When new rings are being fitted into a used piston, check for uneven groove wear by inspecting the ring seating. The rings should fit perfectly parallel to the groove surfaces. If not, the piston must be replaced.

Piston ring end gap

Place the piston ring inside the cylinder, using the piston to locate the ring squarely in place. Set it close to the bottom of the cylinder, where cylinder wear is low. Measure the gap between the ends of the ring with a thickness gauge. If the gap is wider than the service limit, the ring is overworn and must be replaced.

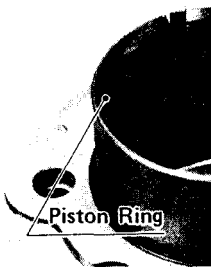

Table 38 Ring End Gap

Standard	Service Limit
0.2~0.4mm	0.7 mm

Piston ring tension

Piston ring tension can be evaluated by measuring the gap between the ends of the ring with the ring free of any restraint. If the measured gap is less than the service limit, the ring is weak and must be replaced.

Piston, piston pin, connecting rod wear

Measure the diameter of the piston pin with a micrometer, and measure the inside diameter of both piston pin holes in the piston. If the piston pin diameter is less than the service limit at any point, replace the piston pin. If either piston pin hole diameter exceeds the service limit, replace the piston.

Measure the inside diameter of the connecting rod small end. If the diameter exceeds the service limit, replace the connecting rod.

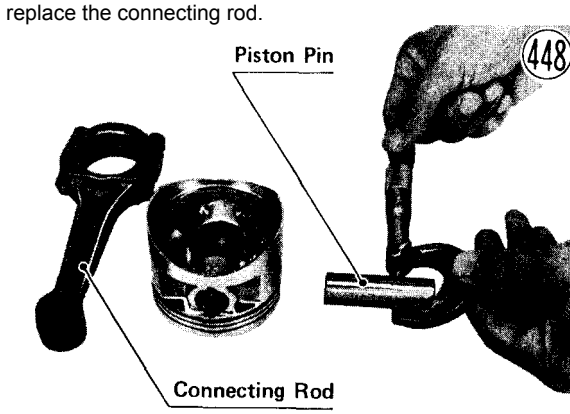

Table 40 Piston Pin, Piston Pin Hole, Small End Diameter

	Standard	Service Limit
Piston Pin	18.998-19.004 mm	18.96 mm
Piston Pin Hole	19.007-19.015 mm	19.08mm
Small End	19.007-19.023 mm	19.06 mm

NOTE: When a new piston or pin is used, also check that piston-to-pin clearance is 0.006 ~ 0.014 mm, and that pin to small end clearance is within 0.003 —0.025 mm.

To the Dealer: When possible, match parts from stock so that a marked pin is assembled with an A piston, and an unmarked pin with an unmarked piston.

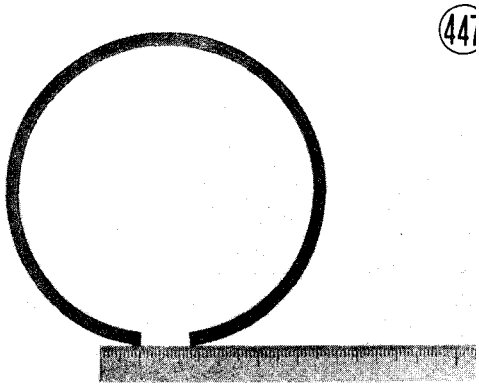

Table 39 Ring Free Gap

	Standard	Service Limit
Top Ring	11.0 mm	8.0 mm
2nd Ring	11.5 mm	8.5 mm
Oil Ring	10.0 mm	7.0 mm

CRANKSHAFT AND CONNECTING RODS

The crankshaft changes the reciprocating motion of the pistons into rotating motion, which is transmitted to the rear wheel when the clutch is engaged. The connecting rods connect the pistons to the crankshaft.

Crankshaft or connecting rod trouble, such as worn crankshaft journals or a bent connecting rod, will multiply the stress caused by the intermittent force on the pistons. This results in not only rapid crankshaft bearing wear; but also noise, power loss, vibration, and shortened engine life. A defective crankshaft or connecting rod should always be detected at an early stage and then replaced immediately.

The following explanation concerns the most common crankshaft and connecting rod problems, giving the procedure for detecting damage and measuring wear and runout.

NOTE: When replacing the crankshaft or crankcase halves, check the alignment of the primary sprocket (on the crankshaft) as described in Page 139.