## 1.7





## **1** Piston Skirt

## 1-7 Wear caused by dirt

**Symptoms** Complaints are often made about high oil consumption,heavy blow-by with fuel condensation in the oil,loss of performanceand poor starting behaviour,particularly in cold weather. On both thrust faces, the piston exhibits a broad, matt wear pattern. The machining profile has been abrased. Individual, small scores are superimposed. The rings have a large closed gap and exhibit radial wear knife-sharp ring edges. The ring lands of the oil control ring(Figure 2) are entirely worn by abrasion. The groove sides also exhibits heavy axial wear. The piston skirt or other worn areas of the piston have a dull grey satin appearance(matt surface with abrasive machining profile)

Cause and Effect

The dull appearance of the surface indicates heavily contaminated oil. In most cases it is still possible to determine whether the dirt has been introduced by the oil or by the intake air. If ring wear is heavier towards the piston crown, particularly in axial direction, then the dirt certainly entered via the intake system. If, on the other hand, the lower rings are more heavily worn (particularly the oil control ring as shown in Figure 2), and the piston skirt exhibits heavy wear, then the cause is contaminated oil. A special indication to this is the wear pattern of the gudgeon pin shown in Figure 2.2.1.5.

If the piston only exhibits vertical scratches and no dull wear pattern, an( if the rings mainly show radial wear (less axial wear on the top ring than described in 2.1.5) the cause lies in the honing of the cylinders. Either the cylinder bore was not carefully washed out after honing, or the honing marks were crushed and the material flakes on the surface ("iron shell") caused by this were then worn away. Scuffed rings may also be a further result (see 2.1.2).

Remedy

Exercise great care during assembly (in accordance with the engine manufacturer's instructions). Clean or replace intake filters, particularly inserts, regularly, as appropriate to the dirt concentration under operating conditions use new gaskets, and check the intake system of the engine for leaks. Use honing stones which cut cleanly. Clean cylinder bores carefully after honing