











Tech Talk tips / techniques / training

The right oil for your vehicle

As with many areas of the automotive industry the world of engine oils continues to become increasingly complicated with the appearance of more and more unique manufacturer specifications and a resulting shift away from commodity products towards manufacturer specific oils. This bulletin shows you how finding the right oil can be made easier and also reduce the risk of potentially expensive damage to your vehicle.

Figure 1 – Manufacturer specific engine oils covering different ACEA, API and manufacturer specifications as well as different viscosities.

ACEA C4	ACEA C1	ACEA C2	ACEA C3	ACEA C3	ACEA A3/B4	ACEA A5/B5	ACEA A1/B1	ACEA A5/B5	API SN
									
Renault	Mazda Land Rover Jaguar	Peugeot Citroen	Audi, Seat, Skoda, Volkswagen	BMW Vauxhall Opal Mercedes- Benz	GM Vauxhall Opal	Ford	Ford	Volvo	Toyota Scion Subaru

Why is oil so important?

Oil plays a vital role within an engine, as it performs three key functions: it reduces metal to metal friction (engine lubrication), provides a degree of cooling (engine cooling) and provides engine cleaning (with the use of detergents, dispersants and other additives). When the incorrect oil is used or the oil is not changed at the manufacturer's recommended intervals or the amount of oil is not checked regularly between service intervals, it can lead to significant and costly engine and other expensive components damage.



Figure 2 – Engine with sludge (can cause oil starvation and oil contamination leading to costly engine damage).

Why is it important to determine the correct oil?

The time when a single grade of engine oil would cover almost the entire vehicle parc is now a thing of the past! Choosing the right engine oil has become more complicated due to engines becoming more complicated, fundamentally because of increasingly demanding environmental legislation. To meet the requirements, as well as changes in design and materials, vehicle manufacturers have to resort to things like EGR (Exhaust Gas Recirculation), exhaust after treatment systems and turbochargers to meet these demanding emissions regulations. These components are very demanding in terms of lubrication (see Figures 3 and 4). Believe it or not, even oil filters can be damaged if the wrong oil is used (see Figure 5). The result is a shift towards OEM (Original Equipment Manufacturer) specific products. In conclusion, modern engines require manufacturer specific engine oils.

Tech Talk tips / techniques / training

Exhaust after-treatment units

Exhaust after treatment systems like DPFs (Diesel Particulate Filters) or CATs (Catalytic Converters) are very sensitive and expensive components that can be damaged if the right Low SAPS (Low Sulphated Ash, Phosphorus and Sulphur) oil is not used.

Figure 3 - Exhaust after treatment systems

Diesel Particulate Filter



Soot
Particulates

Sensitive to:
High Ash Levels

USING THE WRONG
OIL CAN IRREVERSIBLY
BLOCK A DPF



Catalytic Converter



HC
CO
NOX

Sensitive to:
Phosphorus & Sulphur

USING THE WRONG
OIL CAN IRREVERSIBLY
POISON A CAT



Oil filters

Embrittlement of the oil filter occurs when a build-up of harmful bi-products of combustion, particularly acids, attack the filter media causing it to become brittle and possibly even disintegrate.

Figure 5 - Embrittlement of the oil filter



Can using the wrong oil affect a warranty?

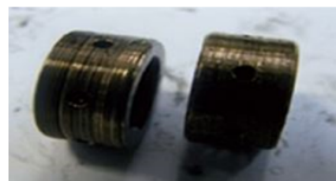
Yes. Engine oil is an integral part of the specification when manufacturers are designing engines. Engine testing carried out by the manufacturer identifies the right oil properties which are then converted into a code (specification) that is included in the vehicle owner's handbook. As defined by the handbook, the right oil should always be used during the vehicle's life cycle however this is especially important during the warranty period. Using the wrong oil can invalidate a warranty.

Turbochargers

Turbochargers present some unique challenges when it comes to lubrication because of the extreme conditions under which they operate. According to turbocharger experts BTN Turbo, 90% of turbocharger failure is caused by a lubrication fault of some kind.

Oil Contamination

Figure 4 - Damaged Turbocharger components



CONTAMINATION
CAUSES SCORING ON
MENTAL SURFACES

Oil Starvation



STARVATION CAUSES
HIGH TEMPERATURES
AND RAPID WEAR

90% of turbo failures are caused by lubricating faults

How do I know which product to use on which car?

The safest way to make product recommendations is to use one of Comma's application tools. At www.CommaOil.com/ppp you will find product recommendations with 100% compatibility guarantee for engine oil and antifreeze & coolant for virtually every European vehicle going back over 30yrs, including system capacities and recommended service intervals. It also covers brake fluid, gear oil and power steering fluid should you find you need some help with those as well.

