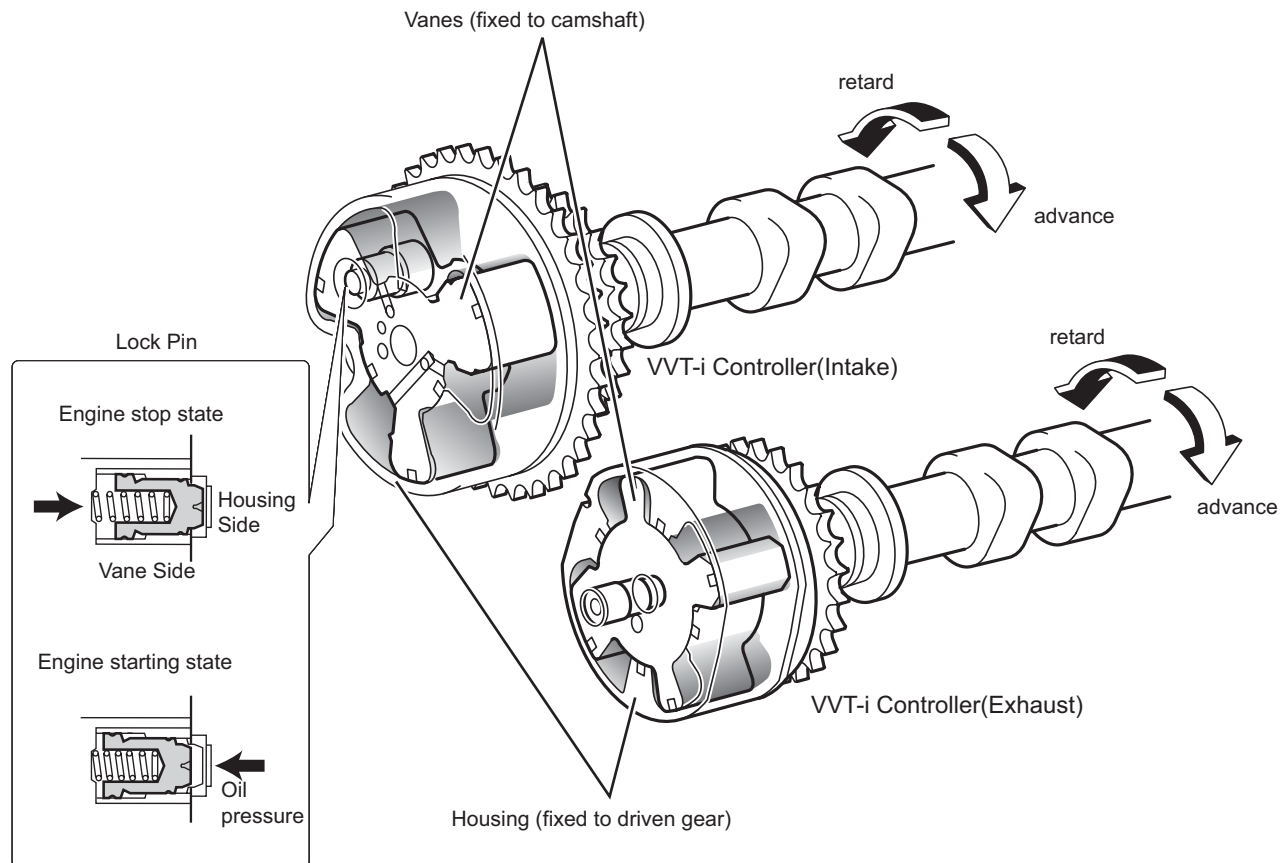


## Dual VVT-i Controller

- The VVT-i controller is a vane type that has low friction and is highly efficient while it is being driven.
- The VVT-i controller for the intake is a 3-vane type, and a 4-vane type for the exhaust. When the engine is stopped, a lock pin locks the vanes for the intake in the most retarded position and the vanes for the exhaust in the most advanced position.
- The VVT-i for the exhaust is provided with an advance assist spring that provides a torque assist in the advance direction so that the lock pin engages securely when the engine is stopped.
- Based on the signals provided by the sensors, the ECM controls the hydraulic pressure that acts on the advance chamber and retard chamber in the VVT-i controller, via an OCV (Oil Control Valve) that is mounted on the cylinder head cover. Thus, it continuously varies the phases of the intake and exhaust camshafts.



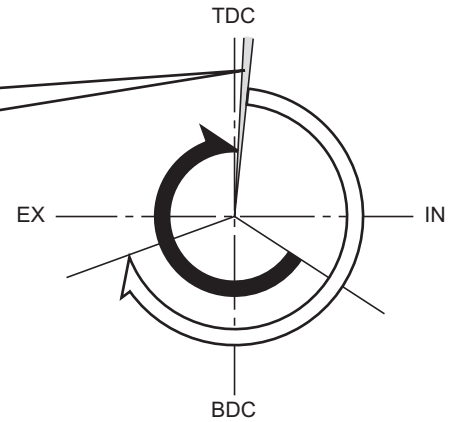
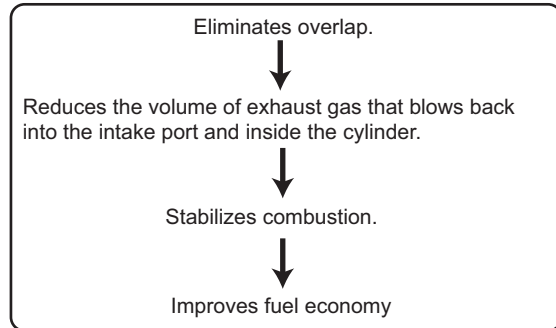
\*The drawing shows the VVT-i controller for the intake in the retarded state and the VVT-i controller for the exhaust in the advanced state.

## Effects of Dual VVT-i

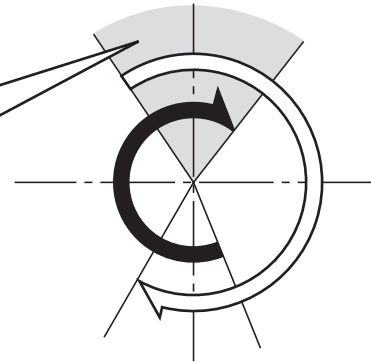
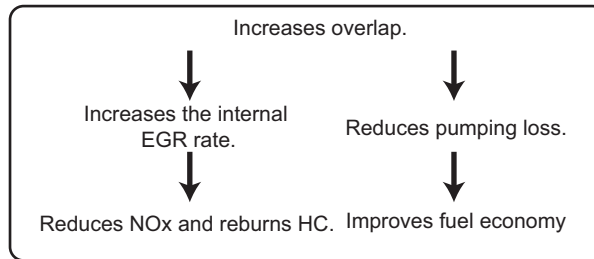
- By advancing and retarding the intake and exhaust valves, the Dual VVT-i provides the following effects.

EG

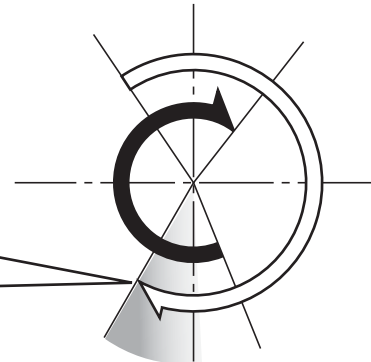
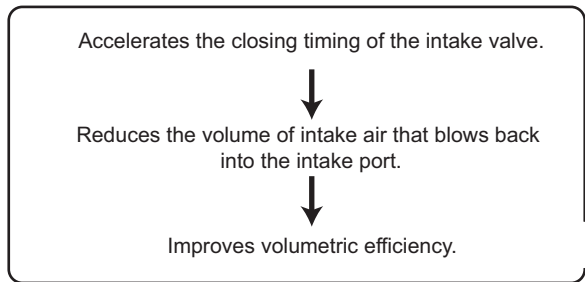
Low temperature operation  
Starting the engine  
Running at idle  
Light load operation



Medium load range



High load range,  
low- to medium-speed



High load range,  
high speed

