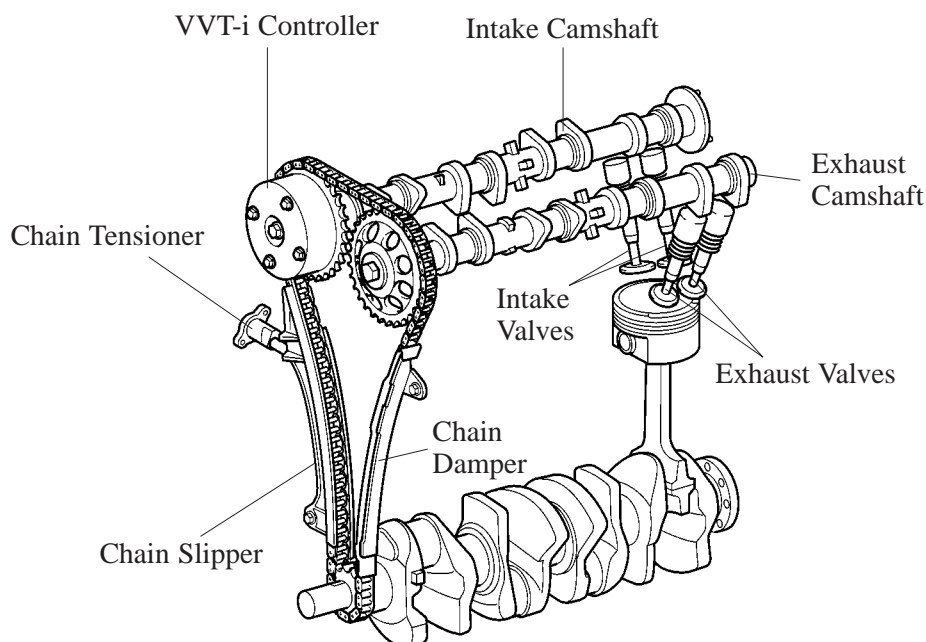


## ■ VALVE MECHANISM

### 1. General

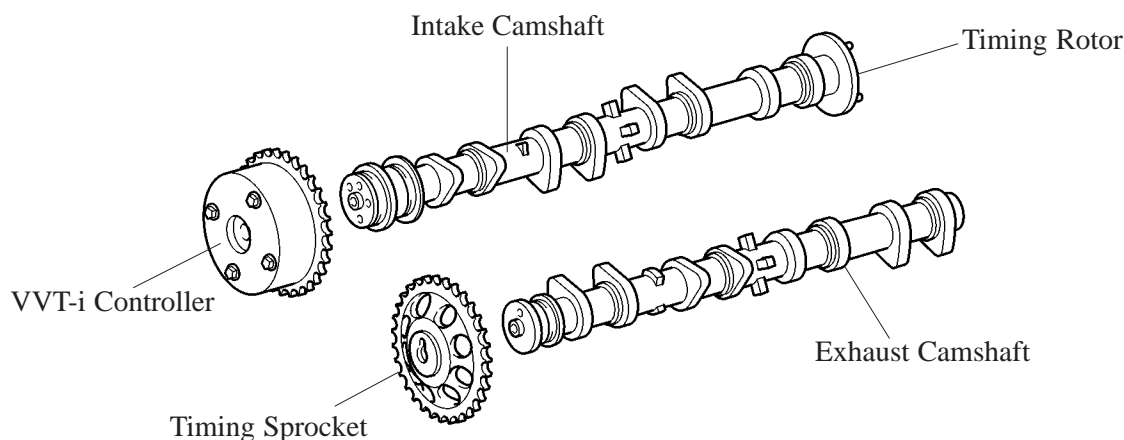
- Each cylinder is equipped with 2 intake valves and 2 exhaust valves. Intake and exhaust efficiency has been increased due to the larger total port areas.
- The valves are directly opened and closed by 2 camshafts.
- The intake and exhaust camshafts are driven by a chain.  
The VVT-i system is used to improve fuel economy, engine performance and reduce exhaust emissions. For details, [see page EG-30](#) in the VVT-i system section.
- The shimless type valve lifter is used.



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### 2. Camshaft

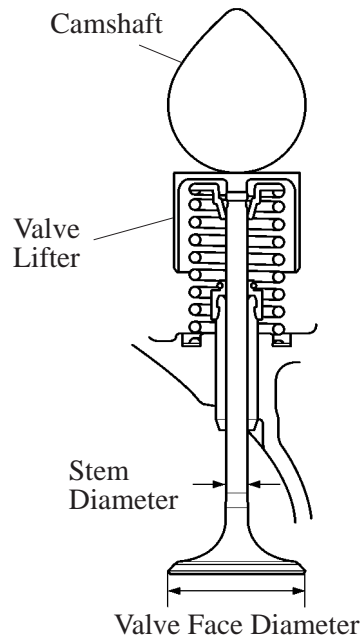
- The intake camshaft is provided with timing rotor to trigger the camshaft position sensor.
- In conjunction with the adoption of the VVT-i system, an oil passage is provided in the intake camshaft in order to supply engine oil pressure to the VVT-i system.
- A VVT-i controller has been installed on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



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### 3. Intake and Exhaust Valves

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



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#### ► Specification ◀

Valve	Intake	Exhaust
Valve Lift	9.2 mm (0.36 in.)	8.6 mm (0.34 in.)
Valve Face Diameter	34.0 mm (1.34 in.)	29.5 mm (1.16 in.)
Stem Diameter	5.5 mm (0.216 in.)	←

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- Along with the increased amount of valve lift, shimless valve lifters that provide a larger cam contact surface have been adopted.

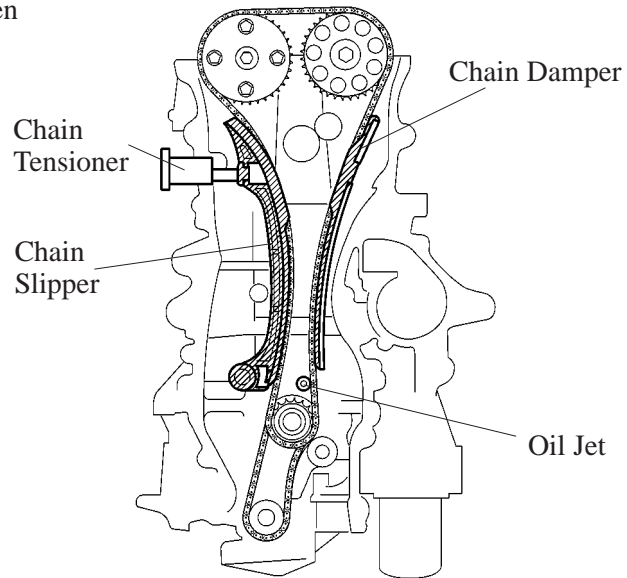
The adjustment of the valve clearance is accomplished by selecting and replacing the appropriate valve lifters.

#### Service Tip

A total of 35 valve lifters are available in 0.020 mm (0.008 in.) increments, from 5.060 mm (0.199 in.) to 5.740 mm (0.226 in.). For details, refer to see the 1AZ-FE Engine Repair Manual (RM865E).

#### 4. Timing Chain

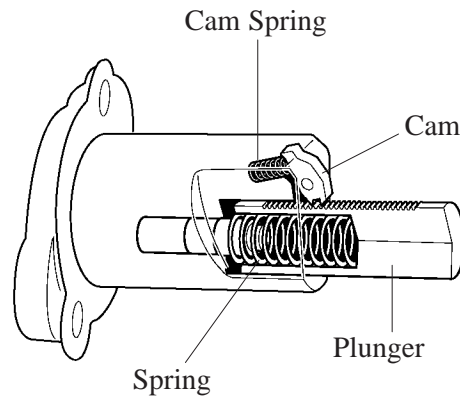
- A roller chain with an 8 mm pitch has been adopted to make the engine more compact.
- The timing chain is lubricated by an oil jet.



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#### 5. Chain Tensioner

- 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 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.



181EG14