

130 MAINTENANCE

2. Cylinder inside diameter must not vary more than 0.006 mm at any point.
3. There are two sizes of oversize pistons available: 0.5 mm and 1.0 mm. Oversize pistons require oversize rings.
4. Be wary of measurements taken immediately after boring since the heat affects cylinder diameter.

Piston/cylinder seizure

Remove the cylinder block and pistons to check the damage. If there is only slight damage, the piston may be smoothed with #400 emery cloth, and any aluminum deposits removed from the cylinder with either #400 emery cloth or light honing. However, in most cases, the cylinder will have to be bored to oversize and honed, and an oversize piston installed.

Piston cleaning

Built-up carbon on the piston head reduces the cooling capability of the piston and raises compression, leading to overheating which could possibly even melt the top of the piston. To decarbonize the piston head, remove the piston (Pg. 44), scrape off the carbon, and then lightly polish the piston with fine emery cloth.

Caution 1. When removing carbon, take ample care not to scratch the side of the piston, or the piston ring grooves.

2. Never clean the piston heads with the engine assembled. If the carbon is scraped from the piston heads with the cylinder left in place, carbon particles will unavoidably drop between the pistons and cylinder walls onto the rings and eventually find their way into the crank chamber. Carbon particles, which are very abrasive, drastically shorten the life of the rings, pistons, cylinders, crankshaft bearings, and oil seals.

Piston ring, piston ring groove wear

Visually inspect the piston rings and the piston ring grooves. If the rings are worn unevenly or damaged, they must be replaced. If the piston ring grooves are worn unevenly or damaged, the piston must be replaced and fitted with new rings.

With the piston rings in their grooves, make several measurements with a thickness gauge to determine piston ring/groove clearance. If the clearance exceeds the service limit, measure the thickness of the piston rings and the width of the ring grooves. If the ring has worn down to less than the service limit, replace the ring; if the groove width exceeds the service limit, replace the piston.



Table 35 Piston Ring/Groove Clearance

Standard	Service Limit
0.01~0.05 mm	0.15 mm



Carbon accumulated in the piston ring grooves can cause the rings to stick. Remove the rings, and clean out any carbon deposits using an end of a broken piston ring or some other suitable tool.



Table 36 Piston Ring Thickness

	Standard	Service Limit
Top and 2nd Rings	1.47~1.49 mm	1.40mm
Oil Ring	2.77~2.79mm	2.70 mm

Table 37 Piston Ring Groove Width

	Standard	Service Limit
Top and 2nd Rings	1.50~1.52mm	1.60 mm
Oil Ring	2.80~2.82 mm	2.90mm