

My Experience With LT5 Oil Consumption

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When my '93 was new I drove it to work on every dry day. It was a forty mile round trip. On that route I was able drive in a spirited manor and usually had opportunities to run the engine at full throttle to 7000 rpm about 20 times. Driven in that fashion I added a quart of oil about every 600 miles. Once a year I would take a 450 or 650 mile road trip to Bowling Green or Carlisle. On a road trip I usually cruise at 75 mph at 2000 rpm. Interestingly, after arriving at the destination the oil level would check so close to full that it was difficult to determine if any oil use occurred. When the engine was run at low speeds oil control was excellent. With rapidly changing engine speed and a lot of 6000 to 7000 rpm use the oil consumption would have to be described as high. Now with 80k miles the oil consumption is the same. Maybe a little less oil is consumed.

I noticed that the inside of the plenum was always soaked with oil. In fact several drops of oil can usually be poured out of a typical LT5 plenum when it is removed from the engine for service. I tried to reduce the oil consumption by installing a two gallon accumulator tank with a coalescing filter on the vacuum line where the PCV tube connects to the plenum. The accumulator would collect only about 10% of the oil that the engine lost. I believe that this proves that the oil loss problem is not through the PCV system. If oil catch cans are installed on the crankcase vent tubes that connect to the air horn, they do not collect oil. I believe that the oil gets past the piston rings and moves up the intake air ports via reversion. My theory is that the rings loose control of the oil through some combination of poor cylinder bore geometry and piston ring flutter.

The Nicasil coated aluminum cylinder liner on the OE LT5 is a drop-in wet liner. The outside diameter of the cylinder liner does not receive support from the block.



The top half of the liner is thicker than the bottom half so thermal and mechanical loads on the liner cause it to expand and contract different amounts between the top and the bottom. The liners are from Mahle in Germany. The liners were dropped into the block during the assembly. The cylinder heads clamp the liners into the block. It is not possible to hone a Nicasil bore so the liners can't be finished for best straightness after they are clamped in the block.

Engines that are modified with iron liners can be honed with deck plates to obtain a straighter and rounder finish than the OE liners. Iron liners are used in 368 and 415 ci engines. Honing is complicated because of the step in liner thickness at the center of the liner. If the honing heat is kept low and the liners are finished asymmetrically, they can be made straighter and rounder than the OE liners. An engine with correctly finished iron liners will have better oil control than an OE engine.

If the honing process is not properly controlled, an engine with iron liners can have less oil control than an OE engine. The worst will have blow-by problems that can push oil out of the crankcase vents and the dipstick tube.