



Engine Oil Matters – The Importance of Oil Grades & Additives

Engine oil is fundamentally designed to keep all the metal surfaces in your Air Cooled VW's engine from grinding together and tearing themselves apart from friction. It also transfers heat away from the combustion cycle, while holding all of the combustion by-products in suspension. It cleans the engine, as well as minimizes the exposure to oxygen and oxidation. Thanks to Rob and Dave's Aircooled Volkswagen Pages, Mid America Motorworks takes a look at the different engine oil grades and the additives available.

Engine Oil Grades

If engine oil gets too thin, it will allow metal-to-metal contact. However, oil that's too thick takes more energy to push around the engine.

Finding the right grade of oil for optimal function is a balance, trying to get the thinnest oil that will still maintain an oil film between the metal components. This is why Oil Grades are important.

Engine oil is graded according to its viscosity, or the property of the oil that resists the force that causes the oil to flow. The proper viscosity is the single most important criteria of a lubricating oil. The basic performance of machinery is based on the viscosity of the lubricant.

High viscosity oils seem thicker and pour more slowly at room temperature than do low viscosity (thinner) oils. Keep in mind that it takes more than a high viscosity oil to properly lubricate an engine. If a high viscosity oil is used during cold weather, it will become so thick and resistant to flow that it cannot properly circulate and reach the parts of the engine requiring lubrication. The proper viscosity oil will remain fluid enough after the engine has cooled to permit easy starting, yet after the engine has reached operating temperature will retain sufficient viscosity to maintain an adequate lubricating film.

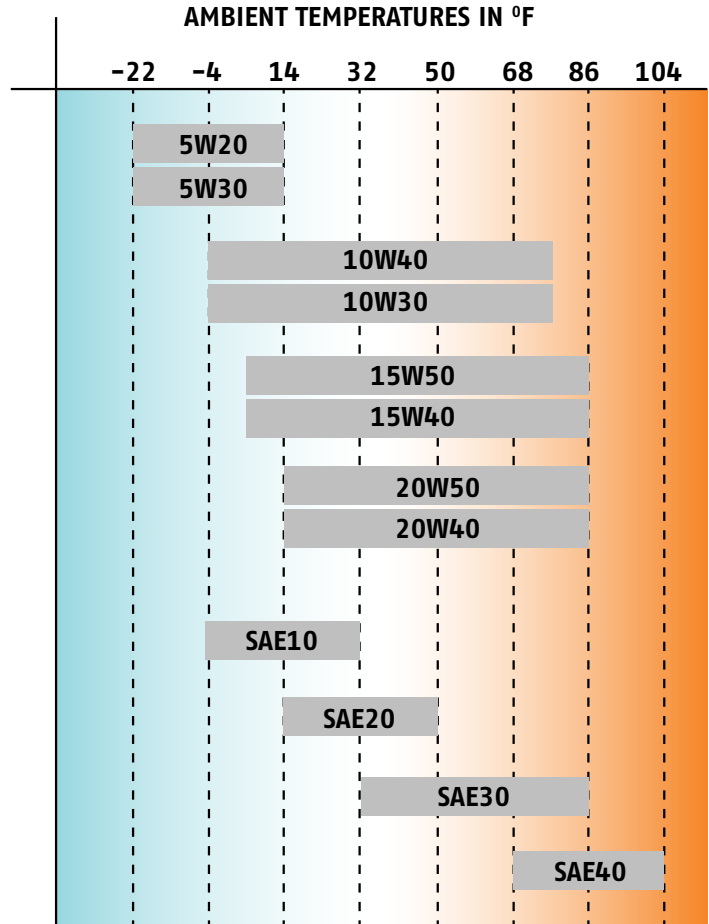




Single-grade engine oils, such as SAE 30, were formerly recommended for use in VW engines because of the unreliable quality of multi-grade engine oils that were available at the time. Improvements in the quality of commercially-available, multi-grade lubricating oils resulted in completely new oil recommendations for VW cars became effective in 1975.

The viscosity grade of oil is designated by an SAE (Society of Automotive Engineers) standard number. An oil designated SAE 40 has a higher viscosity (greater resistance to flow) than an oil designated SAE 30. Multi-grade oils have an extended viscosity range and can be used in place of a number of single-grade oils. For example, an SAE 10W-30 oil is suitable for use within a range of temperatures that would require three different single-grade oils in order to cover it (SAE 10W, SAE 20W/20, and SAE 30). The multi-grade oils available these days are very good, and they make it unnecessary to make the weather-related changes previously recommended by VW. These days most Beetle shops will recommend a good multi-grade oil, say a 20W-50 for general use, and a 10W-30 for snowy winter use. Generally it's better to stay away from the 10W-40s, as they have a higher content of long-chain polymers to get the 40 rating from a thin base, and the polymers are not lubricants themselves.

This chart shows the proper oil viscosity for VW engines in specific temperatures. The SAE viscosity number of the oil should be selected for the lowest anticipated temperature at which engine starting will be required, and not for the temperature at the time of the oil change. Because the temperature ranges of the different oil grades overlap, brief variations in outside temperatures are no cause for alarm.



Oil Additives

Rob and Dave also weigh in on different oil additives that VW owners can use. Rob's VW mechanic in Australia has rebuilt lots of VW engines and has yet to find one that has failed because of the type of oil used. But he has found that wear and crud seem higher in cars that are run on cheap oils and on cars where the oil wasn't changed frequently enough. It is vitally important that VW engine oil be changed regularly.

High Detergent Oils

The "HD" designation used in describing motor oil stands for "High Detergent" (not Heavy Duty). High detergent oils help to wash the engine of crud and hold it in the oil so it gets removed with the oil change.

A caution regarding high-detergent oils: it is detrimental to change back to a detergent oil after using a non-detergent oil for a while. The non-detergent stuff will allow a build-up of crud inside the engine, and then the detergent oil will scrub it away (into the oil) so it will get super dirty super fast, which of course is not good for your engine. VW recommends detergent oils and frequent changes so that the crud is flushed away before it becomes a wear problem.

Synthetic Oils

Synthetic oils can be a waste of money in the VW engine. They are excellent oils, but they are designed for modern high-performance engines with extended oil changes, which means the VW engine doesn't count! Synthetic oils don't get hot enough to make use of the synthetics high stability, and the long lasting properties of synthetics are wasted on a VW engine, since most of them have no filter and you HAVE to change the oil every 3,000 miles to keep it clean. With such frequent oil changes, the extra expense of synthetic oils is totally wasted.





Oil Level

The dip stick on a VW Beetle is near the back of the sump, which is fairly flat/shallow. So the dipstick reads high with the nose of the car high, and low with the nose of the car low. If the oil gets much below the lower mark (car on level ground) the oil light will sometimes flicker in hard cornering because the oil in the 'flat' sump sloshes away from the pickup pipe. If this happens there is less than 2 pints left in the sump! It is wise to check the oil level often and top it up before the level gets this low. VW engines are designed to burn a bit of oil, too, so most Beetles need a pint or so about half way between oil changes to keep it near the full mark.

Regarding a high oil level - A little overfull is no problem, but too much and you get a lot of oil sloshing into the undersides of the pistons in corners (or even on the straight if it's REALLY overfull). This would increase oil consumption as the oil rings would have difficulty scraping the excess away with each stroke. It also might result in leaking from the ventilation groove in the crankcase behind the engine pulley, and the pulley would then throw it all over the engine bay! Not good!

If the oil is real low it tends to get hotter (less time to cool down in the sump), and of course if it runs out, the engine will survive for a short time as it gets hotter and hotter.

Checking and Changing VW Engine Oil

Changing the oil regularly is the cheapest insurance for long life that you can give a VW engine.

After all that we've said about oil quality, it isn't the quality of the oil that is most in question - it's the fact that unless someone custom builds an Air Cooled VW engine that is completely sealed from the outside environment, contaminants are being introduced into the engine just through normal use.

The VW engine has slots behind the engine pulley and a spiral groove in the crankshaft that results in fresh unfiltered air being pulled into the crankcase for positive crankcase ventilation. That air and any fumes are then drawn up the ventilation pipe and into the air cleaner.

So dust and anything else in the atmosphere is being drawn into the engine and is trapped in the oil. There's no oil filter on most VW engines, so the 3,000-mile oil changes are important in cleaning the oil before the crud becomes a problem. It doesn't matter if you use the finest oil in creation, it will still get dirty unless you have a sealed crankcase and an oil filter. Since the stock VW engine has neither, regular oil changes are vitally important. **Note: Buses use lower gearing than Beetles, so you could say that 2,000 miles in a Bus is roughly equivalent to 3,000 miles in a Beetle.**

This newsletter was developed from [Rob and Dave's Aircooled Volkswagen Pages](#).

