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# Counting DOWN

## How Oil Change Indicators Work— And What They're Not Telling You

**B**MWs have them. Mercedes, too. And so do Audis, Volvos, Lexuses (Lexii?), Acuras and others.

What are “they,” you might ask? Oil change indicator lights. And they’re not just confined to luxury makes, either. Almost every

GM vehicle made since 2004 has come standard with the company’s “Oil Life System,” and companies like Chrysler, Honda, Toyota and

others are increasingly putting oil change reminder systems in their cars.

But what do these little lights and flashing messages really tell

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you about the condition of your car's motor oil? And how do they know when your motor oil needs to be changed? Osmosis? Magic? A lucky guess?

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So how can they determine when your oil needs to be changed? In two ways really: They either check the calendar or follow the computer model.

First, the computer model.

Automotive engineers have spent decades testing the effects of temperature, engine speed, load, trip duration, etc. on motor oil. From this testing, engineers devise a mathematical model that can predict when a motor oil will be degraded (i.e. having lost a significant part of its all-important additives package) to the point where it needs to be changed.

General Motors first developed its Oil Life System (OLS) back in the 1980s. After testing and honing the system in certain vehicle types during the 1990s, the company introduced the system throughout its model lineup in the mid-2000s. Today, there are more than 31 million GM vehicles in the United States with the OLS system.

Think of the GM OLS as a clock counting down to zero. Automotive engineers set the clock

with a predetermined number of engine revolutions (the preferred method of measuring usable oil life) based on the motor oil, vehicle, engine size and other factors. A Corvette that comes factory-filled with synthetic motor oil might have its oil life monitor programmed to trip after 15,000 miles of steady-state, mild temperature, 1,500-rpm highway driving. On the other hand, an Impala might have its oil life monitor programmed to trip after 7,500 miles of the same type of driving. The limit varies from vehicle to vehicle, and is based on testing by automotive engineers.

When the oil life monitor is first reset, it begins to record the number of engine revolutions, counting backward from that predetermined limit. However, the oil life monitor has the capability of "penalizing" itself for certain types of driving conditions, i.e. hot or cold weather, stop-and-go driving or high-engine-load applications. For instance, say you start your car on a 20° F day and take a two-mile trip while towing a heavy trailer. The oil life monitor will not only subtract the revolutions made by the engine during that trip, it will also subtract additional revolutions based on the temperature, the short duration of the trip and the load placed on the engine. In this way, the oil life monitor adjusts to the conditions under which a vehicle is driven.

When the 'clock' reaches zero, the oil life monitor flashes a message that the vehicle needs to be serviced.

While GM's OLS is set with upper limits representing approximately 7,000 to 12,000 miles of highway driving (and even higher on some models), company literature indicates that most drivers will see an oil change interval of around 5,000 to 6,000 miles. Cold weather can reduce the intervals to 3,000 miles or less.

Because the system does not monitor the physical condition of the oil, using synthetic motor oil in vehicles not factory-equipped with it will not result in oil change intervals that are any longer than those realized with conventional motor oil. Again, the oil life monitor is unaware whether or not conventional or synthetic motor oil is in the crankcase.

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Other manufacturers like BMW, Chrysler and Honda use similar systems in some of their vehicles.

The second type of oil change indicator system is a simple calendar- or mileage-based reminder. Essentially, the car keeps track of the last time the oil was changed (if the reminder system was reset properly) and based on either mileage accumulated or time elapsed (or in some cases both), the car tells you when to have the oil changed. Manufacturers like Mercedes, Volvo and Toyota

use this type of system. Again, it doesn't physically monitor the oil, but it does remind you it's been so many miles or so much time since you had your oil changed.

Because neither of these oil change indicator systems monitors the physical condition of the oil (though some luxury makes like Mercedes do have systems that monitor the oil level), it's important to check your car's oil level and condition, generally every time you refuel. If you're not comfortable doing that yourself, you might try stopping by your friendly neighborhood fast lube

or auto service center where more often than not a technician will do it for you at no charge, and in just a minute or so. It's a good way to make sure your car's oil, the lifeblood of its engine, is up to the task in between occasions when the oil change reminder light pops on! +