

Engine oil



From 10W-40 to 0W-8 - development in engine lubricant

Choosing the correct replacement engine oil has become increasingly bewildering over the years. In the past, the majority of workshops would have purchased 205-litre drums or have a bulk delivery of one or two grades of engine oil to service and maintain the majority of vehicles. However, in today's world, almost every car requires its own oil specification.

For many years, 5W-40 or 5W-30 have been the common oil grades. Before then, at the turn of the century, 10W-40 was used in most workshops.

The two numbers indicate the viscosity of the multi-grade engine oil, for example 15W-40. The first number with the "W" (winter) stands for the low-temperature viscosity; this indicates how 'fluid' the oil is at low temperatures (e.g. cold-start performance). The second number represents the high-temperature viscosity and how 'fluid' the oil is at high operating temperatures. The following applies to both numbers: the higher it is, the more viscous or thicker the oil is, and vice versa. The lower the number is, the thinner the oil.

Moving forward, 0W-30 is the most likely engine oil grade to be used in the next three to five years as the end draws closer for vehicles exclusively fitted with combustion engines. Oil viscosity will reduce further to 0W-20 and 0W-16 as the main oils used. However, most independent workshops are still currently using 5W-40 or 5W-30, which is based on the vast proportion of the vehicles they maintain within their customer base. This will change in time as new vehicles come to market and their customers change their vehicles.

Not all engine oils are created equal

Vehicle emissions dominate the development of each new generation of engine and drivetrain. Oil viscosities continue to decrease with an increasing cocktail of sophisticated additive packs to ensure engine lubrication is maintained in all load conditions. This is why the replacement oil specification is very important when choosing the correct oil for the job.

All febi engine oils have the oil viscosity rating, independent Organisation and vehicle manufacturer specifications - plus recommended applications written on the label to identify the suitability of each oil.

Independent global organisations define the performance of oils, with engine oils only being assigned to a specification after fulfilling stipulated criteria, for example ACEA/C3, APISN/SM. This combination of letters and numbers translates into the organisation's approval and its engine characteristic compatibility.

ACEA - European Automobile Manufacturers' Association

API - American Petroleum Institute

JASO - Japanese Automotive Standards Organisation

ILSAC - International Lubricant Specification Advisory Committee

Manufacturer approvals:

Vehicle manufacturers check the suitability of engine oils for each engine type before issuing their own approval of these extensively-tested engine oils - e.g., VW 508 00/509 00.

Recommendations:

Recommended applications for a premium febi engine oil are based on comprehensive fleet tests and experience. For example, febi 177640 0W-20 ACEA C5/C6, API SN Plus/RC, ALSAC GF6A engine oil is designed for use in high-performance gasoline and diesel engines, meeting the demanding specifications of vehicle manufacturers - including the resistance of oxidation, oil thickening and sludge formation inside the engine. It meets the high-temperature, high-shear requirements to the current specifications of the engine manufacturers' low-viscosity engine oils. Meeting such specifications ensures that the original fuel economy figures are maintained throughout the service life of the vehicle. Special additive chemistry provides reliable, long-term protection of diesel particulate filters and other exhaust aftertreatment devices.

Drivetrain development

The choice of engine oils was traditionally based on whether the vehicle was powered by a diesel or petrol engine, whether it was turbocharged, and/or whether it had emissions equipment such as a catalytic converter or diesel particulate filter.

As vehicle emission limits have tightened and new generations of engines are developed, engine oil lubricants encounter new challenges at the same time. This includes the common use of direct-injection petrol engines (GDI), gasoline-particulate filters, selective catalyst reduction, cylinder shutoff, stop/start and hybrid-electric vehicles, which mix internal combustion engines and electric-drive motors.

The new challenges are a result of increased loads on the engine oil due to cubic-capacity downsizing, and the ever-increasing use of turbochargers to create high-performance smaller engines with good fuel and emission performance. Additionally, there is the common use of stop/start, mild-hybrid and high-voltage hybrid vehicles, which often have to switch back and forth between drive types at lightning speed.

The engine lubricant has to countermeasure problems such as condensation build-up, which leads to 'sludge' formation, particulates, timing chain protection, build-up of acids and issues requiring special oils, such as low-speed pre-ignition (LSPI).

This is controlled with new additive formulations and greatly improved heat dissipation through reinforced molecular chains. This means that the heat is dissipated much faster from the engine, so that less stress is caused for the engine and the oil - therefore achieving longer service intervals.

In other words, new oils must be used for the new generation of engines. There are several reasons for this, such as a new oil not being compatible with the oil seal material used. The manufacturing tolerances and friction ratio of the engines are also different. However, the main reason is that newer oils with 0W-30, 0W-20 and 0W-16 multi-grade viscosities are mainly designed to promote the reduction of CO2 and increase their environmental compatibility. The three characteristics of fuel economy - fuel saving, emission reduction and extended service intervals to conserve resources - can only be achieved with zero-grade oils, which is not possible with the older 5W-40 or 10W-40 viscosity oils.

The next generation

Development of the internal combustion engine continues - and the challenges created by the combination of technology, the stopping/starting of the engine at different speeds and short journeys can have a massive effect on the internal lubrication demands for an engine. Some vehicle manufacturers are now testing 0W-12 and 0W-8 oils in order to be able to meet the latest emission standards and approvals for their next generation of engines.

Reliable choice

febi engine oils ensure the best possible protection. Each oil consists of the most powerful base oils and additives and are not universal products - but are matched precisely to the special requirements of the vehicle manufacturers.

Rely on tested, OE-matching quality replacement parts from febi. The entire range of engine oils can be found at partsfinder.bilsteingroup.com

The febi brand is part of the bilstein group, the umbrella organisation for several other strong brands. Further information is available at www.bilsteingroup.com

