PISTON, PISTON RING, PISTON PIN [SKYACTIV-D 2.2]

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Purpose, Function

Piston

- The piston in the cylinder of the cylinder block moves reciprocally by the pressure received when the air-fuel mixture combusts.

Piston ring

- The piston ring consists of the compression ring (top ring, second ring) and the oil ring, and has the following functions.
  - — The compression ring prevents leakage of pressure in the cylinder from the piston circumference.
  - — The oil ring clears off extra engine oil adhered to the cylinder wall.
- The piston ring transmits piston heat to the cylinder wall to cool the piston.

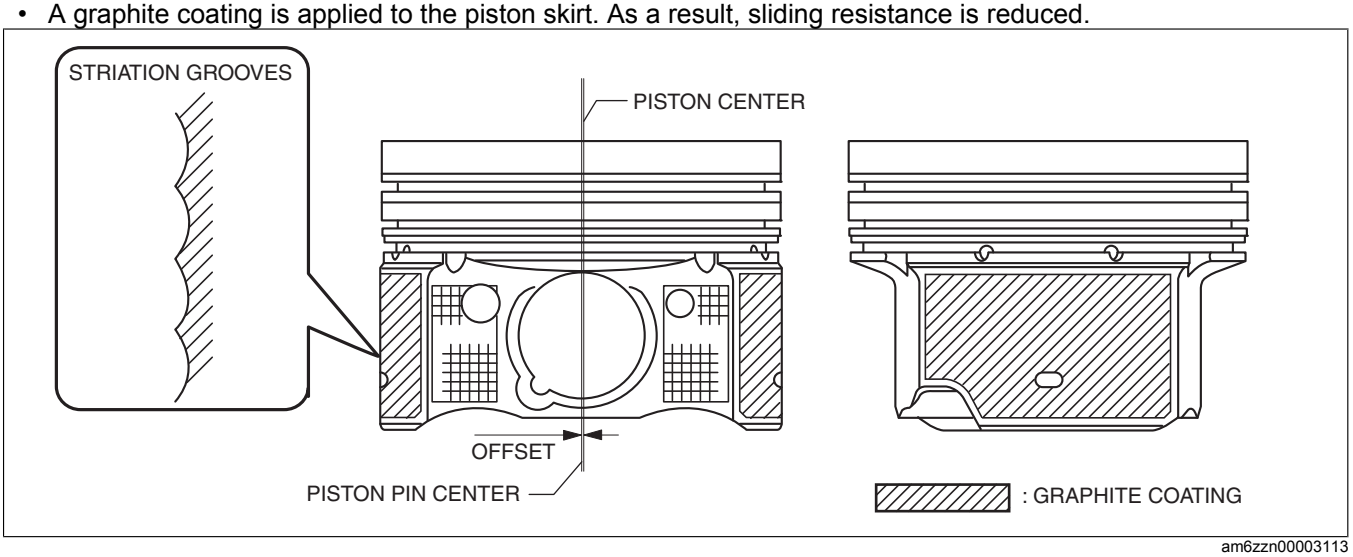
Piston pin

- The reciprocating movement of the piston is transmitted to the connecting rod by the connection of the piston pin to connecting rod.

Construction

Piston

- An offset piston has been adopted in which the center of the piston pin has been offset from the piston center. As a result, piston slap is suppressed.
- Striation processing is employed on the piston skirt. As a result, engine oil is retained in the striation grooves so that an oil film is maintained between the piston skirt and the cylinder.
- A graphite coating is applied to the piston skirt. As a result, sliding resistance is reduced.



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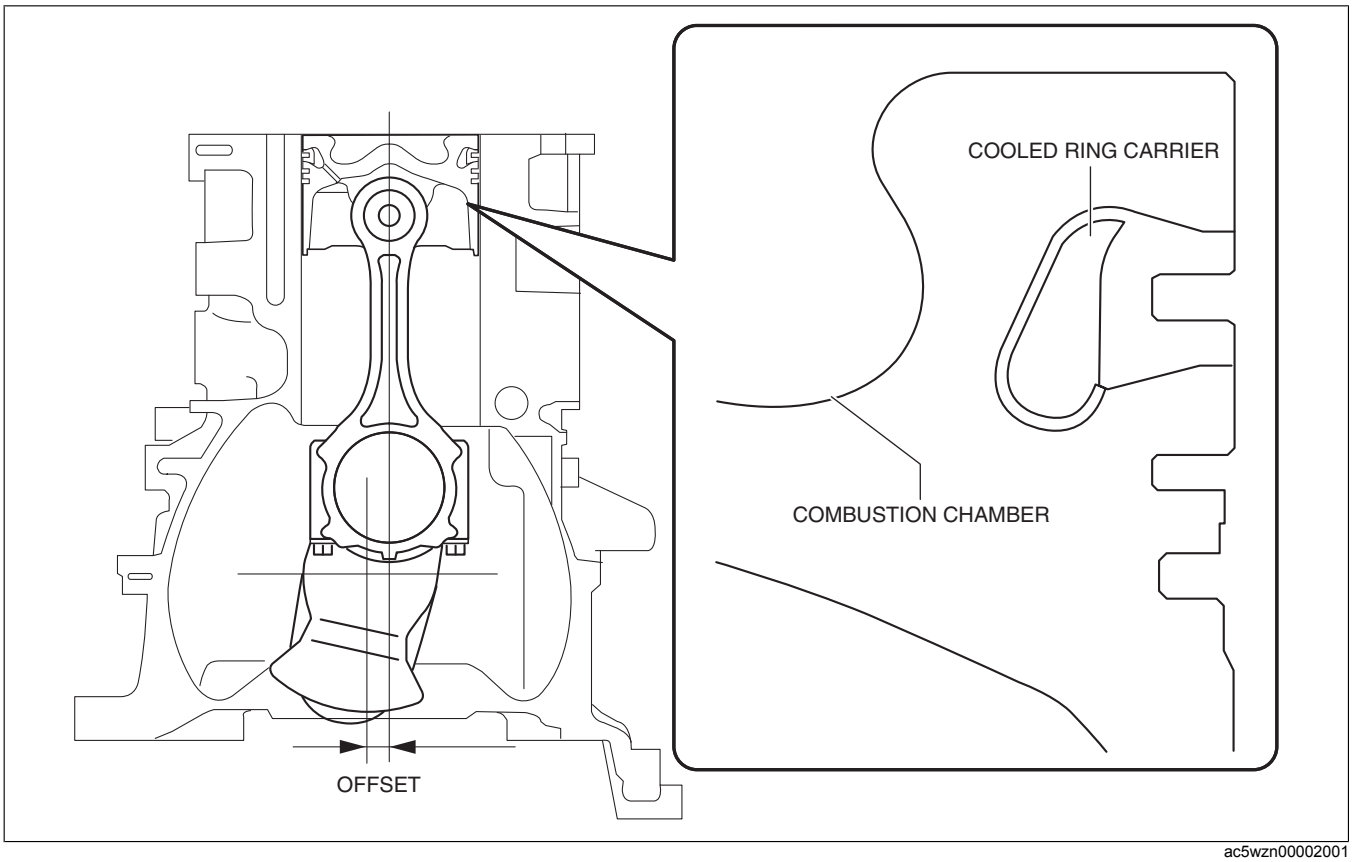
- The sliding resistance and part mass have been reduced by decreasing the surface area of the piston skirt and the thickness, and reducing the piston pin diameter.
- With the adoption of a wide diameter combustion chamber for the piston, high engine output, low emission, and low fuel consumption have been realized.
- A cooled ring carrier has been adopted to the cooling grooves of the piston corresponding to the wide diameter combustion chamber. As a result, the temperature around the combustion chamber decreases efficiently.
- An offset crank has been adopted in which the center of the cylinder bore and the center of the crankshaft axle have been offset. As a result, the sliding resistance has been reduced by decreasing the piston-side force at the expansion stroke.



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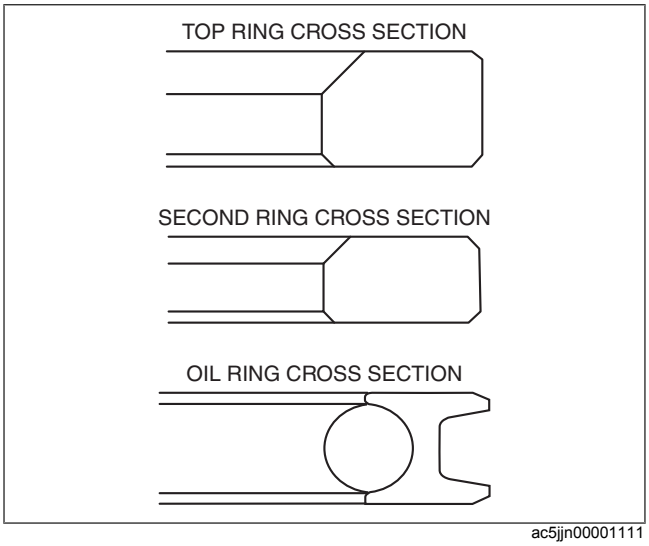
Piston ring

- A barrel-face ring for the top ring and a taper-face ring for the second ring have been adopted.
- A two-piece oil ring for the oil ring have been adopted.
- Tracking capability to the cylinder wall has been improved by thinning down the piston ring. As a result, a low-tension piston ring has been implemented without worsening the engine oil consumption, and the sliding resistance has been reduced during reciprocating movement.
- The sliding surfaces of the top ring and oil ring are subjected to PVD treatment to reduce the sliding resistance and improve engine oil consumption.



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Piston pin

- The piston is a full-floating type.