VVT technology made clear

Variable valve timing (VVT) is a technology used on many newer model engines to improve fuel economy, idle smoothness, emissions and performance. VVT allows valve timing to change with engine RPM, unlike standard fixed-cam drives that never change.

Valve timing determines when the intake and exhaust valves open, how long they remain open and when they close.

In turn, this affects intake and exhaust flow, intake-manifold vacuum, running compression, volumetric efficiency, throttle response and how much power and torque the engine develops at any given RPM.

VVT is a technology that offers performance, emissions and fuel economy advantages for everyday driving.

It allows camshaft and valve timing to change with engine speed and load, so the engine can develop more power while also getting better fuel economy and producing fewer emissions.

VVT also allows the retarding of the exhaust-valve timing, which produces an exhaust gas recirculation (EGR) effect that eliminates the need for an efficiency-robbing EGR valve on many engines.

Most VVT systems are not engaged when the engine is idling and remain in the locked or base-timing setting.

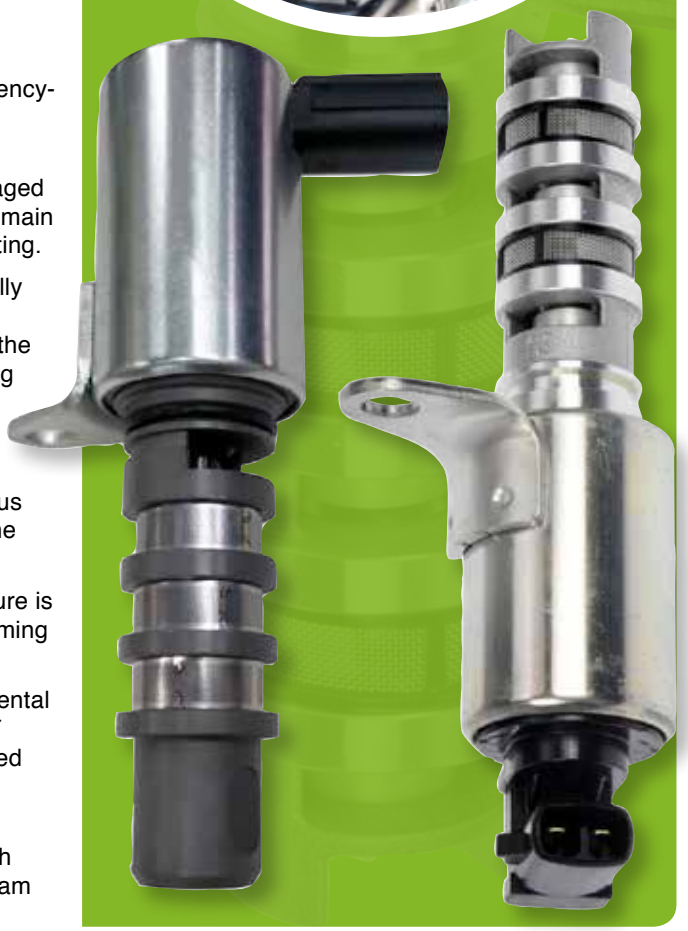
And because of their hydraulically actuated cam phasers, a VVT system usually isn't active until the engine reaches normal operating temperature.

As engine speed and/or load change, the powertrain control module (PCM) looks at its various sensor inputs and commands the VVT solenoids to open.

When the VVT opens, oil pressure is routed to the phaser and cam timing is advanced or retarded.

In applications that offer incremental changes in cam timing, the VVT solenoid is pulse width modulated (PWM).

Changing the duty cycle of the solenoid controls oil flow through the phaser and how much the cam timing is advanced or retarded.



Common signs of a suspect VVT system include rough idling, the check engine light (CEL) coming on and flat-spotting or hesitation when climbing hills or under load.

Symptoms of a faulty or failing VVT solenoid

- Electrical problems with the supply voltage, ground connection or wiring to the VVT system can prevent the system from functioning.
- Low oil pressure, due to a worn oil pump or worn cam bearings, can prevent the cam phaser from developing enough internal pressure to rotate the cam.
- Debris, sludge or varnish will restrict or even block the oil flow to the VVT system, preventing it from working properly.
- Incorrect oil viscosity in the engine can also impact on correct VVT operation, causing various fault codes to be set.
- Physical wear or damage inside the cam-phaser housing can prevent it from rotating, causing it to stick or make the unit noisy. A broken return spring may prevent it from returning to base timing.

Goss says it has a complete range of VVT solenoids available now, reflecting its commitment to continually expanding its range with the latest vehicle technology.

It says all of its products are subjected to a stringent validation process and sourced from leading original equipment manufacturers (OEMs).

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