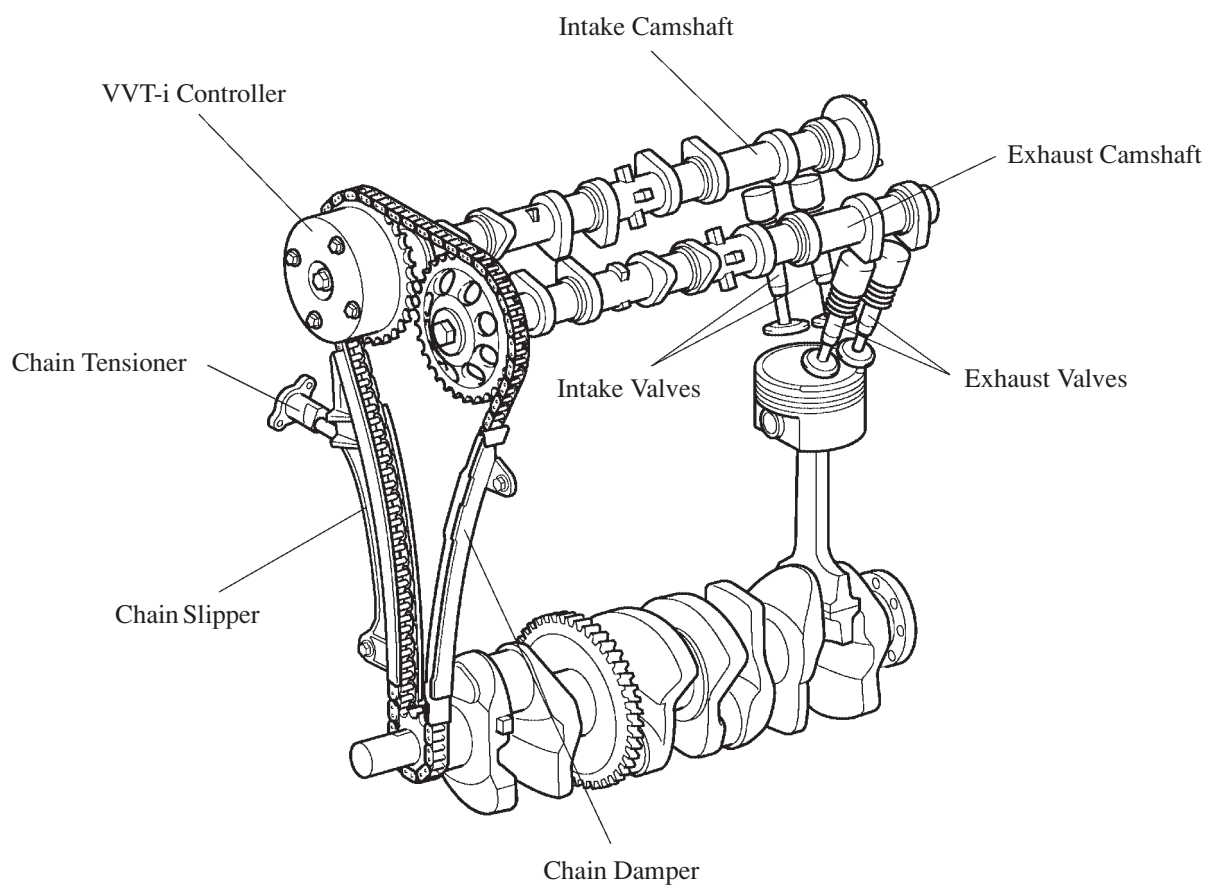


## 5. Valve Mechanism

### General

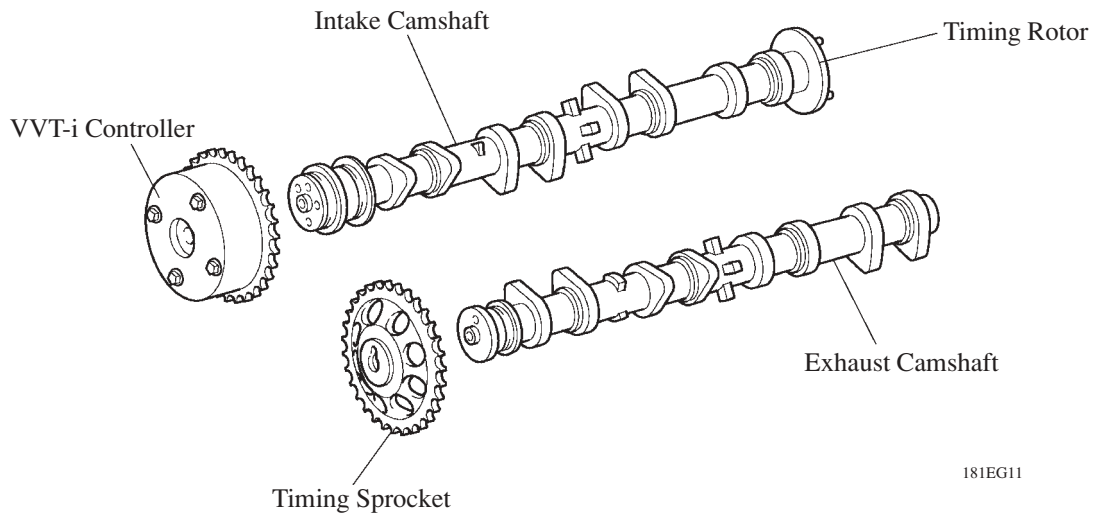
- Each cylinder is equipped with 2 intake valves and 2 exhaust valves. Intake and exhaust efficiency has been increased due to the larger total port areas.
- The valves are directly opened and closed by 2 camshafts.
- The intake and exhaust camshafts are driven by the chain. The VVT-i system used for the intake camshaft is used to realize highly fuel economy, engine performance and reduce exhaust emissions. For details, [see page 212](#) in the VVT-i system section.
- The shimless type valve lifter is used.



181EG10

## Camshaft

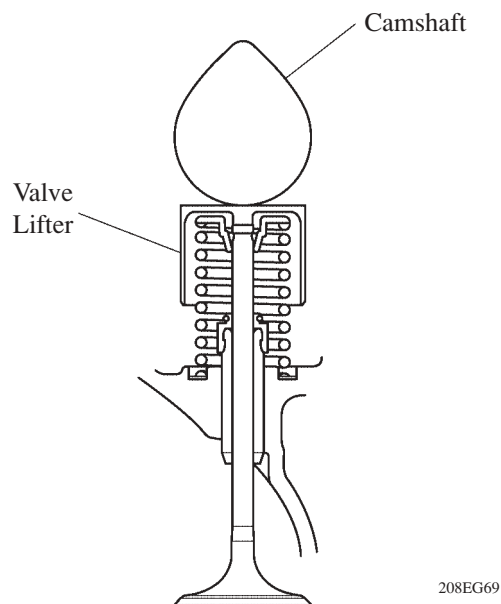
- The intake camshaft is provided with timing rotor to trigger the camshaft position sensor.
- In conjunction with the adoption of the VVT-i system, an oil passage is provided in the intake camshaft in order to supply engine oil pressure to the VVT-i system.
- A VVT-i controller has been installed on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



181EG11

## Intake and Exhaust Valves

- Intake and exhaust valves with large-diameter valve face have been adopted to improve the intake air and exhaust gas flow.
- Narrow valves stems have been adopted to reduce the intake and exhaust resistance and for weight reduction.



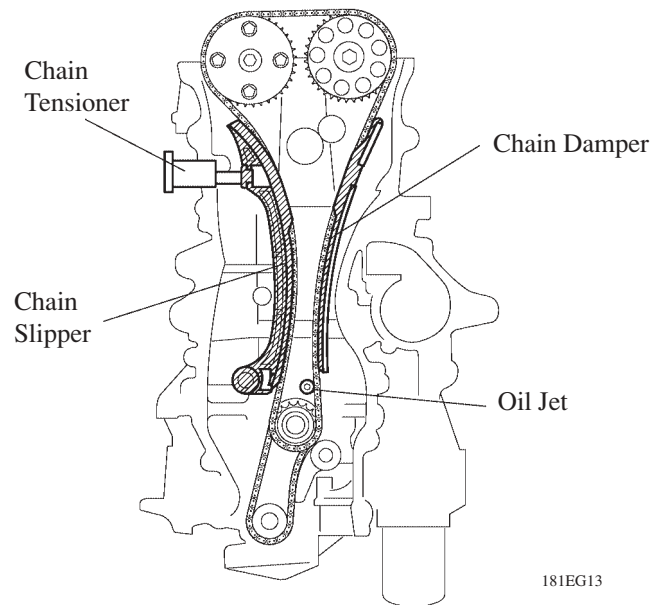
- Along with the increased amount of valve lift, shimless valve lifters that provided a large cam contact surface have been adopted. The adjustment of the valve clearance is accomplished by selecting and replacing the appropriate valve lifters.

### Service Tip

The valve lifters are available in 35 size increment of 0.020 mm (0.008 in.), from 5.60 mm (0.199 in.) to 5.740 mm (0.266 in.).

## Timing Chain

- A roller chain with 8 mm pitch has been adopted.
- The timing chain is lubricated by oil jet.



4

## Chain Tensioner

- The chain tensioner uses a spring and oil pressure to maintain proper chain tension at all time. The chain tensioner suppresses noise generated by the 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 the timing chain cover.

