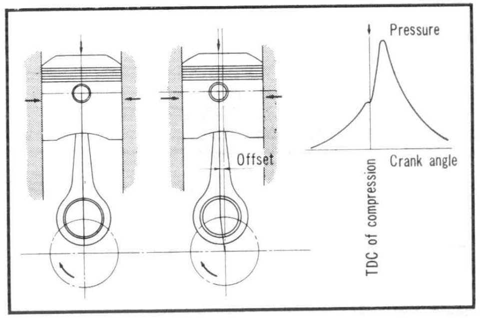
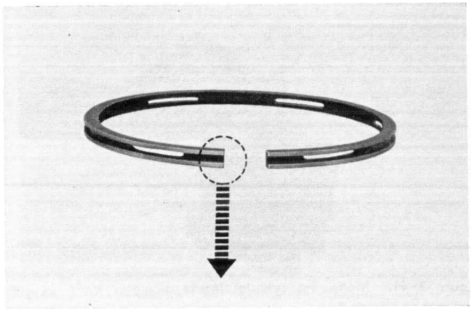


Figure 3-44. Cylinder offset



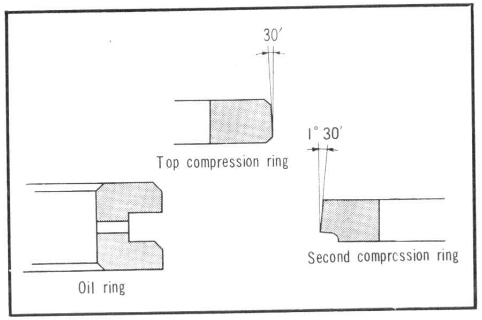


Figure 3-45. Piston ring

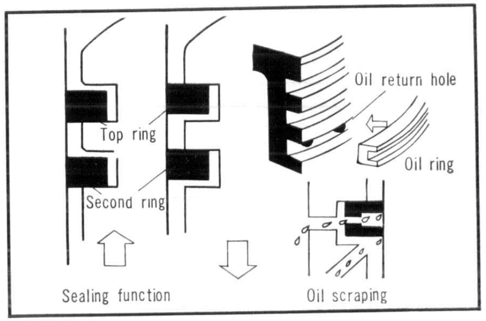


Figure 3-46. Piston ring sealing and oil scraping function

The piston employs a three step taper. The piston pin boss area is made thicker thereby resulting in greater expansion at high temperature. For this reason, the diameter of the piston skirt is made smaller in the direction of the piston pin so that at the high operating temperature, the piston will expand into a true circular shape. The skirt is constantly provided with flexibility to assure that no deformation will result even from extended continuous driving.

The piston pin is offset 1mm from the piston centerline in the direction of the inlet side. So that when the piston approaches the top dead center of the compression stroke, the side load from the cylinder moves from the right side to the left. With a "O" offset, the point will move to align with the top dead center of the compression stroke. **(Fig. 3-43)**

As shown in **Fig. 3-44,** the point of maximum combustion pressure occurs after the top dead center, therefore, the purpose of the offset is to move the point toward the point of weaker pressure which is before top dead center, and by so doing, escapes the powerful pressure movement and makes it possible to eliminate the piston slap.

7. PISTON RING

The top and the second ring serves as a seal for the combustion chamber, the oil ring scrapes the excess oil from the cylinder wall to control the cylinder wall lubrication. Further, they transmit the high temperature of the piston to the cylinder wall where it is dissipated out through the cylinder cooling fins. For this reason, a special alloy of cast iron is used to provide strength, wear resistance, heat resistance, and good heat conducting properties and which is given parkarizing treatment or ferrox coating. The top ring especially is plated on the outer surface with hard chrome and finished by wet honing.

To prevent flutter, the thickness of the rings are made narrower and with the width increased, inertia is made smaller to increase the pressure against the cylinder wall. Further the top and the second rings are made at a slight taper where it contacts the cylinder wall so that the time required for wear-in is lessened. **(Fig. 3-45, 3-47)**

a. Disassembly

(1) Remove the clip and push out the piston pin.
(Caution)
Do not drop the clip into the case. **(Fig. 3-48)**

b. Piston and Piston Ring Inspection

(1) Remove the deposits from the top of the piston, inside and from the ring grooves without scratching or causing damages to the piston. Do not use sandpaper to perform this task.

(2) Piston 〔 〕 are for C50, C50M, S50

	Standard Value	Serviceable Limit
Piston crown dia.	43.5 mm (1.710 in.) +0 (0.000 in.) −0.05 (0.002 in.) 38.6 (1.521 in.) (+0 (0.000 in.) −0.05) (0.002 in.)	
Maximum dia.	44 mm (1.734 in.) +0 −0.020 (0.001 in.) 39 (1.540 in.) +0 −0.02 (0.001 in.) D=44 mm (1.734 in.) +0 −0.020 (0.001 in.) 39 (1.540 in.) (+0 (0.000) −0.02) (0.001 in.)	Replace if under 43.9 (1.730 in.)
Taper	D1=D0 −0.070 (0.003 in.) −0.090 (0.004 in.) (−0.075 (0.0030 in.) −0.095) (0.0037 in.) D2=D0 −0.230 (0.01 in.) −0.250 (0.01 in.) (−0.16 (0.006 in.) −0.18) (0.007 in.)	
Eccentricity	0.168–0.188 (0.0066∼0.0074 in.) 〔0.150∼0.170〕 (0.0059∼0.0067 in)	

(3) Piston ring groove 〔 〕 are for S50

	Standard Value	Serviceable Limit
Groove bottom dia.	39.4 mm (1.552 in.) +0 −0.1 (0.004 in.) 34.6 mm (1.363 in.) (+0 −0.1) (0.004 in.)	
Thickness (top, 2nd)	1.2 (0.047 in.) +0.020 (0.0008 in.) +0.005 (0.0002 in.)	Replace if over 1.27 (0.50 in.)
Oil ring	2.5 (0.099 in.) +0.020 (0.0008 in.) −0 (0)	Replace if over 2.51 (0.989 in.)

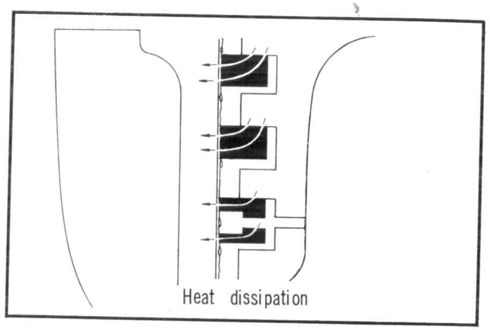


Figure 3-47. Piston ring heat transfer function

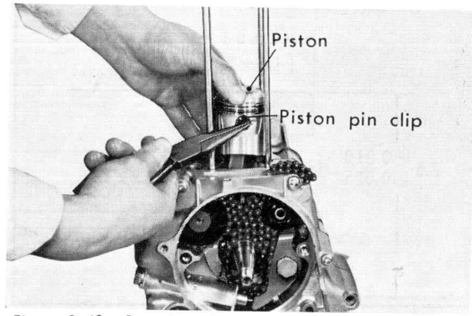


Figure 3-48. Removing piston

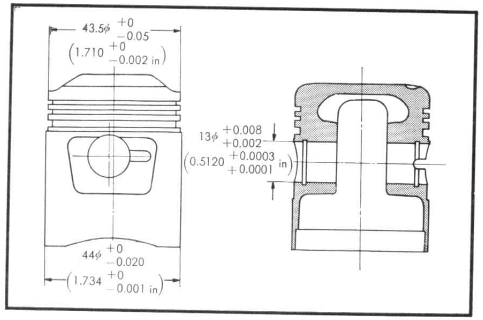


Figure 3-49. Piston dimensions

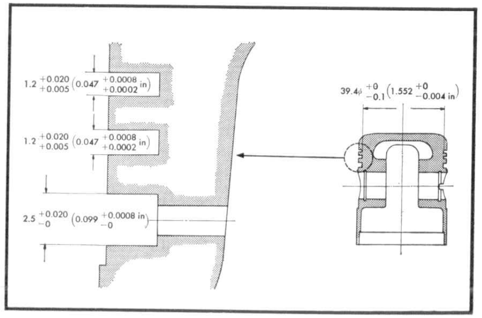


Figure 3-50. Piston ring groove dimensions