

The Camshaft Chronicles

Within the vintage race organization that I belong to there have been an increasing number of engine failures, specifically camshaft failures. This phenomenon has not just been limited to race cars as we have had an increasing number of camshaft related problems in the cars that we service at our Lindsay shop.

This problem occurs despite meticulous maintenance and the use of "good oils" Castrol GTX, Valvoline etc. as well as Mobil 1 and Valvoline synthetic oils for the racers.

Myself, and others have been considering whether the recent rash of camshaft failures could be related to poor camshaft hardening. Alternatively, we theorized that perhaps where synthetic oils were used, the oil just too slippery to allow the cam follower to rotate, thereby bringing on premature failure. In the end, our theories have been put to rest. A fellow racer and inquisitive engine builder went to the source. He consulted a development engineer he knew at one of the large motor oil companies. He was informed that the issue is a motor oil additive related problem.

Apparently in the period between September of 2004 and the spring of 2005, the oil companies followed the requests of the major car manufacturers to reduce the levels of Zinc and Phosphorous in all commercially available motor oils for gasoline-powered automobiles. The reason for the change reportedly was to improve emissions criteria and also to improve longevity and performance of catalytic converters. This change saw reductions of zinc additives decline from about 0.16% to about 0.083% depending on the brand.

My quick check of the Castrol and Valvoline websites confirmed these findings.

According to folks from within the oil industry, zinc and phosphorous additives allow the oils to withstand huge shear and wipe pressures like those found at the point of contact between the camshaft and followers in our older British cars. However, modern engines no longer need this level of additive protection and so it has been reduced substantially in the interest of the environment.

All is not lost, however because diesel motor oils and motorcycle motor oils have not been tampered with. As a result, we are now using Valvoline Racing Oil in our racecars and at the shop we are recommending Valvoline diesel or motorcycle oils (our supplier is Valvoline). Many of the vintage racers have followed similar routes. Also, in light of this new information, most have left behind the notion that the synthetics provide better protection.

I encourage you to consider this advice. If you would like to discuss it further, just drop into our shop on Kent Street and I'd be happy to talk with you and tell you about the "early warning signs".

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Cheers!