

# 11. CRANKCASE/PISTON/CYLINDER

SERVICE INFORMATION	11-1	PISTON/CONNECTING ROD	11-4
TROUBLESHOOTING	11-2	CRANKCASE COMBINATION	11-12
CRANKCASE SEPARATION	11-3		

## SERVICE INFORMATION

### GENERAL

- This section covers crankcase separation for service of the crankshaft and piston.
- The following parts must be removed before separating the crankcase.
  - Alternator/flywheel (Section 10)
  - Clutch/gearshift linkage (Section 9)
  - Cylinder head (Section 8)
  - Engine (Section 6)
  - Oil pump (Section 4)
- Mark and store the disassemble parts to ensure that they are installed in their original locations.
- Mark and store the bearing inserts to be sure of their correct locations for reassembly. If the inserts are improperly installed, they will block the oil hole, causing insufficient lubrication and eventual engine seizure.
- The connecting rod bearing inserts are select fit and are identified by color codes. Select replacement bearings from the code tables. After installing new bearings, recheck them with plastigauge to verify clearance. Apply molybdenum disulfide oil to the crank pin during assembly.

### SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT	
Cylinder	I.D.	79.000–79.015 (3.1102–3.1108)	79.10 (3.114)	
	Out of round	—	0.10 (0.004)	
	Taper	—	0.10 (0.004)	
	Warpage	—	0.05 (0.002)	
Piston, piston rings	Piston mark direction	“IN” mark facing toward the intake side	—	
	Piston O.D.	78.970–78.990 (3.1090–3.1098)	78.90 (3.106)	
	Piston O.D. measurement point	15 mm (0.6 in) from bottom of skirt	—	
	Piston pin bore I.D.	19.002–19.008 (0.7481–0.7483)	19.03 (0.749)	
	Piston pin O.D.	18.994–19.000 (0.7478–0.7480)	18.984 (0.7474)	
	Piston-to-piston pin clearance	0.002–0.014 (0.0001–0.0006)	—	
	Piston ring-to-ring groove clearance	Top	0.030–0.065 (0.0012–0.0026)	0.08 (0.003)
		Second	0.015–0.045 (0.0006–0.0018)	0.06 (0.002)
	Piston ring end gap	Top	0.20–0.35 (0.008–0.014)	0.5 (0.02)
Second		0.40–0.55 (0.016–0.022)	0.7 (0.03)	
	Oil (side rail)	0.2–0.8 (0.01–0.03)	1.0 (0.04)	
Cylinder-to-piston clearance		0.010–0.045 (0.0004–0.0018)	—	
Connecting rod small end I.D.		19.030–19.051 (0.7492–0.7500)	19.061 (0.7504)	
Connecting rod-to-piston pin clearance		0.030–0.057 (0.0012–0.0022)	—	
Crankpin oil clearance		0.030–0.052 (0.0012–0.0020)	0.062 (0.0024)	