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Oil Change Idiot Lights

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Many new cars are equipped with a warning light in the instrument panel that tells the operator when it is time to change oil. Many people assume the system monitors the condition of the oil and turns the light on when the oil is worn out.

Nearly all of the "Change Oil" lights are simply the alarm on a fancy alarm clock. The systems track very few parameters, such as engine revolutions and temperature, and then calculate when to turn the light on.[1] So, the Change Oil light comes on at the same time whether the longest lasting synthetic oil is used or the worst non-detergent oil. There are no sensors telling the computer that the oil is good to go, which is why the alarm has to be reset after an oil change.

The onboard systems that indicate when to change oil generally work pretty well, but it does not mean you can ignore your engine until the light comes on. Here is some practical advice for living with oil change indicator systems.

Keep in mind that the algorithms, the formulas and instructions in the vehicles computer, were set based on typical use. If your vehicle is not used like typical, take it into consideration. For example, pulling a trailer can use up anti-wear additives faster than typical use, but it would not affect RPM and temperature may stay within the normal range, signaling a normal drain length to the vehicle's computer. Does the algorithm adequately compensate for over-heating or the sludging effects of short trip driving? If you suspect contamination, if the oil looks, smells, or feels like it needs changing, do not wait on the dash light to change oil.

The algorithm assumes a full crank case, but over 80% of vehicle owners do not even check their dip sticks between changes.[2] Check your oil level, and if it is low, shorten the oil change interval.

Use a high quality engine oil. Again, most oil change indicator systems do not monitor oil condition. Most of these systems are "green" and set for long drain intervals to reduce the amount of waste oil. Cheap oil with long intervals is a recipe for shorter engine life.

Perhaps we are being overly cautious, but there have been problems in the past. GM has recalled some of their vehicles with 3.5L V-6 engines to reprogram the computer to shorten drain intervals.[3] Apparently, under certain operating conditions the longer intervals were allowing excessive timing chain wear. A few years ago, Mercedes Benz had some engine sludging problems in cars equipped with oil change indicator systems.[4] Their algorithm was based on synthetic European oils which provided longer drain protection than American oil specifications required.

Computers are great for making calculations, but lack a human's ability to think or reason. Therefore, we recommend shortening your drain interval for abnormal operation or events, periodically checking your oil level, and using the best oil available.

References

1. Swedberg, S. "Oil Changes by the Dash," Lubes N Greases, March 2010. 16:3:20.
2. Solomon, L. "Lifting the Cap on Drain Intervals," Lubes N Greases, July 2011. 17:7:38.
3. GM Customer Satisfaction Program 10287, February 2011.
4. Sullivan, T. "Conventional Oil Costs Carmaker $32 million," Lube Report, March 26, 2003.

At the 2011 Cen-Pe-Co 100th Anniversary Convention we had the honor of seeing our Cen-Pe-Co elder statesmen (from L to R), Andy Batty, NY, Don Utter, IA, Loren Bauer, IL, Milt Boerger, OH, and John Rollins, IN. When combined these gentlemen, who are all over the age of 80, represent over 233 years of selling Cen-Pe-Co Porducts! Thank you gentlemen!

Working the Cen-Pe-Co booth at the 2011 National farm Machinery Show in Louisville, KY are (from L to R): Roy Tooman, OH, Ed Shoobridge, MI, and Roger Tooman, OH.

E10 in High Performance Carbureted Engines

Prior to dyno tuning a performance engine at the Illinois Dyno Center in Port Byron, Illinois, the mechanic joked with his customer that "I am looking for a woman that is the way I like my engines -- rich and retarded." Here is what he meant (about the engines).

Pre-ignition can destroy an engine. Ping is not so bad, but knock is worse, and detonation can blow a hole through your piston.

Pre-ignition is caused by something holding heat in the cylinder. This glowing hot piece lights the fuel before the spark plug fires. The glowing part can be the spark plug tip, which is why many performance engines use a "cooler" plug. A "hotter" or "cooler" spark plug indicates the relative temperature it holds, rather than the energy of the spark.

The other thing that commonly holds heat and contributes to pre-ignition is a combustion chamber deposit. It can hold heat through the exhaust and intake strokes, and light the fuel mixture prematurely during the compression stroke.

So, to prevent pre-ignition, we want to keep cylinder temperatures down with a rich fuel to air mixture and retarded ignition timing. Since octane is a measure of resistance to engine knock, a high octane fuel is also safer.

The problem with a safe engine that is too fat and retarded is that it does not make much power. hence the reason for tuning. The goal is to enlean the air-fuel mixture and advance the timing to where the engine makes the most power it can without pre-igniting and destroying itself.

With this background behind us, we can get on with our story. More states have been mandating "gasohol," a mixture of gasoline and ethyl alcohol. Most gasohol is 10% alcohol and called E10, but E15 is being proposed as a voluntary alternative and E85 is available in some markets for flex fuel vehicles.

E10 is required in some areas because the alcohol is an "oxygenate" that brings additional oxygen in with the fuel, thus reducing carbon monoxide emissions from older vehicles. Because alcohol contains oxygen, it tends to enlean the air fuel mixture.

Modern passenger cars have no trouble dealing with the enleaning tendency of E10. Their computers can adjust both the mixture and timing. E10 is not much of a challenge for older cars either. They may run a little leaner, but their engines are rarely set on kill and they are usually not run at the RPM redline.

However, there are some small high performance engines that are at risk. They can be found in chainsaws, motorcycles, snowmobiles, boats, and other power equipment. These engines can make remarkable power for their size and some run at speeds above 10,000 RPM. Enleaning the mixture with E10 can cause engine damaging knock and drastically shorten the life of these engines.

When making the change to E10, there are four precautions that can be taken to prolong the life of high performance carbureted engines.

First, use the highest octane fuel available. Again, octane is a measure of resistance to pre-ignition, and a high octane fuel is less likely to cause damaging engine knock.

Second, have your carburetor adjusted with the new fuel. Since alcohol content alters your air to fuel ratio, stay with whatever fuel the carburetor is adjusted to. If it is tuned with E10, stay with E10.

Third, use a high quality 2-cycle oil in high performance 2-cycle engines, such as Cen-Pe-Co All Purpose 2-Cycle Oil. It is an ashless product designed not to leave combustion chamber deposits.

Finally, use a high quality gasoline additive, such as Cen-Pe-Co Gas-O-Klenz. Gas-O-Klenz removes the combustion chamber deposits that can cause harmful knock. Also, it stabilizes gasoline during storage to maintain its octane rating longer.

The E10 legislation was written for passenger cars, and it puts high performance carbureted engines at risk. If you have one of these engines, keep it fat and retarded or take the necessary precautions to ensure it lasts a long time.