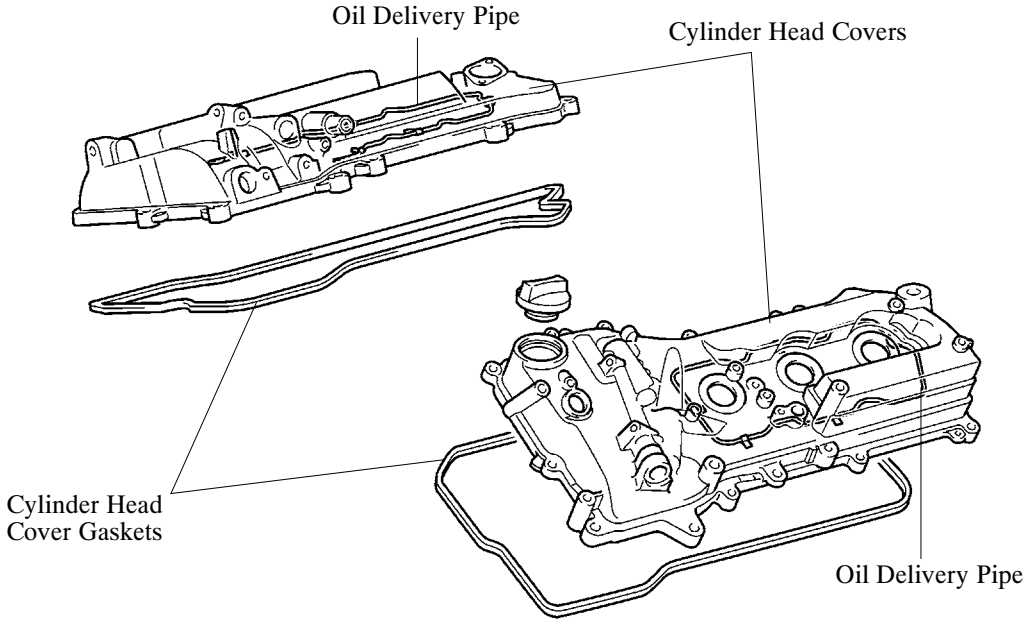
■ENGINE PROPER

1. 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 arms, improving reliability.



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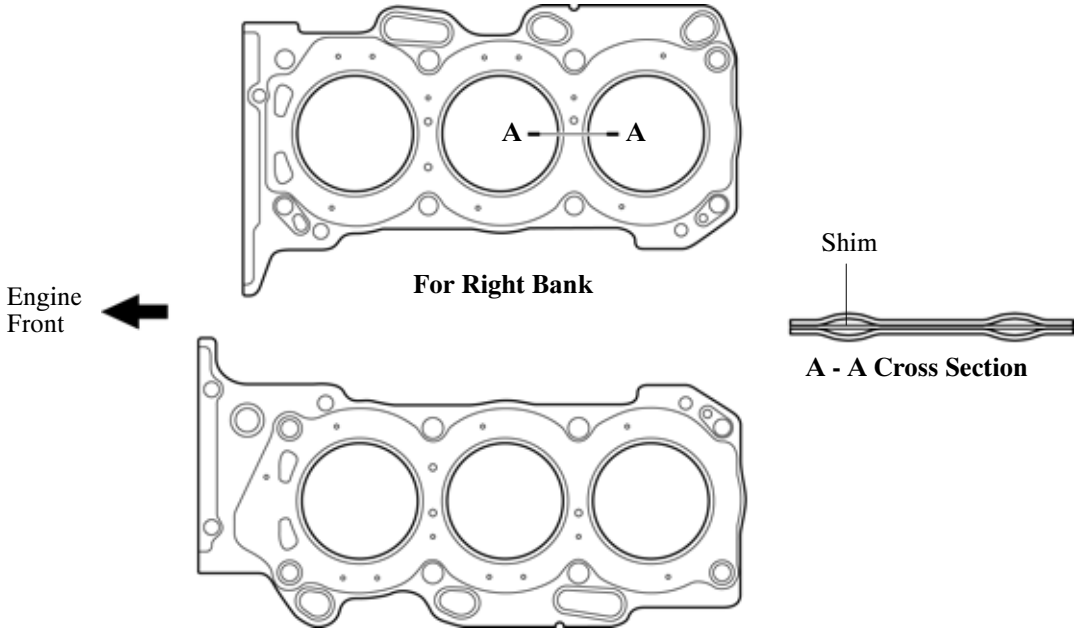
2. Cylinder Head Gasket

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.



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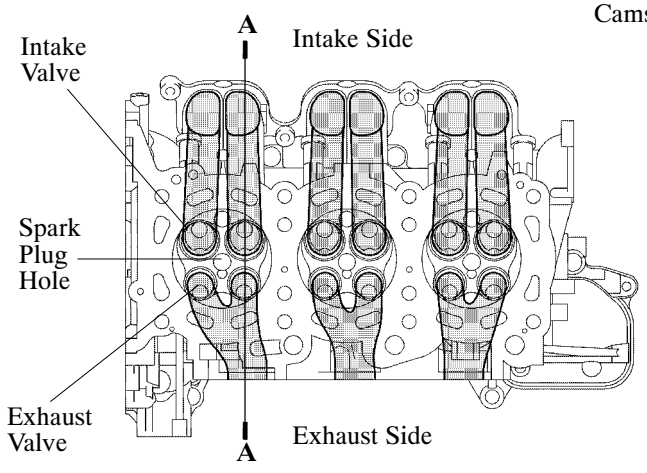
3. Cylinder Head

- 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.
- A taper squish combustion chamber is used to improve anti-knocking performance and intake efficiency. In addition, engine performance and fuel economy are improved.
- The port configuration is an efficient cross-flow type in which the intake ports face the inside of the V bank and the exhaust ports face the outside. The intake ports for each intake valve are independent, and feature a narrow-diameter construction. The exhaust ports have a Siamese construction to enhance low- to medium-speed torque.
- Upright intake ports are used to improve the intake efficiency.



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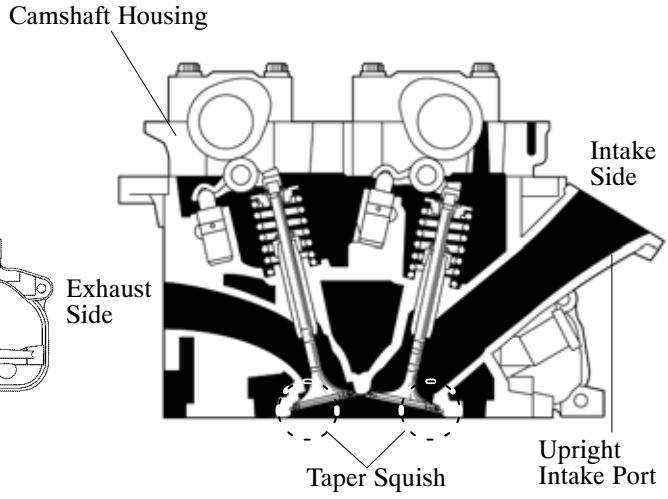
View from bottom Side



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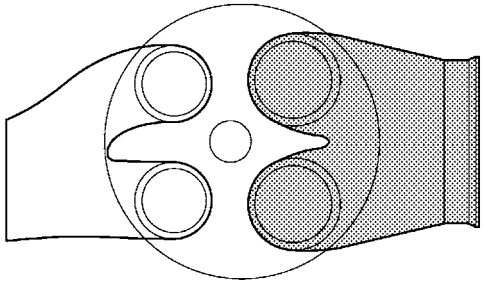
A - A Cross Section

— REFERENCE —

Siamese Type



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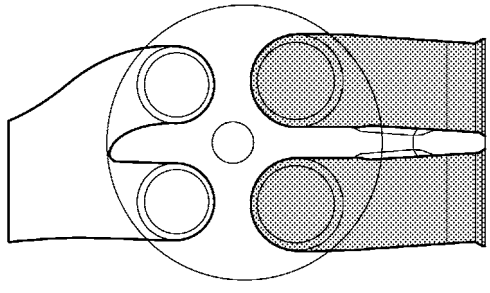
Independent Type



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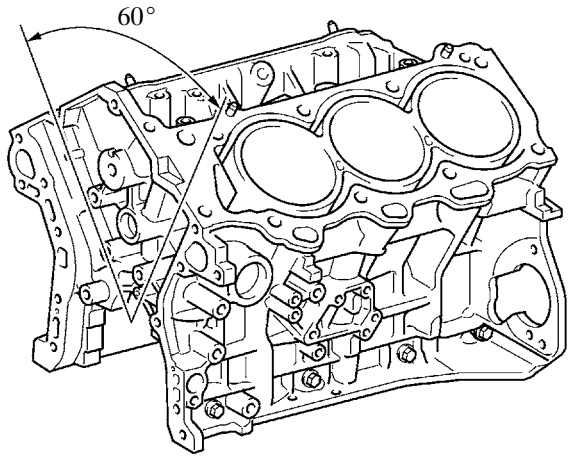
4. Cylinder Block

- 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 (length and width) for its displacement.
- Installation bosses of the two knock sensors are located on the inner side of left and right banks.



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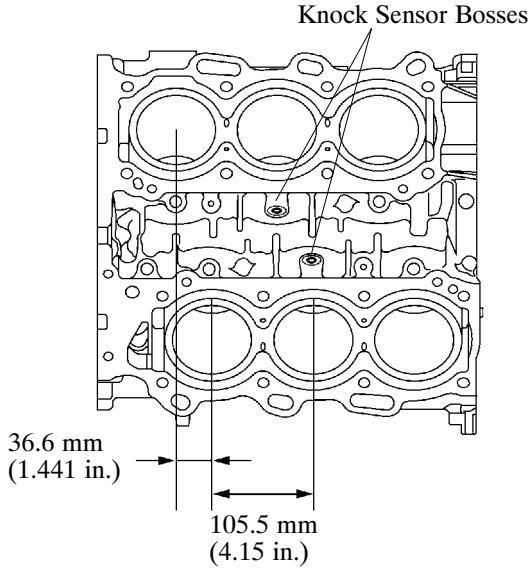

View from Top Side

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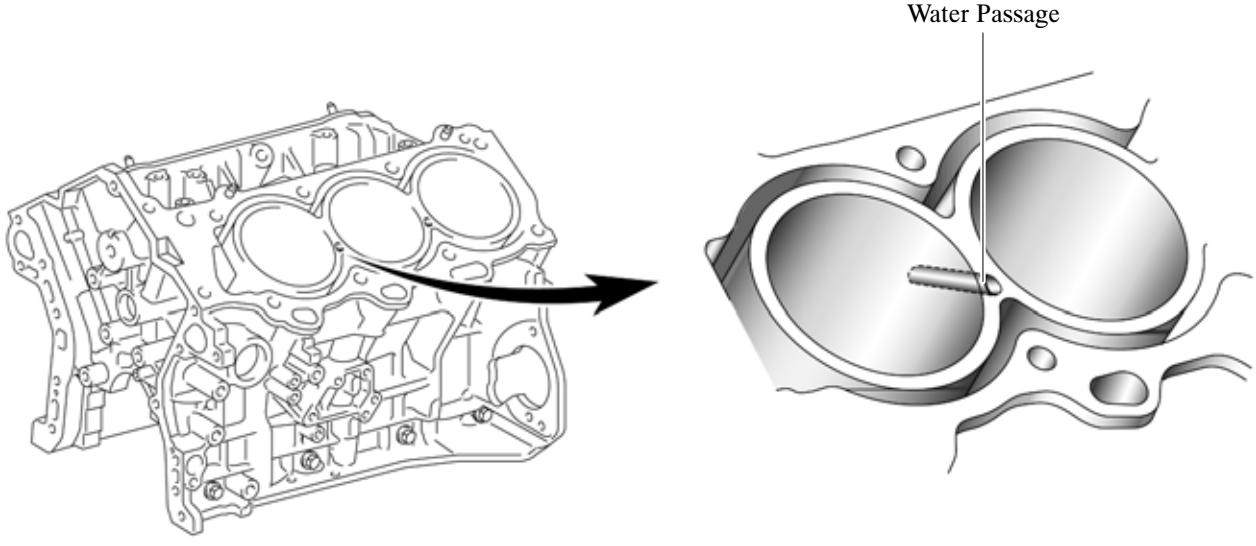
- A water passage has been provided between the cylinder bores. By allowing the engine coolant to flow between the cylinder bores, this construction enables the temperature of the cylinder walls to be kept uniform.



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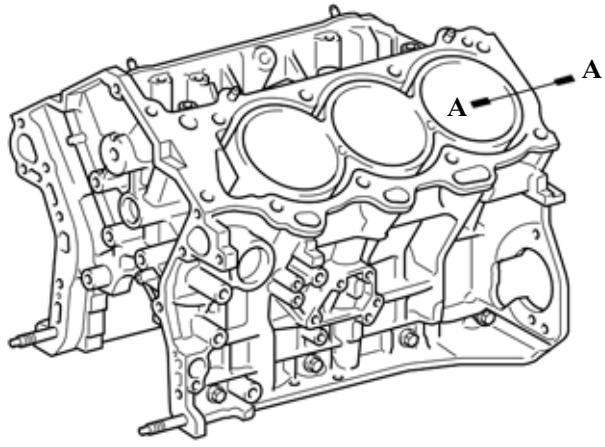
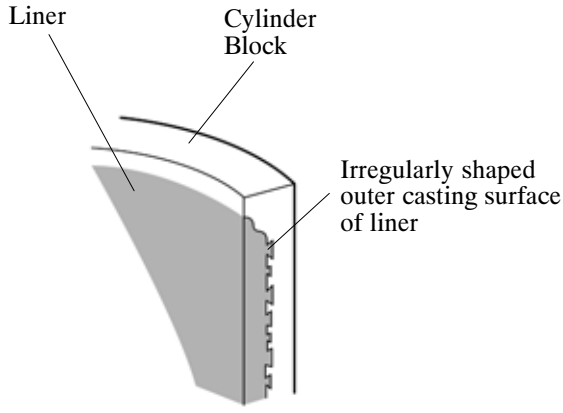
- A compact block has been achieved by producing the thin cast-iron liners and cylinder block as a unit. It is not possible to bore a block which uses this type of liner.
- The liners are a spiny-type, which have been manufactured so that their casting exterior forms a large irregular surface in order 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.





A - A Cross Section

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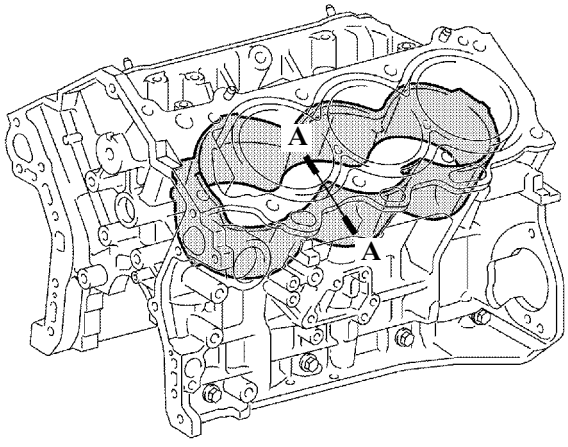
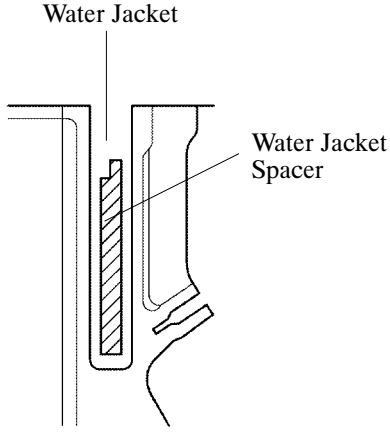
- Water jacket spacers are used in the water jackets of the cylinder block.
- They suppress the water flow in the center of the water jackets, guide the coolant above and below the cylinder bores, and ensure uniform temperature distribution. As a result, the viscosity of the engine oil that acts as a lubricant between the bore walls and the pistons can be lowered, thus reducing friction.





A - A Cross Section

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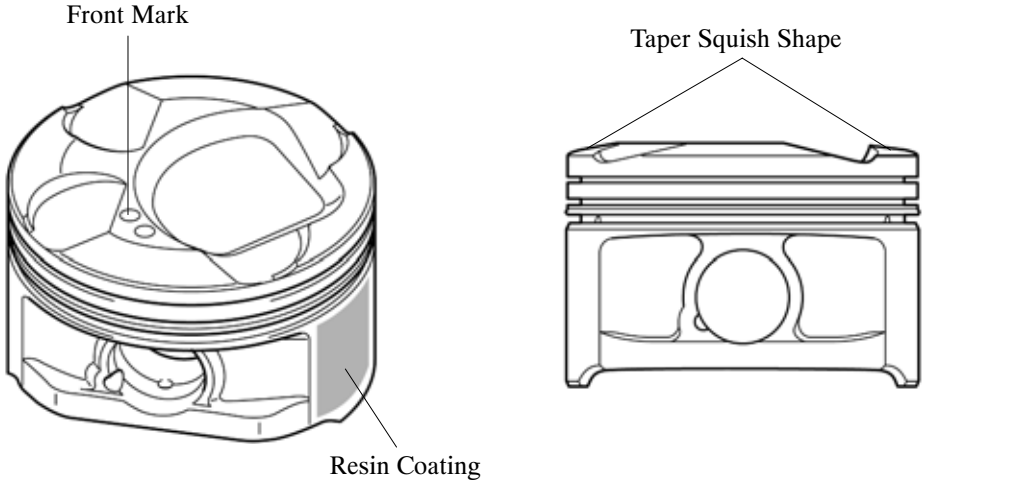
5. Piston

- The pistons are made of aluminum alloy.
- A compact combustion chamber is provided on top of the piston to realize stable combustion. Together with the pentroof type combustion chamber of the cylinder head, this realizes a high compression ratio, resulting in both high performance and excellent fuel economy.
- The piston skirt is coated with resin to reduce friction losses.
- By increasing the machining precision of the cylinder bore diameter in the block, only one size piston is required.



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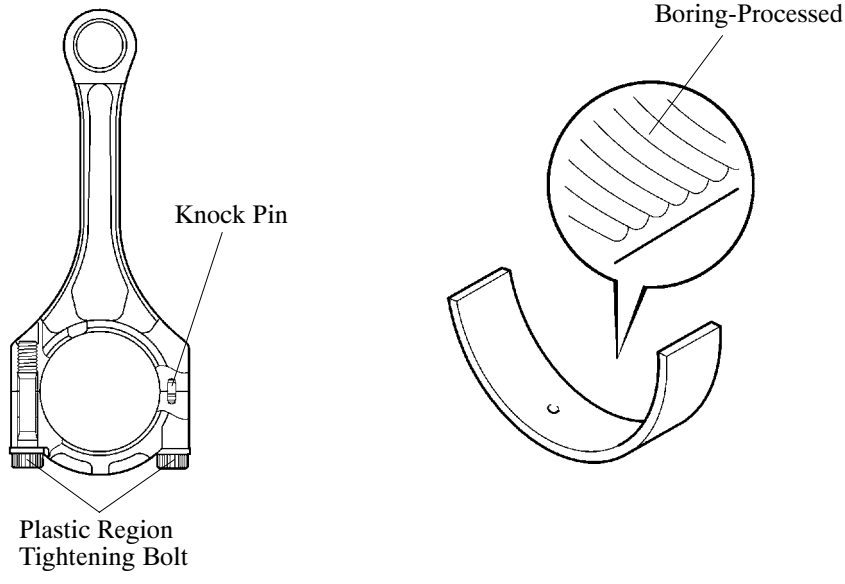
6. Connecting Rod and Connecting Rod Bearing

- 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 sinter forging metal 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.
- The lining surface of the connecting rod bearing is micro-grooved to realize an optimal amount of oil clearance. As a result, cold-engine cranking performance is improved and engine vibration is reduced.



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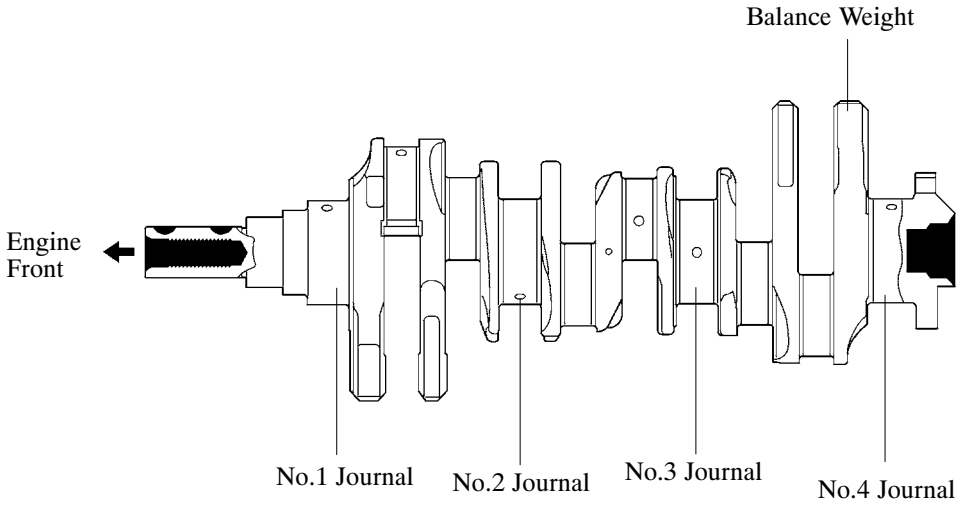
7. Crankshaft

- A crankshaft made of forged steel, which excels in rigidity and wear resistance, is used.
- The crankshaft has 4 main bearing journals and 5 balance weights.



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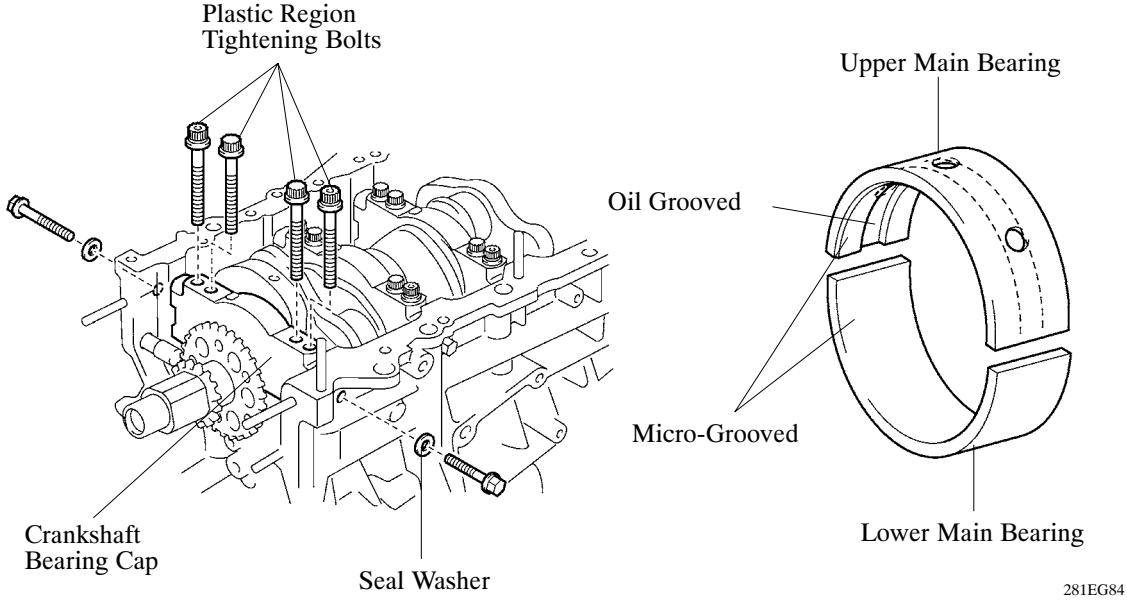
8. Crankshaft Bearing and Crankshaft Bearing Cap

- The crankshaft main bearings are made of aluminum alloy.
- Similar to the connecting rod bearings, the lining surface of the crankshaft bearings is micro-grooved to realize an optimal amount of oil clearance. As a result, cold-engine cranking performance is improved and engine vibration is reduced.
- The upper main bearing has an oil groove around its inside circumference.
- 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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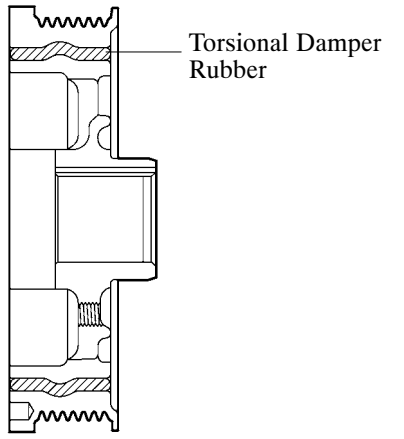
9. Crankshaft Pulley

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



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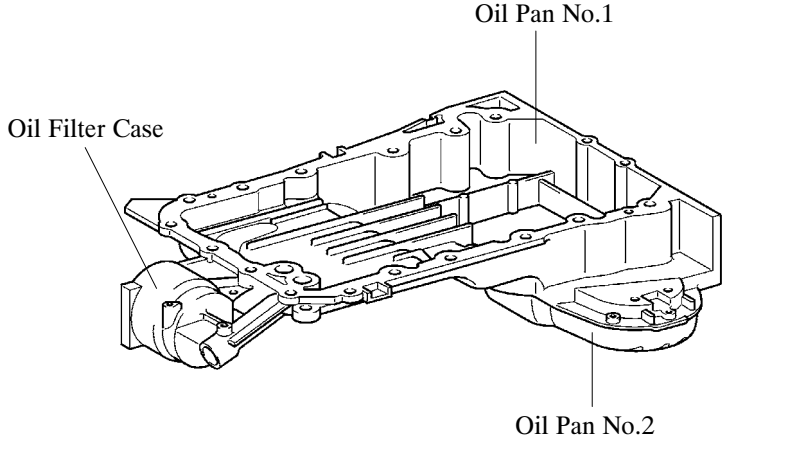
10. Oil Pan

- 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 to increase rigidity.
- The oil filter case is integrated with the oil pan No.1.



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