

Lubrication system components, removing and installing

Note:

- ◆ *If metal particles or other deposits (caused, for example, by partial seizure of the crankshaft or connecting rod bearings) are noticed in the engine oil when performing repairs, clean the oil passages thoroughly and replace the oil cooler (mandatory) to prevent future damage.*
- ◆ *The oil level must NOT be above the MAX. mark - there is the possible danger of damaging the catalytic converter!*

Oil pressure, checking ⇒ [Page 17-14](#)

Oil Capacities up to MY 2000

From my 2001 ⇒ Fluid Capacity Chart

Oil system capacity

- With oil filter 4.5 Liters (4.75 quarts)

Engine oil specifications:

⇒ [Repair Manual, Maintenance or Owner's Manual](#)

The following terms must appear on the oil container singly or in combination with other designations:

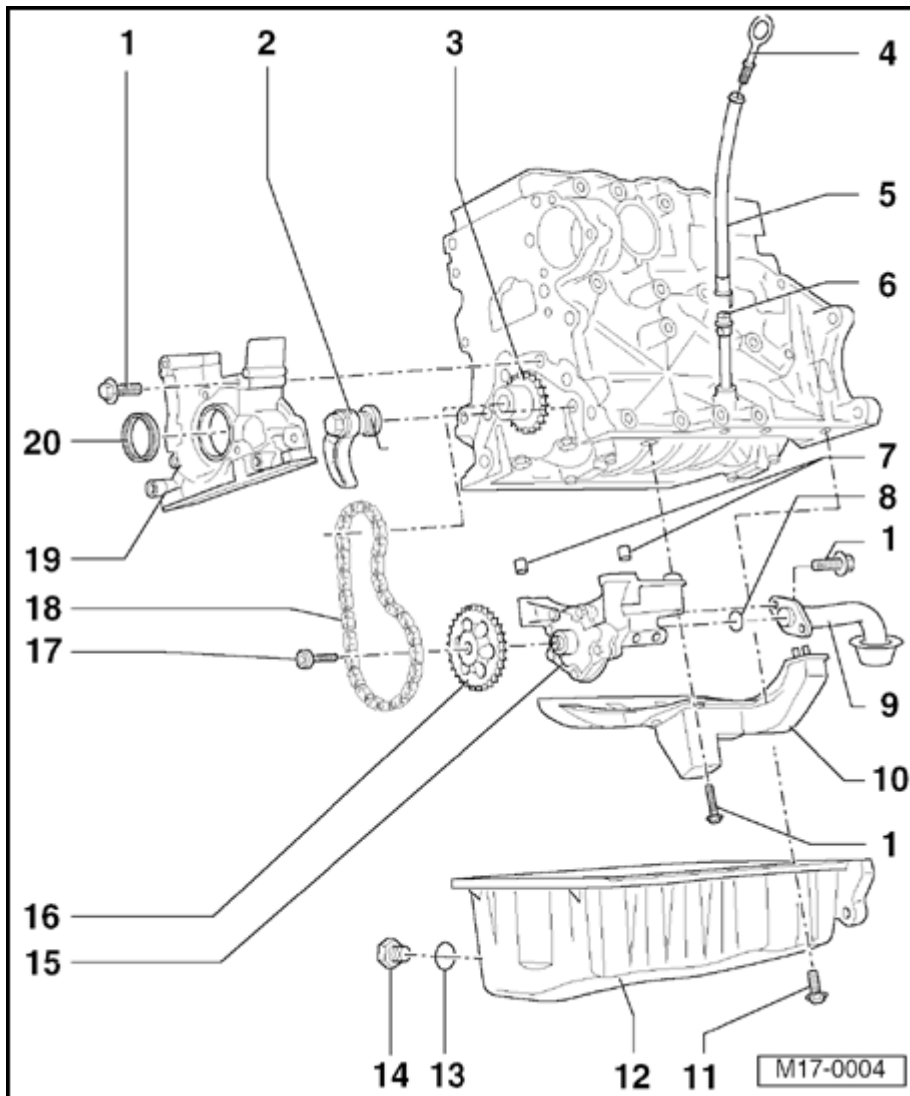
- ◆ VW 505 00

- ◆ ACEA B3 or ACEA B4

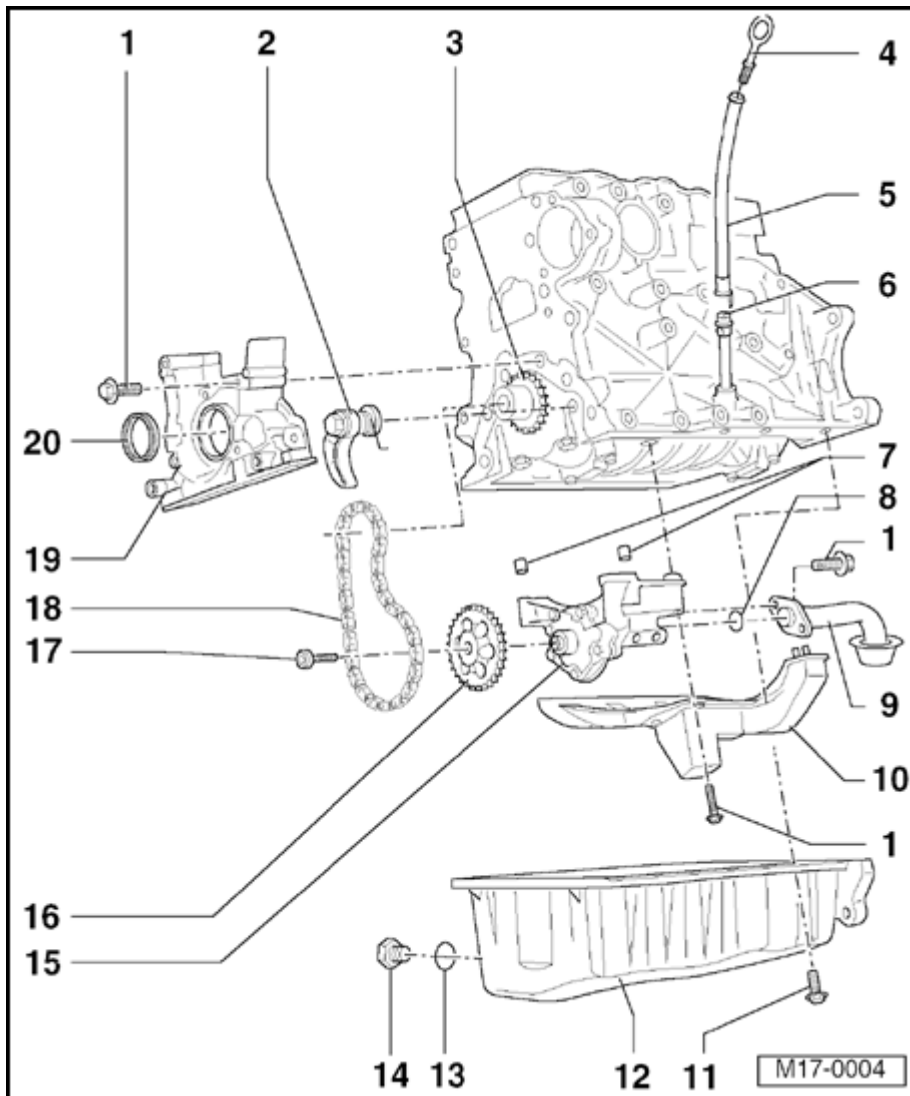
- ◆ API Service CF4 or API Service CG4

- ◆ 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.



- 1 - 15 Nm (11 ft lb)**
- 2 - Chain tensioner (with tensioning rail), 15 Nm (11 ft lb)**
 - ◆ When installing, pretension spring and engage
- 3 - Chain sprocket**
 - ◆ For oil pump drive
- 4 - Oil dip stick**
 - ◆ Oil level must NOT be above the MAX. mark! ⇒ [Page 17-6](#), Fig. ⇒ [1](#)
- 5 - Funnel**
 - ◆ For siphoning oil
- 6 - Guide tube**
- 7 - Guide sleeves**
 - ◆ Check for firm seating.
- 8 - O-ring**
 - ◆ Always replace
- 9 - Suction line**
 - ◆ Clean strainer if contaminated



10 - Baffle plate

11 - 15 Nm (11 ft lb)

- ◆ Remove with flexible wrench 3185
- ◆ Remove or install bolts at flywheel side with hex ball socket 3249

12 - Oil pan

- ◆ Clean sealing surface before installing
- ◆ Install with silicone sealant D 176 404 A2 ⇒ [Page 17-10](#)

13 - Seal

- ◆ Always replace

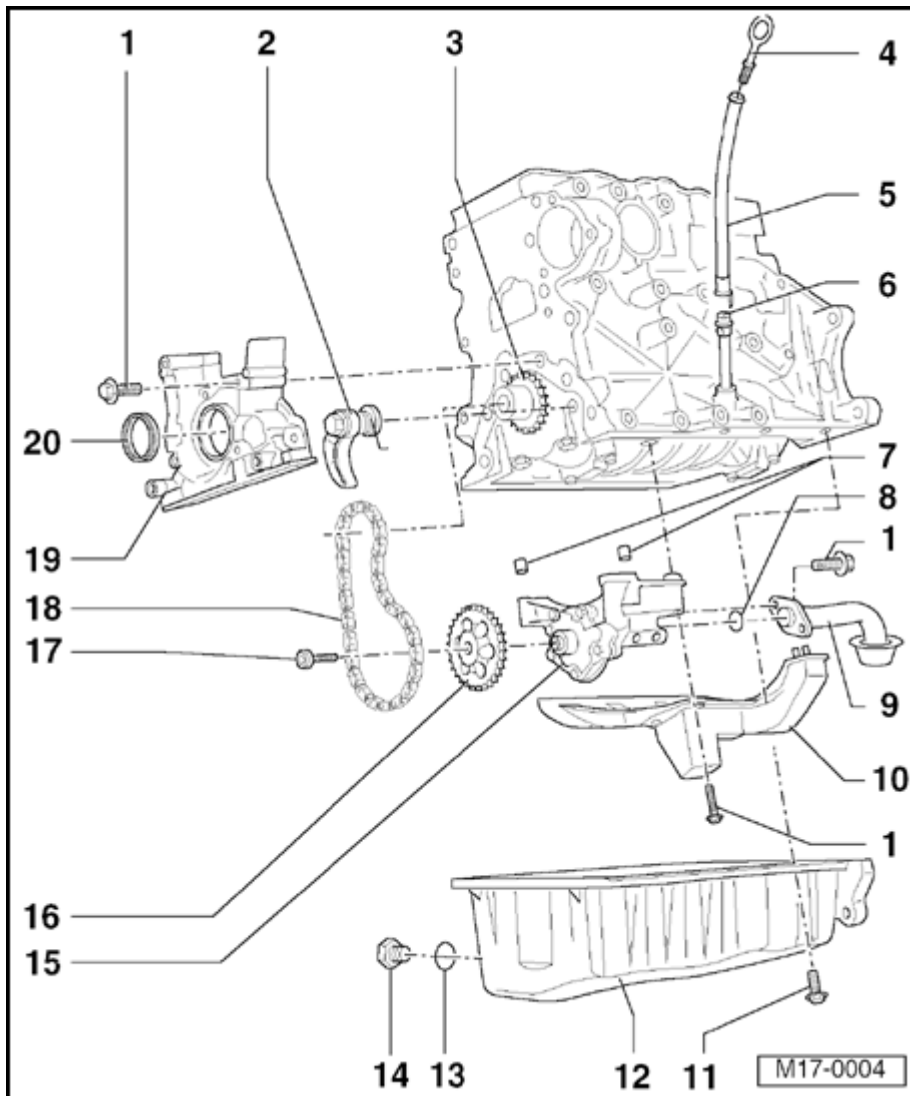
14 - Oil drain plug

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

15 - Oil pump

- ◆ 12 bar pressure relief
- ◆ Before installing, ensure that both centering dowels are installed.
- ◆ Replace if any running surfaces or gears are scored.

16 - Chain sprocket



17 - 25 Nm (18 ft lb)

18 - Chain

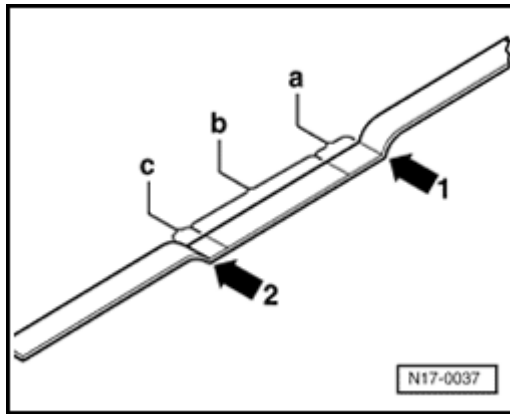
- ◆ Before removing mark running direction.

19 - Sealing flange, front

- ◆ Must be seated on dowels
- ◆ Removing and installing ⇒ [Page 13-38](#)
- ◆ Install with silicone sealer, Part No. D 176 404 A2 ⇒ [Page 13-38](#)

20 - Seal

- ◆ Always replace ⇒ [Page 13-34](#)



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Fig. 1 Dipstick, markings

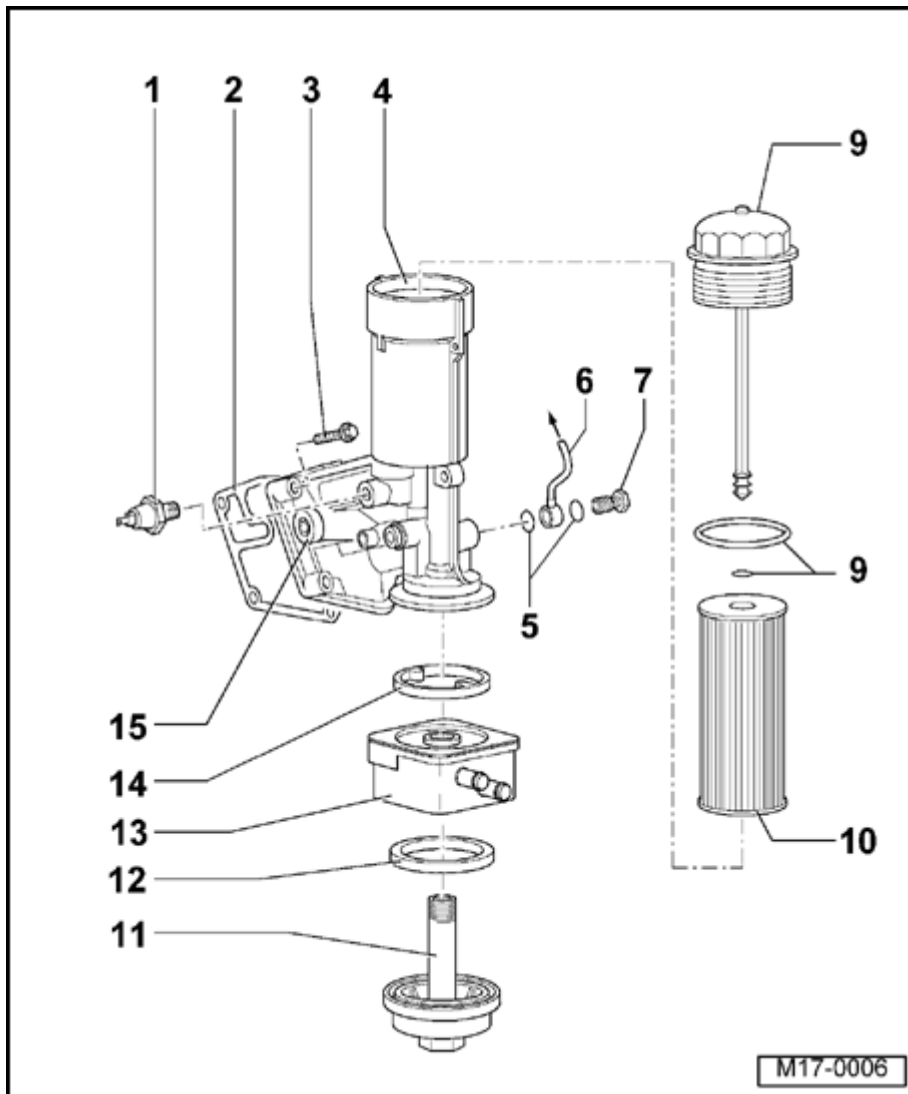
1 - MAX. mark

2 - MIN. mark

a - Area above cross-hatched zone up to the MAX. mark: Do not top-up with engine oil!

b - Oil level within cross-hatched zone: Can be topped-up with engine oil, as necessary.

c - Area from MIN. mark up to cross-hatched zone: Fill with 0.5 Liter (0.47 quarts) of engine oil.



Oil filter, disassembling and assembling

1 - 0.7 bar Oil pressure switch (F1)

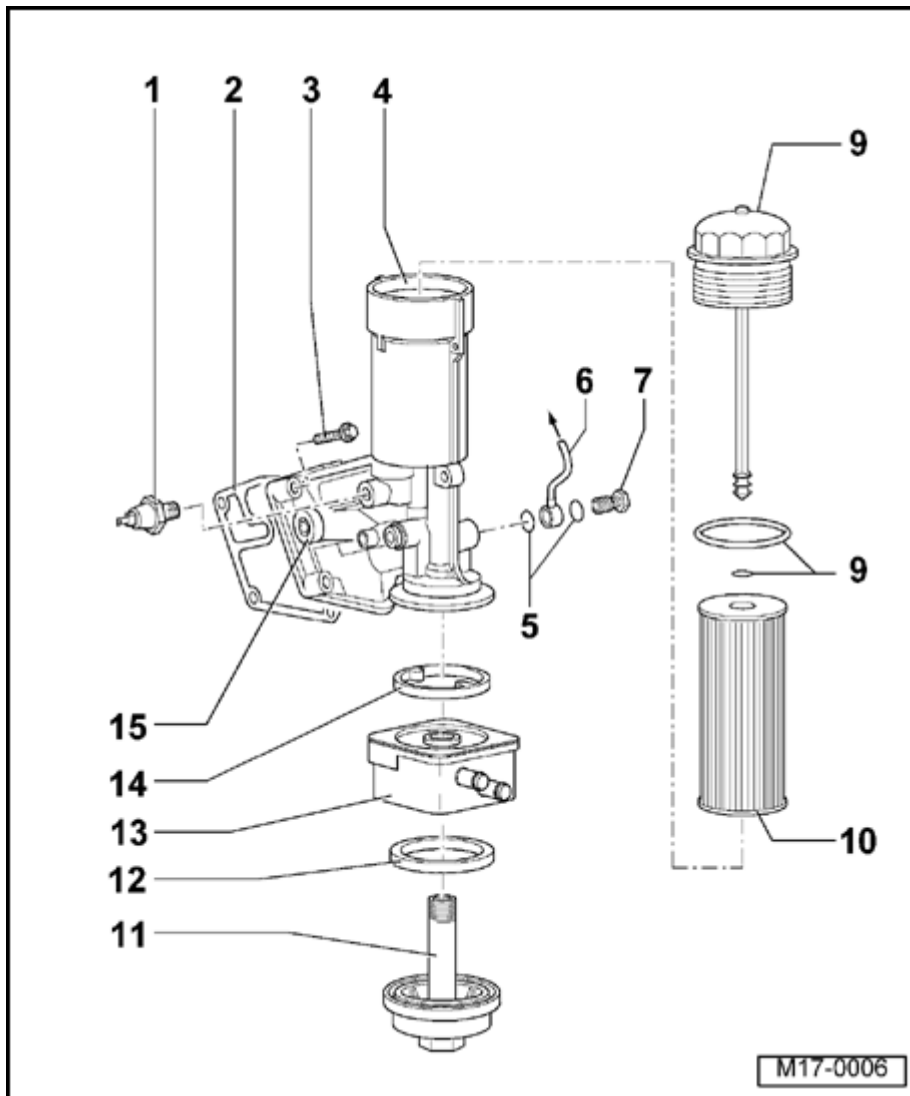
- ◆ 25 Nm (18 ft lb)
- ◆ Color: brown
- ◆ Checking ⇒ [Page 17-14](#)
- ◆ Cut seal when replacing

2 - Seal

- ◆ Always replace

3 - 15 Nm (11 ft lb) + additional $\frac{1}{4}$ turn (90°)

- ◆ Always replace
- ◆ First insert top left bolt and bolt at right bottom, then tighten all bolts evenly and in a crosswise pattern.
- ◆ Torque angle can be measured with Hazet 6690 torque angle meter, or equivalent



4 - Oil filter bracket

- ◆ With pressure relief valve, approx. 4 bar

5 - Seal

- ◆ Always replace

6 - Oil supply line

- ◆ To turbocharger ⇒ [Page 21-10](#)

7 - Banjo bolt

- ◆ 20 Nm (15 ft lb)

8 - Cover

- ◆ 25 Nm (18 ft lb)

- ◆ Remove and install with oil filter wrench 3417

9 - O-ring

- ◆ Always replace

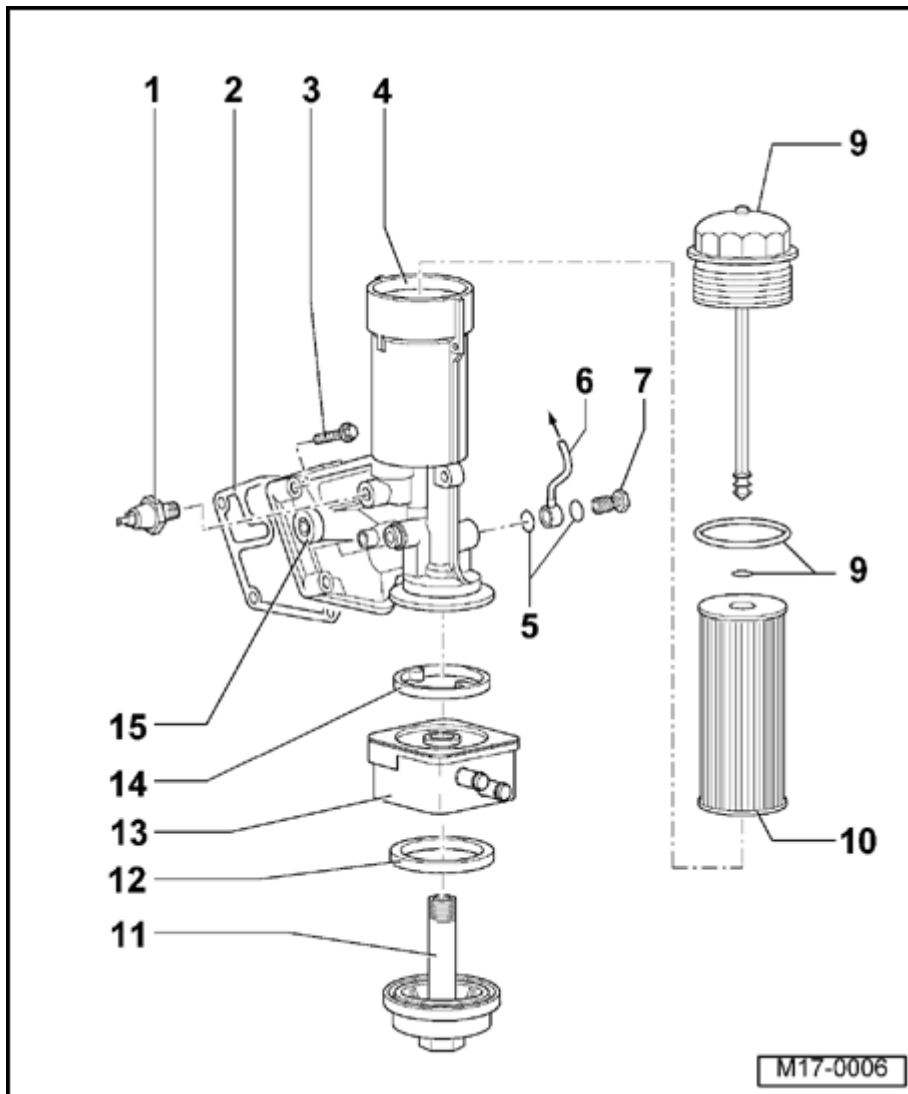
10 - Oil filter cartridge

11 - Sealing plug

- ◆ 25 Nm (18 ft lb)

12 - Seal

- ◆ Always replace



13 - Oil cooler

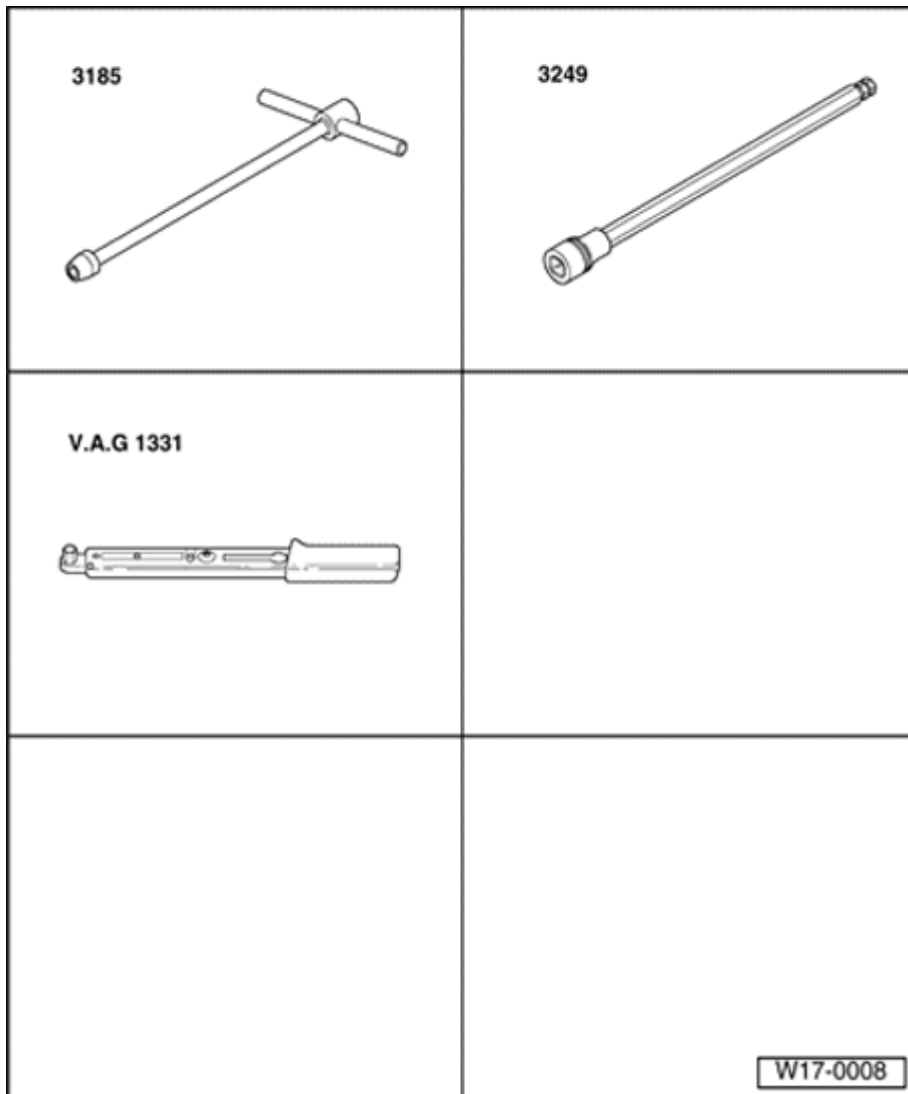
- ◆ Be sure oil cooler has enough clearance to surrounding components
- ◆ Observe notes ⇒ [Page 17-1](#)

14 - Seal

- ◆ Always replace
- ◆ Insert in tabs on oil cooler

15 - Cap

- ◆ Do not open



Oil pan, removing and installing

Special tools, materials and equipment

- ◆ 3185 Flexible wrench
- ◆ 3249 Insert
- ◆ V.A.G 1331 Torque wrench 5 to 50 Nm or equivalent
- ◆ D 176 404 A2 Silicone sealant
- ◆ Hand drill with plastic brush (not shown)
- ◆ Scraper (not shown)
- ◆ Protective glasses (not shown)

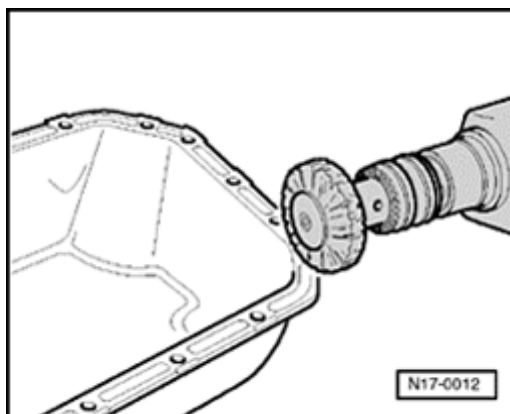


Removing

- Remove sound damping covers.

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

- Drain engine oil.
- Remove bolts with swivel wrench 3185. Use insert 3249 on flywheel side.
- Loosen oil pan by tapping with a rubber mallet if necessary.
- Remove sealant residue on cylinder block with a flat scraper.
- Remove sealant residue on oil pan using a hand drill with a plastic brush (wear protective glasses).
- Clean sealing surfaces of oil and grease.



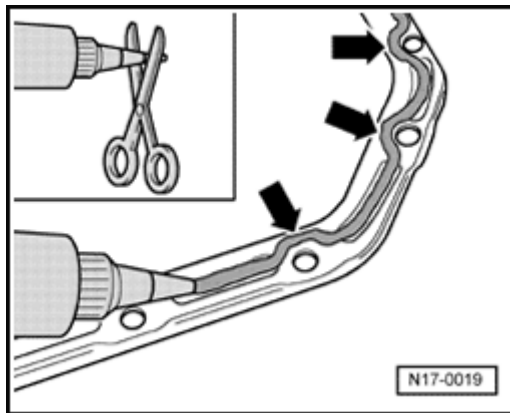
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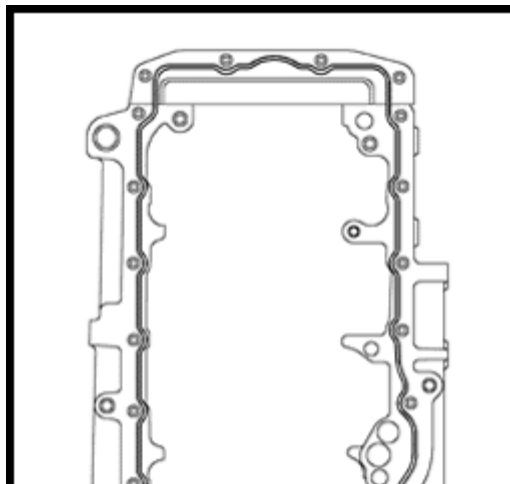
Installing

Note:

- ◆ Note "use by date" on sealant container.
- ◆ Oil pan must be installed within 5 minutes after applying the silicone sealing compound.



- A - Cut off tube nozzle at forward mark (approx. 3 mm dia.).



- A - Apply silicone sealing compound as shown to the clean oil pan sealing surface.
- Bead must be 2 to 3 mm thick.
 - Bead must run on the inside of the bolt holes (arrows).

Note:

The sealing bead must not be thicker than specified or excess sealer will enter the oil pan and may block the suction line to the oil pump.



- Apply silicone sealing bead to clean sealing surface of oil pan.
- Immediately install oil pan and lightly tighten all bolts.
- Lightly tighten all bolts for oil pan/cylinder block crosswise.
- Lightly tighten the three bolts for oil pan/transmission.
- Tighten bolts for oil pan/cylinder block to 15 Nm (11 ft lb).
- Tighten oil pan/transmission bolts to 45 Nm (33 ft lb).

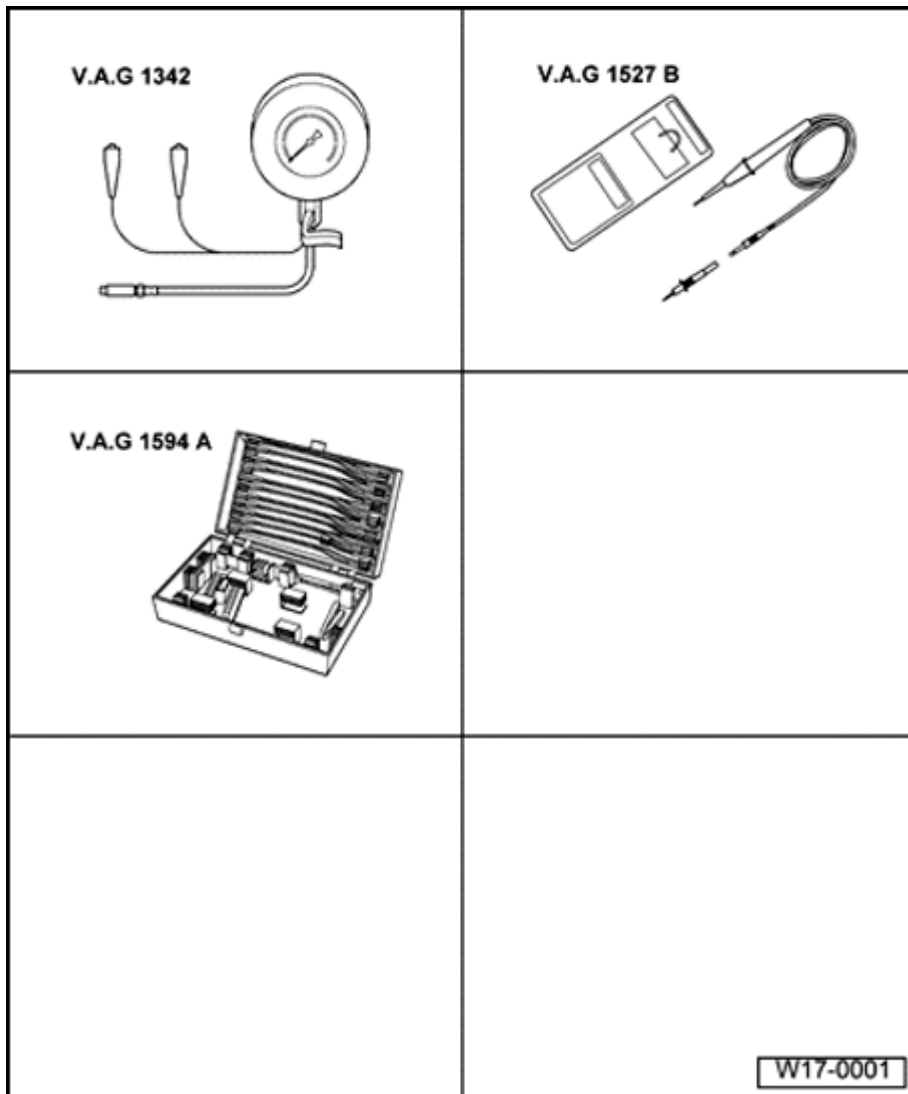
Note:

- ◆ *When installing oil pan with engine removed, be sure that oil pan aligns flush with with the cylinder block.*
- ◆ *After installing the oil pan, allow the sealant to dry for approx. 30 minutes before filling with engine oil.*

Assemble in reverse order of removal.

- Fill engine with oil.
- Install sound damping covers.

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



Oil pressure and oil pressure switch, checking

Special tools

- ◆ VAG 1342 Oil pressure tester
- ◆ VAG 1527 B Voltage tester
- ◆ VW 1594 Adaptor kit



Oil pressure warning system, function

The oil pressure switch is open when no pressure is applied. The switch closes as soon as the specified pressure has been reached.

The oil pressure warning is activated approx. 10 seconds after the ignition is switched on.

The switch-on delay of the oil pressure warning is approx. 3 seconds.

The switch-off delay of the oil pressure warning is approx. 5 seconds.

Oil pressure warning light, checking

After switching on the ignition, the oil pressure warning light -K3- in the instrument cluster must light up for approx. 3 seconds and then go out. The check is ended when the engine is running.

Warning conditions

Triggering of the optical oil pressure warning (blinking of the oil pressure warning light) and the three-time sound of the buzzer as an audible signal occurs under the following operational conditions:

- Ignition on, engine not running, oil pressure switch closed.
- Engine speed higher than 1500 rpm, oil

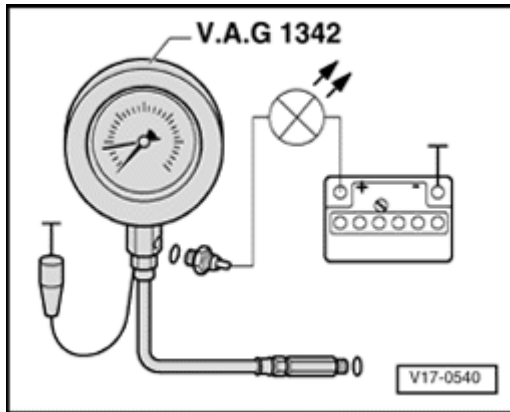
pressure switch closed.

**Note:**

- ◆ *If the engine speed is higher than 5000 rpm, the warning light is not switched off, even when the oil pressure switch is closed. The warning light switches off again below 5000 rpm.*
- ◆ *If the oil pressure switch is open for only 0.5 to 3.0 seconds at an engine speed over 1500 rpm, this will be stored in the instrument cluster control module. If the condition happens three times while the engine is running, the oil pressure warning is triggered immediately and it does not go out even under 1500 rpm. Erasing of the oil pressure warning occurs when the oil pressure switch is closed longer than 5 seconds and when the ignition is switched off.*

Test conditions

- ◆ Engine oil level is OK. Checking ⇒ [Page 17-6](#)
- ◆ Oil pressure warning light -K3- must light up for 3 seconds when the ignition is switched on.
- ◆ Engine oil temperature must be at least 80 ° C (176 ° F).



Oil pressure switch, checking

A

- Remove 0.7 bar oil pressure switch -F1- (brown) and thread into tester.
- Thread tester into filter bracket in place of pressure switch.
- Connect brown tester wire to Ground.
- Connect VAG 1527B voltage tester between battery B+ and oil pressure switch using jumper wires from VW 1594 adaptor kit.

If LED lights up:

- Replace 1.4 bar oil pressure switch -F1- ⇒ [Page 17-7](#) , item -1-.

If LED does not light up:

- Start engine and run at idle.
- At 0.55 to 0.85 bar the LED must light up. If not, replace 0.7 bar oil pressure switch - F1- ⇒ [Page 17-7](#) , item -1-.



Oil pressure,checking

Test conditions

- ◆ Oil pressure tester VAG 1342 is still connected
- ◆ Engine oil temperature at least 80 ° C (176 ° F).
- ◆ Oil pressure tester VAG 1342 is still connected

Test sequence:

- Start engine and run at idle.
- Increase engine speed to approx. 2000 rpm.
- ◆ Specified value: Oil pressure at least 2.5 bar

If the value is not reached:

- Replace oil filter bracket with oil pressure valve
⇒ [Page 17-8](#) , item - 4 -, or oil pump, ⇒ [Page 17-4](#) , item 15 .
- At higher rpm the oil pressure of 7.0 bar must not be exceeded.

- If necessary, replace oil filter bracket with oil pressure valve ⇒ [Page 17-8](#) , item - 4 -.