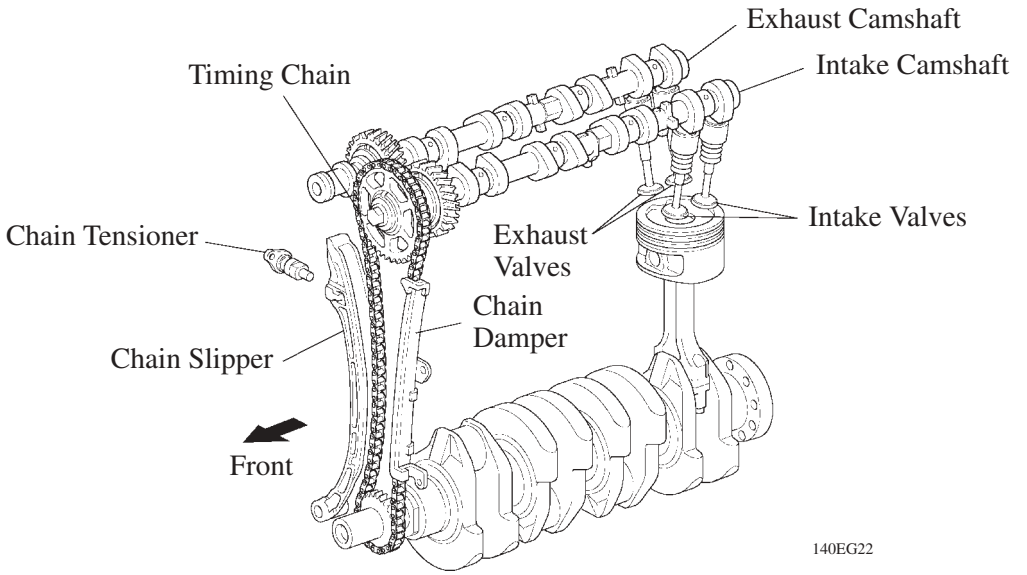
■ VALVE MECHANISM

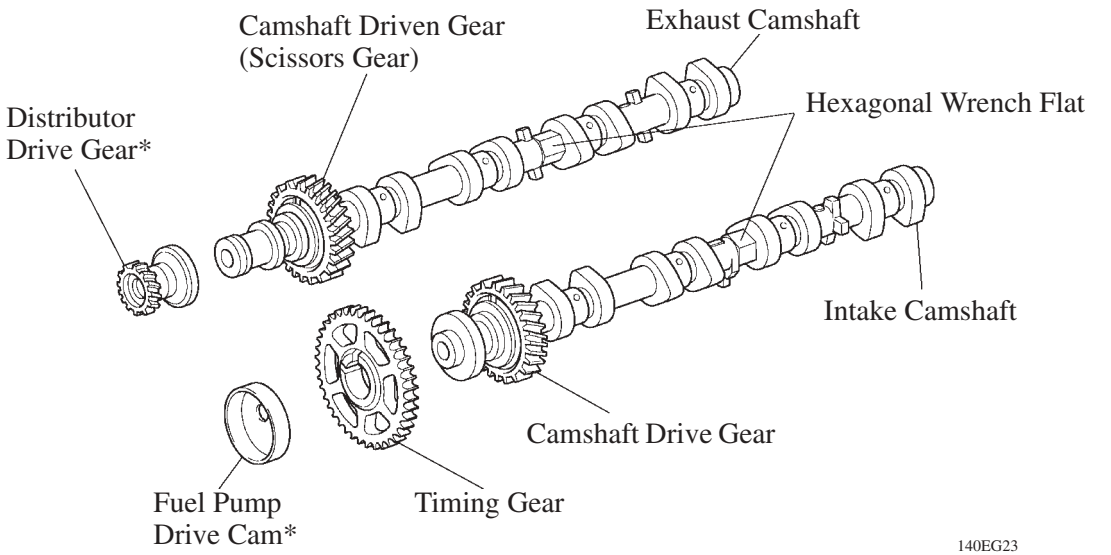
1. General

- 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 camshaft is driven by a chain, while the exhaust camshaft is driven via a gear on the intake camshaft.



2. Camshaft

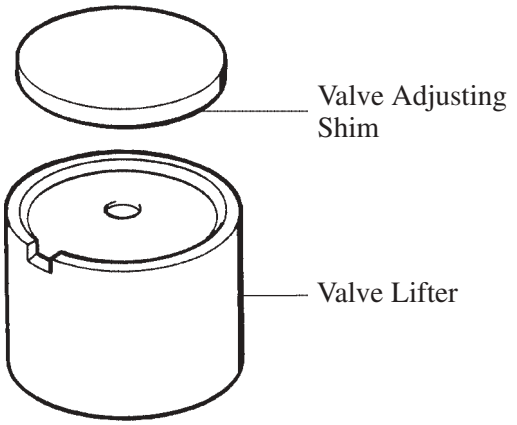
- Each camshaft has 5 journals. Thrust force is received by the thrust surface of the No.1 journal.
- The exhaust camshaft is driven by a gear on the intake camshaft. A scissors gear mechanism has been used on the exhaust camshaft to control backlash and reduce noise.
- Hexagonal wrench flats are provided between the No.2 and No.3 journals for easy servicing.
- In the 3RZ-F engine, the camshaft is provided with a distributor drive gear and a fuel pump drive cam.



*: Only for 3RZ-F Engine

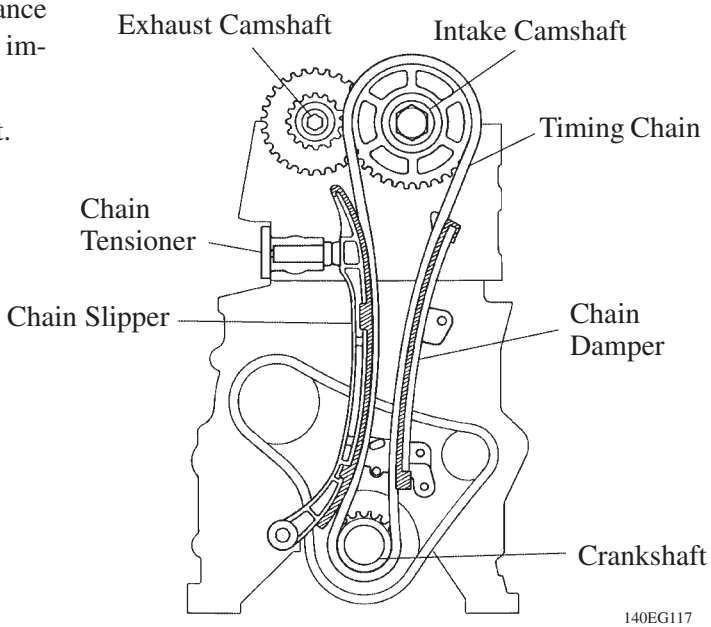
3. Valve Lifter and Valve Adjusting Shim

Outer shim type valve adjusting shims located in the top of the valve lifters are used to improve serviceability.



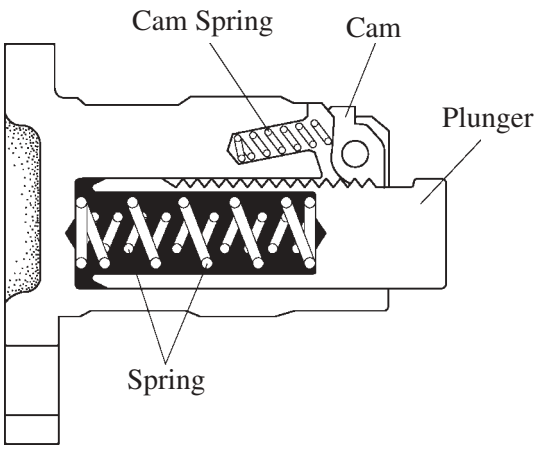
4. Timing Chain

- A material which has excellent wear resistance has been selected for the timing chain to improve reliability.
- The timing chain is lubricated by an oil jet.



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.



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