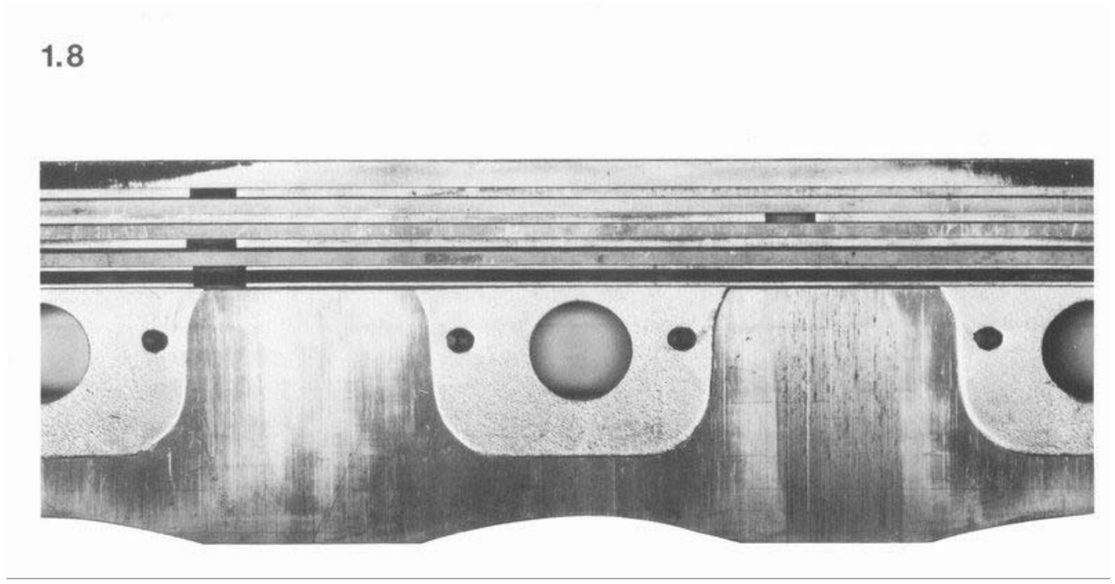

1 Piston Skirt

1-8 Piston scuffing caused by flooding with fuel

Symptoms

The piston has narrow striated areas of scuffing, chiefly on one side, with clearly visible scuff marks over the entire length of the piston skirt. The rings have scores and, to a certain extent, may also exhibit scuffed spots. With Diesel engine pistons, small (size 0.1-0.2 mm) bright spots (so-called "flitter") on the skirt are visible.

Cause and Effect

Flooding with fuel causes a dilution of the oil film on the cylinder wall. The piston and the rings run dry. First scuffing, and later seizures occur in the area of the heaviest load (on the major thrust side).

Auto engine

The excess of fuel is often caused by incorrect operation of the carburetor.It may be that the automatic choke switches off too rate or that a manual choke has been left out too long. Other causes may be a defective fuel injection system (cold-start enrichment device), or spark failure caused by defective spark plugs in individual cylinders, which cause the fuel to be deposited on the cylinder wall. This causes the oil to become diluted; whenengine load is increased, serious piston damage results, as described in1.2.

Diesel engine

Unburnt fuel because of ignition delay and spark failures dilutes the lubricating oil film on the cylinder wall. The consequence is a lack of lubrication which then leads to skirt scuffings and extreme ring wear (2.1.7). "Flitter",i.e. polished piston material which was torn out of a section and plated onto another is a clear indication to lubricating oil dilution.

Remedy

Otto engine

Adjust the automatic choke correctly. With manual choke, pull this out only briefly to start and drive the first few miles. Avoid pumping the accelerator pedal and thereby spraying fuel each time via the accelerator pump into the carburetor. A cold engine which has not yet reached its operating temperature is particularly at risk. Avoid warming up the engine at idling speed. Do not motor the engine too long, opening it up repeatedly at the same time, and do not make too many attempts to start. Check the carburetor to see that the float or float needle valve are working correctly, since getting stuck will mean that the engine becomes flooded with fuel. With petrol fuel injection systems, ensure particularly that the cold-start enrichment device is correctly adjusted. Check oil dilution (formation of small bubbles on the oil dipstick).

Diesel engine

In the case of long, permanent diesel knocking (ignition delay) which does not stop after the cold start check injection equipment, injection nozzles in particular. Measure compression pressure.