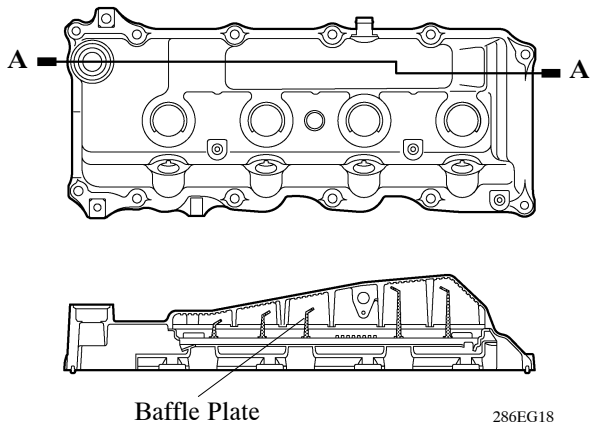
■ ENGINE PROPER

1. Cylinder Head Cover

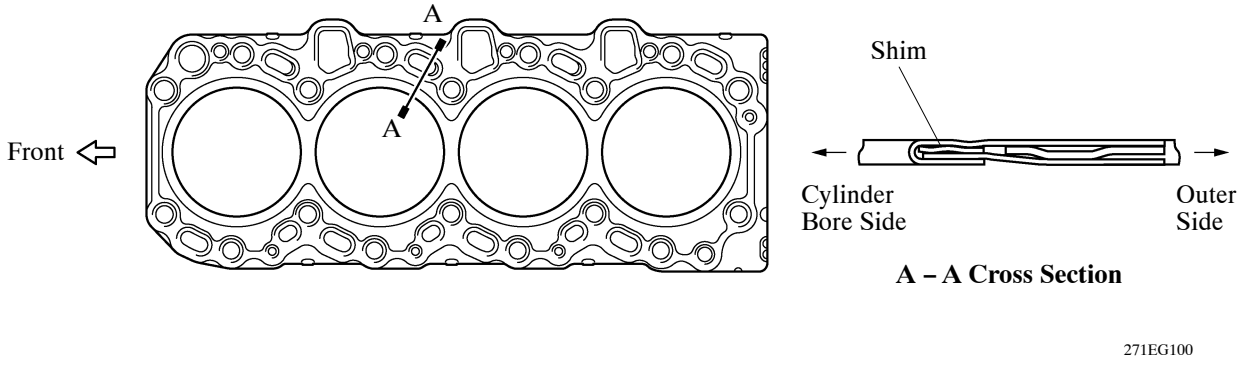
- The cylinder head cover is made of plastic to reduce weight and noise.
- A baffle plate is provided on the inside of the cylinder head cover to reduce the consumption of engine oil through blow-by gas.



A – A Cross Section

2. Cylinder Head Gasket

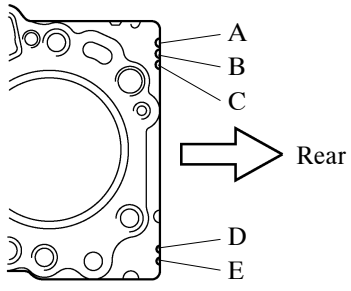
- A steel-laminate type cylinder head gasket is used.
- A shim has been added around the cylinder bore to increase the sealing surface, thus realizing excellent sealing performance.



A – A Cross Section

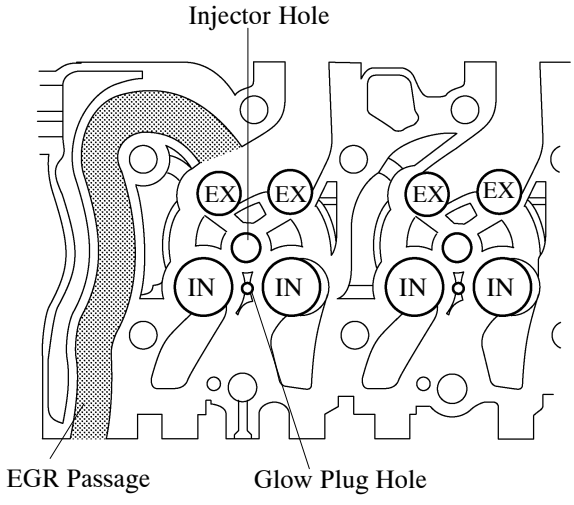
Service Tip

There are 5 sizes of cylinder head gaskets, marked “A”, “B”, “C”, “D”, or “E” according to piston protrusion. For details, refer to the Hiace Repair Manual (Pub. No. RM1171E).



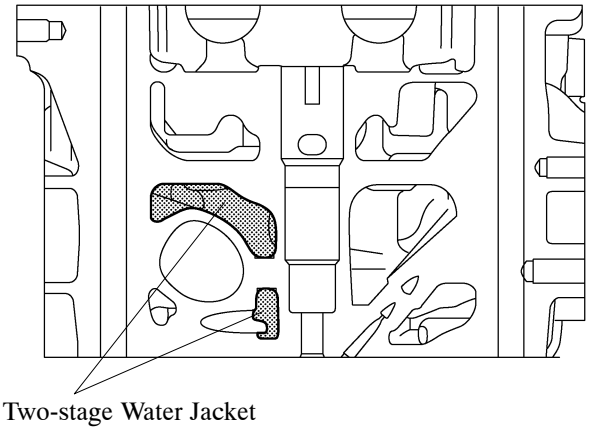
3. Cylinder Head

- The cylinder head is made of aluminum alloy. An injector has been located in the center of the combustion chamber in order to improve engine performance and clean emission.
- Two intake ports with different shapes have been combined to promote the mixture of fuel and air by optimizing the swirl in the cylinder.
- A vertical two-stage construction is used for the water jacket to improve cooling performance.
- A glow plug is placed between the intake ports of each cylinder to ensure startability.
- For models with EGR, the passage for the EGR is provided in the cylinder head. By cooling the exhaust gas, this makes it possible to re-circulate the great amount of exhaust gas.
- Plastic region tightening bolts are used for the cylinder head.



with EGR System

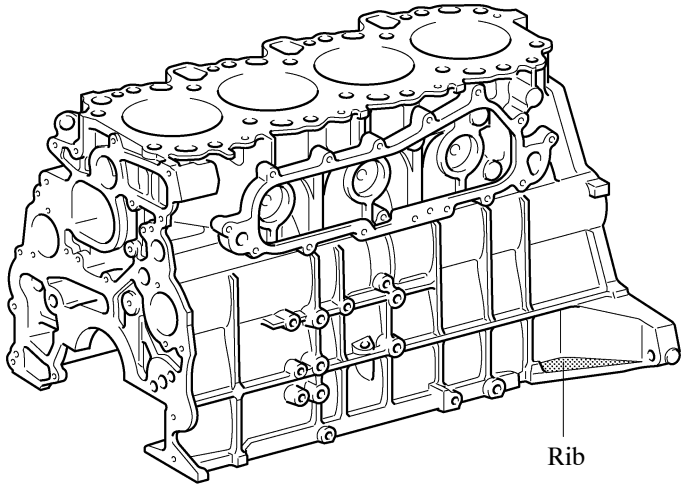
195EG42



286EG60

4. Cylinder Block

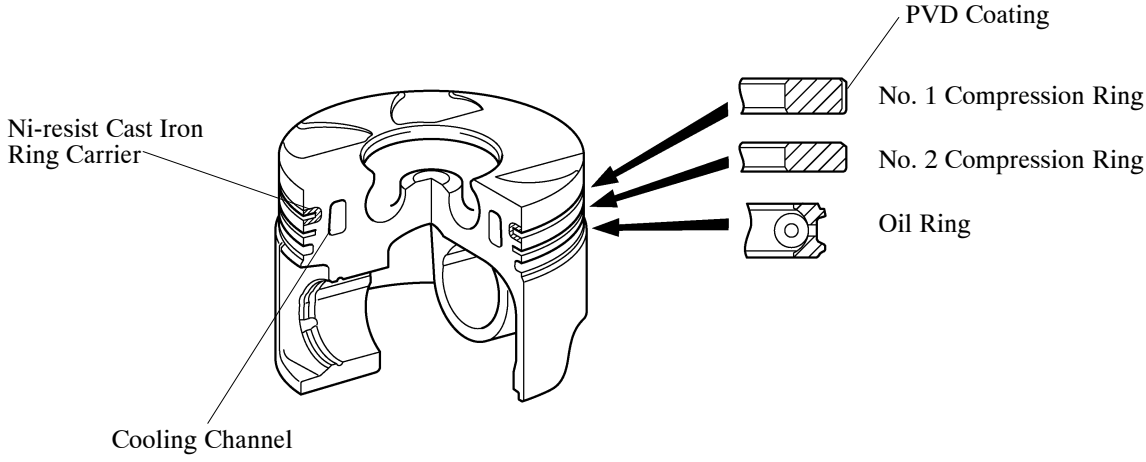
- The cylinder block is constructed of liner-less cast iron alloy.
- Ribs have been added to the block of the cylinder block to reduce engine vibration.



272EG12

5. Piston

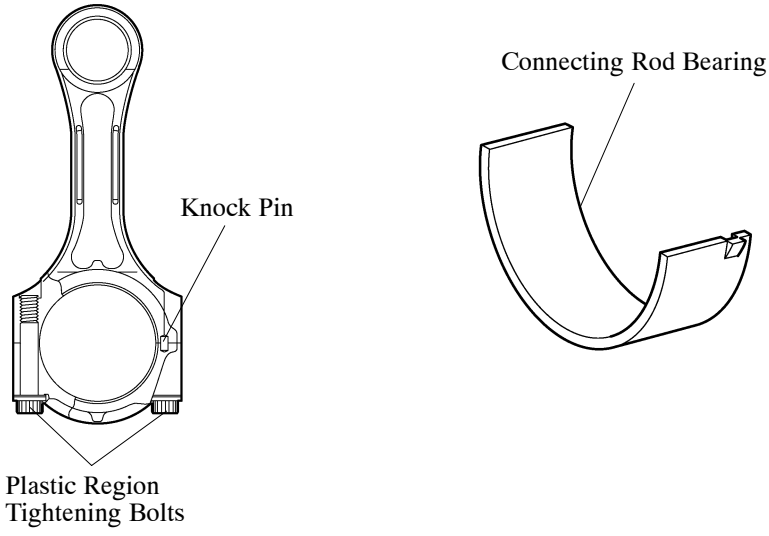
- In conjunction with the adoption of direct injection, piston provided with combustion chamber is used.
- The piston is made of aluminum alloy.
- A cooling channel has been provided to reduce the piston temperature.
- To improve the wear resistance of the top ring groove, a Ni-resist cast iron ring carrier is used.
- A PVD (Physical Vapor Deposition) coating has been applied to the surface of the No. 1 compression ring, to improve its wear resistance.



286EG53

6. Connecting Rod and Connecting Rod Bearing

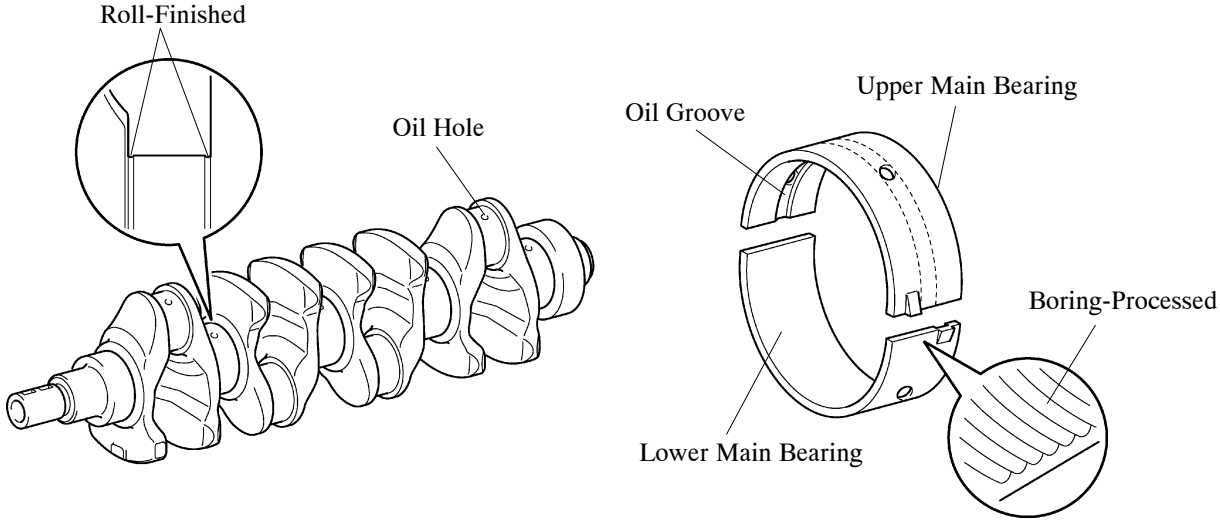
- The connecting rods are made of high-strength material to ensure the proper strength.
- Knock pins are used at the mating surfaces of the bearing caps of the connecting rod to minimize the shifting of the bearing caps during assembly.
- Plastic region tightening bolts are used.
- An aluminum bearing is used for the connecting rod bearings.



271EG104

7. Crankshaft and Crankshaft Bearing

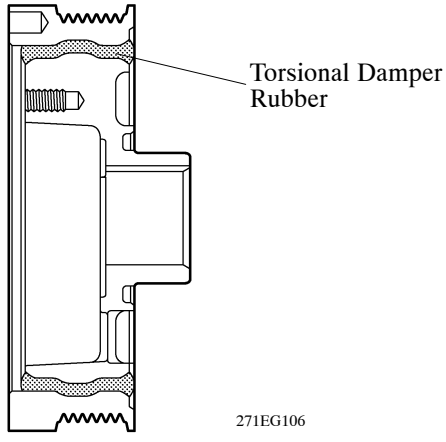
- The crankshaft has 5 journals and 8 balance weights.
- All pins and journal fillets are roll-finished to maintain adequate strength.
- The lining surface of the crankshaft bearing has been boring-processed to realize an optimal amount of oil clearance. As a result, cold-engine cranking performance has been improved and engine vibrations have been reduced.
- The upper main bearing has an oil groove around its inside circumference.



286EG61

8. Crankshaft Pulley

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



271EG106