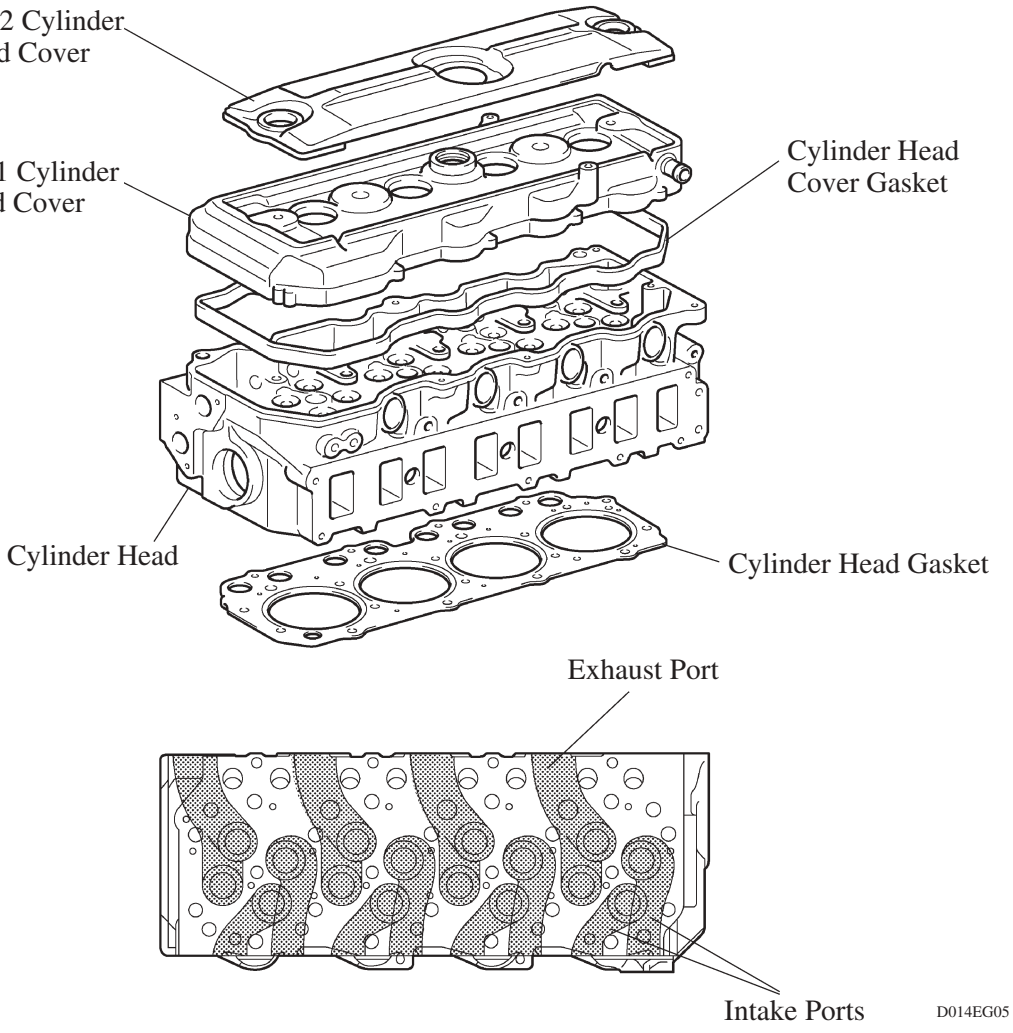
4. Engine Proper

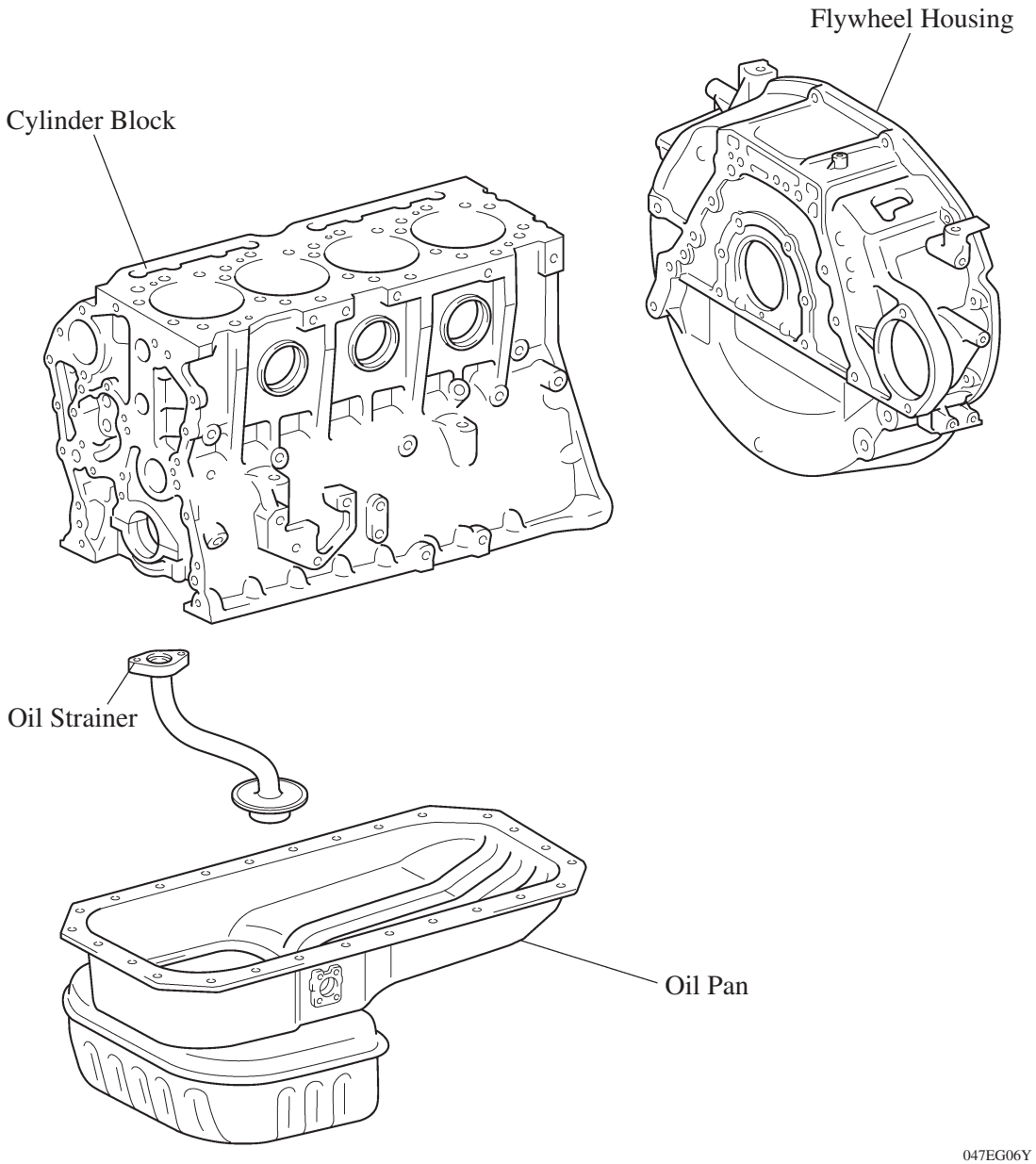
Cylinder Head

- A cylinder head made of high-strength cast iron is used. The thickness of the walls and the layout of the water jacket have been optimized to achieve a well-balanced rigidity and cooling performance. Two intake and two exhaust valves have been provided for each cylinder and the shape of the ports has been optimized.
- Cross-flow type intake ports that consist of two different shapes are used to produce an optimal swirl in order to achieve high charging efficiency and exhaust efficiency.
- Valve guides made of a sintered material that provides good oil retention are used in order to ensure seizure resistance and wear resistance. Furthermore, the amount of oil leakage through the valve stem oil seal has been minimized to achieve low oil consumption and exhaust emissions.
- A steel laminate type cylinder head gasket is used to achieve high sealing performance and heat resistance.
- A No. 1 cylinder head cover made of aluminum alloy is used for weight reduction.
- A cylinder head cover gasket made of a highly heat-resistant and oil-resistant acrylic rubber is used to ensure reliability.
- The No. 2 cylinder head cover is bolted at two locations in the center to achieve the small number of parts and high serviceability.



Cylinder Block and Oil Pan

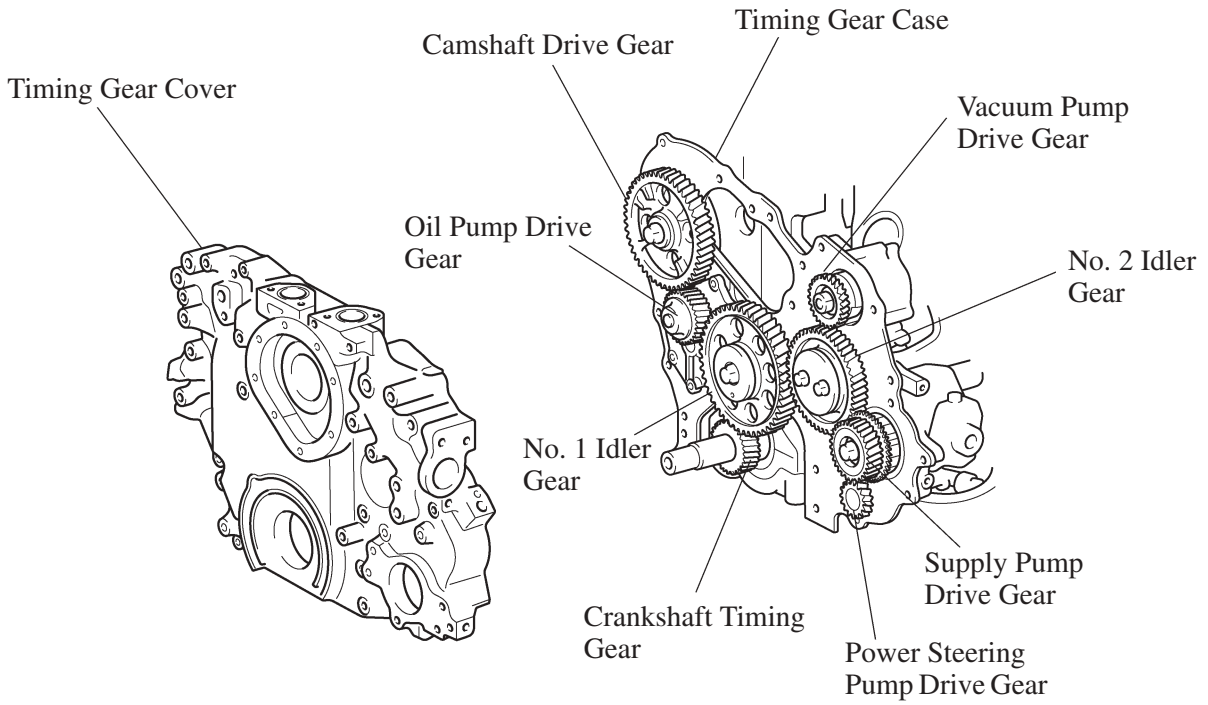
- The cylinder block is made of cast iron alloy and contains dry type cylinder liners that are highly rigid. A full jacket type water jacket is used to ensure strength and durability.
- The casting thickness of the walls of the cylinder block has been optimized to ensure strength and weight reduction.
- An FIPG (Formed-In-Place Gasket), which excels in sealing performance, is used along the outer flange of the oil pan.
- A flywheel housing made of lightweight and highly rigid aluminum alloy is used.



Timing Gear Train

The timing gear train drives the supply pump, oil pump, vacuum pump, camshaft, and power steering pump.

- A timing gear case and a timing gear cover made of aluminum alloy are used.
- The power of the crankshaft timing gear is transmitted to the No. 1 idler gear to drive the oil pump drive gear and the No. 2 idler gear.
- The No. 2 idler gear drives the supply pump drive gear, which also drives the power steering pump drive gear.
- The oil pump drive gear drives the camshaft drive gear.
- The No. 2 idler gear drives the vacuum pump drive gear.

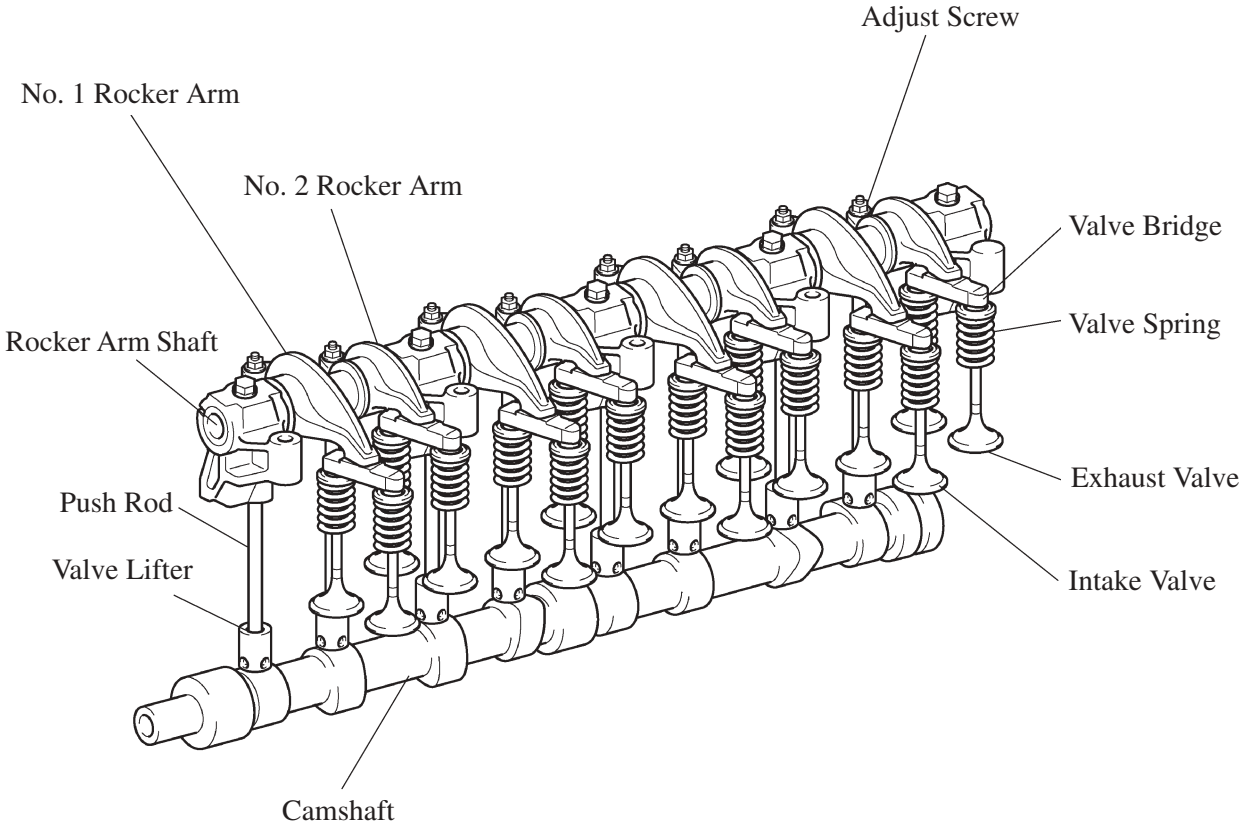


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Valve Mechanism

A 16-valve OHV system is used. The camshaft drives the push rods, rocker arms, and valve bridges in order to open and close the valves.

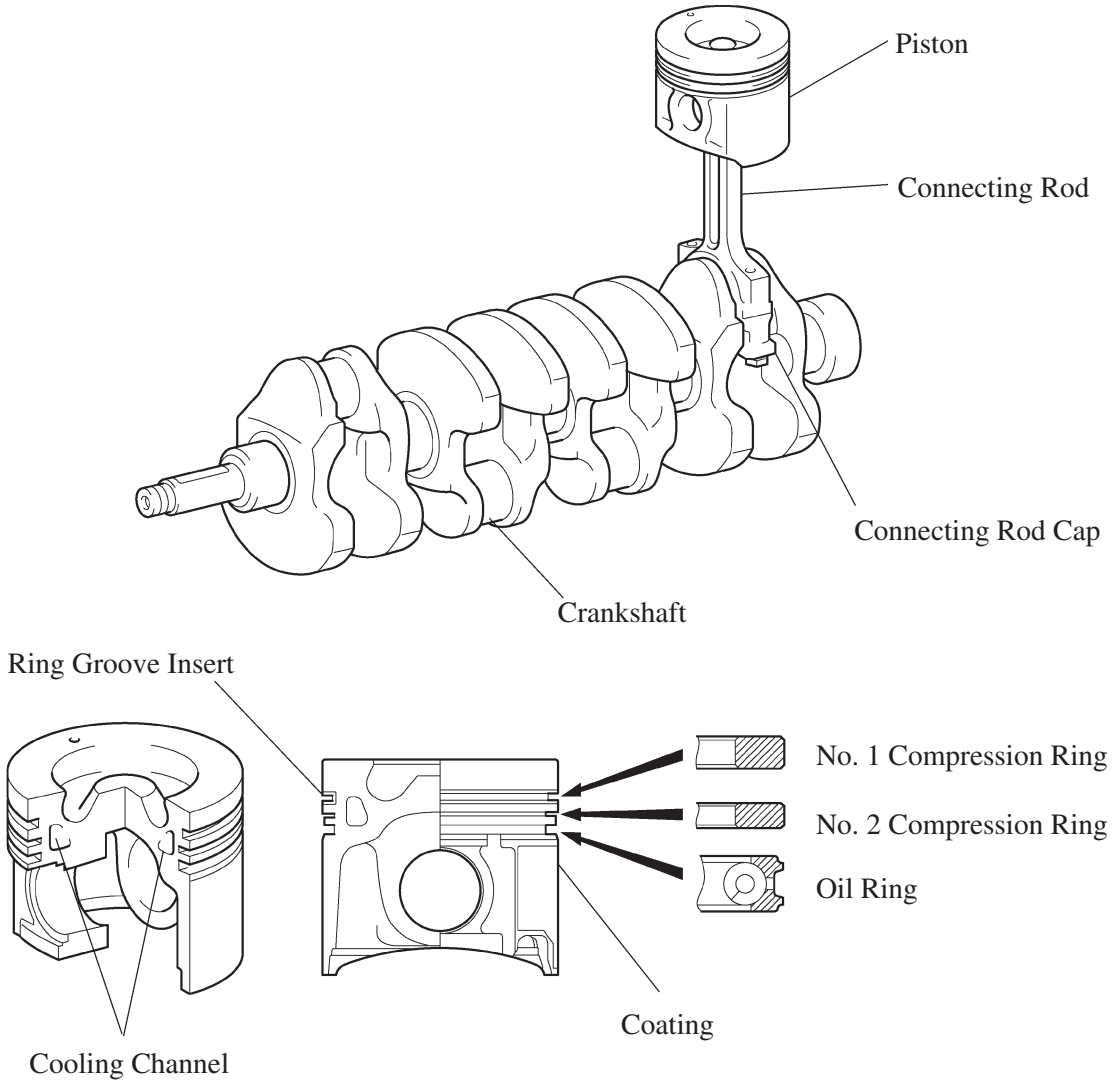
- Push rods made of highly rigid carbon steel are used to achieve a high speed threshold. The portion of the push rods that comes in contact with the rocker arms has been hardened to ensure the proper wear resistance.
- Intake and exhaust valves made of heat-resistant steel are used. The stems and the ends have been nitrocarburized to ensure the proper wear resistance.
- Cast iron valve lifters are used.



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Piston, Connecting Rod and Crankshaft

- Pistons made of lightweight and high-temperature strength aluminum alloy are used, and the combustion chambers have adopted a reentrant shape in order to achieve high power output, good fuel economy, and low exhaust emissions.
- Full-floating type piston pins are used. Their overall length and wall thickness have been optimized to accommodate the high power output of the engine.
- Connecting rods made of cast carbon steel are used.
- The crankshaft is made of high-strength forged special steel.
- A cooling channel has been provided inside each piston ring groove in order to cool the piston with oil, thus improving its reliability.
- A ring groove insert has been provided in the top ring groove to ensure wear resistance, and the skirt has been coated to achieve its high scuffing resistance.



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