Notes on the Practical Work

for Subject No. 7

LIGHT REPAIRS AND ADJUSTMENT WORK ON ENGINE

VOLKSWAGENWERK AG · SERVICE SCHOOL

518 107 20 / January 68

C O N T E N T S

LUBRICATION SYSTEM

Initial filling and refilling quantity 2.5 l

Type of oil HD-Branded oil
HD = Heavy duty

Viscosity

Viscosity is the value for the internal friction of a fluid (light or heavy fluids).
The viscosity of engine oil is strongly influenced by temperature and pressure.
The Society of Automotive Engineers (SAE) has drawn up a classification of viscosity code which is used internationally.

Temperature °C	Viscosity class
over 0	SAE 30
from + 20 to - 15	SAE 20 W/20
from + 5 to - 30	SAE 10 W
from - 5 to - 40	SAE 5 W

These viscosities are valid for VW engines of all types and years of manufacture.

Classification

HD oil is a collective term for engine oils that are blended to varying degrees. In order to more exactly differentiate between the individual oil the American Petroleum Institute (API) introduced a system that is used internationally.
Example:

MM = Moderate Medium (HD oil for engines with medium power weight ratio and moderate to high revolutions, rarely in city traffic).

MS = Most Severe (HD oil for engines with special lubricant requirements, high power weight ratio and higher up to highest revolutions, frequently in city traffic).

Oil pressure relief valve

Check the oil pressure relief valve when disturbances in the oil circulation occur, especially if the oil cooler leaks. If the plunger sticks at the top when the oil is thick, there is a danger of the oil cooler leaking. If the plunger sticks at the bottom the oil will flow directly back to the sump.

Since Aug. 66 a modified pressure relief valve piston with an annular groove has been installed in all engines (except 34 bhp). These pistons were previously installed in the 54 bhp engine. Subsequent installation is possible.

Oil cooler

When removing the oil cooler from engines with a vertical fan the following must be noted: with passenger cars the engine need not be removed, it is sufficient to remove the engine compartment lid.

1 - Versions with throttle ring (up to Aug. 64)
Unhook spring on throttle ring, release two M 6 screws on throttle ring, undo and take out the two slotted screws on the sides of the fan housing. Release the generator pulley, so that the vee belt can be taken off. Undo the generator strap, loosen the accelerator cable and pull it out, disconnect the ignition coil leads, lift the fan housing upwards.
When removing the oil cooler unscrew the attachment nuts with the VW 109 box wrench. The rubber seals must always be renewed.
Check the oil cooler for leaks and also check that the attachment studs are tight: Test pressure 85 psi (6 atü), Test appliance: VW 661/2 (local manufacture).

2 - Versions without throttle ring (from Aug. 64)
With these vehicles the thermostat must be screwed off the connecting rod.

Oil pump

Since July 67 the oil pump has been attached by 4 studs M 8 - previously M 6. At the same time the washers and nuts were replaced by M 8 sealing nuts with a plastic ring.
When removing the oil pump unscrew the nuts on the cover and take off cover together with gasket.
Take out the gears.
Slacken the M 8 nuts on the crankcase above and below the oil pump, remove oil pump body with extractor VW 201.
The gaskets must always be renewed.
Since Dec. 1966 a plastic gasket has been installed between the crankcase and the oil pump.
When installing the pump body insert the oil pump pilot VW 665, turn camshaft 360°. This will center the pump body opposite the slot in the camshaft.