil consumption.

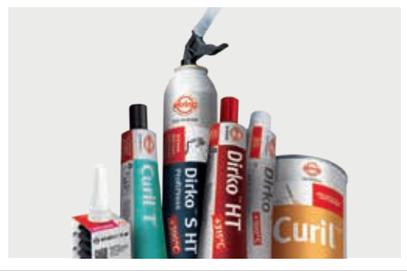
All driving conditions that cause an increase in fuel consumption have a negative impact on oil consumption.

Oil loss caused by:

Incorrect utilisation of sealants

Liquid sealants may only be used for applications for which they are explicitly specified.

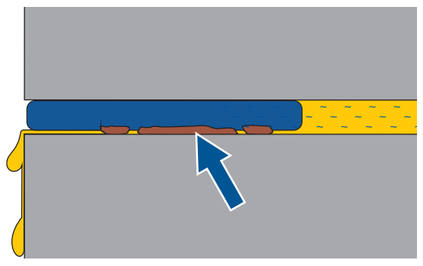
The unnecessary and excessive application of liquid sealant, particularly if solid seals are in use, can cause leaks.



Foreign bodies between sealing areas

Foreign bodies between the seal and the component prevent correct sealing and may cause the component to become distorted.

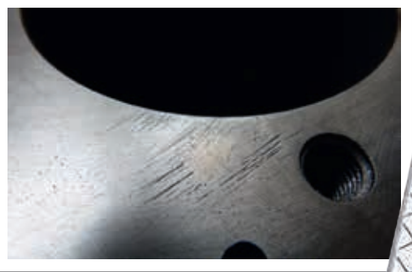
Rust, sealant and paint residue that has not been completely removed may cause similar problems.



Sealing area problems

If the surfaces of components are damaged (scratches, corrosion, rust, dented) or are not plane, the seal may not fulfil its intended function.

A gap will remain between the seal and the sealing area after joining the components through which engine oil or cooling liquid can escape.



Oil pressure too high

If the oil pressure is too high, housing gaskets, oil filters, oil coolers and pipes may leak or crack.

Further details on this subject can be found in our brochure "Oil consumption and oil loss".
Or ask your local Motorservice partner. We have also provided a lot more information for you at www.ms-motorservice.com and on our Technipedia at www.technipedia.info.

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.

KOLBENSCHMIDT

www.ms-motorservice.com

4 102897 152029