

Multigrade Oils Save Energy

In an environment where energy costs continue to rise at alarming rates, we are often bombarded with suggestions on how we can save this essential commodity, especially in the automotive arena; drive with the car windows closed to reduce turbulence and drag, anticipate movement in the traffic ahead to avoid unnecessary and/or harsh braking, use the accelerator moderately when moving off, don't carry excess weight in the vehicle, and so on.

One area that is receiving close attention from manufacturers and oil companies alike is the viscosity of the engine oil. Viscosity is defined as the internal friction of a fluid; so the thinner the oil, the less energy is required to pump it around the engine. There is a limit, of course – when the oil becomes too thin to lubricate effectively, and we see metal-to-metal contact with resultant friction and wear. You may well have noticed a move over the years from the trusted and thick SAE 20W-50 to oil viscosities as low as SAE 0W-20. We have yet to see the thinnest engine oils, but we are reaching the lower limits.

So, what other characteristic of the lubricant can we improve to achieve further savings? As we all know, the viscosity of an oil decreases with increasing temperature; the rate at which this occurs is measured as the Viscosity Index (VI), and the higher the VI, the less effect temperature has. Multigrade oils (such as SAE 15W-40 or SAE 5W-40) when compared to monograde oils (such as SAE 40) exhibit much higher VIs and are therefore less dependent on temperature. All the grades mentioned above have the same viscosity at 100C (as defined by the SAE J300 viscosity chart) but the multigrades will be less viscous at low temperatures than the monograde – this means less energy consumption on start-up and up to operating temperatures.

An additional benefit occurs above 100C, in areas such as the piston rings, close to the combustion process. The viscosity of a monograde drops off faster above 100C than a multigrade will, so better lubrication and protection is afforded by a multigrade. This has been demonstrated in vehicles with worn rings, where the change from a monograde to a multigrade lubricant has decreased smoke from the exhaust and improved compression – as was the case with my 1971 Triumph TR6 on the racetrack.

In conclusion, the benefits of using multigrade engine oils are clear. Many of the latest API specifications cannot be passed with a monograde. It is therefore a real mystery why the top-selling engine oil in South Africa is an SAE 40 – a monograde! Let's work together to rectify this situation.

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