

Lubrication system components, removing and installing

Note:

- ◆ *If large quantities of metal particles or other deposits (caused, for example, by partial seizure of the crankshaft or conrod bearings) are found in the engine oil when performing repairs, clean the oil passages thoroughly and replace the oil cooler in order to prevent further damage from occurring later.*
- ◆ *The oil level must not be above the Max. mark - danger of damage to catalyst! Markings ⇒ [Page 17-14](#) , Fig. ⇒ 3*

Checking oil pressure ⇒ [Page 17-25](#)

Oil Capacities up to MY 2000

From my 2001 ⇒ Fluid Capacity Chart

Oil system capacity

- ◆ With oil filter 3.7 liters (3.9 quarts)

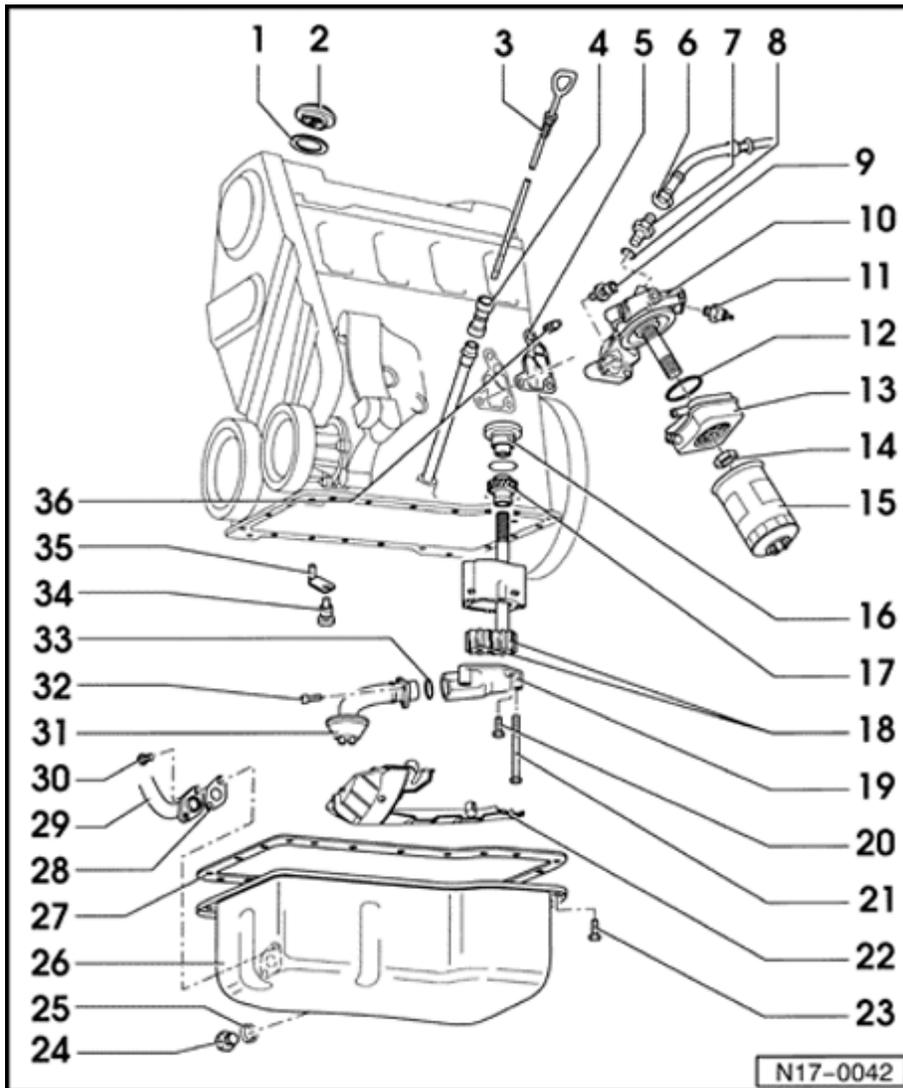
Engine oil specifications

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, API-SJ or API-SL.

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.



Vehicles without oil level / temperature sensor

1 - Gasket

- ◆ Replace if damaged

2 - Cap

3 - Dipstick

- ◆ The oil level must not be above the max. mark!
- ◆ Area above shaded zone up to max. mark: Do not top up with engine oil!
- ◆ Oil level in shaded zone: Engine oil can be topped up
- ◆ Area min. mark up to shaded zone: Top-up engine oil

4 - Guide

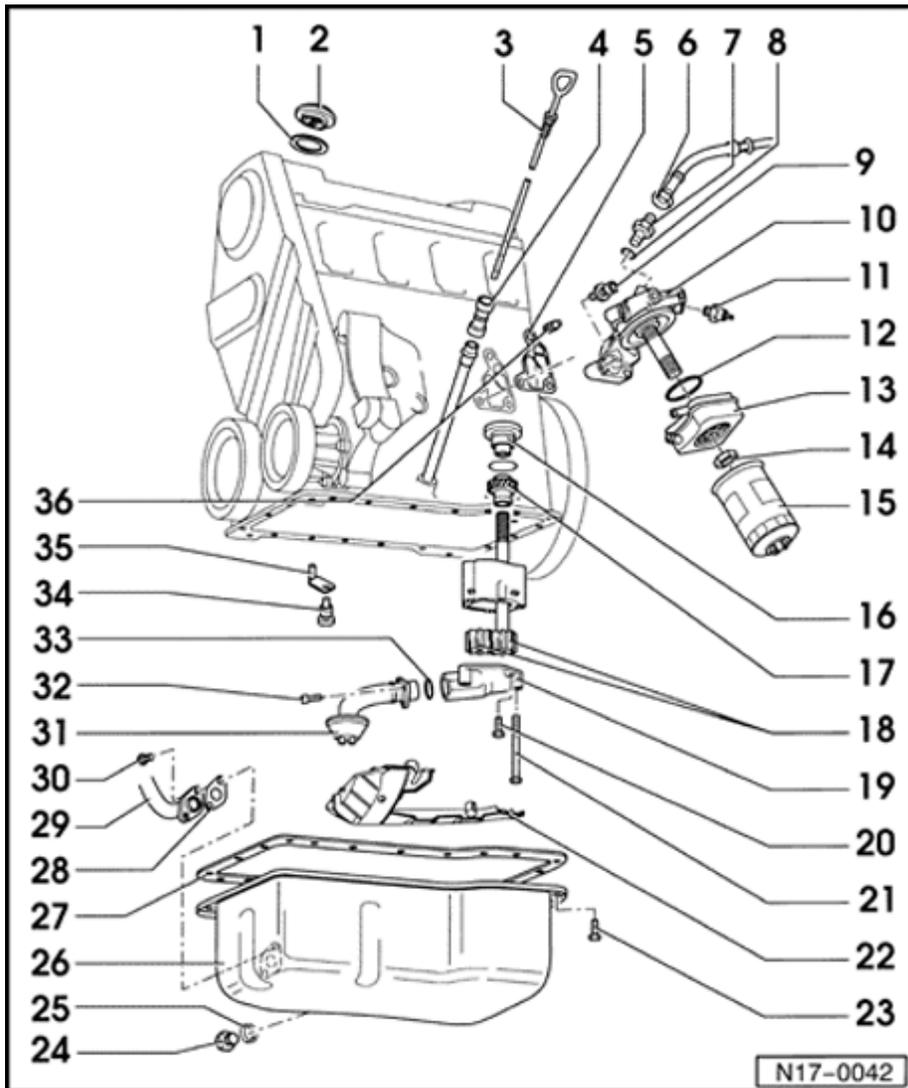
- ◆ Pull off to extract oil

5 - Gasket

- ◆ Always replace

6 - Oil supply line, 20 Nm

- ◆ To turbocharger



7 - 30 Nm

8 - Seal

- ◆ Always replace

9 - 25 Nm

10 - Oil filter bracket

11 - 1.4 bar oil pressure switch -F1-, 25 Nm

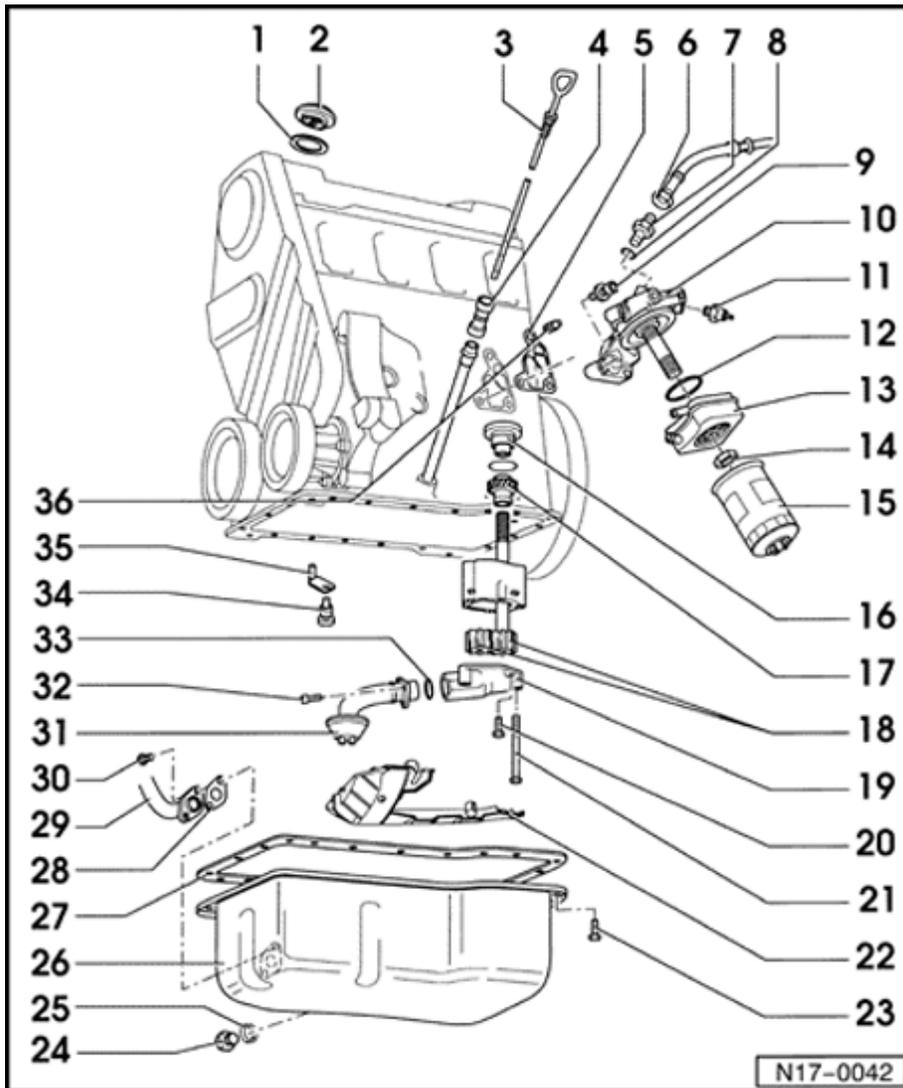
- ◆ Black
- ◆ Checking ⇒ [Page 17-25](#)
- ◆ If sealing ring is leaking cut open and replace.

12 - O-ring

- ◆ Always replace

13 - Oil cooler

- ◆ Coat contact area to flange, outside the seal, with AMV 188 100 02
- ◆ Ensure clearance to adjacent components
- ◆ See note ⇒ [Page 17-1](#)



14 - 25 Nm

15 - Oil filter

- ◆ Loosen with strap wrench
- ◆ Tighten by hand
- ◆ Observe installation instructions on oil filter

16 - Cap

- ◆ With play compensation

17 - Drive gear

- ◆ For oil pump

18 - Gears

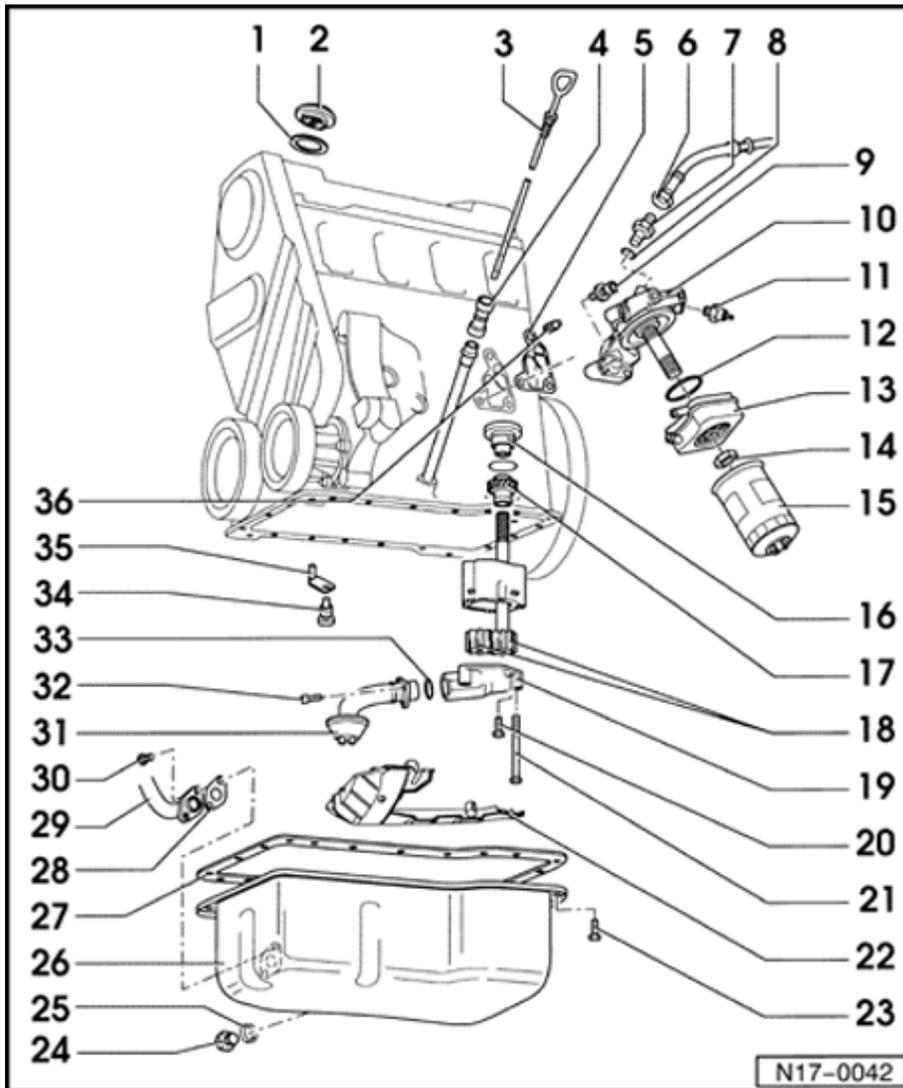
- ◆ Checking backlash⇒ Fig. ⇒ [1](#)
- ◆ Checking axial clearance⇒ Fig. ⇒ [2](#)

19 - Oil pump cover with pressure relief valve

- ◆ Opening pressure: 5.7 to 6.7 bar

20 - 10 Nm

21 - 25 Nm



22 - Baffle plate

23 - 10 Nm

- ◆ Remove and install both rear bolts (transmission end) with jointed wrench 3185

24 - Oil drain plug, 30 Nm

- ◆ 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.

25 - Seal

- ◆ Always replace

26 - Oil pan

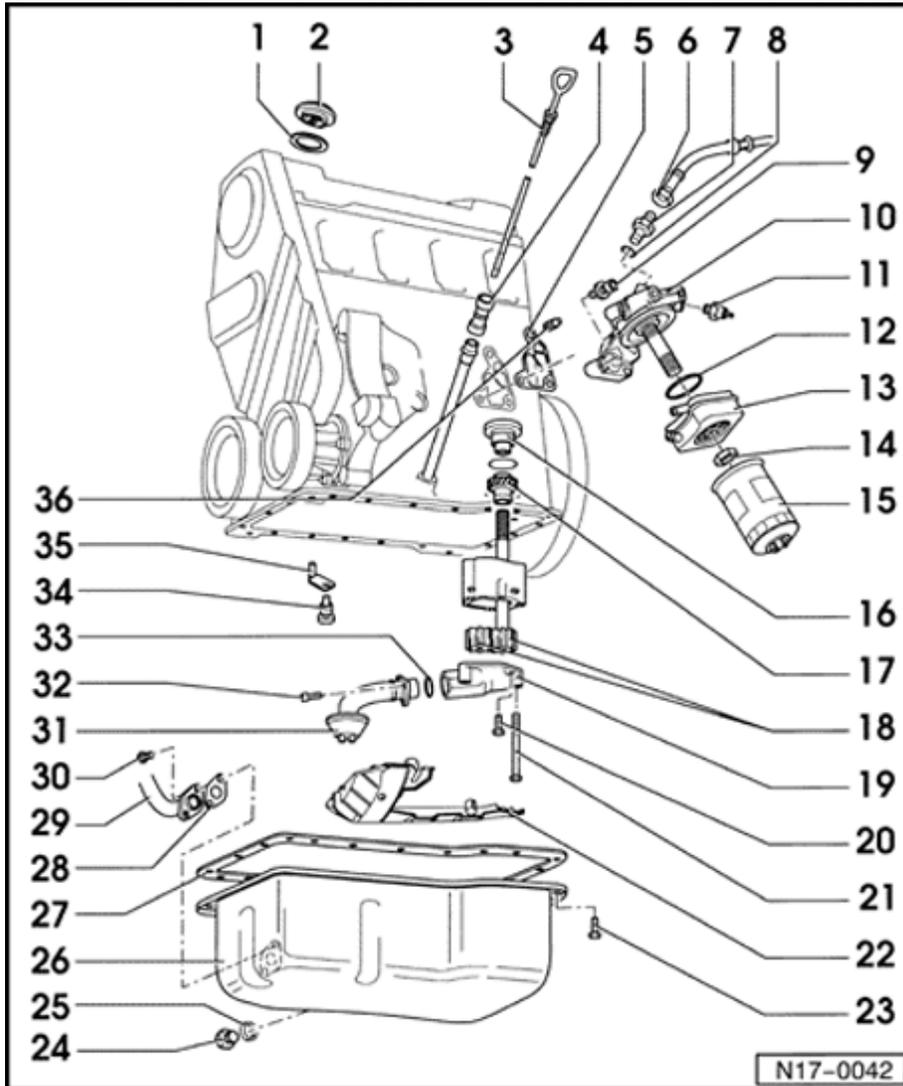
- ◆ Clean sealing surface before installing
- ◆ Aluminium

27 - Gasket

- ◆ Always replace
- ◆ Before installing gasket, coat oil pan flange/cylinder block flange with D 454 300 A2

28 - Gasket

◆ Always replace



29 - Oil return line

◆ From turbocharger

30 - 10 Nm

31 - Suction line

◆ Clean strainer if soiled

32 - 10 Nm

33 - O-ring

◆ Always replace

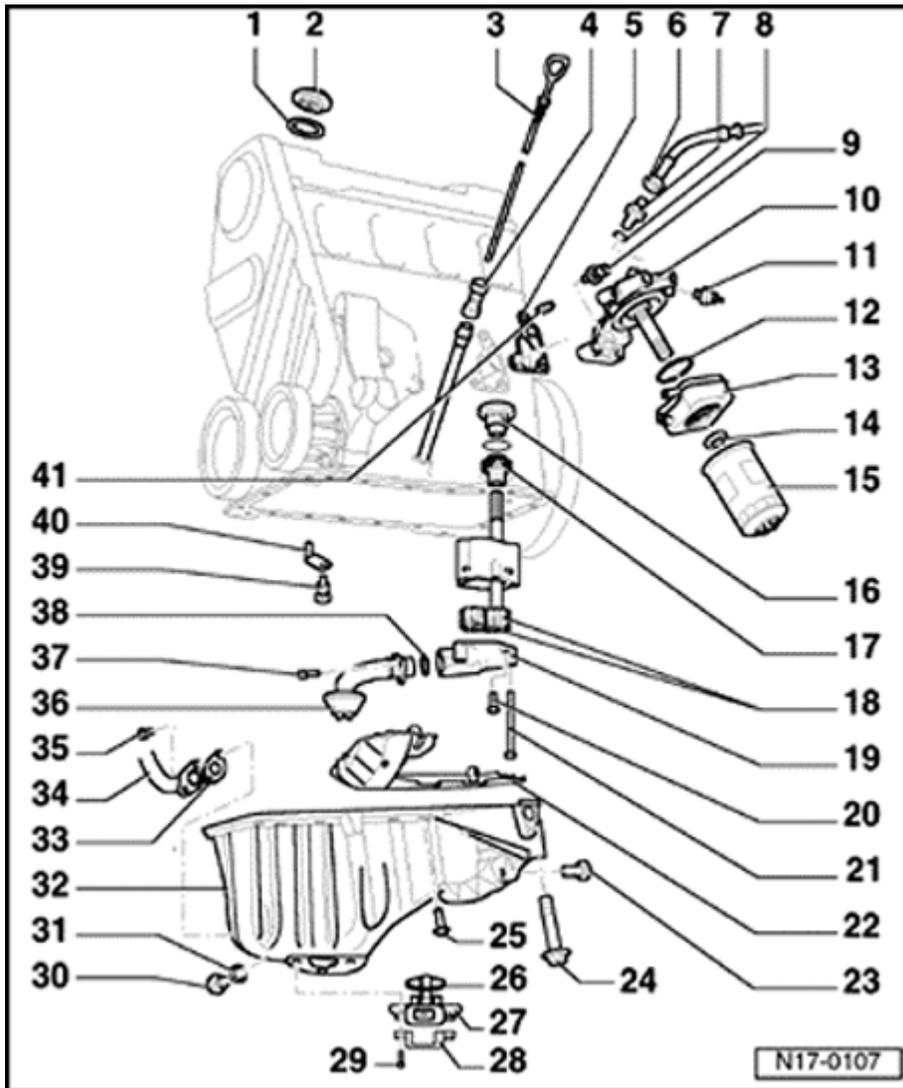
34 - Pressure relief valve, 27 Nm

◆ Opening pressure: 2.5 to 3.2 bar

35 - Oil spray jet

◆ For piston cooling

36 - Check valve, 5 Nm



Vehicles with oil level / temperature sensor

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2 - Cap

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- ◆ Area above shaded zone up to max. mark: Do not top up with engine oil!
- ◆ Oil level in shaded zone: Engine oil can be topped up
- ◆ Area min. mark up to shaded zone: Top-up engine oil

4 - Guide

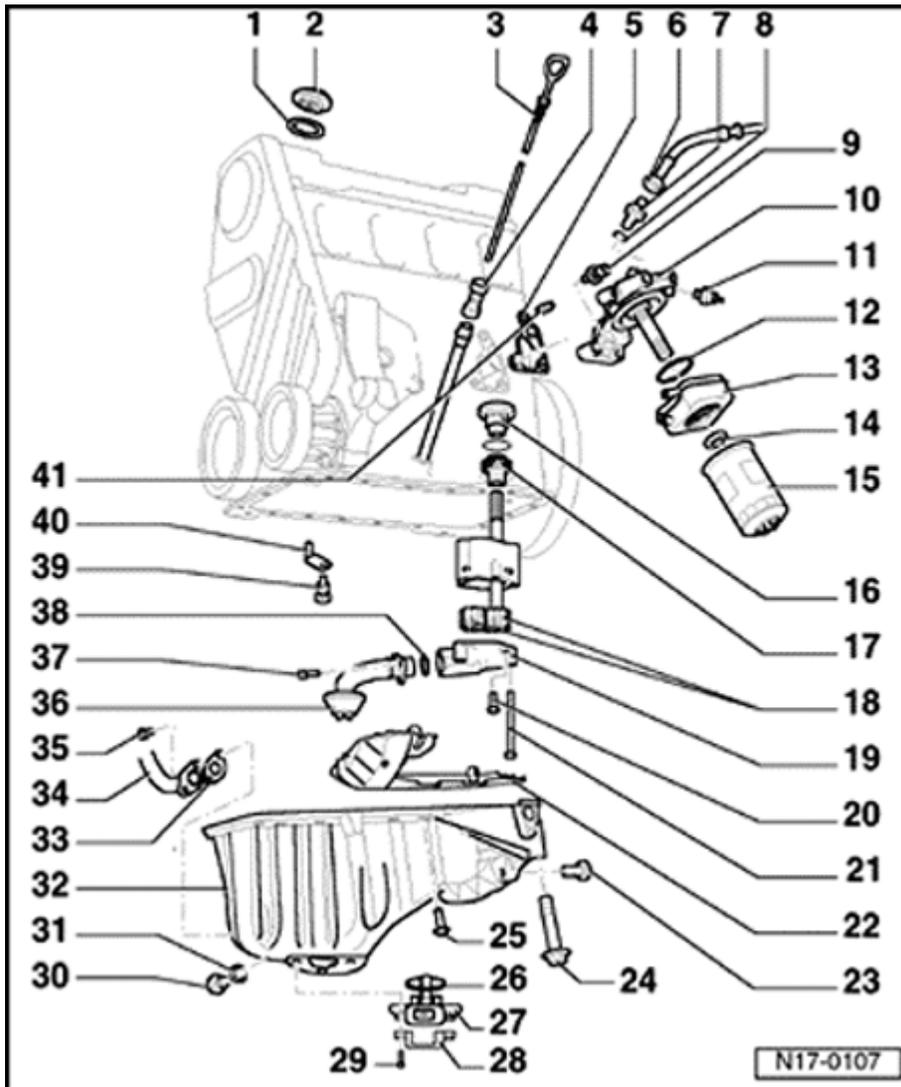
- ◆ Pull off to extract oil

5 - Gasket

- ◆ Always replace

6 - Oil supply line, 20 Nm

- ◆ To turbocharger



7 - 30 Nm

8 - Seal

- ◆ Always replace

9 - 25 Nm

10 - Oil filter bracket

11 - 1.4 bar oil pressure switch -F1-, 25 Nm

- ◆ Black
- ◆ Checking ⇒ [Page 17-25](#)
- ◆ If sealing ring is leaking cut open and replace.

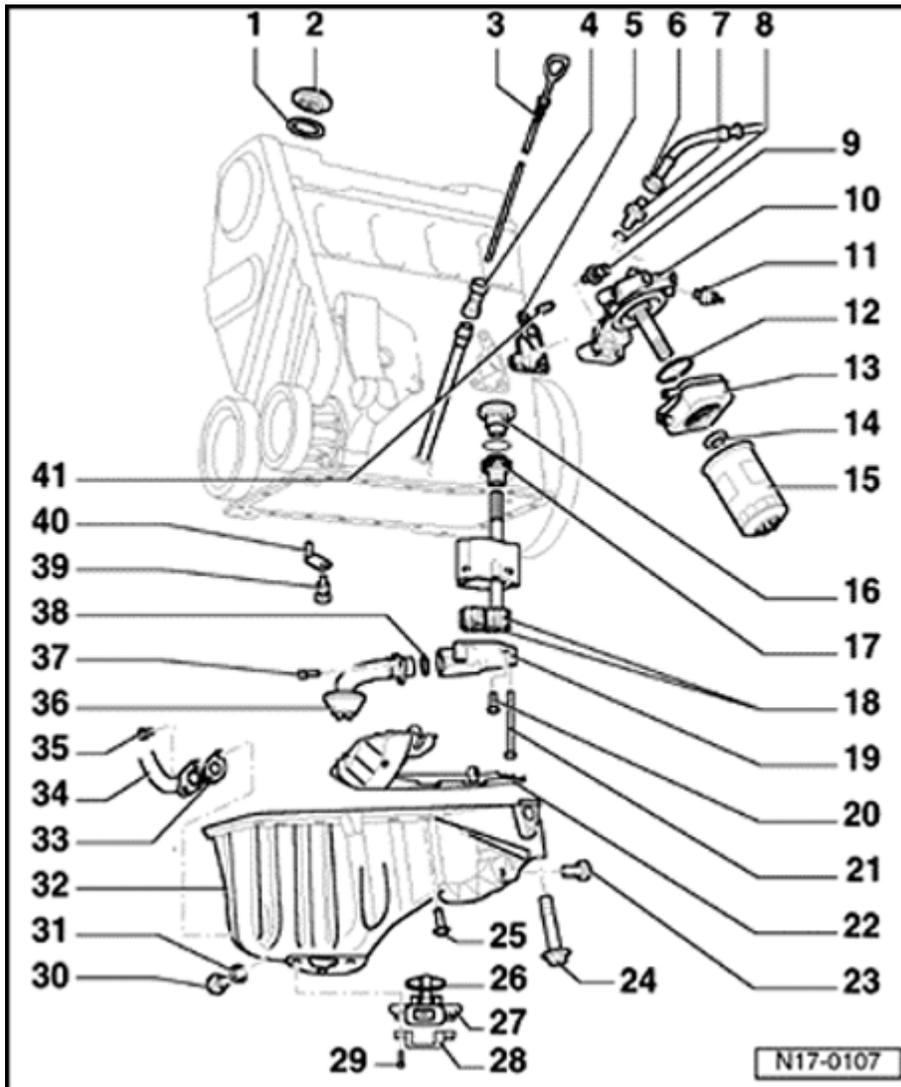
12 - O-ring

- ◆ Always replace

13 - Oil cooler

- ◆ Coat contact area to flange, outside the seal, with AMV 188 100 02
- ◆ Ensure clearance to adjacent components
- ◆ See note ⇒ [Page 17-1](#)

14 - 25 Nm



15 - Oil filter

- ◆ Loosen with strap wrench
- ◆ Tighten by hand
- ◆ Observe installation instructions on oil filter

16 - Cap

- ◆ With play compensation

17 - Drive gear

- ◆ For oil pump

18 - Gears

- ◆ Checking backlash⇒ Fig. ⇒ [1](#)
- ◆ Checking axial clearance⇒ Fig. ⇒ [2](#)

19 - Oil pump cover with pressure relief valve

- ◆ Opening pressure: 5.7 to 6.7 bar

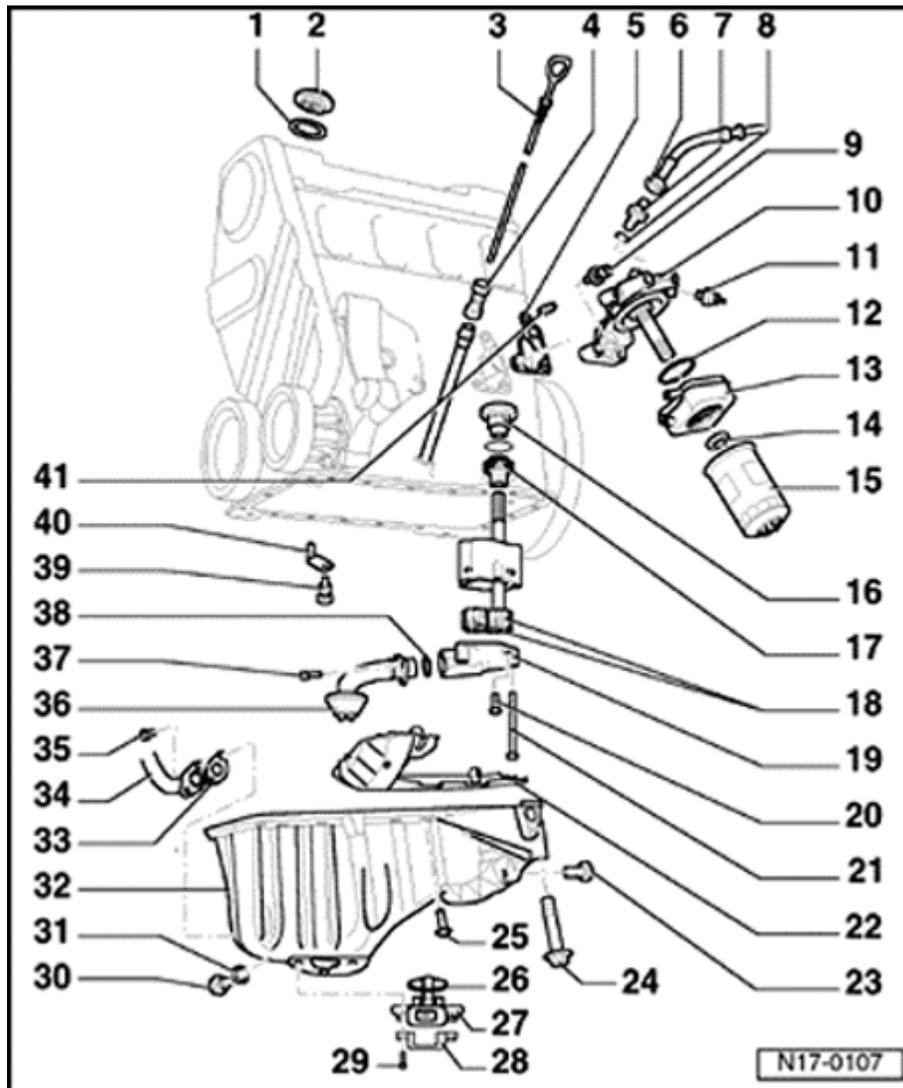
20 - 10 Nm

21 - 25 Nm

22 - Baffle plate

23 - 45 Nm

- ◆ Oil pan/transmission connecting bolt



24 - 45 Nm

25 - 10 Nm

26 - Seal

- ◆ Always replace

27 - Oil level / temperature sensor -G 266-

- ◆ Checking:

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

28 - Cover plate

29 - 10 Nm

30 - Oil drain plug, 30 Nm

- ◆ 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.

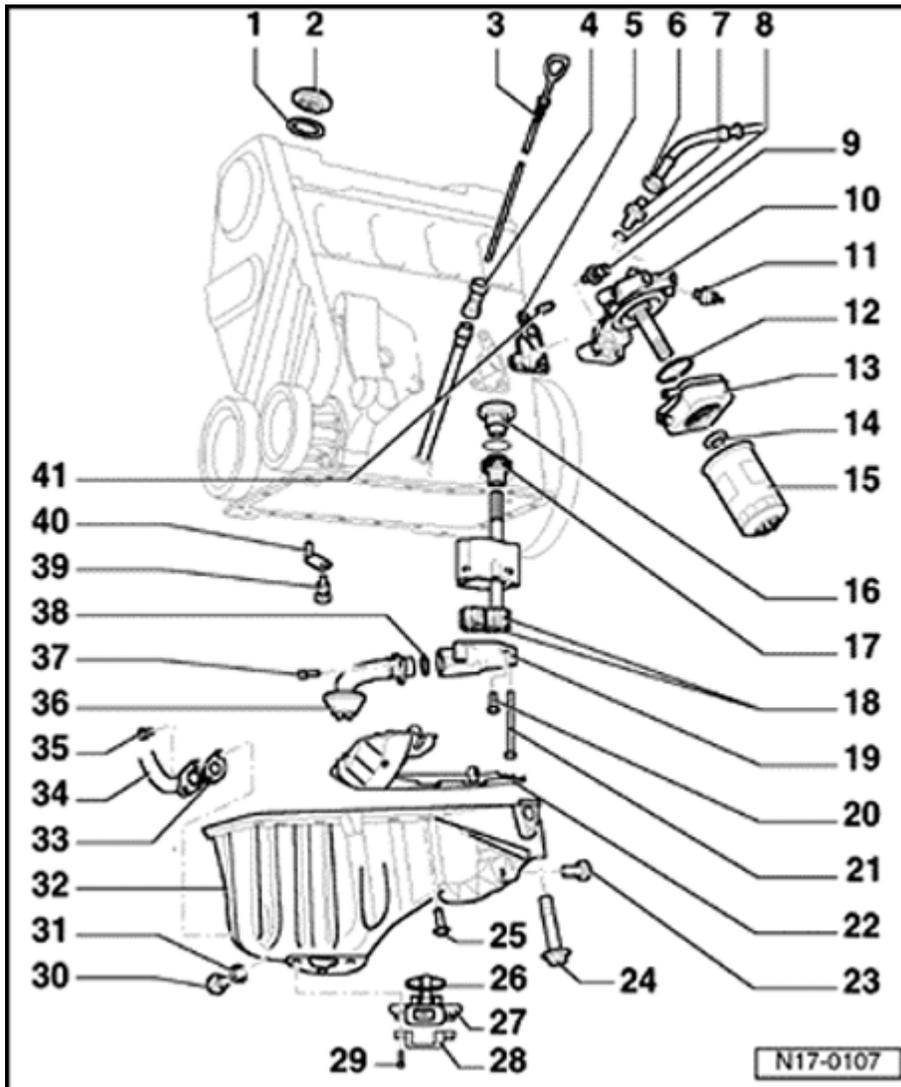
31 - Seal

- ◆ Always replace

32 - Oil pan

- ◆ Clean sealing surface before installing

- ◆ Install with silicone sealant D 176 404 A2
⇒ [Page 17-15](#)
- ◆ Aluminium



33 - Gasket

- ◆ Always replace

34 - Oil return line

- ◆ From turbocharger

35 - 10 Nm

36 - Suction line

- ◆ Clean strainer if soiled

37 - 10 Nm

38 - O-ring

- ◆ Always replace

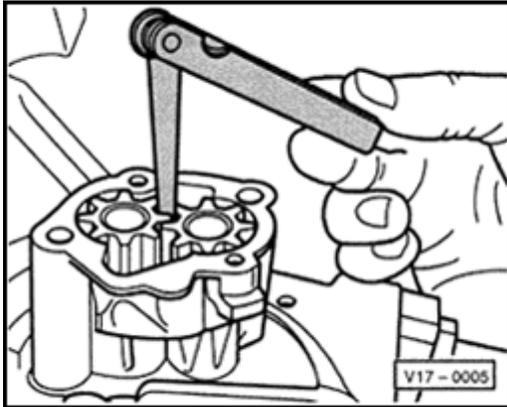
39 - Pressure relief valve, 27 Nm

- ◆ Opening pressure: 2.5 to 3.2 bar

40 - Oil spray jet

- ◆ For piston cooling

41 - Check valve, 5 Nm

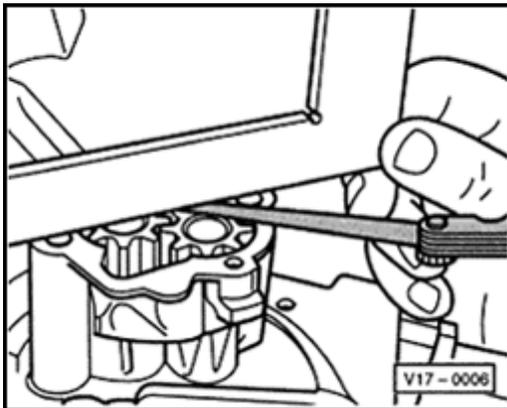


A

Fig. 1 Checking oil pump backlash

New: 0.05 mm

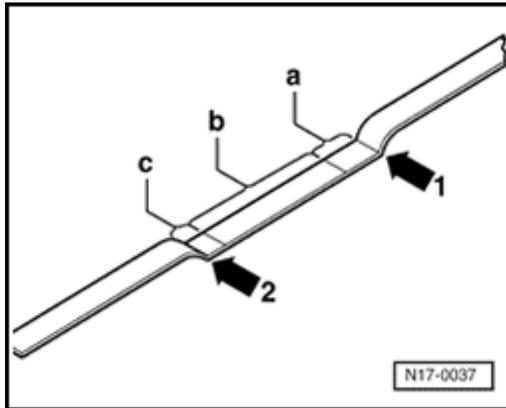
Wear limit: 0.20 mm



A

Fig. 2 Checking oil pump axial clearance

Wear limit: 0.15 mm



A

Fig. 3 Marking on oil dipstick

1 - Max. mark

2 - Min. mark

a - Area above hatched field up to max. mark: Do not top-up with engine oil!

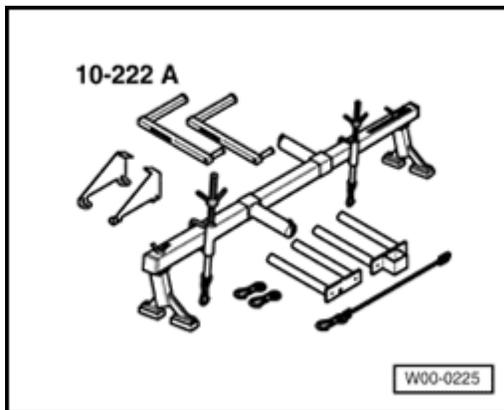
b - Oil level within hatched field: can be topped-up with engine oil

c - Area from min. mark up to hatched field: fill with max. 0.5 ltr. of engine oil!



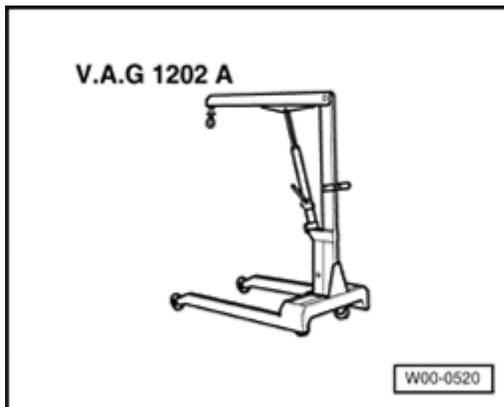
Oil pan, removing and installing

Special tools and equipment



A

- ◆ Engine support bracket 10-222A with legs 10-222A/1



A

- ◆ Workshop crane VAG 1202 A or equivalent
- ◆ Hand drill with plastic brush
- ◆ Silicone sealant D 176 404 A2
- ◆ Punch, 5 mm diameter
- ◆ Cable tie

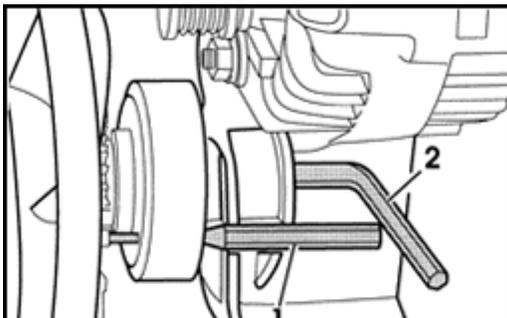


Removing

- Bring lock carrier into service position.

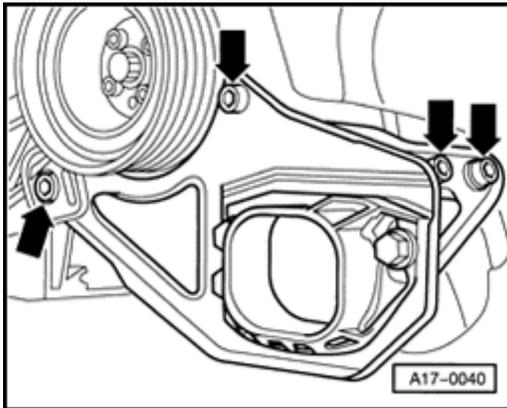
⇒ [Repair Manual, Body Exterior, Repair Group 50](#)

- Drain engine oil.
- Mark toothed belt direction of rotation.
- Remove ribbed belt ⇒ [Page 13-14](#) .
- Remove A/C compressor ribbed belt tensioning roller complete.
- Take off A/C compressor ribbed belt.

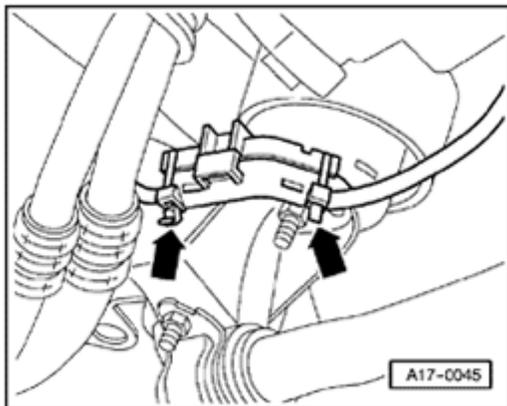


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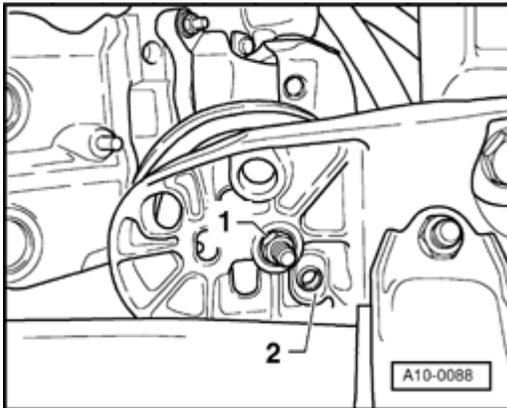
- Secure viscous fan coupling belt pulley with a punch (< 5 mm diameter) -1-.
- Remove viscous fan coupling securing bolt (with 8 mm hex key -2-) and remove viscous fan coupling with belt pulley.



- A
- Unbolt torque rod bracket (arrows).

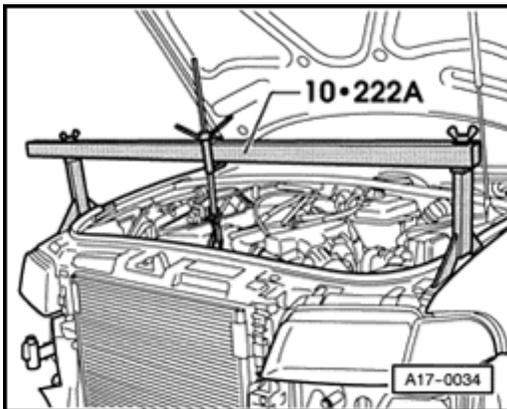


- A
- Cut through cable ties (arrows), open retainer for starter wiring and take out wiring.
 - Remove support between oil pan and intake manifold
 - Unbolt oil return line from turbocharger.
 - Disconnect left upper engine mounting.



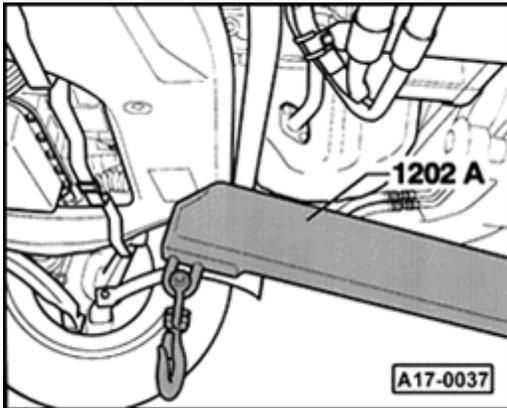
A

- Mark installation position of threaded connection -1- and lower locating sleeve -2- on left and right engine mountings.
- Disconnect both lower engine mountings.
- Slide lock carrier again to rear and bolt top on.

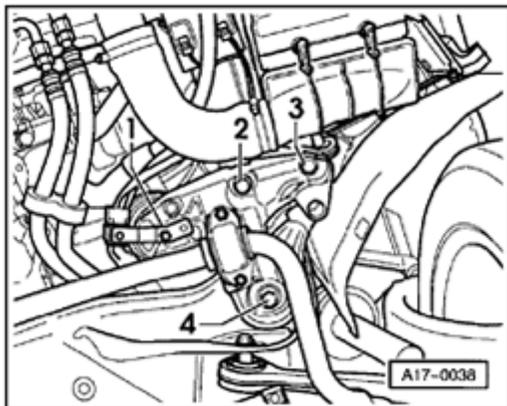


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- Attach lifting device 10-222A as shown.
- Support engine at front lifting eye with lifting device.
- Lift engine with spindle of lifting device until air hose to throttle valve module touches bulkhead.
- Take out left engine mounting.



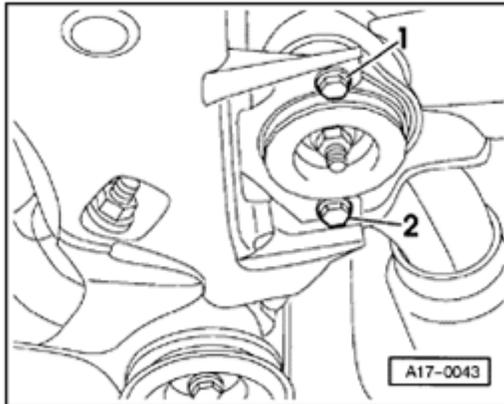
- A - Support subframe with workshop crane 1202 A.



- A - First remove front subframe bolts -2- and -3- on left and right-hand sides. Then remove bolts -4-.

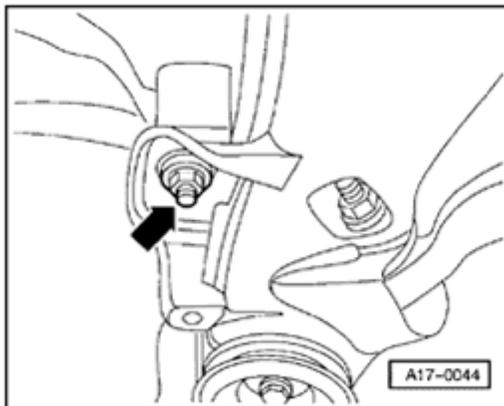
Note:

To avoid measuring wheel alignment, the subframe must only be loosened or lowered at the front end.



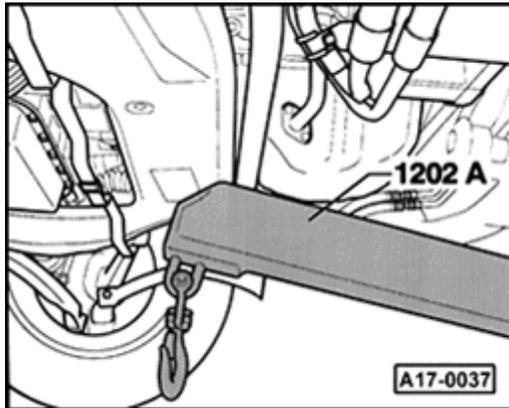
A

- Loosen rear right transmission mounting rear bolt -2- several turns, remove right transmission mounting front bolt -1-.



A

- Loosen nut for left-hand transmission mounting (arrow) until it aligns with lower edge of bolt (turned approx. 4 threads).



A

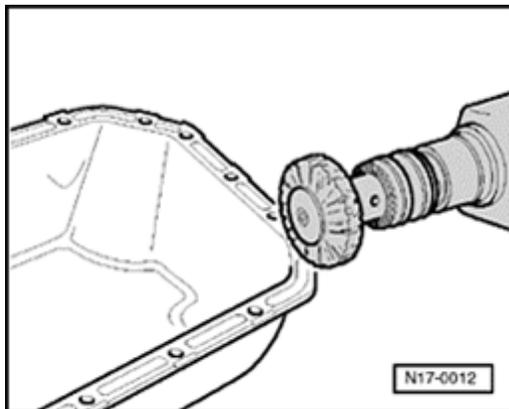
- Lower subframe slowly with workshop crane.
- Remove workshop crane, swing stabilizer bar down.
- Remove oil pan.

Note:

It may be necessary to release the oil pan by tapping it lightly with a rubber mallet.

Vehicles without solid gasket

- Remove sealant residue on cylinder block with a flat scraper.



A

- Remove sealant residue on oil pan with a rotating brush, e.g. hand drill with a plastic brush (wear protective glasses).
- Clean sealing surface so that it is free of oil and grease.

Installing

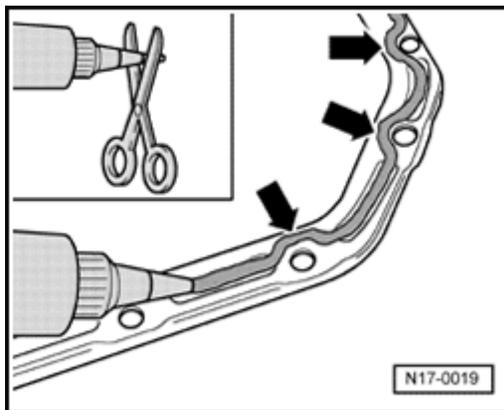
- Install oil pan with solid type gasket.



Vehicles without solid gasket

Note:

- ◆ Note the "use by" date of the sealant.
- ◆ The oil pan must be installed within 5 minutes of applying silicone sealing compound.

**A**

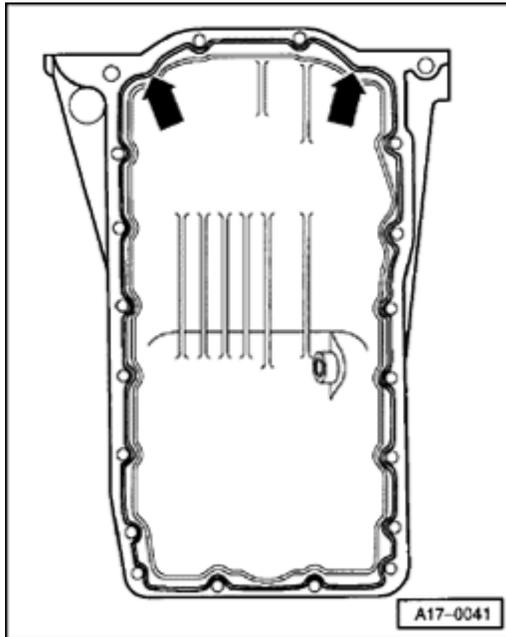
- Cut-off tube nozzle at forward marking (nozzle approx. 3 mm diameter).
- Apply silicone sealing compound, as shown, to clean oil pan sealing surface.

Sealing compound bead must be:

- ◆ 2 to 3 mm thick
- ◆ applied on inside of bolt holes (arrows)

Note:

The sealing compound bead must not be thicker, otherwise excess sealing compound will enter the oil pan and may block the oil suction line strainer.



A

- Apply silicone sealing bead as shown to clean sealing surface of oil pan. (illustration shows position of sealant bead on cylinder block).
- Install oil pan immediately and tighten all oil pan bolts lightly.

Note:

After installing the oil pan the sealant must be allowed to dry for approx. 30 minutes before the engine is filled with oil.

Continued for all vehicles

- Tighten oil pan bolts to 15 Nm.

Note:

The remaining assembly is basically a reverse of the disassembly sequence.

- Tighten bolts securing oil pan to transmission to 45 Nm.
- Tighten M10 bolts securing oil pan to cylinder block to 45 Nm.

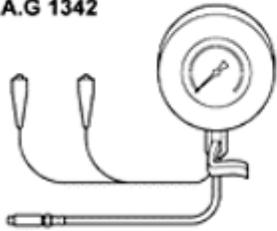


Tightening torques

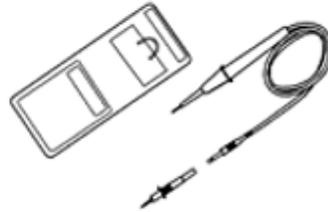
Component	Nm
Engine mounting to subframe	25
Engine mounting to engine support	25
Torque rod bracket to engine	25
Transmission support to transmission mounting M10	40
Transmission mounting to subframe M8	25
Intake manifold bracket	25



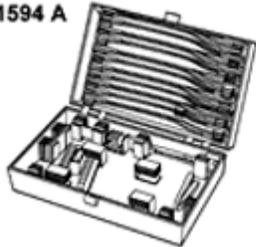
V.A.G 1342



V.A.G 1527 B



V.A.G 1594 A



Oil pressure and oil pressure switch, checking

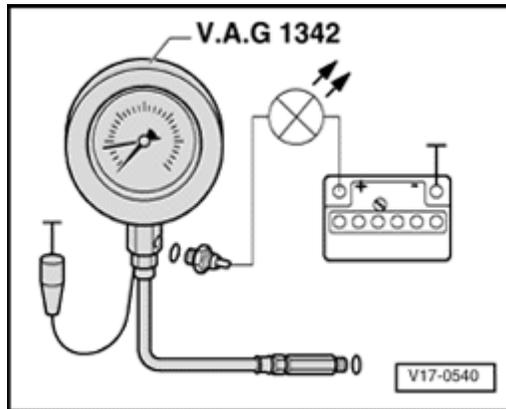
Special tools and equipment

- ◆ VAG 1342 Oil pressure tester
- ◆ VAG 1527 B Voltage tester
- ◆ VAG 1594 A Adapter set

Note:

Functional check and servicing the optical and acoustic oil pressure warning:

⇒ Electrical Wiring Diagrams, Troubleshooting & Component Locations



Checking sequence

- Remove oil pressure switch -F1- and screw into tester.
- Screw tester into oil filter bracket in place of oil pressure switch.
- Connect brown wire of tester to Ground (-).
- Connect voltage tester VAG 1527 B using auxiliary cables from VAG 1594 A to battery positive (+) and oil pressure switch.
 - LED must not light up.
- If LED lights up, replace 1.4 bar oil pressure switch -F1- .

If the LED does not light up:

- Start engine and run at idling speed:
 - At 1.2 to 1.6 bar LED must light up

If the LED does not light up:

- Replace oil pressure switch.
 - Oil pressure at idling: min. 2 bar
- Increase engine speed further.
 - At 2000 rpm and an oil temperature of 80° C, oil pressure should be 3.0 to 4.5 bar.



If the specifications are not obtained:

- Correct possible mechanical damage, e.g. bearing damage.
- Replace oil filter bracket with pressure relief valve ⇒ [Page 17-4](#) , item 10 or replace oil pump.

Note:

At higher engine speeds the oil pressure must not exceed 7.0 bar.

If specified value is exceeded:

- Check oil passage.
- Replace oil filter bracket together with pressure release valve if necessary ⇒ [Page 17-4](#) , item 10