

# CRANKCASE/PISTON/CYLINDER

## TORQUE VALUES

Part	Size	Torque (N·m)	Torque (kgf·m)	Torque (lbf·ft)	Notes
Crankcase bolt	10 mm	39	4.0	29	Apply oil to the threads
	9 mm	37	3.8	27	
	8 mm	25	2.5	18	
	7 mm	18	1.8	13	
	6 mm	12	1.2	9	
Connecting rod nut		41	4.2	30	Apply oil to the threads
Lower crankcase flange bolt		29	3.0	22	Apply a locking agent to the threads
Lower crankcase sealing bolt	20 mm	29	3.0	22	Apply a locking agent to the threads
	8 mm	22	2.2	16	Apply a locking agent to the threads

## 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

ITEM	STANDARD	MIN.	MAX.	
Cylinder	I.D.	78.000 - 78.012 (3.1102 - 3.1109)	78.10 (3.114)	
	Out of round	0.10 (0.004)	0.10 (0.004)	
	Taper	0.10 (0.004)	0.10 (0.004)	
	Warpage	0.08 (0.003)	0.08 (0.003)	
Piston, piston rings	Piston mark direction	"IN" mark facing forward the intake side		
		Piston O.D.	78.970 - 78.980 (3.1099 - 3.1098)	78.90 (3.106)
	Piston O.D. measurement point	15 mm (0.6 in) from bottom of skirt		
	Piston pin hole I.D.	18.002 - 18.008 (0.7081 - 0.7083)	18.03 (0.709)	
	Piston pin O.D.	18.984 - 18.000 (0.7478 - 0.7480)	18.984 (0.7474)	
	Piston-to-piston pin clearance	0.082 - 0.014 (0.0001 - 0.0008)		
		Piston ring-to-ring groove clearance	0.030 - 0.088 (0.0012 - 0.0035)	0.08 (0.003)
	Piston ring end gap		0.15 - 0.048 (0.0008 - 0.0019)	0.08 (0.003)
		Cylinder-to-piston clearance	0.30 - 0.35 (0.008 - 0.014)	0.5 (0.02)
	Connecting rod small end I.D.		0.40 - 0.55 (0.016 - 0.022)	0.7 (0.03)
Connecting rod-to-piston pin clearance		0.2 - 0.8 (0.01 - 0.03)	1.0 (0.04)	
	Crankpin oil clearance	0.010 - 0.045 (0.0004 - 0.0018)		
		18.030 - 18.051 (0.7082 - 0.7500)	18.051 (0.7504)	
	0.030 - 0.087 (0.0012 - 0.0035)			
	0.030 - 0.082 (0.0012 - 0.0032)	0.082 (0.0034)		