

LT5 Oil Filter Review

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This article presents the latest information that I have on oil filters for our favorite engine. The information contained here follows onto and in some respects, replaces information in the article that I published in 1997. The previous article can be viewed on my www site. www.zr1specialist.com Click the button for Articles. My previous recommendation was for the Fram TG3984. This filter is no longer marketed by Fram in many parts of the country and is difficult to find. If it can be found, it is still a good choice for a premium quality filter. I don't recommend the Fram PF3984, the orange colored filter, because it is designed to compete in the low price segment of the market. As such it is a lower quality filter.

Unfortunately, all of the AC black PF970C oil filters have poor drainback control. Because the LT5 uses the filter with the base positioned down, the anti-drainback system is very important. Starting the engine with a filter that leaks down is like starting the engine with a new filter on every cold start. At startup, it takes about 1.4 additional seconds for the engine to build oil pressure because the filter needs time to be filled. For engines that have a tendency to rattle the right camshaft chain at startup, this means that the chain will rattle for an additional 1.4 seconds because it is the oil pressure that activates the tensioner that removes the slack and quiets the chain. Because of this problem, I consider the black PF970C filters to be undesirable for the LT5 engine. The picture shows the AC filters for the LT5 that I have encountered over the years.



- Filter A is an original PF970. The anti-drainback system works correctly in this filter. AC-Delco discontinued this filter several years ago.
- Filter B is the early version of the PF970C. The filter on top is the version with the upside down label. The filter with the upside down label was the factory installed filter on my '93 engine.
- Filter C is the late version of the PF970C. AC-Delco has discontinued the black PF970C filter.
- Filter D is the current version of the PF970C. This filter was acquired from the GM service parts system at a dealer in July of 2006. Through its odd evolution over the years, it is neither a real PF970C because it is not black, nor, even though it is blue, it is not a PF970. However, the anti-drainback system works very well. The PF970C is listed in the AC-Delco catalog as applicable to seven car manufactures for 13 different engines.

The Bosch Premium 3401 oil filter is a good choice for the LT5. The anti-drainback valve works very well and it has filtration and flow characteristics that are compatible with the PF970C. The manufactures provided the following performance specifications for the original PF970C (early filter) and the Bosch 3401. The testing was performed according to SAE specification HS-806.

Filter.	Single pass particle size at 98% efficiency.	Flow at 3 psi pressure differential.
PF970C	25 microns	7 gal./min.
Bosch 3401	20 microns	12 gal./min.

The anti-drainback system performs poorly on the Mobil 1 M1-207 filter.



Anti-Drainback Test Results

The filters were removed from LT5 engines 8 hours after shutdown. The oil to weight ratio is the weight of the retained oil expressed as a percentage of the total weight of the filter and the oil. The testing was performed with Mobil 1 10W-30 oil. Mobil 1 10W-30 oil weighs .94 ounce in mass per fluid ounce of volume.

Filter.	Weight when new.	Weight after 8 hours.	Retained oil weight.	Oil to weight ratio.
PF970	14oz.	25oz.	11oz.	44%
PF970C early	15oz.	18oz.	3oz.	17%
PF970C late	15oz.	20oz.	5oz.	25%
PF970C blue	14oz.	22oz.	8oz.	36%
Bosch 3401	13oz.	22oz.	9oz.	41%
Mobil 1 207	17oz.	21oz.	4oz.	19%

Recommendations

The old blue PF970 was the best performer in this test. However, it is no longer available from AC-Delco. The Bosch 3401 and the blue PF970C filters are about equal with very good anti-drainback performance in this test.