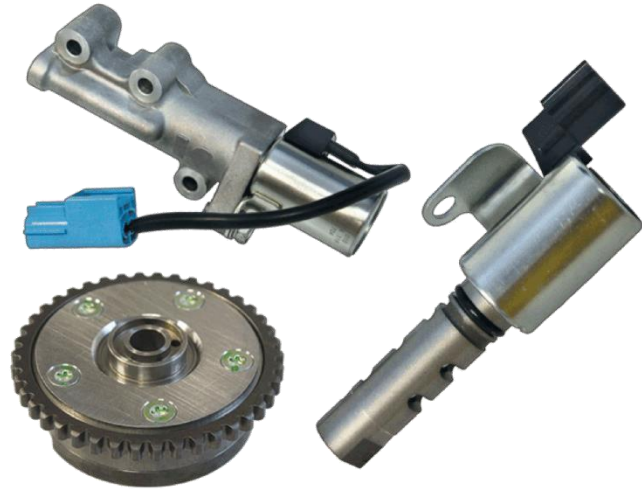




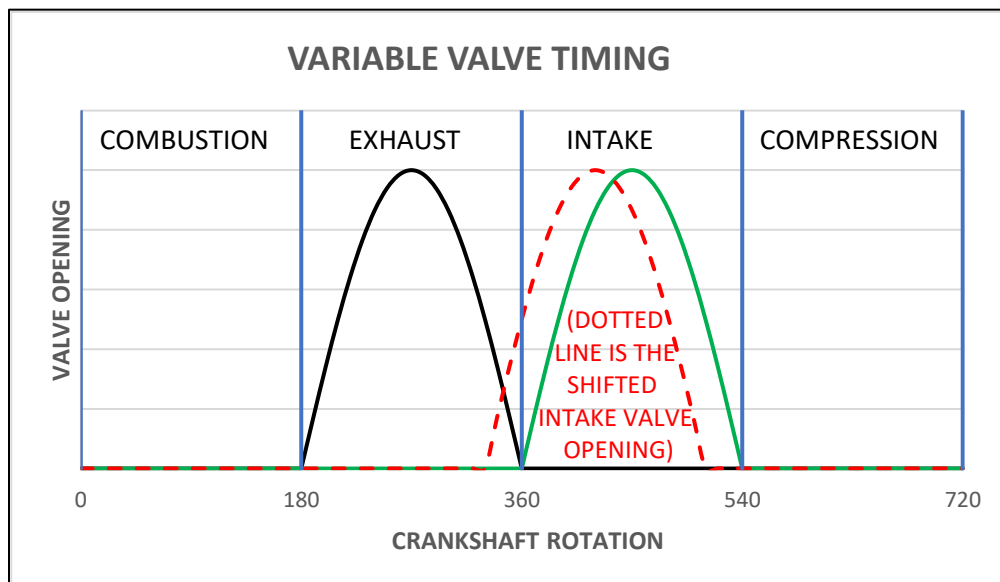
Walker Products – Variable Valve Timing

What is “Variable Valve Timing”?

Variable Valve Timing (VVT) is the system responsible for adjusting the valve timing based on certain engine conditions. VVTs are now a common technology in vehicles that provide improved horsepower, lower emissions, improved exhaust gas recirculation, and better fuel economy. There are many different methods to achieve this process, such as mechanical devices, electro-hydraulic devices, and even cam-less systems. Regardless of the type, their goal is the same: provide optimal valve timing for all engine conditions:



- Lower engine RPM = no advanced timing for easier vehicle starting and idling
- Medium engine RPM = slightly more timing for increased horsepower
- High engine RPM = fully advanced timing for maximum horsepower



The VVT system physically adjusts the valve timing, and the vehicles onboard computer matches to provide appropriate air, fuel, and ignition. During low RPM starting and idling, stalling is prevented with

combustion temperatures over 100C. Higher combustion temperatures are achieved by having no exhaust/intake valve overlap and no “inert” exhaust gas in the combustion chamber. At higher RPM, the exhaust/intake valve overlap adds “inert” exhaust gas to the combustion mix. Because the inert gas is also be heated during combustion, temperatures are kept below 1300C, which reduces high temperature NOx formation.



What happens when VVTs fail?

When the VVT system is intermittent or non-functioning, you will likely lose many or all of the advantages previously listed. It is likely that you will also notice some of the following symptoms:

- Lower power at high rpm
- Lower fuel economy
- Engine code P0011 or P0012 indicating an incorrect cam position
- Hard or no starting, also with rough idling
- Higher emissions

What should you know when replacing VVT?

It is important to properly diagnose the VVT system as the process will vary per application, but some there are some general things to check when a VVT problem is expected: Dirty oil – oil is commonly used for VVT actuation which requires clean oil

- Correct oil viscosity – even using 5w30 in 5w20 system can cause issues with VVT performance
- Dirty or clogged oil filter and screen – reduced oil flow hampers proper adjuster actuation
- Malfunctioning electrical connections to the oil control valve
- Oil control valve is malfunctioning, preventing the proper amount of oil flow to the adjuster
- The adjuster itself might be damaged and in need of replacement

As you already know, VVT diagnostics are very application-specific. From dozens of OBD II trouble codes to unique system and electronics configurations, always be sure to proper service information and bulletins.

Why should you trust Walker Products for Variable Valve Timing

Walker Products knows Engine Management and is an expert in VVT. Walker began supplying the fuel system needs of the automotive industry in 1946. Today, Walker is an ISO 9001/ IATF16949 certified manufacturer, and one of the largest privately owned manufacturers of fuel system components and engine sensors. Walker Products is committed to supplying products manufactured to meet or exceed OEM standards and specifications – an effort backed by in-house manufacturing, product management, and dedicated engineering teams to ensure precise accuracy in the production of the highest quality parts, vehicle applications, and technical support.

The next time you are servicing a vehicle with a check engine light, look no further than the Engine Management Experts – trust Walker Products for all your fuel, ignition, and engine sensor needs so you can complete the job right the first time.

To learn more about Walker Products and their extensive Engine Management capabilities, please visit walkerproducts.com .