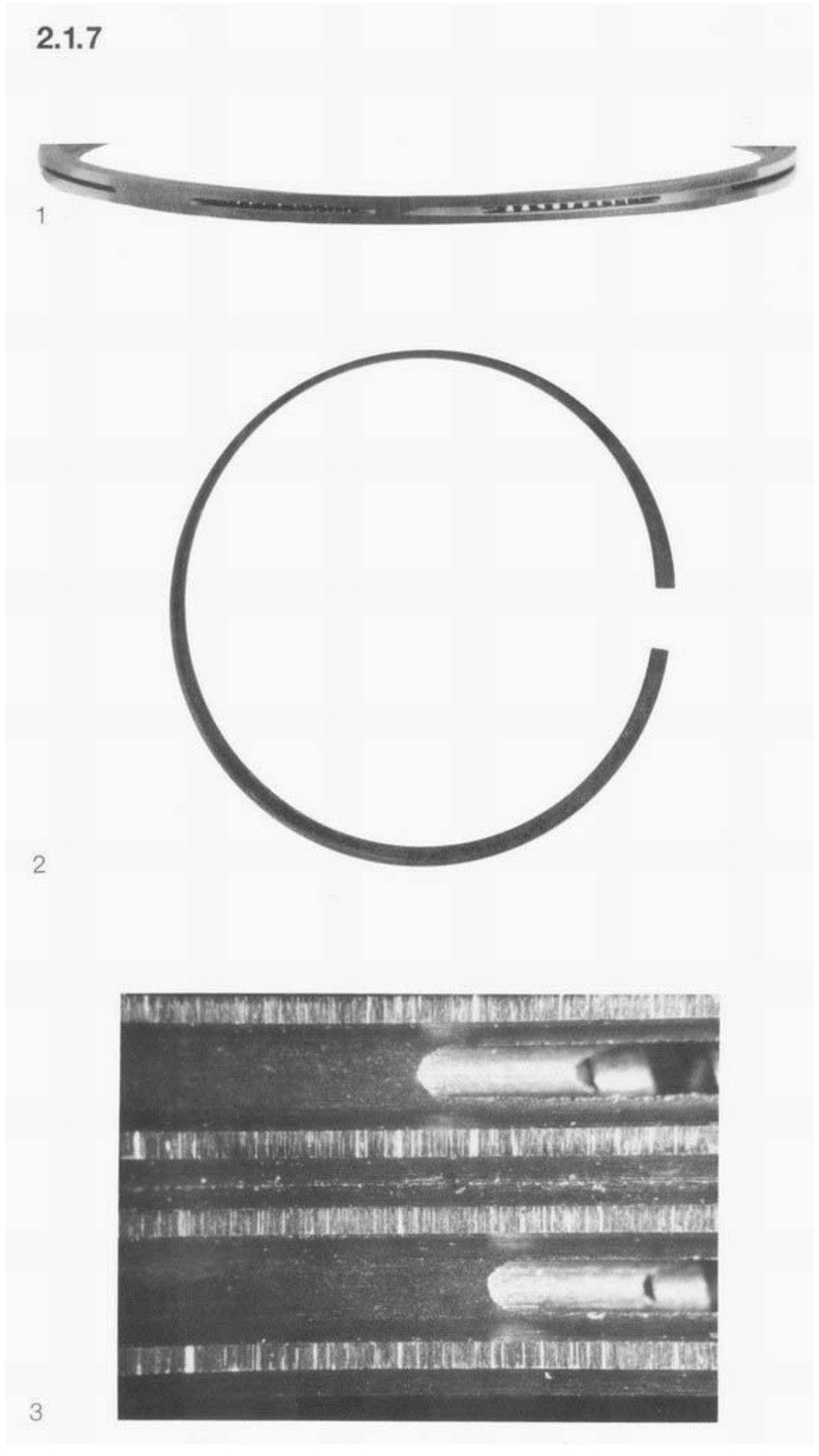

2 Ring Belt

2.1.7 Heavy radial wear on rings (Oil dilution because of unburnt fuel)

Symptoms

The rings exhibit heavy radial wear (Figure 2) and to a certain extent scuffed wear surfaces. The axial wear of the rings and groove sides is low. The lands of the oil control ring can partly be abrased (Figure 1). The oil control rings in Figure 3 also exhibit heavy radial wear compared to the low axial wear, however, the surface only has heavy scores without scuff marks.
The piston skirt also exhibits heavy formation of scores and to a certain extent weak scuffing or seizure without particular wear of the machining profile (see also 1.8).

Cause and Effect

Generally, it is faulty lubrication which leads to excessive wear of this kind.
Incorrect carburetor adjustment, faults in the automatic choke mechanism,excessive operation of the choke, long idling times especially with cold engine, cold-start/short-haul operation, spark failure in only one cylinder, etc. result in condensations of fuel which dilute the oil film and thus accelerate wear.
In Diesel engines with a faulty combustion because of ignition delay and spark failure unburnt fuel can be deposited on the cylinder wall. This also leads to oil dilution. The "flitter" which can be found on the piston working surface is a characteristic indication for Diesel engines (see 1.8).The unburnt fuel can also lead to uncontrolled combustion (see 3.2.2).
If compressors or air compressors (stationary or for pneumatic brake in the car) are to be overhauled due to insufficient performance or high oil consumption a ring damage corresponding to Figures 1 or 2 is often present.This is caused by water from condensing air humidity arising from the expansion of the compressed air in the compressor due to a leaky backpressure valve. The emulsified water considerably decreases the lubricating effect of the oil. Within a very short period of time considerable ring and cylinder wear result.

Remedy

Check engine adjustment if excessive fuel consumption occurs. Check for oil dilution (formation of odor and small bubbles on the oil dipstick). In the case of "Diesel knocking" which does not stop after the cold start check compression pressure and injection nozzles. Immediately repair spark failure in the case of Otto engines (also with regard to a damage of the catalytic converter).
Check for unobjectionable honing. Clean crankcase or cylinder carefully before assembly. (Observe our honing recommendation no. 6903, too.).