

## SERVICE INFORMATION

### GENERAL

- The crankcase must be separated to service the following:
  - Crankshaft (page 13-7)
  - Piston/connecting rod/cylinder (page 13-15)
- The following components must be removed before separating the crankcase:
  - Engine (page 8-4)
  - Clutch (page 10-16)
  - Cylinder head (page 9-13)
  - Flywheel (page 11-5)
  - Gearshift linkage/transmission (page 12-11)
  - Oil pan (page 5-6), oil pump (page 5-8) and oil cooler (page 5-13)
  - Starter clutch (page 10-28)
  - Starter motor (page 19-6)
  - Water pump (page 7-17)
- Replace the crankcase and transmission bearing holder as an assembly.
- Be careful not to damage the crankcase mating surfaces when servicing.
- Prior to assembling the crankcase halves, apply sealant to their mating surfaces. Wipe off excess sealant thoroughly.
- The crankcase must be separated to service the crankshaft, cylinder and piston/connecting rod. Refer to procedures for crankcase separation (page 13-5) and assembly (page 13-21).
- Mark and store the connecting rods, bearing caps and bearing inserts to be sure of their correct locations for reassembly.
- The crankpin and main journal bearing inserts are select fit and are identified by color codes. Select replacement bearings from the code tables. After selecting new bearings, recheck the oil clearance with a plastigauge. Incorrect oil clearance can cause major engine damage.
- Clean the oil jets in the upper crankcase with compressed air before installing the pistons

### SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Crankshaft	Connecting rod side clearance	0.05 – 0.20 (0.002 – 0.008)	0.25 (0.098)	
	Crankpin bearing oil clearance	0.030 – 0.052 (0.0012 – 0.0020)	0.06 (0.002)	
	Main journal bearing oil clearance	0.019 – 0.037 (0.0007 – 0.0015)	0.05 (0.002)	
	Runout	–	0.05 (0.002)	
Piston, piston rings	Piston O.D. at 4.0 (0.16) from bottom	74.960 – 74.980 (2.9512 – 2.9520)	74.895 (2.9486)	
	Piston pin bore I.D.	17.002 – 17.008 (0.6694 – 0.6696)	17.030 (0.6705)	
	Piston pin O.D.	16.994 – 17.000 (0.6690 – 0.6693)	16.980 (0.6685)	
	Piston-to-piston pin clearance	0.002 – 0.014 (0.0001 – 0.0006)	0.04 (0.002)	
	Piston ring end gap	Top	0.22 – 0.32 (0.009 – 0.013)	0.52 (0.020)
		Second	0.48 – 0.63 (0.019 – 0.025)	0.82 (0.032)
		Oil (side rail)	0.2 – 0.7 (0.01 – 0.03)	1.0 (0.04)
	Piston ring-to-ring groove clearance	Top	0.050 – 0.085 (0.0020 – 0.0033)	0.125 (0.0049)
Second		0.015 – 0.050 (0.0006 – 0.0020)	0.075 (0.0030)	
Cylinder	I.D.	75.000 – 75.015 (2.9528 – 2.9533)	75.15 (2.959)	
	Out of round	–	0.10 (0.004)	
	Taper	–	0.10 (0.004)	
	Warpage	–	0.10 (0.004)	
Cylinder-to-piston clearance		0.020 – 0.055 (0.0008 – 0.0022)	0.10 (0.004)	
Connecting rod small end I.D.		17.030 – 17.042 (0.6705 – 0.6709)	17.048 (0.6712)	
Connecting rod-to-piston pin clearance		0.030 – 0.046 (0.0012 – 0.0018)	0.07 (0.003)	