



## Tech Minute #3: Motor Oils

### WHAT DOES ZINC HAVE TO DO WITH MOTOR OIL (AND OTHER QUESTIONS ABOUT HOW TO DETERMINE THE BEST CHOICE FOR YOUR PONTIAC)

Written by Tom Locke

If you go to your local auto parts store and buy motor oil for your Pontiac that contains “zinc,” it is usually describing a compound called Zinc Dialkyl Dithiophosphates or ZDDP. According to [Valvoline](#), “its primary role is to prevent metal-to-metal contact between engine parts by forming a protective film. Despite being referred to as zinc, ZDDP also contains phosphorus, which helps to perform the anti-wear function in the motor oil.”

Zinc acts as a friction inhibitor, and research suggests that older engines using “flat tappet” lifters (pretty much any V6 or V8 built before 1988) need to have zinc present in the engine oil in order to keep the camshaft and lifters from wearing prematurely.

After requiring the use of catalytic converters in the late 1980s, auto manufacturers realized that zinc was damaging the converters, and its use was removed or minimized to place in oil for street driven vehicles.

Some manufactures still use it to some degree, but typically not high enough “parts per million” (ppm) needed for our older engines.

For those of us with the old engine cams and valve trains that need this precious protective film to prevent premature failure of these components, we have a few options.

1. A zinc additive to our engine oil during oil changes. There are several additive options available.
2. Use of an off road/racing oil that contains zinc. There are several good manufacturers of motor oil with zinc, including the Mobil 1 Racing (high zinc) with 1,850 parts ppm, Valvoline VR-1 with 1,200 ppm, Castrol GTX Classic with 1,400 ppm, Lucas Hot Rod with 1,600 ppm and Brad Penn Oil - available online and sold by Valley of the Sun Pontiacs Club member Frank Gostyla.

### **Oil Viscosity**

The Society of Automotive Engineers (SAE) sets the standard for testing engine oils. We typically see grades of automotive oil in either a multi grade, say 10W-30, or single grade oil such as 30 grade. The grade of the oil as tested indicates basically the thickness or flow of the oil at certain set temperatures. In the multi grade oil, the first number is the flow when the engine is cold. A 10W indicates the flow rate and the “W” stands for winter. The second number in the 10w-30 indicates the flow when the oil reaches 212 degrees Fahrenheit.

Most new engines have very small tolerances and use oils sometimes as low as 0W-40. Most classic car owners stick with a multi grade oil such as 10W-30, although some also stay with a single grade 30 grade. The idea is that we want the oil thinner during the winter and during cold starts, so it gets to the bearings, cam and such quickly.

## **Synthetic and Semi-Synthetic Motor Oil**

Using synthetics in our older engines is typically acceptable, but some owners state they have leaks. The original formulas had a chemical that broke down certain seals, but that formula was changed quite a few years ago.

## **Oil analysis/testing kits**

Oil analysis offers the ability to monitor your motor oil. There are numerous testing companies that will test your oil and report the analysis back to you.

Some of the results include identifying various metals that would indicate wear on your engine internals. They test for other contaminants to include dirt, coolant, fuel and such. The typical cost of a kit is \$35. If done regularly the report keeps track of previous testing showing you any changes to your oil.

## **Testing kits**

WIX kits – available at O’Reilly’s auto parts, Amazon and other locations (right)

Blackstone kits – available online and includes return postage.



## **Oil filters**

A high-quality oil filter is worth the price. You get what you pay for. Some samples:

**Hyper Tech (Walmart brand)** – Center of filter is plastic. Paper ends and pressure relief is an aluminum tab at the bottom which, under pressure, can bend. Low end minimal quality.



**Fram Extra Guard** - Center of filter is metal, ends are paper, and pressure relief was again an aluminum tab. Low end with minimal quality.

**Wix (Nappa Gold)** - Center of filter is metal, ends of filter are metal and this filter uses a metal spring as a pressure relief. Additionally, the actual filter pleats were higher in count and thicker.

## **Oil filter removal tools**

Oil filter removal tools now come in various shapes and sizes, and offer unique features, like the K&N filters that include a nut at the bottom of the filter for ease of removal. Here are some examples:

1. Three prong specialty wrenches available online.
2. Various size cups that go over the end of the filter.
3. Filter strap removal tools are also available.

More of Tom's writeups summarizing his Tech Time presentations can be found at [www.valleysunpontiacs.com](http://www.valleysunpontiacs.com).