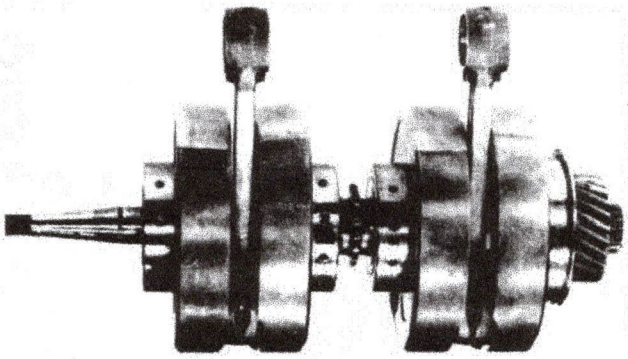
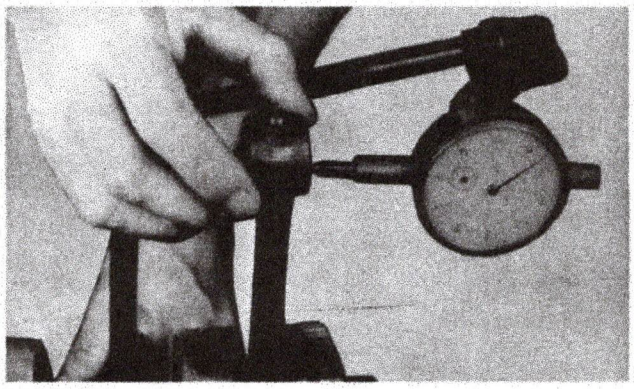
C. Crankshaft

The crankshaft is built up of pressed together parts. It has four full circle crank wheels. The entire unit runs in four main bearings, three rollers and one ball bearing (the ball bearing is the outer right-hand bearing). The rods run parallel (360° crank) on needle bearings over hollow center crank pins. The left and right crank halves are pressed together with the cam chain drive sprocket between the halves.



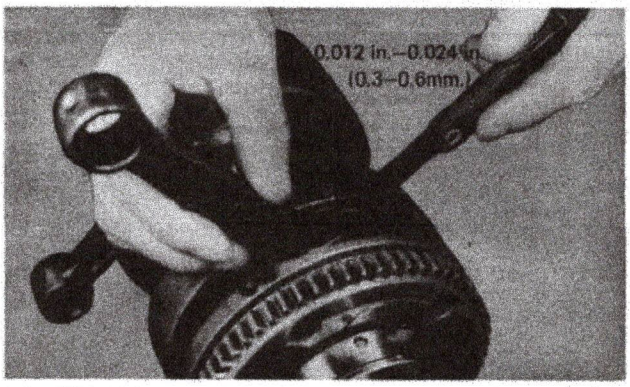
Completely assembled crankshaft

1. Crankshaft removal:
   Tap the crankshaft with a rubber hammer to loosen it, then lift it out.
2. Crankshaft main bearing wear
   Though the crankshaft main bearings are heavy duty and will withstand much abuse, they should still be checked for wear.
3. Clean the bearing in solvent and dry it with air. Visually inspect all friction surfaces for obvious pits, scratches, chatter marks, or rust. Any of these bearing conditions that are bad enough to be readily seen should be sufficient cause for bearing replacement.
4. Measure connecting rod axial looseness at the small end to determine the amount of wear in the big end (crank pin and big end bearing). Hold the big end stable to prevent it from sliding, then rock the small end.
   Maximum Allowable Tolerance: 2 mm. Small End Play



Checking for big end wear

5. If small end side play exceeds 2 mm., disassemble the crankshaft and check the connecting rod, crank pin, and needle bearing for wear. Replace worn parts and recheck small end play. It should measure no more than 1.0 mm. with new parts.
6. Check for correct connecting rod big end side play. Slide the big end to one side and insert a feeler gauge between the crankwheel and rod big end. It should measure between 0.012 in. (0.3 mm.) and 0.024 in. (0.6 mm.). If it exceeds 0.26 in. (0.65 mm.), the connecting rod big end should be closely checked for excessive wear. In addition, total crankshaft width should be measured.



Measuring big end side clearance

Cylinder:	Standard bore size	2.952 $^{+0.00078}_{+0}$ ins. (75 $^{+0.020}_{+0}$ mm.)
	Wear limit	2.960 ins. (75.1 mm.)
	Taper limit	0.002 in. (0.05 mm.)
Piston:	Nominal clearance	0.00196 – 0.00216 in. (0.05 – 0.055 mm.)
	Wear Limit	0.004 in. (0.1 mm.)

Ring groove width

	1st	2nd	3rd
Nominal	0.047 in. (1.2 mm.)	0.059 in. (1.5 mm.)	0.110 in. (2.8 mm.)
Wear limit	0.05 in. (1.25 mm.)	0.06 in. (1.55 mm.)	0.112 in. (2.85 mm.)

Piston ring:

		1st	2nd	3rd
Ring end gap, Installed	Nominal	0.008 – 0.016 in. (0.2 – 0.4 mm.)	0.008 – 0.016 in. (0.2 – 0.4 mm.)	0.012 – 0.035 i (0.3 – 0.9 mm.)
	Wear limit	0.039 in. (1.0 mm.)	0.039 in. (1.0 mm.)	0.059 in. (1.5 mm.)
Ring end gap, Free	Nominal	0.335 in. (8.5 mm.)	0.433 in. (11.0 mm.)	0.0003 in. (0.01 mm.)
	Wear limit	–	–	–
Side clearance	Nominal	0.002 – 0.004 in. (0.04 – 0.08 mm.)	0.001 – 0.003 in. (0.03 – 0.07 mm.)	0.001 in. (0.03 mm.)
	Wear limit	0.006 in. (0.15 mm.)	0.006 in. (0.15 mm.)	0.0004 in. (0.01 mm.)

Crankshaft:

Deflection Tolerance				Flywheel width		Rod clearance			
						Axial		Side	
1.	2.	3.	4.	5.	6.	New	Max.	Max.	
0.001 in. (0.03 mm.)	0.002 in. (0.05 mm.)	0.002 in. (0.05 mm.)	0.001 in. (0.03 mm.)	2.598 $^{-0.00196}_{-0.00393}$ in. (66 $^{-0.05}_{-0.10}$ mm.)	7.322 $^{0}_{-0.001}$ in. (186 $^{0}_{-0.03}$ mm.)	0.032 in. 0.039 (0.8 – 1.0 mm.)	0.079 in. (2.0 mm.)	0.024 in. (0.6 mm.)	0.0 (0.3