

Lubrication system components

If you find metal shavings or large quantities of metal particles (possibly caused by partial seizure of crankshaft and connecting rod bearings) in the engine oil while performing engine repairs:

- Thoroughly clean all oil passages, replace all oil spray jets, oil non-return valve and oil cooler.

Oil pressure and oil pressure switch, checking ⇒ [Page 17-12](#) .

Oil Capacities up to MY 2000

⇒ [Fluid Capacity Chart, from my 2001](#)

Oil system capacity

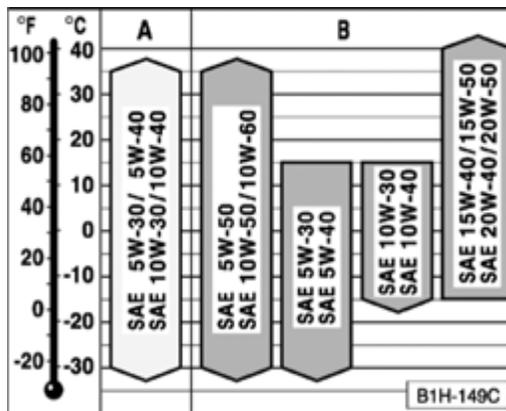
- ◆ Without oil filter: 5.5 ltrs. (5.8 quarts)
- ◆ With oil filter: 6.0 ltrs. (6.3 quarts)

CAUTION!

**Do NOT allow engine oil above MAX. mark.
This can lead to catalyst damage!**

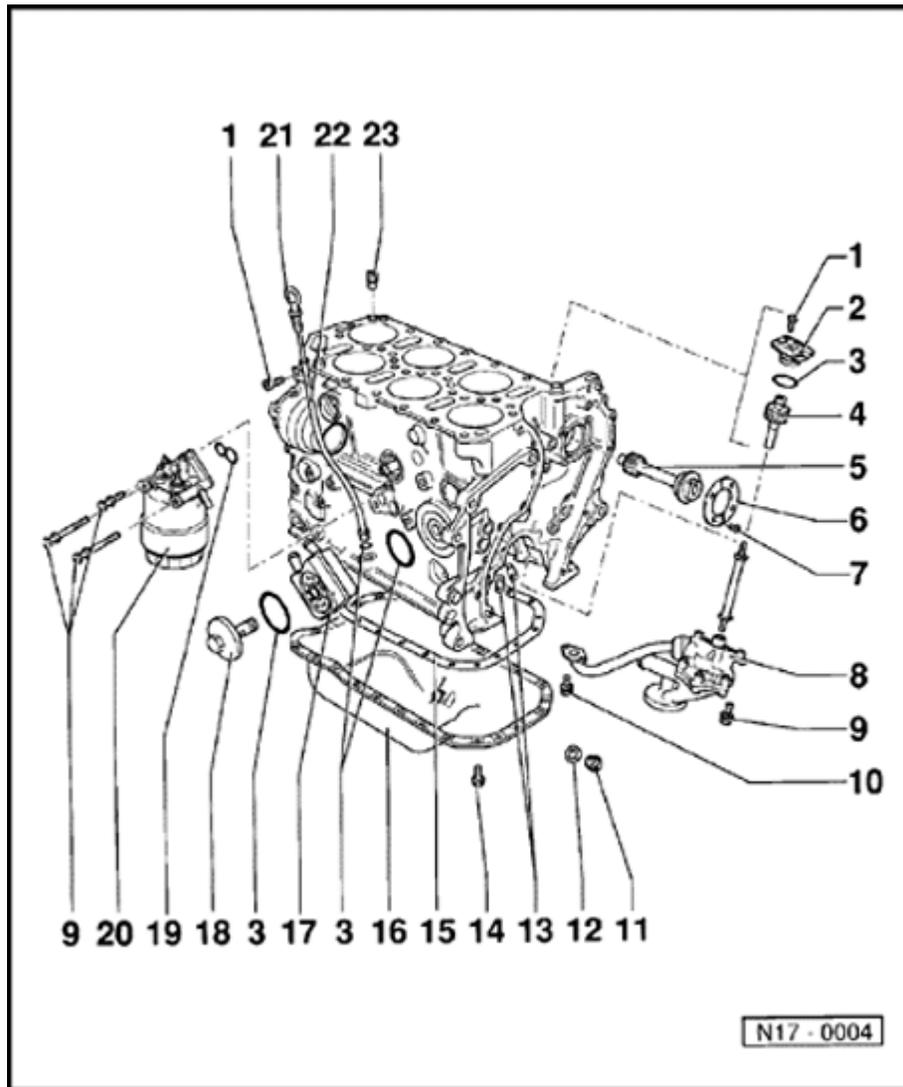
Engine oil specifications

The following terms must appear on the oil container singly or in combination with other designations: VW 502 00 or VW500 00 or VW501 01, ACEA A2 or ACEA A3, or API-SJ or API-SL.



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- ◆ Engine oils are graded according to viscosity. The proper grade to be used 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 components, removing and installing

1 - 10 Nm (7 ft lb)

2 - Oil pump drive cover

3 - O-ring

◆ Always replace.

◆ Oil before installing.

4 - Oil pump drive

5 - Intermediate shaft

6 - Thrust washer

7 - 10 Nm (7 ft lb)

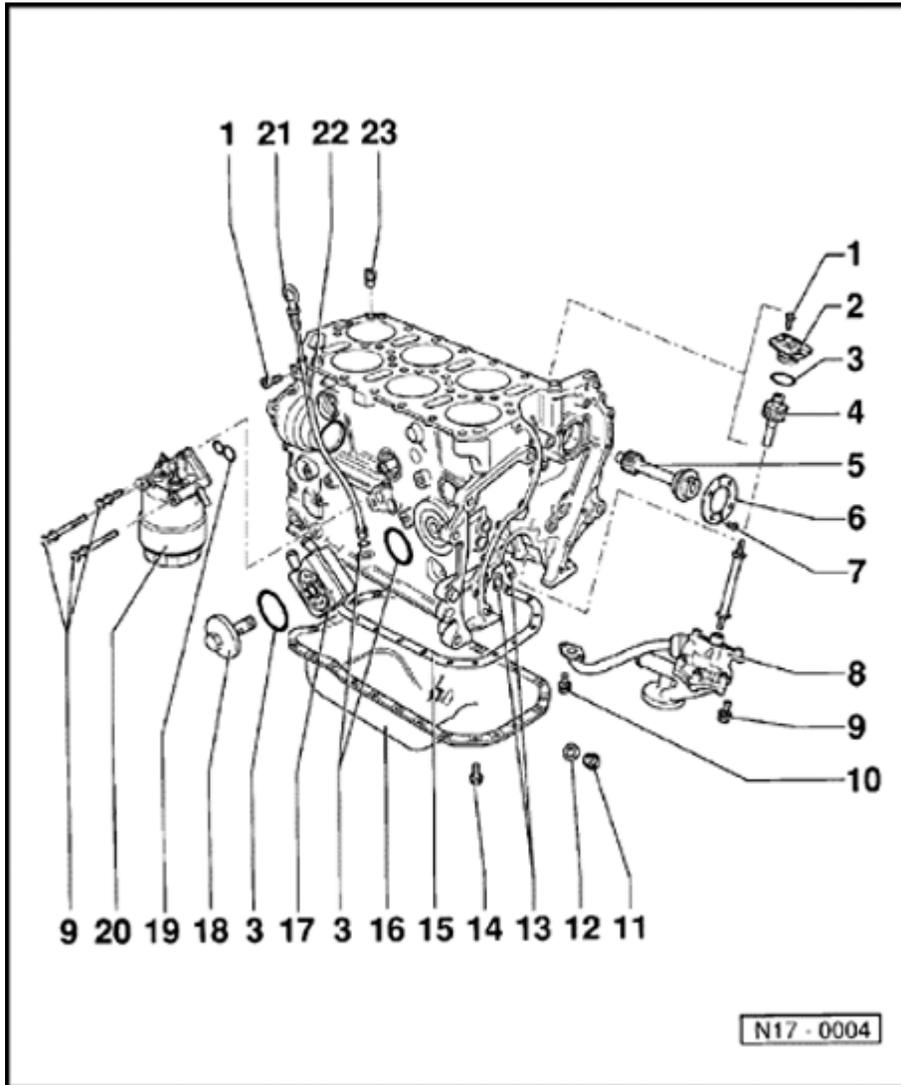
◆ Install with locking fluid D6.

8 - Oil pump

◆ Disassembly and assembly ⇒ [Page 17-10](#)

◆ Coat oil pump housing and oil pressure pipe at cylinder block with AMV 188 001 02.

9 - 25 Nm (18 ft lb)



10 - 10 Nm (7 ft lb)

- ◆ Replace.
- ◆ Install with D6 locking fluid.

11 - Oil drain plug

- ◆ 30 Nm (22 ft lb)
- ◆ Replace if leaking. See Parts Catalog for correct application. In some cases, seal and drain plug are combined; do not interchange with separate seal and drain plug.

12 - Seal

- ◆ Always replace.

13 - Oil spray jet

- ◆ For crankshaft bearings 2 to 7
- ◆ For piston cooling
- ◆ Removing and installing ⇒ [Fig. 1](#)
- ◆ Opening pressure: 2.0 bar (29 psi)
- ◆ See note ⇒ [Page 17-2](#)

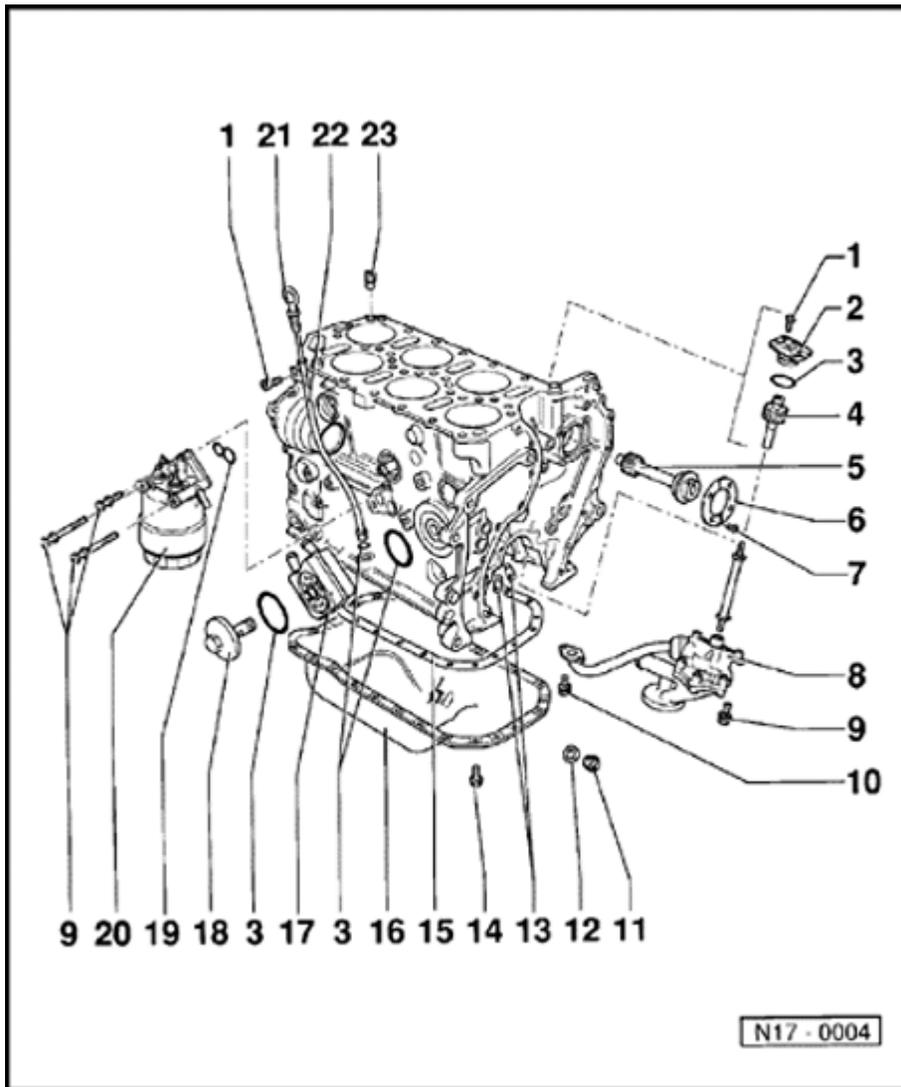
14 - 15 Nm (11 ft lb)

- ◆ Remove and install using 3249 socket.

- ◆ With flywheel installed: turn flywheel so recesses align with bolts.

15 - Gasket

- ◆ Always replace.
- ◆ Before installing gasket, coat sump flange/cylinder block flange with D2.



16 - Oil pan

- Clean sealing surfaces before installing.

17 - Oil cooler

- Coat contact area to flange, outside the seal, with AMV 188 100 02.

◆ Make sure clearance to adjacent components.

◆ See note ⇒ [Page 17-1](#)

18 - Oil cooler cover

◆ 25 Nm (18 ft lb)

19 - Gasket

- Replace.

◆ Note installed position.

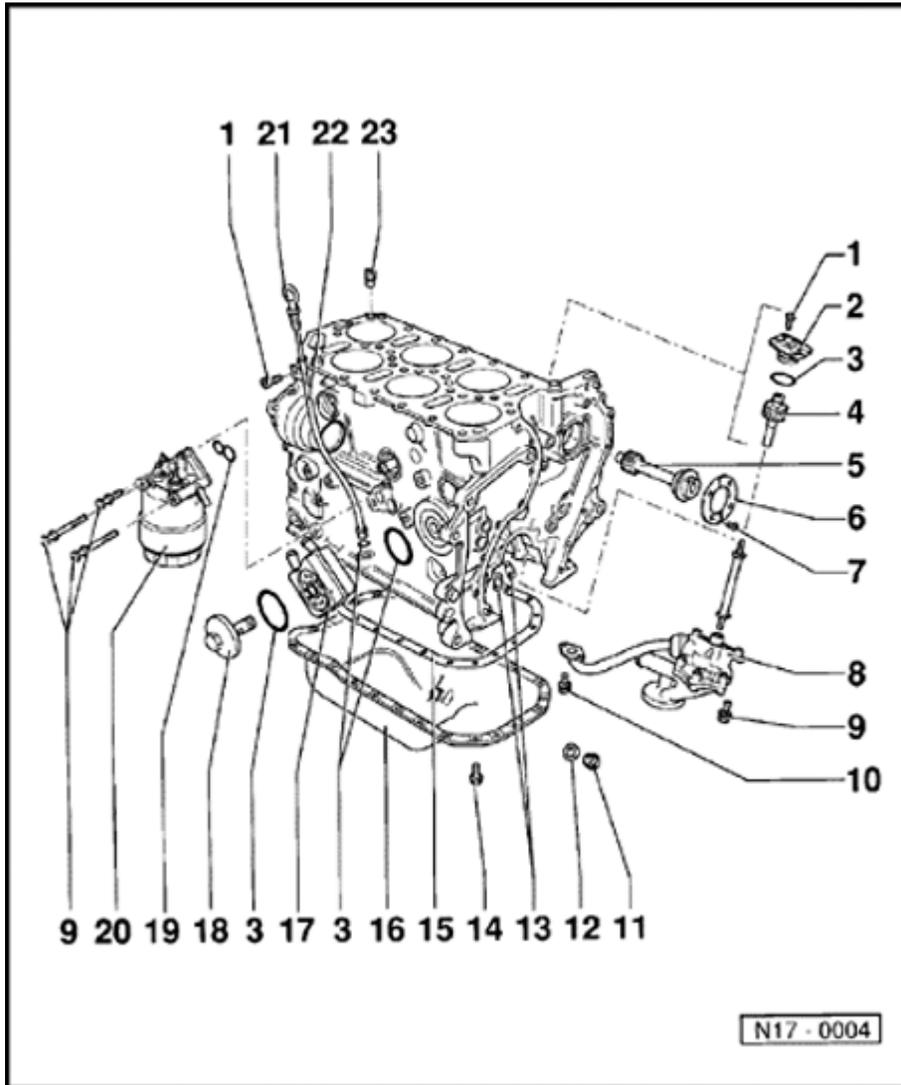
- Oil before installing.

20 - Oil filter housing

◆ Disassembling and assembling ⇒ [Page 17-8](#)

21 - Dipstick

◆ Oil level must not be above max. mark.

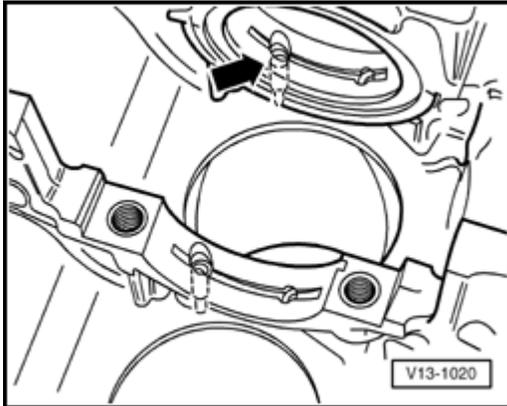


22 - Guide tube

- ◆ For dipstick
- ◆ Bolted to intake manifold

23 - Oil non-return valve

- ◆ 5 Nm (44 in. lb)
- ◆ Note installed position.
- ◆ Clean if necessary, see note ⇒ [Page 17-1](#)



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Fig. 1 Oil spray jet, removing and installing

Special tools and equipment

- ◆ 4 mm diameter punch
- ◆ 6 mm diameter punch

Note:

Oil spray jets are installed in main bearings 2 through 7.

Requirement

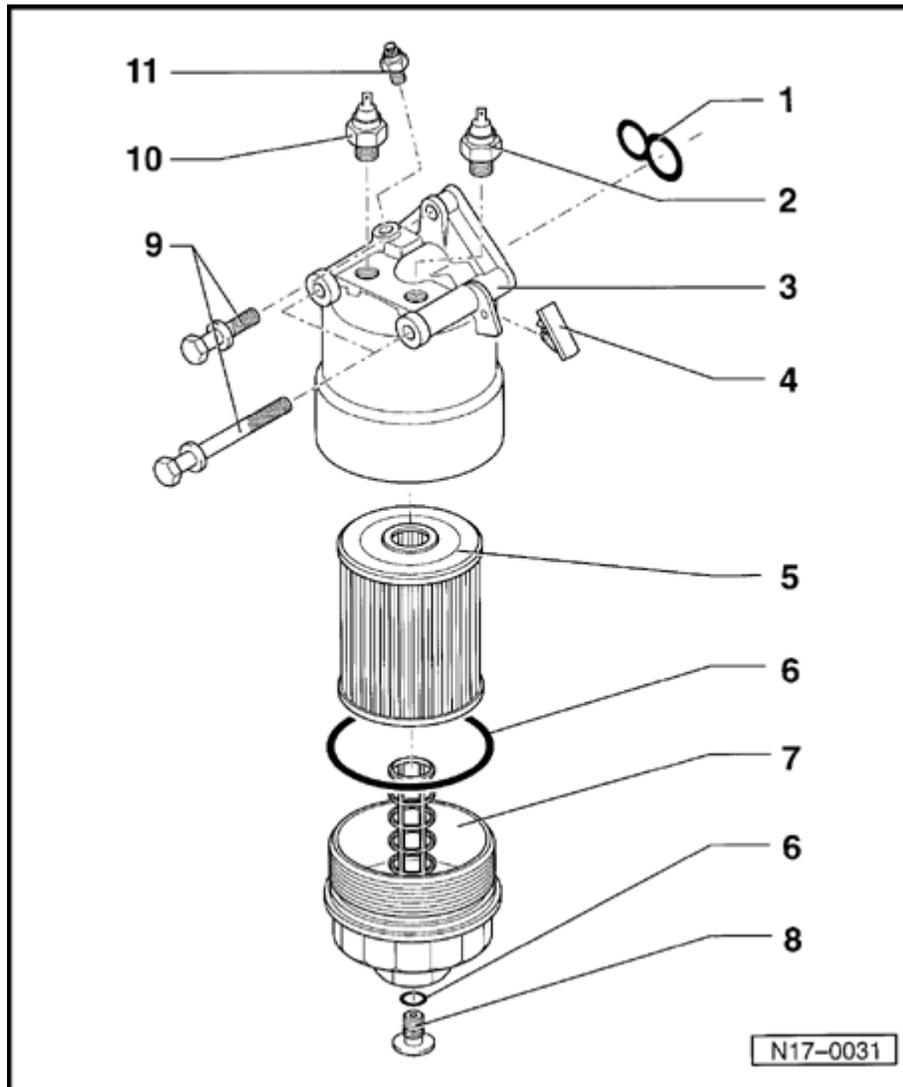
- ◆ Crankshaft must be removed.

Removing

- Remove using 4 mm diameter punch.

Installing

- Install by hand using 6 mm diameter punch -arrow-.



Oil filter housing, disassembling and assembling

1 - Gasket

- Replace.
- Note installed position.
- Oil before installing.

2 - 0.3 Bar Oil Pressure Switch-F22-

- ◆ 20 Nm (15 ft lb)
- ◆ Brown body
- ◆ Blue/black wiring
- ◆ Checking ⇒ [Page 17-12](#)
- ◆ If seal is leaking; nip replace.

3 - Oil filter bracket

4 - Stop plate

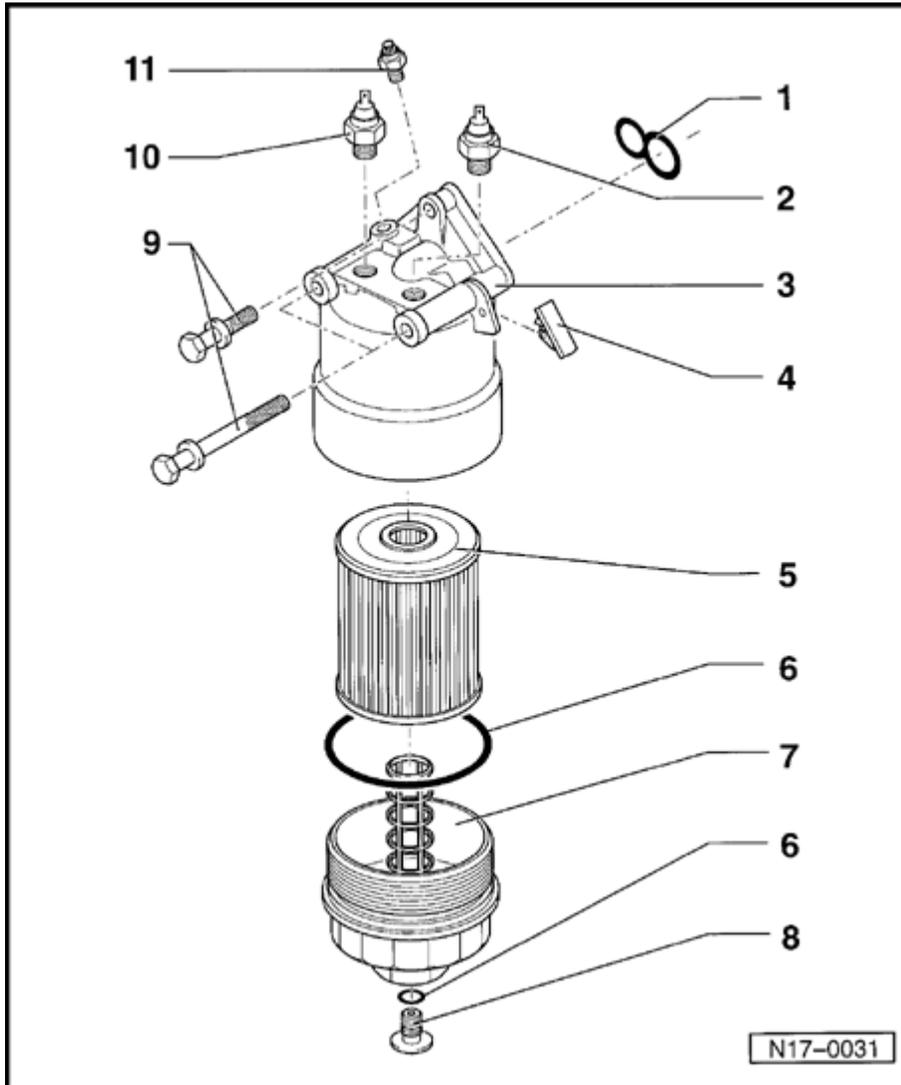
- ◆ For oil cooler
- ◆ Mounted to oil filter bracket

5 - Oil filter element

- ◆ Note replacement intervals.
- ◆
- ◆ With by-pass valve: opening pressure: 2.0

bar (29 psi)

- Clip into lower oil filter section before installing.



6 - O-ring

- Oil before installing.

7 - Oil filter, lower section

◆ 30 Nm (22 ft lb)

- Drain before removing.

8 - Oil drain screw

◆ 10 Nm (7 ft lb)

9 - 25 Nm (18 ft lb)

10 - Oil pressure switch (1.4 bar, 20 psi) -F1-

◆ 20 Nm (15 ft lb)

◆ Black body

◆ Yellow wiring

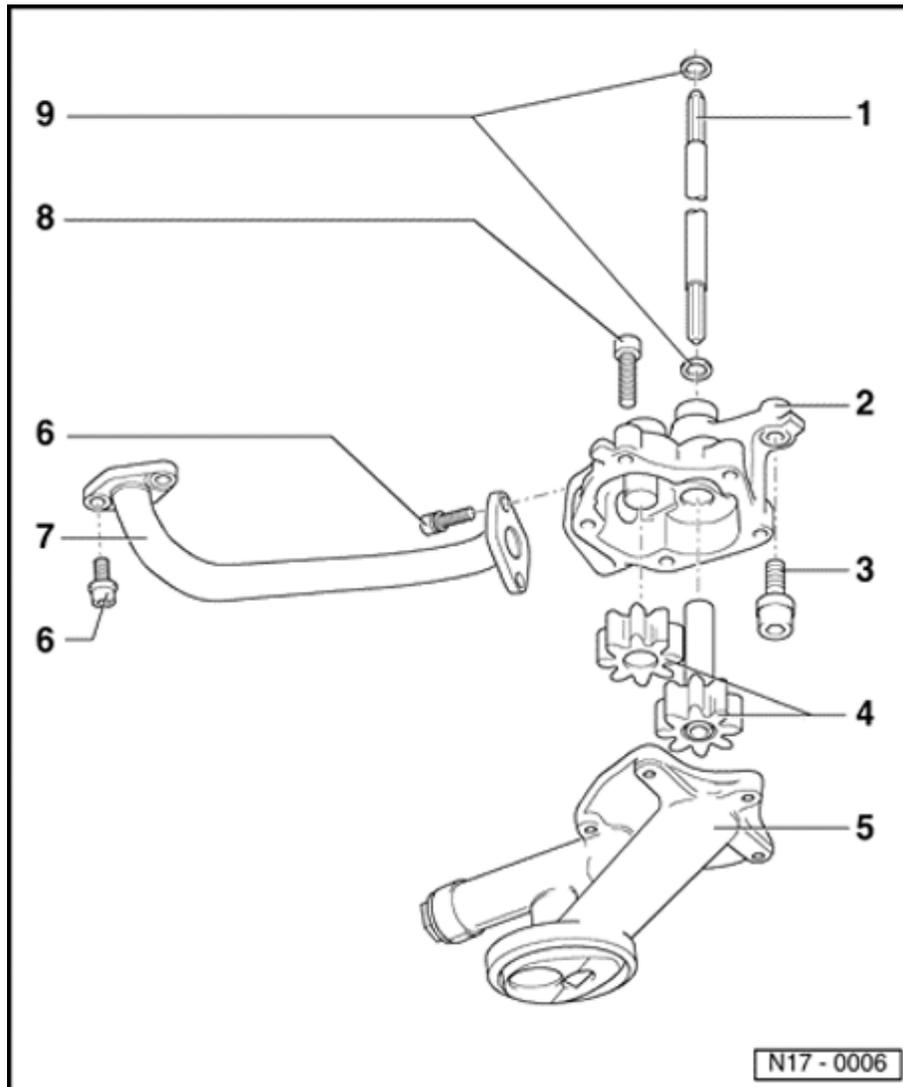
◆ Checking ⇒ [Page 17-12](#)

- If sealing ring is leaking; nip open and replace.

11 - Engine Oil Temperature sensor -G8-

◆ 10 Nm (7 ft lb)

◆ Green/black wiring



Oil pump, disassembling and assembling

1 - Drive shaft

- ◆ For oil pump drive

2 - Oil pump housing

3 - 25 Nm (18 ft lb)

4 - Gears

- ◆ Backlash, checking ⇒ [Fig. 1](#)
- ◆ Axial clearance, checking ⇒ [Fig. 1](#)

5 - Oil pump cover (with pressure relief valve)

- ◆ Opening press: 5.3 to 5.7 bar
- Clean strainer if dirty.

6 - 10 Nm (7 ft lb)

- ◆ Always replace.
- Install with locking fluid D6.

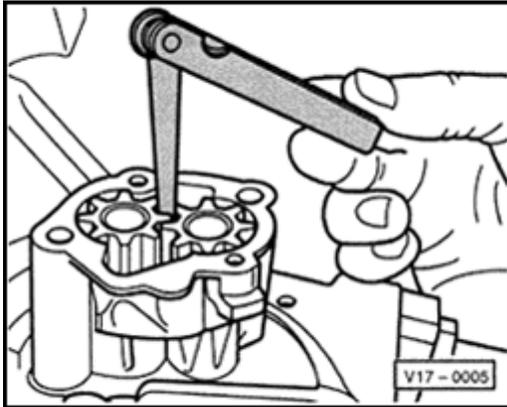
7 - Oil pressure pipe

- Coat cyl. block and oil pump housing. with AMV 188 001 02.

8 - 10 Nm (7 ft lb)

9 - O-ring

- Replace if damaged.

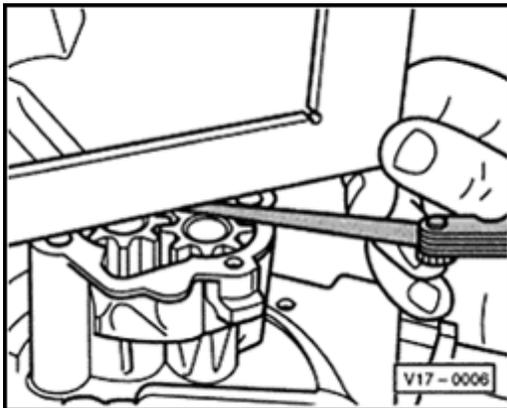


A Fig. 1 Oil pump backlash, checking

Special tools and equipment

- ◆ Feeler gauge

Wear limit: 0.20 mm (0.008 in.)



A Fig. 2 Oil pump axial clearance, checking

Special tools and equipment

- ◆ Feeler gauge

Wear limit: 0.10 mm (0.004 in.)



Oil pressure and oil pressure switches, checking

Note:

Functional check and servicing optical and acoustic oil pressure warning:

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

Special tools and equipment

- ◆ VAG 1342 Oil pressure tester
- ◆ VAG 1527B LED tester
- ◆ VW 1594 Adaptor kit
- ◆ Wiring diagram

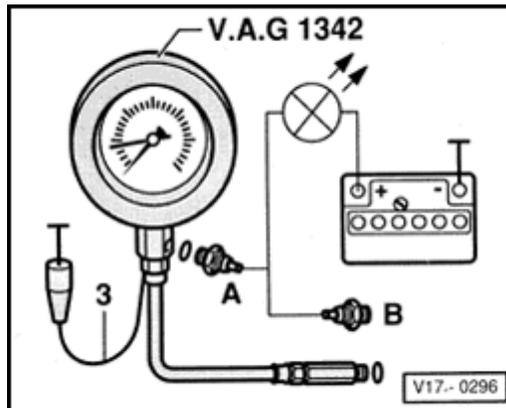
Test sequence

- Remove sound tray.

⇒ [Repair Manual, Body Exterior, Repair Group 50](#)



- Remove 0.3 bar (4 psi) oil pressure switch (brown body).
- Install oil pressure switch in tester.
- Install tester in oil filter bracket in place of oil pressure switch.



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- Connect tester wire -3- (brown) to ground
- Connect VAG 1527B LED tester to battery positive (+) and 0.3 bar oil pressure switch -A- using jumper wires from VW 1594 adaptor kit.
 - ◆ LED must light up.
- Start engine and slowly increase engine speed.
 - ◆ At 0.15 to 0.45 bar, LED must go out

If LED does not go out:

- Replace 0.3 bar oil pressure switch.
- Connect LED tester to 1.4 bar oil pressure switch -F- -B- (black).
 - ◆ At 1.2 to 1.6 bar, LED must light up.

If LED does not light up:

- Replace 1.4 bar oil pressure switch -F1-.
- Increase engine speed.
 - ◆ At 2000 rpm and an oil temperature of 80° C (176° F) oil pressure must be 2.0 bar minimum.
 - ◆ At higher rpm, oil pressure must not exceed 7.0 bar.
- Replace oil pump if necessary ⇒ [Page 17-10](#) .