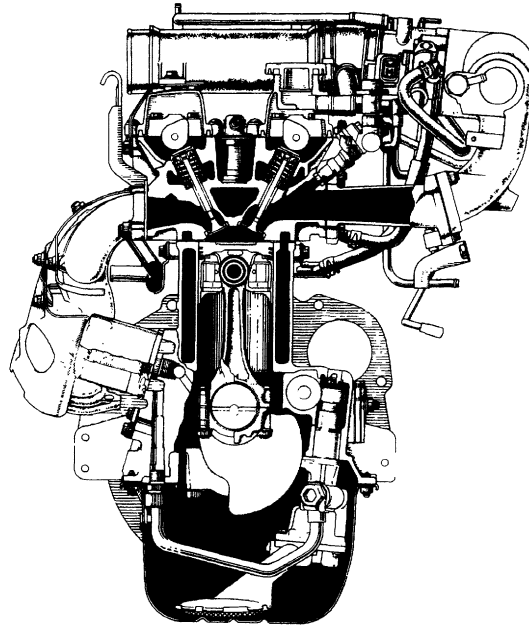
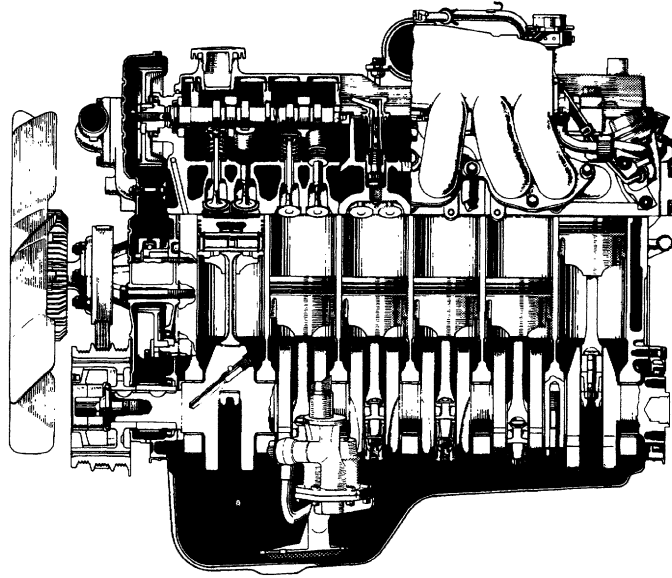

ENGINE MECHANICAL

DESCRIPTION

The 7M-GE engine is an in-line 6-cylinder 3.0 liter DOHC 24 valve engine.



The 7M-GE engine is an in-line 6-cylinder engine with the cylinders numbered 1-2-3-4-5-6 from the front. The crankshaft is supported by 7 bearings inside the crankcase. These bearings are made of kelmet.

The crankshaft is integrated with 12 weights which are cast with it for balance. Oil holes are built into the crankshaft for supplying oil to the connecting rods, pistons and other components. The engine's firing order is 1-5-3-6-2-4. The cylinder head is made of aluminum alloy, with a cross flow type intake and exhaust layout and with pent roof type combustion chambers. The spark plugs are located in the center of the combustion chambers.

Exhaust and intake valves are equipped with irregular pitch springs with symmetrical ends made of oil tempered silicon chrome steel wire which are capable of following the valves even at high engine speeds.

Both the exhaust side camshaft and the intake side camshaft are driven by a single timing belt. The cam journal is supported at 7 places between the valve lifters of each cylinder and on the cylinder head of front end. Lubrication of the cam journal and cam is accomplished by oil being supplied through the oiler port in the center of the camshaft. Adjustment of the valve clearance is done by means of an outer shim type system, in which valve adjusting shims are located above the valve lifters. This permits replacement of the shims without removal of the camshafts.

The resin timing belt cover is made of 2 pieces.

Pistons are made of high temperature-resistant aluminum alloy, and a depression is built into the piston head to prevent interference with valves. 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 stainless 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 gas leakage from the cylinder and the oil ring works to scrape oil off the cylinder walls to prevent it from entering the combustion chambers.

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 each cylinder 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 the oil shifts away from the oil pump suction pipe.