

Engine Lubrication - Observation and Opinion....

By James Pate

WHICH OIL IS BEST?

Quite a few owners are now using the synthetic motor oils (Mobil 1, Redline, and others) in their older Rolls-Royce and Bentley engines. Certainly the synthetic formulas are superior oils in both lubrication properties and resistance to temperature breakdown. The owner wishing to give his car the very best chance for survival in our hot desert conditions can reasonably be persuaded that the added cost of the synthetic oils is a minor concern, considering the present-day price of an engine overhaul. There are other factors though, which in my own judgment make oil-type selection just a little more complicated. The synthetic blends now being formulated for new automobiles are just fine for the V-8 engines found in our later cars, but for the six cylinder engines (both pre and post-war) please consider the following points before selecting the oil to be used in your car.

It is especially important to change the oil regularly on the older cars, at least once a year, at a minimum. I change my own oil every June and December even if the car is not being driven much. The reason is that the older cars will always have a greater degree of blow-by past the piston rings. The Rolls-Royce six cylinder engines of the early post-war period for example, will experience nominally 18 cubic feet of blow-by per hour when running at quarter throttle and in the RPM range of 3500. This is actually very good performance for that time, and just about one half the blow-by expected of other engines of the era. The Rolls-Royce engines were exceptionally tight when new (piston skirt clearance at the bottom was zero), and the above figure is for a new or recently rebuilt engine. Even so, the amount of blow-by will be much greater on a well-worn engine, resulting in significant quantities of carbon, water, and other contaminants constantly entering the oil sump. Provided the cars are allowed to reach operating temperatures, the water will boil off through the breather pipe, but the carbon and acids will remain in the oil. This is why we must change it regularly, and long before the oil has otherwise started to break down (be it synthetic or regular). Do not imagine either, that the oil filter will fully protect against the deposits. Very early cars had practically no oil filtration and even the so-called full flow system, introduced with the 4.5 Ltr. MK VI Bentley and late Silver Dawn models, was not a true full-filtration system. In this later case the engine lubrication scheme included both a high-pressure and a low-pressure circuit, divided at the pressure regulator located externally, on the right hand side of the engine block. Only the high-pressure circuit to the camshaft and crankshaft bearings was fed by filtered oil. The low-pressure oil circuit in this engine type feeds the hollow rocker shaft and subsequently the rocker arms, push-rod ends, and both intake and exhaust tappets. Another low-pressure line goes forward to lubricate the camshaft gearing. All of this low-pressure oil is drawn directly from the sump and delivered without any filtration whatsoever.

Although it is not generally known, the major oil companies have been quietly reducing the detergent additives in premium oils over recent years. This is true also of the synthetic oil blends. The reason for this change is the clean-air regulations, requiring all new cars to have catalytic converters. The oil

companies have reduced the detergent properties of modern automobile oils in order to prolong the service life on the catalytic converters. This is bad news for our older cars. We need all the detergent properties we can obtain in order to hold those carbon and other blow-by particles in suspension, and we do not have catalytic converters to protect anyway. This change in automotive oils therefore requires that we look around for more appropriate products to protect our precious older cars. Consider the great fleets of diesel trucks on the road, for they have similar needs, and their huge numbers mean that their needs are being met. With their 16 to 1 compression ratios, the diesel engines also have a serious blow-by problem and the diesel fleets do not use catalytic converters either. Therefore, the major oil companies all market oils especially suited for the diesel truck fleet, AND those products do include the high detergent levels that we also need. In fact, at this point in time, the diesel oils seem to be just the product we are looking for. I suggest that all owners of the older cars (those without catalytic converters) consider switching to a quality-brand, diesel engine oil. That way, the blow-by contaminants will be held in oil suspension for just as long as is possible. Then, with regular oil and filter changes, it is the oil that will be dirty rather than the innards of our engines. Shell Rotella T is one such product, which is easily available in 15W-40 multigrade. For those insisting upon synthetic oil, do not worry, the competition for all that diesel business has also produced synthetic blends. I recently purchased a case of Valvoline Premium Blue 2000 in 15W-40 from the NAPA outlet located behind the Rio hotel on Valley View. The boss there uses this product in his new diesel pickup so the supply should be dependable for the foreseeable. This particular product is especially interesting, as it was specifically developed for needs similar to our own in cooperation with Cummings Diesel, Inc.

HOW TO BEST CHANGE IT, HOT OR COLD?

From our early youth, most of us learned that the basic reasoning regarding oil changes requires that we drain the old oil out while the engine is still hot. That way, the oil is thin and the contaminants are still suspended. Sounds like good solid judgment so we go forward and never question the matter. Were I a shop owner, I would still offer this advice, for it also happens to be the only way a firm could hope to turn a profit. For the rest of us though, please consider this matter with some care. I have for some time now been persuaded that with our six-cylinder Rolls-Royce engines it makes far more sense to drain the oil when it is cold. The colder, the better, I now believe.

Have you ever started up your older R-R after it had sat unused for a week or more? If so, perhaps you noticed that several seconds, actually up to 8 or 9, elapse before any oil pressure registers on the gauge. One then remembers that if the engine has recently been run the oil pressure comes up almost instantly. So, we are already aware that if the engine is allowed to cool for days (and not just for minutes) quite a lot of oil drains into the sump. These engines do not use high oil pressures, but they certainly do employ high volume in the oil flow. If you have ever overhauled the oil pump on one of our cars this will be self-evident. Yet, even with a high-volume pump a long dormant engine will take eight plus seconds to fill all the internal voids? Yes, it certainly will and you have probably noticed and worried about this phenomenon.

The first priority in draining old, dirty oil is to remove just as much as possible. Remember that the crank is hollow and it

Sept20021.txt

contains rather a lot of oil, which will take a day or more before it fully drains past the bearings. Even the cylinder head and valve gear oil will take hours to drain down. As the engine cools, oil is also drawn back from the filter bowl (admittedly, this point is somewhat moot providing the filter will also be changed). Should you doubt the point I am making here, I can tell you that tests have been conducted, actually weighing the amount of oil drained using both the hot and the cold method. The results were convincing, at least to myself. Another important advantage of draining the oil after it has completely cooled, relates to the very real problem many of these particular engines have with internal water leakage. If the oil is first allowed to cool, any suspended water droplets will settle out at the bottom of the sump. I always drain the first pint into a quart glass jar (done while the drain plug is still in by a few threads but loose enough to leak a good flow). If there is an internal water leakage problem with the engine it will then be obvious.

The care of our old cars is important to us or we would not have formed a club to share ideas. All the above is only opinion offered in the hope that it will encourage both thought and argument, for that is how we all will realize maximum benefit from our membership in this great organization.