



Vehicle Emissions Inspection Program

# REPAIR CARE

## Variable Valve Timing Codes? It Could Be the Oil!

If all other components of a variable valve timing (V V T) system seem to be functioning properly and the OBD codes will not go away, check to see if the oil has been changed recently and if the proper grade of oil was used. Different grades of oil might look the same, in the bottle, but do not act the same in the engine.

Vehicle oil must meet two criteria: It should be the proper Society of Automotive Engineers (SAE) grade and viscosity and it should meet the American Petroleum Institute (API) service classification for the vehicle. Both the SAE and API designations can be found on the vehicle's oil fill cap or in the owner's manual.

The viscosity and grade of motor oil is what interests us here. Viscosity refers to how easily oil flows. Two primary factors affect oil's viscosity: temperature and age. When oil is hot, it flows quickly. Oil flows slower as it cools. As oil ages, the polymer additives break down and the oil loses viscosity. The ability to flow smoothly in an engine is important because most of the passages are tiny.

Most vehicles require multi-grade motor oil. This means the oil has characteristics of both cold weather oil and warm weather oil. As an example, consider a vehicle that requires a 5W30 grade of motor oil. This means that the oil has the flow properties of a 5-weight oil when cold and a flow property of a 30-weight oil when warm. The "W" means that the oil has been tested for cold weather use.

With more vehicle manufacturers employing variable valve timing systems on vehicles to meet emissions and horsepower needs, how well oil flows through an engine becomes very important. Many manufacturers use oil pressure or flow as the power source to adjust the timing. If the wrong grade of oil is used or if the oil is old, the flow properties could be insufficient. If this happens, the timing system will not work properly and the OBD system may set codes.