
ELECTRIC VARIABLE VALVE TIMING ACTUATOR [SKYACTIV-G 2.0, SKYACTIV-G 2.5]

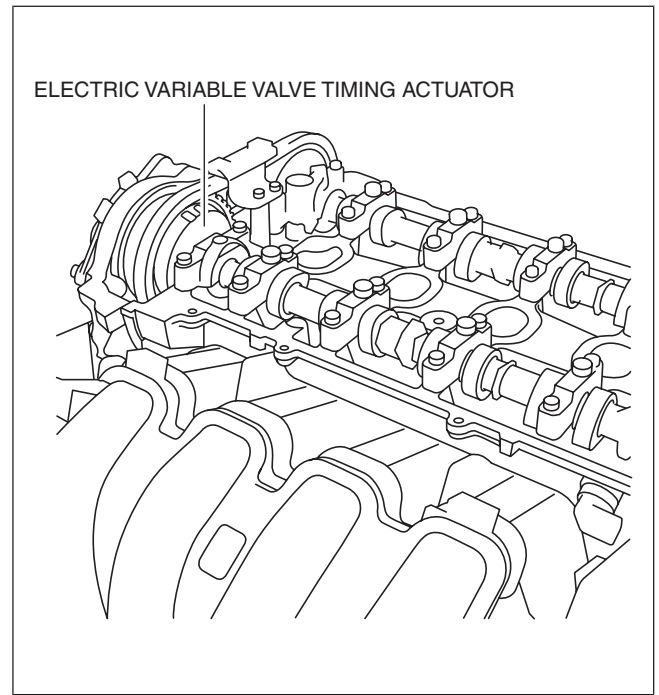
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Purpose, Function

- The electric variable valve timing actuator changes the phases of the intake camshaft relative to the crankshaft. As a result, the open/close period of the intake valve is changed, optimized valve timing in accordance with driving conditions is realized, output is improved, and emission reduction is realized.

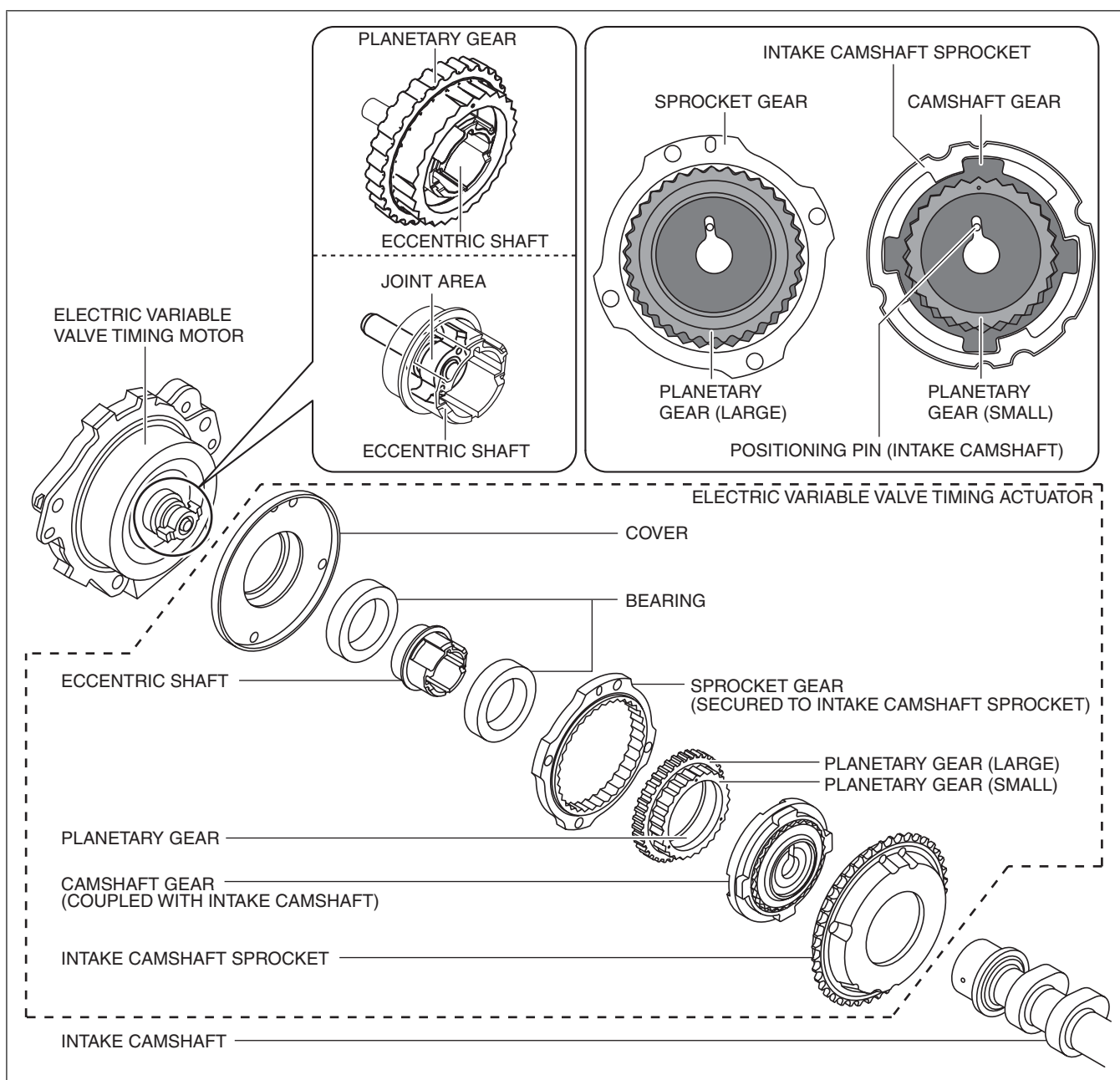
Construction

- The electric variable valve timing actuator is installed to the intake camshaft.



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- The electric variable valve timing actuator consists of the following parts:



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- The sprocket gear rotates together with the intake camshaft sprocket.
- The camshaft gear rotates together with the intake camshaft.
- The eccentric shaft is an eccentric shape relative to the rotation axis of the intake camshaft.
- The planetary gear is engaged with the eccentric shaft. In addition, the planetary gear is engaged with the sprocket gear and the camshaft gear.
- The number of teeth for the planetary gear (large) is one tooth fewer than the number of teeth for the sprocket gear.
- The number of teeth for the planetary gear (small) is one tooth fewer than the number of teeth for the camshaft gear.
- The planetary gear rotates by receiving the rotation force from the eccentric shaft.
- The camshaft gear rotates by receiving the rotation force from the planetary gear.

Operation

Advancing valve timing

- The electric variable valve timing motor rotation speed is faster than the intake camshaft sprocket rotation speed. As a result, the camshaft gear rotates in the advance direction relative to the intake camshaft sprocket, and the valve timing is advanced.

Retarding valve timing

- The electric variable valve timing motor rotation speed is slower than the intake camshaft sprocket rotation speed. As a result, the camshaft gear rotates in the retard direction relative to the intake camshaft sprocket, and the valve timing is retarded. (If engine rotation speed is slow, the electric variable valve timing motor may be rotating in reverse and the camshaft gear may be rotating in the retard direction.)

Maintaining intermediate valve timing

- The electric variable valve timing motor rotation speed is the same as the intake camshaft sprocket rotation speed. As a result, the phase difference of the camshaft gear relative to the intake camshaft sprocket is maintained, the camshaft gear rotation speed is the same as the intake camshaft sprocket rotation speed, and the valve timing is maintained.

Fail-safe

DTC	Fail-safe
P0011:00	• Stops activation of the electric variable valve timing driver.
P0012:00	• Stops activation of the electric variable valve timing driver.
P1380:00	• Stops activation of the electric variable valve timing driver.