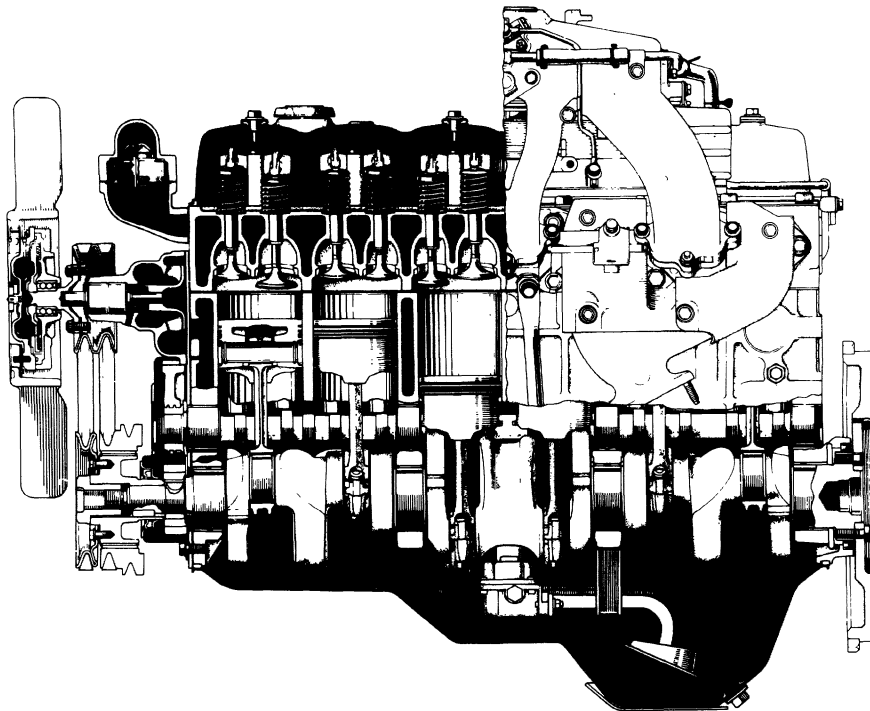
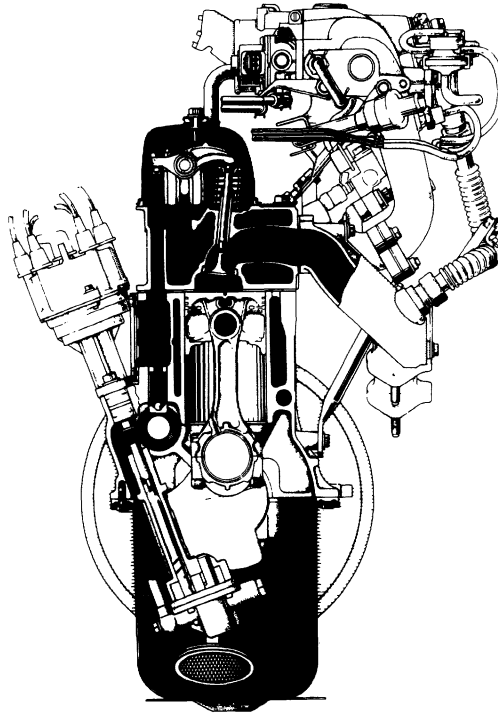


ENGINE MECHANICAL

DESCRIPTION

The 3F-E engine is an in-line 6-cylinder 4.0 liter OHV 12 valve engine.



The 3F-E engines are an in-line 6-cylinder engine with the cylinders numbered 1-2-3-4-5-6 from the front. The crankshaft is supported by 4 bearings specified by the inside of the crankcase.

The crankshaft is integrated with 9 weights which are cast along with it for balance. Oil holes are built into the center of the crankshaft for supplying oil to the connecting rods, pistons and other components. These engine's ignition order is 1-5-3-6-2-4. The cylinder head is made of case iron, with a counter-flow type intake and exhaust layout and with wedge type combustion chambers. The spark plugs are located in the right side of the combustion chambers. Exhaust and intake valves are equipped with irregular pitch springs which are capable of following the valves even at high engine speeds.

Each valve lifter is lifted up by the rotation of the camshaft so that valve is driven via a push rod and rocker arm.

The camshaft is located in the cylinder block. The camshaft is turned by the crankshaft by means of the timing gears. To rotate the camshaft once, the crankshaft must rotate twice because the camshaft timing gear has twice as many teeth as the crankshaft timing gear.

Pistons are made of high temperature-resistant aluminum alloy.

Piston pins are the full-floating type, with the pins fastened to neither the piston boss nor the connecting rods. Instead, snap rings are fitted on both ends of the pins, preventing the pins from falling out.

The No. 1 compression ring is made of steel and the No. 2 compression ring is made of cast iron. The oil ring is made of a combination of steel and stainless steel. The outer diameter of each piston ring is slightly larger than the diameter of the piston and the flexibility of the rings allows them to hug the cylinder walls when they are mounted on the piston. Compression rings No. 1 and No. 2 work to prevent the leakage of gas from the cylinder and the oil ring works to scrape oil off the cylinder walls to prevent it from entering the combustion chamber.

The cylinder block is made of cast iron. It has 6 cylinders which are approximately 1.6 times the length of the piston stroke. The top of the cylinders is closed off by the cylinder head and the lower end of the cylinders becomes the crankcase, in which the crankshaft is installed. In addition, the cylinder block contains a water jacket, through which coolant is pumped to cool the cylinders.

The oil pan is bolted onto the bottom of the cylinder block. The oil pan is an oil reservoir made of pressed steel sheet. A dividing plate is included inside the oil pan to keep sufficient oil in the bottom of the pan even when the vehicle is tilted. This dividing plate also prevents the oil from making waves when the vehicle is stopped suddenly and thus shifting the oil away from the oil pump suction pipe.