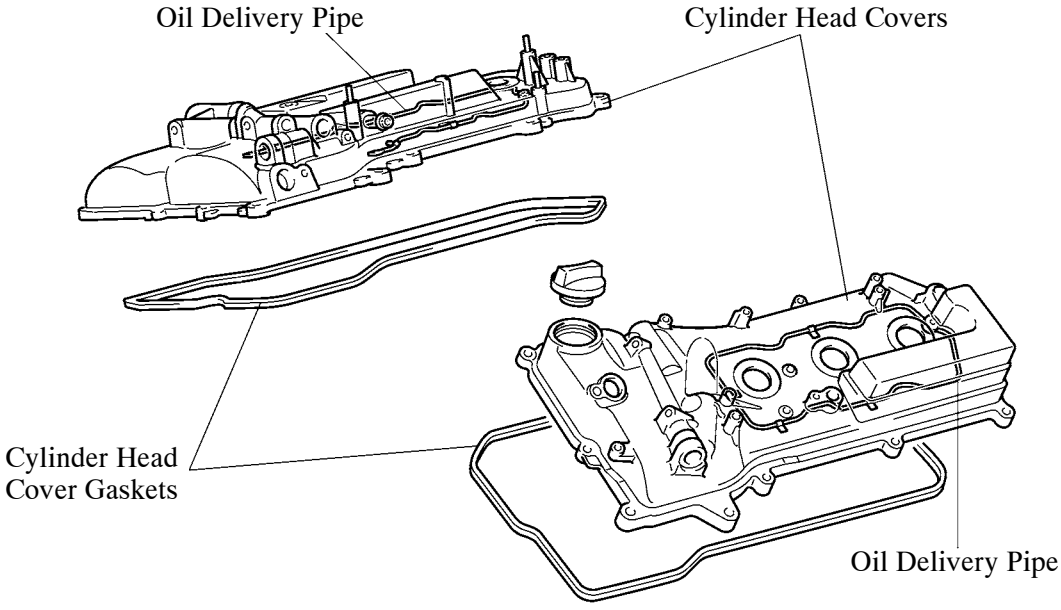
3. Engine Proper

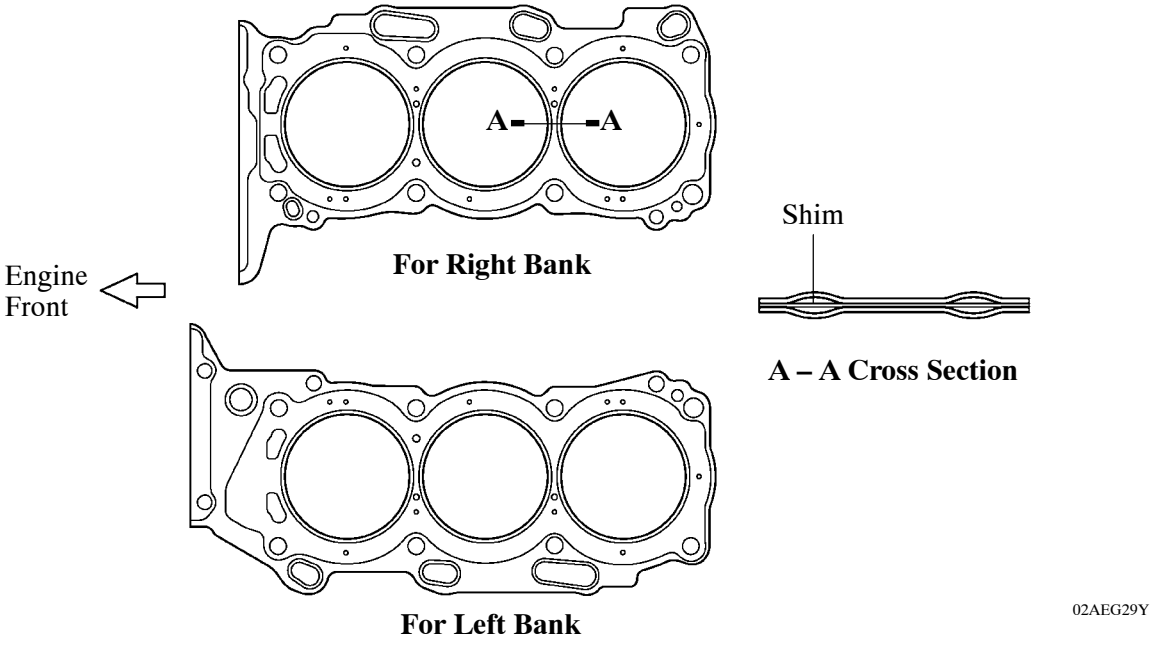
Cylinder Head Cover

- Lightweight yet high-strength aluminum cylinder head covers are used.
- An oil delivery pipe is installed inside the cylinder head cover. This ensures lubrication to the sliding parts of the roller rocker arm, improving reliability.



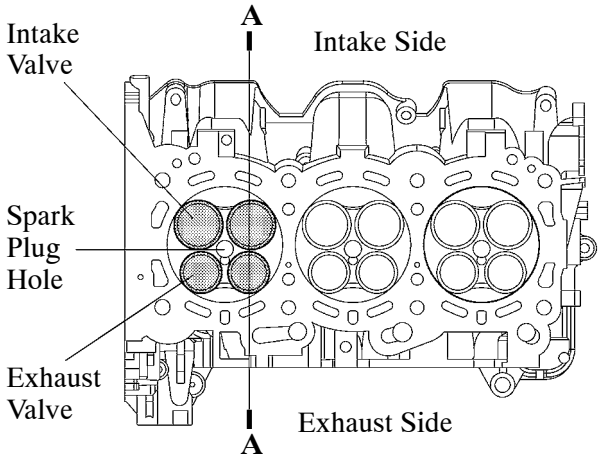
Cylinder Head Gasket

A steel-laminate type cylinder head gasket is used. A shim is used around the cylinder bore of the gasket to help enhance sealing performance and durability.

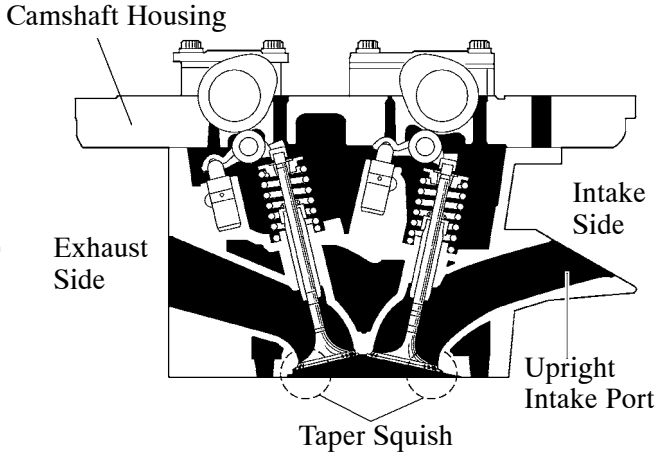


Cylinder Head

- The cylinder head structure has been simplified by separating the cam journal portion (camshaft housing) from the cylinder head.
- The cylinder head, which is made of aluminum, contains a pentroof-type combustion chamber. The spark plug is located in the center of the combustion chamber in order to improve the engine's anti-knocking performance.
- The intake ports are on the inside and the exhaust ports are on the outside of the left and right banks respectively.
- Upright intake ports are used to improve the intake efficiency.
- A taper squish combustion chamber is used to improve anti-knocking performance and intake efficiency. In addition, engine performance and fuel economy have been improved.
- The siamese type intake port is used to reduce the overall surface area of the intake port walls. This prevents the fuel from adhering onto the intake port walls, thus reducing HC exhaust emissions.

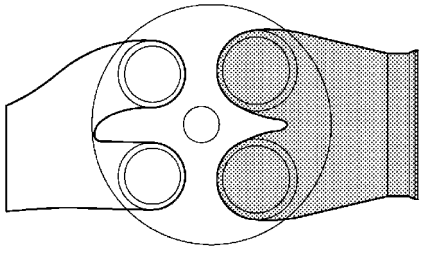


View from Back Side

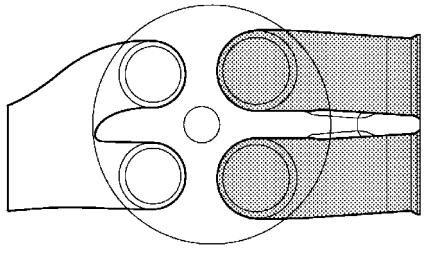


A – A Cross Section

— REFERENCE —



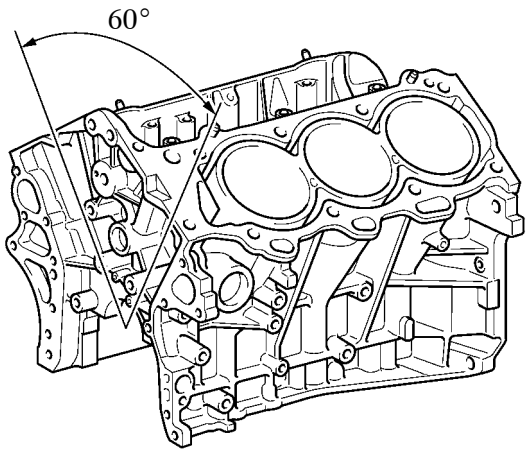
Siamese Type



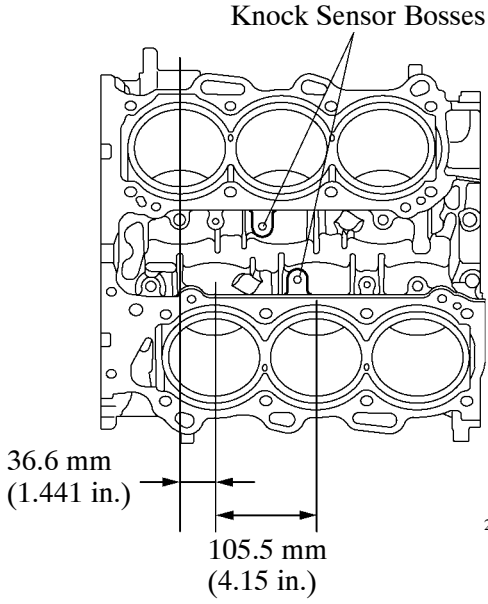
Independent Type

Cylinder Block

- The cylinder block is made of aluminum alloy, so it is lightweight.
- The cylinder block has a bank angle of 60° , a bank offset of 36.6 mm (1.441 in.) and a bore pitch of 105.5 mm (4.15 in.), resulting in a compact block in its length and width even for its displacement.
- Installation bosses of the two knock sensors are located on the inside of left and right banks.



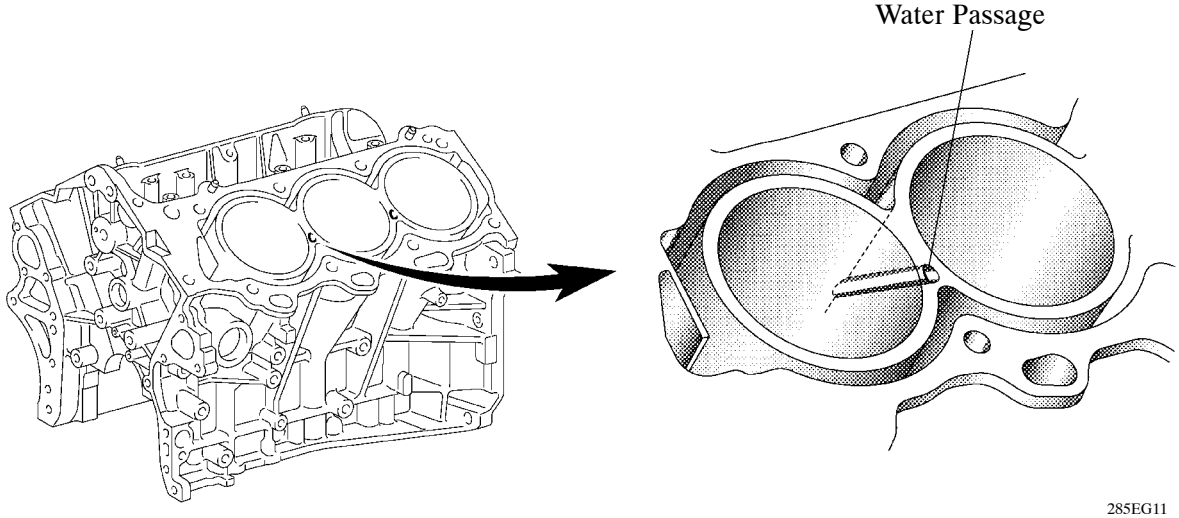
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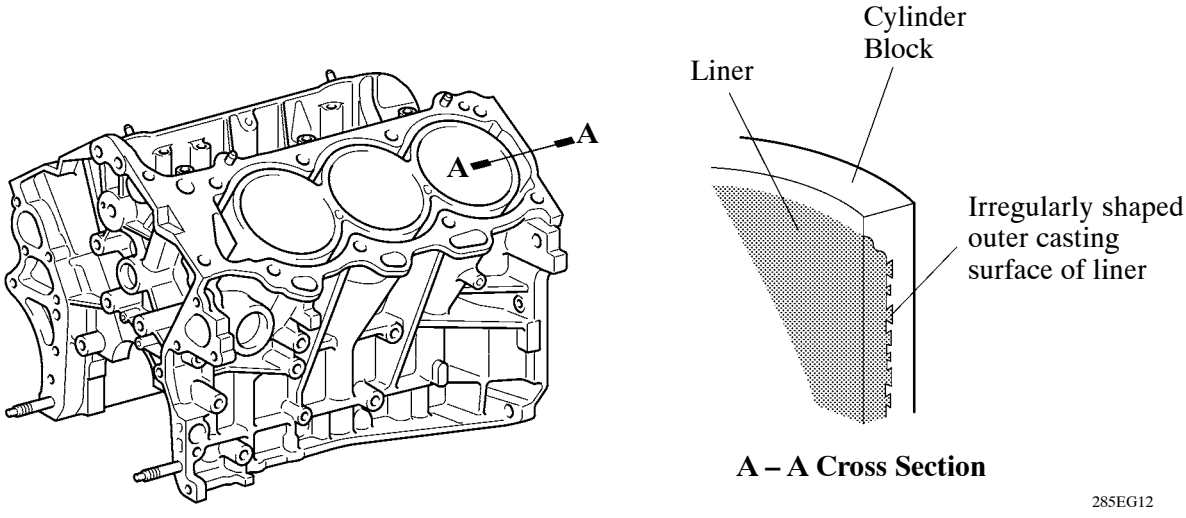
View from Top Side

- A water passage has been provided between the cylinder bores. By allowing the water to flow between the cylinder bores, this construction enables the temperature of the cylinder walls to be kept uniform.



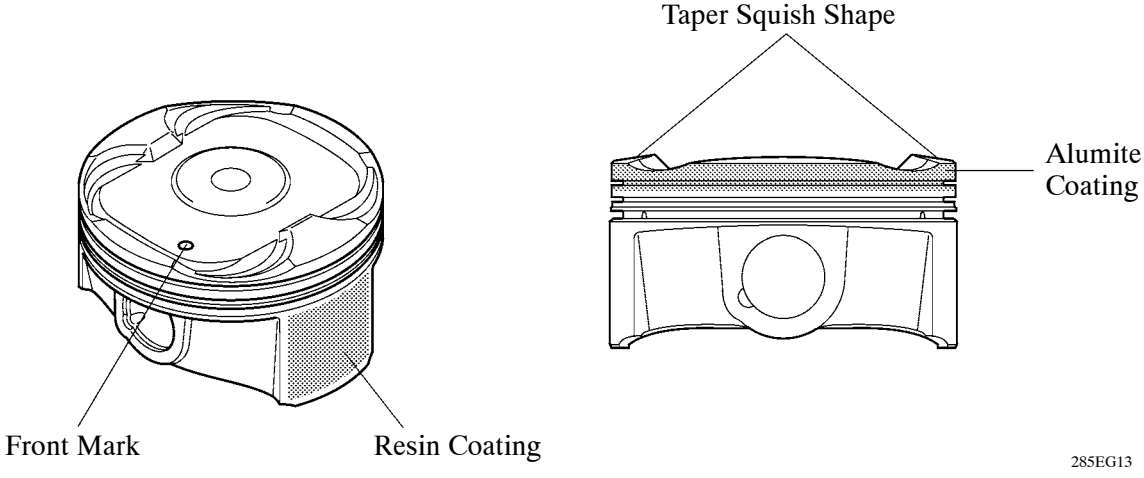
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- A compact block has been achieved by producing the thin cast-iron liners and cylinder block as a unit. It is not possible to bore the block with this liner.
- The liners are the spiny-type, which have been manufactured so that their casting exteriors form large irregular surfaces in order to enhance the adhesion between the liners and the aluminum cylinder block. The enhanced adhesion helps improve heat dissipation, resulting in a lower overall temperature and reduced heat deformation of the cylinder bores.



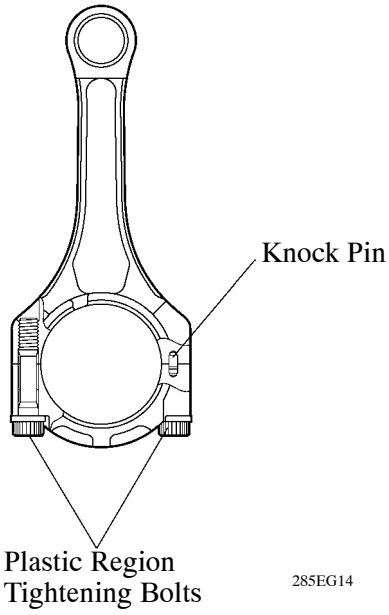
Piston

- The piston is made of aluminum alloy.
- The piston head portion uses a taper squish shape to accomplish fuel combustion efficiency.
- The piston skirt is coated with resin to reduce the friction loss.
- The groove of the top ring is coated with alumite to ensure wear resistance.
- By increasing the machining precision of the cylinder bore diameter, the outer diameter of the piston is made into one size.



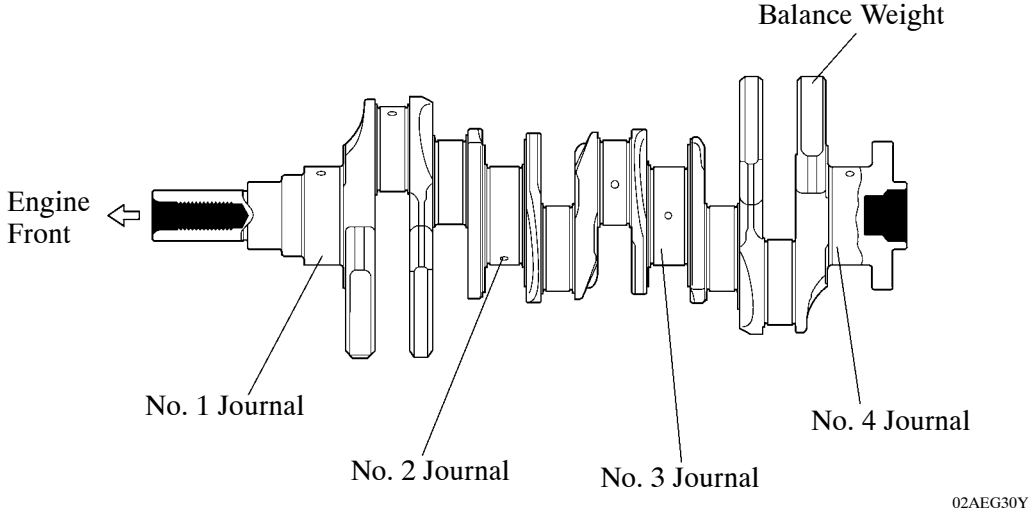
Connecting Rod and Connecting Rod Bearing

- Connecting rods that have been forged for high strength are used for weight reduction.
- Knock pins are used at the mating surfaces of the bearing caps of the connecting rod to minimize the shifting of the bearing caps during assembly.
- The connecting rods and caps are made of high-strength steel for weight reduction.
- Nutless-type plastic region tightening bolts are used on the connecting rods for a lighter design.
- An aluminum bearing is used for the connecting rod bearings.
- The connecting rod bearings are reduced in width to reduce friction.



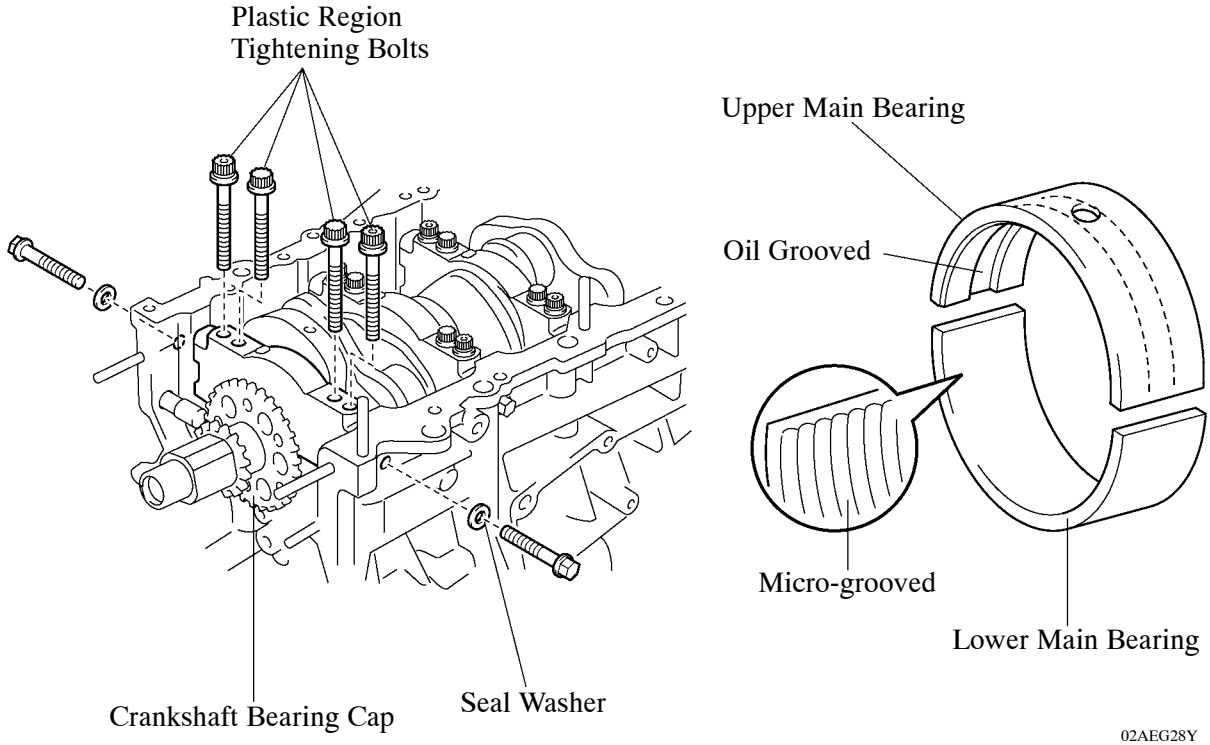
Crankshaft

- A crankshaft made of forged steel, which excels in rigidity and wear resistance, is used.
- The crankshaft has 4 journals and 5 balance weights.
- All pins and journal fillets are IH-finished to maintain adequate strength.



Crankshaft Bearing and Crankshaft Bearing Cap

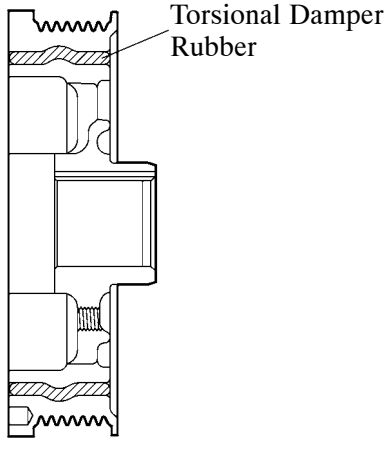
- The crankshaft bearing is made of aluminum alloy.
- The upper main bearing has an oil groove around its inside circumference.
- The lining surface of the crankshaft bearing has been micro-grooved to realize an optimal amount of oil clearance. As a result, cold-engine cranking performance has been improved and engine vibration have been reduced.
- The crankshaft bearing caps are tightened using 4 plastic region tightening bolts for each journal. In addition, each cap is tightened laterally to improve its reliability.



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Crankshaft Pulley

The rigidity of the crankshaft pulley with its built-in torsional damper rubber reduces noise.



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Oil Pan

- The oil pan No. 1 is made of aluminum alloy.
- The oil pan No. 2 is made of steel.
- The oil pan No. 1 is secured to the cylinder block and the transmission housing, increasing rigidity.
- The oil filter case is integrated with the oil pan No. 1.

