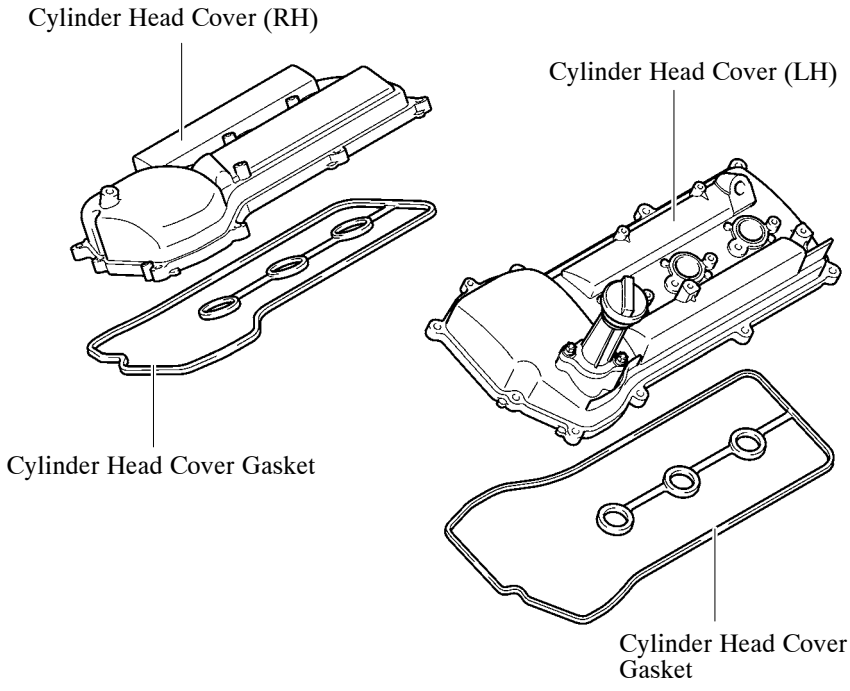
■ENGINE PROPER

1. Cylinder Head Cover

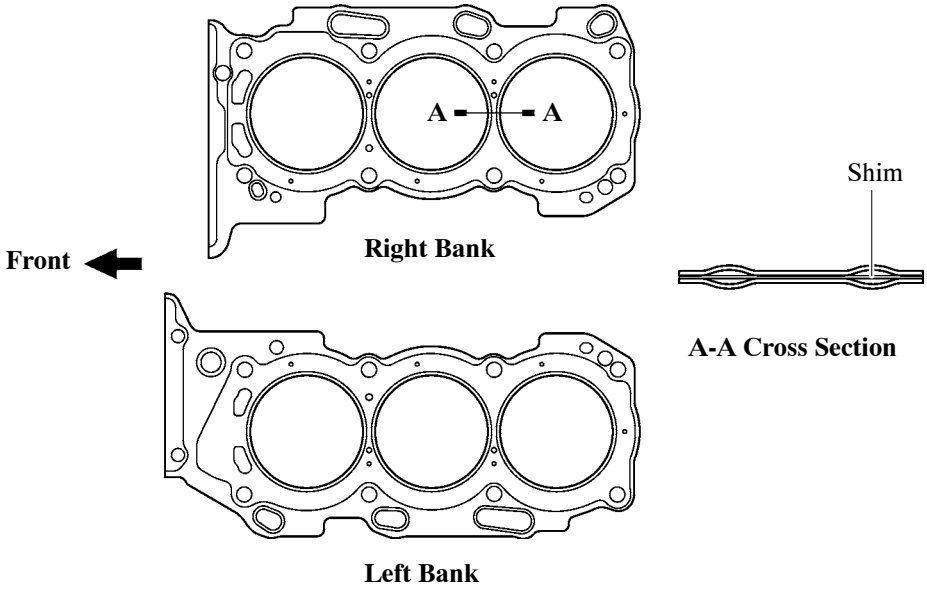
- Lightweight yet high-strength aluminum cylinder head covers are used.
- An oil filler extension housing is provided on the left bank cylinder head cover for use when filling the engine oil to improve serviceability.



238EG05

2. Cylinder Head Gasket

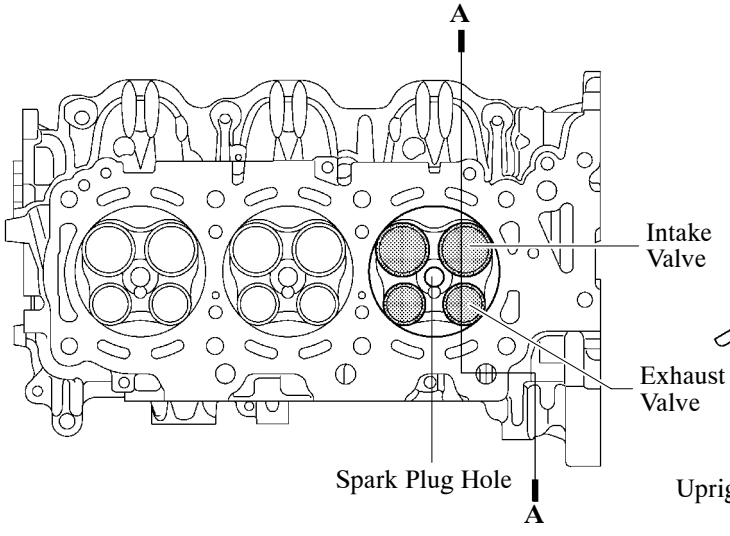
Steel-laminate type cylinder head gaskets are used. Shims are used around the cylinder bores of these gaskets. This improves sealing performance and durability.



0240EG40C

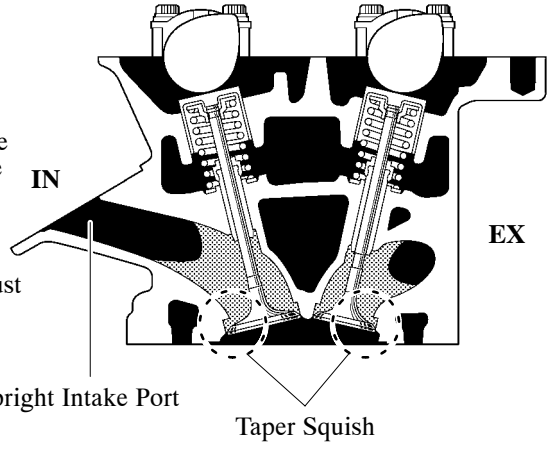
3. Cylinder Head

- 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 are improved.
- Siamese type intake ports are used to reduce the overall surface area of the intake port walls. This prevents the fuel from adhering to the intake port walls, thus reducing HC exhaust emissions.



238EG08

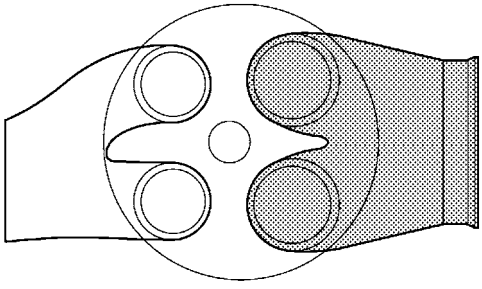
View from Back Side



238EG07

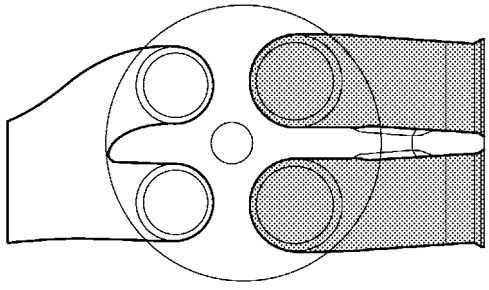
A-A Cross Section

— REFERENCE —



Siamese Type

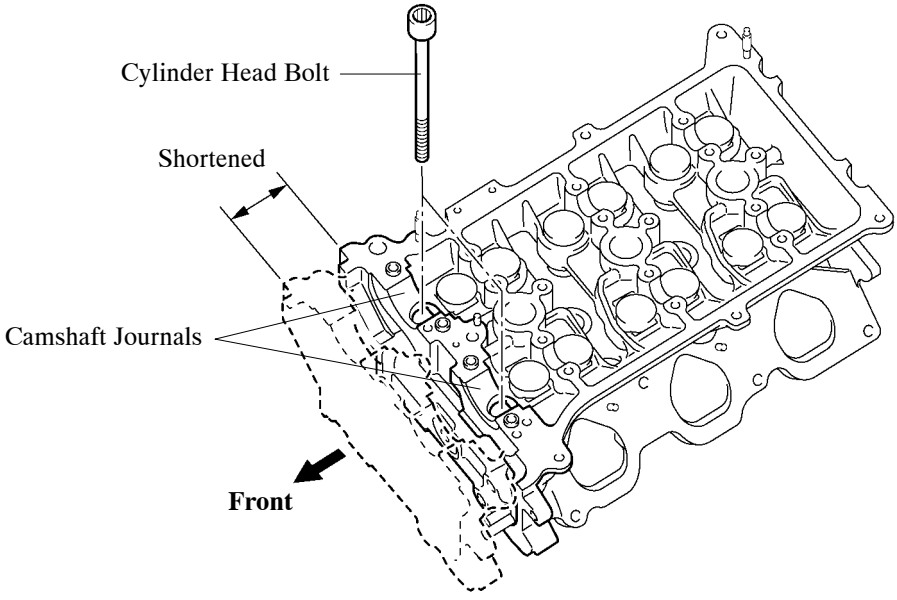
215EG18



Independent Type

215EG19

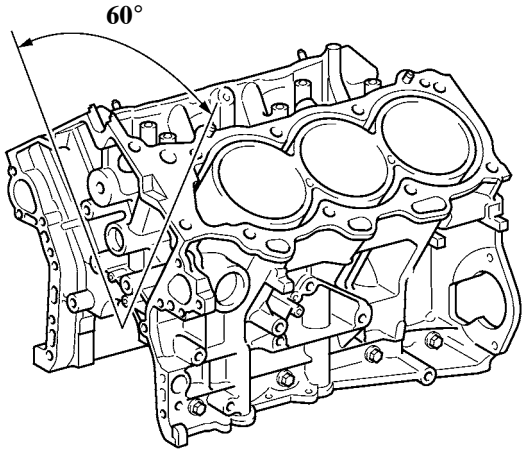
- The cylinder head bolts are positioned below the camshaft journal in the front of the right bank, and holes are provided in the camshaft journals to allow installation of the bolts. Thus, the front end of the right bank is shortened, resulting in the overall length of the engine being shorter.

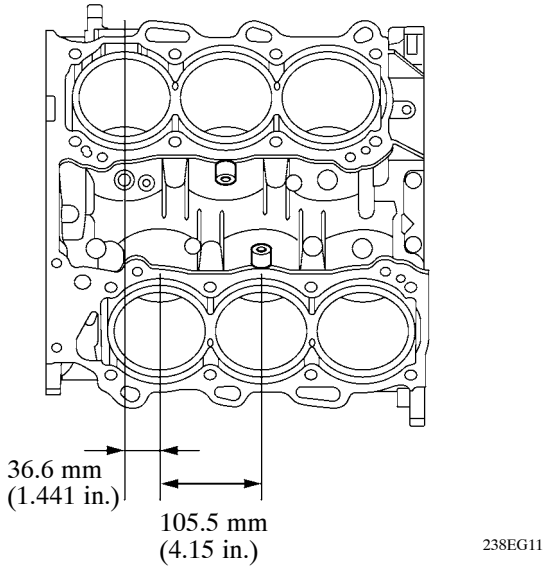


Right Bank Cylinder Head

4. Cylinder Block

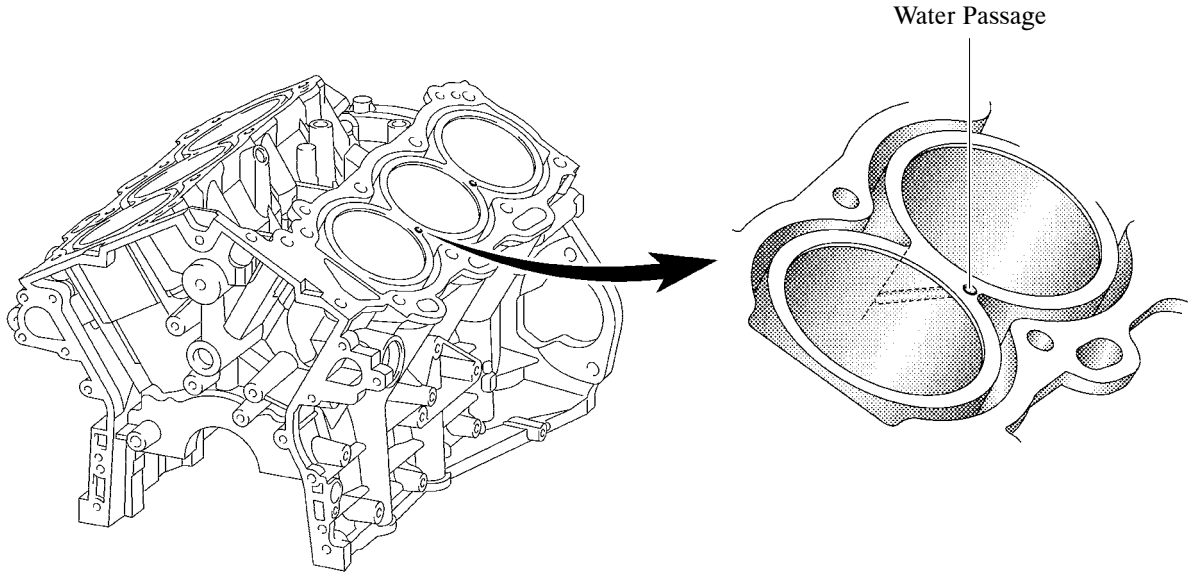
- The cylinder block is made of aluminum alloy.
- The cylinder block has a bank angle of 60°, a bank offset of 36.6 mm (1.441 in.) and a bore pitch of 105.5 mm (4.15 in.), resulting in a compact block in its length and width considering its displacement.





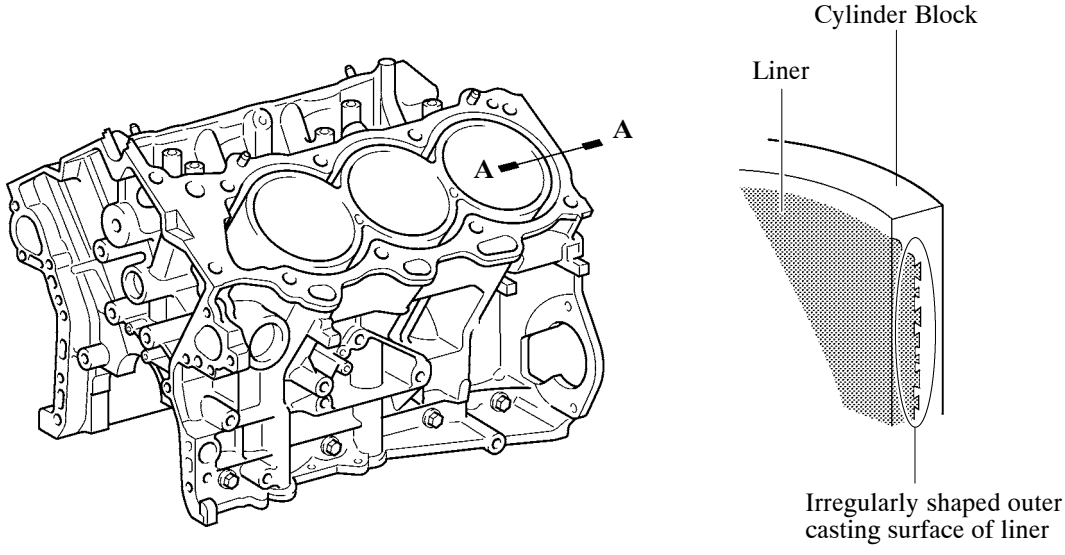
View of Top Side

- A water passage is 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.



238EG12

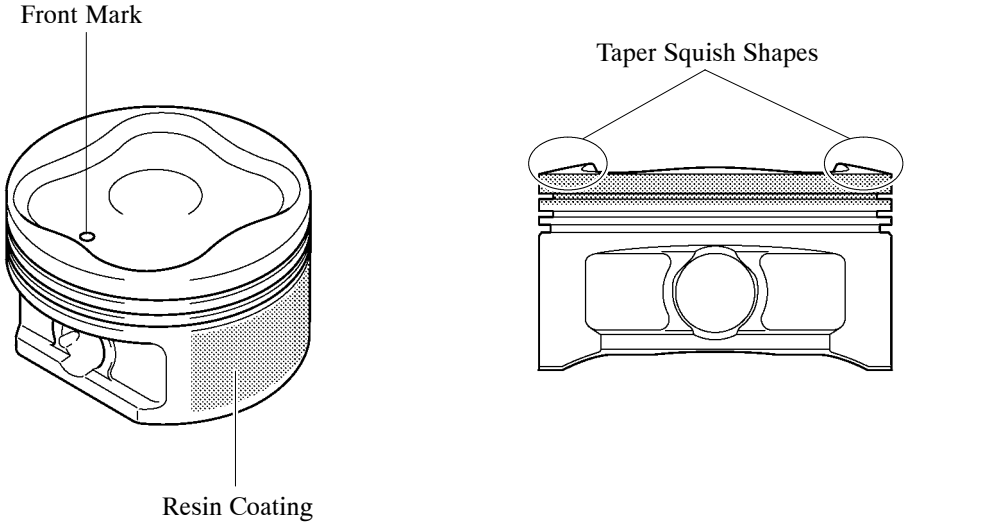
- A compact block is achieved by producing the thin cast-iron liners and cylinder block as a unit. It is not possible to bore a block with this type of liner.
- The liners are a spiny-type, which have been manufactured so that their casting exterior forms a large irregular surface in order to enhance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



238EG13

5. Piston

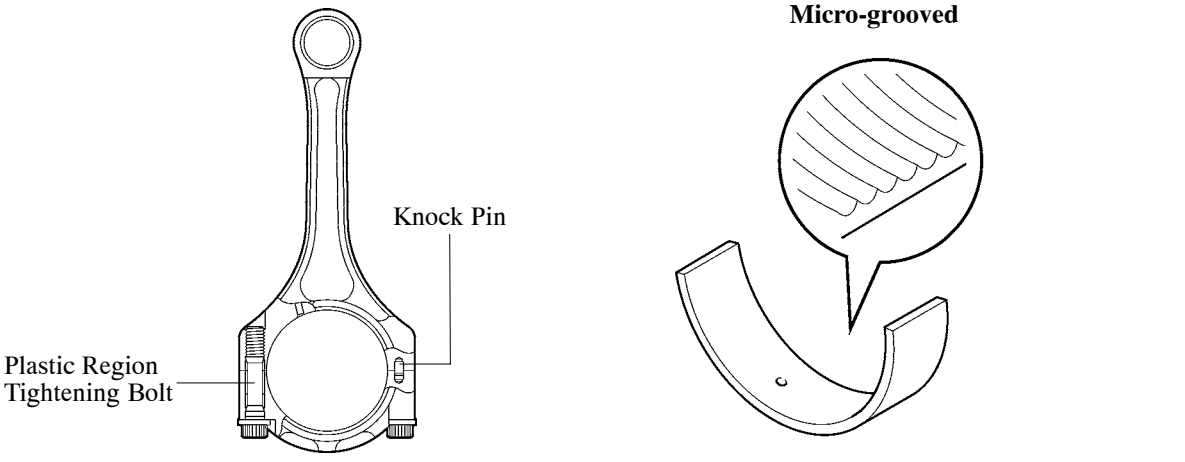
- The pistons are made of aluminum alloy.
- The piston head portion uses a taper squish shape to accomplish fuel combustion efficiency.
- The piston skirt is coated with resin to reduce friction losses.
- The groove of the top ring is coated with anodic oxide to improve wear resistance and corrosion resistance.
- This piston is common to all cylinders. Therefore, the pistons are not shaped especially for the right or the left bank. As a result, serviceability has been improved.
- By increasing the machining precision of the cylinder bore diameter, only one size piston is required.



238EG14

6. Connecting Rod and Connecting Rod Bearing

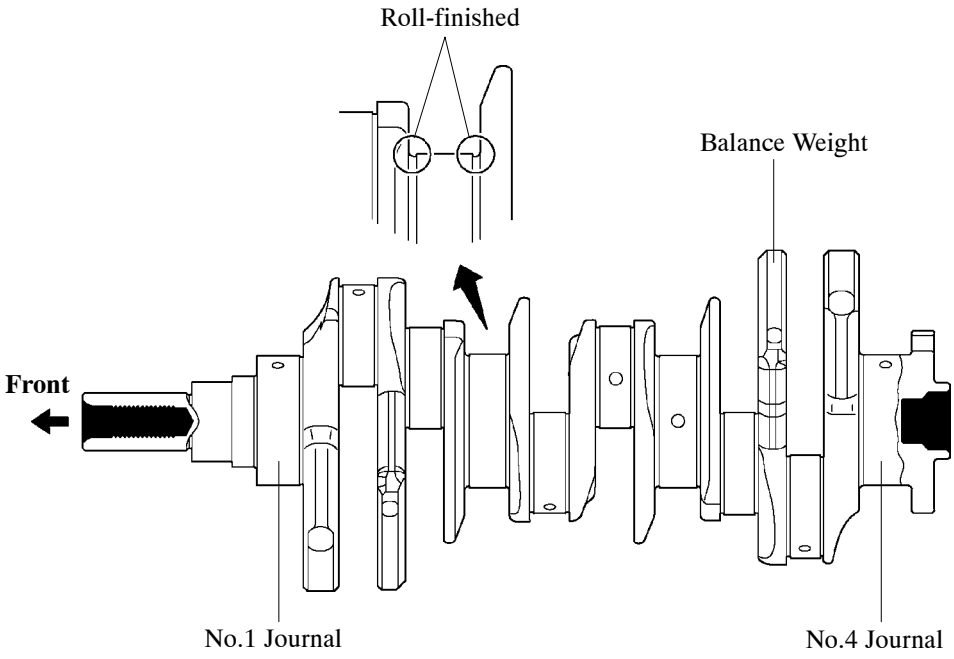
- Connecting rods that are forged for high strength are used for weight reduction.
- Knock pins are used at the mating surfaces of the bearing caps of the connecting rod to minimize the shifting of the bearing caps during assembly.
- Plastic region tightening bolts are used.
- Aluminum bearings are used for the connecting rod bearings.
- 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.



0240EG39C

7. Crankshaft

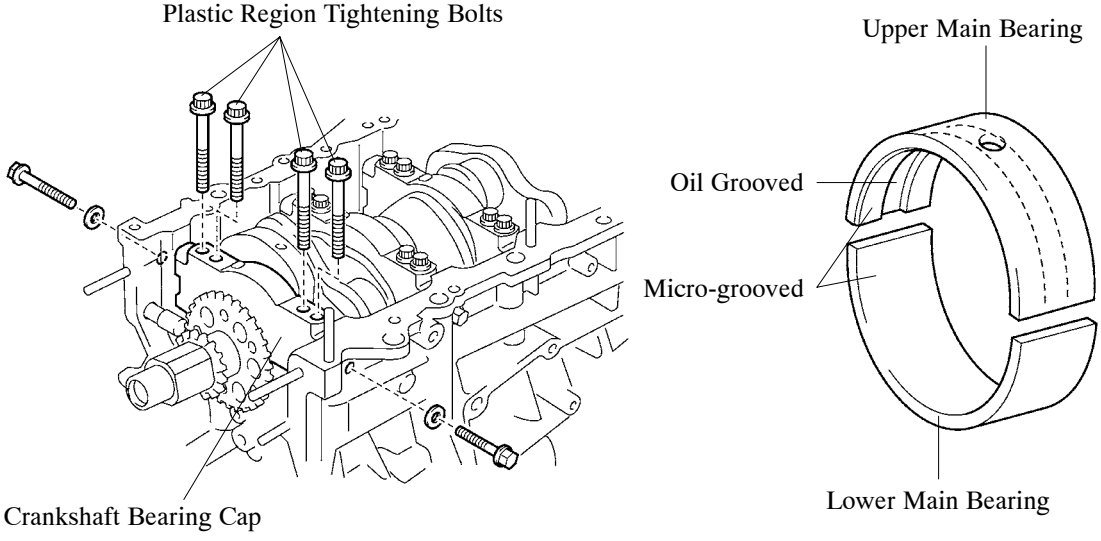
- A crankshaft made of steel, which excels in rigidity and wear resistance, is used.
- The crankshaft has 4 main bearing journals and 9 balance weights.
- All pin and journal fillets are roll-finished to maintain adequate strength.



0240EG01C

8. Crankshaft Bearing and Crankshaft Bearing Cap

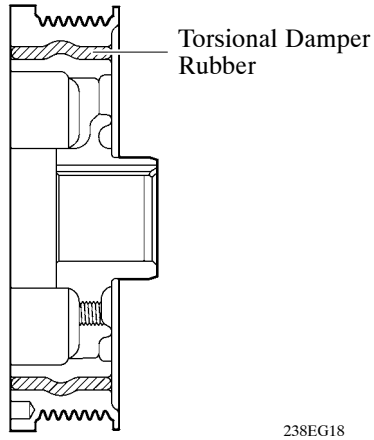
- The crankshaft main bearings are made of aluminum alloy.
- Similar to the connecting rod bearings, the lining surface of the crankshaft bearings is micro-grooved to realize an optimal amount of oil clearance. As a result, cold-engine cranking performance is improved and engine vibration is reduced.
- 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.



238EG17

9. Crankshaft Pulley

The rigidity of the torsional damper rubber is optimized to reduce noise.



10. Oil Pan

- The oil pan No.1 material is made of aluminum alloy.
- The oil pan No.2 material is made of steel.
- An oil passage is integrated in the oil pan No.1 to simplify the construction of the oil strainer.
- The oil pan No.1 is secured to the cylinder block and the torque converter housing and is increasing rigidity.

