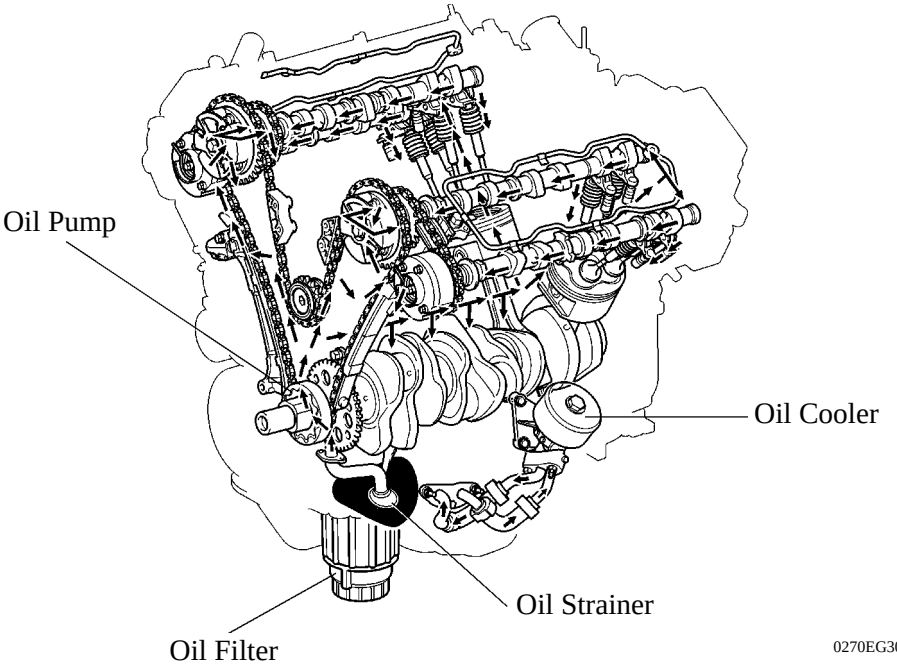
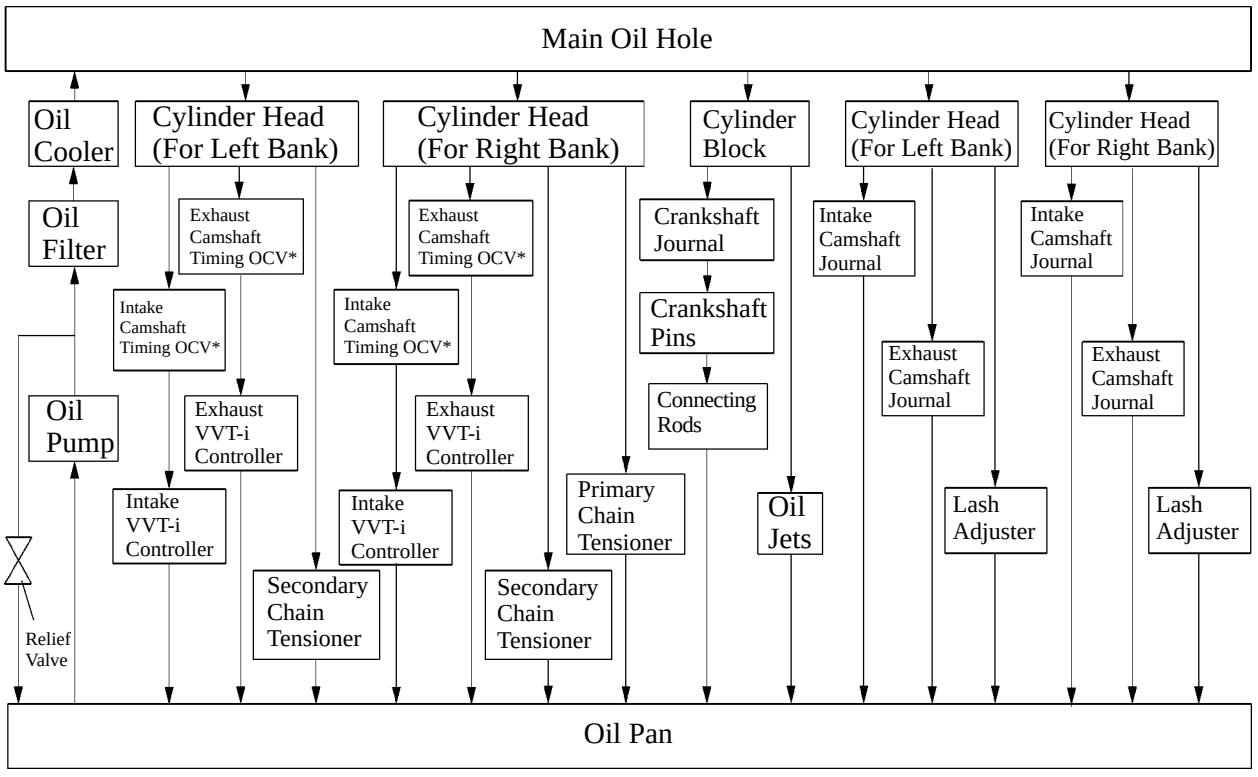
■LUBRICATION SYSTEM

1. General

- The lubrication circuit is fully pressurized and all oil passes through an oil filter.
- A cycloid rotor type oil pump is used.

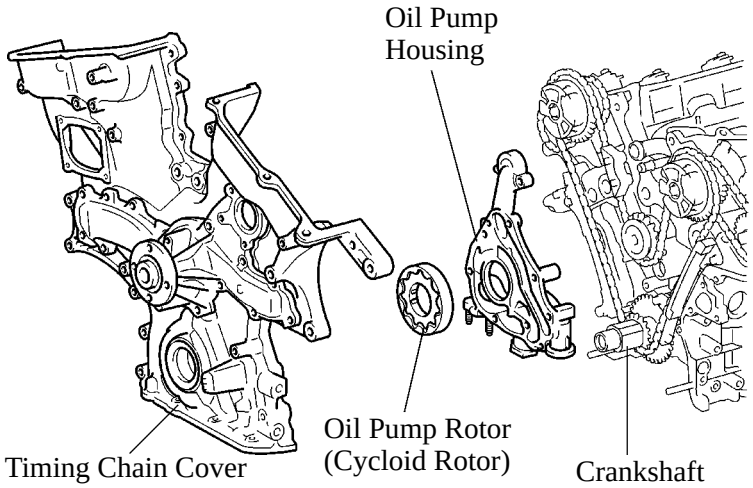


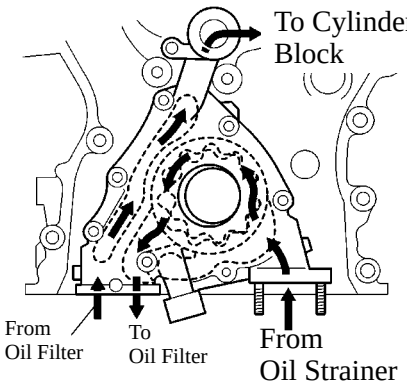


*: Oil Control Valve

2. Oil Pump

- A compact cycloid rotor type oil pump directly driven by the crankshaft is used.
- This oil pump uses an internal relief method which circulates relief oil to the suction passage in the oil pump. This aims to minimize oil level change in the oil pan, reduce friction, and reduce air mixing rate in the oil.



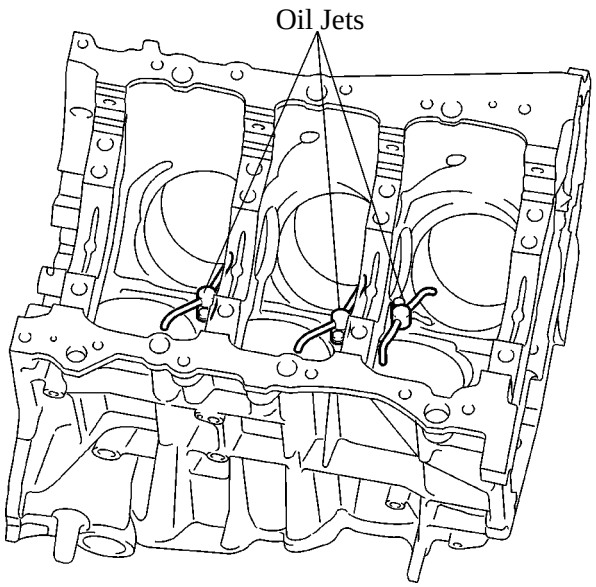


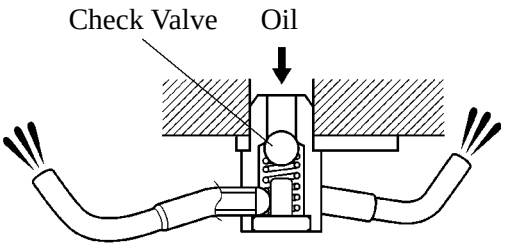
Oil passage in the oil pump

285EG24

3. Oil Jet

- Oil jets for cooling and lubricating the pistons have been provided in the cylinder block, in the center of the right and left banks.
- These oil jets contain a check valve to prevent oil from being fed when the oil pressure is low. This prevents the overall oil pressure in the engine from dropping.



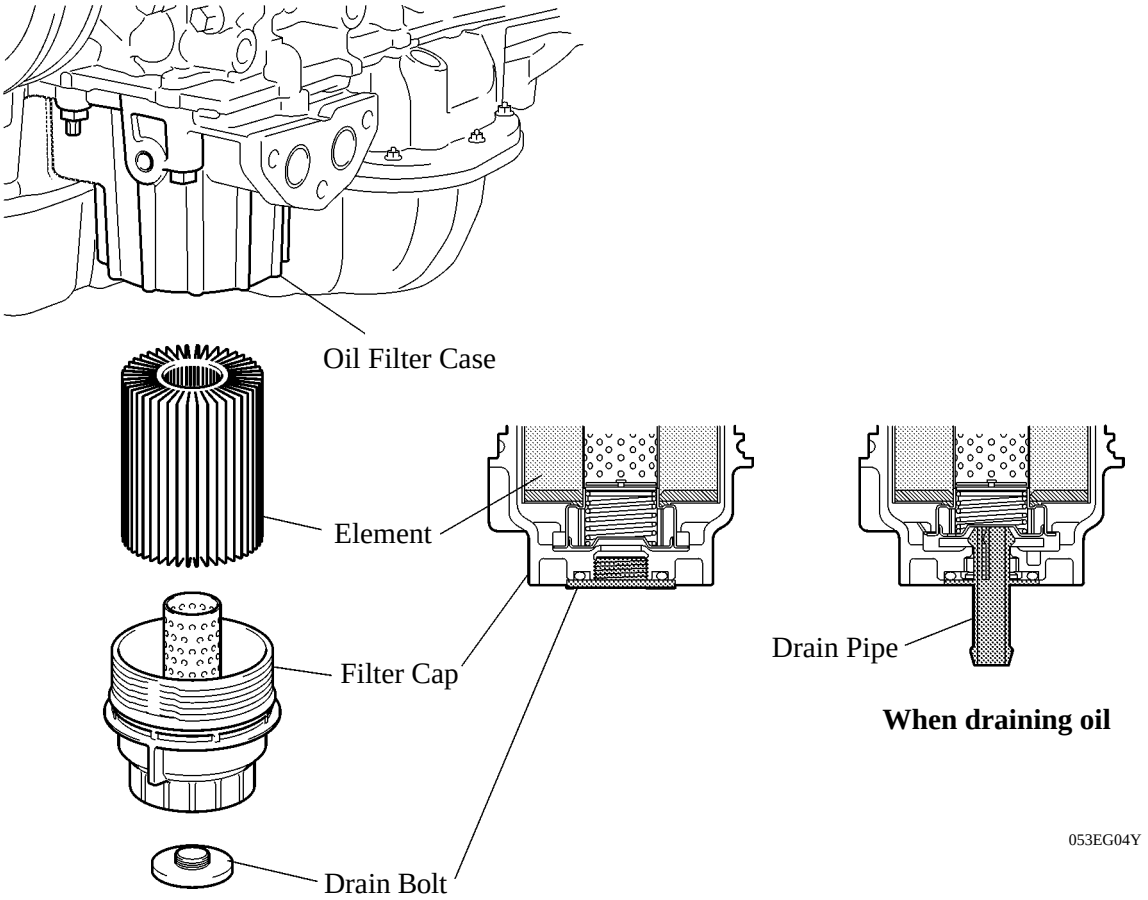


Oil Jet Cross Section

285EG25

4. Oil Filter

- A newly developed oil filter with a replaceable element is used. The element uses a high-performance filter paper to improve filtration performance. It is also combustible for environmental protection.
- An aluminum alloy filter cap is used to extend its life.
- This oil filter has a structure which can drain the oil remaining in the oil filter. This prevents oil from spattering when replacing the element and allows the technician to work without touching hot oil.



Service Tip

- The oil in the oil filter can be drained by removing the drain bolt and inserting the drain pipe supplied with the element into the oil filter. For details, refer to the 2007 Sienna Repair Manual (Pub. No. RM0530U).
- The engine oil maintenance interval for a model that has an oil filter with a replaceable element is the same as that for the conventional model.