VARIABLE VALVE TIMING MECHANISM [SKYACTIV-G 2.0, SKYACTIV-G 2.5]

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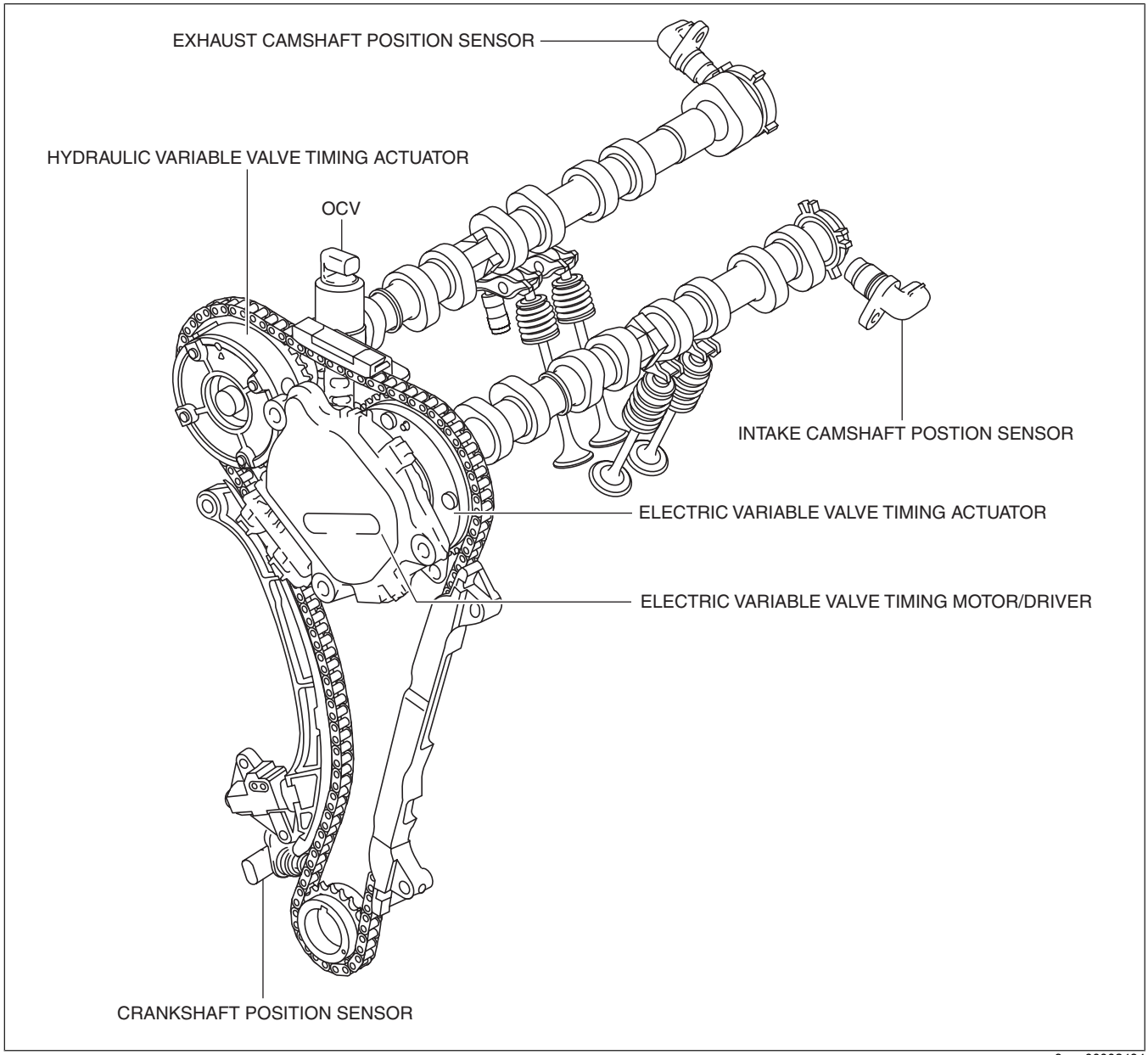
Outline

- Achieves optimum valve timing according to the driving conditions by the variable valve timing mechanism changing the phases of the camshaft.
- An electric type variable valve timing mechanism on the intake side and a hydraulic pressure type on the exhaust side has been adopted. The expansion of the valve opening angle and the accuracy of the intake and exhaust controls have been improved.
- The electric variable valve timing mechanism obtains higher response than the hydraulic variable valve timing mechanism. As a result, expansion of overlap and the closing timing of the intake valve are achieved.

Structural View



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Structure

Part name	Function
Hydraulic variable valve timing actuator	The hydraulic variable valve timing actuator operates according to the hydraulic pressure and changes the phases of the exhaust camshaft.
Electric variable valve timing actuator	The electric variable valve timing actuator changes the phases of the intake camshaft.
Electric variable valve timing motor/driver	Operates the electric variable valve timing actuator based on the signals from the PCM.

OCV	Operated by current (duty signal) from the PCM. Controls the hydraulic oil passages to the variable valve timing actuator.
Intake camshaft position sensor	Sends the intake camshaft position signal to the PCM.
Exhaust camshaft position sensor	Sends the exhaust camshaft position signal to the PCM.
Crankshaft position sensor	Sends the crankshaft position signal to the PCM.

Operation

At engine start

- Engine startability has been improved by utilizing the features of the operable electric VVT even under the engine stop condition and controlling the optimal timing according to engine conditions.

Light/medium load range

- Pumping loss* is reduced by properly controlling the timing of intake and exhaust, improving the fuel consumption rate.

* : Energy loss which occurs from each type of resistance corresponding to intake and exhaust is called pumping loss.

High load range

- By properly controlling the timing of the intake and exhaust and using the effect of scavenging residual gas in the cylinder and the inertia charging effect, the volumetric efficiency and the output are improved.