

# CRANKCASE/PISTON/CYLINDER

## SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Cylinder	I.D.	65.000 – 65.015 (2.5591 – 2.5596)	65.10 (2.563)	
	Out of round	————	0.10 (0.004)	
	Taper	————	0.10 (0.004)	
	Warpage	————	0.10 (0.004)	
Piston, piston rings	Piston mark direction	“IN” mark facing toward the intake side	————	
	Piston O.D.	64.970 – 64.990 (2.5579 – 2.5587)	64.90 (2.555)	
	Piston O.D. measurement point	11 mm (0.4 in) from bottom of skirt	————	
	Piston pin bore I.D.	17.002 – 17.008 (0.6694 – 0.6696)	17.02 (0.670)	
	Piston pin O.D.	16.994 – 17.000 (0.6691 – 0.6693)	16.98 (0.669)	
	Piston-to-piston pin clearance	0.002 – 0.014 (0.0001 – 0.0006)	0.04 (0.002)	
	Piston ring-to-ring groove clearance	Top	0.025 – 0.060 (0.0010 – 0.0024)	0.08 (0.003)
		Second	0.015 – 0.050 (0.0006 – 0.0020)	0.08 (0.003)
	Piston ring end gap	Top	0.20 – 0.35 (0.008 – 0.014)	0.5 (0.02)
		Second	0.35 – 0.50 (0.014 – 0.020)	0.7 (0.03)
Oil (side rail)		0.20 – 0.70 (0.008 – 0.028)	1.0 (0.04)	
Cylinder-to-piston clearance		0.010 – 0.045 (0.0004 – 0.0018)	0.10 (0.004)	
Connecting rod small end I.D.		17.016 – 17.034 (0.6699 – 0.6706)	17.04 (0.671)	
Connecting rod-to-piston pin clearance		0.016 – 0.040 (0.0006 – 0.0016)	————	
Crank pin oil clearance		0.028 – 0.052 (0.0011 – 0.0020)	0.06 (0.002)	

## TORQUE VALUES

Main journal bolt	25 N·m (2.6 kgf·m , 19 lbf·ft)	Apply oil to the threads
Crankcase bolt, 10 mm	39 N·m (4.0 kgf·m , 29 lbf·ft)	
8 mm	24 N·m (2.4 kgf·m , 17 lbf·ft)	
Lower crankcase sealing bolt, 20 mm	29 N·m (3.0 kgf·m , 22 lbf·ft)	Apply a locking agent to the threads
Lower crankcase sealing bolt, 14 mm	25 N·m (2.5 kgf·m , 18 lbf·ft)	Apply a locking agent to the threads
Connecting rod nut	25 N·m (2.6 kgf·m , 19 lbf·ft)	Apply oil to the threads
Oil pressure switch terminal screw	2 N·m (0.2 kgf·m , 1.4 lbf·ft)	

## TROUBLESHOOTING

### Cylinder compression is too low, or engine is hard to start

- Blown cylinder head gasket
- Worn, stuck or broken piston ring
- Worn or damaged cylinder or piston
- Bent valve, or bent and deteriorated valve seat

### Cylinder compression is too high, or engine overheats or knocks

- Carbon deposits on the cylinder head and/or piston crown

### Piston sounds

- Worn cylinder, piston and/or piston ring
- Worn piston pin hole and piston pin
- Worn connecting rod small end

### Excessive smoke

- Worn, stuck or broken piston ring
- Worn valve stem seal

### Excessive noise

- Worn connecting rod big end bearing
- Bent connecting rod
- Worn crankshaft main journal bearing
- Worn transmission bearing

### Engine vibration

- Excessive crankshaft runout