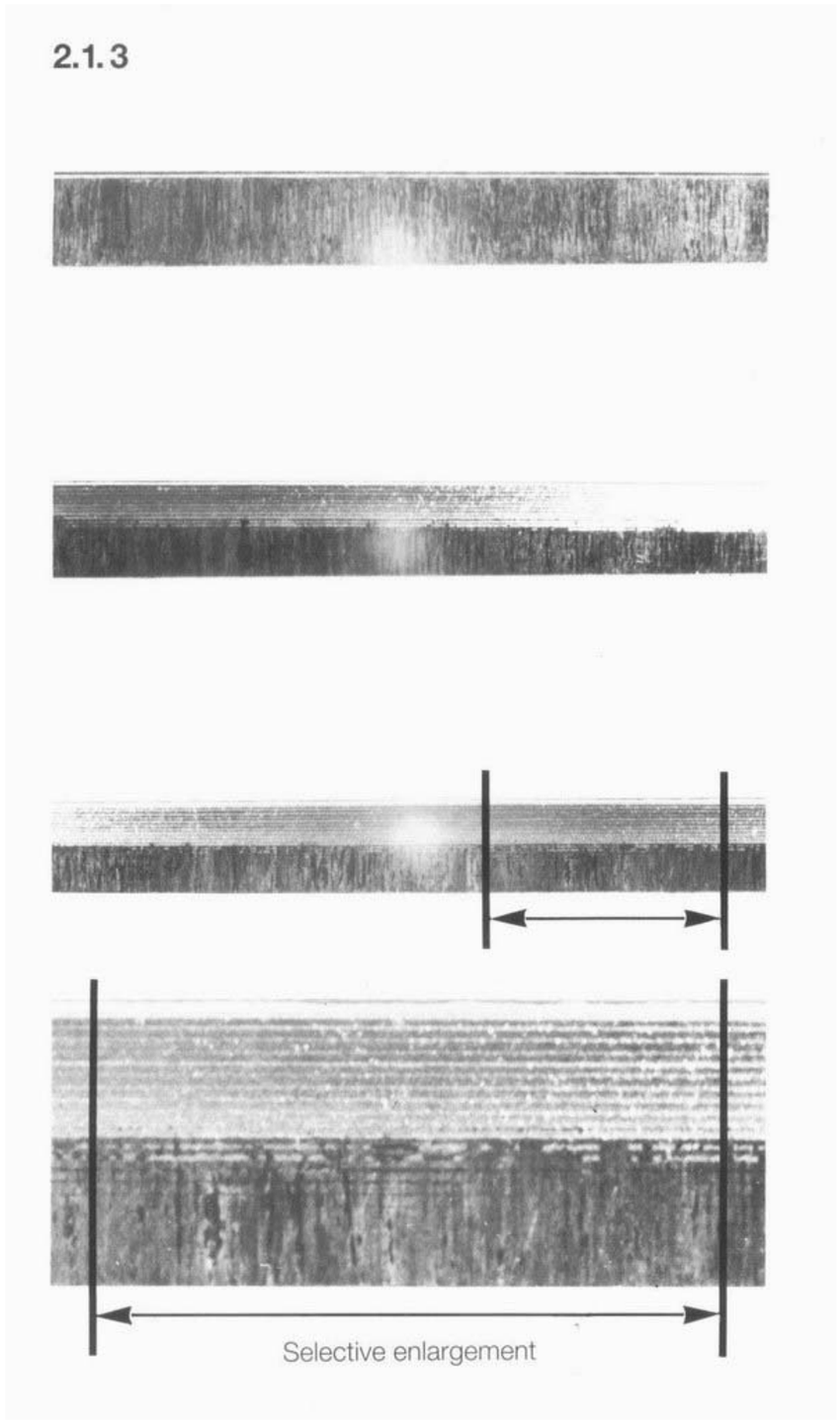

2 Ring Belt

2.1.3 Scuffed rings caused by excessive oil scraping action or a cylinder running surface which is too smooth

Symptoms

The rings exhibit typical seizures (scuff marks) and marks can also be seen on the cylinder wall. The piston is still in good condition. Generally, there are no signs of overheating (oil residues on lower ring belt and upper skirt area).

Cause and Effect

Excessive oil scraping action, e.g. in cases where a well-proven ring configuration is changed and a heavily-scraping coil spring ring or a three part steel ring is installed, leads to inadequate lubrication of the cylinder wall resulting in scuffed rings.

If the piston rings are changed without the cylinder wall being re-honed, the ring peripheries, which are not yet run-in and which are therefore bearing on the cylinder wall only with their outermost edges, are not able to find sufficient lubrication on the smooth cylinder wall (see also 2.1.2).

Remedy

Do not make arbitrary changes to a well-tried and recommended ring configuration in an attempt to achieve lower oil consumption.

When new rings are fitted (check side clearance for wear. See 2.1.5) the cylinder bore should be re-honed in order to provide the roughness for running-in and to remove the wear steps formed at the top of ring travel. Mostly, however, the cylinder is damaged by the scores to the extent that only an exchange (with liner engines) or boring out to the next oversize allows a reliable continued operation of the engine. Before installing the piston into the cylinder, check that the rings can move freely in the grooves. Check the angular position of the connecting rod before installation or, thereafter, check the piston gap in the direction of the gudgeon pin with a feeler gauge at TDC and BDC.