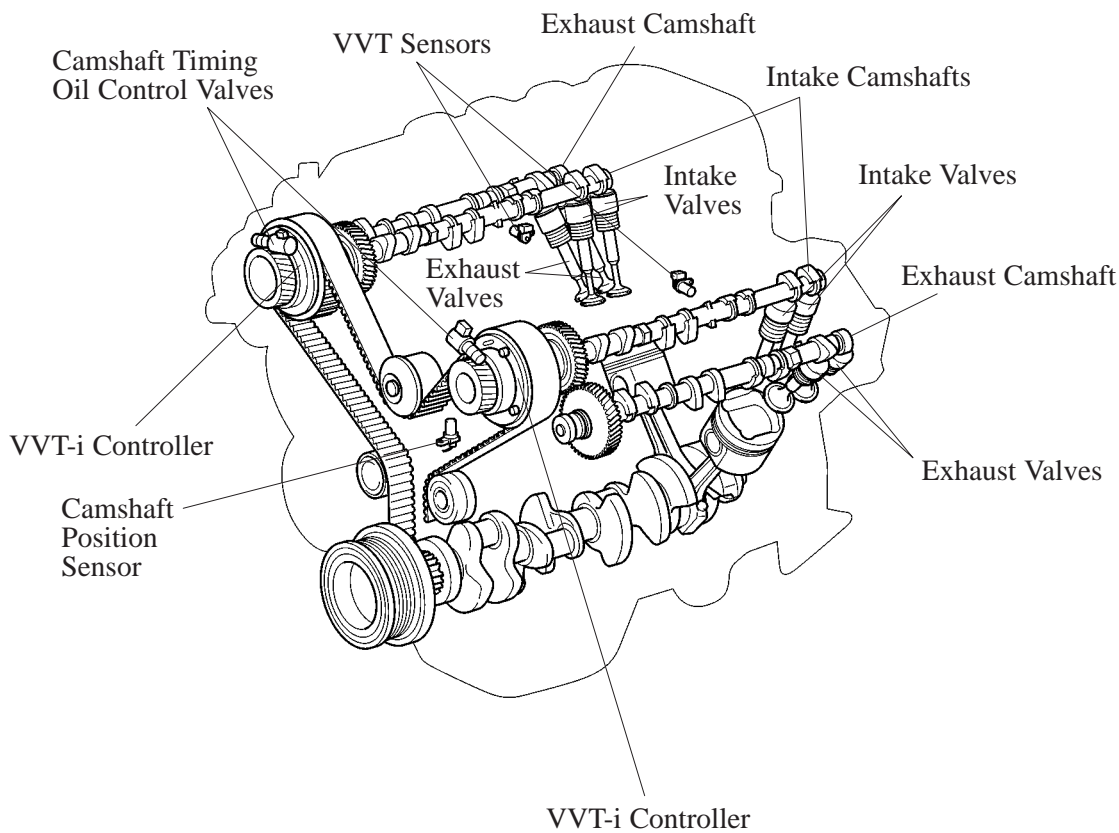


■ VALVE MECHANISM

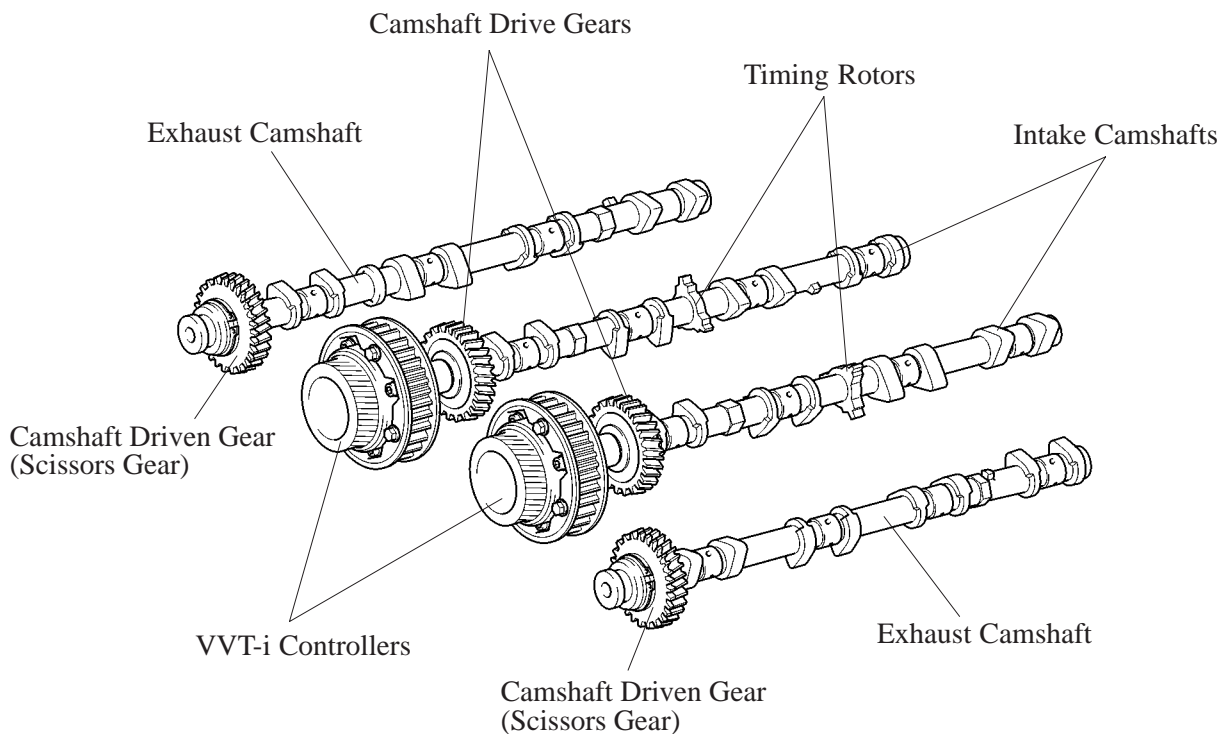
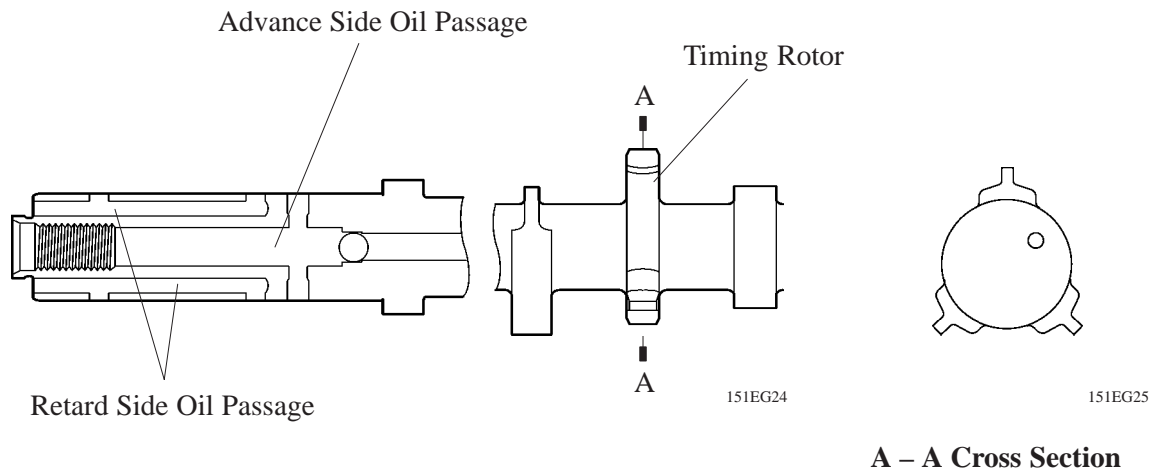
1. General

- Each cylinder has 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 4 camshafts.
- The intake camshafts are driven by a timing belt, while the exhaust camshafts are driven through gears on the intake camshafts.
- The VVT-i (Variable Valve Timing-intelligent) system is used to improve fuel economy, engine performance and reduce exhaust emissions. For details, [see page 69](#).
- In contrast to the previous 1UZ-FE engine on the LS400, an automatic timing belt tensioner with optimized construction and body material that has been changed to aluminum has been adopted in the new 3UZ-FE engine on the LS430.



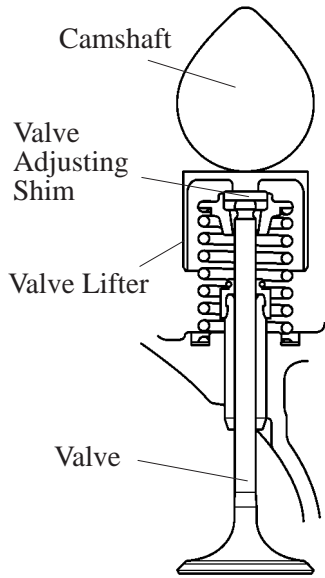
2. Camshaft

- The exhaust camshafts are driven by gears on the intake camshafts. The scissors gear mechanism has been used on the exhaust camshaft to control backlash and reduce gear noise.
- A VVT-i controllers have been installed on the front of the intake camshafts to vary the timing of the intake valves.
- 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 to the VVT-i system.
- The intake camshaft is provided with timing rotor to trigger the VVT sensor.



3. Intake and Exhaust Valve and Valve Lifter

- An inner shim type valve adjusting shim has been adopted as well as the previous 1UZ-FE engine on the LS400.
- The valve lifter, which has been made lighter and thinner.
- High-strength, heat-resistant steel is used in both the intake and exhaust valves, and soft nitriding treatment has been applied to the stem and the face areas of the valves.
- Carbon steel with a round-shaped cross section has been adopted for the valve spring, which is used for both the intake and exhaust valves.



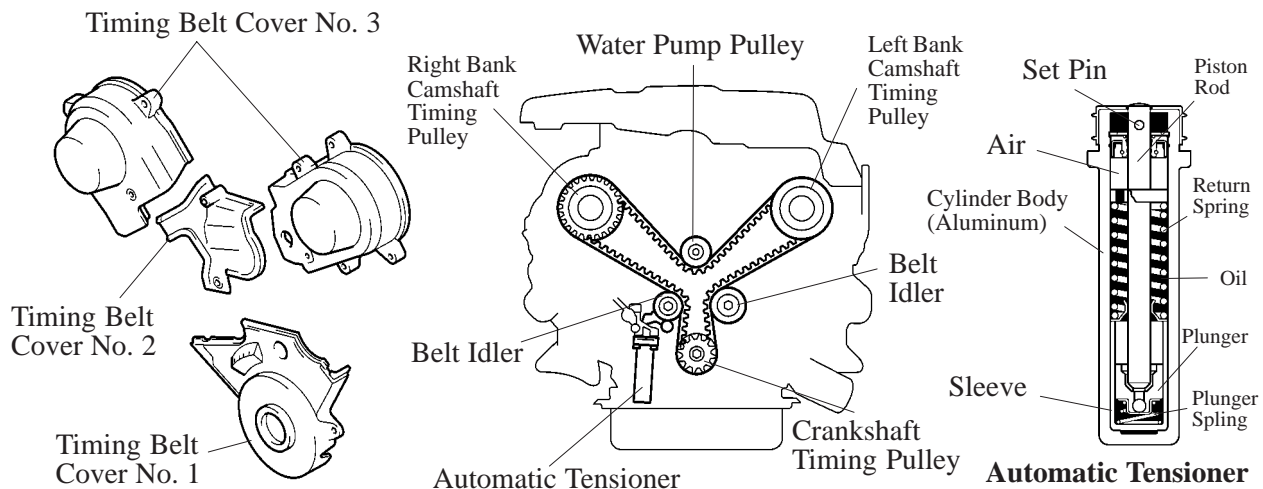
► Specifications ◀

Item	mm (in.)	
	Intake Valve	Exhaust Valve
Face Diameter	34.5 (1.36)	29.0 (1.14)
Stem Diameter	5.5 (0.22)	5.5 (0.22)

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4. Timing Pulleys, Automatic Tensioner and Timing Belt Cover

- In contrast to the previous 1UZ-FE engine on the LS400, an automatic timing belt tensioner with optimized construction and body material that has been changed to aluminum has been adopted in the new 3UZ-FE engine on the LS430.
- The timing belt cover No. 3 is made of aluminum to reduce noise.
- The timing belt cover No. 1 and No. 2 are composite formed with a gasket to improve serviceability.



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