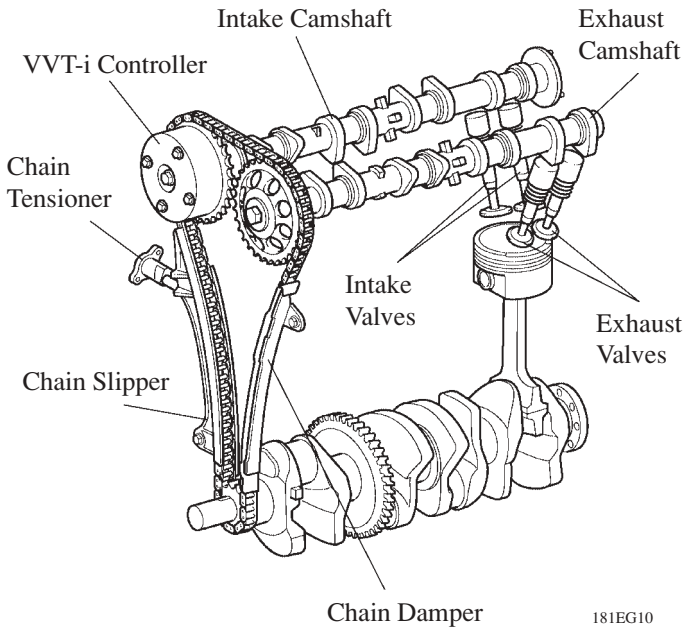
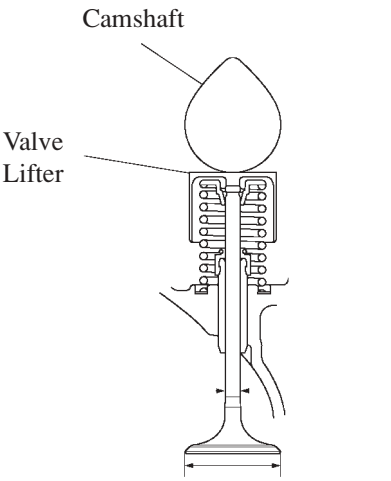
5. Valve Mechanism

1) General

- The VVT-i (Variable Valve Timing-intelligent) system is used to improve fuel economy, engine performance and reduce exhaust emissions. For details, see page 57.
- Along with the increase in the amount of valve lift, the shimless type of valve lifter is used. This valve lifter increases the cam contact surface.



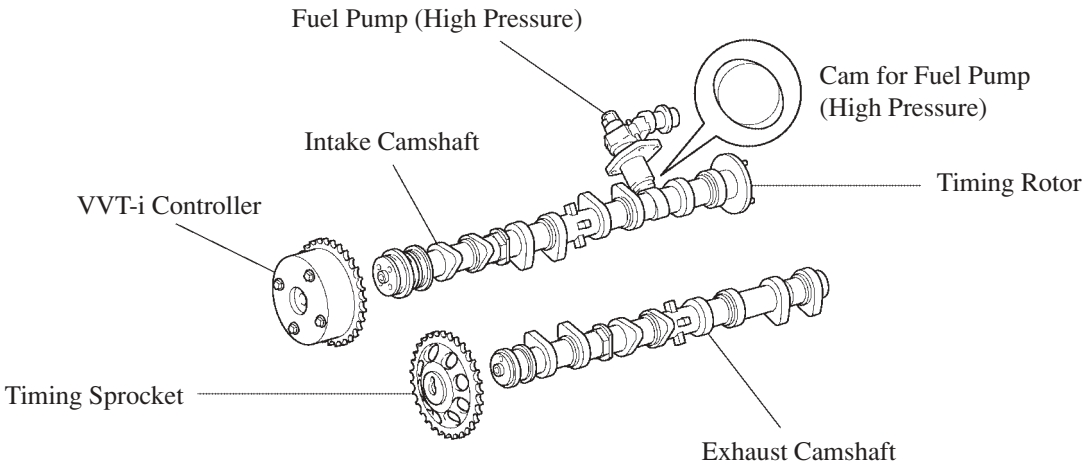


Service Tip

The adjustment of the valve clearance is accomplished by selecting and replacing the appropriate valve lifters. Adjusting valve lifters are available in 35 increments of 0.020 mm (0.0008 in.), from 5.060 mm (0.1992 in.) to 5.740 mm (0.2260 in.).
For details, refer to the Avensis Repair Manual Supplement (Pub. No. RM1045E).

2) Camshaft

- The intake camshaft is provided with the timing rotor to trigger the camshaft position sensor, and the cam to drive the fuel pump (high pressure).
- In conjunction with the adoption of the VVT-i system, an oil passage is provided in the intake camshaft in order to supply engine oil pressure to the VVT-i system.
- A VVT-i controller has been installed on the front of the intake camshaft to vary the timing of the intake valves.



3) Timing Chain and Chain Tensioner

- A roller chain with an 8 mm pitch is used to make the engine more compact.
- The timing chain is lubricated by an oil jet.
- The chain tensioner uses a spring and oil pressure to maintain proper chain tension at all times. The chain tensioner suppresses noise generated by the timing chain.
- A ratchet type non-return mechanism is also used.
- To improve serviceability, the chain tensioner is constructed so that it can be removed and installed from the outside of timing chain cover.