Maintenance
Audi A8 2003 ➤
Edition 06.2014

Maintenance

Heading

1. General information
2. Preparations
3. Maintenance

Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

Contents

1 General information

(AIGG000565; Edition 06.2014)

1.1 --- Change history ---

No.	Date	Chapter	Changes made
2	28.05.2014	Headlights: checking for correct adjustment ⇒ page 48	Chapter added
1	20.05.2014	All	Completely revised

Note

For greater clarity, only the last three updates to the document are listed.

1.2 Overview of engines

1.2.1 Petrol engines

Engine code	Engine type/ number of cylinders	Capacity [ltr.]	Injection system	Power output [kW] (rpm)	Torque [Nm] (rpm)	Camshaft drive	Stroke [mm]	Bore [mm]	Compression ratio [:1]
ASN	V6	3.0	MPI	162 (6300)	300 (3200)	Toothed belt	92.8	82.5	10.3
BBJ	V6	3.0	MPI	160 (6300)	290 (3200)	Toothed belt	92.8	82.5	10.3
BDX	V6	2.8	FSI	154 (6000)	280 (3000-5000)	Timing chain	82.4	84.5	12.0
BFL	V8	3.7	MPI	206 (6000)	360 (3750)	Timing chain	82.4	84.5	11.0
BFM	V8	4.2	MPI	246 (6500)	430 (3500)	Timing chain	93.0	84.5	11.0
BGK	V8	4.2	MPI	246 (6000)	430 (3500)	Timing chain	93.0	84.5	11.0
BHT	W12	6.0	MPI	331 (6200)	580 (4000-4700)	Timing chain	90.2	84.0	10.75

Engine code	Engine type/ number of cylinders	Capacity [ltr.]	Injection system	Power output [kW] (rpm)	Torque [Nm] (rpm)	Camshaft drive	Stroke [mm]	Bore [mm]	Compression ratio [:1]
BPK	V6	3.2	FSI	191 (6500)	330 (3250)	Timing chain	92.8	84.5	12.5
BSB	W12	6.0	MPI	331 (6200)	580 (4000-4700)	Timing chain	90.2	84.0	10.75
BSM	V10	5.2	FSI	331 (7000)	540 (3000-4000)	Timing chain	92.8	84.5	12.5
BTE	W12	6.0	MPI	331 (6200)	580 (4000-4500)	Timing chain	90.2	84.0	10.75
BVJ	V8	4.2	FSI	257 (6500)	440 (3500)	Timing chain	92.8	84.5	11.5
CJBA	V6	2.8	FSI	170 (6000)	280 (3000-5000)	Timing chain	82.4	84.5	12.0

1.2.2 Diesel engines

Engine code	Engine type/ number of cylinders	Capacity [ltr.]	Injection system	Power output [kW] (rpm)	Torque [Nm] (rpm)	Camshaft drive	Stroke [mm]	Bore [mm]	Compression ratio [:1]
ASB	V6	3.0	TDI common rail	171 (4000)	450 (1500)	Timing chain	91.4	83.0	19.5
ASE	V8	4.0	TDI common rail	202 (3750)	650 (1800)	Timing chain	95.5	81.0	19.5
BNG	V6	3.0	TDI common rail	155 (4000)	450 (1400)	Timing chain	91.4	83.0	17.0
BVN	V8	4.2	TDI common rail	240 (3750)	650 (1600-3500)	Timing chain	95.5	83.0	16.5

1.3 Engine number

Note

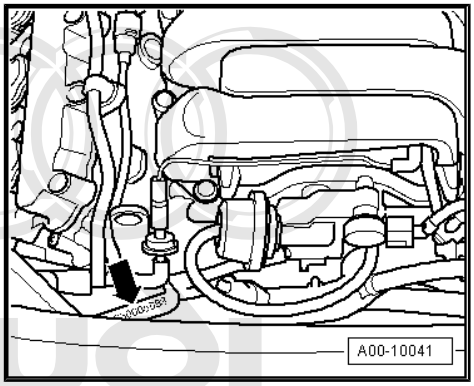
The engine number consists of the engine code letters (3 or 4 characters) and the serial number.

1.3.1 6-cyl. petrol engine 2.8 ltr. FSI/3.0 ltr. MPI/3.2 ltr. FSI

The engine number is stamped on the left side at the joint between the engine and the gearbox -arrow-.

The engine number is also given on the sticker on the toothed belt cover (top).

In addition, the engine code letters are given on the vehicle data sticker ⇒ page 5 .

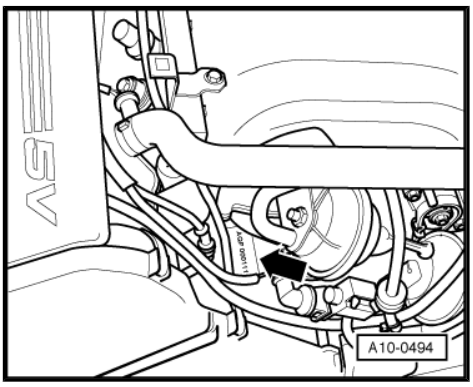


1.3.2 8-cyl. petrol engine 3.7 ltr. MPI/4.2 ltr. MPI/4.2 ltr. FSI

The engine number is stamped on the left side at the joint between the engine and the gearbox -arrow-.

The engine number is also given on the sticker on the toothed belt cover (top).

In addition, the engine code letters are given on the vehicle data sticker ⇒ page 5 .

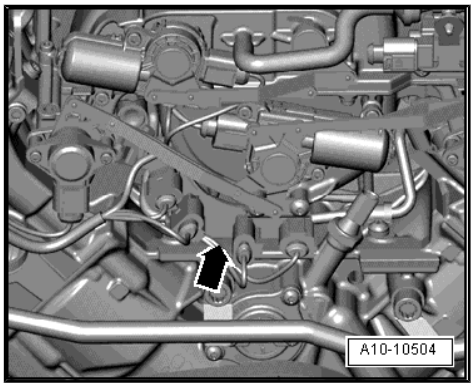


1.3.3 10-cyl. petrol engine 5.2 ltr. FSI

The engine number is stamped on the left side at the joint between the engine and the gearbox -arrow-.

The engine number is also given on the sticker on the toothed belt cover (top).

In addition, the engine code letters are given on the vehicle data sticker ⇒ page 5 .

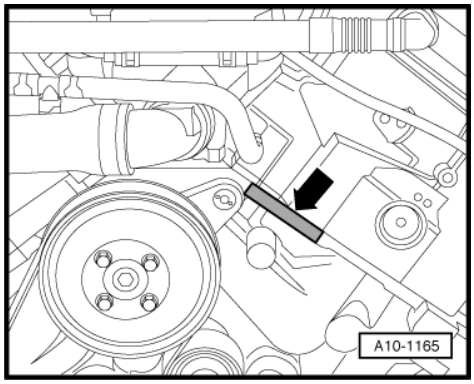


1.3.4 12-cyl. petrol engine 6.0 ltr. MPI

The engine number is stamped on the left side at the joint between the engine and the gearbox -arrow-.

The engine number is also given on the sticker on the toothed belt cover (top).

In addition, the engine code letters are given on the vehicle data sticker ⇒ page 5 .

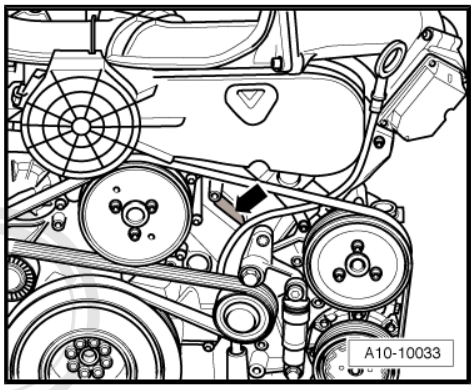


1.3.5 6-cyl. diesel engine 3.0 ltr. TDI

The engine number is stamped on the left side at the joint between the engine and the gearbox -arrow-.

The engine number is also listed on the sticker on the toothed belt cover (top) -arrow-.

In addition, the engine code letters are given on the vehicle data sticker ⇒ page 5 .

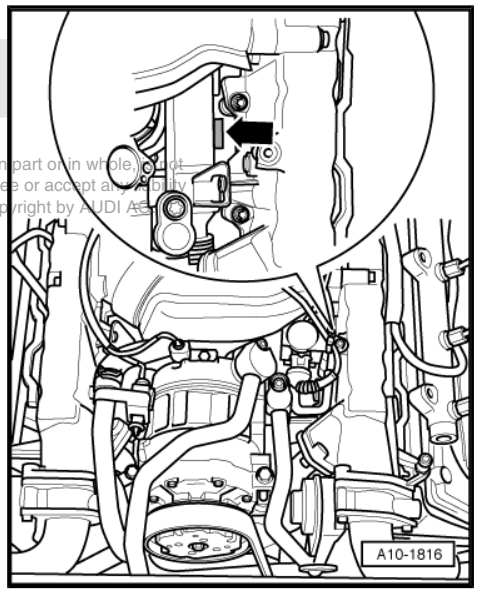


1.3.6 8-cyl. diesel engine 4.0 ltr. TDI

The engine number can be found on the inside left surface below the intake manifold -arrow- (left-side).

The engine number is also printed on the sticker on the intake manifold.

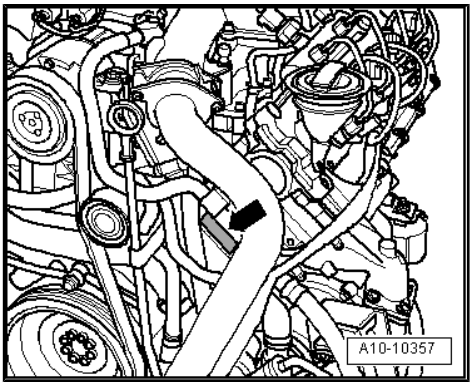
In addition, the engine code letters are given on the vehicle data sticker ⇒ page 5 .



1.3.7 8-cyl. diesel engine 4.2 ltr. TDI

The engine number can be found on the inside left surface below the intake manifold -arrow- (left-side).

The engine number is also printed on the sticker on the intake manifold.



In addition, the engine code letters are given on the vehicle data sticker ⇒ page 5 .

1.4 Vehicle identification number

Depending on the equipment and country-specific version, the vehicle identification number is located:

- Optional: In the MMI under »Car systems«
- On the suspension turret (right-side)
- On the vehicle data sticker ⇒ page 5

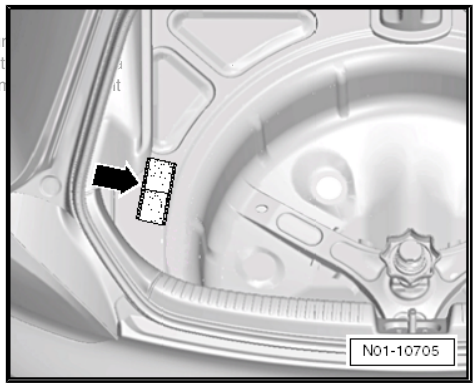
The vehicle identification number consists of the following:

WAU	ZZZ	4E	Z	B	A / N	000 234
Manufacturer's mark	Filler characters	Type	Filler characters	Model year	Production location	Serial number

1.5 Vehicle data sticker

The vehicle data sticker is located:

- In the Service Schedule
- In the area of the spare wheel well under the floor covering -arrow-



The vehicle data sticker contains the following vehicle data:

1 - Vehicle identification number

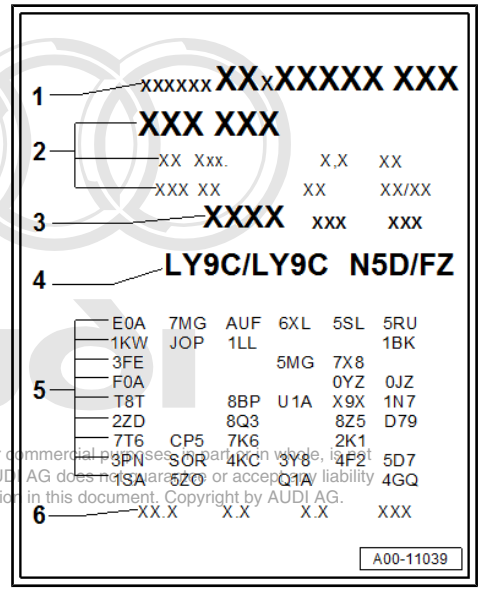
2 - Vehicle model, manufacturer's code, engine type and power output, production month and year

3 - Engine and gearbox code letters (not specified on some export models)

4 - Paint number, interior equipment number

5 - Numbers for optional extras

6 - Fuel consumption: urban, extra urban, combined, CO2 (not specified on some export models)



2 Preparations

2.1 Vehicle: raising

Caution

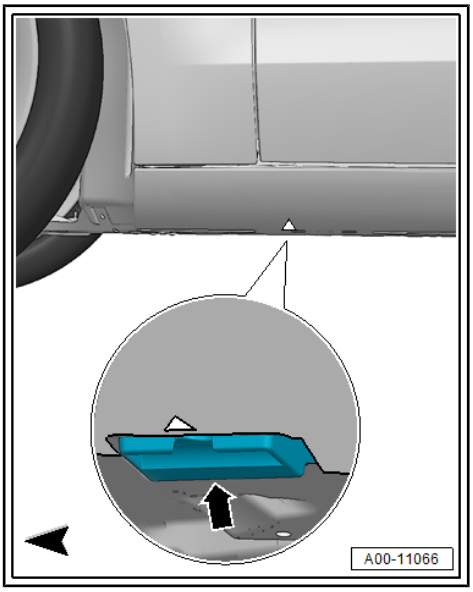
Risk of damage to vehicle due to incorrect use of lifting platform.

- *Do not exceed the permissible lifting capacity of the lifting platform.*
- *The vehicle should be lifted only at the points shown in the illustration.*
- *Position support plates so that they are aligned centrally below the lifting points.*
- *Ensure sufficient clearance between low-mounted vehicle components and the lifting platform.*

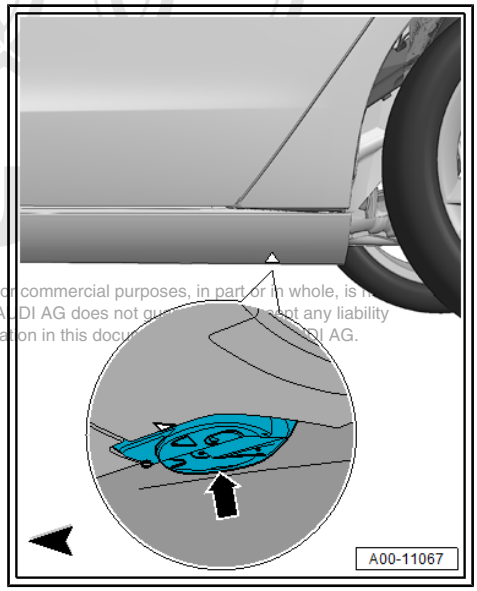
Procedure:

– For vehicles with adaptive air suspension: Activate jacking mode before lifting vehicle ⇒ page 8 .

– Front: Position support plates of lifting platform under plastic mountings -arrow- on underside of side member trim.



– Rear: Position support plates of lifting platform under plastic mountings -arrow- on underside of side member trim.



Note

The location of the lifting points is indicated by markings stamped on the side member trim.

2.1.1 Activating jacking mode

Procedure:

– Switch on ignition and activate MMI.

– Press function selector button CAR.

– Under »Systems«, navigate through following menu structure:

♦ adaptive air suspension

♦ SETUP

– Use MMI rotary pushbutton to select “Jacking mode” and set to “on”.

Note

♦ *Jacking mode is switched off again automatically once a speed higher than 15 km/h is reached.*

♦ *If jacking mode is activated for a longer period of time, the pressure in the suspension struts may dissipate, thereby lowering the vehicle. If necessary, start the engine briefly to reactivate jacking mode.*

2.2 Engine cover panel: removing and installing

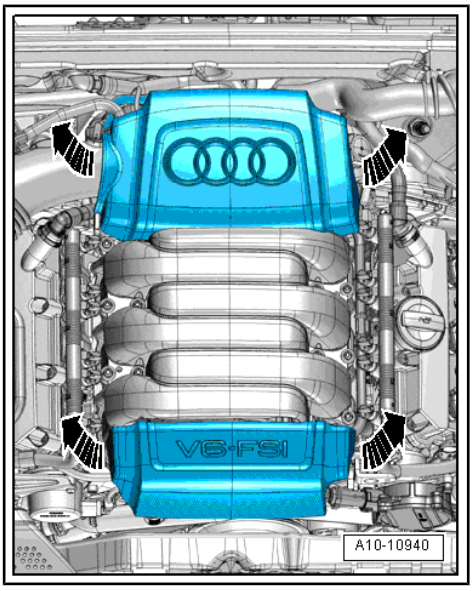
2.2.1 6-cyl. petrol engine 2.8 ltr. FSI

Procedure for removing:

– Carefully pull engine cover panels off retaining pins one after another -arrows-.

Procedure for installing:

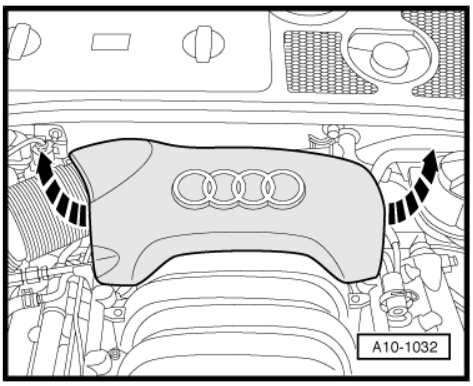
– Position engine cover panels on retaining pins and then use your hands to press it onto retaining pins, one after the other.



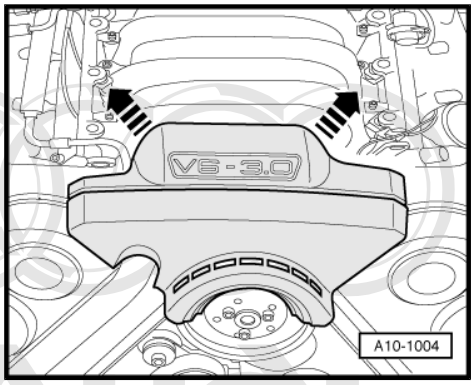
2.2.2 6-cyl. petrol engine 3.0 ltr. MPI

Procedure for removing:

– Carefully pull engine cover panel (rear) off retaining pins one after another -arrows-.



– Carefully pull engine cover panel (front) off retaining pins one after another -arrows-.



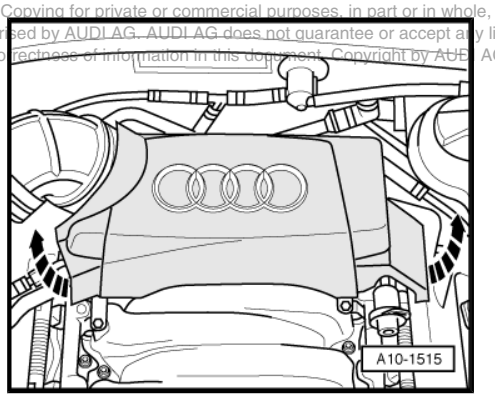
Procedure for installing:

– Position engine cover panels on retaining pins and then use your hands to press it onto retaining pins, one after the other.

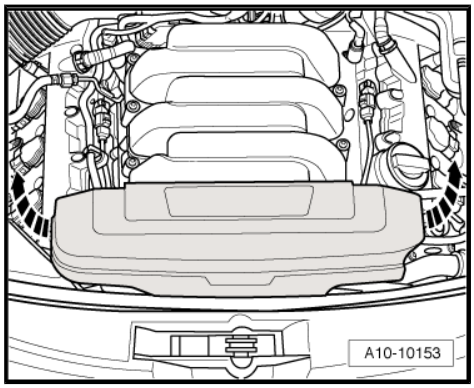
2.2.3 6-cyl. petrol engine 3.2 ltr. FSI

Procedure for removing:

– Carefully pull engine cover panel (rear) off retaining pins one after another -arrows-.



– Carefully pull engine cover panel (front) off retaining pins one after another -arrows-.



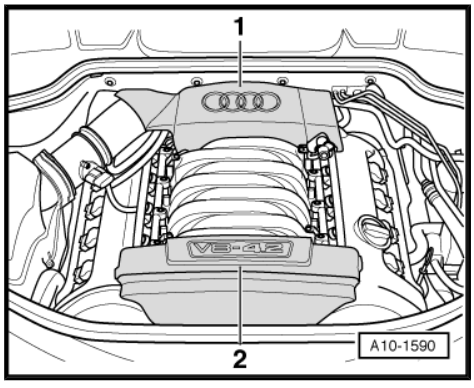
Procedure for installing:

– Position engine cover panels on retaining pins and then use your hands to press it onto retaining pins, one after the other.

2.2.4 8-cyl. petrol engine 3.7 ltr. MPI, 4.2 ltr. MPI

Procedure for removing:

– Carefully pull engine cover panels -1- and -2- off retaining pins one after another.



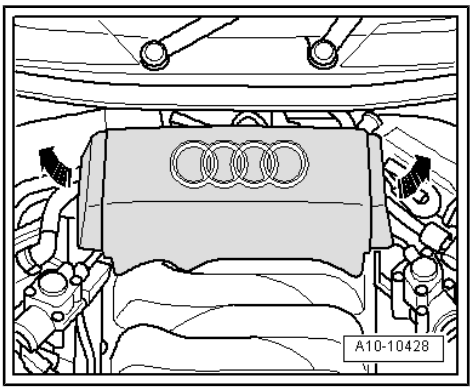
Procedure for installing:

– Press engine cover panels into mountings.

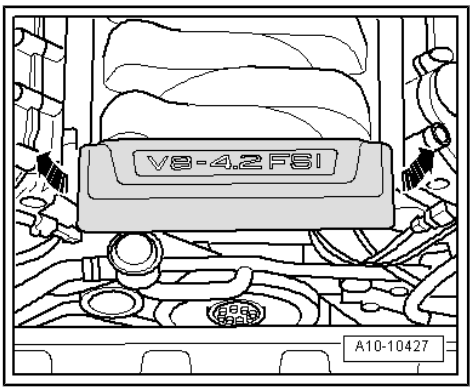
2.2.5 8-cyl. petrol engine 4.2 ltr. FSI

Procedure for removing:

– Carefully pull engine cover panel (rear) off retaining pins one after another -arrows-.



– Carefully pull engine cover panel (front) off retaining pins one after another -arrows-.



Procedure for installing:

– Position engine cover panels on retaining pins and then use your hands to press it onto retaining pins, one after the other.

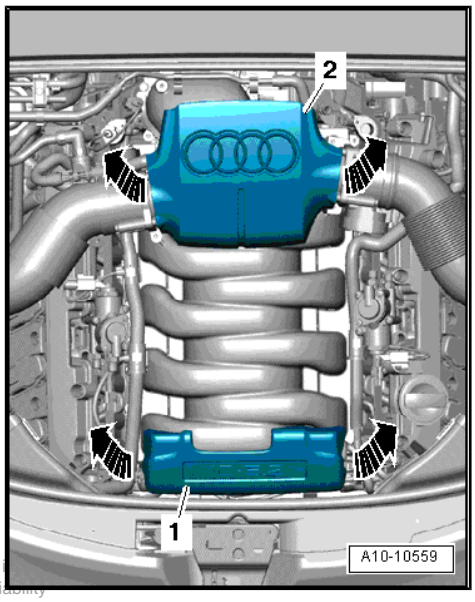
2.2.6 10-cyl. petrol engine 5.2 ltr. FSI

Procedure for removing:

– Carefully pull engine cover panels off retaining pins one after another -arrows-.

Procedure for installing:

– Position engine cover panels on retaining pins and then use your hands to press it onto retaining pins, one after the other.



2.2.7 12-cyl. petrol engine 6.0 ltr. MPI

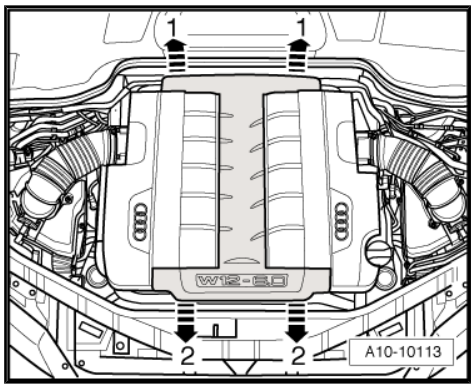
Procedure for removing:

– Carefully pull rear and centre parts of engine cover panel off retaining pins one after another in direction of -arrows 1-.

– Pull front part of engine cover panel off intake manifold in direction of -arrows 2- and remove.

Procedure for installing:

– Position engine cover panels on retaining pins and then use your hands to press it onto retaining pins, one after the other.



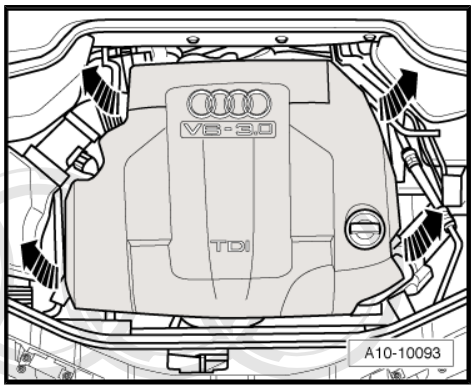
2.2.8 6-cyl. diesel engine 3.0 ltr. TDI

Procedure for removing:

– Carefully pull engine cover panel off retaining pins one after another -arrows-.

Procedure for installing:

– Position engine cover panel on retaining pins and then use your hands to press it onto retaining pins, one after the other.



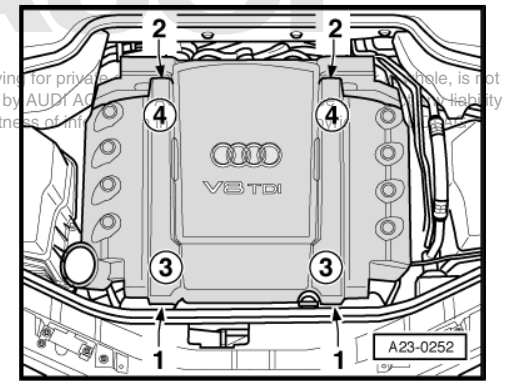
2.2.9 8-cyl. diesel engine 4.0 ltr. TDI

Procedure for removing:

– Carefully pull engine cover panel off retaining pins at points -1- and -2-.

Procedure for installing:

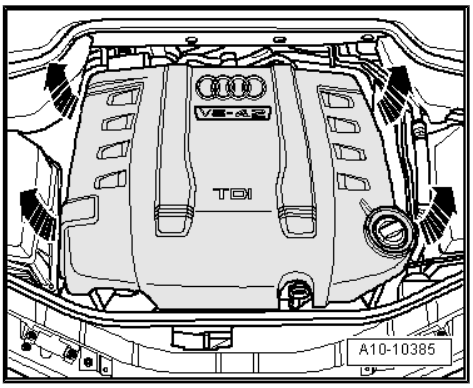
– Position engine cover panel on retaining pins and then use your hands to press it onto retaining pins, one after the other.



2.2.10 8-cyl. diesel engine 4.2 ltr. TDI

Procedure for removing:

– Carefully pull engine cover panel off retaining pins one after another -arrows-.



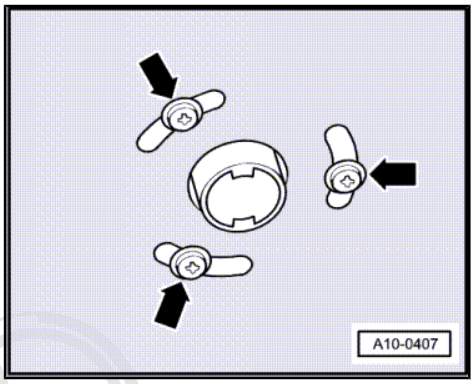
Procedure for installing:

– Position engine cover panel on retaining pins and then use your hands to press it onto retaining pins, one after the other.

2.3 Noise insulation: removing and installing

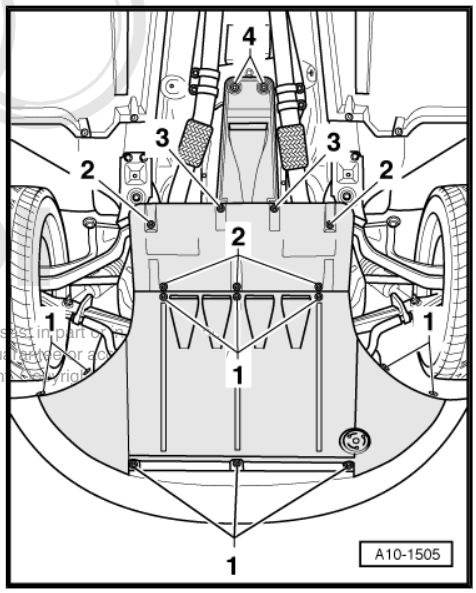
Procedure for removing:

– On vehicles with auxiliary heater: Unscrew bolts for exhaust pipe of auxiliary/supplementary heater at noise insulation.



– Unscrew quick-release fasteners -1-, -2- and -3-.

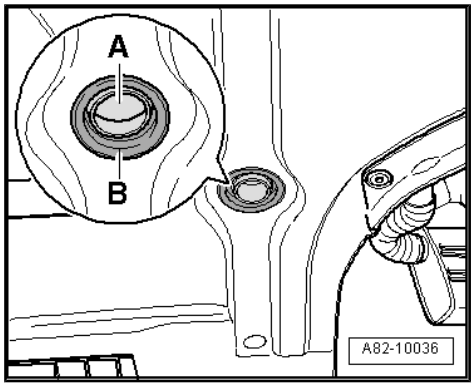
– Pull noise insulation towards rear out of bottom section of bumper cover and detach.



Procedure for installing:

Install in reverse sequence.

– Check that seal -B- is fitted between exhaust pipe of supplementary heater and noise insulation.



Note

- *Ensure that you feel the quick-release fasteners engage when installing.*
- *On vehicles with supplementary heater, opening of exhaust pipe must be routed vertically through grommet in noise insulation.*

2.4 Window regulators: activating automatic open/close function

If the vehicle battery was disconnected, the automatic open/close function for the electric windows must be reactivated.

Procedure:

– Pull up on window regulator switch until windows are completely closed.

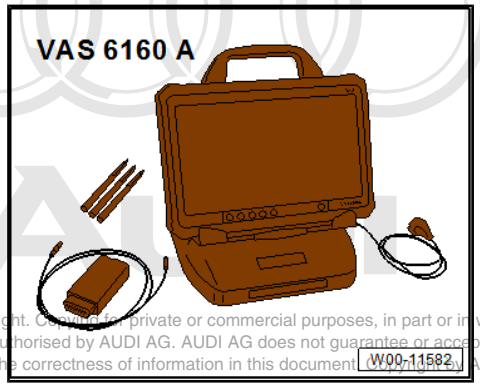
– Release switch and pull on it again for at least one second.

– Repeat procedure with all window regulators.

2.5 Vehicle diagnostic tester: connecting

Special tools and workshop equipment required

- Diagnosis system - VAS 6160 A-



- Remote diagnosis head - VAS 5054A- or diagnosis interface - VAS 5055-

Procedure:

– Plug connector for remote diagnosis head - VAS 5054A- into diagnostic connection in vehicle.

– Switch on diagnostic system - VAS 6160 A- .

– Switch on ignition.

– Follow the menu on the screen to start the desired functions.

3 Maintenance

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Windscreen washer system:checking spray pattern and adjusting if necessary ⇒ page 46

Wiper blades: checking for damage ⇒ page 47

Headlight washer system: checking operation ⇒ page 47

Headlights: checking for correct adjustment ⇒ page 48

Snow screen: cleaning ⇒ page 102

Service interval display: resetting service ⇒ page 21

Horn: checking operation ⇒ page 50

Dust and pollen filter: renewing ⇒ page 103

Dust and pollen filter: renewing preliminary filter ⇒ page 103

Transport mode: deactivating ⇒ page 21

Door hinges with arresters and locking cylinders: lubricating ⇒ page 45

Underbody: checking trim, wheel housing liners, side members and pipes/wiring for damage, and checking that they are properly secured ⇒ page 41

Shipping mode: deactivating ⇒ page 22

Plenum chamber and water drains: checking for dirt
⇒ page 101

Toothed belt for camshaft drive and tensioning roller: renewing
⇒ page 108

Toothed belt for camshaft drive: renewing ⇒ page 108

Spark plugs: renewing ⇒ page 76

3.1 Diesel particulate filter: reading out ash deposit volume

Table of test values and procedure guidelines:

Engine	Measured value designation for diagnostic tester	Maximum value for ash deposit
6-cyl. diesel engine 3.0 ltr. TDI common rail	Measured value block 104/zone 1	Oil ash deposit volume: 460 ml
8-cyl. diesel engine 4.0 ltr. TDI/ 4.2 ltr. TDI	Exhaust bank 1: Measured value block 105/zone 1 Exhaust bank 2: Measured value block 106/zone 1	Oil ash deposit volume: 760 ml

Procedure:

– Connect vehicle diagnostic tester ⇒ page 14 .

– Select Diagnosis mode and begin diagnosis.

– Perform vehicle identification.

– De-select “Working with Guided Fault Finding” by removing v and press Apply.

– Continue to follow instructions on screen.

– Switch to “Control units” tab.

– Select control unit “01 — Engine electronics” and carry out following functions via right mouse button:

♦ Identify control unit

♦ Guided Functions

♦ 01 - Read measured values

– Select desired measured value (see table of test values and procedure guidelines ⇒ page 19) by entering v and confirming with OK.

– Evaluate measured value and follow further instructions on screen.

– Perform the following measures according to the measured value:

Result:	Measure:
Measured value < critical value	Vehicle can be driven for a further 30,000 km (19,000 miles).
Measured value ≥ critical value	Renew diesel particulate filter and reset measured value to zero ⇒ Rep. gr. 26 ; Removing and installing parts of exhaust system - vehicles with particulate filter; Removing and installing particulate filter with main catalytic converter .

Note

- *The critical values listed are always given for one diesel particulate filter.*
- *For vehicles with two exhaust pipes, the ash deposit volume must be read out for both diesel particulate filters.*

3.2 Event memory: reading out and erasing

Procedure:

– Connect vehicle diagnostic tester ⇒ page 14 .

– Select Diagnosis mode and begin diagnosis.

– Perform vehicle identification.

– Select “Working with Guided Fault Finding” by entering v and press Apply.

The control unit is then identified, and the event memory is interrogated. Observe notes and test conditions.

– Switch to “Control units” tab and call up “Event memory list” for an overview of all entries stored in event memory.

– Correct relevant faults and erase event memory.

Note

The event memory is erased automatically if the Guided Fault Finding is closed correctly.

3.3 Navigation system (MMI high): releasing eject button

Procedure:

– Connect vehicle diagnostic tester ⇒ page 14 .

– Select Diagnosis mode and begin diagnosis.

– Perform vehicle identification.

– De-select “Working with Guided Fault Finding” by removing v and press Apply.

– Switch to “Special functions” tab and select following program:

- 5F - Lock / release eject button

– Start program by selecting Carry out check.

– Continue to follow instructions on screen.

3.4 Navigation system (MMI basic): releasing eject button and running CD for languages

Step 1 - releasing eject button:

– Connect vehicle diagnostic tester ⇒ page 14 .

– Select Diagnosis mode and begin diagnosis.

– Perform vehicle identification.

– De-select “Working with Guided Fault Finding” by removing [v] and press [Apply].
– Switch to “Special functions” tab and select following program:
♦ 5F - Lock / release eject button
– Start program by selecting [Carry out check].
– Continue to follow instructions on screen.

Step 2 - installing language:

– Activate MMI.
– Take “Navigation cues and speech dialogue system” CD out of glove box and insert it into CD/DVD drive.
– Press function selector button [SETUP].
– Select following menu under control button »Settings«:
♦ Language
– Use MMI rotary pushbutton to select desired language.
– Put CD back when finished.

3.5 Service interval display: resetting service

Procedure:

– Connect vehicle diagnostic tester ⇒ page 14 .
– Select [Diagnosis] mode and begin diagnosis.
– Perform vehicle identification.
– De-select “Working with Guided Fault Finding” by removing [v] and press [Apply].
– Switch to “Special functions” tab.
– Select service setting to be reset (e.g. “17 — Inspection”).
– Start program by selecting [Carry out check].
– Continue to follow instructions on screen.

Note

Please refer to the relevant Maintenance table for information on which service channel to reset and what data to enter.

3.6 Transport mode: deactivating

Procedure:

– Connect vehicle diagnostic tester ⇒ page 14 .
– Select [Diagnosis] mode and begin diagnosis.
– Perform vehicle identification.
– De-select “Working with Guided Fault Finding” by removing [v] and press [Apply].
– Switch to “Special functions” tab and select following program:
♦ 19 - Activating / deactivating transport mode
– Start program by selecting [Carry out check].

– Continue to follow instructions on screen.

Note

- *The transport mode serves to maintain the vehicle's ability to start.*
- *When the vehicle is in transport mode, many functions, e.g. radio, are restricted or unavailable.*

3.7 Shipping mode: deactivating

Procedure:

– Connect vehicle diagnostic tester ⇒ page 14 .

– Select Diagnosis mode and begin diagnosis.

– Perform vehicle identification.

– De-select “Working with Guided Fault Finding” by removing v and press Apply.

– Switch to “Special functions” tab and select following program:

- 34 - Activating / deactivating shipping mode

– Start program by selecting Carry out check.

– Continue to follow instructions on screen.

Note

Deactivating shipping mode may cause the height of the vehicle to drop.

3.8 Battery: reading out status and sending diagnostic log

Procedure:

– Connect vehicle diagnostic tester ⇒ page 14 .

– Select Diagnosis mode and begin diagnosis.

– Perform vehicle identification.

– De-select “Working with Guided Fault Finding” by removing v and press Apply.

– Switch to “Special functions” tab and select following program:

- A - Battery check

– Start program by selecting Carry out check.

– Continue to follow instructions on screen.

– Use results of test to determine following measures:

Result on vehicle diagnostic tester:	Measure:
“Battery OK”	No further measures necessary.
“Charge battery”	Charge battery ⇒ Rep. gr. 27 ; Battery; Charging battery .
“Battery is no longer of the same quality as when shipped”	Renew battery after consulting with customer ⇒ Rep. gr. 27 ; Battery; Removing and installing battery .

3.9 Battery: checking that battery and battery cables are securely fitted

WARNING

Risk of injury due to loose battery clamp on positive terminal.

- *Disconnect battery clamp from negative terminal and then tighten battery clamp on positive terminal.*

Special tools and workshop equipment required

- Torque wrench - VAS 6583- , measuring range 3 to 60 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Nut on battery clamp	4
Bolt on retainer plate	24

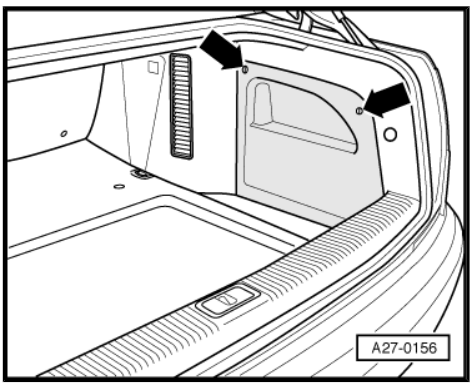
Battery is located behind the luggage compartment side trim (right-side).

Requirements:

- Ignition switched off during test.

Steps for removal:

– Unfasten clips -arrows- and take out luggage compartment side trim.

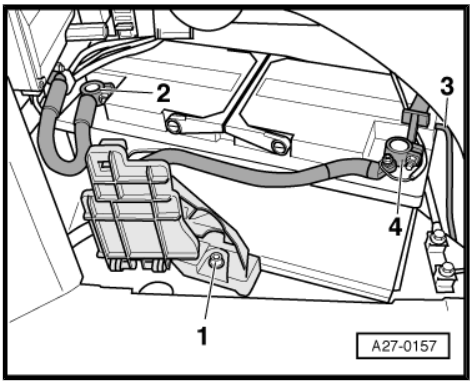


Procedure:

– Check by hand that battery terminal clamps -2- and -4- are securely seated. If necessary tighten nuts to specified torque (see table of tightening torques for installation ⇒ page 23).

– Check by hand that battery is securely installed. If necessary tighten securing bolt -1- on retainer plate to specified torque (see table of tightening torques for installation ⇒ page 23).

Install in reverse sequence.



3.10 Battery: checking electrolyte level

Battery is located behind the luggage compartment side trim (right-side).

Note

Batteries must not be opened.

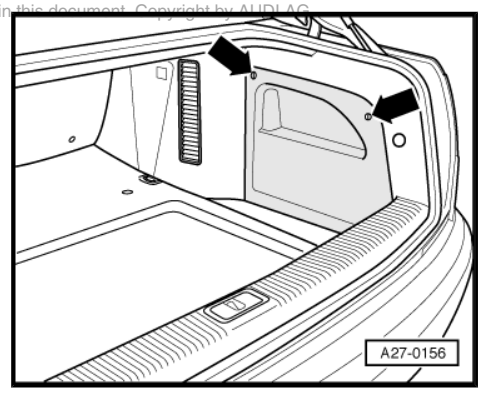
Battery without magic eye ⇒ page 24

Battery with magic eye ⇒ page 24

3.10.1 Battery without magic eye

Steps for removal:

– Unfasten clips -arrows- and take out luggage compartment side trim.



Procedure:

– Check battery housing for the following:

♦ Battery terminals are not corroded or damaged

♦ Mechanical damage to battery housing and cover, indicated by electrolyte leakage or crystals at the damaged area

– Damaged batteries must be renewed.

– Check electrolyte level of all battery cells using markings on housing.

– If electrolyte level of one or more battery cells is below MIN marking: Renew battery.

Install in reverse sequence.

Note

♦ *A bright hand-held light helps to better see the MIN and MAX markings on the housing.*

♦ *If battery is difficult to see: Use a small mirror to check the electrolyte level (shine a bright hand-held light at a right angle onto the battery cells).*

3.10.2 Battery with magic eye

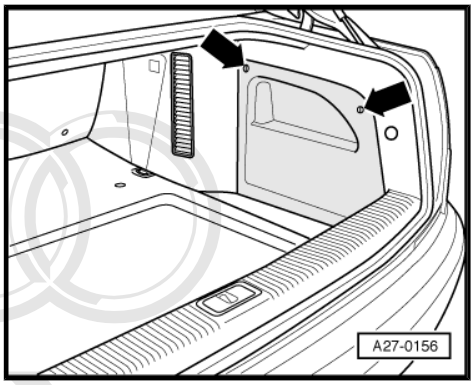
WARNING

Risk of explosion if magic eye is colourless or light yellow!

- ***Do not attempt to jump-start vehicle.***
- ***Do not check or charge battery.***
- ***Renew battery.***

Steps for removal:

– Unfasten clips -arrows- and take out luggage compartment side trim.



Procedure:

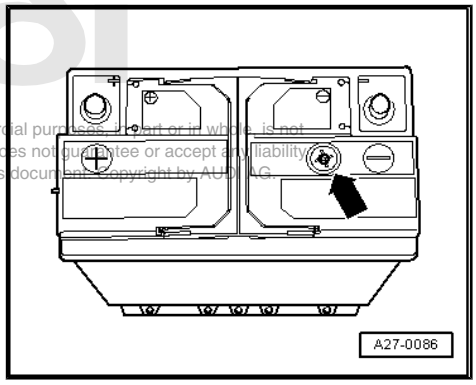
– Check battery housing for the following:

- Battery terminals are not corroded or damaged
- Mechanical damage to battery housing and cover, indicated by electrolyte leakage or crystals at the damaged area

– Damaged batteries must be renewed.

– Before checking electrolyte level: Tap magic eye -arrow- carefully with handle of a screwdriver.

– Read off battery electrolyte level according to colour display. Two different results are possible:



Colour of magic eye:	Measure:
Black or green	Electrolyte level OK: No further measures necessary
Colourless or light yellow	Electrolyte level too low: Battery must be renewed

Install in reverse sequence.

Note

- *The magic eye is also referred to as an ALI (acid level indicator).*
- *The magic eye is only for use in determining the electrolyte level.*
- *During battery charging or vehicle operation, air bubbles can form underneath the magic eye which could falsify the colour display. Tap magic eye lightly to release any bubbles.*

3.11 Brake fluid: changing

WARNING

Risk of accident if the brake pedal has too much free play.

- ***Make sure that the brakes work properly before the vehicle is driven on the road.***

WARNING

Risk of injury due to caustic brake fluid.

- *Avoid contact with skin.*

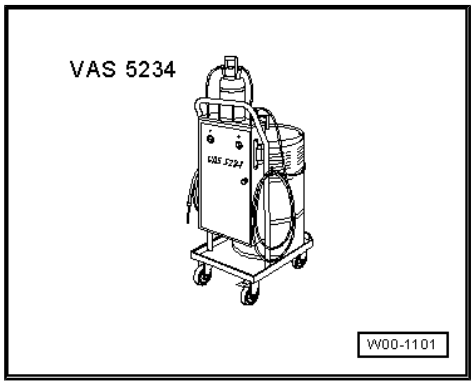
Caution

Risk of damage due to improper handling of brake fluid.

- *Avoid contact with vehicle paint.*
- *Avoid contact with liquids containing mineral oils (oil, petrol, cleaning agents).*

Special tools and workshop equipment required

- Brake filling and bleeding equipment - VAS 5234-



- Tool set for brake bleeding - VAS 6564-

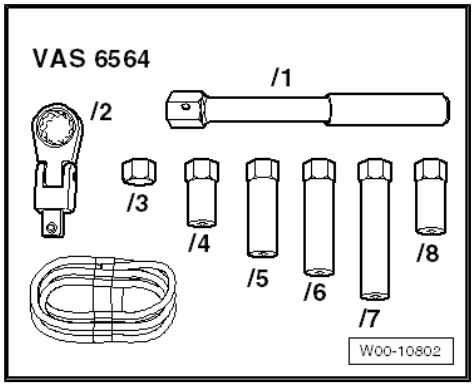


Table of test values and procedure guidelines:

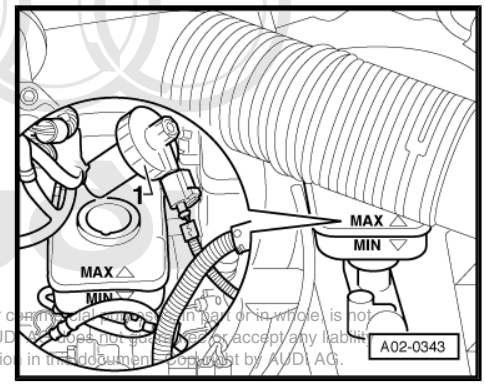
The value given in the table is for one brake caliper, i.e. if there are two bleeder screws on one caliper, the sum of the quantities discharged from both bleeder screws must equal the value given in the table.

Sequence of opening bleeder screws:		Quantity of brake fluid to discharge:
Brake calipers		
Front axle on driver's side	1.	0.20 ltr.
Front axle on front passenger's side	2.	0.20 ltr.
Rear axle on driver's side	3.	0.30 ltr.
Rear axle on front passenger's side	4.	0.30 ltr.
Clutch slave cylinder	5.	0.15 ltr.

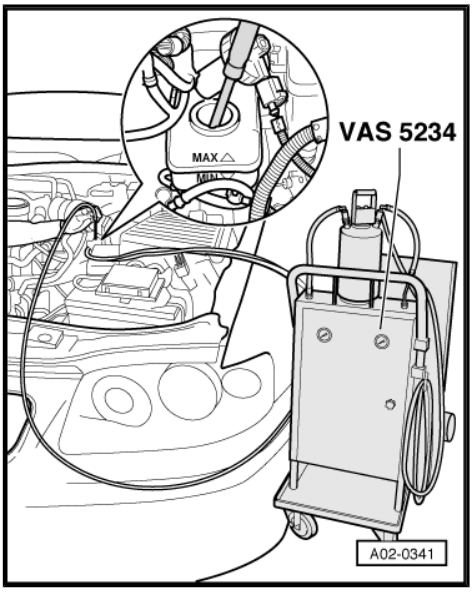
Sequence of opening bleeder screws:	Quantity of brake fluid to discharge:
⇒ Total quantity, automatic gearbox	1.00 ltr.
⇒ Total quantity, manual gearbox	1.15 ltr.

Step 1 - connecting brake filling and bleeding equipment:

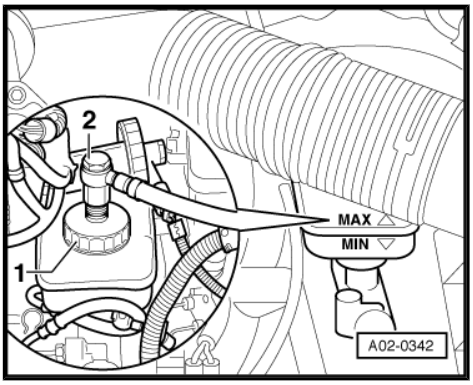
– Unscrew filler cap -1- from brake fluid reservoir.



– Use extraction hose included in brake filling and bleeding equipment - VAS 5234- to extract brake fluid from reservoir (with strainer installed) until fluid is level with bottom edge of strainer. Make sure that no more fluid flows back into reservoir from strainer after extracting fluid.



– Screw adapter -1- onto brake fluid reservoir.
– Connect filling hose -2- included with brake filling and bleeding equipment - VAS 5234- to adapter.
– Set pressure on brake filling and bleeding equipment - VAS 5234- (see operating instructions).



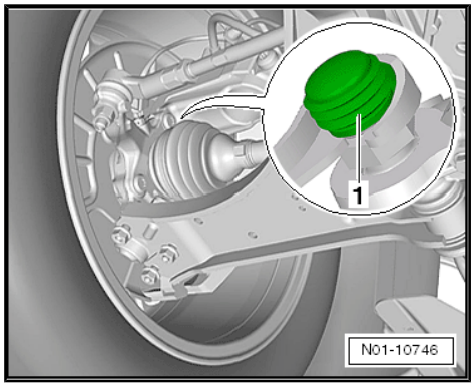
Step 2 - bleeding and filling brake system:

If there are two bleeder screws on each brake caliper, first bleed the inner, then the outer bleeder screw.

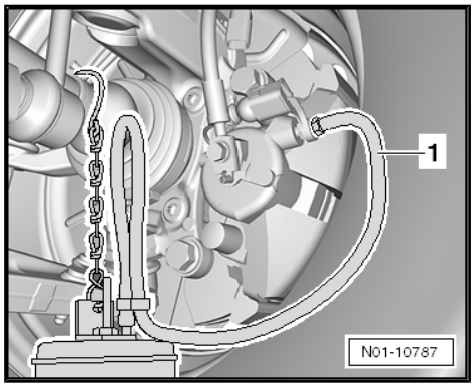
– Raise vehicle ⇒ page 7 .

Front axle:

– Brake caliper (driver's side): Remove cap(s) -1- from bleeder screw(s).

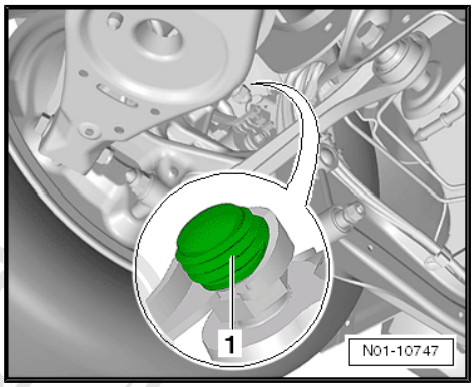


– Fit bleeder hose -1- attached to collector container onto bleeder screw from inside of rim.
– Open bleeder screw and allow brake fluid to discharge. Refer to table for correct quantity of brake fluid to discharge ⇒ page 26 .
– Close bleeder screw.
– If there are two bleeder screws on each brake caliper: Repeat procedure with second bleeder screw.
– Refit cap on bleeder screw(s).
– Repeat procedure on passenger's side.

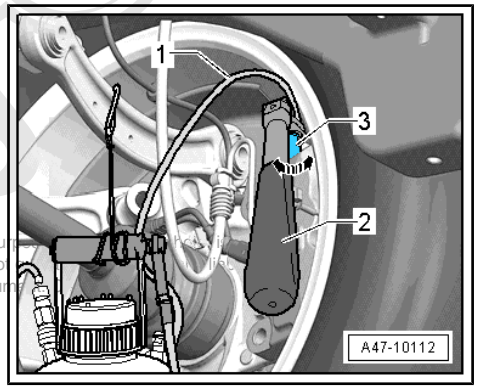


Rear axle:

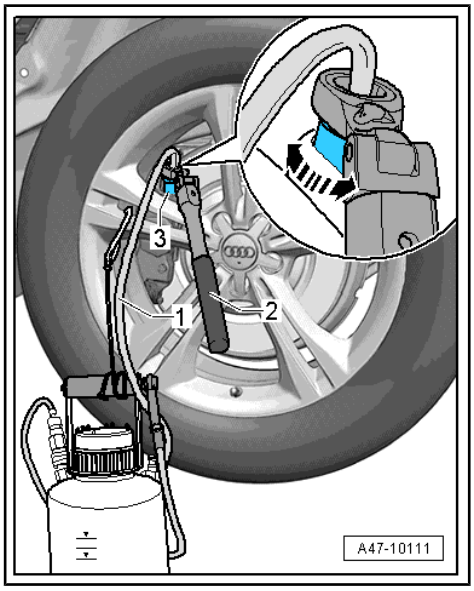
– Brake caliper (driver's side): Remove cap(s) -1- from bleeder screw(s).
– Take reversible ratchet and appropriate socket from tool set for brake bleeding - VAS 6564- and fit together.



– Run bleeder hose -1- from inside of rim through reversible ratchet -2- and socket -3- and fit onto bleeder screw.
– Open bleeder screw with ratchet -2- and allow brake fluid to discharge. Refer to table for correct quantity of brake fluid to discharge ⇒ page 26 .
– Close bleeder screw.



– If there are two bleeder screws on each brake caliper: Working from outside of rim, apply reversible ratchet -2- and socket -3- and repeat procedure.
– Refit cap on bleeder screw(s) on brake caliper.
– Repeat procedure on passenger's side.



Step 3 - bleeding clutch slave cylinder

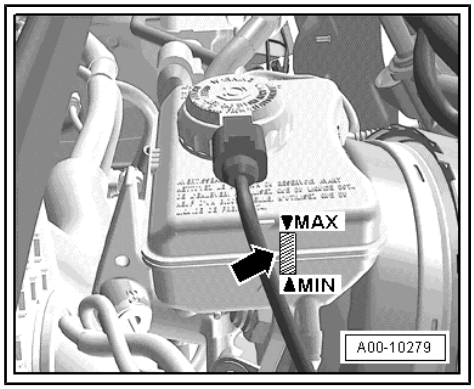
Only for vehicles with manual gearbox

– Remove components necessary for access; refer to ⇒ Rep. gr. 30 ; Clutch mechanism; Bleeding clutch mechanism .
– Fit bleeder hose attached to collector container -1- onto bleeder screw of clutch slave cylinder.
– Open bleeder screw and allow correct amount of brake fluid to flow out (see table of test values and procedure guidelines ⇒ page 26).
– Close bleeder screw and fit cap.

Step 4 - final steps:

– Close filling lever of brake filling and bleeding equipment - VAS 5234- .
– Detach filling hose from adapter.
– Unscrew adapter from brake fluid reservoir.

– Check brake fluid level and adjust if necessary (depending on brake pad wear) ⇒ page 31 .
– Screw cap onto brake fluid reservoir.



– Operate clutch pedal several times.
– Check pedal pressure and free travel: No more than $^1/_3$ of total pedal travel.
– Make sure that the brakes work properly before the vehicle is driven on the road.
– If free travel of brake pedal is greater than specified, or if brake function is impaired: Check brake system for leaks and renew brake fluid again.

Note

- *The bleeder hose must fit tightly on the bleeder screw to prevent air from entering the brake system.*
- *In the case of certain wheel combinations, the wheels may have to be removed.*
- *With the aid of the tool set for brake bleeding - VAS 6564- , the rear brakes or, depending on version, the front and rear brakes can be bled without having to remove the wheels.*
- *Use genuine Audi brake fluid; see Electronic parts catalogue (ETKA).*
- *Do not reuse brake fluid.*
- *Always observe the relevant environmental regulations for disposal of brake fluid.*

3.12 Brake fluid: checking fluid level

Table of test values and procedure guidelines:

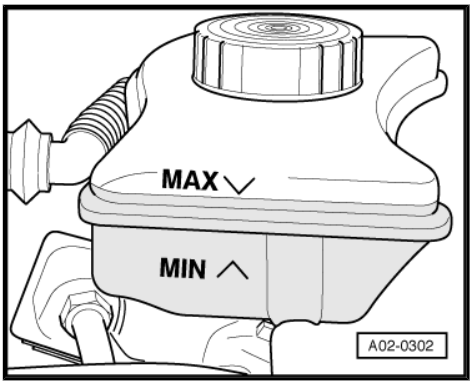
Type of service:	Fluid level specification:
Delivery Inspection	Fluid level must be at MAX marking.
Brake fluid change	Fluid level must be between MAX marking and MIN marking according to wear level of brake pads.

Checking the brake system for leaks is a repair measure and should be charged separately.

Procedure:

– Evaluate brake fluid level according to markings -arrows- on brake fluid reservoir.

– Perform the following measures according to the results of the check:



Fluid level:	Evaluation/measure:
Above MAX marking	Extract brake fluid.
Below specified level	Carry out brake system leak test ⇒ Rep. gr. 47 ; Hydraulic system; Leak test .

Note

When the vehicle is in use, the fluid level drops due to wear and automatic adjustment of the brake pads.

3.13 Brake system: checking condition of brake hoses, and checking that caps are fitted on bleeder screws

Requirements:

- Brake hoses must not touch any components when steering is on full lock.
- Brake hoses must not be twisted.

Procedure:

– Check that all brake hoses are secured properly; when doing so, ensure that the conditions listed are met:

– Check all brake hoses for abrasion, porosity, blistering and cracking.

– Check that brake connections are seated correctly, and check for corrosion and leaks.

– If faults are found on brake hoses: Repair/renew relevant component.

– Check that caps are fitted and secured on bleeder screws of all brake calipers.

– Renew any missing caps.

3.14 Brake pads: checking thickness

Special tools and workshop equipment required

- Test pin - T40139- : Use the side with the thin probe (brake symbol) to measure brake pad thickness.

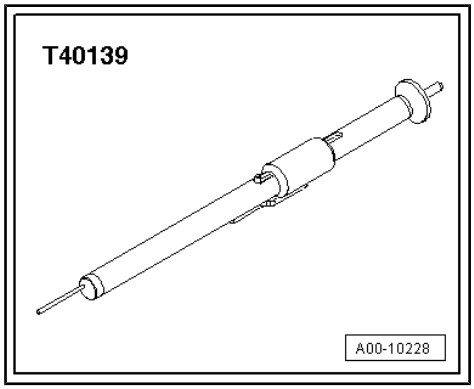


Table of test values and procedure guidelines:

Brake version	Brake pad wear limit including backplate and damper plate [mm]	Brake pad wear limit including backplate, not including damper plate [mm]	Brake pad wear limit not including backplate and damper plate [mm]
Front axle:			
Steel-version brakes	9	11	---
Ceramic brakes	9.5	---	---
Rear axle:			
Steel-version brakes	---	8	---
Ceramic brakes	---	9	3

Check only the thickness of the outer brake pads.

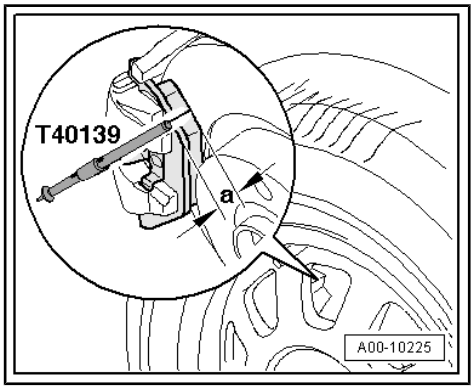
Procedure:

– Before you begin: Push sliding ring towards tip of test pin as far as it will go.

– Bring tip of test pin into contact with brake disc.

– Slide test pin towards brake pad until test pin makes contact with backplate of brake pad.

– Remove test pin and read off brake pad wear value -a- from scale on tool.
– Repeat procedure for all wheels.
– If brake pad thickness has reached wear limit (see table of test values and procedure guidelines ⇒ page 32): Renew brake pads ⇒ Rep. gr. 46 ; Brake pads; Removing and installing brake pads .



Note

- *When removing the test gauge, take care not to move the sliding ring. This would give an incorrect measurement.*
- *Note where the test gauge makes contact on the rear of the brake pad and include the thickness of the damper plate in the calculation if necessary.*
- *In the case of certain wheel combinations, the wheels must be removed.*

3.15 Tyres: checking condition and wear pattern, and checking and recording tread depth

Special tools and workshop equipment required

- Test pin - T40139- : Use the side with the thick probe and shoulder (scale marked with tyre symbol) to measure tread depth.

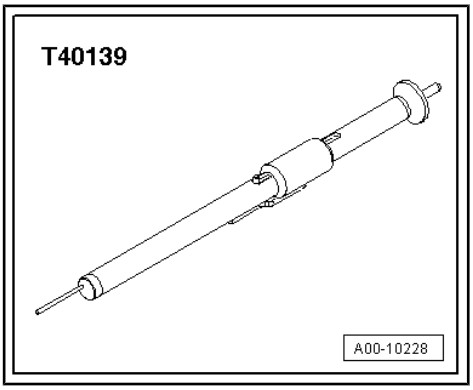


Table of test values and procedure guidelines:

Country-specific regulations for minimum tread depth apply; for countries not listed, evaluate values according to the country's specifications.

Country	Minimum tread depth [mm]
EU countries	1.6[1)]
Brazil	1.6
China	1.6
India	1.6
Japan	1.6
Norway	1.6[1)]
Russia	1.6
Switzerland	1.6
Turkey	1.6

Country	Minimum tread depth [mm]
Ukraine	1.6[1)]
USA	1.6

1) Larger values for winter tyres where these are mandatory

Performing wheel alignment is a repair measure and should be charged separately.

Step 1 - checking condition:

– Check for and remove any foreign bodies in tyre tread.

– Check all tyres for following types of damages:

♦ Cuts, cracks, tears

♦ Scuffing or flattened areas on tyre tread

♦ Porous sidewalls

♦ Blisters on sidewalls

– If damage is found: Renew tyres.

Step 2 - checking tyre wear pattern:

– Check tyre wear pattern of front wheels; check for the following:

♦ Feathering on tread indicating possible incorrect toe setting

♦ One-sided tread wear indicating possible incorrect camber

– If the above types of wear are found: Check wheel alignment to determine the cause.

Step 3 - checking tread depth:

– Measure tread depth on all tyres (including spare tyre) at several points using test pin - T40139- . Uneven tread depth indicates damage.

– Record average measurement for each tyre in Maintenance table.

– If minimum tread depth has been reached (as specified for your country; see table of test values and procedure guidelines ⇒ page 33): Renew tyre.

Note

Vehicles with four-wheel drive must be fitted with tyres with the same tread pattern. Otherwise the centre differential may be damaged.

3.16 Tyres: checking tyre pressures and adjusting if necessary

Note

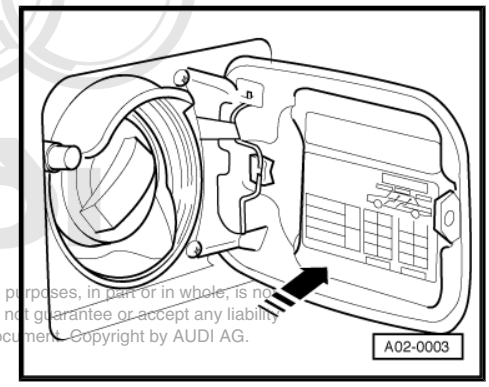
The tyre valves have to be sealed with valve caps. Otherwise, dirt could enter the valve, which will then become blocked and will no longer seal properly.

Front and rear axles ⇒ page 35

Spare wheel and temporary spare wheel ⇒ page 35

3.16.1 Front and rear axle

The tyre pressure specifications are listed on the sticker on the inside of the tank flap.



Tyre sizes not listed: See Wheel/tyre guide for tyre pressure specification ⇒ Rep. gr. 44 ; Tyre pressures .

Procedure:

– Check tyre pressure of all tyres.

– If necessary, adjust to correct tyre pressures.

Note

The tyre pressures listed only apply to cold tyres. When the tyres are warm, the actual pressures will be higher, but must not be reduced.

3.16.2 Spare wheel and temporary spare wheel

The following parameters apply to the tyre pressure specifications:

- Spare wheel with standard-size tyre: Inflate to maximum tyre pressure indicated on tyre pressure sticker ⇒ page 35 .
- Temporary spare wheel: The correct tyre pressure is indicated on the sidewall.

Procedure:

– Check tyre pressure of spare wheel/temporary spare wheel.

– If necessary, adjust to correct tyre pressures.

Note

Depending on equipment version, there may only be a tyre repair kit supplied; see Maintenance table.

3.17 Tyre Pressure Loss Indicator: storing changed tyre pressures

The Tyre Pressure Loss Indicator must be initialised after every time the tyre pressures are changed or the tyres are renewed.

Requirements:

- The inflation pressures of all tyres must be adjusted to the correct values before the pressures are stored.

Procedure:

– Switch on ignition and activate MMI.

– Press function selector button CAR.

– Under »Systems«, navigate through following menu structure:

◆ Tyre pressure monitoring

♦ Store tyre pressures

– Use MMI rotary pushbutton to select option to store tyre pressures.

Note

After changing one or more wheels: Select "Initialise after wheel change" in the menu structure.

3.18 Tyre repair kit: checking that set is complete, and checking and recording expiry date

The tyre repair kit is located in the spare wheel well.

Procedure:

– Check that the following components of the tyre repair kit are present:

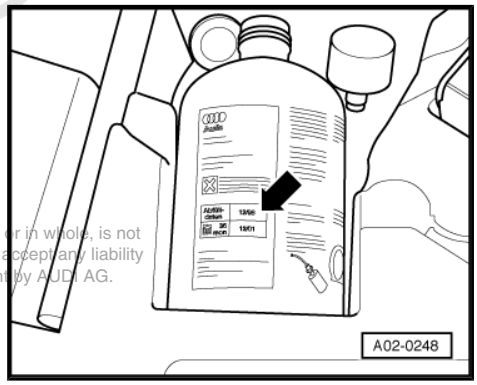
♦ Compressor

♦ Tyre filler bottle incl. filler hose

– Take out the bottle and check the expiry date (printed on bottle -arrow-).

– Record expiry date in Maintenance table.

– If expiry date has been exceeded or if bottle has already been used: Renew tyre filler bottle.



3.19 Wheel bolts: tightening to specified torque

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1332- , measuring range 40 to 200 Nm

♦ Or: torque wrench - V.A.G 1576- , measuring range 80 to 400 Nm

Table of test values and procedure guidelines:

Fastener	Tightening torque [Nm]
Wheel bolts (all wheels except PAX and A8 Security)	120
Wheel bolts (wheels with PAX tyres)	140
Wheel bolts (A8 Security)	140

The adapter for loosening and tightening anti-theft wheel bolts is included in vehicle tool kit.

Procedure:

– Tighten wheel bolts in a diagonal sequence to specified torque (see table of test values and procedure guidelines ⇒ page 36).

– If adapter for anti-theft wheel bolts was used from tool kit: Put adapter back in tool kit.

3.20 Components of front and rear axles: checking play, secure attachment and protective boots

The following applies to all components shown below:

- There must be no noticeable or visual play.
- As a rule you can identify damage to the boots/drive shaft boots by emerging grease.
- Check that retaining rings and spring-type clips are seated correctly.

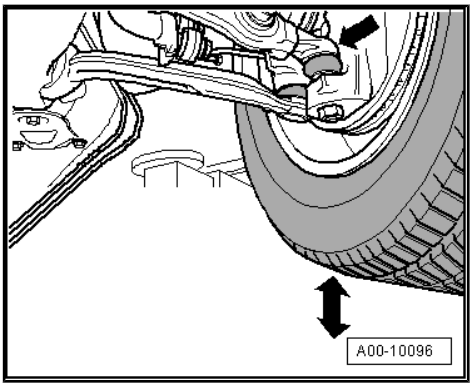
Front axle ⇒ page 37

Rear axle ⇒ page 39

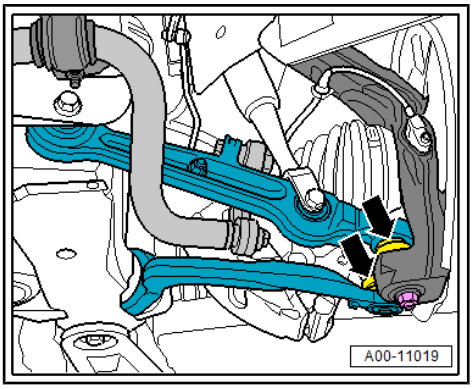
3.20.1 Front axle

Track control links and guide links:

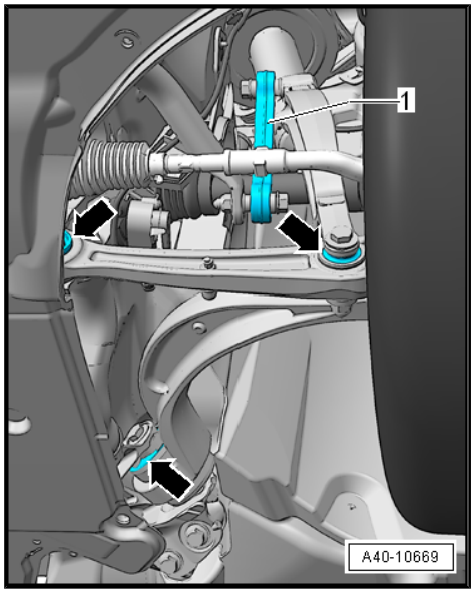
– Check relative movement between wheel bearing housing and track control link/guide link.



– Check boots of swivel joints -arrows- all around for damage and make sure they are seated correctly.

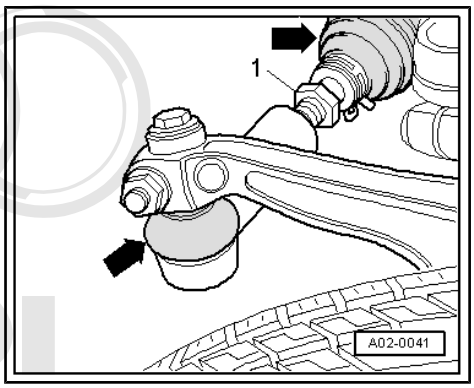


– Check bonded rubber bushes -arrows- of track control links and guide links for play.



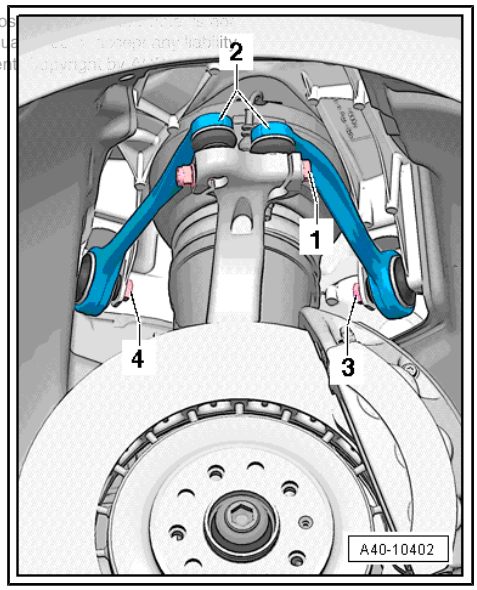
Track rod ball joint:

– Check boot for track rod joint -arrow- all around for damage and make sure it is seated correctly.
– Check play at track rod ball joint.



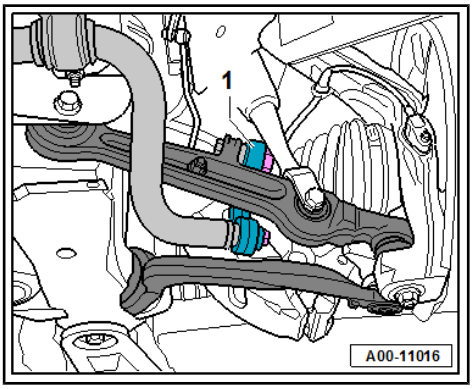
Upper links:

– Upper links -2-: Check bushes of swivel joints all around for damage and make sure they are seated correctly.
– Check bonded rubber bushes -3- and -4- of both swivel joints (top) for play.

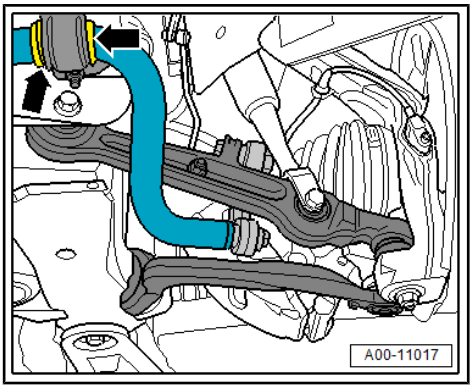


Coupling rod and anti-roll bar:

– Check play at coupling rod -1-.



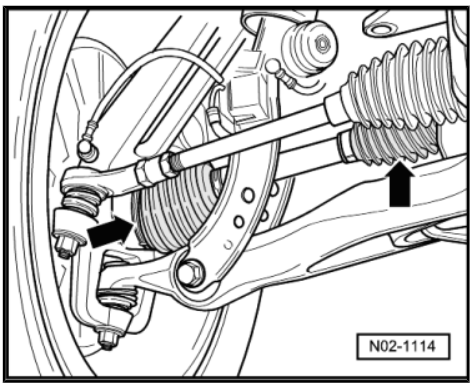
– Check anti-roll bar bush -arrows- for damage.



Drive shaft and steering rack:

– With steering turned: Check drive shaft boots -arrows- all around for damage and make sure they are seated correctly.

– Check boots of steering rack all around for damage and correct seating.



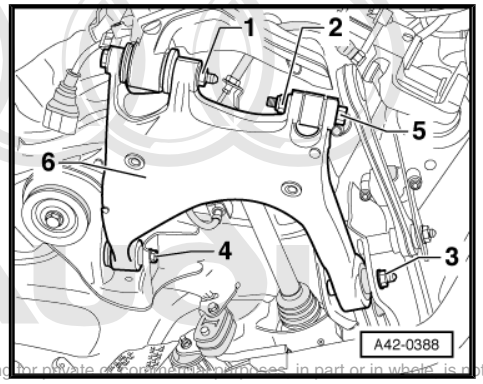
– If faults are found on any of the above components: Renew relevant component.

3.20.2 Rear axle

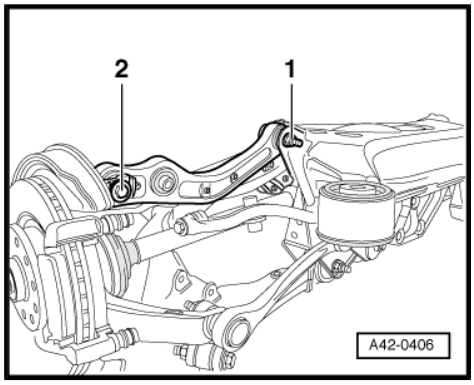
Trapezium links and upper transverse links:

– Check relative movement between wheel bearing housing and transverse links.

– Check all bonded rubber bushes -1-, -2-, -3- and -4- of lower transverse link -6- for play.

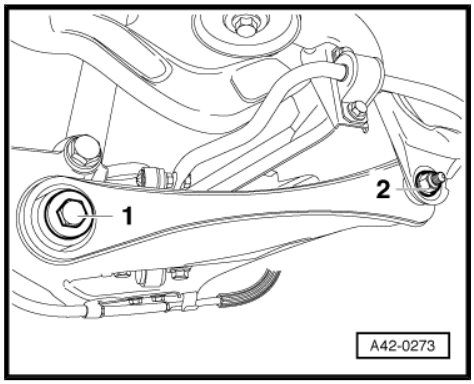


– Check bonded rubber bushes -1- and -2- of upper transverse link for play.



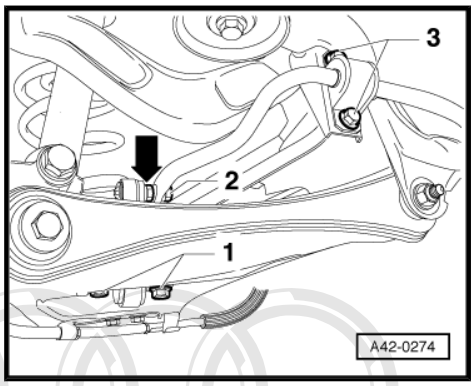
Track rod:

– Check bonded rubber bushes -1- and -2- of track rod for play.

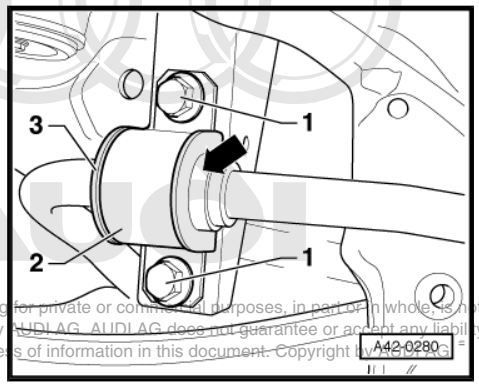


Coupling rod and anti-roll bar:

– Check play at coupling rods -1- and -2-.



– Check anti-roll bar bush -arrow- for damage.

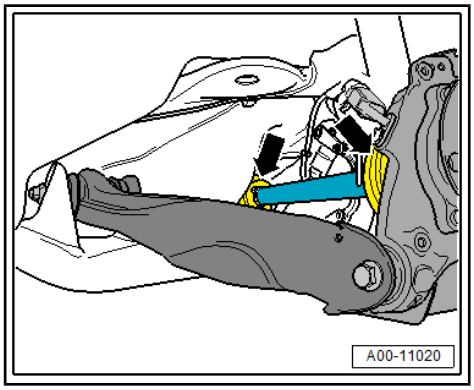


Drive shaft:

Only applies for vehicles with quattro.

– Check drive shaft boots -arrows- for damage and make sure they are seated correctly.

– If faults are found on any of the above components: Renew relevant component.



3.21 Engine, gearbox, final drive and steering: checking for leaks and damage

Procedure:

– Check engine and engine ancillaries from below for leaks and damage.

– Check radiator and cooling circuit for leaks and damage.

– Check refrigerant circuit for damage (check air conditioner compressor, condenser and refrigerant lines including connections).

– Check gearbox, final drive and steering for leaks and damage.

– If faults are found: repair or renew relevant component.

3.22 Underbody: checking trim, wheel housing liners, side members and pipes/wiring for damage, and checking that they are properly secured

Procedure:

– Check all underbody trim panels and wheel housing liners for tears and cracks.

– Use your hands to check that all underbody trim panels and wheel housing liners are secured correctly and check for missing fasteners.

– Inspect side members for deformations.

– Check visible area of pipes/wiring and connections for damage and ensure they are secured correctly.

– If faults are found: Renew missing fastener or damaged component.

3.23 Roof insert: checking operation

Only applies to equipment version with sliding/tilting sunroof.

Cleaning and lubricating the roof insert is a repair measure and should be charged separately.

Procedure:

– Open and close roof system completely and check for unusual noises and stiffness/sticking.

– If there is unusual noise or stiffness/sticking: Clean and lubricate roof insert ⇒ page 42 .

3.24 Roof insert - sliding/tilting sunroof: cleaning and lubricating

Special tools and workshop equipment required

- Lubricating paste - G 060 751 A2-
- Krytox lubricating paste - G 052 141 A2-
- Cleaning solution - D 009 401 04-
- Industrial vacuum cleaner, e.g. wet/dry vacuum cleaner - VAS 5128-
- Commercially available paintbrush: approx. 15 mm wide and bent by approx. 40°
- Fine-pored sponge (e.g. a piece of household sponge without a scouring surface)

Cleaning and lubricating the roof insert is a repair measure and should be charged separately.

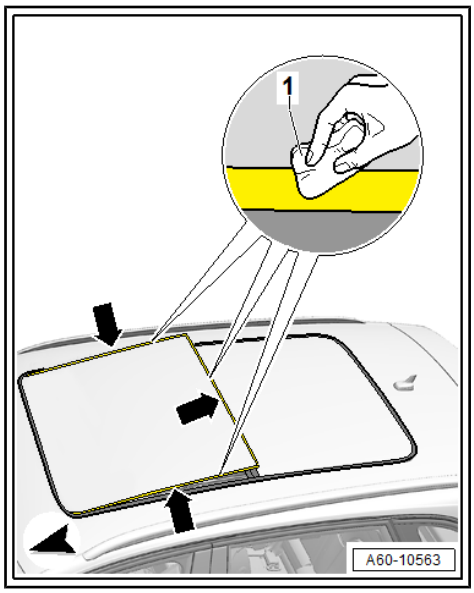
Protect vehicle interior from becoming dirty.

Step 1 - cleaning and lubricating glass panel seal:

– Tilt open glass panel at rear.

– Remove all accessible grease and dirt residue from glass panel seal using cleaning solution - D 009 401 04- and a lint-free cloth.

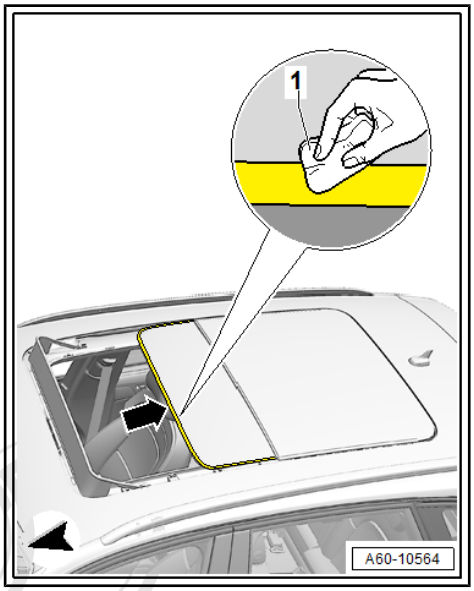
– Use sponge -1- to apply a small amount of Krytox lubricating paste - G 052 141 A2- to glass panel seal at sides and rear edge -arrows-. Make sure that no coarse residue remains visible after applying lubricant.



– Open glass panel completely.

– Using cleaning solution - D 009 401 04- and a lint-free cloth, clean glass panel seal at front in area that has not been lubricated yet.

– Use a sponge -1- to lubricate glass panel seal at front -arrow- with Krytox lubricating paste - G 052 141 A2- . Make sure that no coarse residue remains visible after applying lubricant.



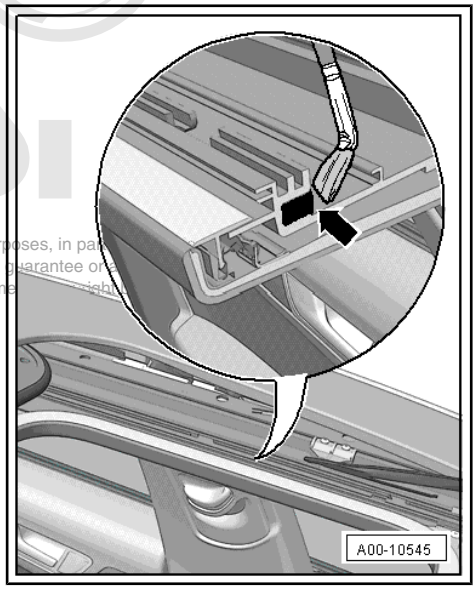
Step 2 - cleaning and lubricating guide rail:

Glass panel opened completely.

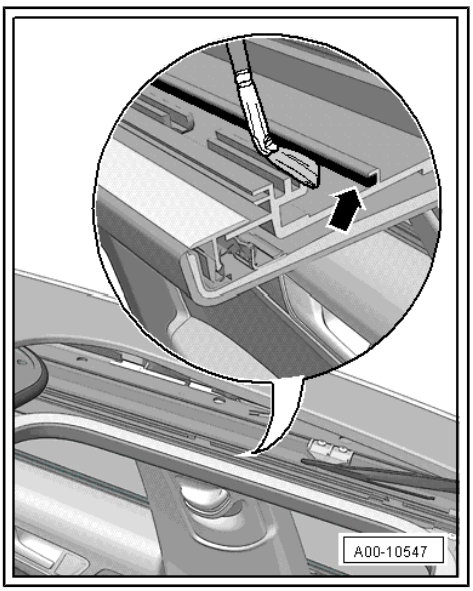
– First use an industrial vacuum cleaner to remove any loose residue from guide rail.

– Remove grease and dirt from guide rail with a lint-free cloth.

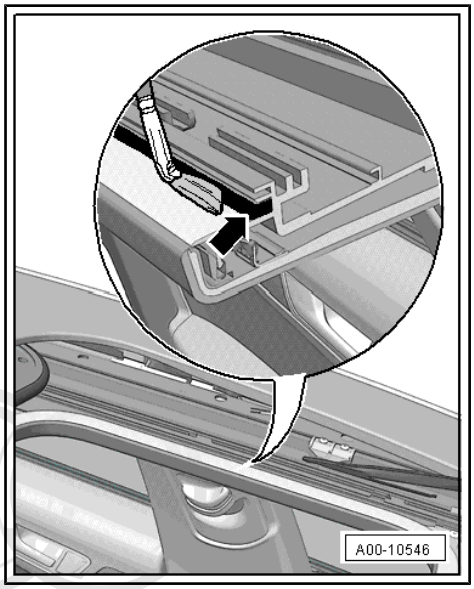
– Apply lubricating paste - G 060 751 A2- to inside of guide rail -arrow- using paintbrush.



– Apply lubricating paste - G 060 751 A2- to outside of guide rail -arrow- using paintbrush.



– Apply lubricating paste - G 060 751 A2- to side guide rail of sliding headliner -arrow- using paintbrush.
– Repeat cleaning and lubricating procedure on opposite side of vehicle.
– Remove surplus lubricant with cloth.
– Open and close roof system completely and check again for surplus lubricant.



3.25 Rear lid hinges: lubricating

Special tools and workshop equipment required

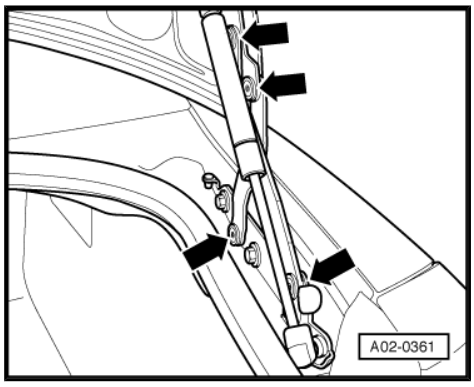
♦ Universal spray oil - G 000 115 A2-

Requirements:

• The vehicle must be at least at room temperature.

Procedure:

– If fitted, remove cover for rear lid hinges.
– First clean all lubricating points with a lint-free cloth.
– Lubricate rear lid hinges at hinge joints shown -arrows- with universal spray oil - G 000 115 A2- .
– Remove surplus lubricant with cloth.
– Repeat procedure on opposite side of vehicle.
– If originally fitted, re-install cover for rear lid hinges.



3.26 Bonnet arrester hook: lubricating

Special tools and workshop equipment required

♦ Universal spray oil - G 000 115 A2-

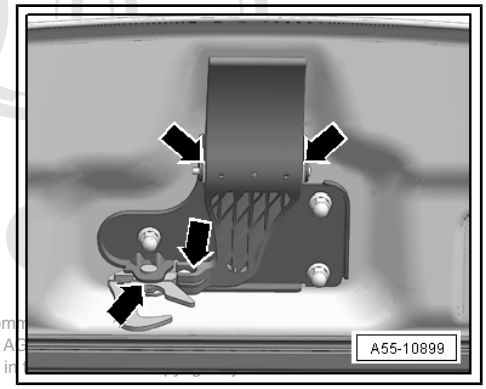
Requirements:

• The vehicle must be at least at room temperature.

Procedure:

– First clean all lubricating points with a lint-free cloth.

– Lubricate arrester hook with universal spray oil - G 000 115 A2- at points marked -arrows-.
– Operate moving parts several times so that the lubricant is able to penetrate.
– Remove surplus lubricant with cloth.



3.27 Door hinges with arresters and locking cylinders: lubricating

Special tools and workshop equipment required

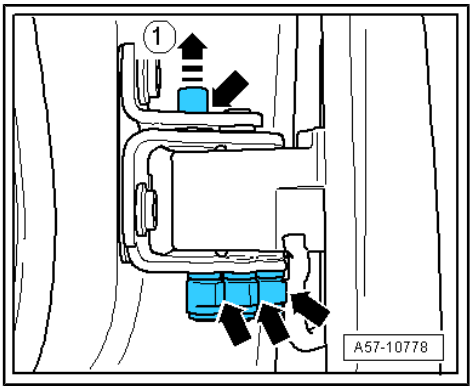
- Universal spray oil - G 000 115 A2- for door arresters and hinges
- Spray-on grease - G 052 778 A2- for locking cylinders

Requirements:

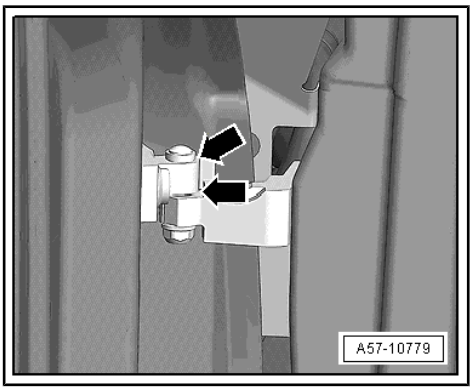
- The vehicle must be at least at room temperature.

Procedure:

– Remove protective cap -1- from door hinge with arrester in direction of -arrow-.
– First clean all lubricating points with a lint-free cloth.
– Lubricate door hinge with arrester with universal spray oil - G 000 115 A2- at points marked with -arrows-.
– Re-attach cap.

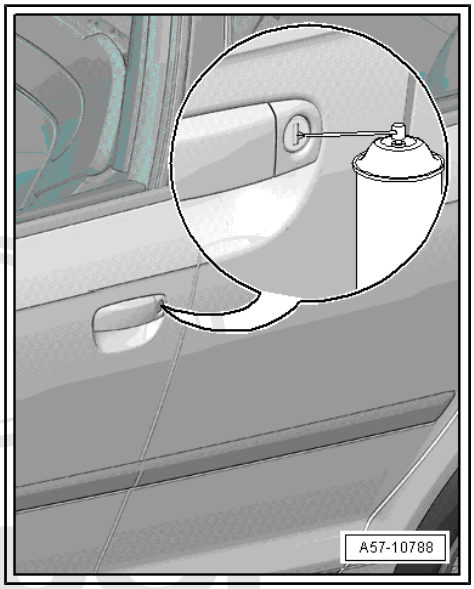


– Lubricate top door hinge with universal spray oil - G 000 115 A2- at points marked with -arrows-.
– Move door several times so that the universal spray oil is able to penetrate.
– Use cloth to remove surplus lubricant from all door hinges.



– Lubricate lock cylinder with spray-on grease - G 052 778 A2- ; see -illustration-.

– Repeat cleaning and lubricating procedure on all remaining doors of vehicle.



3.28 Windscreen washer system: checking spray pattern and adjusting if necessary

Checking windscreen spray pattern: dual washer jets
⇒ page 46

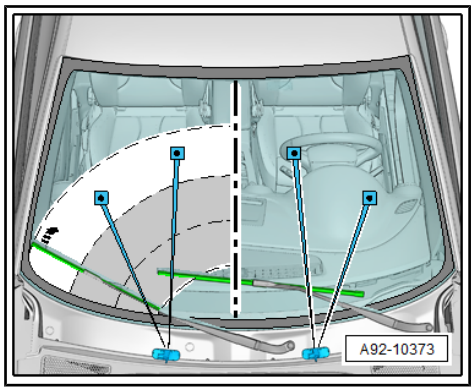
Checking windscreen spray pattern: triple washer jets
⇒ page 47

Adjusting windscreen washer jets ⇒ page 47

3.28.1 Checking windscreen spray pattern: dual washer jets

The spray pattern must meet the following specifications:

- Evenly distributed, symmetrical spray pattern
- Uniform, precise jets of water
- Jet unit (passenger's side): Water from all washer jets makes contact within upper third of wiper area -illustration-
- Jet unit (driver's side): Spray pattern symmetrically opposite that of jet unit on passenger's side

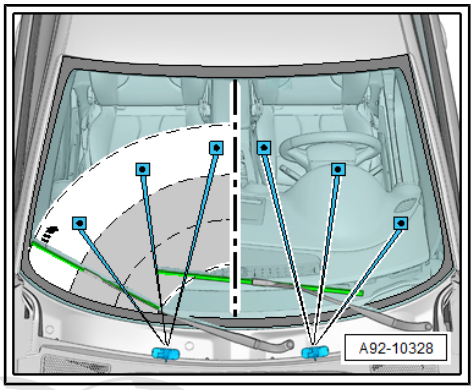


Procedure:

– Operate windscreen washer system and check spray pattern.

– If spray pattern is not set as specified, adjust windscreen washer jets ⇒ page 47 .

3.28.2 Checking windscreen spray pattern: triple washer jets



The spray pattern must meet the following specifications:

- Evenly distributed, symmetrical spray pattern
- Uniform, precise jets of water
- Jet unit (passenger's side): Water from all washer jets makes contact within upper third of wiper area -illustration-
- Jet unit (driver's side): Spray pattern symmetrically opposite that of jet unit on passenger's side

Procedure:

– Operate windscreen washer system and check spray pattern.

– If spray pattern is not set as specified, adjust windscreen washer jets ⇒ page 47 .

3.28.3 Adjusting windscreen washer jets

Special tools and workshop equipment required

♦ Commercially available adjusting tool (e.g. adjusting tool - T10127-) or suitable needle

Procedure:

– Use adjusting tool to align washer jets as required according to specification.

– If the spray pattern still cannot be set as specified, clean appropriate washer jets ⇒ Rep. gr. 92 ; Windscreen wiper system; Adjusting washer jets .

3.29 Wiper blades: checking for damage

Step 1 - service position:

– Switch on ignition and activate MMI.

– Press function selector button CAR.

– Under »Systems«, navigate through following menu structure:

♦ Windscreen wipers

♦ Service position

– Use MMI rotary pushbutton to activate service position for windscreen wipers.

Step 2 - checking:

– Lift windscreen wipers and check each wiper blade for tears, cuts, abraded areas or other damage.

– Repeat check on rear window.

– If you find damage: Renew relevant wiper blade. Windscreen wiper system ⇒ Rep. gr. 92 ; Windscreen wiper system; Removing and installing wiper blade .

3.30 Headlight washer system: checking operation

Not all vehicles are equipped with a headlight washer system (depending on equipment version).

Procedure:

– Operate headlight washer system and check function.

– If water jet does not contact headlight: Renew relevant washer jets ⇒ Rep. gr. 92 ; Headlight washer system; Removing and installing washer jets .

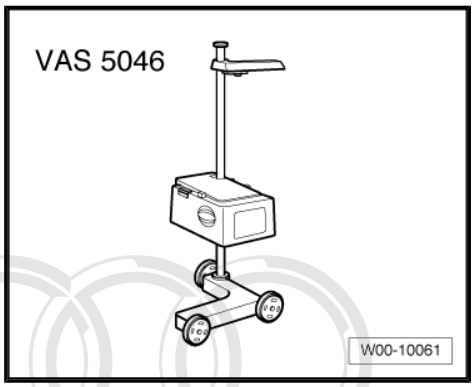
Note

The headlight washer jets are set by the manufacturer and therefore cannot be adjusted.

3.31 Headlights: checking for correct adjustment

Special tools and workshop equipment required

- Headlight adjustment unit - VAS 5046 A-



- Or: headlight adjustment unit - VAS 5047 A-
- Or: headlight adjustment unit - VAS 5208A-
- Or: headlight adjustment unit - VAS 5209B-

Performed as part of an inspection, this check is merely an abbreviated form of the headlight adjustment check required, for example, after a repair, and does not take the place of a full headlight adjustment check.

Do not adjust the vehicle load or the tyre pressures for this procedure.

Do not adjust the headlights to their basic setting using the vehicle diagnostic tester.

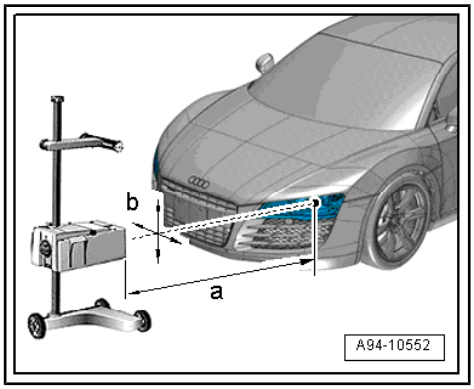
Checking and adjusting the headlights according to the instructions in the Workshop Manual is a repair measure and must be charged separately.

Procedure:

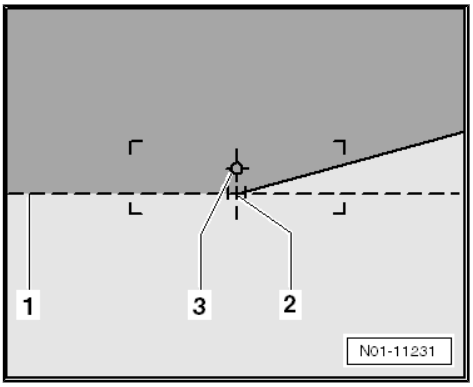
– For vehicles with manually adjustable headlight range control: Use manual adjuster to set to basic setting.

– Activate dipped headlights.

– Align headlight adjustment unit parallel to vehicle and position it centrally in front of headlight at a distance of 30 to 70 cm -distance a-; deviation from centre of light emission surface must not exceed 3 cm -distance b-.



– Adjust dip setting of headlight adjustment unit so that beam of headlight falls on test screen according to following parameter: Horizontal light-dark border should coincide with setting line -1-.



– Read off dip setting of headlight adjuster.
– Repeat procedure on opposite side.
– Compare dip setting on left and right sides.
– If they deviate 2.0% or more from one another: Check and adjust headlight setting according to procedure specified in Workshop Manual ⇒ Electrical system; Rep. gr. 94 ; Headlights; Adjusting headlights .

3.32 Headlights and reversing lights, side lights, number plate lights, turn signals, hazard warning lights: checking operation

Check the lights/signals listed below from the outside to ensure they function properly.

Procedure:

– Activate side lights and check that the following exterior lights function properly:

- ♦ Side lights (front)
- ♦ Side lights (rear)
- ♦ If applicable: additional tail light under open rear lid

– Switch on ignition.
– Check operation of daytime running lights (front).
– Operate right turn signal, left turn signal and hazard warning lights, and check that corresponding turn signal lamps at front, rear and side function properly.
– Activate dipped headlights and check that the following exterior lights function properly:

- ♦ Dipped headlights
- ♦ Taillights
- ♦ Number plate lights

– Use appropriate switch to activate fog lights and check that they function properly.
– Check that main beam headlights function properly.

– Engage reverse gear and check that all reversing lights function properly. This model is fitted with two reversing lights.
– Use appropriate switch to activate rear fog lights and check that they function properly. This model is fitted with two rear fog lights.
– Renew any defective bulbs.

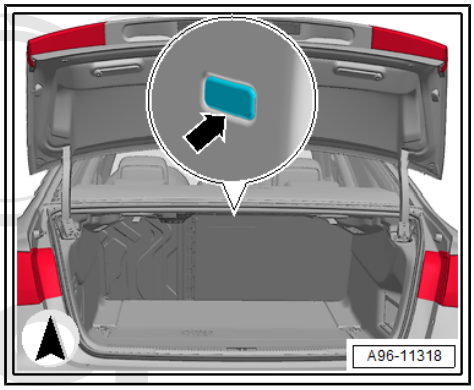
Note

It is possible to deactivate the daytime running lights intentionally via the appropriate MMI setup menu.

3.33 Luggage compartment lighting: checking operation

Procedure:

– Check proper function of luggage compartment lights shown -arrows-.



3.34 Glove box light, interior lighting and reading light: checking operation

Procedure:

– Open glove box and check that glove box light functions properly.
– Use the appropriate switches to activate the following interior lights and check that the lights function properly:

♦ All reading lights in roof frame
♦ Interior lights in headliner at front
♦ Interior lights in headliner at rear

Note

Checking the ambient lighting is NOT part of the inspection.

3.35 Horn: checking operation

Procedure:

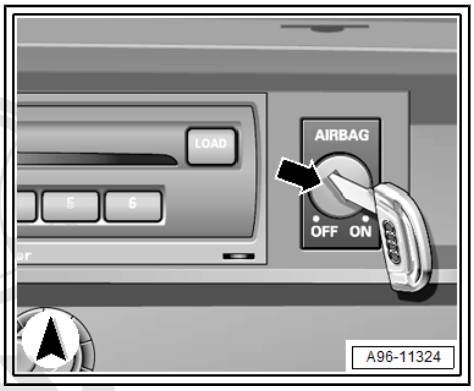
– Switch on ignition.
– Operate horn and check proper function of treble horn and bass horn.

Note

Perform this check outdoors, e.g. when driving the vehicle to the workshop or during a road test.

3.36 Front passenger's airbag: checking key switch on / off and setting to "on"

Switch for “Airbag ON/OFF” is located in glove box -arrow-.



Procedure:

- Turn switch to “AIRBAG OFF” position.
- Switch ignition on and wait for vehicle to complete initial system check.
- Check that “PASSENGER AIRBAG OFF” display lights up in instrument cluster.
- Switch off ignition.
- Turn switch to “AIRBAG ON” position.
- Switch ignition on and wait for vehicle to complete initial system check.
- Check that “PASSENGER AIRBAG OFF” disappears.
- Switch off ignition.

Note

The amount of time needed for the vehicle system check varies depending on the model and equipment.

3.37 Vehicle keys: checking operation and recording number of keys given to customer

Procedure:

- Open key ring to check each key individually.
- Start engine with each key individually.
- Record number of keys which have been matched and handed over in Maintenance table.
- If a vehicle key has not been matched: Re-match all keys to vehicle using Guided Function of vehicle diagnostic tester via online tool GeKo.
- If there is reason to suspect improper use (e.g. missing key): See current notices from AUDI AG under “Technical information ► Anti-theft protection” on ServiceNet.

Note

- *Only the key being checked may be inside the vehicle. Place all other keys out of transmission range.*
- *If the key has not been matched, the engine will turn off after a few seconds. In addition, the warning lamp for the immobiliser or the display "SAFE" will appear in the instrument cluster, depending on the vehicle equipment.*

3.38 Turbocharger: greasing rod linkage

Special tools and workshop equipment required

- Universal spray oil -G 000 115 A2-
- High-temperature paste - G 052 112 A3-
- Torque wrench - V.A.G 1783- , measuring range 2 to 10 Nm
- Or: torque wrench - V.A.G 1410- , measuring range 4 to 20 Nm
- Or: torque wrench - VAS 6854- , measuring range 5 to 13 Nm

Table of tightening torques for installation:

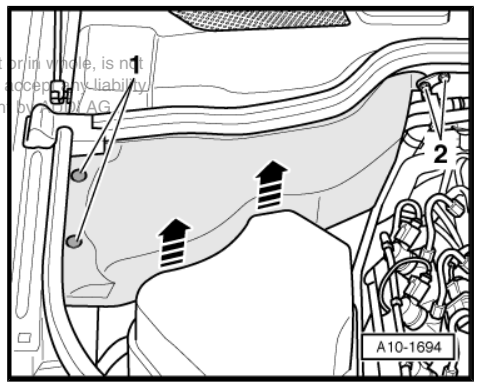
Component/fastener	[Nm]
Securing bolts for air cleaner (top section)	3.5

Steps for removal:

– Remove engine cover panel ⇒ page 9 .

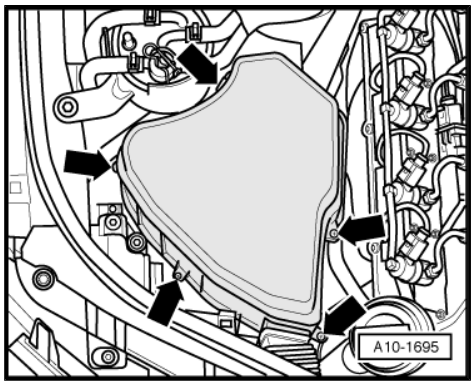
– Detach spreader clips -1- for suspension turret cover (right-side) and remove bolts -2-.

– Pull suspension turret cover out of retainers -arrows-.

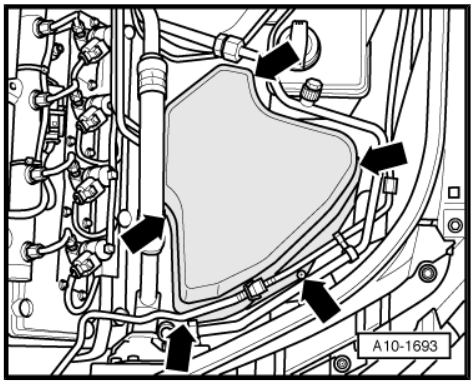


– Loosen bolts -arrows- for air cleaner (top section, right-side) and detach it.

– Take out filter element and cover open air cleaner housing with a clean cloth.

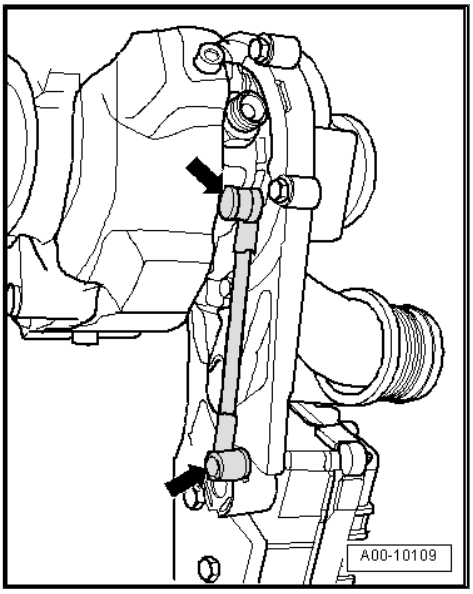


– Loosen bolts -arrows- for air cleaner (top section, left-side) and detach it.
– Take out filter element and cover open air cleaner housing with a clean cloth.

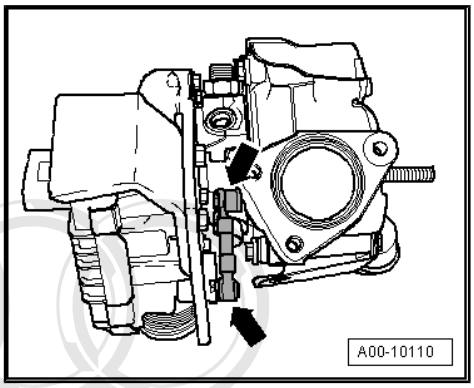


Step 1 - cleaning linkage:

– Lubricate linkage of turbocharger (right-side) with universal spray oil G 000 115 A2 at areas marked.



– Lubricate linkage of turbocharger (left-side) with universal spray oil G 000 115 A2 at areas marked.



Step 3 - performing final control diagnosis and lubricating linkage:

– Perform a final control diagnosis of turbocharger control units for about 30 seconds ⇒ page 53 .
– Then lubricate both turbocharger linkages with high-temperature paste - G 052 112 A3- at areas marked.

Install in reverse sequence. Note tightening torques (see table of tightening torques for installation ⇒ page 52).

3.38.1 Performing final control diagnosis

Procedure:

– Connect vehicle diagnostic tester ⇒ page 14 .
– Select `Diagnosis` mode and begin diagnosis.
– Perform vehicle identification.
– De-select “Working with Guided Fault Finding” by removing V and press `Apply`.
– Switch to “Control units” tab.
– Select control unit “ASE engine (Repair group 01: 10-28)” and navigate through following structure via right mouse button:

◆ Identify control unit

- 01 Self-diagnosis compatible systems
- 01/11 - Engine electronics I and II
- Electronic components

– Select program “J 724 Turbocharger 1 control unit” or “J 725 Turbocharger 2 control unit”.

– Continue to follow instructions on screen and start final control diagnosis.

3.39 Engine oil: draining

Note

- *Oil should always be changed when engine is warm.*
- *Always observe the relevant environmental regulations for disposal.*
- *Keep components clean.*

6-cyl. petrol engine 2.8 ltr. FSI, 3.2 ltr. FSI ⇒ page 54

6-cyl. petrol engine 3.0 ltr. MPI ⇒ page 55

8-cyl. petrol engine 3.7 ltr. MPI, 4.2 ltr. MPI ⇒ page 56

8-cyl. petrol engine 4.2 ltr. FSI ⇒ page 57

10-cyl. petrol engine 5.2 ltr. FSI ⇒ page 57

12-cyl. petrol engine 6.0 ltr. MPI ⇒ page 58

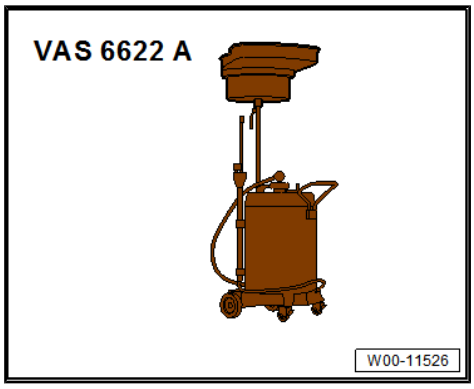
6-cyl. diesel engine 3.0 ltr. TDI ⇒ page 59

8-cyl. diesel engine 4.0 ltr. TDI, 4.2 ltr. TDI ⇒ page 60

3.39.1 6-cyl. petrol engine 2.8 ltr. FSI, 3.2 ltr. FSI

Special tools and workshop equipment required

- Used oil collection and extraction unit - V.A.S 6622 A-



- Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Oil drain plug on sump	30

Steps for removal:

– Remove noise insulation ⇒ page 13 .

Procedure:

– Place oil drip tray under engine sump.

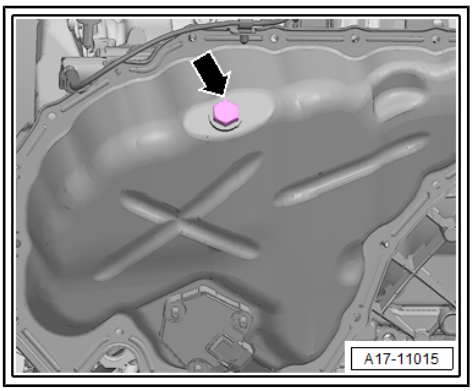
– Unscrew oil drain plug of sump -arrow-.

– Drain engine oil from sump.

– Renew seal for oil drain plug.

– Screw oil drain plug into sump and tighten to specified torque (see table of tightening torques for installation ⇒ page 54).

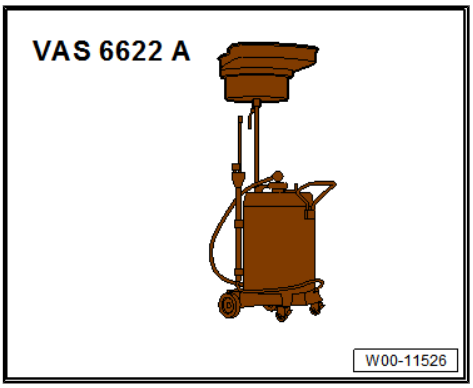
Continue installation in reverse sequence.



3.39.2 6-cyl. petrol engine 3.0 ltr. MPI

Special tools and workshop equipment required

♦ Used oil collection and extraction unit - V.A.S 6622 A-



♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Oil drain plug on sump	30

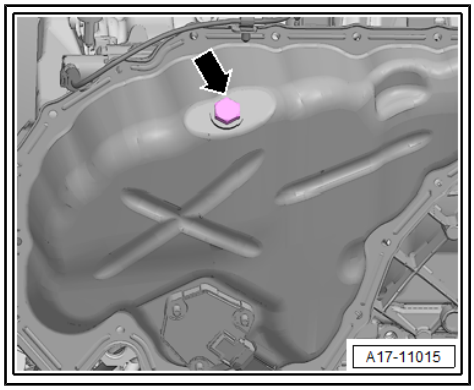
Steps for removal:

– Remove noise insulation ⇒ page 13 .

Procedure:

– Place oil drip tray under engine sump.

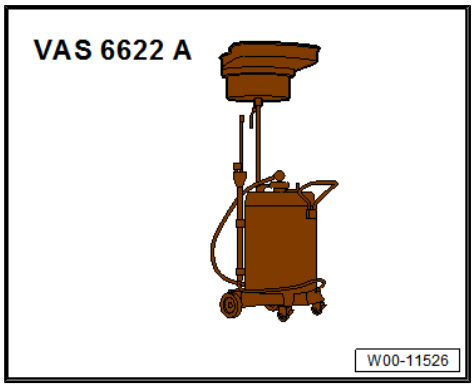
– Unscrew oil drain plug of sump -arrow-.
– Drain engine oil from sump.
– Renew seal for oil drain plug.
– Screw oil drain plug into sump and tighten to specified torque (see table of tightening torques for installation ⇒ page 55).



3.39.3 8-cyl. petrol engine 3.7 ltr. MPI, 4.2 ltr. MPI

Special tools and workshop equipment required

♦ Used oil collection and extraction unit - V.A.S 6622 A-



♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Oil drain plug on sump	50

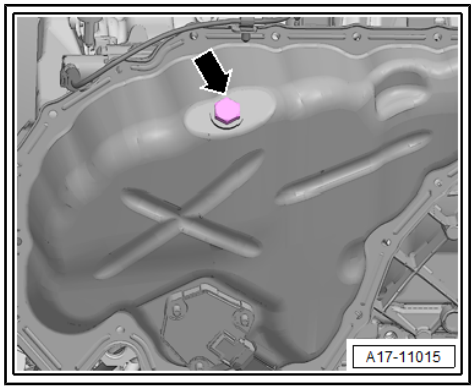
Steps for removal:

– Remove noise insulation ⇒ page 13 .

Procedure:

– Place oil drip tray under engine sump.
– Unscrew oil drain plug of sump -arrow-.
– Drain engine oil from sump.
– Renew seal for oil drain plug.
– Screw oil drain plug into sump and tighten to specified torque (see table of tightening torques for installation ⇒ page 56).

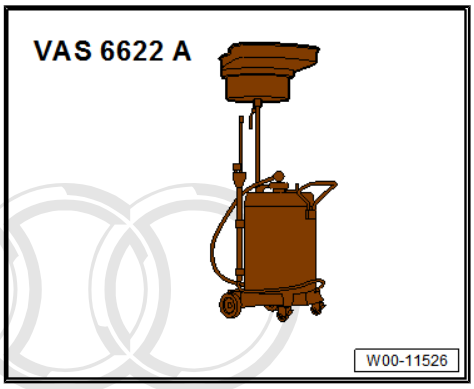
Continue installation in reverse sequence.



3.39.4 8-cyl. petrol engine 4.2 ltr. FSI

Special tools and workshop equipment required

- Used oil collection and extraction unit - V.A.S 6622 A-



- Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Oil drain plug on sump	25

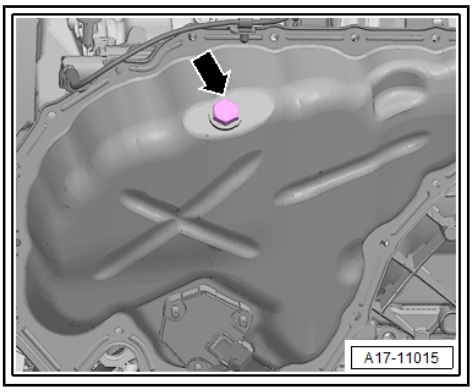
Steps for removal:

– Remove noise insulation ⇒ page 13 .

Procedure:

– Place oil drip tray under engine sump.
– Unscrew oil drain plug of sump -arrow-.
– Drain engine oil from sump.
– Renew seal for oil drain plug.
– Screw oil drain plug into sump and tighten to specified torque (see table of tightening torques for installation ⇒ page 57).

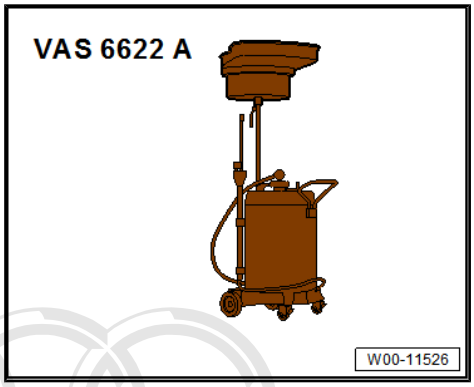
Continue installation in reverse sequence.



3.39.5 10-cyl. petrol engine 5.2 ltr. FSI

Special tools and workshop equipment required

- Used oil collection and extraction unit - V.A.S 6622 A-



- Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Oil drain plug on sump	25

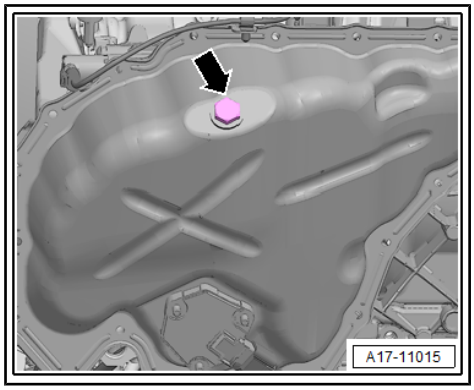
Steps for removal:

– Remove noise insulation ⇒ page 13 .

Procedure:

– Place oil drip tray under engine sump.
– Unscrew oil drain plug of sump -arrow-.
– Drain engine oil from sump.
– Renew seal for oil drain plug.
– Screw oil drain plug into sump and tighten to specified torque (see table of tightening torques for installation ⇒ page 58).

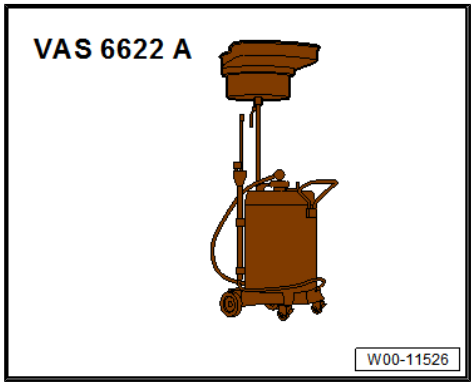
Continue installation in reverse sequence.



3.39.6 12-cyl. petrol engine 6.0 ltr. MPI

Special tools and workshop equipment required

- Used oil collection and extraction unit - V.A.S 6622 A-



♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Oil drain plug on sump	30

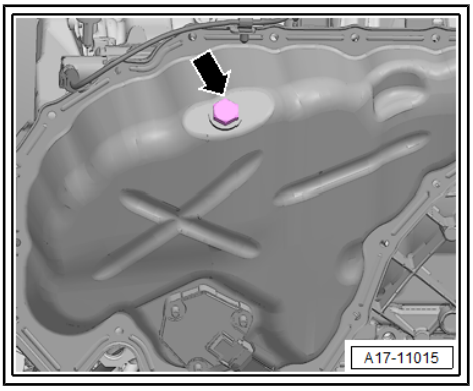
Steps for removal:

– Remove noise insulation ⇒ page 13 .

Procedure:

– Place oil drip tray under engine sump.
– Unscrew oil drain plug of sump -arrow-.
– Drain engine oil from sump.
– Renew seal for oil drain plug.
– Screw oil drain plug into sump and tighten to specified torque (see table of tightening torques for installation ⇒ page 59).

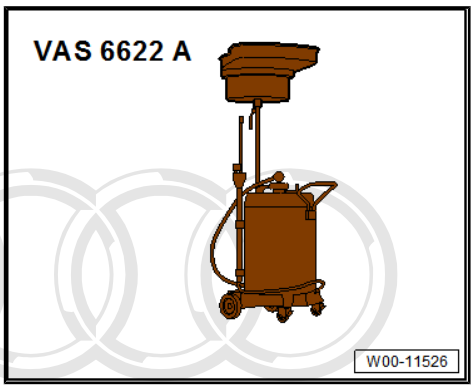
Continue installation in reverse sequence.



3.39.7 6-cyl. diesel engine 3.0 ltr. TDI

Special tools and workshop equipment required

♦ Used oil collection and extraction unit - V.A.S 6622 A-



♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Oil drain plug on sump, M 14	30
Oil drain plug on sump, M 24	50

Steps for removal:

– Remove noise insulation ⇒ page 13 .

Procedure:

– Place oil drip tray under engine sump.

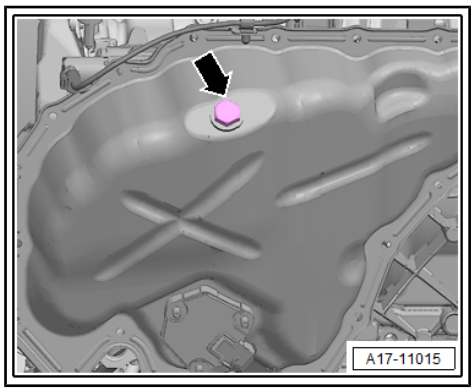
– Unscrew oil drain plug of sump -arrow-.

– Drain engine oil from sump.

– Renew seal for oil drain plug.

– Screw oil drain plug into sump and tighten to specified torque (see table of tightening torques for installation ⇒ page 59).

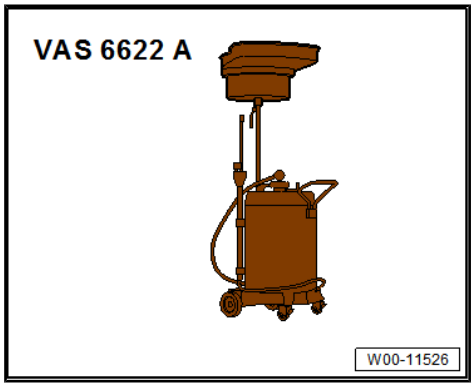
Continue installation in reverse sequence.



3.39.8 8-cyl. diesel engine 4.0 ltr. TDI, 4.2 ltr. TDI

Special tools and workshop equipment required

♦ Used oil collection and extraction unit - V.A.S 6622 A-



♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Oil drain plug on sump	50

Steps for removal:

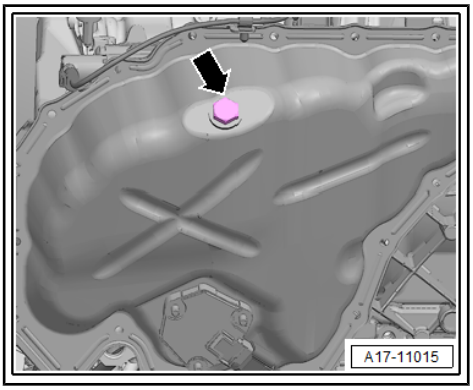
– Remove noise insulation ⇒ page 13 .

Procedure:

– Place oil drip tray under engine sump.

– Unscrew oil drain plug of sump -arrow-.
– Drain engine oil from sump.
– Renew seal for oil drain plug.
– Screw oil drain plug into sump and tighten to specified torque (see table of tightening torques for installation ⇒ page 60).

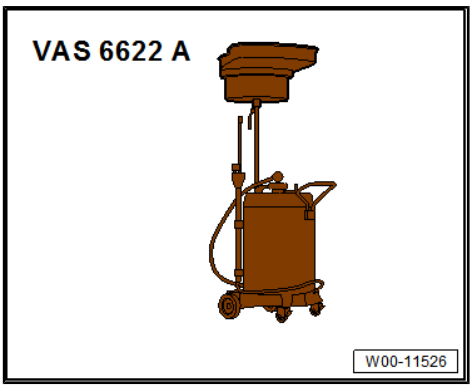
Continue installation in reverse sequence.



3.40 Engine oil: extracting

Special tools and workshop equipment required

♦ Used oil collection and extraction unit - V.A.S 6622 A-



Procedure:

– Pull oil dipstick/sealing plug out of guide tube.
– Insert extraction probe of oil extraction unit into guide tube. Use flexible extraction probe with largest possible diameter and insert without using any significant force. Otherwise the tip can become diverted on the bottom of the sump and a large amount of used oil will remain in the engine.
– Extract engine oil completely. Observe operating instructions for extraction unit.
– Finally, install oil dipstick/sealing plug.

Note

♦ *Oil should always be changed when engine is warm.*
♦ *Always observe the relevant environmental regulations for disposal.*
♦ *Keep components clean.*

3.41 Engine oil: renewing oil filter

3.41.1 6-cyl. petrol engine 2.8 ltr. FSI, 3.2 ltr. FSI

Special tools and workshop equipment required

- Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Sealing cap	25

Steps for removal:

– Remove engine cover panel ⇒ page 9 .

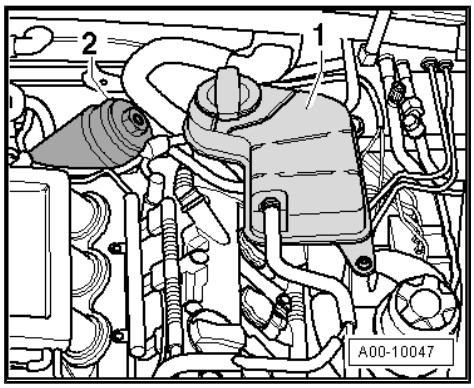
Procedure:

– Remove coolant expansion tank -1- and move it to the side.

– Loosen sealing cap -2- using socket (36 mm) . This causes a valve to open.

– Wait a few minutes to allow engine oil to drain from filter housing into crankcase.

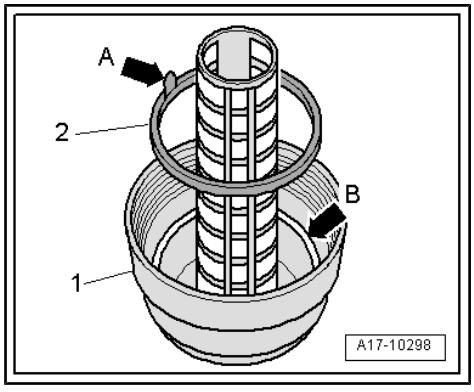
– Completely remove sealing cap -arrow- of oil filter. Make sure that no engine oil drips onto engine.



– Remove oil filter element and seal -2- from sealing cap.

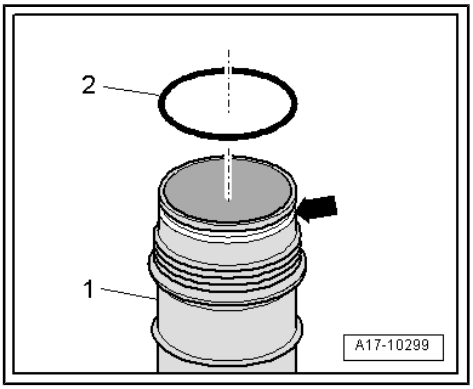
– Clean sealing surface of sealing cap -1-.

– Lightly lubricate new seal -2- with engine oil and insert into sealing cap. Note position of service tab on seal -arrow-. Flat side of seal profile must face outwards.



– Remove O-ring -2- on oil filter housing -1-.
– Lightly lubricate new O-ring -2- with engine oil and insert into groove -arrow-.
– Fit new oil filter element in sealing cap.
– Use socket (36 mm) to fit sealing cap and tighten it to specified torque (see table of tightening torques for installation ⇒ page 62).

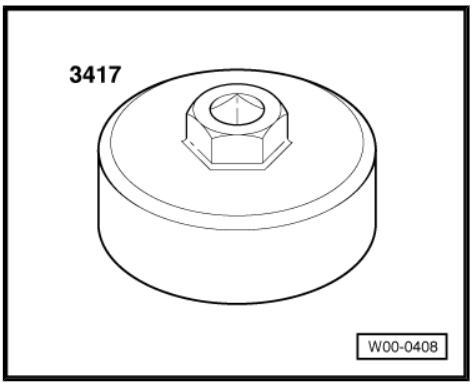
Continue installation in reverse sequence.



3.41.2 6-cyl. petrol engine 3.0 ltr. MPI

Special tools and workshop equipment required

♦ Oil filter tool - 3417-



♦ Hazet strap wrench - 2171-1-
♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

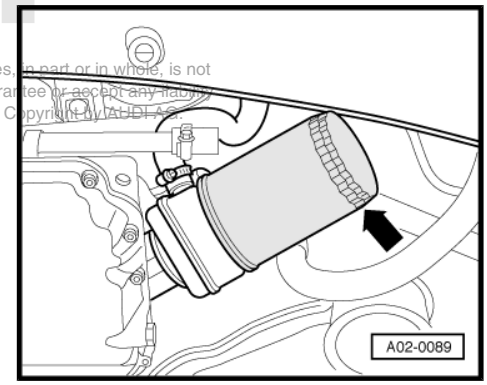
Component/fastener	[Nm]
Oil filter cartridge	30

Requirements:

• Engine oil drained.

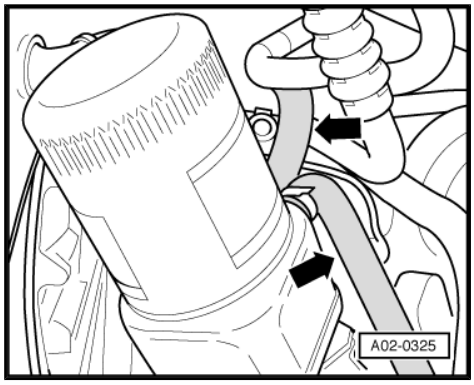
Procedure:

– Use Hazet strap wrench - 2171-1- or oil filter tool - 3417- to slacken oil filter cartridge -arrow- and then remove it.
– Clean sealing surface for oil filter at engine.



– Lightly lubricate rubber seal with engine oil.
– Fit new oil filter cartridge -arrows- and tighten to specified torque (see table of tightening torques for installation ⇒ page 63).

Continue installation in reverse sequence.



3.41.3 8-cyl. petrol engine 3.7 ltr. MPI, 4.2 ltr. MPI

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

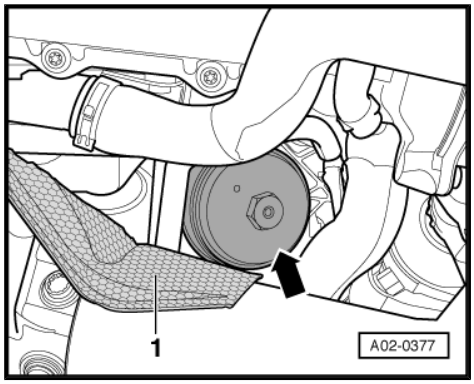
Component/fastener	[Nm]
Sealing cap	25

Requirements:

• Engine oil drained.

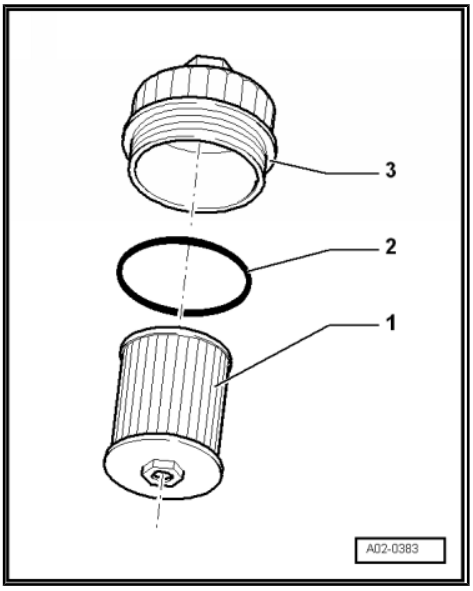
Procedure:

– Remove air cleaner housing ⇒ Rep. gr. 24 ; Removing and installing air cleaner housing .
– Push heat shield -1- in direction of vehicle frame.
– Loosen sealing cap -arrow- of oil filter using socket (24 mm) . This causes a valve to open.
– Wait a few minutes to allow engine oil to drain from filter housing into crankcase.
– Completely remove sealing cap of oil filter -arrow-. Make sure that no engine oil drips onto engine.



– Pull oil filter element -1- and O-ring -2- out of sealing cap -3-.
– Clean sealing surfaces of sealing cap -1-.
– Lightly lubricate new O-ring -2- with engine oil and insert into groove.
– Fit new oil filter element -1- in sealing cap -3-.
– Fit sealing cap -3- on engine and tighten to appropriate torque using socket (24 mm) (see table of tightening torques for installation ⇒ page 64).

Continue installation in reverse sequence.



3.41.4 8-cyl. petrol engine 4.2 ltr. FSI

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

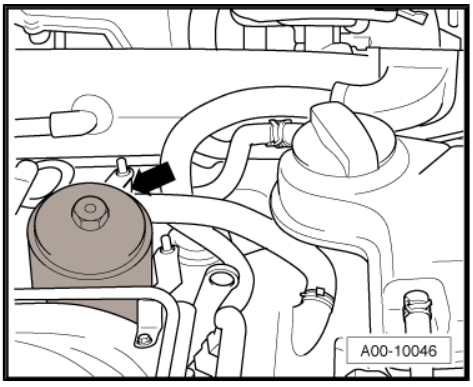
Component/fastener	[Nm]
Sealing cap	25

Steps for removal:

– Remove engine cover panel ⇒ page 9 .

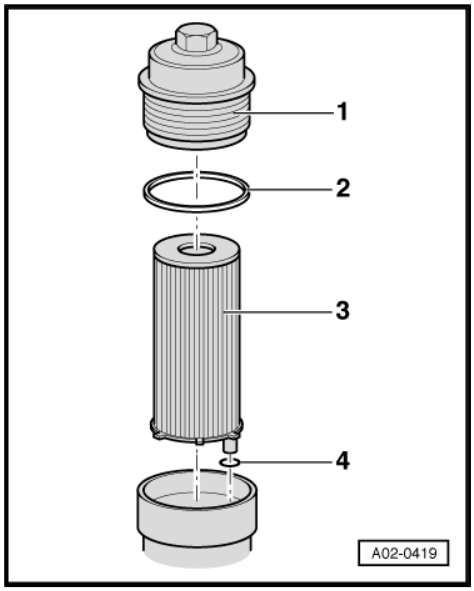
Procedure:

– Loosen sealing cap -arrow- of oil filter using socket (24 mm) . This causes a valve to open.
– Wait a few minutes to allow engine oil to drain from filter housing into crankcase.
– Completely remove sealing cap -arrow- of oil filter. Make sure that no engine oil drips onto engine.



– Pull oil filter element -3- and O-ring -2- out of sealing cap -1-.
– Clean sealing surfaces of sealing cap -1-.
– Lightly lubricate new O-rings -4- and -2- with engine oil and insert into grooves.
– Fit new oil filter element -3- in sealing cap -1-.
– Fit sealing cap -1- on engine and tighten to appropriate torque using socket (24 mm) (see table of tightening torques for installation ⇒ page 65).

Continue installation in reverse sequence.



3.41.5 10-cyl. petrol engine 5.2 ltr. FSI

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

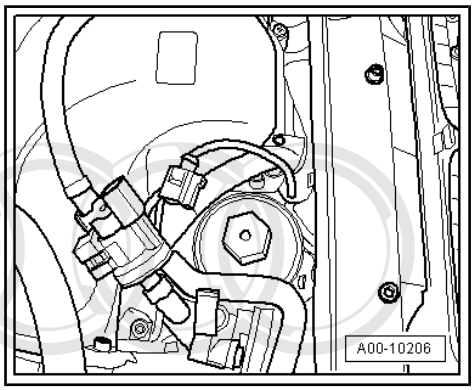
Component/fastener	[Nm]
Sealing cap	25

Steps for removal:

– Remove engine cover panel ⇒ page 9 .

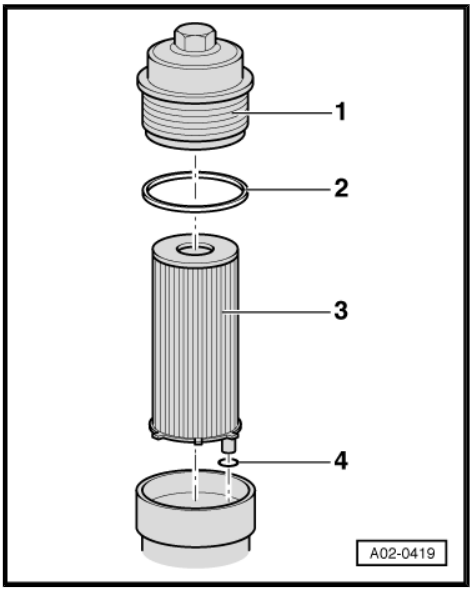
Procedure:

– Unclip ACF valve from bracket and move it to one side.
– Loosen sealing cap using socket (32 mm) .
– Wait a few minutes to allow engine oil to drain from filter housing into crankcase.
– Completely remove sealing cap -arrow- of oil filter. Make sure that no engine oil drips onto engine.



– Pull oil filter element -3- and O-ring -2- out of sealing cap -1-.
– Clean sealing surfaces of sealing cap -1-.
– Lightly lubricate new O-rings -4- and -2- with engine oil and insert into grooves.
– Fit new oil filter element -3- in sealing cap -1-.
– Fit sealing cap -1- on engine and tighten to appropriate torque using socket (32 mm) (see table of tightening torques for installation ⇒ page 66).

Continue installation in reverse sequence.



3.41.6 12-cyl. petrol engine 6.0 ltr. MPI

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

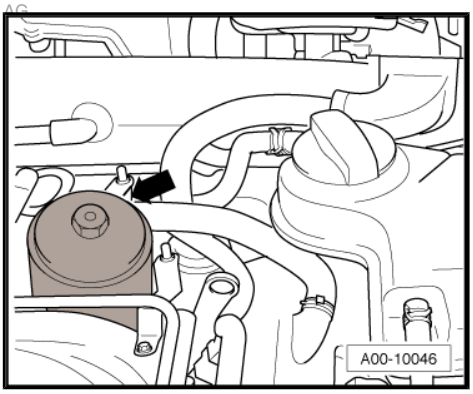
Component/fastener	[Nm]
Sealing cap	25

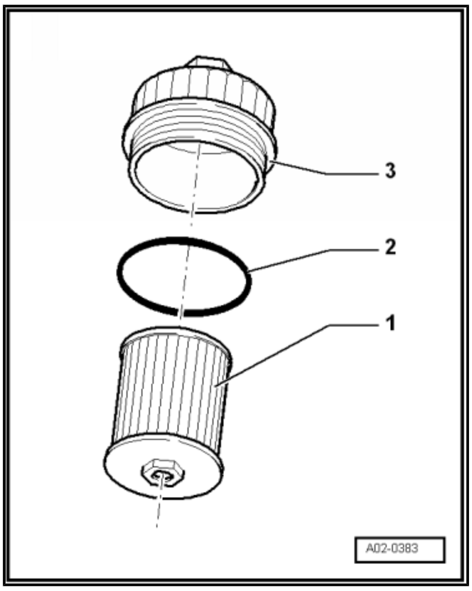
Steps for removal:

– Remove engine cover panel ⇒ page 9 .

Procedure:

– Loosen sealing cap -arrow- using socket (32 mm) . This causes a valve to open.
– Wait a few minutes to allow engine oil to drain from filter housing into crankcase.
– Completely remove sealing cap -arrow- of oil filter. Make sure that no engine oil drips onto engine.





- Pull oil filter element -1- and O-ring -2- out of sealing cap -3-.
- Clean sealing surfaces of sealing cap -3-.
- Lightly lubricate new O-ring -2- with engine oil and insert into groove.
- Fit new oil filter element -1- in sealing cap -3-.
- Fit sealing cap -3- on engine and tighten to appropriate torque using socket (32 mm) (see table of tightening torques for installation ⇒ page 67).

Continue installation in reverse sequence.

3.41.7 6-cyl. diesel engine 3.0 ltr. TDI

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

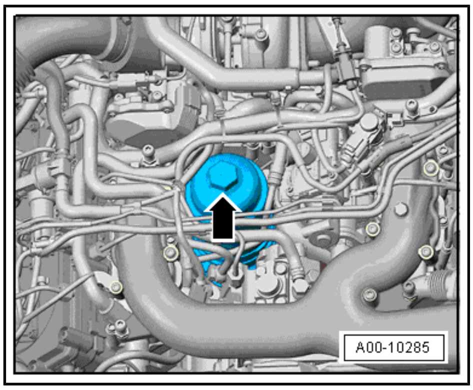
Table of tightening torques for installation:

Component/fastener	[Nm]
Sealing cap	35

Steps for removal:

- Remove engine cover panel ⇒ page 9 .

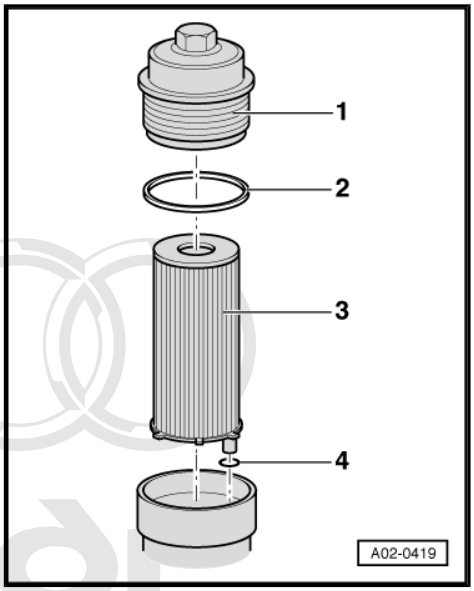
Procedure:



- Loosen sealing cap -arrow- using socket (32 mm) . This causes a valve to open.
- Wait a few minutes to allow engine oil to drain from filter housing into crankcase.
- Completely remove sealing cap -arrow- of oil filter. Make sure that no engine oil drips onto engine.

– Pull oil filter element -3- and O-ring -2- out of sealing cap -1-.
– Clean sealing surfaces of sealing cap -1-.
– Lightly lubricate new O-rings -4- and -2- with engine oil and insert into grooves.
– Fit new oil filter element -3- in sealing cap -1-.
– Fit sealing cap -1- on engine, paying attention to installation position of filter.
– Use socket (32 mm) to tighten sealing cap to specified torque (see table of tightening torques for installation ⇒ page 68).

Continue installation in reverse sequence.



3.41.8 8-cyl. diesel engine 4.0 ltr. TDI, 4.2 ltr. TDI

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

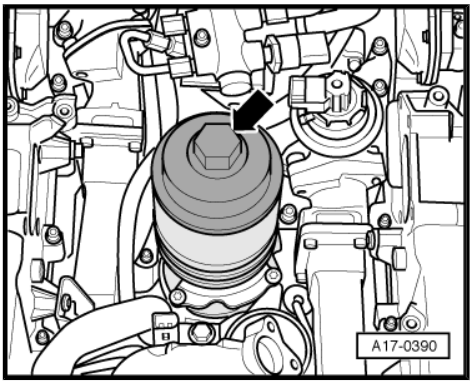
Component/fastener	[Nm]
Sealing cap	35

Steps for removal:

– Remove engine cover panel ⇒ page 9 .

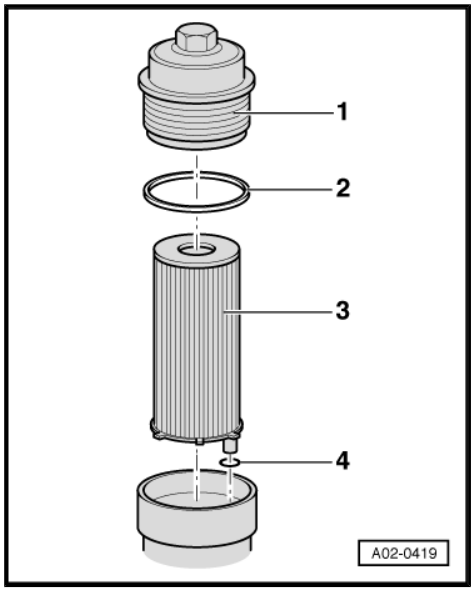
Procedure:

– Loosen sealing cap -arrow- of oil filter using socket (32 mm) . This causes a valve to open.
– Wait a few minutes to allow engine oil to drain from filter housing into crankcase.
– Completely remove sealing cap of oil filter. Make sure that no engine oil drips onto engine.



– Pull oil filter element -3- and O-ring -2- out of sealing cap -1-.
– Clean sealing surfaces of sealing cap -1-.
– Lightly lubricate new O-rings -4- and -2- with engine oil and insert into grooves.
– Fit new oil filter element -3- in sealing cap -1-.
– Fit sealing cap -1- on engine, paying attention to installation position of filter.
– Use socket (32 mm) to tighten sealing cap to specified torque (see table of tightening torques for installation ⇒ page 69).

Continue installation in reverse sequence.



3.42 Engine oil: filling up

Caution

Risk of engine damage if the engine is revved too soon after changing the oil!

- *The engine must only run at idling speed as long as the oil pressure warning lamp in the instrument cluster is on.*
- *Increase the engine speed only after the warning lamp has gone out.*

Refer to ELSA maintenance table for engine-specific oil capacities and oil grades.

Procedure:

– Fill up engine oil.
– Then check oil level and adjust if necessary ⇒ page 70 .

3.43 Engine oil: checking oil level and correcting if necessary

Caution

Risk of damage to catalytic converter if engine oil level is too high!

- *Drain engine oil until level meets specification.*

Requirements for all engines except V6 diesel engines and V8 petrol engines:

- Engine oil temperature at least 60 °C.
- Wait a few minutes after switching off the engine to allow the oil to flow back into the sump.
- Vehicle must be level (horizontal).

Requirements for V6 diesel engines:

- The engine must be at operating temperature (90 °C oil temperature).
- Wait approx. two minutes after switching off the engine to allow the oil to drain back into the sump.
- Vehicle must be level (horizontal).

Requirements for V8 petrol engines:

- The engine must be at operating temperature (90 °C oil temperature).
- Allow engine to run at idling speed for approx. one minute.
- Switch off engine and wait approx. five minutes (to allow oil to flow back slowly).
- Check engine oil level within one minute.
- Vehicle must be level (horizontal).

Checking oil level with dipstick ⇒ page 71

Checking oil level on MMI ⇒ page 71

3.43.1 Checking oil level with dipstick

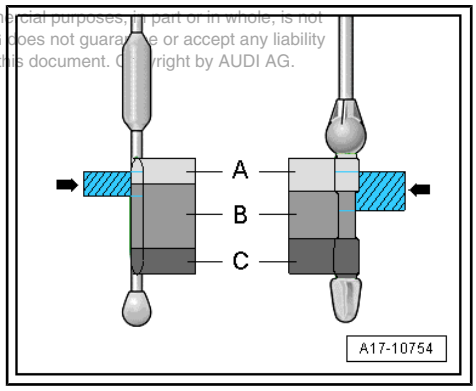
Procedure:

– Pull out dipstick and wipe it off with a clean cloth.

– Re-insert dipstick into guide tube as far as it will go.

– Pull oil dipstick out again and read off oil level on marked area.

– Evaluate oil level and determine any necessary measures accordingly:



Oil level:	Evaluation/measure:
Marked area -arrow-	Optimum oil level.
Area A	Oil must not be topped up.
Area B	Oil can be topped up.
Area C	Oil must be topped up.

Note

Some engines are not fitted with an oil dipstick; if this is the case, use the oil level display in the MMI system ⇒ page 71 *.*

3.43.2 Checking oil level on MMI

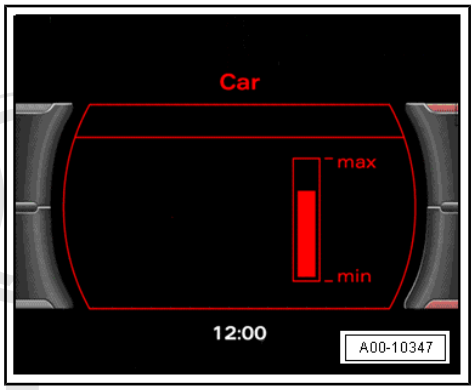
Procedure:

– If necessary, close bonnet.

– Switch on ignition and activate MMI.
– Press function selector button CAR.
– Under »Car systems«, navigate through following menu structure:

♦ Servicing & checks
♦ Oil level

– Read off and evaluate oil level on display.



– If necessary, correct oil level:

Oil level	Evaluation/measure
At “max”	Drain engine oil until level meets optimum level.
Just under “max”	Optimum oil level.
Significantly under “max”	Fill up engine oil to optimum level (close bonnet to refresh oil level display).

Note

♦ *The oil level display on the MMI is not refreshed when the bonnet is open.*
♦ *A warning lamp in the driver information system indicates that the level is too low.*

3.44 Poly V-belts for ancillaries: checking

Caution

Risk of engine damage if camshaft drive slips.

♦ ***Turn crankshaft only in normal direction of engine rotation.***

This maintenance item only applies to certain countries: Note specification in Maintenance table.

8-cyl. petrol engine 4.2 ltr. MPI ⇒ page 72

10-cyl. petrol engine 5.2 ltr. FSI ⇒ page 73

12-cyl. petrol engine 6.0 ltr. MPI ⇒ page 75

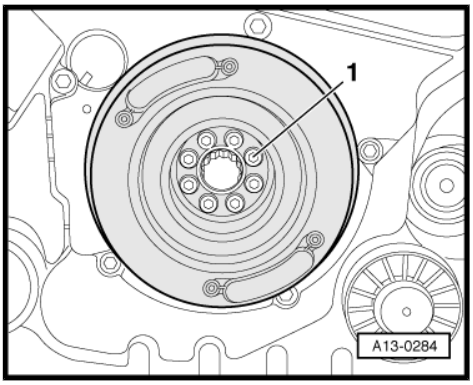
3.44.1 8-cyl. petrol engine 4.2 ltr. MPI

Steps for removal:

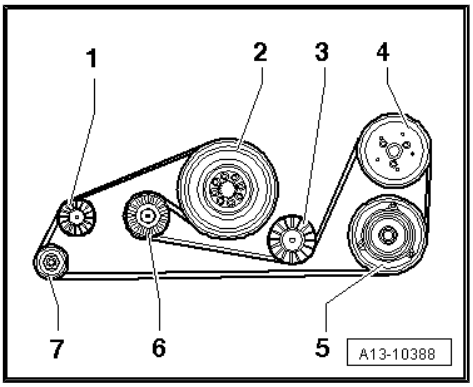
– Remove noise insulation ⇒ page 13 .

Procedure:

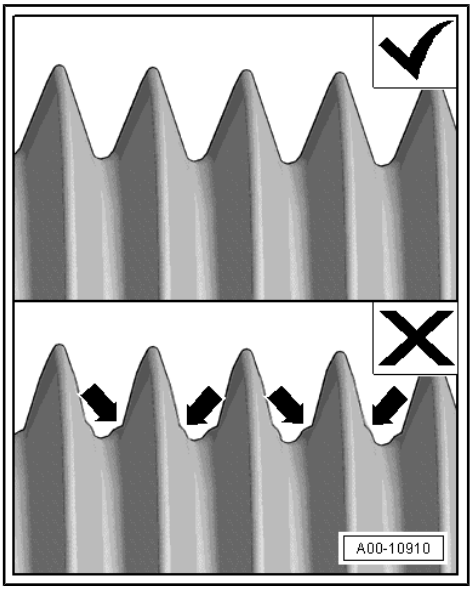
– Fit reversible ratchet onto centre bolt -1- of crankshaft.



– Turn poly V-belt clockwise using reversible ratchet and check pulley for air conditioner compressor -5- and entire belt. Look for the following types of damage:



- ♦ Cracks or tears in belt profile and on reverse side (cracks, core fractures, cross-sectional fractures)
- ♦ Layer separation (top layer, cord strands)
- ♦ Fraying of cord strands
- ♦ Foreign objects in belt profile and reverse side
- ♦ Excessive traces of oil and grease on rollers and pulleys
- ♦ Flank wear on pulleys (material wear, frayed flanks, surface cracks); see -illustration-



If faults are found: Renew poly V-belt ⇒ Rep. gr. 13 ; Dismantling and assembling engine; Removing and installing poly V-belt .

Continue installation in reverse sequence.

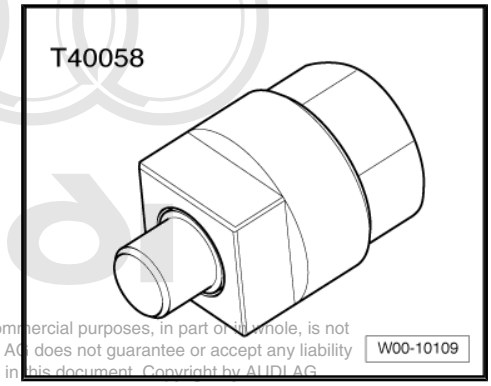
Note

The example given here shows possible damage to a pulley. The appearance of other types of material wear on the load-bearing flanks of the ribbing can be different.

3.44.2 10-cyl. petrol engine 5.2 ltr. FSI

Special tools and workshop equipment required

- Adapter - T40058-



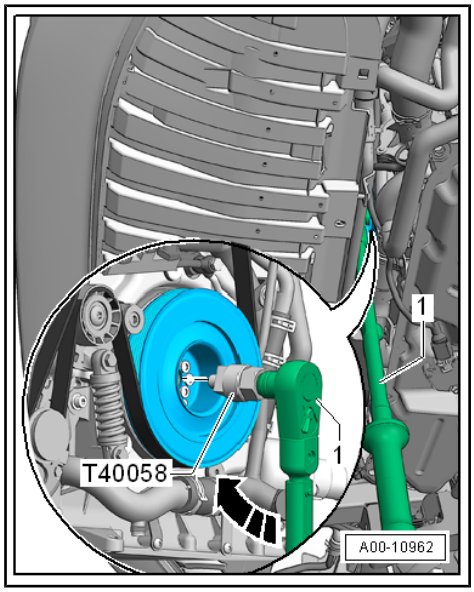
Steps for removal:

– Remove noise insulation ⇒ page 13 .

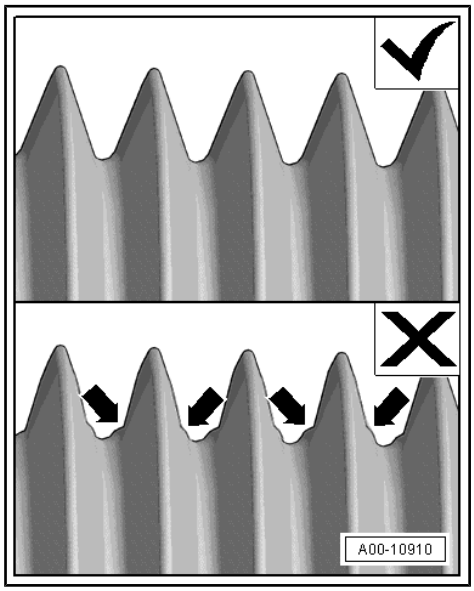
Procedure:

– Apply adapter - T40058- to crankshaft vibration damper (see -illustration-).

– Turn poly V-belt clockwise using reversible ratchet and adapter - T40058- , and check entire belt. Look for the following types of damage:



- Cracks or tears in belt profile and on reverse side (cracks, core fractures, cross-sectional fractures)
- Layer separation (top layer, cord strands)
- Fraying of cord strands
- Foreign objects in belt profile and reverse side
- Excessive traces of oil and grease on rollers and pulleys
- Flank wear on pulleys (material wear, frayed flanks, surface cracks); see -illustration-



If faults are found: Renew poly V-belt ⇒ Rep. gr. 13 ; Dismantling and assembling engine; Removing and installing poly V-belt .

Continue installation in reverse sequence.

Note

The example given here shows possible damage to a pulley. The appearance of other types of material wear on the load-bearing flanks of the ribbing can be different.

3.44.3 12-cyl. petrol engine 6.0 ltr. MPI

Table of test values and procedure guidelines:

The table specifies which component(s) to renew according to the damage or irregularities found.

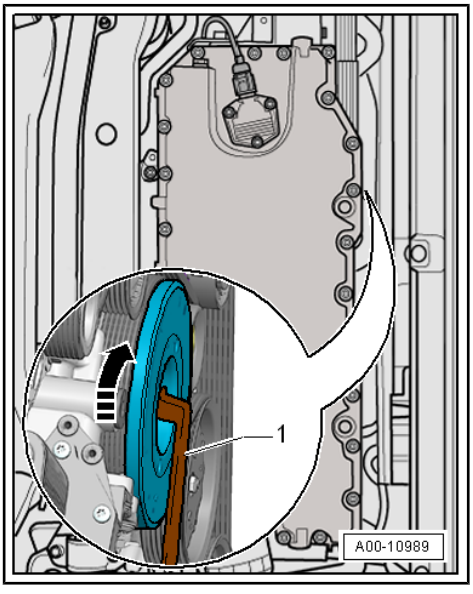
Damage/irregularities found on:	Following component(s) must be renewed:					
	Poly V-belt	Pulley (power steering pump)	Pulley (coolant pump)	Belt tensioner	Vibration damper	Idler rollers
Poly V-belt	X	---	---	---	---	---
Pulley (power steering pump)	X	X	---	---	---	---
Pulley (coolant pump)	X	---	X	---	---	---
Belt tensioner	---	---	---	X	---	---
Vibration damper	X	---	---	---	X	---
Idler rollers	X	---	---	---	---	X

Steps for removal:

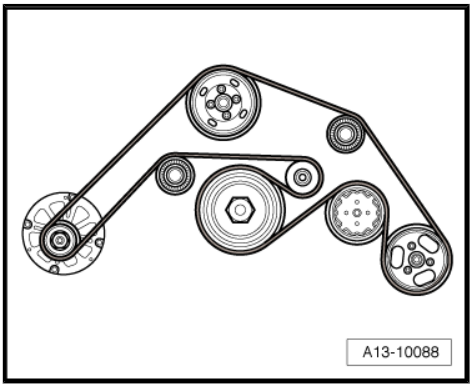
– Remove noise insulation ⇒ page 13 .

Procedure:

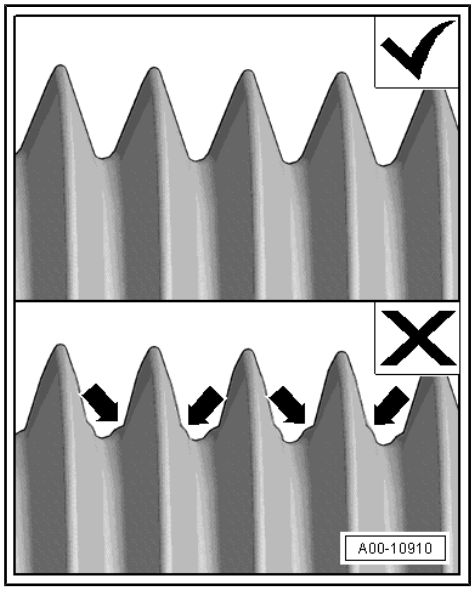
– Apply offset ring spanner -1- to crankshaft vibration damper.



– Turn poly V-belt clockwise using offset ring spanner -1- and check pulley for air conditioner compressor and entire belt. Look for the following types of damage:



- Cracks or tears in belt profile and on reverse side (cracks, core fractures, cross-sectional fractures)
- Layer separation (top layer, cord strands)
- Fraying of cord strands
- Foreign objects in belt profile and reverse side
- Excessive traces of oil and grease on rollers and pulleys
- Flank wear on pulleys (material wear, frayed flanks, surface cracks); see -illustration-



– If faults are found: Renew components according to table (see table of test values and procedure guidelines ⇒ page 75); refer to Workshop Manual for procedure ⇒ Rep. gr. 13 ; Dismantling and assembling engine; Removing and installing poly V-belt .

Continue installation in reverse sequence.

Note

The illustration shows possible damage to the pulley. The appearance of other types of material wear on the load-bearing flanks of the ribbing can be different.

3.45 Spark plugs: renewing

6-cyl. petrol engine 2.8 ltr. FSI, 3.0 ltr. MPI, 3.2 ltr. FSI
⇒ page 76

8-cyl. petrol engine 3.7 ltr. MPI, 4.2 ltr. MPI, 4.2 ltr. FSI
⇒ page 78

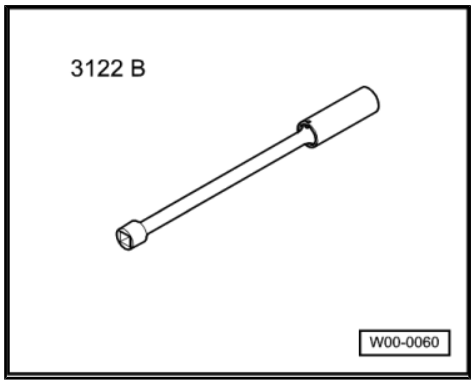
10-cyl. petrol engine 5.2 ltr. FSI ⇒ page 80

12-cyl. petrol engine 6.0 ltr. MPI ⇒ page 83

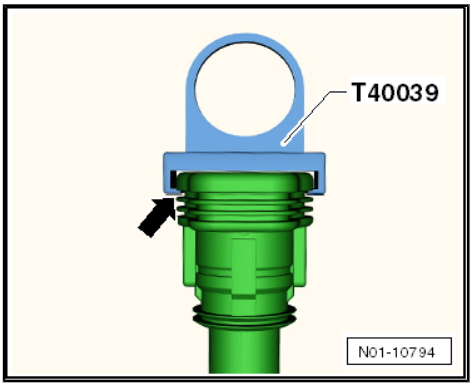
3.45.1 6-cyl. petrol engine 2.8 ltr. FSI, 3.0 ltr. MPI, 3.2 ltr. FSI

Special tools and workshop equipment required

- Spark plug socket and extension - 3122B-



- Puller - T40039-



- Torque screwdriver - V.A.G 1624- , measuring range 1 to 5 Nm
- Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

Component/fastener	[Nm]
Spark plugs	30
Securing bolts for connector rail	5

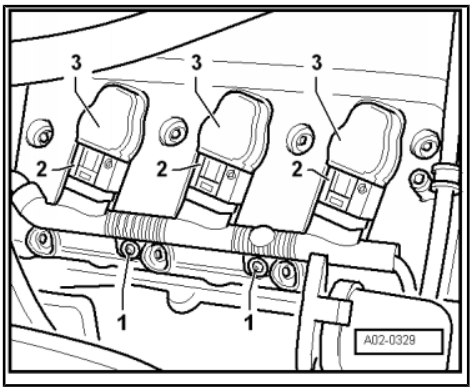
Step 1 - removing spark plugs, cylinder bank (right-side):

– Removing air cleaner (top section) ⇒ page 90 .

– Unscrew bolts -1- for connector rail.

– Release connectors -2- for ignition coils and at the same time unplug all connectors from ignition coils -3-.

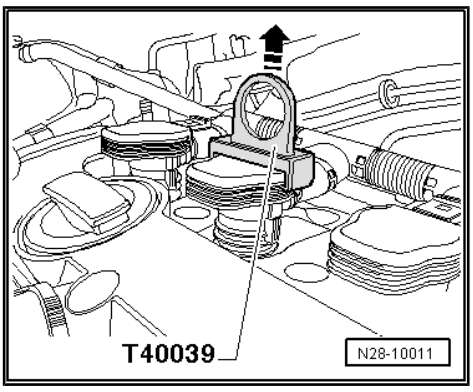
– Place connector rail slightly to one side. Make sure that wiring is not kinked or damaged.



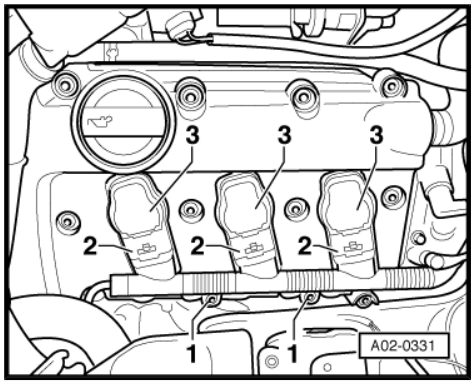
– Position puller - T40039- only on thick rib at the top of ignition coils and detach all ignition coils from spark plugs one after the other in direction of -arrow-.

– Unscrew spark plugs from cylinder head using spark plug socket - VAS 3122B- .

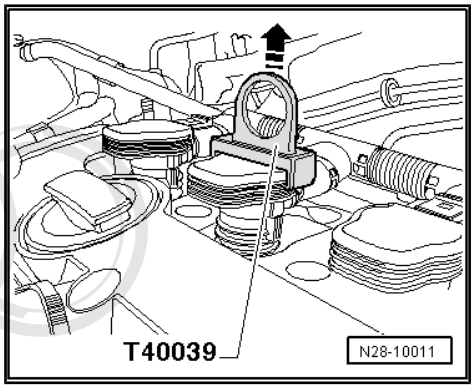
Step 2 - removing spark plugs, cylinder bank (left-side):



– Unscrew bolts -1- for connector rail.
– Release connectors -2- for ignition coils and at the same time unplug all connectors from ignition coils -3-.
– Place connector rail slightly to one side. Make sure that wiring is not kinked or damaged.



– Position puller - T40039- only on thick rib at the top of ignition coils and detach all ignition coils from spark plugs one after the other in direction of -arrow-.
– Unscrew spark plugs from cylinder head using spark plug socket - VAS 3122B- .



Step 3 - installing spark plugs:

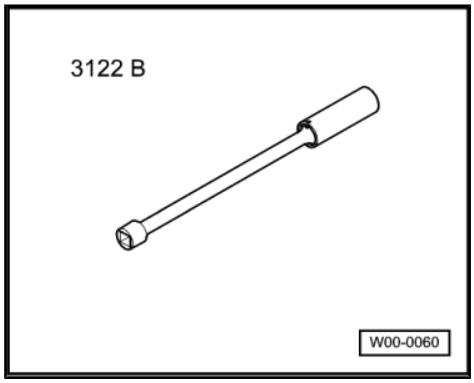
– Install new spark plugs using spark plug socket and extension - VAS 3122B- and tighten to specified torque (table ⇒ page 77).
– Fit all ignition coils loosely into spark plug apertures and align with connectors of connector rail.
– Push ignition coils evenly onto spark plugs by hand (do not attempt to knock in coils with any kind of tool).
– Align connector rail and plug all connectors simultaneously onto ignition coils so that they engage.
– Install connector rail, screwing in securing bolts to specified torque (see table of tightening torques for installation ⇒ page 77).

Continue installation in reverse sequence.

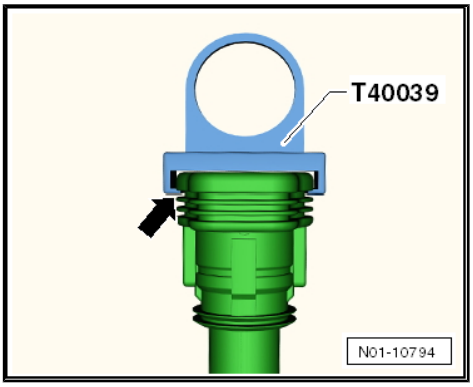
3.45.2 8-cyl. petrol engine 3.7 ltr. MPI, 4.2 ltr. MPI, 4.2 ltr. FSI

Special tools and workshop equipment required

♦ Spark plug socket and extension - 3122B-



- Puller - T40039-



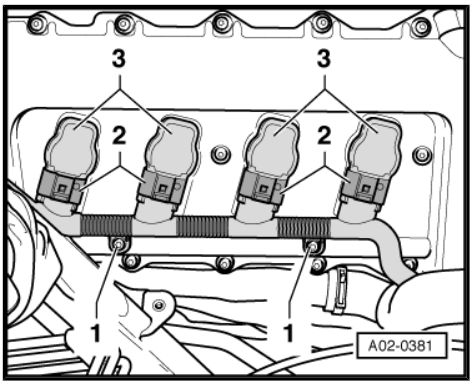
- Torque screwdriver - V.A.G 1624- , measuring range 1 to 5 Nm
- Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

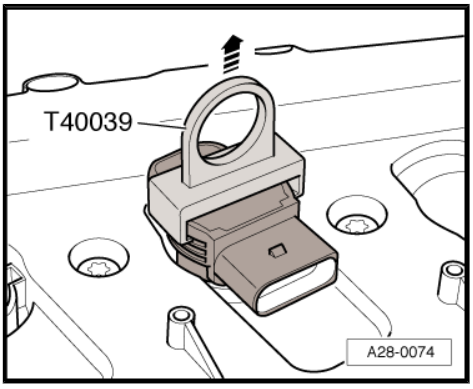
Component/fastener	[Nm]
Spark plugs	30
Securing bolts for connector rail	5

Step 1 - removing spark plugs, cylinder bank (right-side):

– Removing air cleaner (top section) ⇒ page 90 .
– Unscrew bolts -1- for connector rail.
– Release connectors -2- for ignition coils and at the same time unplug all connectors from ignition coils -3-.
– Place connector rail slightly to one side. Make sure that wiring is not kinked or damaged.

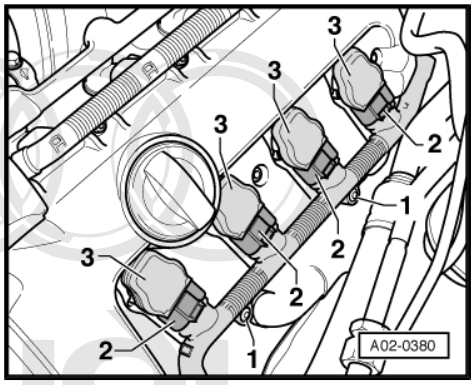


– Position puller - T40039- only on thick rib at the top of ignition coils and detach all ignition coils from spark plugs one after the other in direction of -arrow-.
– Unscrew spark plugs from cylinder head using spark plug socket - VAS 3122B- .

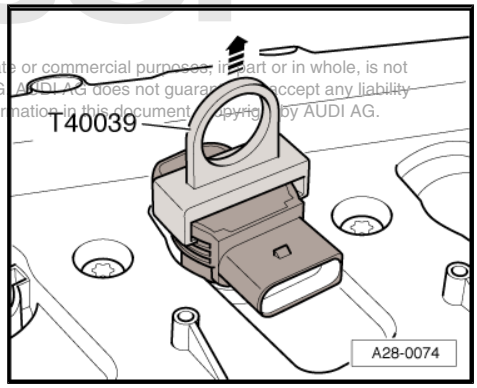


Step 2 - removing spark plugs, cylinder bank (left-side):

– Unscrew bolts -1- for connector rail.
– Release connectors -2- for ignition coils and at the same time unplug all connectors from ignition coils -3-.
– Place connector rail slightly to one side. Make sure that wiring is not kinked or damaged.



– Position puller - T40039- only on thick rib at the top of ignition coils and detach all ignition coils from spark plugs one after the other in direction of -arrow-.
– Unscrew spark plugs from cylinder head using spark plug socket - VAS 3122B- .



Step 3 - installing spark plugs:

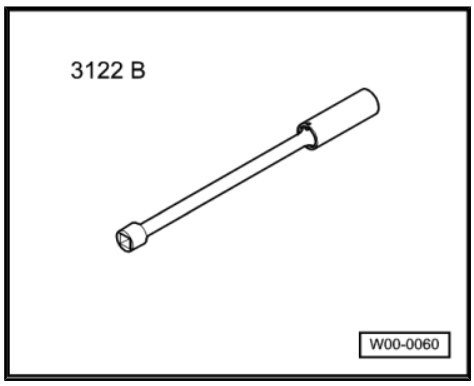
– Install new spark plugs using spark plug socket and extension - VAS 3122B- and tighten to specified torque (table ⇒ page 79).
– Fit all ignition coils loosely into spark plug apertures and align with connectors of connector rail.
– Push ignition coils evenly onto spark plugs by hand (do not attempt to knock in coils with any kind of tool).
– Align connector rail and plug all connectors simultaneously onto ignition coils so that they engage.
– Install connector rail, screwing in securing bolts to specified torque (see table of tightening torques for installation ⇒ page 79).

Continue installation in reverse sequence.

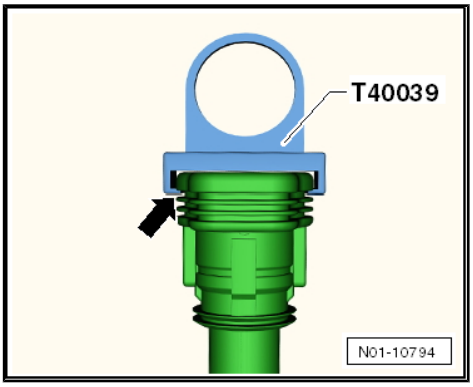
3.45.3 10-cyl. petrol engine 5.2 ltr. FSI

Special tools and workshop equipment required

♦ Spark plug socket and extension - 3122B-



- Puller - T40039-



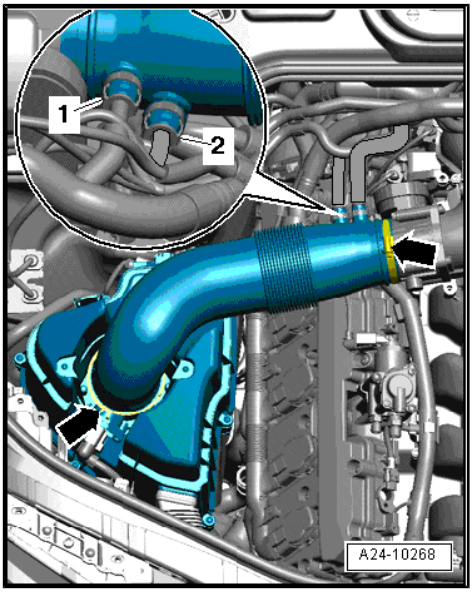
- Torque screwdriver - V.A.G 1624- , measuring range 1 to 5 Nm
- Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

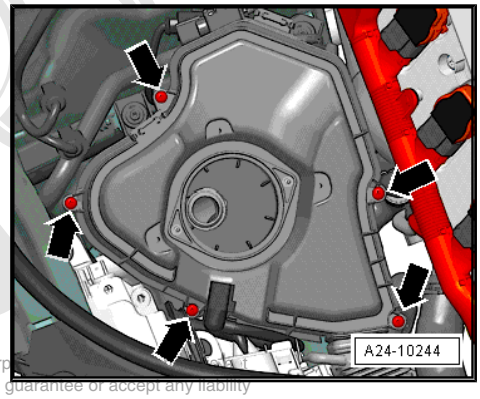
Component/fastener	[Nm]
Spark plugs	30
Guide for ignition coil wiring to cylinder head cover	5
Securing bolts for connector rail	5

Step 1 - removing spark plugs, cylinder bank (right-side):

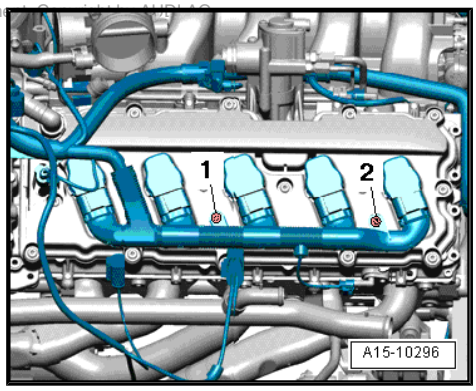
– Remove engine cover panel ⇒ page 9 .
– Release hose clips -arrows- and detach air pipe.
– Move air pipe to one side with vacuum hoses -1- and -2- attached.
– Unplug electrical connector from air mass meter - G70- .



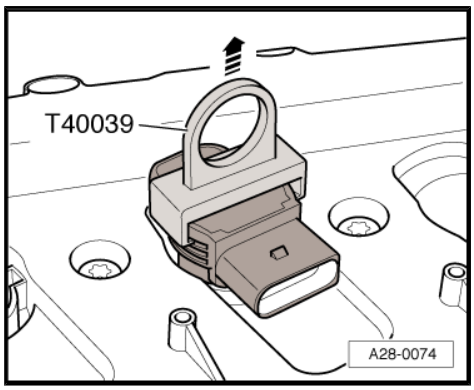
– Remove bolts -arrows- and detach air cleaner (top section).



– Remove bolts -1- and -2- for connector rail.
– Release connectors for ignition coils and unplug all connectors from ignition coils at the same time.
– Place connector rail slightly to one side. Make sure that wiring is not kinked or damaged.

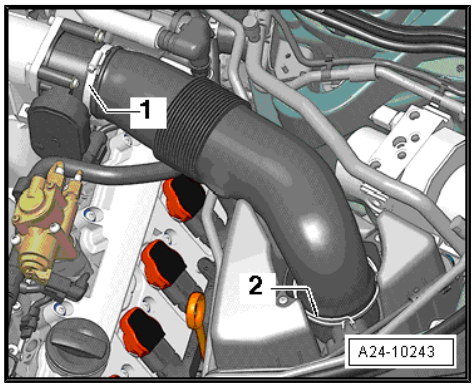


– Position puller - T40039- only on thick rib at the top of ignition coils and detach all ignition coils from spark plugs one after the other in direction of -arrow-.
– Unscrew spark plugs from cylinder head using spark plug socket - VAS 3122B- .

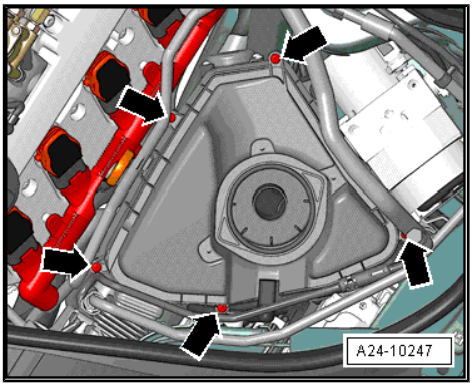


Step 2 - removing spark plugs, cylinder bank (left-side):

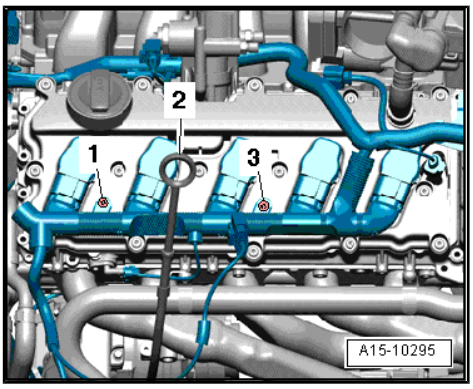
– Unfasten hose clip -1-, release retaining clip -2- and remove air pipe.
– Move air pipe to one side.
– Unplug electrical connector from air mass meter 2 - G246- .



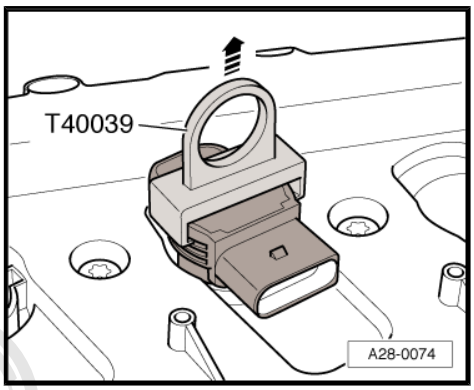
– Remove bolts -arrows- and detach air cleaner (top section).



– Remove bolts -1- and -3- for connector rail.
– Release connectors for ignition coils and unplug all connectors from ignition coils at the same time.
– Place connector rail slightly to one side. Make sure that wiring is not kinked or damaged.



– Position puller - T40039- only on thick rib at the top of ignition coils and detach all ignition coils from spark plugs one after the other in direction of -arrow-.
– Unscrew spark plugs from cylinder head using spark plug socket - VAS 3122B- .



Step 3 - installing spark plugs:

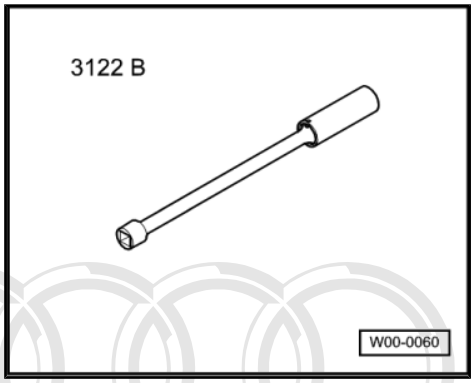
– Install new spark plugs using spark plug socket and extension - VAS 3122B- and tighten to specified torque (table ⇒ page 81).
– Fit all ignition coils loosely into spark plug apertures and align with connectors of connector rail.
– Push ignition coils evenly onto spark plugs by hand (do not attempt to knock in coils with any kind of tool).
– Align connector rail and plug all connectors simultaneously onto ignition coils so that they engage.
– Install connector rail, screwing in securing bolts to specified torque (see table of tightening torques for installation ⇒ page 81).

Continue installation in reverse sequence.

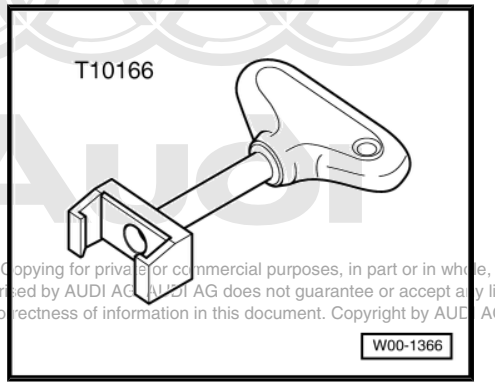
3.45.4 12-cyl. petrol engine 6.0 ltr. MPI

Special tools and workshop equipment required

- Spark plug socket and extension - 3122B-



- Puller - T10166-



- Torque wrench - V.A.G 1331- , measuring range 6 to 50 Nm

Table of tightening torques for installation:

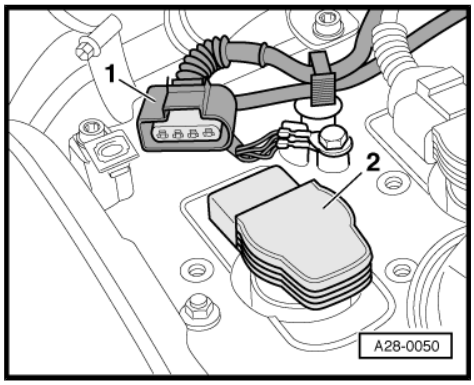
Component/fastener	[Nm]
Spark plugs	30

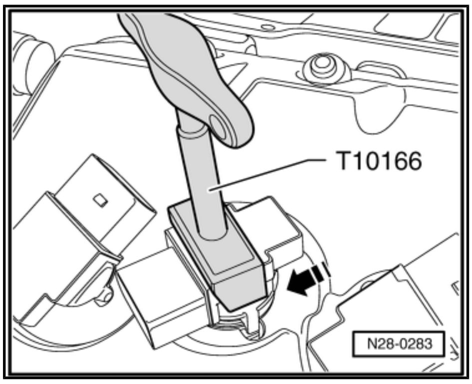
Step 1 - removing spark plugs, cylinder bank (left-side):

– Remove intake manifold (top section) ⇒ Rep. gr. 24 ; Servicing Mototronic injection system; Removing and installing intake manifold (top section) .

– Remove left section of intake manifold ⇒ Rep. gr. 24 ; Servicing Mototronic injection system; Removing and installing left section of intake manifold .

– Release connectors -1- for ignition coils -2- and unplug all connectors from ignition coils simultaneously.

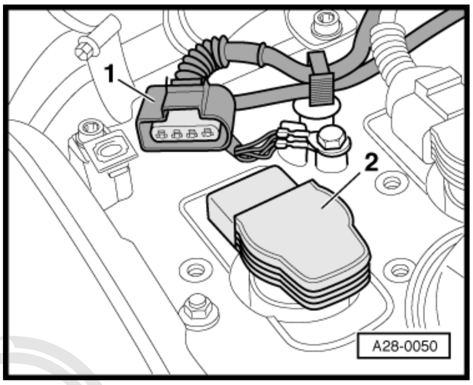




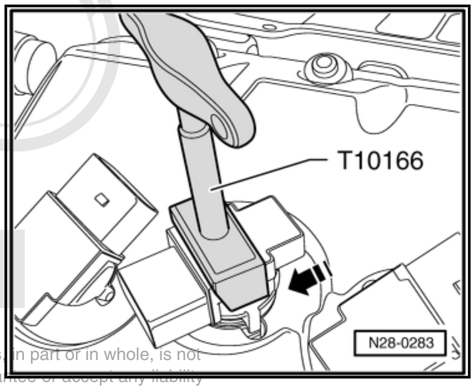
- Position puller - T10166- and detach all ignition coils from spark plugs one after the other in direction of -arrow-.
- Unscrew spark plugs from cylinder head using spark plug socket - VAS 3122B- .

Step 2 - removing spark plugs, cylinder bank (right-side):

- Remove right section of intake manifold ⇒ Rep. gr. 24 ; Servicing Mototronic injection system; Removing and installing right section of intake manifold .



- Release connectors -1- for ignition coils -2- and unplug all connectors from ignition coils simultaneously.



- Position puller - T10166- and detach all ignition coils from spark plugs one after the other in direction of -arrow-.
- Unscrew spark plugs from cylinder head using spark plug socket - VAS 3122B- .

Step 3 - installing spark plugs:

- Install new spark plugs using spark plug socket and extension - VAS 3122B- and tighten to specified torque (table ⇒ page 84).
- Fit all ignition coils loosely into spark plug apertures and align with connectors.

- Push ignition coils evenly onto spark plugs by hand (do not attempt to knock in coils with any kind of tool).
- Plug all connectors evenly onto ignition coils, making sure they engage.

Continue installation in reverse sequence.

3.46 Hydraulic system: checking fluid level

6-cylinder petrol engine and 6-cylinder diesel engine ⇒ page 85

10-cylinder petrol engine, 12-cylinder petrol engine and 8-cylinder diesel engine ⇒ page 86

3.46.1 6-cylinder petrol engine and 6-cylinder diesel engine

Table of test values and procedure guidelines:

Hydraulic fluid temperature:	Fluid level specification:
Ambient temperature (approx. 20°C)	Fluid level close to MIN marking (up to 2 mm above or below marking)

Hydraulic fluid temperature:	Fluid level specification:
Hydraulic fluid at operating temperature (approx. 80°C)	Fluid level between MIN and MAX markings

The hydraulic fluid reservoir is located in the engine compartment.

Checking the hydraulic system for leaks is a repair measure and should be charged separately.

Requirements:

- Engine switched off
- Bring front wheels into straight-ahead position.

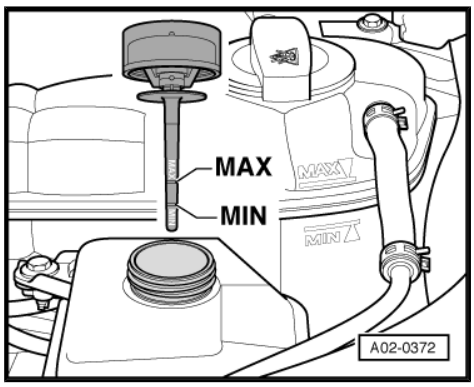
Procedure:

– Unscrew filler cap with dipstick.

– Clean dipstick with a clean cloth.

– Screw cap on hand tight and unscrew again.

– Check fluid level according to scale on dipstick.



– If fluid level does not meet specification: Perform following measures as appropriate:

Fluid level:	Measure:
Above specified level	Extract hydraulic fluid.
Below specified level	Check hydraulic power steering system for leaks ⇒ Rep. gr. 48 ; Checking fluid level, bleeding steering system and checking for leaks; Checking steering system for leaks .

3.46.2 10-cylinder petrol engine, 12-cylinder petrol engine and 8-cylinder diesel engine

Table of test values and procedure guidelines:

Hydraulic fluid temperature:	Fluid level specification:
Ambient temperature (approx. 20°C)	Fluid level close to MIN marking (up to 2 mm above or below marking)
Hydraulic fluid at operating temperature (approx. 80°C)	Fluid level between MIN and MAX markings

The hydraulic fluid reservoir is located below the air cleaner housing (left-side).

Checking the hydraulic system for leaks is a repair measure and should be charged separately.

Requirements:

- Engine switched off

- Bring front wheels into straight-ahead position.

Steps for removal:

– Raise vehicle ⇒ page 7 .

– Remove front left wheel.

– Remove wheel housing liner and air cleaner housing ⇒ Rep. gr. 48 ; Checking fluid level, bleeding steering system and checking for leaks; Checking power steering fluid level (V8 diesel and V10 and W12 petrol engines only) .

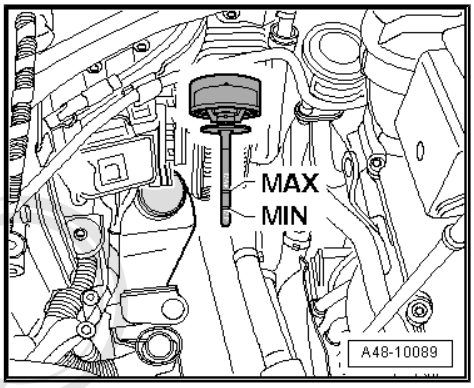
Procedure:

– Unscrew filler cap with dipstick.

– Clean dipstick with a clean cloth.

– Screw cap on hand tight and unscrew again.

– Check fluid level according to scale on dipstick.



– If fluid level does not meet specification: Perform following measures as appropriate:

Fluid level:	Measure:
Above specified level	Extract hydraulic fluid.
Below specified level	Check hydraulic power steering system for leaks ⇒ Rep. gr. 48 ; Checking fluid level, bleeding steering system and checking for leaks; Checking steering system for leaks .

3.47 Cooling system: checking anti-freeze protection and coolant level, and correcting if necessary

WARNING

Coolant expansion tank under pressure - risk of injuries!

- *Only open coolant expansion tank when engine is cold.*

Note

- *Coolant additives may only be mixed with distilled water, as the effectiveness of the coolant and the corrosion protection it provides are greatly influenced by the quality of the water with which the coolant is mixed. To ensure an adequate water quality, the coolant additive should be mixed with distilled water.*
- *For approved coolant additives, refer to Electronic parts catalogue (ETKA).*
- *G13 and G12++ may be mixed together.*
- *Coolant additives G13 and G12++ may be mixed with coolant additives G11, G12 and G12+, though this may result in decreased corrosion protection.*
- *G12 and G11 may NOT be mixed together.*
- *Do not reuse coolant.*
- *Only water/coolant additive may be used as lubricant for coolant hoses.*

Checking anti-freeze additive ⇒ page 88

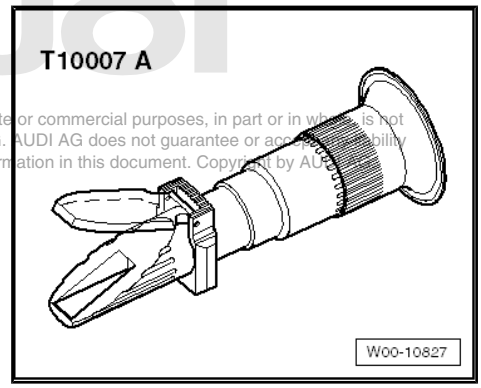
Checking coolant level ⇒ page 89

Filling up coolant ⇒ page 90

3.47.1 Checking anti-freeze

Special tools and workshop equipment required

- Refractometer - T10007 A-



Requirements:

- Anti-freeze protection must be guaranteed to -25 °C (in countries with an arctic climate to -36 °C); note specification in Maintenance table.
- The proportion of coolant additive must not exceed 55 % (gives anti-freeze protection down to -48 °C); beyond this concentration the frost protection and the cooling efficiency are reduced again.

Procedure:

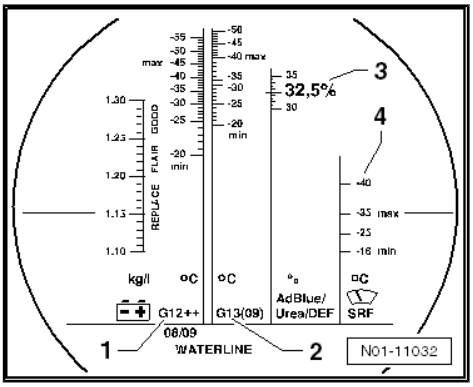
– Use a pipette to place a drop of coolant on glass of refractometer - T10007 A- . Light-dark border will now be clearly visible through refractometer.

– Check level of anti-freeze protection using corresponding scale on refractometer; to do so, read off value on light-dark border.

– If anti-freeze protection level does not meet specification in Maintenance table: Perform following measures:

Anti-freeze protection level:	Evaluation/measure:
> Specification	Depending on deviation from specification, remove a small amount of coolant and replace it with distilled water. Repeat procedure until coolant mixture meets correct specification.
< Specification	Depending on deviation from specification, remove a small amount of coolant and replace it with coolant additive. Repeat procedure until coolant mixture meets correct specification.

– Check coolant additive concentration once more following road test.



Note

- *The refractometer - T10007 A- must be used to determine the current anti-freeze concentration.*
- *Scale -1- on the refractometer applies to coolant additives G11, G12, G12+ and G12++.*
- *Scale -2- refers only to coolant additive G13.*
- *If more than one type of coolant additive has been used: Always use the scale for G13 to determine the anti-freeze protection.*
- *The temperature indicated on the refractometer - T10007 A- corresponds to the temperature at which the first ice crystals can form in the coolant.*
- *It is essential that anti-freeze be used in the cooling system all year round. In the correct concentration, coolant additives prevent scaling and frost and corrosion damage, and also raise the boiling point of the coolant.*
- *Because of its high boiling point, the coolant improves engine reliability under heavy loads in countries with tropical climates.*

3.47.2 Checking coolant level

Table of test values and procedure guidelines:

Type of service:	Coolant level specification:
Delivery Inspection	Coolant at level of MAX marking.
Inspection	Coolant level between MIN and MAX markings.

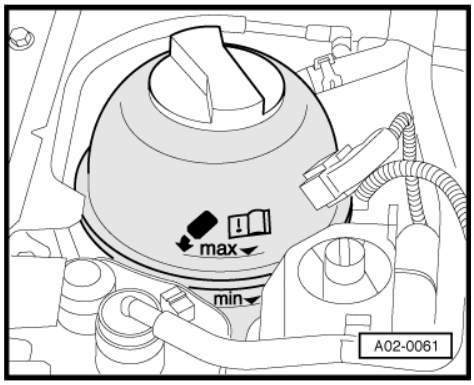
Checking the coolant system for leaks is a repair measure and should be charged separately.

Requirements:

- The vehicle must be parked on a level surface.

Procedure:

- Check coolant level (according to marking -illustration-) in expansion tank with engine cold.
- If coolant level is too low: Add required amount (using correct mixture ratio) ⇒ page 90 .
- If fluid losses are greater than can be reasonably expected: First use a leak test determine the cause ⇒ Rep. gr. 19 ; Cooling system/coolant; Checking cooling system for leaks .



3.47.3 Filling up coolant

Table of test values and procedure guidelines:

Frost protection to:	Coolant additive:	Water:
-25 °C	approx. 40 %	approx. 60 %
-36 °C	approx. 50 %	approx. 50 %

Procedure:

- Add required amount (using mixture ratio according to anti-freeze protection specification in Maintenance table). Use the table as a reference for the coolant mixture ratio.

Note

Small quantities of coolant can simply be topped up. Use the cooling system charge unit - VAS 6096- to add larger quantities of coolant.

3.48 Air cleaner: renewing filter element and cleaning housing

Note

- *Use only silicone-free lubricants when installing intake hoses.*
- *Secure all hose connections with hose clips (same as original equipment); see Electronic parts catalogue (ETKA).*

3.48.1 6-cyl. petrol engine 2.8 ltr. FSI, 3.2 ltr. FSI

Special tools and workshop equipment required

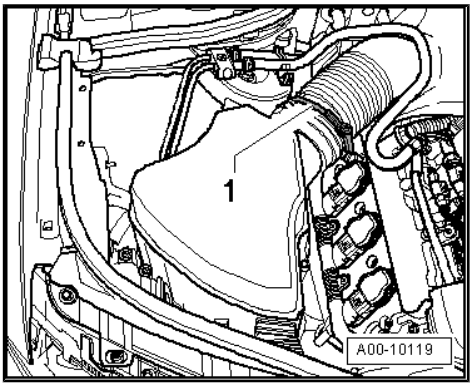
- Torque screwdriver - VAS 6494- , measuring range 1.5 to 3 Nm

Table of tightening torques for installation:

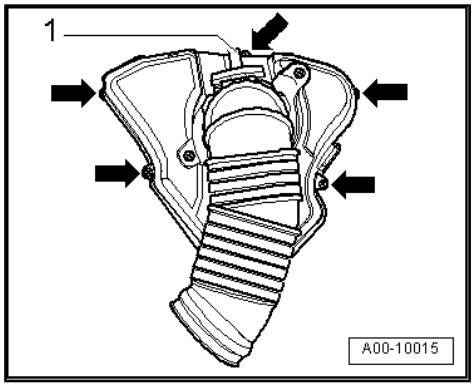
Component/fastener:	[Nm]
Securing bolts for air cleaner (top section)	1.5

Step 1 - removing air filter element:

– Release hose clip -1- and detach air pipe.



– Remove securing bolts -arrows- and detach air cleaner (top section).
– Take out air filter element.



Step 2 - installing air filter element:

– Check for dirt in housing and water drains and clean if necessary ⇒ page 101 .
– Insert new air filter element centrally in mounting in air cleaner (bottom section).
– Carefully fit air cleaner (top section) onto air cleaner (bottom section) without applying any significant force, and tighten bolts to specified torque (see table of tightening torques for installation ⇒ page 91). Ensure that air cleaner (top section) is flush with air cleaner (bottom section) and that it is not fitted at an angle.

Continue installation in reverse sequence.

3.48.2 6-cyl. petrol engine 3.0 ltr. MPI

Special tools and workshop equipment required

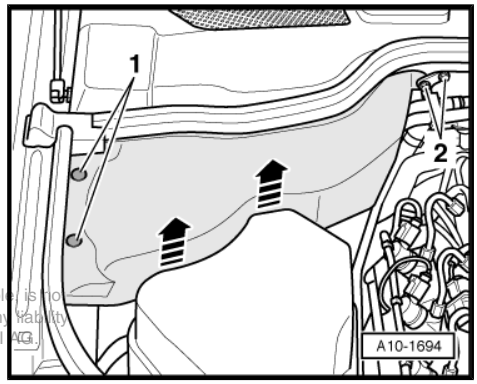
♦ Torque wrench - V.A.G 1783- , measuring range 2 to 10 Nm

Table of tightening torques for installation:

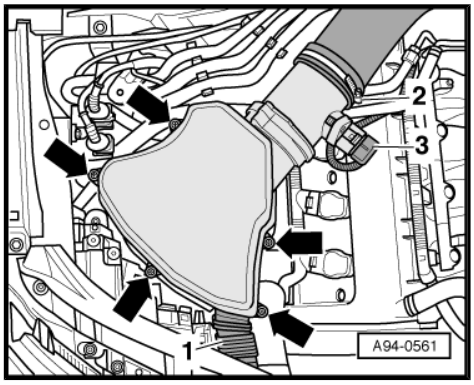
Component/fastener:	[Nm]
Securing bolts for air cleaner (top section)	3.5
Securing bolt for cover	4.5

Step 1 - removing air filter element:

– Remove fasteners -1-, unscrew securing bolt -2- and detach cover in direction of -arrows-.



– Unplug electrical connector -3- for air mass meter - G70- .
– Release hose clip -2- and detach air pipe.
– Detach connecting hose -1-.
– Remove securing bolts -arrows- from air cleaner (top section) and detach it.
– Take out air filter element.



Step 2 - installing air filter element:

– Check for dirt in housing and water drains and clean if necessary ⇒ page 101 .
– Insert new air filter element centrally in mounting in air cleaner (bottom section).
– Carefully fit air cleaner (top section) onto air cleaner (bottom section) without applying any significant force, and tighten bolts to specified torque (see table of tightening torques for installation ⇒ page 92). Ensure that air cleaner (top section) is flush with air cleaner (bottom section) and that it is not fitted at an angle.

Continue installation in reverse sequence. Note tightening torque ⇒ page 92 .

3.48.3 8-cyl. petrol engine 3.7 ltr. MPI, 4.2 ltr. MPI, 4.2 ltr. FSI

Special tools and workshop equipment required

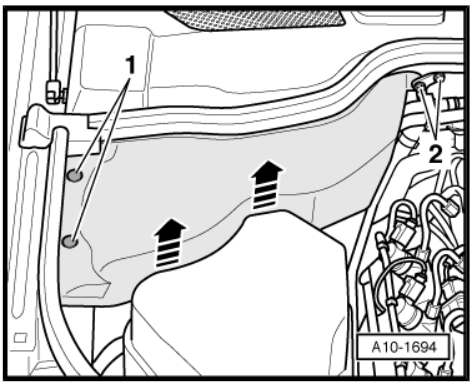
♦ Torque wrench - V.A.G 1783- , measuring range 2 to 10 Nm

Table of tightening torques for installation:

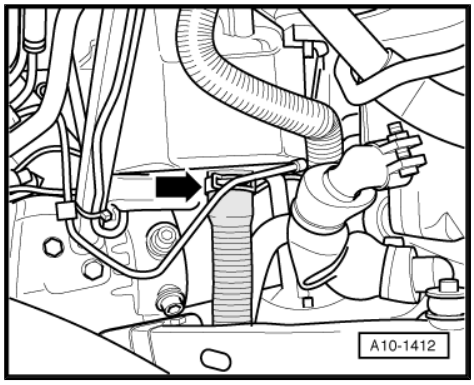
Component/fastener:	[Nm]
Securing bolts for air cleaner (top section)	3.5
Securing bolt for cover	4.5

Step 1 - removing air filter element:

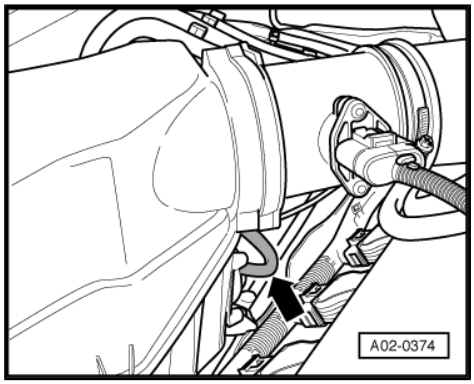
– Remove engine cover panel ⇒ page 9.
– Remove fasteners -1-, unscrew securing bolt -2- and detach cover in direction of -arrows-.



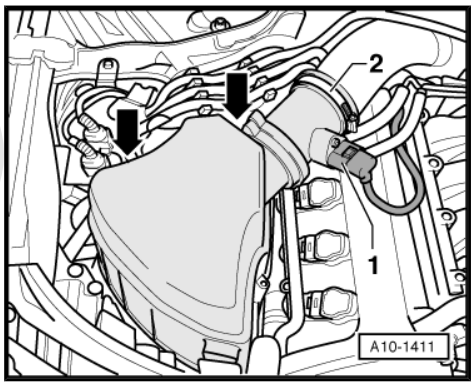
– Unfasten hose clip -arrow- and detach hose to secondary air pump.



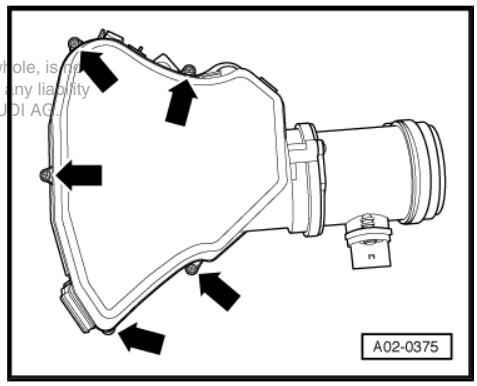
– If fitted: Disconnect vacuum hose -arrow- from air cleaner (bottom section).



– Unplug electrical connector -1- for air mass meter - G70- .
– Release hose clip -2- and detach air pipe.

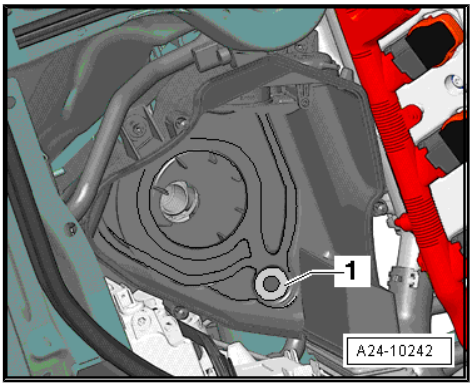


– Remove securing bolts -arrows- and detach air cleaner housing.
– Take out air filter element.



Step 2 - installing air filter element:

– Check for dirt in housing and water drains -1- and clean if necessary ⇒ page 101 .
– Insert new air filter element centrally in mounting in air cleaner (bottom section).
– Carefully fit air cleaner (top section) onto air cleaner (bottom section) without applying any significant force, and tighten bolts to specified torque (see table of tightening torques for installation ⇒ page 93). Ensure that air cleaner (top section) is flush with air cleaner (bottom section) and that it is not fitted at an angle.



Continue installation in reverse sequence. Note tightening torque ⇒ page 93 .

3.48.4 10-cyl. petrol engine 5.2 ltr. FSI

Special tools and workshop equipment required

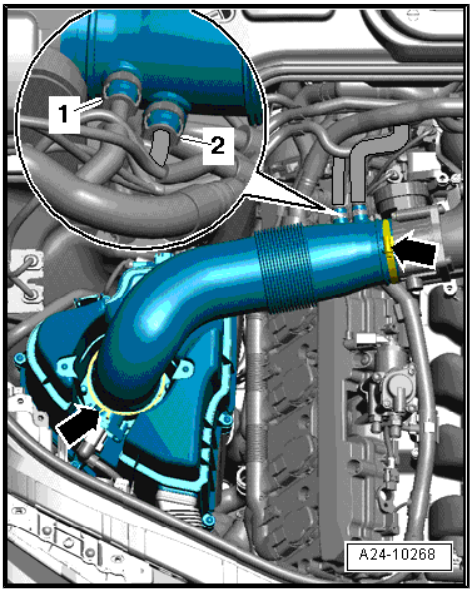
♦ Torque wrench - V.A.G 1783- , measuring range 2 to 10 Nm

Table of tightening torques for installation:

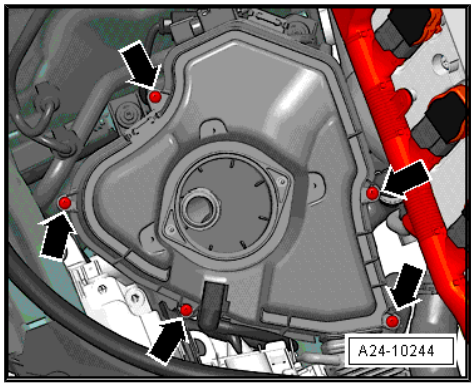
Component/fastener:	[Nm]
Securing bolts for air cleaner (top section)	3.5

Step 1 - removing air filter element (right-side):

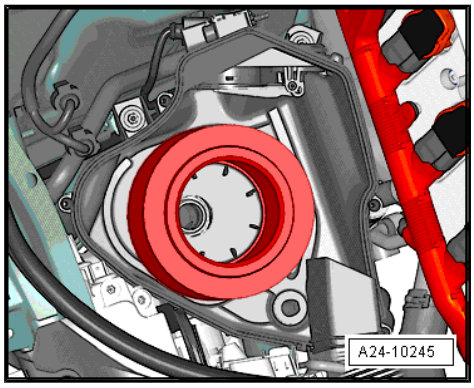
– Remove engine cover panel ⇒ page 9 .
– Loosen hose clips -arrows- and detach air pipe.
– Move air pipe to one side with vacuum hoses -1- and -2- attached.
– Unplug electrical connector for air mass meter - G70- .



– Remove securing bolts -arrows- from air cleaner (top section) and detach it.

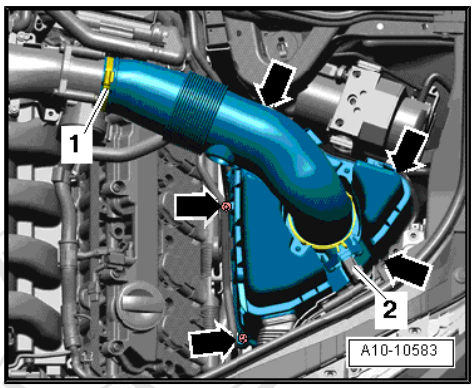


– Take out air filter element.

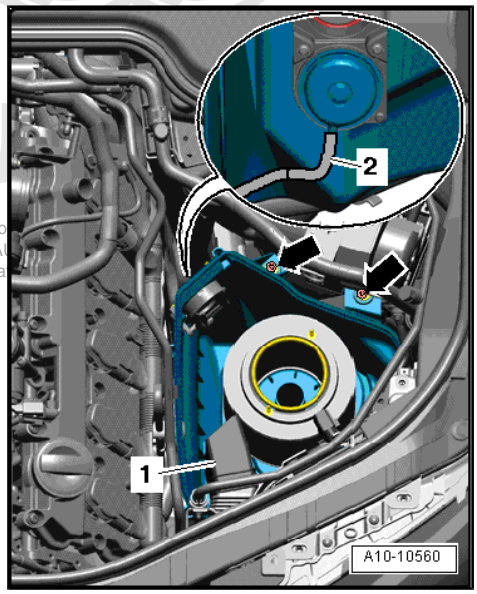


Step 2 - removing air filter element (left-side):

– Release hose clip -1- and detach air pipe.
– Move air pipe to one side with vacuum hoses -1- and -2- attached.
– Unplug electrical connector for air mass meter - G246- .
– Remove securing bolts -arrows- from air cleaner (top section) and detach it.



– Take out air filter element.



Step 3 - installing air filter elements:

– Check for dirt in housing and water drains and clean if necessary ⇒ page 101 .
– Insert new air filter element centrally in mounting in air cleaner (bottom section).
– Carefully fit air cleaner (top section) onto air cleaner (bottom section) without applying any significant force, and tighten bolts to specified torque (see table of tightening torques for installation ⇒ page 95). Ensure that air cleaner (top section) is flush with air cleaner (bottom section) and that it is not fitted at an angle.
– Repeat procedure on opposite side of vehicle.

Continue installation in reverse sequence. Note tightening torque ⇒ page 95 .

3.48.5 12-cyl. petrol engine 6.0 ltr. MPI

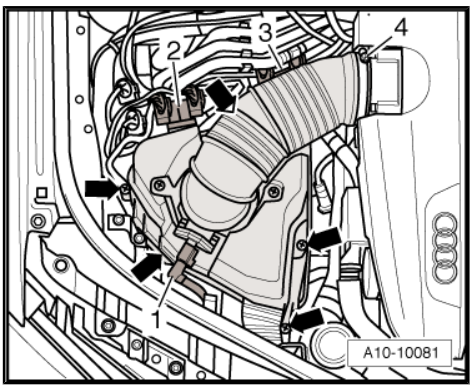
Special tools and workshop equipment required

- Torque wrench - V.A.G 1783- , measuring range 2 to 10 Nm

Table of tightening torques for installation:

Component/fastener:	[Nm]
Securing bolts for air cleaner (top section)	3.5

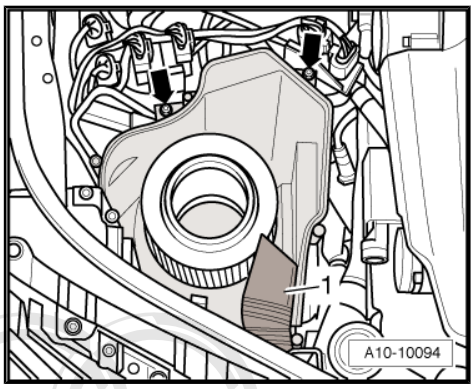
Step 1 - removing air filter element (right-side):



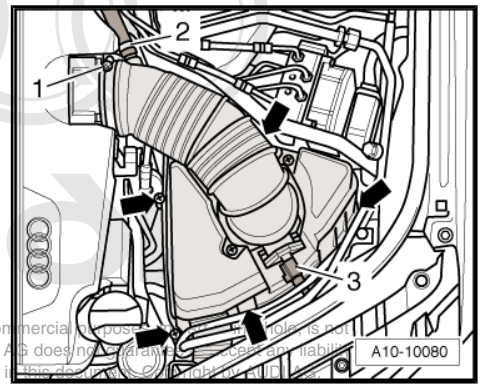
– Unplug electrical connector -1- for air mass meter - G70- .
– Release hose clip -4- and detach air pipe.
– Disengage retainers -2- and -3- for electrical connectors.
– Remove securing bolts -arrows- from air cleaner (top section) and detach it.

– Take out air filter element.

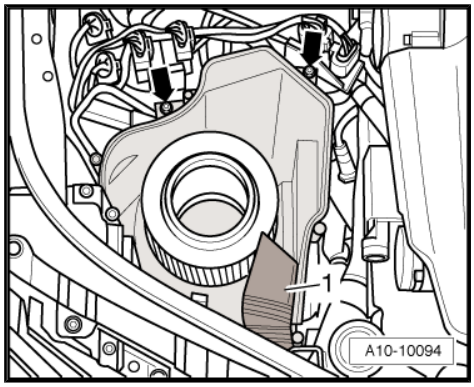
Step 2 - removing air filter element (left-side):



– Unplug electrical connector -3- for air mass meter - G70- .
– Release hose clip -1- and detach air pipe.
– Remove securing bolts -arrows- from air cleaner (top section) and detach it.



– Take out air filter element.



Step 3 - installing air filter elements:

– Check for dirt in housing and water drains and clean if necessary ⇒ page 101 .

– Insert new air filter elements centrally in mounting in air cleaner (bottom section).

– Carefully fit air cleaner (top section) onto air cleaner (bottom section) without applying any significant force, and tighten bolts to specified torque (see table of tightening torques for installation ⇒ page 97). Ensure that top and bottom sections of air cleaner are flush.

Continue installation in reverse sequence. Note tightening torque ⇒ page 97 .

3.48.6 6-cyl. diesel engine 3.0 ltr. TDI

Special tools and workshop equipment required

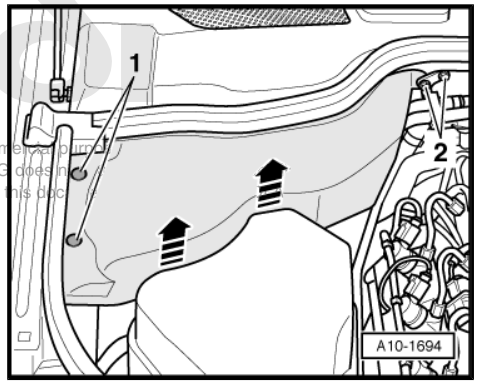
♦ Torque wrench - V.A.G 1783- , measuring range 2 to 10 Nm

Table of tightening torques for installation:

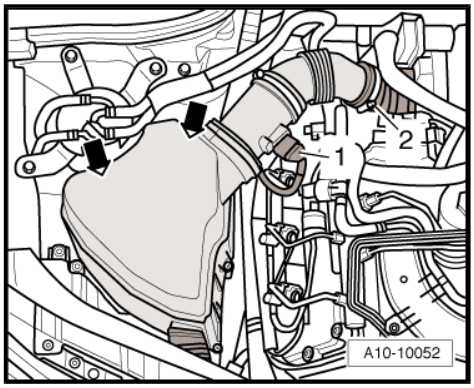
Component/fastener:	[Nm]
Securing bolts for air cleaner (top section)	3.5
Securing bolt for cover	4.5

Step 1 - removing air filter element:

– Remove fasteners -1-, unscrew securing bolt -2- and detach cover in direction of -arrows-.



– Unplug electrical connector -1- for air mass meter - G70- .
– Release hose clip -2- and detach air pipe.
– Remove securing bolts -arrows- and detach air cleaner (top section).
– Take out air filter element.



Step 2 - installing air filter element:

– Check for dirt in housing and water drains and clean if necessary ⇒ page 101 .
– Insert new air filter element centrally in mounting in air cleaner (bottom section).
– Carefully fit air cleaner (top section) onto air cleaner (bottom section) without applying any significant force, and tighten bolts to specified torque (see table of tightening torques for installation ⇒ page 98). Ensure that top and bottom sections of air cleaner are flush.

Continue installation in reverse sequence. Note tightening torque ⇒ page 98 .

3.48.7 8-cyl. diesel engine 4.0 ltr. TDI, 4.2 ltr. TDI

Special tools and workshop equipment required

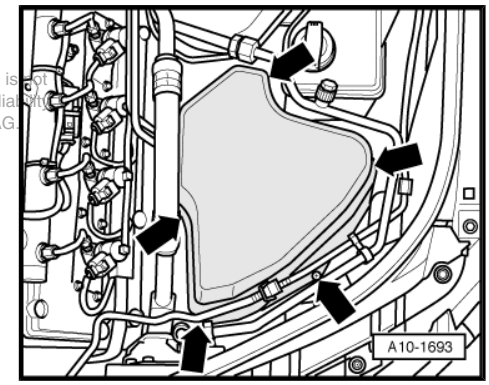
♦ Torque wrench - V.A.G 1783- , measuring range 2 to 10 Nm

Table of tightening torques for installation:

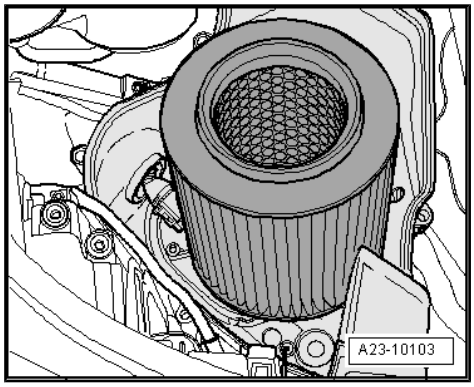
Component/fastener:	[Nm]
Securing bolts for air cleaner (top section)	3.5
Securing bolt for cover	4.5

Step 1 - removing air filter element (left-side):

– Remove securing bolts -arrows- and detach air cleaner (top section).

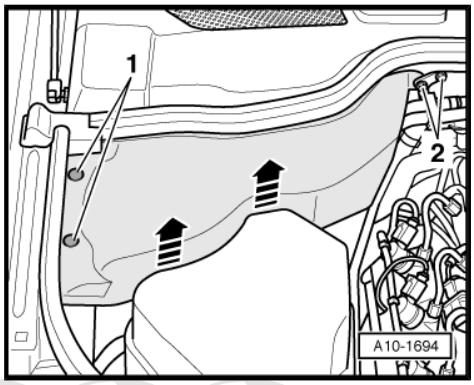


– Take out air filter element.

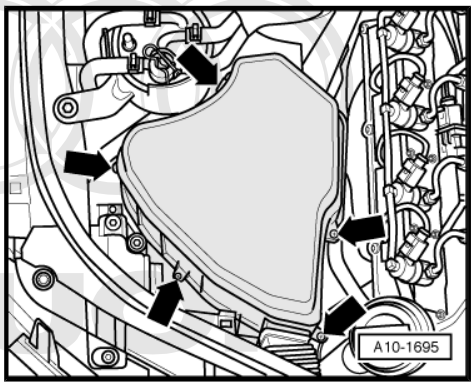


Step 2 - removing air filter element (right-side):

– Remove fasteners -1-, unscrew securing bolt -2- and detach cover in direction of -arrows-.

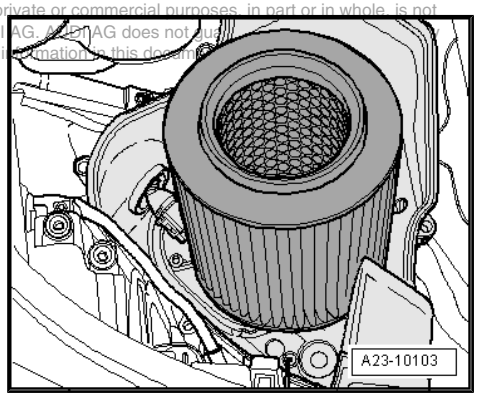


– Remove securing bolts -arrows- and detach air cleaner (top section).



– Take out air filter element.

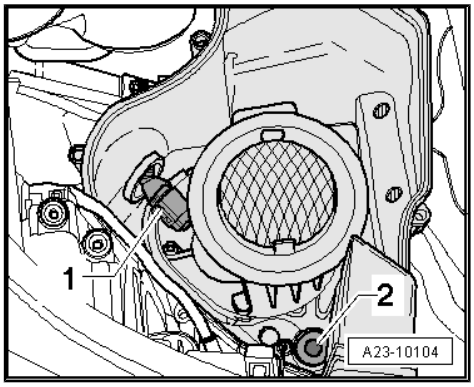
– Repeat procedure on opposite side of vehicle.



Step 2 - installing air filter elements:

– Check for dirt in housing and water drains -2- and clean if necessary ⇒ page 101 .
– Insert new air filter element centrally in mounting in air cleaner (bottom section).
– Carefully fit air cleaner (top section) onto air cleaner (bottom section) without applying any significant force, and tighten bolts to specified torque (see table of tightening torques for installation ⇒ page 99). Ensure that air cleaner (top section) is flush with air cleaner (bottom section) and that it is not fitted at an angle.

Continue installation in reverse sequence. Note tightening torque ⇒ page 99 .



– Repeat procedure on opposite side of vehicle.

3.48.8 Cleaning air cleaner housing

Procedure:

– Remove any loose dirt or leaves out of air cleaner housing (top and bottom sections).
– Check whether water drain hose in air cleaner (bottom section) is dirty or blocked and clean if necessary.

Note

- *When cleaning air cleaner housing with compressed air: Cover air mass meter with a clean cloth.*
- *On vehicles for cold countries, the snow screen in the intake section must also be cleaned; see specification in ELSA Maintenance table.*

3.49 Plenum chamber and water drains: checking for dirt

Checking plenum chamber and water drains for dirt
⇒ page 102

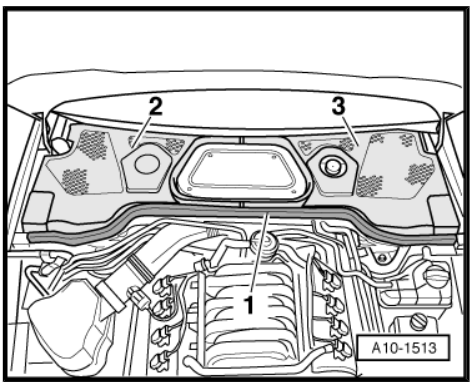
Cleaning plenum chamber and water drains ⇒ page 102

3.49.1 Checking plenum chamber and water drains for dirt

Cleaning the plenum chamber, as well as the removal procedures required, are a repair measure and should be charged separately.

Steps for removal:

– Pull off rubber seal -1- on plenum chamber cover.
– Take out plenum chamber cover -2- and -3-.

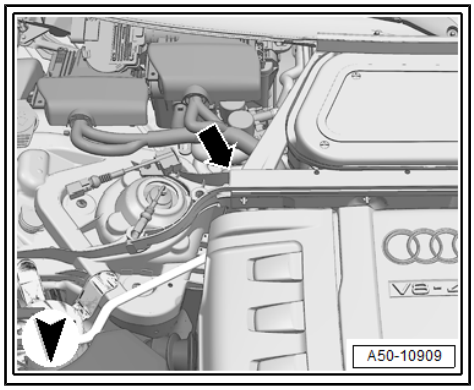


Step 1 - checking plenum chamber and water drains (passenger's side):

– Use a hand-held light to check for dirt in plenum chamber and water drains.

– If no dirt was found: Pour a small amount of water into plenum chamber above engine cover panel (right-side) -arrow- and check that water drains quickly and fully.

If necessary, clean plenum chamber and water drains ⇒ page 102 .

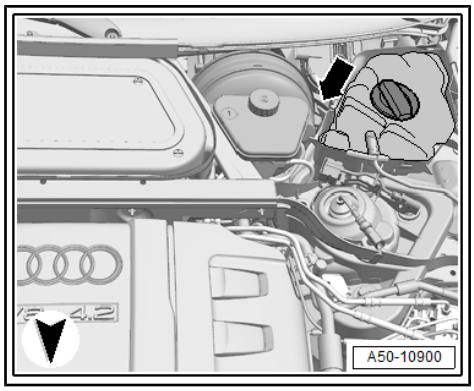


Step 2 - checking plenum chamber and water drains (driver's side):

– Use a hand-held light to check for dirt in plenum chamber and water drains.

– If no dirt was found: Pour a small amount of water into plenum chamber between brake fluid reservoir and coolant expansion tank -arrow- and check that water drains quickly and fully.

– If necessary, clean plenum chamber and water drains ⇒ page 102 .



Install in reverse sequence.

Note

If the water you have poured in does not drain out or drains out very slowly, this is a sign that the water drains -arrows- are fully or partly blocked.

3.49.2 Cleaning plenum chamber and water drains

Special tools and workshop equipment required

- Suction feed spray-gun - VAG 1538-
- Nylon probe - VAG 1538/2-
- Flexible picking tool

Cleaning the plenum chamber, as well as the removal procedures required, are a repair measure and should be charged separately.

Procedure:

– Remove coarse dirt from plenum chamber and water drain grommets with a flexible picking tool.

– Remove fine dirt using suction-feed spray gun - V.A.G 1538- and nylon probe - V.A.G 1538/2- or a thin water hose.

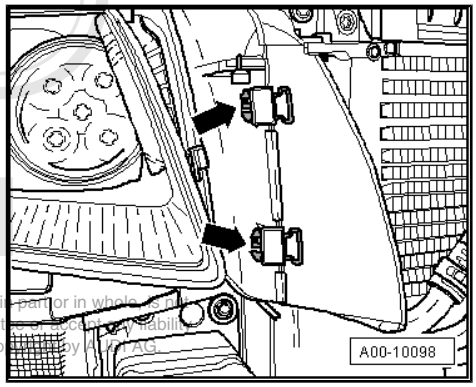
3.50 Snow screen: cleaning

Steps for removal:

– Remove front bumper ⇒ Rep. gr. 63 ; Bumper (front); Removing and installing bumper .

Procedure:

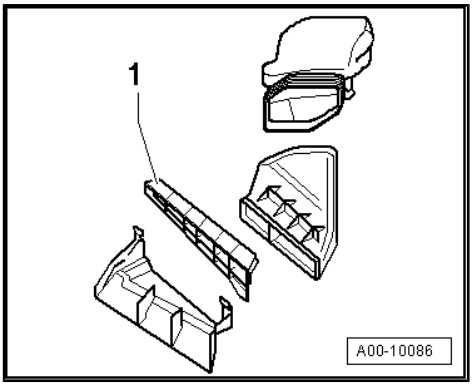
– Remove snow screens on left and right air cowls -arrows-.



– Remove snow screen -1- and clean using compressed air.
– Use a suitable blunt tool to remove persistent dirt.
– If the snow screen is damaged it must be renewed.

Install in reverse sequence. When doing so, note the following:

– First press fastener into appropriate hole and then secure it with spreader pin.



3.51 Dust and pollen filter: renewing

Equipment version for certain countries only.

The dust and pollen filter is located in the plenum chamber.

Steps for removal:

– Remove plenum chamber cover ⇒ Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

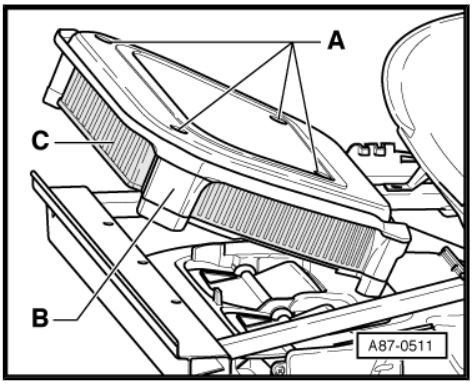
Step 1 - removing filter element:

– Loosen clamping pins -A- by turning them 180° and remove cover -B- together with dust and pollen filter -C-.
– Take out filter element -C- under retainers.

Step 2 - installing filter element:

– Clean surrounding area after removing filter element.
– Fit new filter element so that arrows indicating direction of flow point downwards.

Continue installation in reverse sequence.



3.52 Fuel filter: renewing

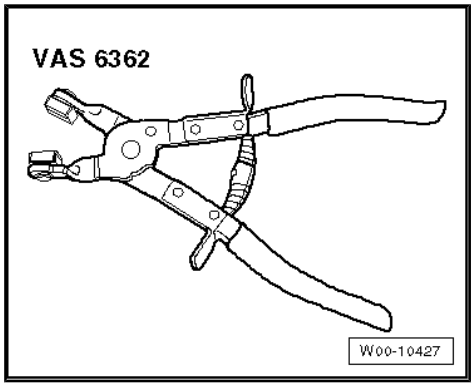
Diesel engine with filter in engine compartment ⇒ page 103

Petrol engine with filter at bottom ⇒ page 105

3.52.1 Diesel engine with filter in engine compartment

Special tools and workshop equipment required

- Hose clip pliers - VAS 6362-



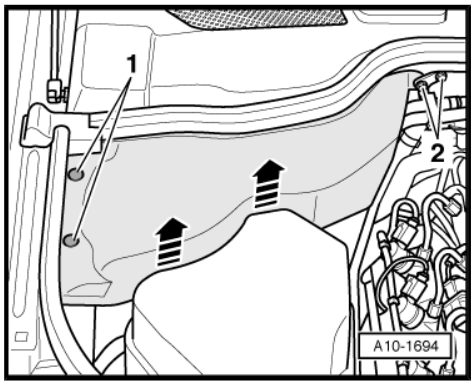
- Torque wrench - V.A.G 1410- , measuring range 4 to 20 Nm

Table of tightening torques for installation:

Fastener	Tightening torque [Nm]
Bolt on bracket	10

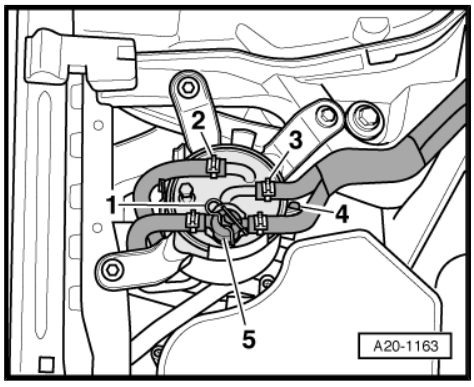
Steps for removal:

– Remove fasteners -1- and unscrew bolts -2-.
– Remove suspension turret cover from retainers in direction of -arrows-.



Step 1 - removing:

– Detach retaining clip -1-, then remove O-rings and regulating valve -5- with fuel hoses attached.
– Use hose clip pliers to disconnect fuel supply hoses -2- and -3-.
– Loosen bolt -4- on bracket and remove fuel filter.



Step 2 - installing fuel filter:

Install in reverse sequence. Note tightening torques (see table of tightening torques for installation ⇒ page 104).

Flow direction is indicated by arrows on filter housing.

3.52.2 Petrol engine with filter at bottom

WARNING

Fuel is hot and under pressure - risk of injuries!

- *Wear protective gloves.*
- *Wear safety goggles.*
- *Allow connections of fuel lines to cool down.*
- *Place cloths around connections and loosen them carefully.*

Procedure:

– Observe the safety precautions when working on the fuel system ⇒ Rep. gr. 20 ; Notes for working on the fuel supply system; Safety precautions when working on the fuel supply system .

Renew fuel filter according to Workshop Manual ⇒ Rep. gr. 20 ; Fuel filter - all vehicles; Removing and installing fuel filter .

3.53 Fuel tank: adding fuel additive

Special tools and workshop equipment required

- Multi-purpose additive for petrol fuel - G 001 770 A2-
- Or: Multi-purpose additive for petrol fuel - G 001 780 M3-

Table of test values and procedure guidelines:

Indicated on fuel gauge	-G 001 770 A2-	-G 001 780 M3-
	90 ltr. tank	**90 ltr. tank**
approx. 1/4	approx. 23 ml	approx. 74 ml
approx. 1/2	approx. 45 ml	approx. 149 ml
approx. 3/4	approx. 68 ml	approx. 223 ml
approx. 1/1	approx. 90 ml	approx. 297 ml

This maintenance item only applies to certain countries: Note specification in Maintenance table.

Procedure:

– Add fuel additive to fuel tank according to current fuel tank level.

Note

If the fuel level in the fuel tank is other than quoted: Add multi-purpose additive for petrol fuel - G 001 770 A2- in a ratio of 10 ml per 10 litres of fuel. For multi-purpose additive for petrol fuel - G 001 780 M3- , add in a ratio of 33 ml per 10 litres of fuel.

3.54 Body: checking vehicle paint for damage and corrosion with bonnet, rear lid and doors open

Procedure:

– Open all vehicle doors, bonnet and rear lid.

– Check vehicle paint on inside and outside of body for damage and corrosion.

– Rectify defects of any kind (repair measure).

3.55 Road test

Procedure:

– The following points must be checked during the road test:

♦ Engine: performance, misfiring, idling speed, acceleration, starting behaviour (engine cold and warm), engine noise

♦ Clutch: pulling away, pedal pressure, odours, noise due to load change

♦ Manual gearbox: ease of operation, gear lever position, gearbox noise

♦ Automatic gearbox: selector lever position, shift lock / ignition key lock, gearbox noise, kickdown, shift behaviour, instrument cluster display

♦ Brake pedal and handbrake: operation, travel and effectiveness, pulling to one side, response (delayed braking), juddering, squeal

♦ ABS function: pulsing must be felt at the brake pedal when performing ABS-controlled braking.

♦ Steering: operation, steering free play, steering wheel centralised when wheels are in straight-ahead position, moving off line when travelling straight

♦ Imbalance: wheels, drive shafts

♦ Wheel bearings: noises

♦ Roof insert: unusual noise during operation

♦ Horn: checking

Note

To what extent all of these can be checked depends on vehicle equipment and local conditions (urban/country).

3.56 Display instruments: setting language, time and date

Procedure:

– Change settings of display instruments: Refer to Operating Manual for radio/sound system/MMI system.

3.57 Automatic gearbox (multitronic): changing ATF fluid

Procedure:

– Change ATF fluid according to Workshop Manual ⇒ Rep. gr. 37 ; ATF; Draining and filling ATF .

3.58 Poly V-belts for ancillaries: renewing

Procedure:

– Renew poly V-belt for ancillaries according to specifications in Workshop Manual ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .

3.59 Poly V-belts for ancillaries and all pulleys: renewing

Procedure:

– Renew poly V-belt for ancillaries according to specifications in Workshop Manual ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .

– Renew pulleys according to Workshop Manual ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Exploded view - cylinder block (pulley end) .

3.60 Poly V-belts for ancillaries and pulleys for coolant pump and power steering pump: renewing

Procedure:

– Renew poly V-belt for ancillaries according to specifications in Workshop Manual ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .

– Renew pulleys according to Workshop Manual ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Exploded view - cylinder block (pulley end) .

3.61 Poly V-belts for ancillaries and idler rollers: renewing

Procedure:

– Renew poly V-belt for ancillaries according to specifications in Workshop Manual ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .

– Renew idler rollers according to Workshop Manual ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Exploded view - cylinder block (pulley end) .

3.62 Instrument cluster: resetting driver information system

Procedure:

– Reset single journey memory and total journey memory of driver information system; refer to vehicle Owner's Manual.

3.63 Toothed belt for camshaft drive: renewing

Procedure:

– Renew toothed belt for camshaft drive according to specifications in Workshop Manual ⇒ Rep. gr. 15 ; Toothed belt drive; Removing and installing toothed belt .

3.64 Toothed belt for camshaft drive and tensioning roller: renewing

Procedure:

– Renew toothed belt for camshaft drive according to specifications in Workshop Manual ⇒ Rep. gr. 15 ; Toothed belt drive; Removing and installing toothed belt .

– Renew tensioning roller according to Workshop Manual ⇒ Rep. gr. 15 ; Toothed belt drive; Exploded view - toothed belt .