

Lubrication system, general information

CAUTION!

- ◆ *If large amounts of metal shavings or small metal particles are found in the engine oil, caused by wear of crankshaft and connecting rod bearings, thoroughly clean the oil passages to remove contaminants and help prevent later damage.*
- ◆ *The oil cooler cannot be sufficiently cleaned, and must be replaced.*

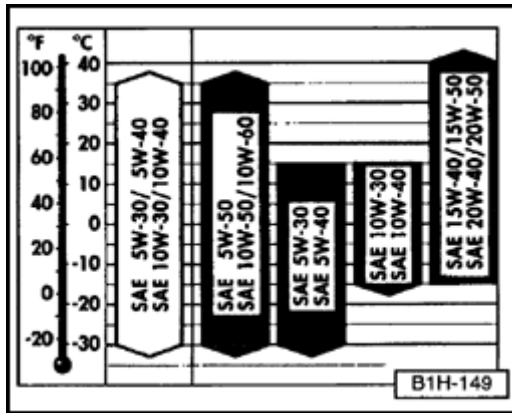
Oil pressure, checking ⇒ [Page 17-8](#)

Oil capacity

- ◆ Without oil filter: 4.0 liters (4.2 qt.)
- ◆ With oil filter: 4.5 liters (4.7 qt.)

Engine oil specifications

The following terms must appear on the oil container singly or in combination with other designations: VW 505 00, ACEA B3 or ACEA B4,

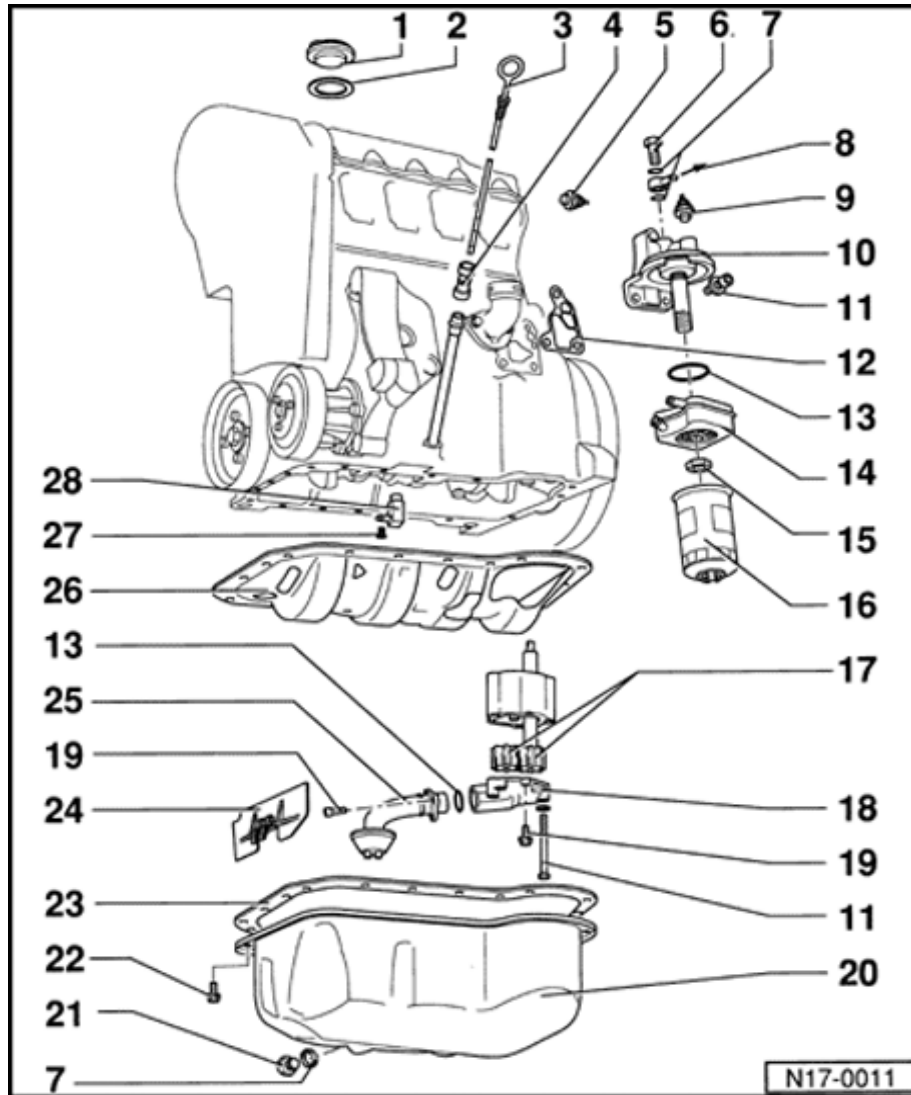


API-SJ or API-SL.

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Engine oils are graded according to their viscosity. The proper grade to be used in depends on existing climatic or seasonal conditions.

The original engine oil has a viscosity grade of SAE 5W-40. Use this oil over all temperature ranges for normal driving. If engine oil viscosity grade SAE 5W-40 is not available, use SAE 5W-30.



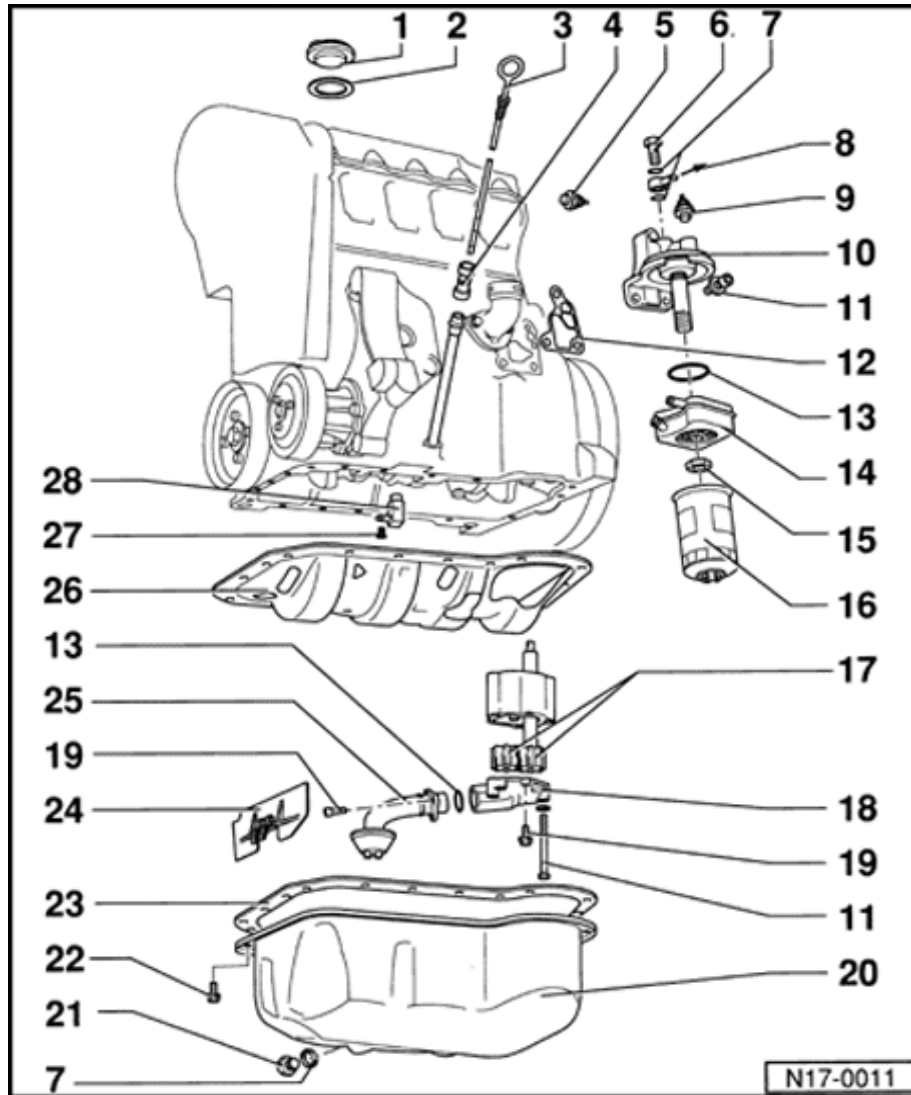
Lubrication system, component layout

WARNING!

- ◆ *Do not re-use fasteners that are worn or deformed in normal use.*
- ◆ *Some fasteners are designed to be used only once, and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow recommendations in this manual-replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.*

CAUTION!

Part numbers are listed here for reference only. Always check with your Parts department for the latest information.



1 - Cap

2 - Gasket

- ◆ Replace if damaged

3 - Oil dipstick

- ◆ Oil level must not be above MAX mark.
- ◆ Area above shaded zone up to MAX mark: Do not top up engine oil!
- ◆ Oil level in shaded zone: Engine oil can be topped up.
- ◆ Area from MIN mark up to shaded zone: Top up engine oil

4 - Guide

- ◆ Remove to suck oil out

5 - 0.3 bar oil pressure switch -F22-

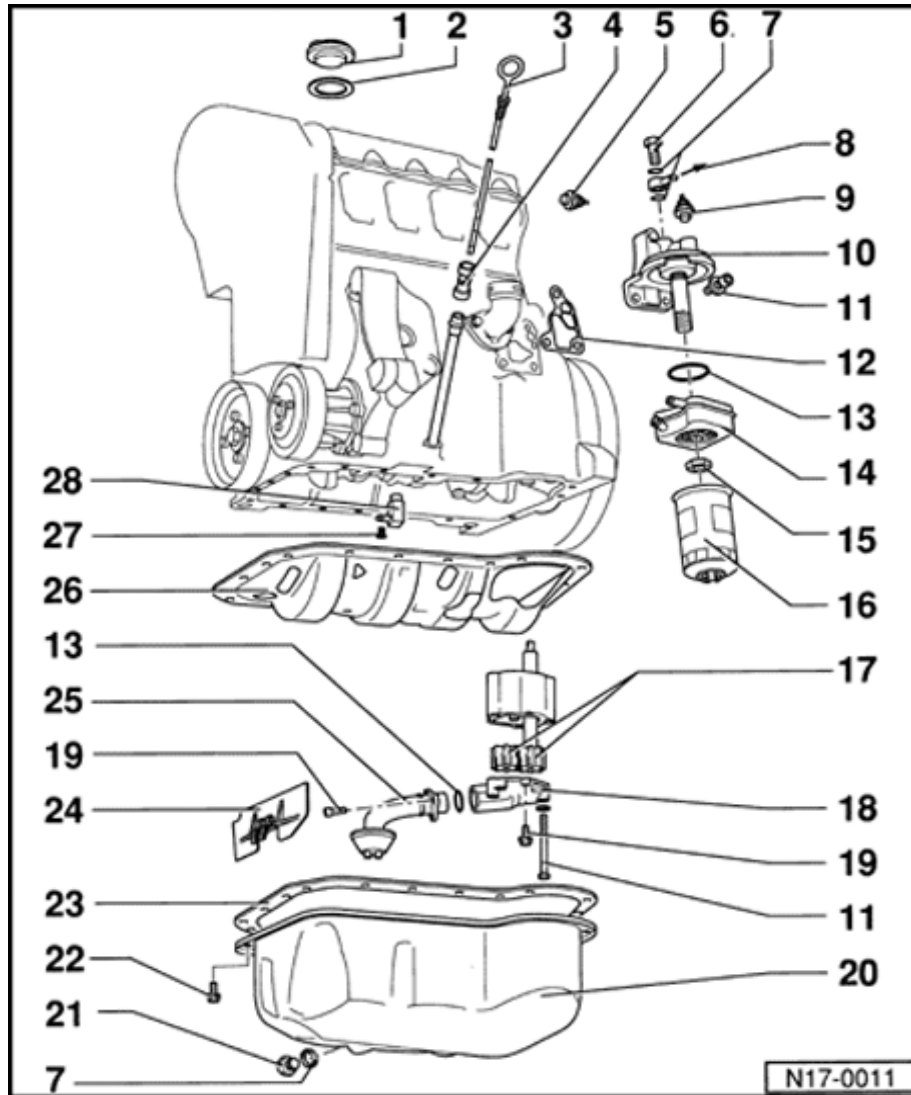
- ◆ 0.3 bar (4.4 psi)
- ◆ Color: Blue
- ◆ Checking ⇒ [Page 17-8](#)
- ◆ 25 Nm (18 ft lb)
- ◆ If sealing ring is leaking, cut open and replace

6 - Banjo bolt

- ◆ 25 Nm (18 ft lb)

7 - Oil seal

- ◆ Always replace



8 - To charge air cooler

9 - Oil pressure switch -F1-

- ◆ Color: Grey
- ◆ Checking ⇒ [Page 17-8](#)
- ◆ 25 Nm (18 ft lb)
- ◆ If sealing ring is leaking, cut open and replace

10 - Oil filter bracket

11 - Mounting bolt

- ◆ 25 Nm (18 ft lb)

12 - Gasket

- ◆ Always replace

13 - O-ring

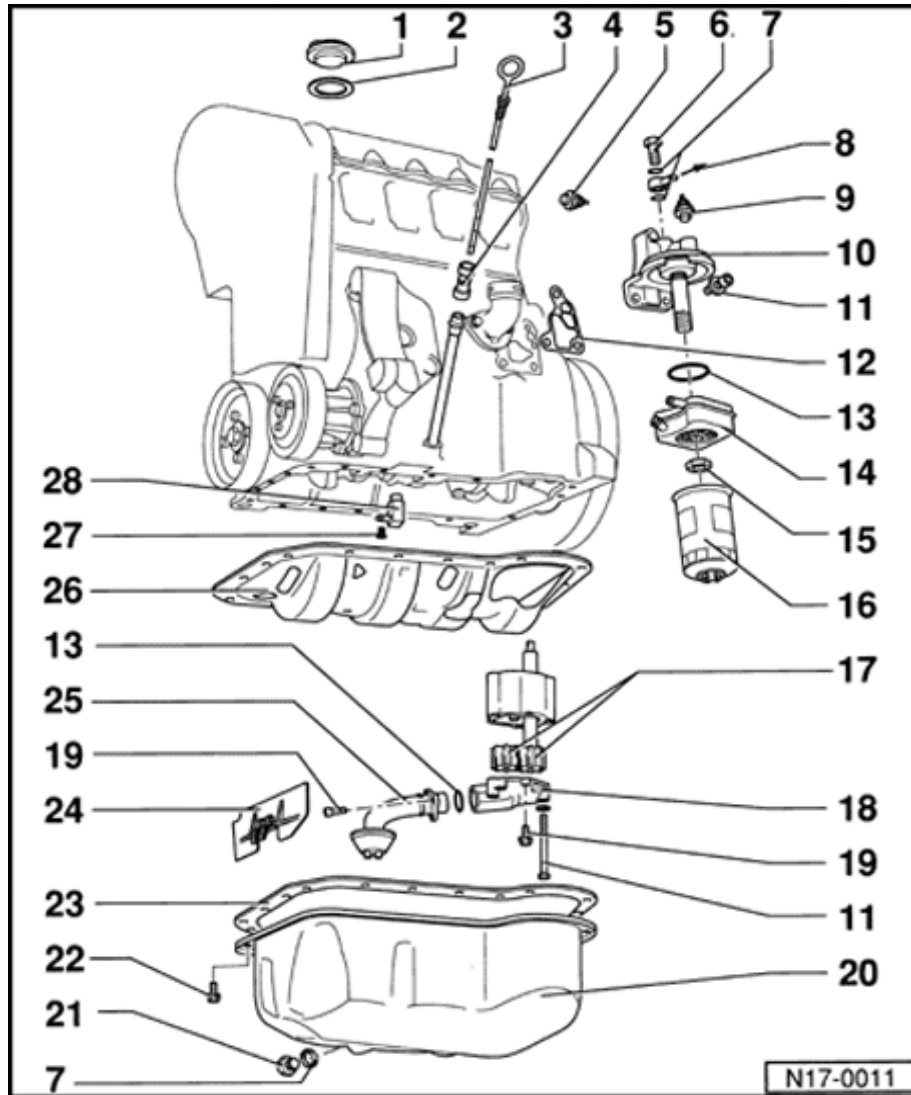
- ◆ Always replace

14 - Oil cooler

- ◆ Coat oil filter bracket contact surfaces outside of seal with AMV 188 100.02
- ◆ Make sure that there is adequate clearance to surrounding components
- ◆ If metal shavings or particles are found in engine oil,

oil cooler must be replaced ⇒ [Page 17-1](#) ,
CAUTION!

and drain plug.



22 - 20 Nm (15 ft lb)

- ◆ Remove and install rear bolts to transmission using 3185 or equivalent 10 mm swivel/extension

23 - Gasket

- ◆ Engine codes 1Z, AHU
- ◆ Always replace
- ◆ Before installing gasket coat oil pan/engine block flange with D2 sealant

24 - Baffle

25 - Oil pick-up

- ◆ Clean strainer

26 - Baffle plate

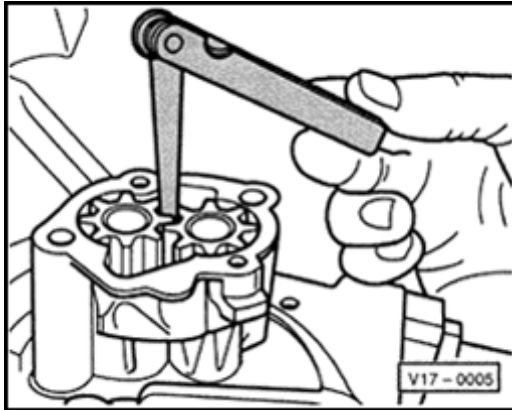
- ◆ Engine code AAZ
- ◆ With seal
- ◆ Replace seal if damaged

27 - 10 Nm (7 ft lb)

- ◆ Install with AMV 188 100.02

28 - Oil spray nozzle

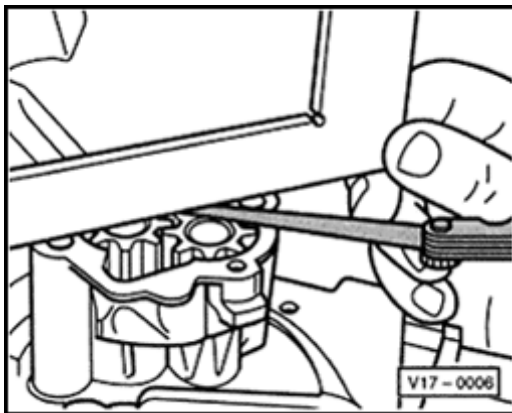
- ◆ For piston cooling



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Fig. 1 Checking oil pump gear backlash

- ◆ New: 0.05 mm (0.0020 in.)
- ◆ Wear limit: 0.20 mm (0.0079 in.)



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Fig. 2 Checking oil pump gear axial play

Wear limit: 0.15 mm (0.0059 in.)



Oil pressure and oil pressure switch, checking

Dynamic oil pressure warning system

Note:

For functional testing and repair of the optical (warning light) and acoustic (warning buzzer) oil pressure warning systems ⇒ "Electrical Wiring Diagrams, Troubleshooting & Component Locations" binder.

Special tools, testers and auxiliary items

- ◆ VAG1342 oil pressure gauge
- ◆ VAG1527B voltage tester
- ◆ VW1594 connector test kit

Test sequence



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- Remove 0.3 bar oil pressure switch -F22- (blue insulation) and install in VAG1342 oil pressure gauge.
- Connect line from VAG1342 oil pressure gauge in place of 0.3 bar oil pressure switch -F22-.

- Connect brown wire from oil pressure gauge to Ground.
- Connect VAG1527B voltage tester to battery positive voltage (B+) and 0.3 bar oil pressure switch -A- (installed in oil pressure gauge) using adapters from VW1594 connector test kit.



- Voltage tester LED must light up
- Start engine and increase RPM slowly to 0.15-0.45 bar (2.2-6.5 psi).
- Voltage tester LED must go out

If NO:

- Replace 0.3 bar oil pressure switch -F22-.
- Connect VAG1527B voltage tester to 0.9 bar oil pressure switch -F1- (grey insulation) on oil filter mounting bracket -B-. Increase RPM slowly to 0.75-1.05 bar (10.9-15.2 psi)
- LED must light up

If NO:

- Replace oil pressure switch -F1-.
- Increase engine speed further and check engine oil pressure:

- ◆ At 2000 RPM and 80° C (176° F) oil temperature, oil pressure must be min. 2.0 bar (29 psi)
- ◆ At higher RPM, oil pressure must not exceed 7.0 bar (101 psi).

If NO:

- Replace oil pump cover with pressure relief valve.