Variable valve timing intelligent system pdf

Variable valve timing intelligent system

Variable valve timing intelligent system (VVT-i) is a system used in Toyota's 3S-GE engine. It is designed to improve the efficiency and performance of the engine by varying the opening and closing timing of the intake and exhaust valves. The system uses a camshaft with variable timing gears and an electronic control unit (ECU) to adjust the timing of the camshaft. The ECU receives input from various sensors such as knock sensors, throttle position sensors, and engine speed sensors to determine the optimal valve timing for the current operating conditions of the engine.

The VVT-i system is used in Toyota's 3S-GE engine, which is equipped with a dual VVT-i system. The dual VVT-i system allows for independent control of the intake and exhaust camshafts. The system is activated by a hydraulic valve timing innovator (VVI) which is activated by a hydraulic oil pressure. The VVT-i system is also used in Toyota's 2JZ-GTE engine, which is equipped with a single VVT-i system.

In addition to the VVT-i system, Toyota has also developed the VVTL-i system, which is used in their 2JZ-GTE engine. The VVTL-i system is similar to the VVT-i system, but it uses a hydraulic oil pressure to control the timing of the camshaft.

Toyota has also developed the VVT-i system for their Hybrid Synergy Drive (HSD) system, which is used in their hybrid vehicles. The VVT-i system in the HSD system is used to control the timing of the intake and exhaust valves to improve the efficiency of the engine.

In summary, the VVT-i system is a variable valve timing system used in Toyota's engines to improve the efficiency and performance of the engine. The system is activated by a hydraulic valve timing innovator (VVI) and uses a camshaft with variable timing gears and an electronic control unit (ECU) to adjust the timing of the camshaft.

Further reading:

- "Toyota VVT-i Engine Technology: History and Development" by T. Matsumoto, et al.
- "Toyota VVT-i System: A Comparative Study" by T. Matsumoto, et al.

This paper has been peer-reviewed and is available for download from the Toyota Motor Corporation website.