

**Volkswagen Jetta, Golf, GTI 1999, 2000**

**2.8 Liter VR6 2V Engine Mechanical, Engine Code(s): AFP**

**17 Engine-Lubrication (Page GR-17)**

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**[Lubrication system components, removing and installing](#)**

[Oil filter housing, disassembling and assembling](#)

[Oil pan, removing and installing](#)

[Oil pressure and oil pressure switch, checking](#)

[Oil pump, disassembling and assembling](#)

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#### Lubrication system components, removing and installing (Page 17-1)

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#### **Notes:**

- ♦ *If significant amounts of metal and other abraded particles (caused by corrosion of the crankshaft, small end bearings, etc.) are discovered in the oil during engine repair work, it will be necessary to replace all spray nozzles in the oil return stop, oil filter cartridge and oil cooler, besides carefully cleaning the oil passages to prevent secondary damage.*
- ♦ *Do not overfill with oil-this could damage the catalytic converter!*

Checking oil pressure ⇒ [page 17-15](#).

#### **Volumes**

With oil filter, 6.1 liter (6.4 qt.)

#### **Oil specifications**

The following items must appear on the oil container singly or in combination with other designations: VW 502 00, VW 500 00 or VW 501 01, ACEA A2 or ACEA A3 or API Service J.

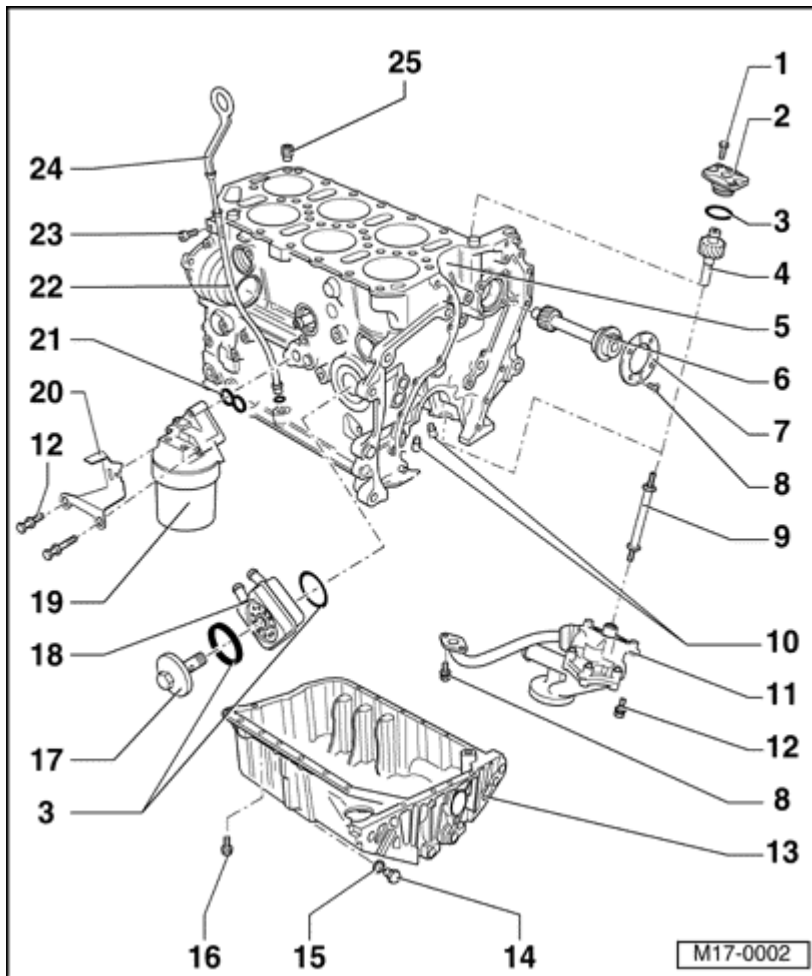
Engine oils are graded according to their viscosity. The proper grade to be used in your engine depends on existing climatic or seasonal conditions.

The engine oil which was first put into your engine has a viscosity grade of SAE 5W-40. You can use this oil over all temperature ranges for normal driving. If engine oil viscosity grade SAE 5W-40 is not available, you can also use SAE 5W-30.

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#### Lubrication system components, removing and installing (Page 17-2)



**1 - 10 Nm**

**2 - Cover for oil pump drive**

**3 - O-Ring**

- ◆ Replace
- ◆ Lubricate before assembly

**4 - Oil pump drive**

**5 - Cylinder block**

**6 - Intermediate shaft**

**7 - Thrust washer**

**8 - 10 Nm**

- ◆ Insert with thread lock "D6".

**9 - Drive shaft**

- ◆ For oil pump drive

**10 - Spray nozzle**

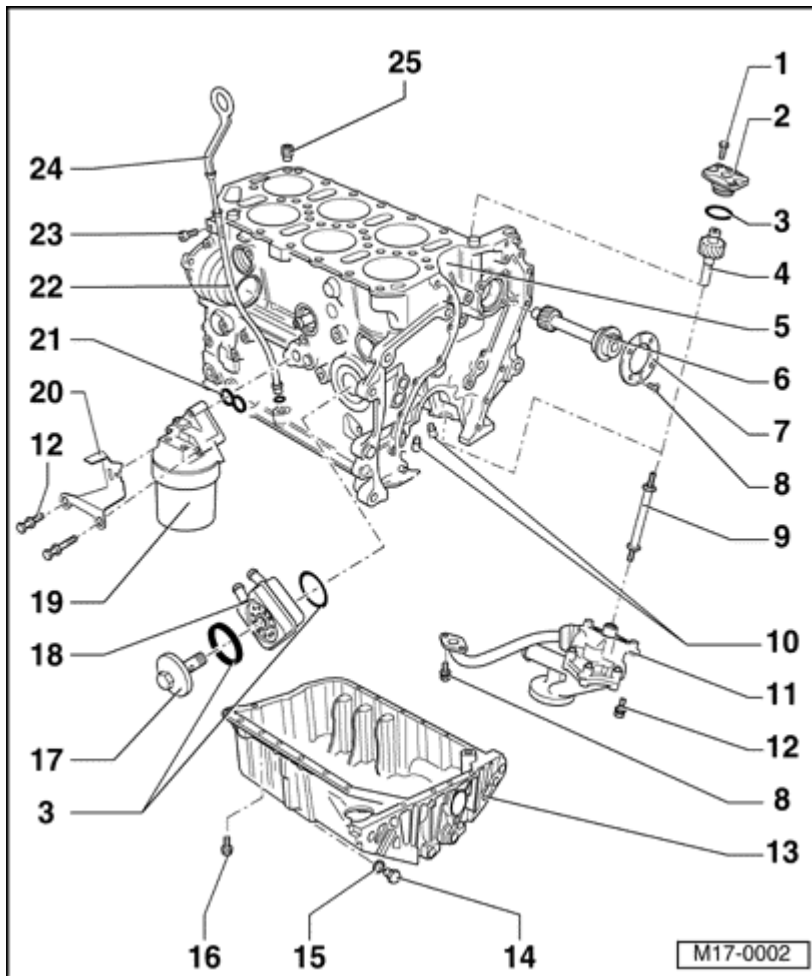
- ◆ For crankshaft bearings 2-6
- ◆ For piston cooling
- ◆ Removing and installing ⇒ [Fig. 1](#)

- ◆ Opening pressure: 2.0 bar
- ◆ See Note ⇒ [page 17-1](#)

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#### Lubrication system components, removing and installing (Page 17-3)



#### 11 - Oil pump

- ◆ Disassembling and assembling ⇒ [page 17-9](#)
- ◆ Coat the oil pressure pipe on the engine block and the oil pump body with AMV 188 001 02

#### 12 - 25 Nm

#### 13 - Oil pan

- ◆ Removing and installing ⇒ [page 17-12](#)

#### 14 - Oil drain plug, 20 Nm

#### 15 - Sealing ring

- ◆ Replace

#### 16 - 15 Nm

#### 17 - Oil cooler cover, 25 Nm

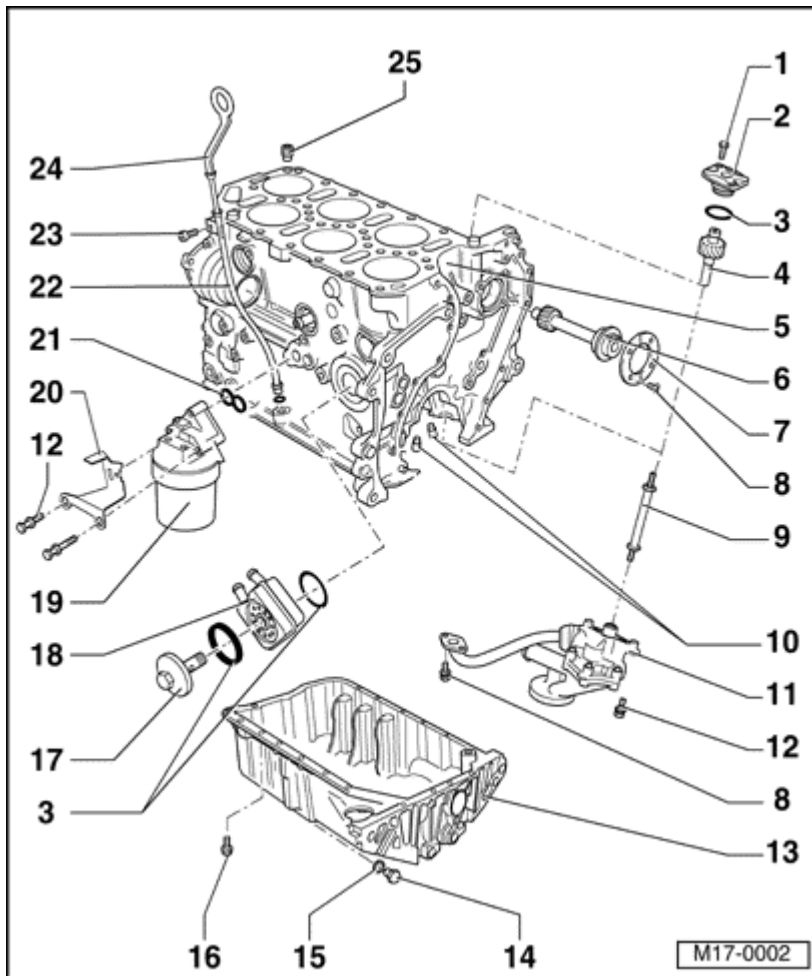
#### 18 - Oil cooler

- ◆ Coat all contact surfaces outside the gasket with AMV 188 001 02
- ◆ Note floating contact with surrounding components
- ◆ See Note ⇒ [page 17-1](#)

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#### Lubrication system components, removing and installing (Page 17-4)



#### 19 - Oil filter body

- ◆ Disassembling and assembling ⇒ [page 17-7](#)

#### 20 - Bracket

- ◆ For valve for intake manifold cross-over (N156)

#### 21 - Gasket

- ◆ Replace
- ◆ Observe correct fitting position
- ◆ Lubricate before assembly

#### 22 - Guide pipe

- ◆ For dipstick
- ◆ Fastened to top of the intake manifold with bolts

#### 23 - 5 Nm

#### 24 - Dipstick

- ◆ Do not fill above upper mark!
- ◆ Marks ⇒ [page 17-6](#) , [Fig. 2](#)

#### 25 - Oil return stop, 5 Nm

- ◆ Observe correct position

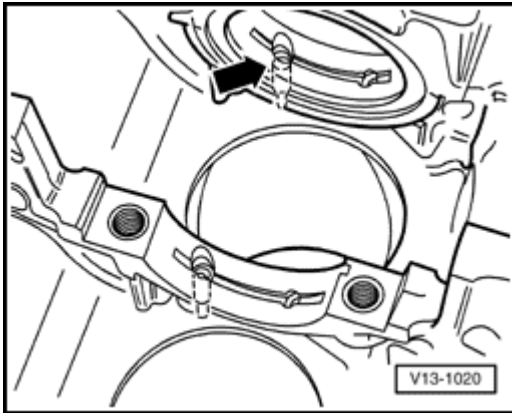
- ◆ Clean if very dirty
- ◆ See Note ⇒ [page 17-1](#)

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#### Lubrication system components, removing and installing (Page 17-5)

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**A**

#### **Fig. 1 Removing and installing spray nozzle**

#### **Special tools, equipment, test and inspection devices; required accessories**

- ◆ Drift, 4 mm dia.

#### **Notes:**

*Spray nozzles are built into crankshaft bearings 2-6.*

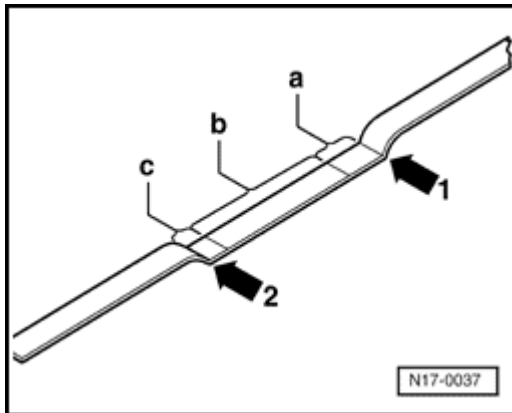
- Crankshaft dismantled

#### **Removing**

- Using a 4 mm drift, press out the spray nozzles toward the engine mount.

#### **Installing**

- Press in the spray nozzles by hand using a 6 mm drift -arrow-.



**A**

**Fig. 2 Dipstick markings**

1- Upper mark

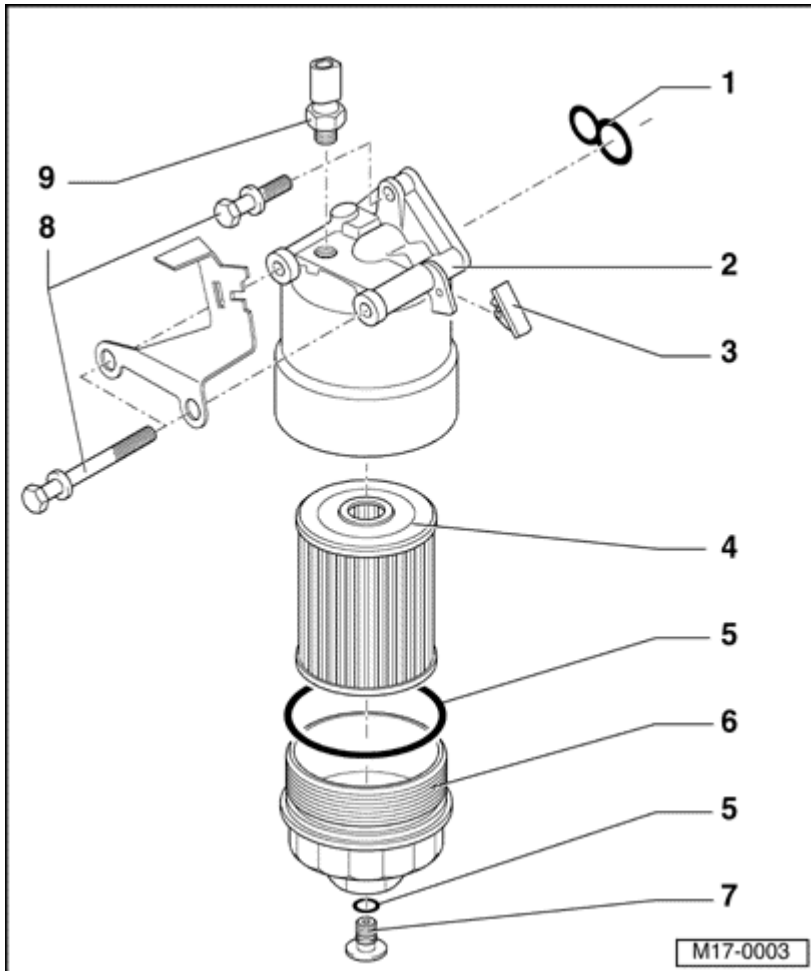
2- Lower mark

a- If the level is between the cross-hatched region and the upper mark: Do not top up!

b- If the oil level is within the cross-hatched region: oil may be topped up.

c- If the oil level is between the lower mark and the cross-hatched region: add no more than 0.5 liters of oil!

## Oil filter housing, disassembling and assembling



### 1 - Gasket

- ◆ Replace
- ◆ Observe correct fitting position
- ◆ Lubricate before assembly

### 2 - Filter housing

### 3 - Stop

- ◆ For oil cooler
- ◆ Fastened to the oil filter housing

### 4 - Filter cartridge

- ◆ Maintain regular change intervals
- ◆ With by-pass valve. Opening pressure: 2.0 bar
- ◆ Clip into bottom of oil filter before installing

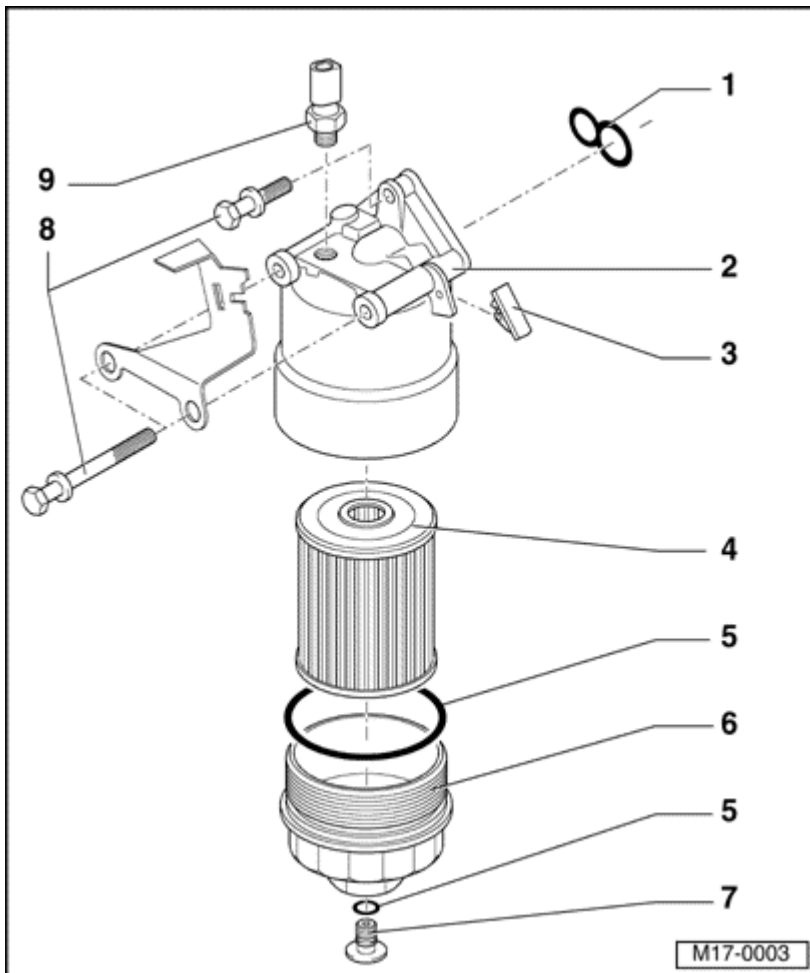
### 5 - O-Ring

- ◆ Replace
- ◆ Lubricate before assembly

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**Lubrication system components, removing and installing (Page 17-8)**



**6 - Bottom of oil filter housing, 30 Nm**

- ◆ Empty before disassembling

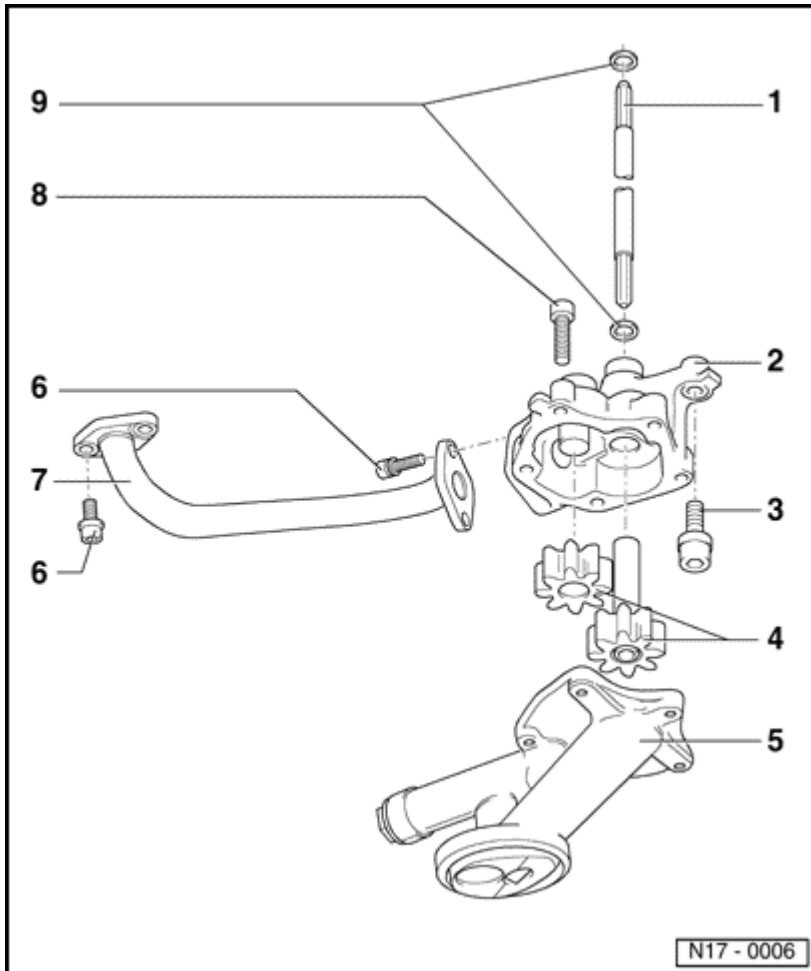
**7 - Oil drain plug, 10 Nm**

**8 - 25 Nm**

**9 - 1.4 bar oil pressure switch (F1), 25 Nm**

- ◆ Black
- ◆ Checking ⇒ [page 17-15](#)
- ◆ If gasket is leaking, cut open and replace gasket

## Oil pump, disassembling and assembling



### 1 - Drive shaft

- ◆ For oil pump drive

### 2 - Oil pump body

### 3 - 25 Nm

### 4 - Gears

- ◆ Checking tooth backlash ⇒ [Fig. 1](#)
- ◆ Checking end play ⇒ [Fig. 2](#)

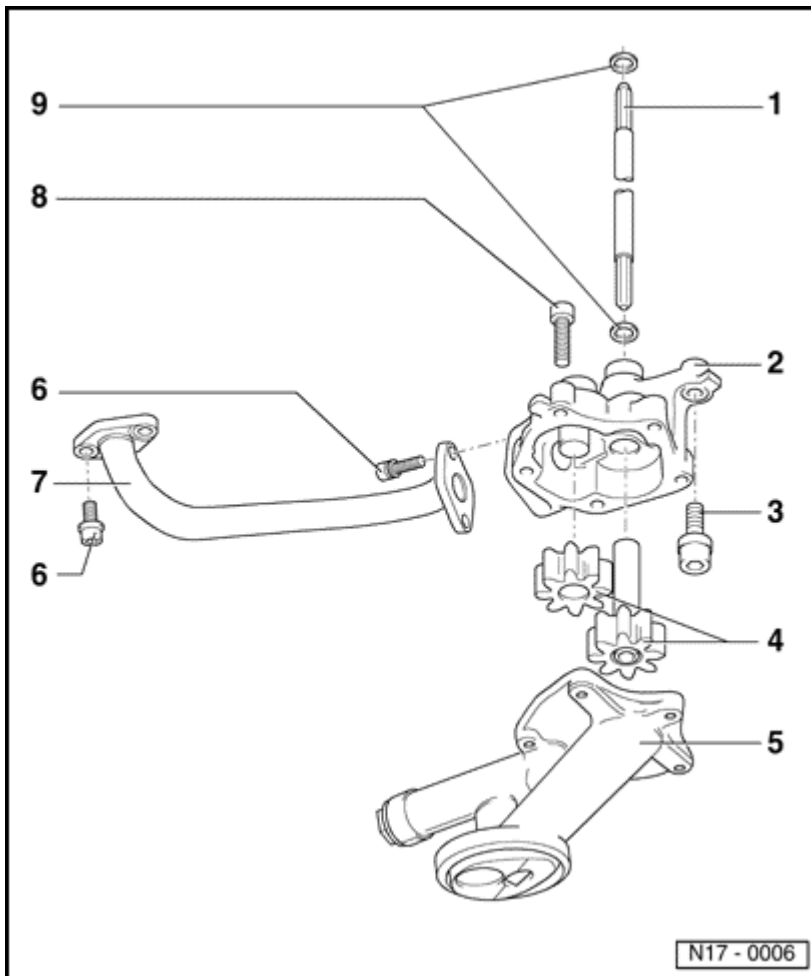
### 5 - Oil pump cover with pressure relief valve

- ◆ Opening pressure: 5.3-5.7 bar
- ◆ Clean strainer if contaminated

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**Lubrication system components, removing and installing (Page 17-10)**



**6 - 10 Nm**

- ◆ Replace
- ◆ Insert with thread lock "D6".

**7 - Discharge pipe**

- ◆ Coat the engine block and oil pump body with AMV 188 001 02

**8 - 10 Nm**

**9 - O-Ring**

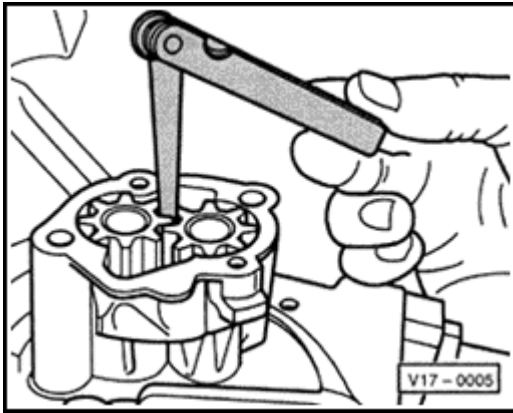
- ◆ Replace if damaged

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**Lubrication system components, removing and installing (Page 17-11)**

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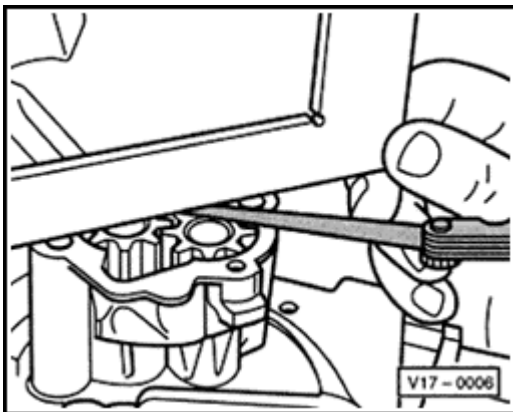
**A**

**Fig. 1 Checking oil pump tooth backlash**

**Special tools, equipment, test and inspection devices; required accessories**

- ♦ Feeler gauge

Wear limit: 0.20 mm



**A**

**Fig. 2 Checking oil pump end play**

**Special tools, equipment, test and inspection devices; required accessories**

- ♦ Feeler gauge

Wear limit: 0.10 mm

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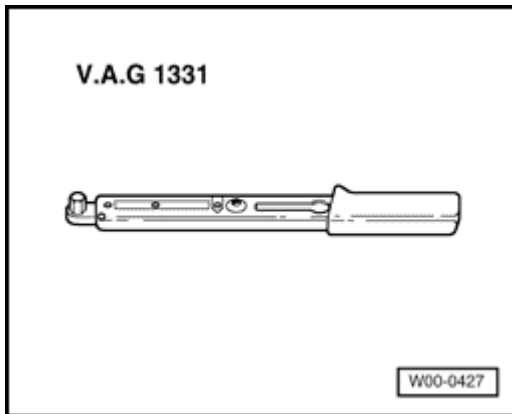
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#### Lubrication system components, removing and installing (Page 17-12)

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## Oil pan, removing and installing

Special tools, equipment, test and inspection devices; required accessories



### A

- ◆ V.A.G. 1331 torque wrench (5...50 Nm)
- ◆ Hand drill with plastic brush inset
- ◆ Silicone sealing compound D 176 404 A2
- ◆ Flat scraper

### Removing

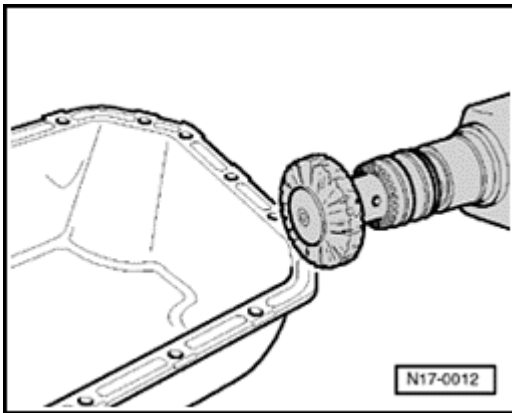
- Remove middle, left, and right damping pans:  
⇒ [Repair Manual, Body-Exterior, Repair Group 50](#)
- Drain the oil.
- Unscrew the oil pan.
- The oil pan can be loosened by soft blows with a rubber hammer if necessary.
- Use a flat scraper to remove sealing residue from the cylinder block.

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#### Lubrication system components, removing and installing (Page 17-13)

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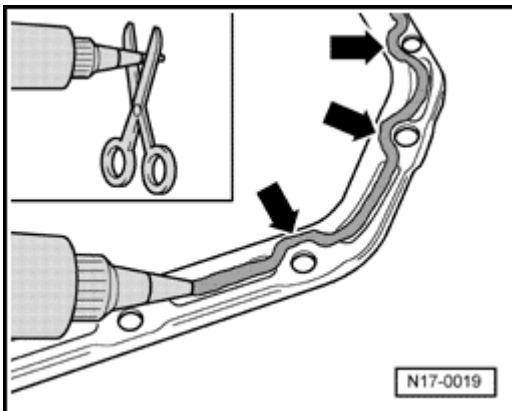
**A**

- Use a rotating brush to remove sealing residue from the oil pan, a hand drill with plastic brushes for example-inset (wear protective glasses).
- Clean the sealing surfaces so that they are free of oil and grease.

#### Installing

##### Notes:

- ◆ *Ensure that the sealing compound has a valid expiration date.*
- ◆ *The oil pan must be installed within 5 minutes after applying the silicon sealing compound.*



**A**

- Cut the tubular nozzle off at the front mark (nozzle diameter approx. 3 mm).
- Apply the sealing compound to the cleaned sealing surface, as shown. The bead must:
  - ◆ be 2-3 mm thick
  - ◆ run past the inside around the bores -arrows-

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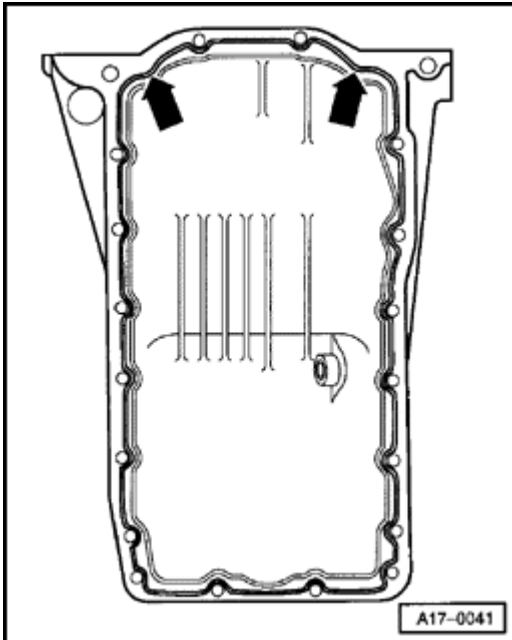
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#### Lubrication system components, removing and installing (Page 17-14)

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#### **Notes:**

*If the bead is too thick, excess sealing compound can get in the oil pan and clog the strainer in the pump suction line.*



#### **A**

- Apply the sealing compound to the clean surface as shown.
- Immediately put the oil pan in place and insert all bolts, leaving them loose.
- Tighten the bolts to 15 Nm.
- Tighten the oil pan to gear bolts to 45 Nm.

#### **Notes:**

*After assembling the oil pan, wait approximately 30 minutes for the sealing compound to dry before filling with oil.*

Complete assembly in reverse order.

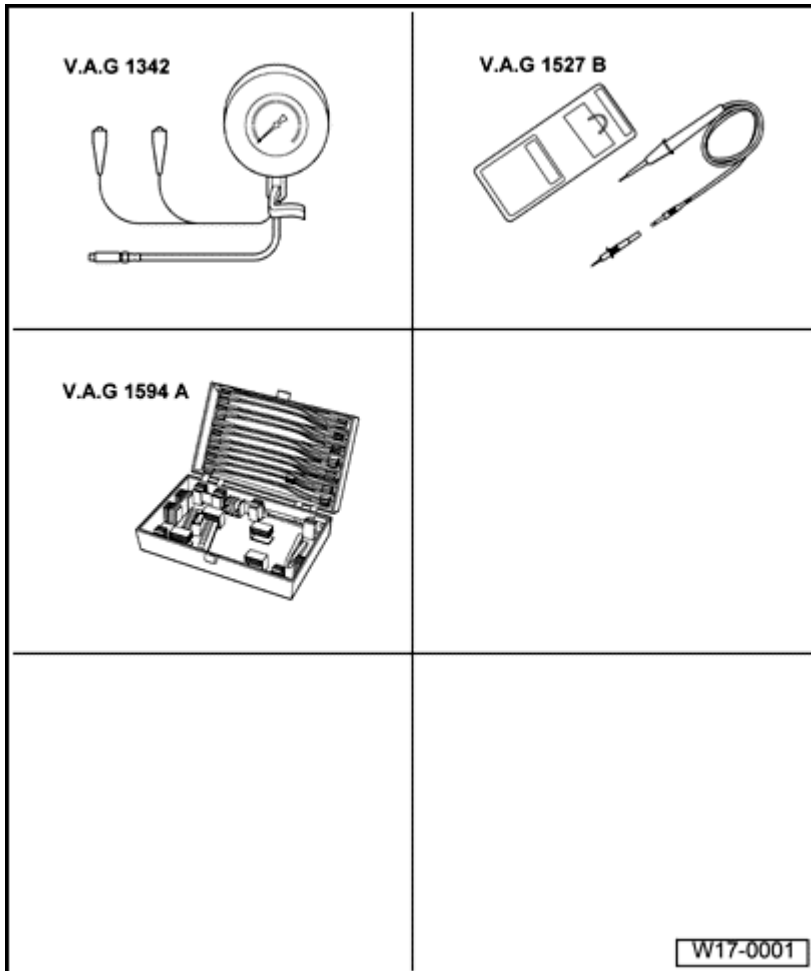
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Lubrication system components, removing and installing (Page 17-15)

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#### Oil pressure and oil pressure switch, checking



#### Special tools, equipment, test and inspection devices; required accessories

- ◆ V.A.G 1342 Oil pressure tester
- ◆ V.A.G 1527 B Diode test lamp
- ◆ V.A.G 1594 A Supplemental measuring toolset

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#### **Lubrication system components, removing and installing (Page 17-16)**

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#### **Function of the Dynamic Oil Pressure Warning System**

The oil pressure switch is open without pressure and is closed when the operating pressure is reached.

The oil pressure warning is actuated approx. 10 seconds after the ignition is turned on.

Oil pressure warning turn-on delay: approx. 3 seconds.

Oil pressure warning turn-off delay: approx. 5 seconds.

#### **Checking the indicator light for operation with oil pressure**

After the ignition is turned on, the indicator light (K3) in the instrument panel must light for approx. 3 seconds and then extinguish. The test ends when the engine starts running.

#### **Warning criteria**

Warning is provided both visually (blinking indicator light) and acoustically (buzzer sounds three times). This occurs under the following operational states:

- Ignition ON, engine stopped, oil pressure switch closed
- Engine speed above 1500/min, oil pressure switch open

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#### **Notes:**

- ◆ *The indicator light is not switched off if the engine speed exceeds 5000 rpm, not even if the oil pressure switch is closed. The indicator light will be shut off again when the engine speed drops below 5000 rpm.*
- ◆ *If the oil pressure switch is only opened for 0.5-3.0 seconds when the engine speed is over 1500 rpm, this fact will be stored in the instrument cluster processor. If this state occurs three times while the engine is running, the warning will be triggered and will not be cleared even under 500 rpm. The warning will be cleared when the oil pressure switch is closed for more than 5 seconds and the ignition is turned off.*

#### **Test conditions**

- Oil level OK (checking ⇒ [page 17-6](#) , [Fig. 2](#) )
- Indicator lamp for oil pressure (K3) must illuminate for approx. 3 seconds after the ignition is turned on.
- Oil temperature at least 80° C

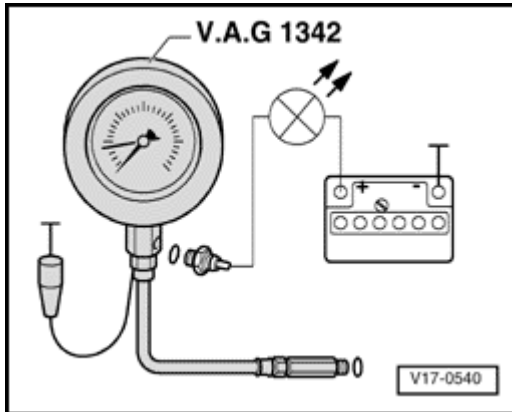
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#### Lubrication system components, removing and installing (Page 17-18)

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#### Oil pressure switch, checking



- Remove the 1.4 bar oil pressure switch (F1) (black insulation) and screw it into the tester.
- Screw the tester into the oil filter housing in place of the oil pressure switch.
- Ground the tester brown lead (-).
- Connect the V.A.G 1527 B diode test lamp to the battery positive terminal (+) and to the oil pressure switch using the auxiliary cables from V.A.G 1594 A. The light-emitting diode (LED) should not illuminate.

If the LED illuminates:

- Replace the 1.4 bar oil pressure switch (F1) ⇒ [page 17-8](#) , item -9-.

If the LED does not illuminate:

- Let the engine continue to idle. The light-emitting diode should light at 1.2-1.6 bar. Otherwise, replace the 1.4 bar oil pressure switch (F1).

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#### Lubrication system components, removing and installing (Page 17-19)

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#### Oil pressure, checking

##### Test condition

- The V.A.G 1342 oil pressure test instrument is not connected
- Oil temperature at least 80° C

##### Test sequence

- Start the engine and let it idle.  
Specification: oil pressure: at least 2.0 bar
- Increase engine speed.
  - ◆ The oil should be at least 2.0 bar at 2000 rpm and 80° C oil temperature.
  - ◆ The oil pressure may not exceed 7.0 bar
- Replace oil pump if necessary ⇒ [page 17-9](#).