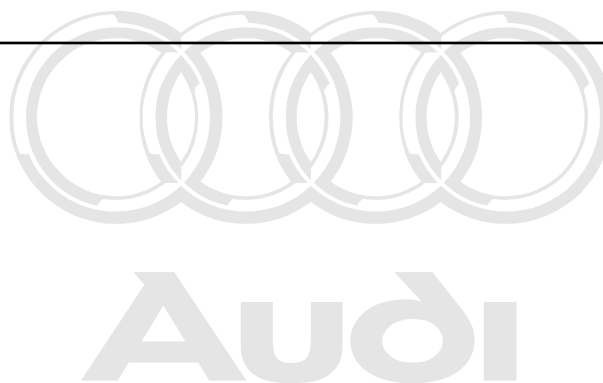




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Workshop Manual Audi A4 1995 ➤

Electrical system

Edition 12.2005

List of Workshop Manual Repair Groups

Repair Group

- 27 - Starter, current supply, CCS
- 90 - Gauges, instruments
- 92 - Windscreen wash/wipe system
- 94 - Lights, bulbs, switches - exterior
- 96 - Lights, bulbs, switches - interior
- 97 - Wiring



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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.

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27 – Starter, current supply, CCS

1 Battery

The battery is one of the most important electrical components in the vehicle. A trouble-free battery has a great influence on customer satisfaction. To ensure a long service life, the battery must be checked, serviced and maintained according to the instructions in this Manual.

Apart from starting the engine, the battery also acts as an electrical buffer and supplies power to all parts of the vehicle's electrical system.

1.1 Safety measures and procedures to be followed

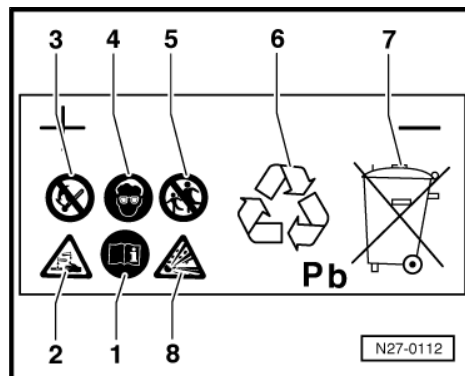
Prior to starting work, employees should be informed of the possible hazards involved with handling batteries.

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1.2 Warnings and safety procedures when handling lead-acid batteries

Explanatory notes on battery symbols

- 1 - Follow instructions on battery, in electrical system Workshop Manual and in Owner's manual.
- 2 - Danger of acid burns: Electrolyte is highly corrosive; protective gloves and eye protection must therefore be worn at all times.
- 3 - Fires, sparks, naked flames and smoking are prohibited.
- 4 - Wear eye protection.
- 5 - Keep children away from acid and batteries.
- 6 - Disposal: Observe disposal regulations for batteries and sulphuric acid. Always use the specified containers for disposal at the authorised sites.
- 7 - Never dispose of old batteries in household waste system. Batteries contain lead (Pb), which is toxic.
- 8 - Danger of explosion: A highly explosive gas mixture is given off when batteries are under charge.



WARNING

Electrolyte:

- ◆ *Can cause severe injury to the eyes, skin and mucous membranes.*
- ◆ *Inhalation can damage the respiratory system.*
- ◆ *Swallowing is harmful to the digestive system.*
- ◆ *First aid: Rinse eyes and immediately consult first aid station or inform doctor.*
- ◆ *Never tilt battery. Acid can leak out of the gas vents.*
- ◆ *Soak up spilt electrolyte with binding agent and neutralise any residual electrolyte.*
- ◆ *Never allow electrolyte to come into contact with hands.*
- ◆ *Avoid contact with skin.*
- ◆ *Never touch mouth, nose or eyes with soiled hands.*
- ◆ *Immediately change any clothing affected by electrolyte and place in water if necessary.*
- ◆ *Do not eat, drink or store foodstuffs at workplace.*
- ◆ *Wash thoroughly before breaks and on completion of work.*

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WARNING

Smoking, naked flames, fires and sparks:

- ◆ *Smoking, naked flames and fires are prohibited whilst working; flying sparks must be avoided.*
- ◆ *Avoid short circuits and sparks when handling cables and electrical equipment.*



WARNING

Eye protection and protective clothing:

- ◆ *Wear safety goggles and an acid-resistant apron or alternatively electrolyte-proof overalls.*
- ◆ *Wear electrolyte-proof gloves.*



WARNING

Danger of explosion:

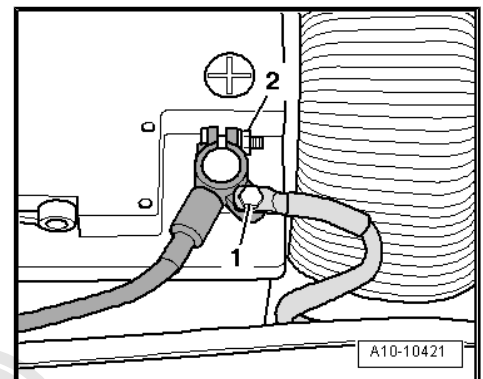
- ◆ *Old batteries (in use for 6 months or more) must be treated with an anti-static spray (currently "Neostatic Antistatikum HB 155") prior to handling.*
- ◆ *Sealing plugs must be closed when charging.*
- ◆ *Charging of batteries removed from the vehicle is only permitted in vented cubicles with extraction system.*
- ◆ *After charging, battery must be left in charging area with extraction system for an appropriate length of time.*
- ◆ *Batteries must always be transported in conductive metal containers.*
- ◆ *Electrostatically chargeable materials are not to be used for securing purposes.*

1.3 Battery handling instructions



Note

- ◆ *Battery terminals should now NOT be greased.*
- ◆ *To avoid damaging the battery housing, do not use force when attaching the battery clamps; press them on by hand.*
- ◆ *The tightening torque for the battery clamps -2- is 8 Nm.*
- ◆ *The tightening torque for the additional clamps -1- at the battery terminal clamps is 7.5 Nm.*



1.4 Disconnecting and connecting battery

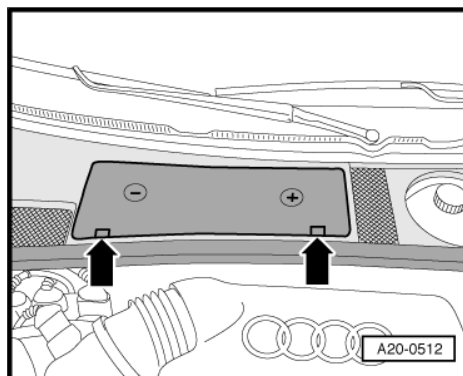
Procedure



Caution

On vehicles fitted with telematics system, activate service mode of telematics control unit before disconnecting battery ⇒ Communication; Rep. Gr. 01 or ⇒ Rep. Gr. 91.

- If fitted, remove cover above battery -arrows-.



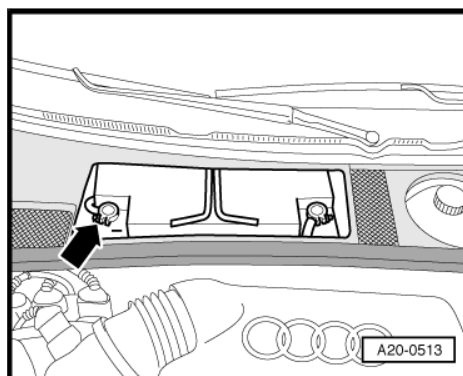
- With ignition switched off, disconnect earth cable -arrow- at battery.
- When connecting battery, attach battery clamp of earth cable to negative battery terminal “-” by hand and tighten nut.

The following measures must be carried out after re-connecting battery:



Note

- ♦ **Make sure to activate vehicle equipment (radio, radio navigation system, clock, electric windows) according to operating instructions.**
- ♦ **Deactivate service mode of telematics control unit ⇒ Communication; Rep. Gr. 01 or ⇒ Rep. Gr. 91 .**
- ♦ **For further operations after reconnecting power supply, refer to ⇒ Rep. Gr. 24 .**
- ♦ **Check proper function of remote control keys; synchronise keys if necessary. Inform customer that all additional keys must also be synchronised to ensure that the remote control works properly ⇒ Owner's Manual .**
- ♦ **After reconnecting the voltage supply, it is possible that the ABS/ESP warning lamp will not go out until the vehicle has been driven several metres.**



Tightening torque

Component	Nm
Battery cable clamp to battery terminal	8

1.5 Removing and installing battery

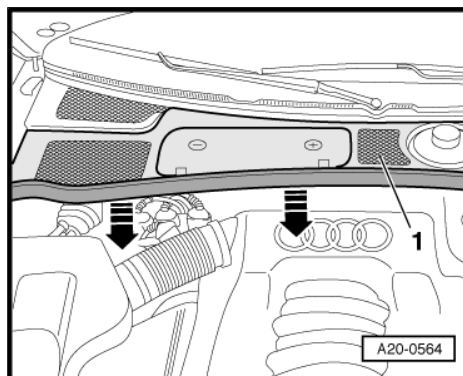
Removing



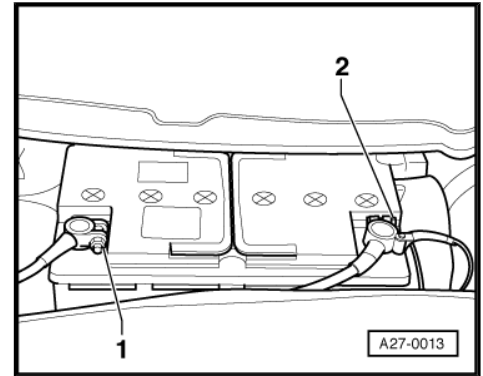
Caution

On vehicles fitted with telematics system, activate service mode of telematics control unit before disconnecting battery ⇒ Communication; Rep. Gr. 01 or ⇒ Rep. Gr. 91 .

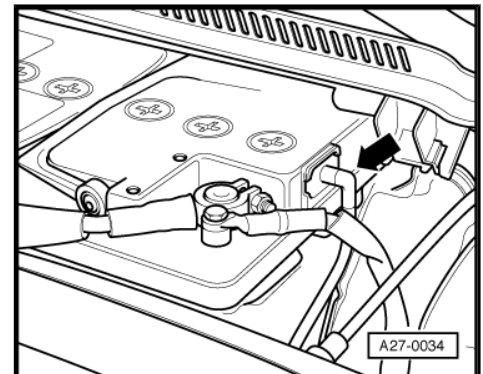
- Switch off ignition and take out ignition key.
- If fitted, detach rubber seal of plenum chamber cover in direction of -arrow-.
- Remove plenum chamber cover -1- to front.



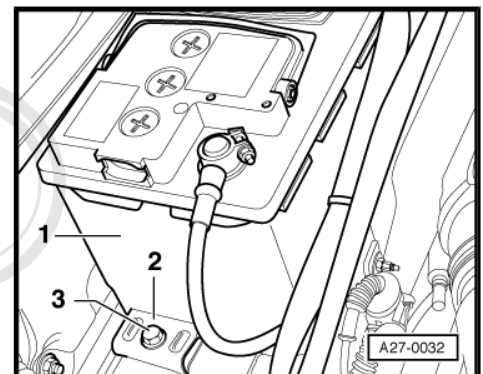
- If fitted, fold up cover over positive terminal.
- Disconnect earth cable -1- and positive cable -2- at battery.



- Disconnect hose -arrow- for central gas venting system.



- Unscrew bolt -3- on battery retainer plate -2-.
- Lift battery -1- out of plenum chamber.



WARNING

When disposing batteries it is absolutely necessary that the disposal procedures for batteries and sulphuric acid are observed.

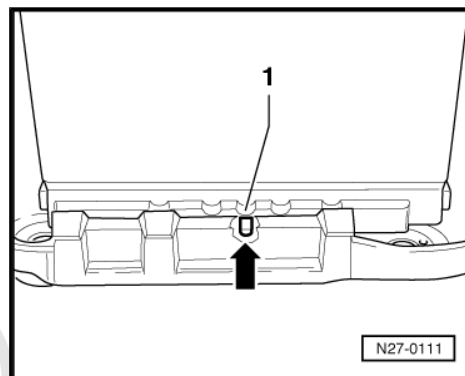
Installing



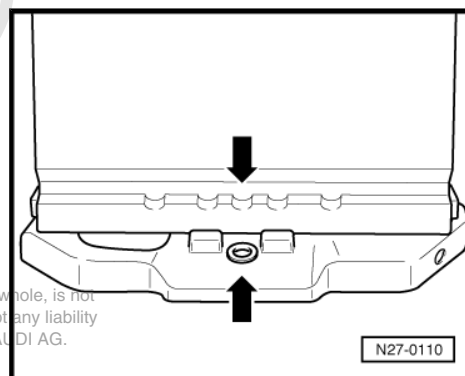
Note

- ◆ *Only install maintenance-free batteries with the specifications "TL82506" (from December 1997 onwards) and "VW75073" (from August 2001 onwards).*
- ◆ *Batteries from the Audi parts range feature a base strip adapter for matching to different retainer flanges. The battery operating instructions give details of when and how to use the base strip adapter.*

- Insert battery into battery tray.
- The lug on the rear side of the battery tray must engage in the recess -arrow- in the battery base strip -1-.
- It should no longer be possible to move the battery.



- The battery has been properly inserted if the centre recess in the battery base strip aligns with the tapped hole in the battery tray -arrows-.



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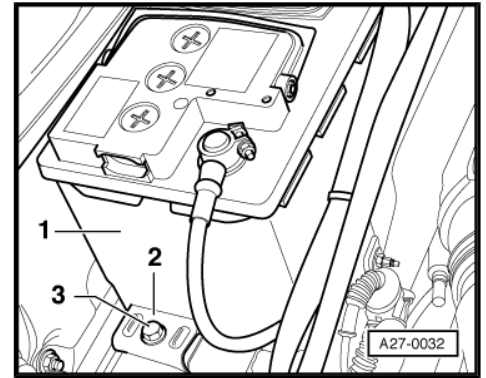
- Secure battery retaining strap -2- with hexagon bolt -3-.

 Note

Lug on battery retainer plate must engage in recess on battery base strip.

Connect up battery in the following sequence with ignition and electrical equipment switched off:

- First connect battery clamp of positive cable by hand to battery positive terminal “+” and tighten nut.
- Attach battery clamp of earth cable to negative battery terminal “-” by hand and tighten nut.
- Connect hose for central gas venting system; see notes [⇒ page 8](#).
- Check that battery is firmly secured following installation [⇒ page 7](#).



 Note

- ◆ *Make sure to activate vehicle equipment (radio, radio navigation system, clock, electric windows) according to operating instructions.*
- ◆ *Deactivate service mode of telematics control unit → Communication; Rep. Gr. 01 or → Rep. Gr. 91.*
- ◆ *For further operations after reconnecting power supply, refer to → Rep. Gr. 24.*
- ◆ *Check proper function of remote control keys; synchronise keys if necessary. Inform customer that all additional keys must also be synchronised to ensure that the remote control works properly → Owner's Manual.*
- ◆ *After reconnecting the voltage supply, it is possible that the ABS/ESP warning lamp will not go out until the vehicle has been driven several metres.*

Tightening torques

Component	Nm
Bolt to retainer plate	22
Battery cable clamp to battery terminal	8

1.6 Checking that battery is firmly secured

- Shake battery to check that it is properly secured.

There is a danger of the following if the battery is not properly secured:

- ◆ Shortened service life due to vibration damage.
- ◆ The plates in the battery will be damaged if the battery is not secured correctly.
- ◆ Damage to battery housing caused by retainer plate (possibility of acid leaking, resulting in substantial repair costs).
- ◆ Poor crash safety.

1.7 Batteries with central gas venting



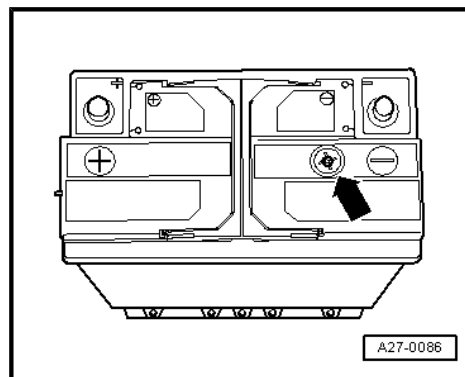
Note

- ◆ Make sure venting system hose is always attached to battery.
- ◆ On batteries with central gas venting hose/pipe, make sure that hose does not become disconnected. Only then is the battery able to vent freely.
- ◆ The latest generation of batteries is equipped with a central gas venting system and a fine-mesh "flame trap". Function: The gases produced during charging escape through a central opening in the top of the battery cover. The fine-mesh flame trap which prevents ignition of the flammable gas in the battery is also located here. The flame trap comprises a small round fibreglass mat approx. 15 mm in diameter and 2 mm thick. It operates in a manner similar to a valve, i.e. it allows the gas produced in the battery by gassing to escape.

1.8 Battery with "magic eye"

The "magic eye" -arrow- provides information on the electrolyte level and charge of the battery to be tested. Three different coloured displays are possible:

Colour indicator	Battery charge state
Green	• Battery adequately charged.
Black	• Not charged or inadequately charged.
Colourless or yellow	• Critical electrolyte level reached; topping up with distilled water essential.



Note

If a battery is more than 5 years old and the indicator of the magic eye is colourless, the battery should be replaced with a new one.

Procedure



Note

- ◆ When recharging the battery, and during driving, air bubbles may form under the "magic eye". They distort the colour displayed by the "magic eye".
- ◆ If batteries are fitted with sealing plugs for production reasons, these are covered with plastic foil.

- Prior to visual inspection, use screwdriver handle to tap gently and carefully on "magic eye" to disperse the bubbles.
- Observe colour of "magic eye" indicator ➔ [page 8](#).

1.9 Visual inspection of battery

Visually inspect battery before performing measurements, e.g. no-load voltage, relative density of electrolyte or battery load test.

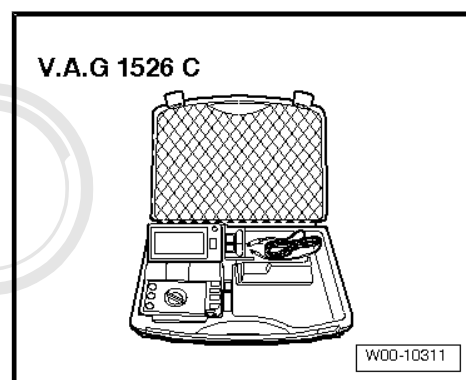
- Check the following:

- ◆ Battery housing damaged? Electrolyte can leak out if the housing is damaged.
- ◆ Battery posts (battery cable terminals) damaged? Proper contact of connections is not ensured if battery posts are damaged. This may then result in cable burn-out and electrical system malfunctions.
- ◆ Battery's original sealing plugs fitted? The sealing plugs must be fitted with an O-ring. Only use sealing plugs of same type (same as original equipment) if originals are lost or damaged.

1.10 No-load voltage measurement

Special tools and workshop equipment required

- ◆ Hand-held multimeter -V.A.G 1526C-



Procedure

- Always heed the following, otherwise correct measurement is not guaranteed.
- Always disconnect earth strap if no-load voltage is measured with battery in vehicle.
- The battery must not be placed under load by connected consumers for at least 2 hours prior to measuring.
- The battery must not be charged for at least 12 hours before making the measurements.
- Battery temperature must be at least -10°C .



Caution

On vehicles fitted with telematics system, activate service mode of telematics control unit before disconnecting battery → Communication; Rep. Gr. 01 or → Rep. Gr. 91.

- Switch off ignition and take out ignition key.
- With ignition switched off, disconnect earth cable at battery
⇒ [page 3](#).

After a waiting time of at least 2 hours:

- Measure voltage between terminals.
- Battery is OK if tester reading is 12.5 V or above.
- Battery no-load voltage must never drop below 12.5 V; if it does, battery must be immediately recharged ⇒ [page 15](#).
- When battery has been fully charged, measure voltage under load ⇒ [page 14](#).

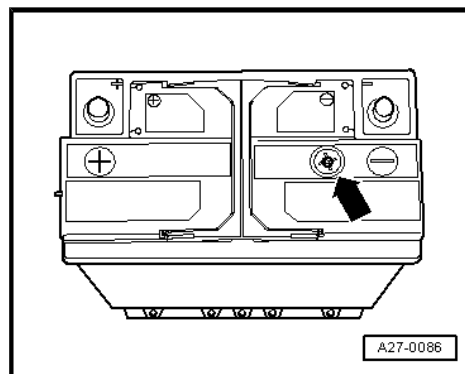
Installation is carried out in the reverse order; note the following:

- Connect battery. Additional steps required ➔ [page 4](#) .

1.11 Checking electrolyte level - batteries with “magic eye”

- On batteries with a “magic eye” -arrow-, the electrolyte level can be established from the colour indicator. Three different coloured displays are possible:

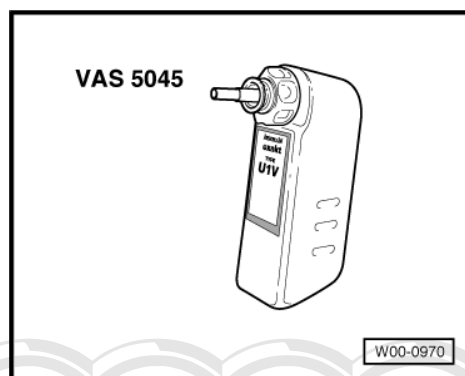
Colour indicator	Battery charge state
Green	• Battery adequately charged.
Black	• Not charged or inadequately charged.
Colourless or yellow	• Critical electrolyte level reached; topping up with distilled water essential, procedure ➔ page 10 .



1.12 Checking electrolyte level - batteries with sealing plugs

Special tools and workshop equipment required

- ◆ Battery filler bottle -VAS 5045-



Procedure



WARNING

- ◆ *Always observe safety instructions when handling battery electrolyte ➔ [page 2](#) .*
- ◆ *Always wear suitable protective clothing ➔ [page 3](#) .*
- ◆ *Only use electric hand torch to illuminate inside of battery casing.*
- ◆ *Never use an open flame to illuminate the inside of the battery housing.*
- ◆ *Never hold naked flame or burning cigarette close to batteries.*

The correct electrolyte level is an important factor in ensuring long battery service life.

- On batteries with visible min and max marks it is sufficient to perform visual inspection from outside to check electrolyte level.
- The electrolyte level must be above the minimum marking but must not exceed the max marking.

- On batteries on which the min and max marks are difficult to see, or on which the electrolyte level cannot be seen because of the opacity of the battery housing, unscrew the sealing plugs.
- Check the electrolyte level by making a visual inspection of the inside of the battery.
- The electrolyte level must coincide with the internal level mark (plastic moulding). This corresponds to the max. marking on the outside.

Electrolyte level too low

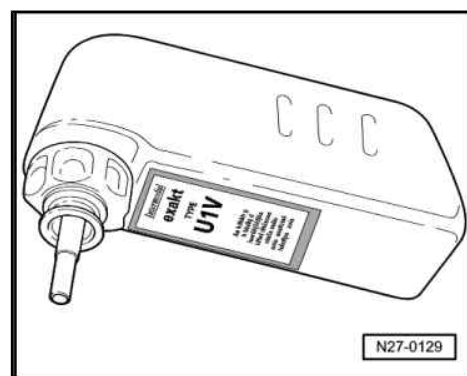
If the electrolyte level is too low, drying-out of the cell plates will reduce the capacity (power) of the battery. The cell plates must be fully covered by electrolyte (sulphuric acid/water mixture) in order to prevent corrosion of plates, plate bridges and cell connectors. Such corrosion would impair battery operation and make the battery unusable.

- If electrolyte level is too low, use battery filler bottle -VAS 5045- to add distilled water until max. mark is reached.



Note

- ◆ *Filler neck of battery filler bottle -VAS 5045- is designed to prevent over-filling of battery cell and electrolyte spills. When the maximum filling level is reached, the flow of distilled water into the battery cell is cut off.*
- ◆ *Use distilled water only, this prevents contamination of the battery electrolyte and the associated increase in self discharge.*
- Screw sealing plugs of battery cells back in again.



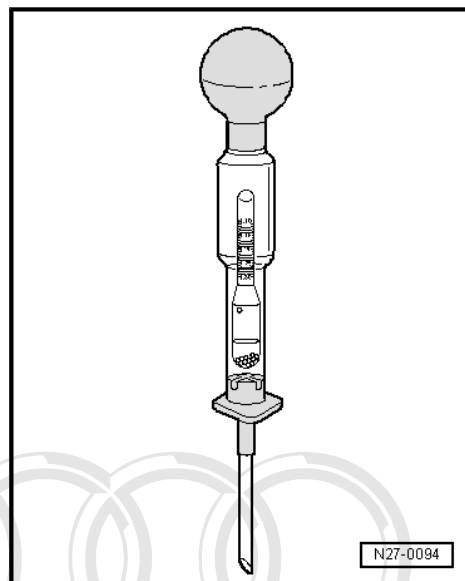
Caution

- ◆ *Battery openings must be fitted with the correct plugs to ensure that battery cover (different types!) is properly secured. Always use correct sealing plugs (same as original equipment) in the event of loss or damage.*
- ◆ *The plugs must be equipped with an O-ring seal.*

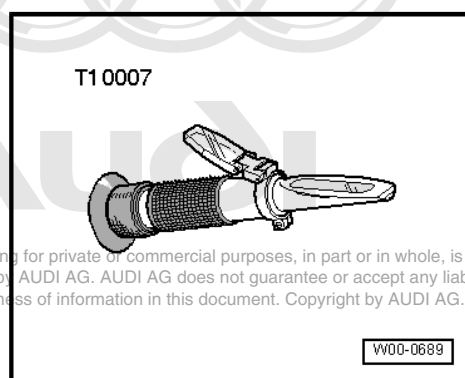
1.13 Checking relative density of electrolyte for all cells - batteries with sealing plugs

Special tools and workshop equipment required

- ◆ Hydrometer (commercially available) or



- ◆ Refractometer -T10007-



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Procedure



WARNING

- ◆ *Always observe safety instructions when handling battery electrolyte ⇒ [page 2](#) .*
- ◆ *Always wear suitable protective clothing ⇒ [page 3](#) .*
- ◆ *When disposing batteries it is absolutely necessary that the disposal procedures for batteries and sulphuric acid are observed.*



Note

- ◆ *The electrolyte density test in conjunction with the battery load test provides specific information on the battery condition.*
 - ◆ *The temperature of the battery electrolyte must be at least 10 ° C.*
 - ◆ *The electrolyte density can be checked immediately after charging battery.*
- Remove all battery plugs (battery cell sealing plugs).

- Immerse end of hydrometer in a cell and extract sufficient electrolyte so that float swims free in the electrolyte.
- ◆ The greater the relative density of the electrolyte drawn in, the higher the float will ride.
- ◆ The relative density in kg/dm^3 (specific gravity of electrolyte) can be read off the scale -arrow- on the hydrometer.
- Take reading on hydrometer and compare it to values given in table:

Charge condition in normal climatic zones	Relative density of electrolyte in kg/dm^3
discharged	1.12
half charged	1.20
well charged	1.28

Charge level in tropical countries	Relative density of electrolyte in kg/dm^3
discharged	1.08
half charged	1.16
well charged	1.23

The relative density in normal climatic zones must be at least 1.24 kg/dm^3 . If relative density is too low in all battery cells:

- Charge battery and then repeat electrolyte relative density test.

Example 1:

Battery cell:	1	2	3	4	5	6
Relative density of electrolyte per cell in kg/dm^3	1.24	1.25	1.25	1.10 ¹⁾	1.24	1.25
• ¹⁾ Relative density in cell 4 is too low (difference greater than 0.03 kg/dm^3)						

Example 2:

Battery cell:	1	2	3	4	5	6
Relative density of electrolyte per cell in kg/dm^3	1.26	1.26	1.25	1.14 ¹⁾	1.18 ¹⁾	1.24
• ¹⁾ Relative density in cells 4 and 5 is too low (difference greater than 0.03 kg/dm^3).						

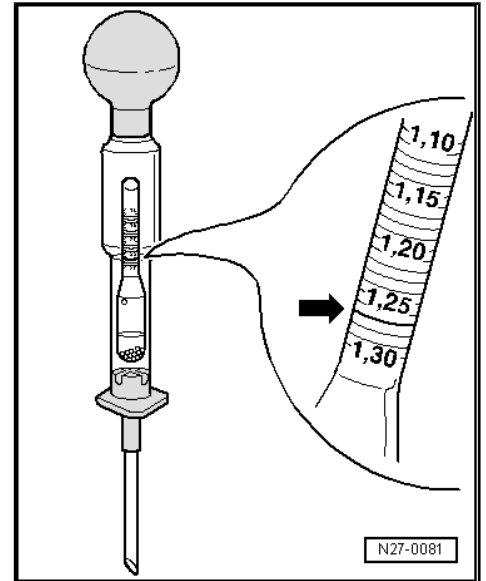
If the specifications are not obtained:

- Renew the battery ➔ [page 4](#).



Note

The measured values for the electrolyte relative density of the individual battery cells must NOT deviate by more than 0.03 kg/dm^3 , otherwise battery has to be renewed.



- Screw sealing plugs of battery cells back in again.

**Caution**

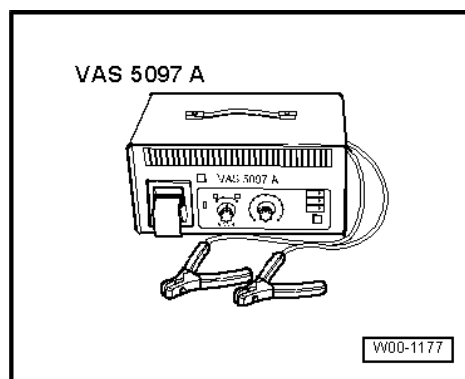
- ◆ *Battery openings must be fitted with the correct plugs to ensure that battery cover (different types!) is properly secured. Always use correct sealing plugs (same as original equipment) in the event of loss or damage.*
- ◆ *The plugs must be equipped with an O-ring seal.*

1.14 Measuring voltage under load

- ◆ The load test simulates starting at low temperatures. During the test a high current flows, which means that the voltage may only drop to a minimum value specified by the battery tester depending on battery capacity.
- ◆ If the battery is defective or only weakly charged, the battery voltage will drop very quickly to below the specified minimum voltage level.
- ◆ The battery must be renewed if the minimum voltage level is not met.
- ◆ After completing the test these low voltage values remain over an extremely long period; the voltage increases very slowly again.

Special tools and workshop equipment required

- ◆ Battery tester with printer -VAS 5097A-



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**Note**

Refer to ⇒ *operating instructions for -VAS 5097A- battery tester.*

Procedure

- Battery temperature must be at least +10 °C.

**WARNING**

- ◆ *When handling electrolyte, always heed safety instructions ⇒ [page 2](#) .*
- ◆ *Always wear suitable protective clothing ⇒ [page 3](#) .*
- ◆ *Battery sealing plugs must always be firmly screwed in when performing load measurement.*

- With ignition switched off, disconnect earth cable at battery ⇒ [page 3](#) .

- Connect clamps of -VAS 5097A- to battery posts ⇒ operating instructions for -VAS 5097A- .
- The clamps must make good contact with the battery posts.
- Set load current on -VAS 5097A- ⇒ operating instructions for -VAS 5097A- .



Note

Load current is set depending on the battery low temperature test current (indicated on battery housing).

- Perform battery load test ⇒ operating instructions for -VAS 5097A- .
- ◆ Test result is printed out after approx. 20 seconds.
- ◆ Assessment of test result ⇒ Maintenance ; Booklet 802 .

If battery is OK:

- Charge battery if necessary ⇒ [page 15](#) .

If battery is not OK:

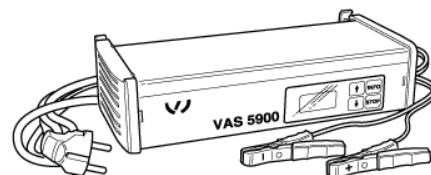
- Renew the battery ⇒ [page 4](#) .

1.15 Charging battery

Special tools and workshop equipment required

- ◆ Battery charger -VAS 5900- or

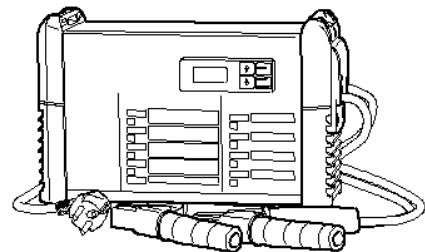
VAS 5900



W00-10182

- ◆ Battery charger -VAS 5903-

VAS 5903



W00-10436

**Note**

- ◆ *Battery chargers -VAS 5900- and -VAS 5903- charge without current and voltage peaks. Batteries can therefore also be charged when installed. Safety precautions must be heeded when doing so. Both chargers have a back-up function enabling them to supply power to circuits.*
- ◆ *To prevent damage to the battery, it must be connected to a charging unit with back-up mode to work on the electrical system when system components are periodically switched on.*

Procedure**WARNING**

- ◆ *Ensure good ventilation.*
- ◆ *Smoking or the use of naked lights are not allowed in rooms in which batteries are being charged. The reason for this is that inflammable gasses are formed during the battery charging process.*
- ◆ *Heed safety regulations of the charger and battery manufacturers.*
- ◆ *Rapid-charging of battery ⇒ **page 19**.*

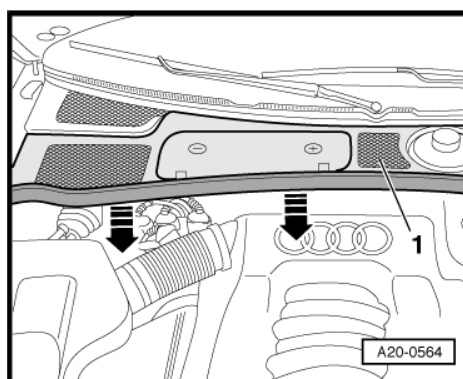
- Switch off battery charger.

**Caution**

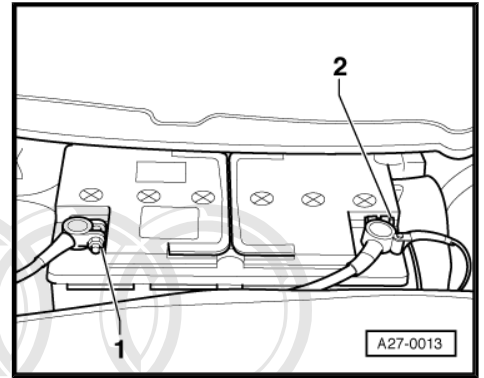
On vehicles fitted with telematics system, activate service mode of telematics control unit before disconnecting battery ⇒ Communication; Rep. Gr. 01 or ⇒ Rep. Gr. 91.

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- Switch off ignition.
- If fitted, detach rubber seal of plenum chamber cover in direction of -arrow-.
- Remove plenum chamber cover -1- to front.



- If fitted, fold up cover over positive terminal.
- Disconnect earth cable -1- and positive cable -2- at battery.



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- Connect clamp -5- of positive cable of battery charger -1- to battery positive terminal post -4- and clamp -2- of earth cable of battery charger to battery earth terminal post -3-.



Note

Illustration shows battery removed.

- Adjust the charging current on the charger according to the battery capacity.
- The charging current should be around 10 % of the battery capacity (so for a 60 Ah battery around 6 A).
- Switch on the battery charger.

Reassembly is carried out in the reverse order; note the following:

- Connect battery. Additional steps required ⇒ [page 4](#) .

Exhausted batteries

- ◆ Batteries which have not been used for lengthy periods, e.g. in vehicles which have not been driven, are subject to self-discharge.
- ◆ A battery is considered to be exhausted if the no-load voltage has dropped below 11.6 V. Initial battery damage can occur between 12.2 and 11.6 V. Measuring no-load voltage ⇒ [page 9](#) .
- ◆ In an exhausted battery the electrolyte (sulphuric acid/water mixture) is reduced to almost all water, as the sulphuric acid content is heavily reduced. At temperatures below zero, the battery may freeze and the cause the housing to burst.
- ◆ Exhausted batteries become sulphated, i.e. the entire battery plate surfaces harden. The electrolyte has a slightly milky appearance (instead of being clear).
- ◆ If exhausted batteries are charged directly after being discharged, the sulphation dissipates.
- ◆ If this is not done, the plates become even harder and the battery's ability to absorb charge is impaired. This results in reduced power output.

Procedure for charging exhausted batteries (sulphated)

Exhausted batteries (that are also sulphated) must be charged as follows using a low charging current:

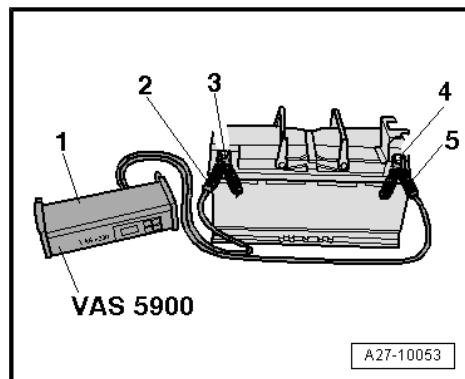
- Approx. 5 % of battery capacity, i.e. for a 60 Ah battery the charging current is approx. 3 A.

Charging battery ⇒ [page 15](#) . The charging voltage (U_{max}) must not exceed 14.4 V.



Note

Do NOT attempt to rapid-charge exhausted batteries.



1.16 Rapid-charging battery



Caution

- ◆ *Battery must not be connected to vehicle electrical system when performing rapid-charging. Disconnect earth and positive cables ➔ [page 4](#).*
- ◆ *Do NOT attempt to rapid-charge exhausted batteries.*



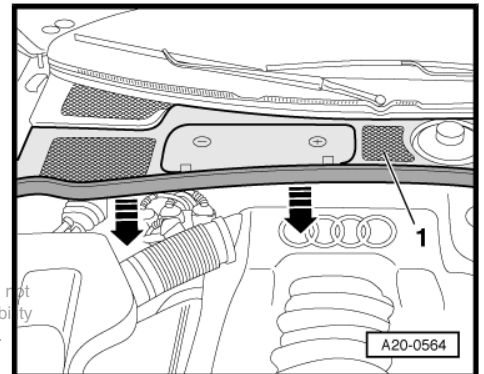
Caution

On vehicles fitted with telematics system, activate service mode of telematics control unit before disconnecting battery ➔ Communication; Rep. Gr. 01 or ➔ Rep. Gr. 91.

Preparations

- Switch off ignition and take out ignition key.
- If fitted, detach rubber seal of plenum chamber cover in direction of -arrow-.
- Remove plenum chamber cover -1- to front.

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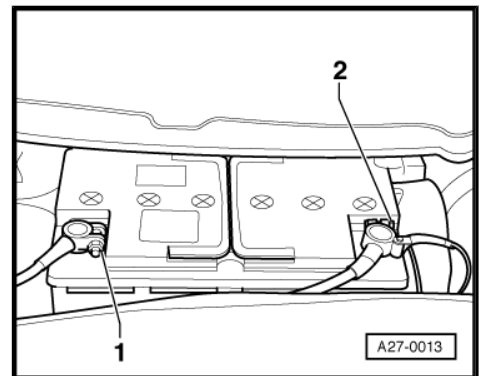


- If fitted, fold up cover over positive terminal.
- Disconnect earth cable -1- and positive cable -2- at battery.



WARNING

- ◆ *The battery plugs must be screwed in tightly when charging, measuring voltage or performing load tests.*
- ◆ *Ensure good ventilation.*
- ◆ *Smoking or the use of naked lights are not allowed in rooms in which batteries are being charged. The reason for this is that inflammable gasses are formed during the battery charging process.*
- ◆ *Heed safety regulations of the charger and battery manufacturers.*



Note

- ◆ *The battery temperature must be at least +10 °C.*
- ◆ *Rapid-charging of batteries should only be performed in exceptional circumstances (e.g. boost starting) as rapid-charging may cause damage.*

2 Removing and installing alternator

2.1 Vehicles with 4-cyl. petrol engine

Removing

- With ignition switched off, disconnect earth cable at battery
⇒ [page 3](#).

Vehicles with 1.6 ltr. 2V bucket tappet engine (AHL, ANA, ARM):

- Press guide funnel for dipstick upwards off guide tube.

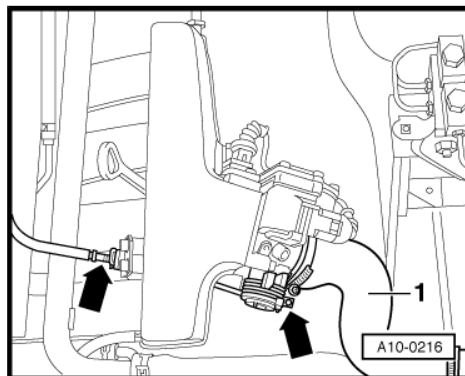
Vehicles with 1.8 ltr. 5V turbo engine:

- Detach air intake hose -1- from charge air cooler at throttle valve housing.



Note

Disregard -arrows-.



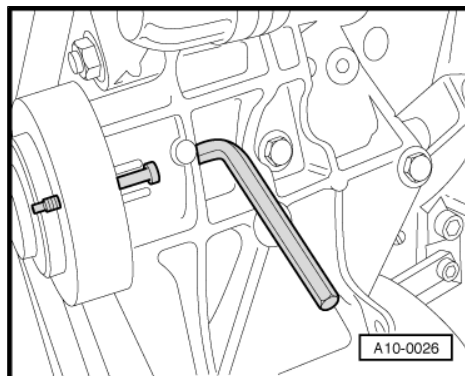
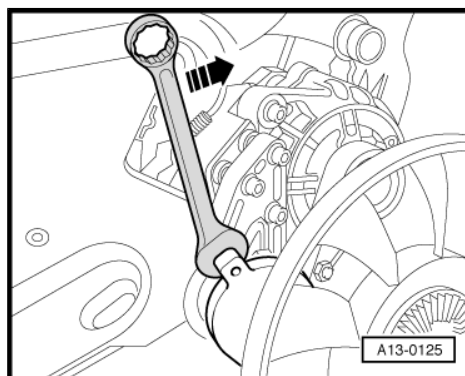
All models:



Note

Before removing, mark running direction of poly V-belt with chalk or felt-tipped pen. If the poly V-belt runs in the opposite direction when it is refitted, this can cause breakage.

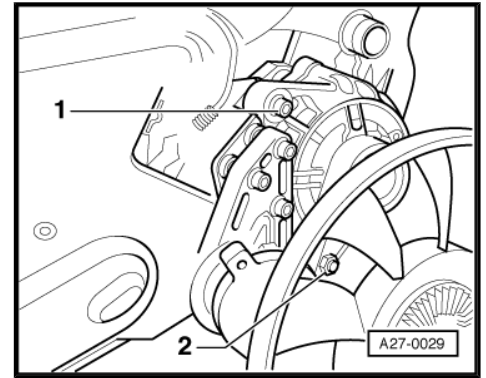
- To slacken poly V-belt, pivot tensioner in direction indicated -arrow-.
- Remove poly V-belt from alternator pulley.
- Release pressure from tensioner.
- Secure pulley for viscous fan with bolt M5x60 mm.
- Unscrew viscous fan using Allen key.



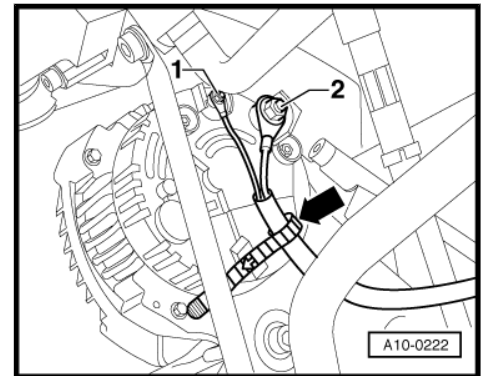
- Remove hexagon socket head bolt -1-.
- Unscrew nut -2-.
- Pivot alternator slightly to one side and pull out bolt at bottom.

 Note

- ◆ *If alternator sticks in bracket, screw bolt back in again down to the last 2 turns.*
- ◆ *Tap carefully on bolt heads with flat side of hammer to release threaded bushes of alternator mount.*



- Disengage wiring harness from cable tie -arrow-.
- Disconnect wire -2- for terminal 30/B+ at alternator.
- Unscrew D+ terminal -item 1-.



- If fitted, remove cover -arrow- from power steering reservoir.
- Carefully push coolant hose to one side and lift out alternator.

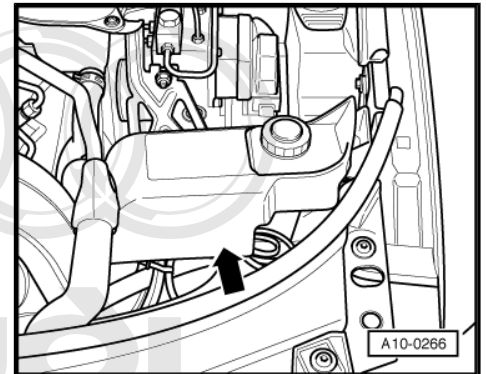
Installing

Installation is carried out in the reverse order; note the following:

- To facilitate positioning of alternator, drive back bushes for securing bolts slightly.

 Note

Stiff alternator mount bushes must be freed; otherwise the clamping force of the bush will not be adequate even when the bolts are tightened to the correct torque.

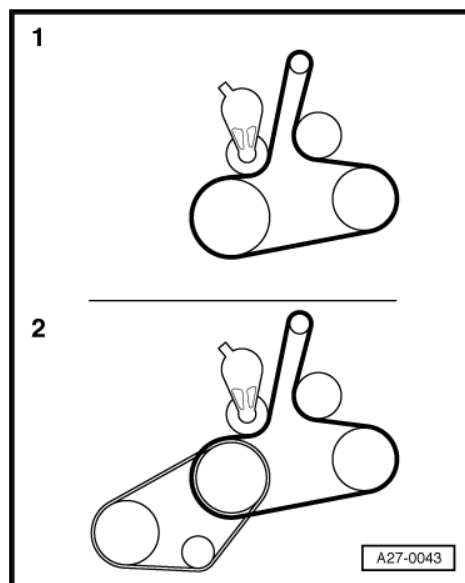


- Make sure poly V-belt is properly positioned and correctly routed.

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Vehicles with 1.6 ltr. 2V engine (AHL, ANA, ARM, ALZ):

- 1 - without air conditioning system
- 2 - with air conditioning system



Vehicles with 1.6 ltr. 2V engine (ADP) or 1.8 ltr. 5V engine:

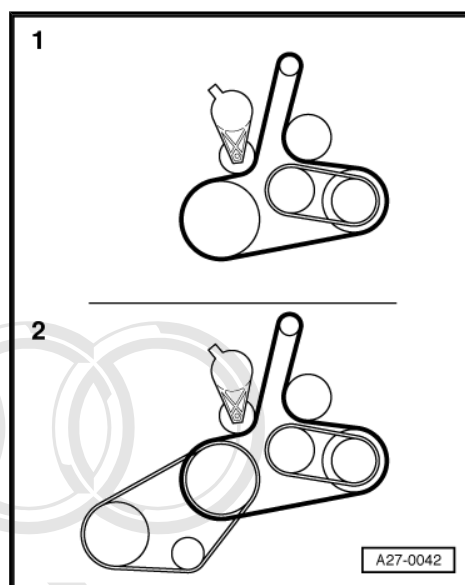
- 1 - without air conditioning system
- 2 - with air conditioning system

All models:

- Connect battery. Additional steps required [⇒ page 4](#).
- Start engine and check that belt runs properly.

Tightening torques

Component		Nm
Alternator to engine	M8	25
	M10	45
30/B+ terminal to alternator		16
D+ terminal to alternator		4

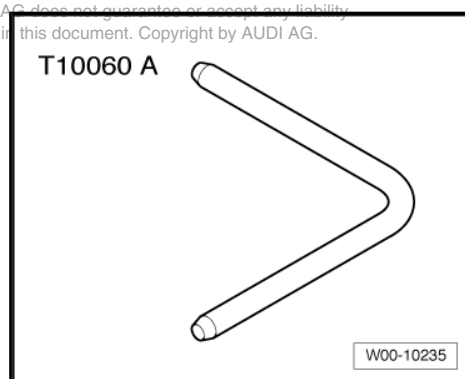


2.2 Vehicles with 6-cyl. naturally aspirated engine

Special tools and workshop equipment required

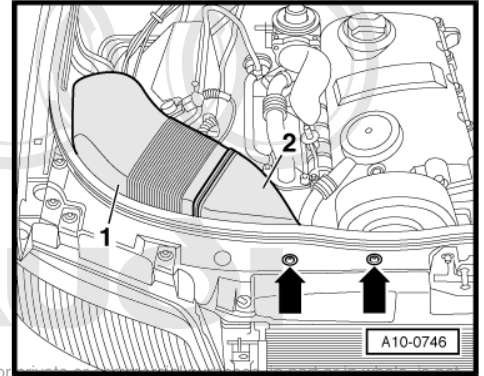
- ◆ Locking pin -T10060 A-

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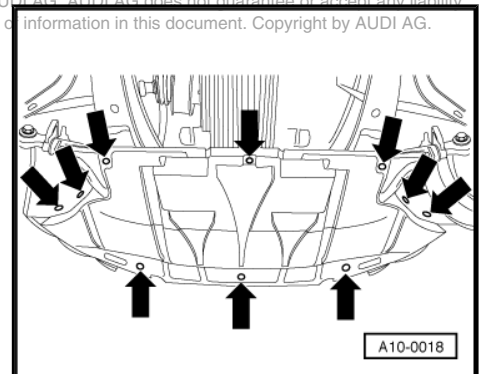


Removing

- With ignition switched off, disconnect earth cable at battery
⇒ [page 3](#).
- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



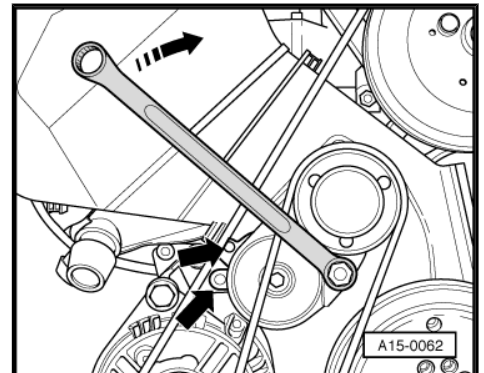
- Remove noise insulation -arrows-.
- Remove front bumper ⇒ Rep. Gr. 63.
- Move lock carrier to service position ⇒ Rep. Gr. 50.
- Remove engine cover panel and cover for poly V-belt.



Note

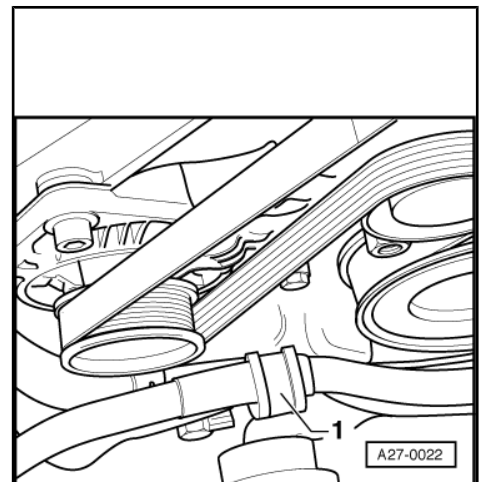
Before removing, mark running direction of poly V-belt with chalk or felt-tipped pen. If the poly V-belt runs in the opposite direction when it is refitted, this can cause breakage.

- In order to slacken the poly V-belt, swivel the tensioner in direction of -arrow- using a 17 mm ring spanner.
- Lock tensioner by inserting locking pin -T10060 A- in locating holes -arrows-.
- Remove poly V-belt from alternator pulley.

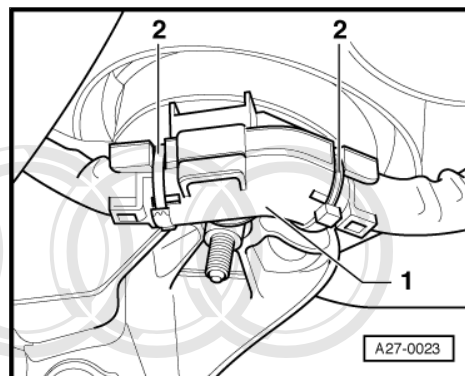


Vehicles with air conditioner:

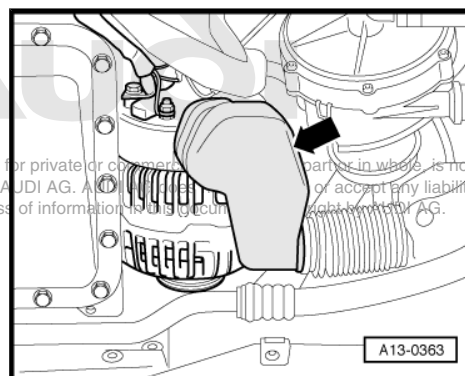
- Unbolt retaining clip -1- for refrigerant lines above torque reaction support.



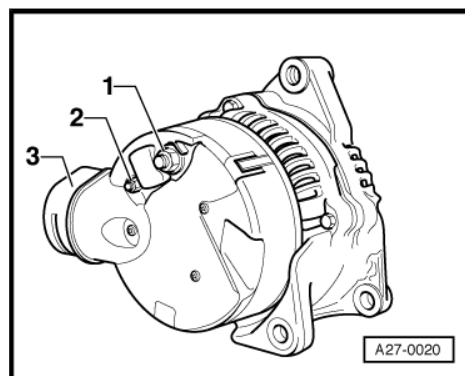
- Cut through cable ties -2-, open bracket -1- for starter and alternator wiring and take out wiring.



- Detach air duct -arrow- for alternator.



- Unscrew 30/B+ terminal wiring -item 1- from alternator.
- Unscrew D+ terminal -item 2-.



- Remove securing nut -2-.
- Unscrew bolts -1- and -3-.

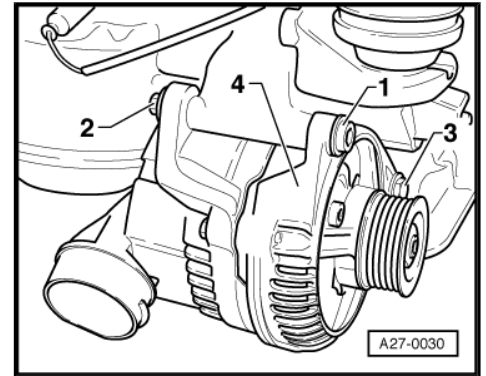
 Note

- ◆ *If alternator sticks in bracket, screw bolt back in again down to the last 2 turns.*
- ◆ *Tap carefully on bolt heads with flat side of hammer to release threaded bushes of alternator mount.*



Caution

When removing alternator, the refrigerant lines must be pushed aside very carefully.



- Take out alternator -4- from below.

Installing

Installation is carried out in the reverse order; note the following:

- To facilitate positioning of alternator, drive back bushes for securing bolts slightly.

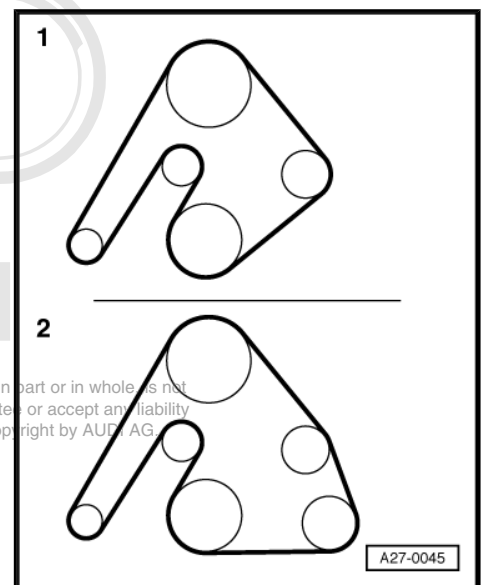
 Note

Stiff alternator mount bushes must be freed; otherwise the clamping force of the bush will not be adequate even when the bolts are tightened to the correct torque.

- Make sure poly V-belt is properly positioned and correctly routed.
- 1 - without air conditioning system
- 2 - with air conditioning system
- Install lock carrier with attachments ⇒ Rep. Gr. 50 .
- Install front bumper ⇒ Rep. Gr. 63 .
- Connect battery. Additional steps required ⇒ [page 4](#) .
- Start engine and check that belt runs properly.

Tightening torques

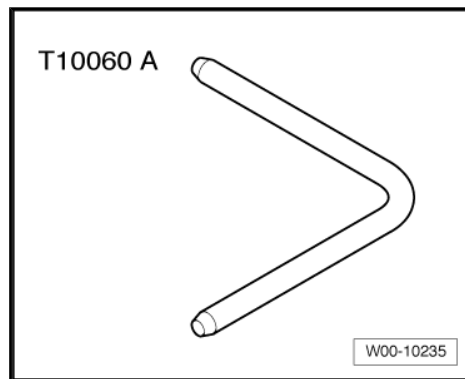
Component		Nm
Alternator to engine	M8	22
	M10	45
30/B+ terminal to alternator		16
D+ terminal to alternator		4
Hose clamps for air intake hoses		3.5



2.3 Vehicles with 6-cyl. bi-turbo engine

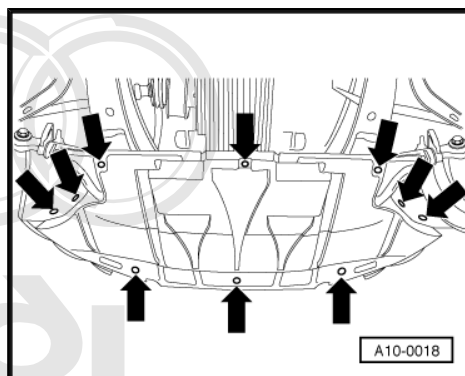
Special tools and workshop equipment required

◆ Locking pin -T10060 A-



Removing

- With ignition switched off, disconnect earth cable at battery ⇒ [page 3](#) .
- Remove noise insulation -arrows-.
- Remove front bumper ⇒ Rep. Gr. 63 .
- Move lock carrier to service position ⇒ Rep. Gr. 50 .

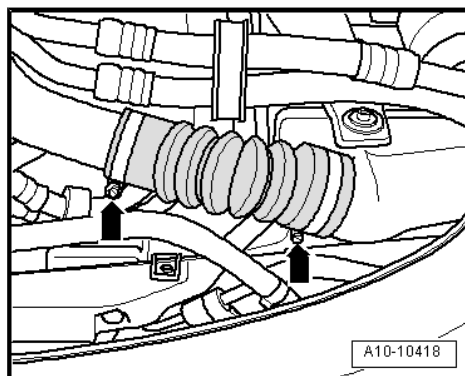
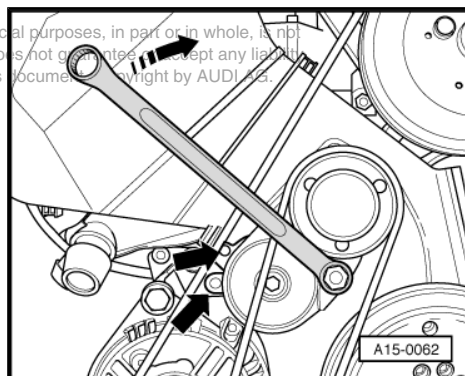


Note

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Before removing, mark running direction of poly V-belt with chalk or felt-tipped pen. If the belt runs in the opposite direction when it is refitted, this can cause breakage.

- In order to slacken the poly V-belt, swivel the tensioner in direction of -arrow- using a 17 mm ring spanner.
- Lock tensioner by inserting locking pin -T10060 A- in locating holes -arrows-.
- Remove poly V-belt from alternator pulley.
- Remove air intake hose going to charge air cooler (right-side) -arrows-.



i Note

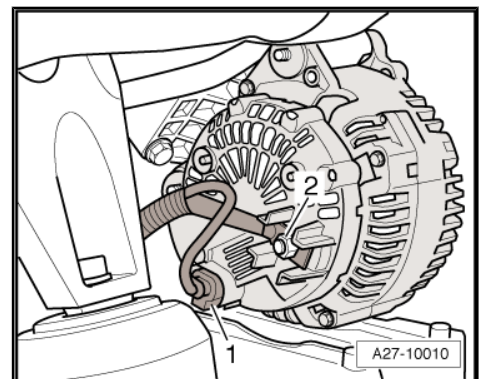
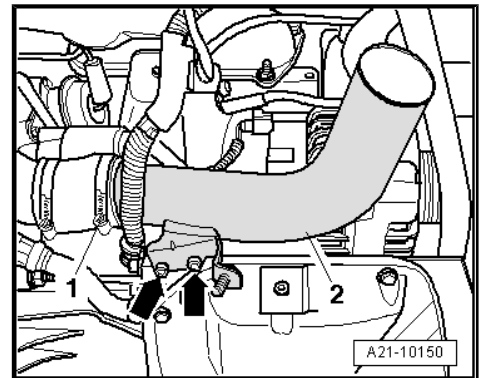
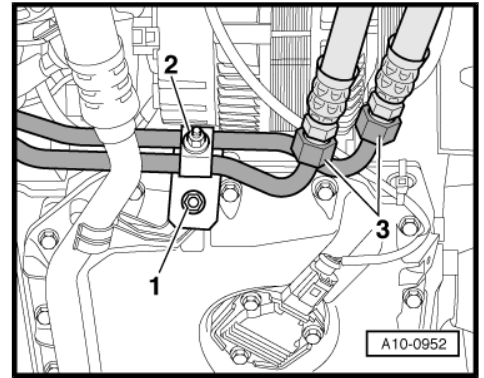
To avoid damage to the refrigerant pipes/hoses, take care not to strain, kink or bend pipes and hoses.

- Unscrew nut -1- and remove bracket for refrigerant line.
- Unscrew nut -2- and remove bracket for gear oil lines.

i Note

Disregard -item 3-.

- Unscrew bolts -arrows-.
- Loosen clip -1- and remove air pipe (right-side) -2- from turbocharger.



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- **Detach wires 1 and 2 at alternator.**
 - Move wiring harness clear.

- Unscrew bolts -arrows-.

**Note**

- ◆ *If alternator sticks in bracket, screw bolt back in again down to the last 2 turns.*
- ◆ *Tap carefully on bolt heads with flat side of hammer to release threaded bushes of alternator mount.*

- Remove alternator.

Installing

Installation is carried out in the reverse order; note the following:

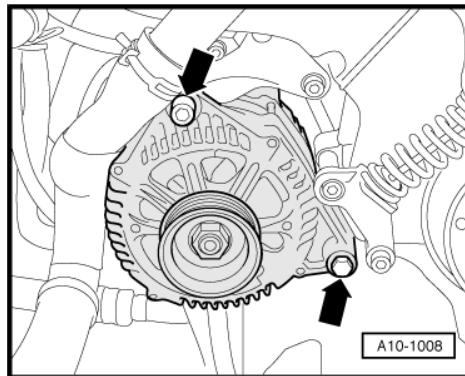
**Note**

Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Parts catalogue.

- To facilitate positioning of alternator, drive back bushes for securing bolts slightly.

**Note**

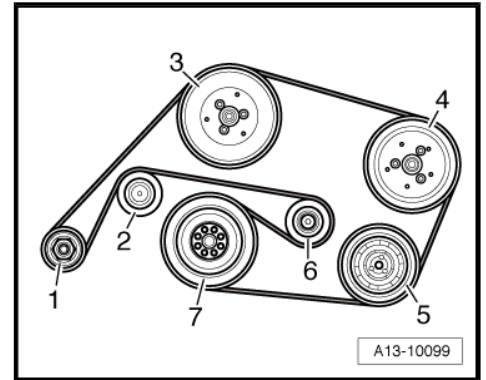
Stiff alternator mount bushes must be freed; otherwise the clamping force of the bush will not be adequate even when the bolts are tightened to the correct torque.



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– Position poly V-belt over pulleys in the following sequence:

- 1 - Alternator
- 2 - Idler roller
- 3 - Coolant pump
- 4 - Power steering pump
- 5 - Air conditioner compressor
- 6 - Tensioner for poly V-belt
- 7 - Crankshaft



 Note

When installing poly V-belt, make sure it is properly seated on pulleys.

- Install lock carrier with attachments ⇒ Rep. Gr. 50 .
- Install front bumpers ⇒ Rep. Gr. 63 .
- Connect battery. Additional steps required ⇒ [page 4](#) .
- Start engine and check that belt runs properly.

Tightening torques

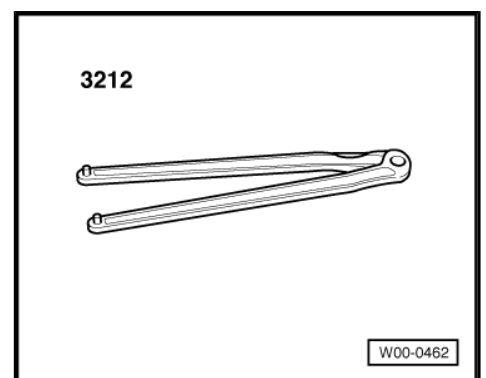
Component	Nm
Alternator to engine	23
30/B+ terminal to alternator	16
Air intake pipe to sump (top section)	10
Bracket for refrigerant line to sump (top section)	9
Clamp to bracket for refrigerant line	9

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2.4 Vehicles with 4-cyl. TDI engine

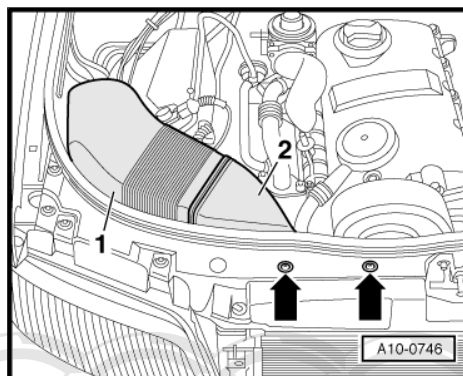
Special tools and workshop equipment required

- ◆ 2-hole pin wrench -3212-



Removing

- With ignition switched off, disconnect earth cable at battery
⇒ [page 3](#) .
- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.

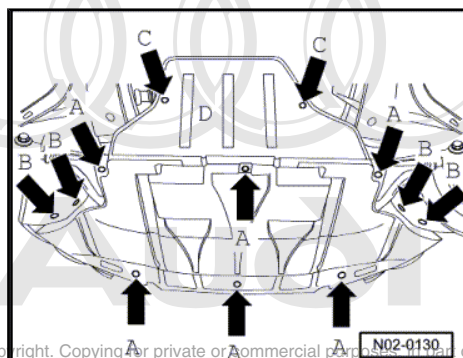


- Loosen fasteners -arrows A- and -arrows B- and remove front noise insulation.
- Remove front bumper ⇒ Rep. Gr. 63 .
- Move lock carrier to service position ⇒ Rep. Gr. 50 .



Note

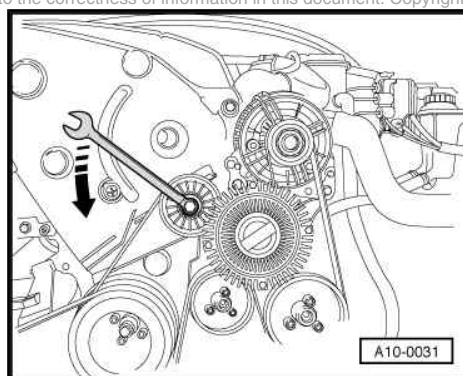
Before removing, mark running direction of poly V-belt with chalk or felt-tipped pen. If the poly V-belt runs in the opposite direction when it is refitted, this can cause breakage.



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Vehicles with distributor-type injection pump (TDI engine):

- To slacken poly V-belt, pivot tensioner in direction indicated -arrow-.

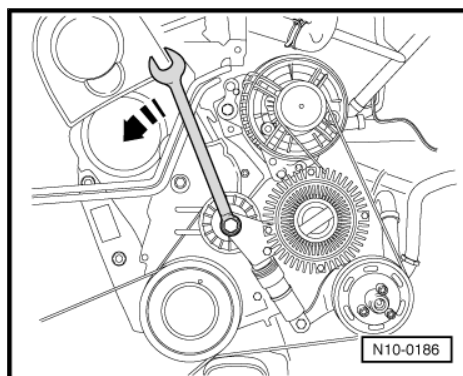


Vehicles with unit injector TDI engine:

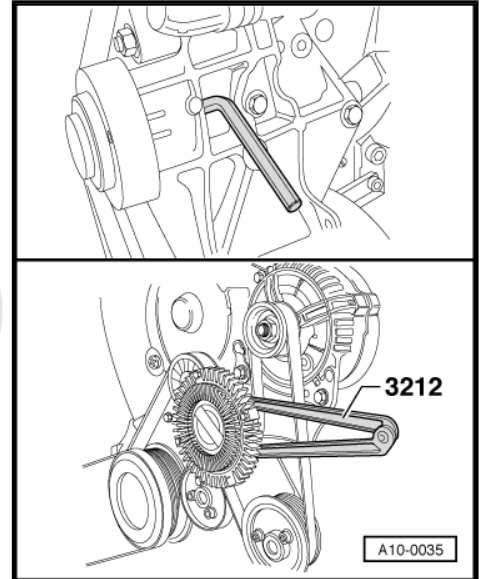
- To slacken poly V-belt, pivot tensioner in direction indicated -arrow-.

All models:

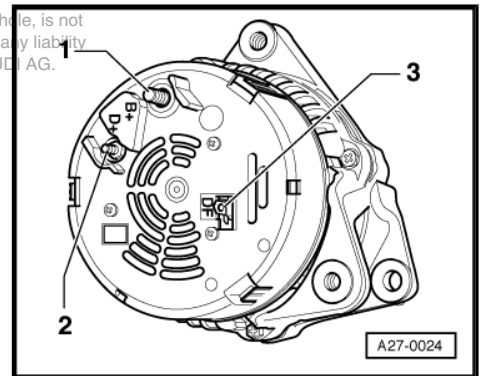
- Remove poly V-belt from alternator pulley.
- Release pressure from tensioner.



- Counterhold on pulley for viscous fan with 2-hole pin wrench -3212- and unscrew from bracket using 8 mm Allen key.



- Unscrew 30/B+ terminal wiring item 1 from alternator.
- Unscrew D+ terminal item 2.
- Unplug electrical connector for terminal DF -item 3-.
- Disengage wiring harness from cable tie.



- Unscrew bolts -1- and -2-.
- Carefully move coolant hose to one side and lift out alternator.

Note

- ◆ If alternator sticks in bracket, screw bolt back in again down to the last 2 turns.
- ◆ Tap carefully on bolt heads with flat side of hammer to release threaded bushes of alternator mount.

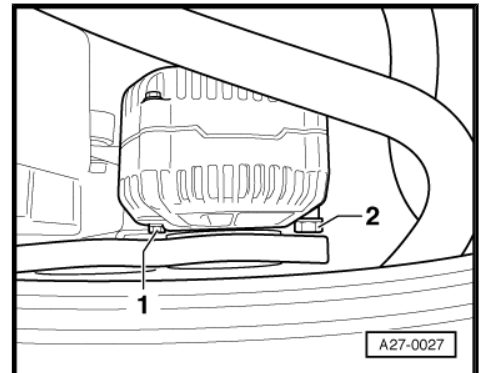
Installing

Installation is carried out in the reverse order; note the following:

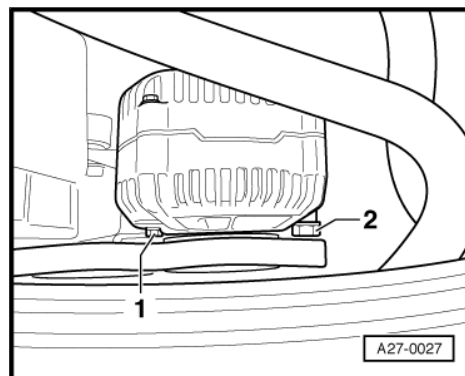
- To facilitate positioning of alternator, drive back bushes for securing bolts slightly.

Note

Stiff alternator mount bushes must be freed; otherwise the clamping force of the bush will not be adequate even when the bolts are tightened to the correct torque.

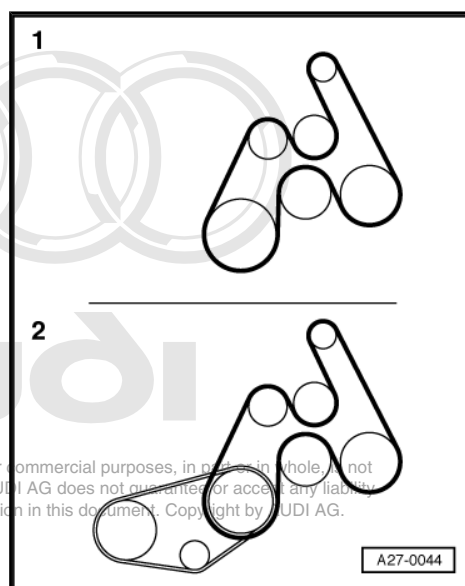


- Start by fitting securing bolt -1- for alternator.
- Make sure poly V-belt is properly positioned and correctly routed.



Vehicles with distributor-type injection pump (TDI engine):

- 1 - without air conditioning system
- 2 - with air conditioning system



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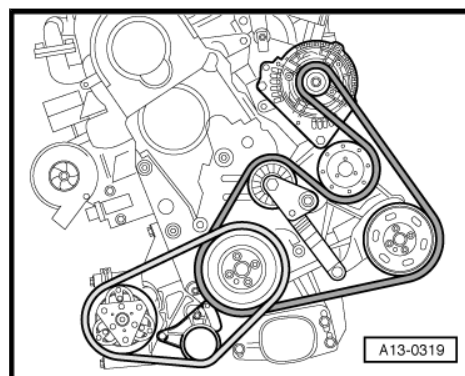
Vehicles with unit injector TDI engine:

All models:

- Connect battery. Additional steps required ⇒ [page 4](#) .
- Start engine and check that belt runs properly.

Tightening torques

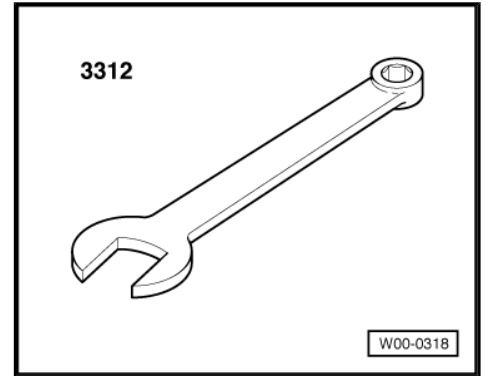
Component		Nm
Alternator to engine	M8	25
	M10	45
30/B+ terminal to alternator		16
D+ terminal to alternator		4



2.5 Vehicles with 6-cyl. TDI engine

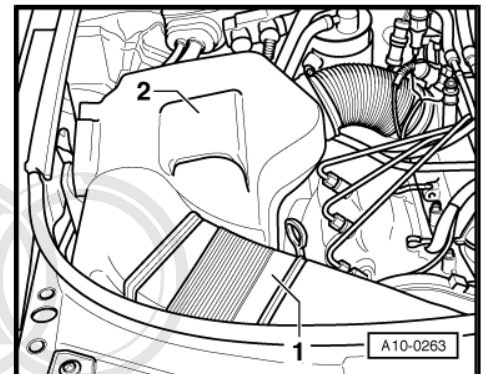
Special tools and workshop equipment required

- ◆ Open-end spanner -3312-

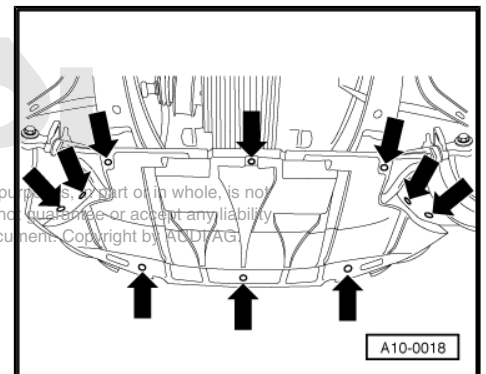


Removing

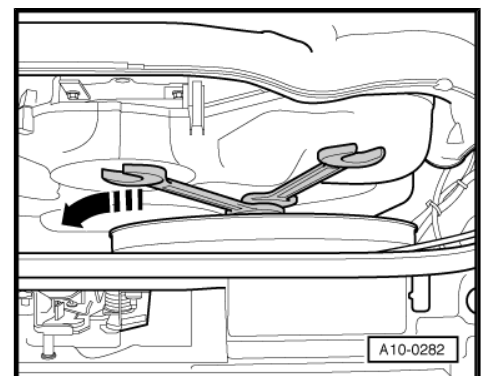
- With ignition switched off, disconnect earth cable at battery
⇒ [page 3](#) .
- Remove air cleaner cover -2- (if fitted).
- Remove air duct -1- going to air cleaner housing.



- Remove noise insulation -arrows-.
- Remove front bumper ⇒ Rep. Gr. 63 .
- Move lock carrier to service position ⇒ Rep. Gr. 50 .

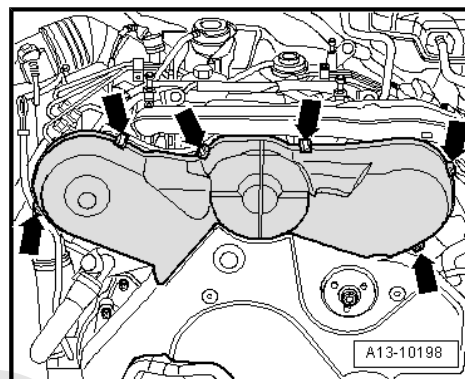


- Unscrew viscous fan (counterhold with 32 mm ring spanner).



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- Open clamps -arrows- and remove toothed belt guard (left and right).

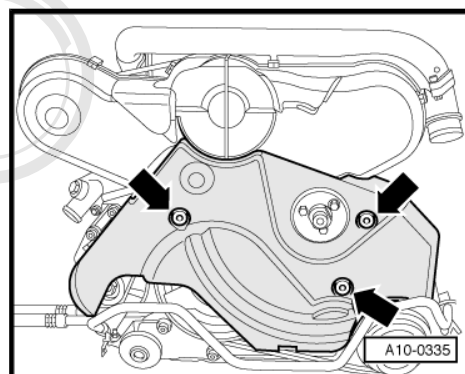


- Remove poly V-belt cover -arrows-.



Note

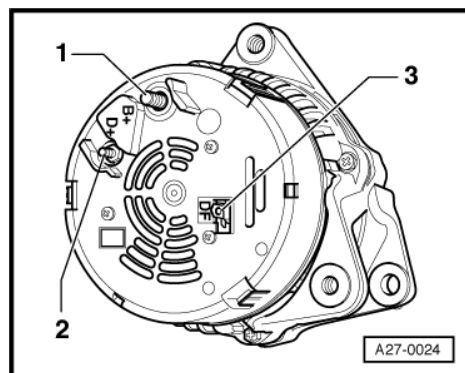
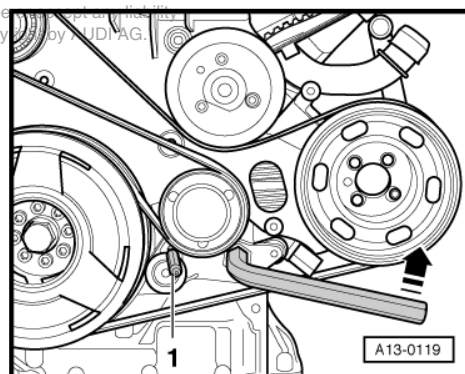
Note spacer sleeves for poly V-belt cover.



Note

Before removing, mark running direction of poly V-belt with chalk or felt-tipped pen. If the poly V-belt runs in the opposite direction when it is refitted, this can cause breakage.

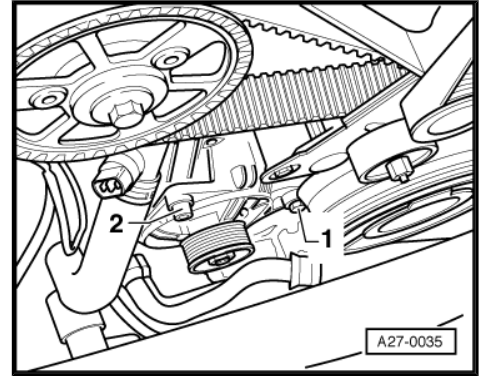
- In order to slacken the poly V-belt, swivel the tensioner in direction of -arrow- using an Allen key.
- Lock tensioner by inserting locking pin Ø 4 mm -item 1- in locating holes.
- Remove poly V-belt from alternator pulley.
- Unscrew 30/B+ terminal wiring -item 1- from alternator.
- Unscrew D+ terminal -item 2-.
- Unplug electrical connector for terminal DF -item 3-.



- Unscrew bolts -1- and -2-.

 Note

- ◆ *If alternator sticks in bracket, screw bolt back in again down to the last 2 turns.*
- ◆ *Tap carefully on bolt heads with flat side of hammer to release threaded bushes of alternator mount.*

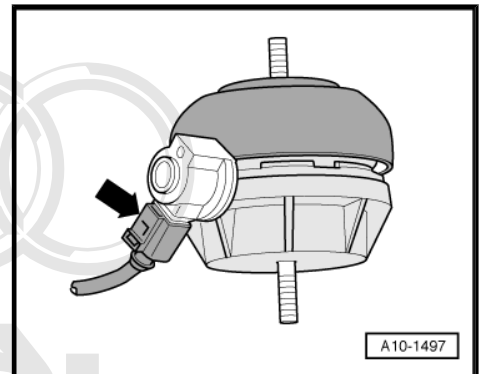


- Unplug electrical connector -arrow- at engine mounting.



Caution

When removing alternator, the refrigerant lines must be pushed aside very carefully.



- Remove alternator towards bottom.

Installing

Installation is carried out in the reverse order; note the following:

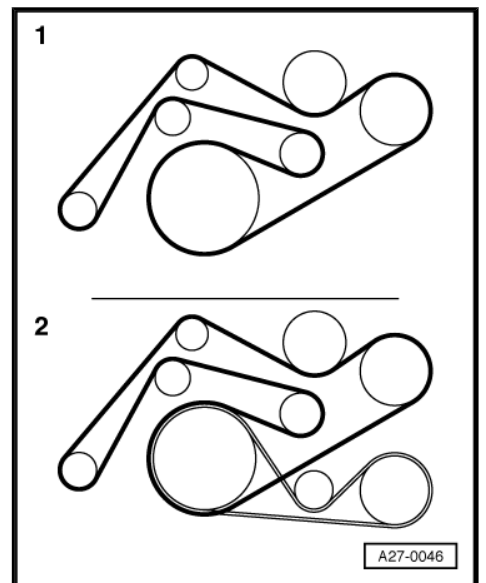
- To facilitate positioning of alternator, drive back bushes for securing bolts slightly.

 Note

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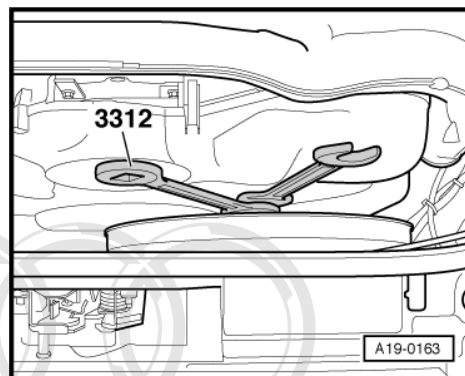
Stiff alternator mount bushes must be freed; otherwise the clamping force of the bush will not be adequate even when the bolts are tightened to the correct torque.

- Make sure poly V-belt is properly positioned and correctly routed.
- 1 - without air conditioning system
 - 2 - with air conditioning system



- Secure viscous fan using open-end spanner -3312- .

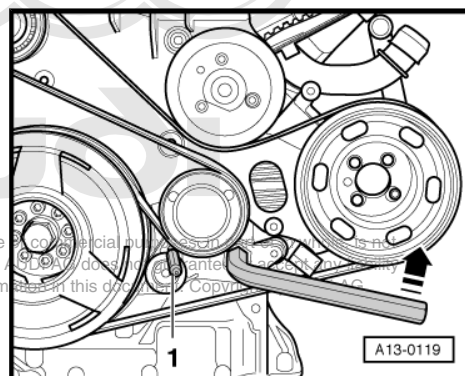
Tightening torque for viscous fan	Nm
Torque wrench -V.A.G 1331- and open-end spanner -3312-	37
Torque wrench -V.A.G 1331- without open-end spanner -3312-	70



- Remove locking pin -1-; to do so, turn tensioner in direction of -arrow- using Allen key.
- Install lock carrier with attachments ⇒ Rep. Gr. 50 .
- Install front bumper ⇒ Rep. Gr. 63 .
- Connect battery. Additional steps required ⇒ [page 4](#) .
- Start engine and check that belt runs properly.

Tightening torques

Component		Nm
Alternator to engine	M8	22
	M10	45
30/B+ terminal to alternator		16
D+ terminal to alternator		4
Poly V-belt cover to bracket		10



3 Servicing alternator

3.1 Bosch alternator - exploded view of components

1 - 1 Nm

2 - Cover

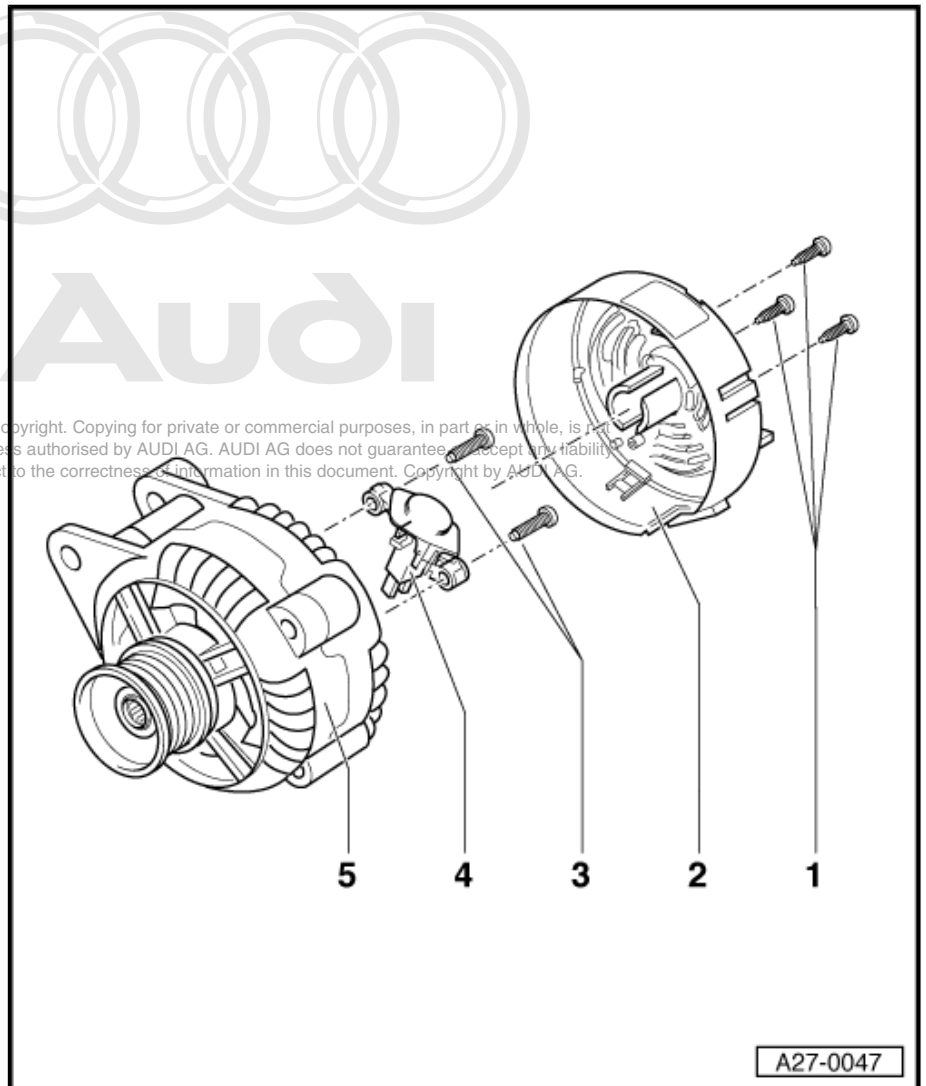
- ☐ With three retaining tabs

3 - 2 Nm

4 - Voltage regulator

- ☐ Removing:
 - Unscrew bolts -item 1- and detach protective cap -item 2-
 - Unscrew bolts -item 3- and detach voltage regulator
- ☐ Carbon brush wear limit:
5 mm

5 - Alternator



3.2 Valeo alternator - exploded view of components

1 - Alternator

2 - Voltage regulator

❑ Removing:

- Unscrew nuts -item 5- and detach protective cap -item 4-
- Unscrew bolt -item 6- and nuts -item 7- and detach voltage regulator

- ❑ Carbon brush wear limit: 5 mm

3 - Cover

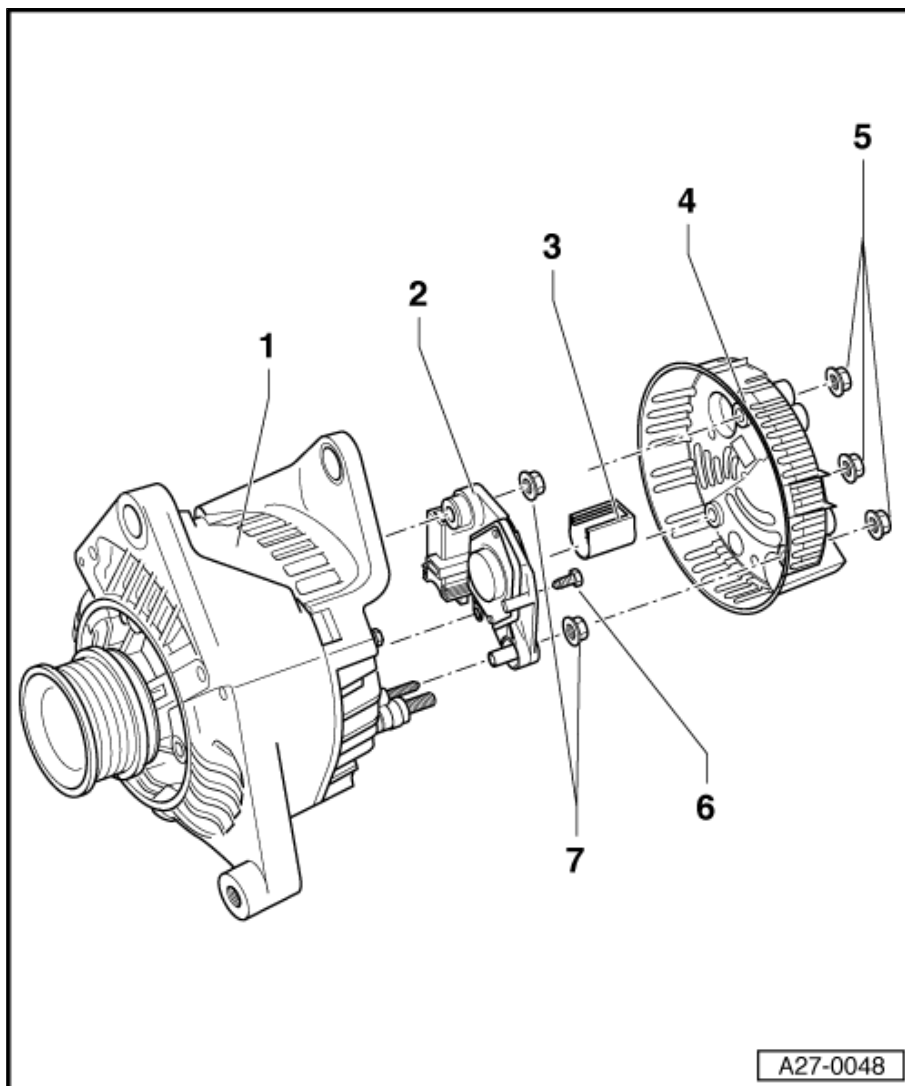
4 - Protective cap

5 - Nut with washer, 2 Nm

6 - Hexagon bolt, 2 Nm

7 - Nut with washer, 3.5 Nm

- ❑ 2x

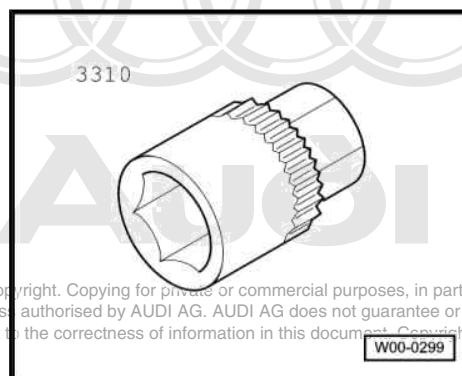


A27-0048

3.3 Removing and installing poly V-belt pulley without free-wheel

Special tools and workshop equipment required

- ◆ Socket -3310-



3310

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W00-0299

- ◆ 8 mm hexagon socket or TORX T50 socket

Removing

- Remove alternator:
 - ◆ Vehicles with 4-cyl. petrol engine ⇒ [page 20](#) .
 - ◆ Vehicles with 6-cyl. naturally aspirated engine ⇒ [page 22](#) .
 - ◆ Vehicles with 6-cyl. bi-turbo engine ⇒ [page 25](#) .
 - ◆ Vehicles with 4-cyl. TDI engine ⇒ [page 29](#) .
 - ◆ Vehicles with 6-cyl. TDI engine ⇒ [page 32](#) .
- Press protective cap off alternator pulley.
- Counterhold on securing nut using socket -3310- and turn alternator shaft clockwise to loosen.
- Detach poly V-belt pulley.

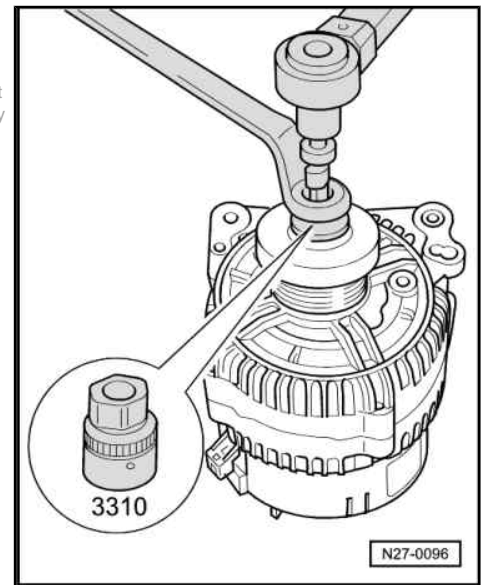
Installing

Installation is carried out in the reverse order; note the following:

- Turn alternator shaft anti-clockwise to tighten.
- Clip protective cap onto alternator pulley.

Tightening torque

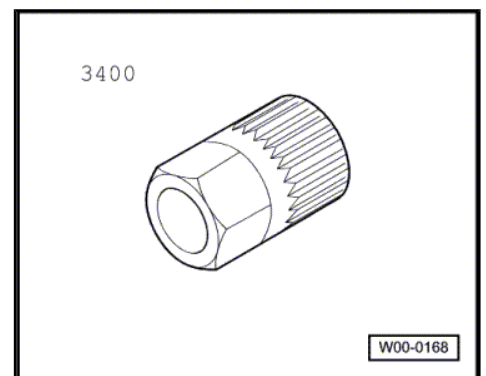
Component	Nm
Poly V-belt pulley to alternator	65



3.4 Removing and installing poly V-belt pulley with free-wheel

Special tools and workshop equipment required

- ◆ Adapter -3400-



- ◆ 8 mm hexagon socket or TORX T50 socket

Removing

- Remove alternator:
 - ◆ Vehicles with 4-cyl. petrol engine ⇒ [page 20](#) .
 - ◆ Vehicles with 6-cyl. naturally aspirated engine ⇒ [page 22](#) .
 - ◆ Vehicles with 6-cyl. bi-turbo engine ⇒ [page 25](#) .
 - ◆ Vehicles with 4-cyl. TDI engine ⇒ [page 29](#) .
 - ◆ Vehicles with 6-cyl. TDI engine ⇒ [page 32](#) .

- Press protective cap off alternator pulley.
- Counterhold on belt pulley using adapter -3400- and turn alternator shaft clockwise to loosen.

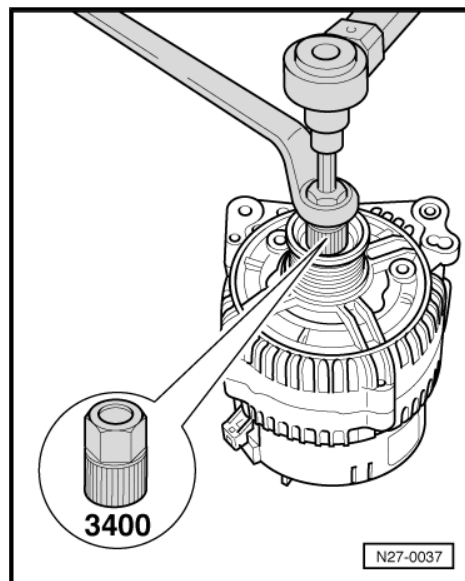
Installing

Installation is carried out in the reverse order; note the following:

- Turn alternator shaft anti-clockwise to tighten.
- Clip protective cap onto alternator pulley.

Tightening torque

Component	Nm
Poly V-belt pulley with free-wheel to alternator	80



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4 Removing and installing starter

4.1 Vehicles with 4-cyl. engine

Removing

- With ignition switched off, disconnect earth cable at battery ➔ [page 3](#).
- Remove noise insulation -arrows-.

Vehicles with air conditioning system, except engine code letters AHL, ANA, ARM, ALZ:

- Remove front bumper ➔ Rep. Gr. 63.
- Move lock carrier to service position ➔ Rep. Gr. 50.

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All models:



Note

Before removing, mark running direction of poly V-belt with chalk or felt-tipped pen. If the poly V-belt runs in the opposite direction when it is refitted, this can cause breakage.

- Slacken off bolts securing tensioning roller for poly V-belt for air conditioner compressor -arrows-, slacken off poly V-belt and detach.
- Unbolt A/C compressor.



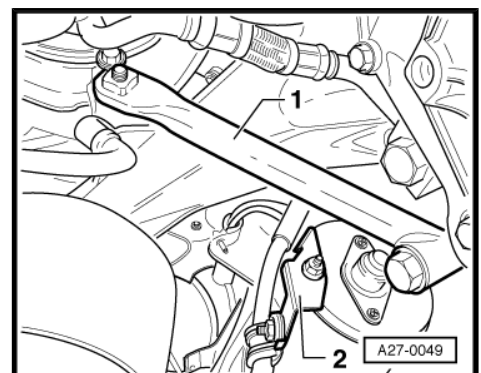
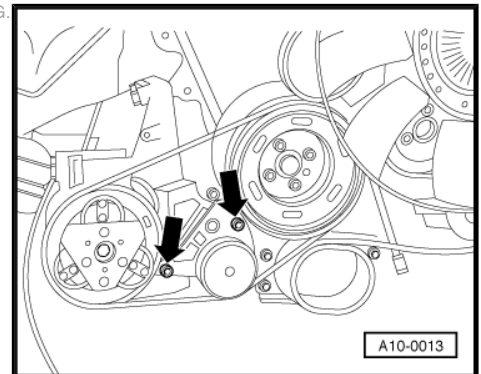
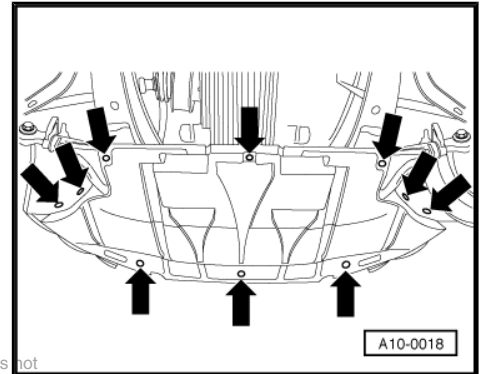
Caution

Do not open refrigerant circuit of air conditioner.

- Tie up A/C compressor on body with pipes/hoses still connected.

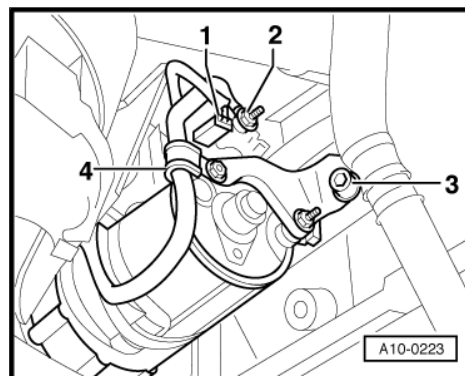
Vehicles with TDI engine:

- If fitted, detach support for turbocharger -1-.
- Unscrew wiring retainer -2- from starter.

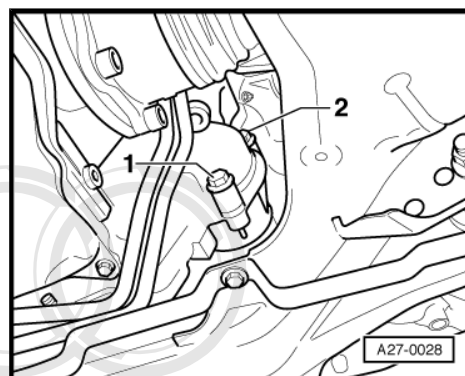


All models:

- Unscrew wire for terminal 30/B+ -item 2-.
- Unplug electrical connector for terminal 50 -item 1-.
- Remove bolt -3- (if fitted).
- Unscrew wiring clamp -4-.



- Unscrew bolts -1- and -2-.
- Remove starter towards the front.

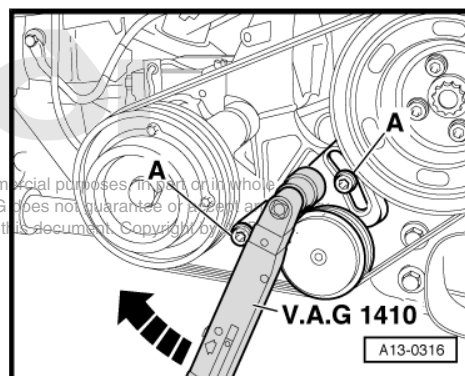


Installing

Installation is carried out in the reverse order; note the following:

Vehicles with air conditioner:

- Fit poly V-belt for air conditioner compressor.
- Apply torque wrench as shown in "7 o'clock position" to hexagon head of tensioning roller and pre-tension to 30 Nm by turning wrench in direction of -arrow-.
- At the same time, tighten bolts -A- to 23 Nm.



All models:

- Connect battery. Additional steps required ⇒ [page 4](#) .
- Start engine and check that belt runs properly.

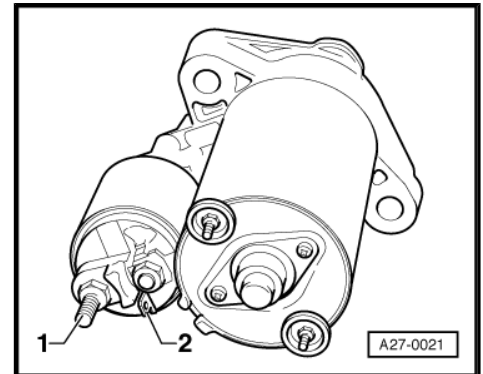
Tightening torques

Component		Nm
Starter to gearbox		65
Support for turbocharger to cylinder block	M8	25
	M10	40
Cable retainer to starter		10
Terminal 30/B+ to starter		16
Wiring clamp to starter		4
Air conditioner compressor to bracket		25

4.2 Vehicles with 6-cyl. naturally aspirated engine

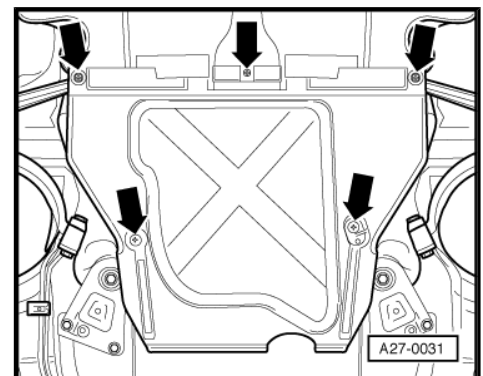
Removing

- Remove alternator ⇒ [page 22](#) .
- Unscrew wire for terminal 30/B+ -item 1-.
- Unplug electrical connector for terminal 50 -item 2-.



Vehicles with manual gearbox:

- Remove rear noise insulation -arrows-.



- Unscrew bolts -1- and -2- and remove starter to front.

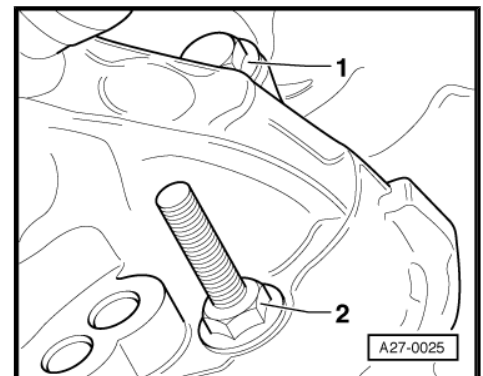
Vehicles with automatic gearbox:

- Remove front wheel (right-side).
- Remove top bolt -1- from wheel housing (right-side).
- Remove bottom bolt from engine side.
- Remove starter towards the front.

Installing

Installation is carried out in the reverse order; note the following:

- Install alternator ⇒ [page 22](#) ; observe notes on connecting battery.



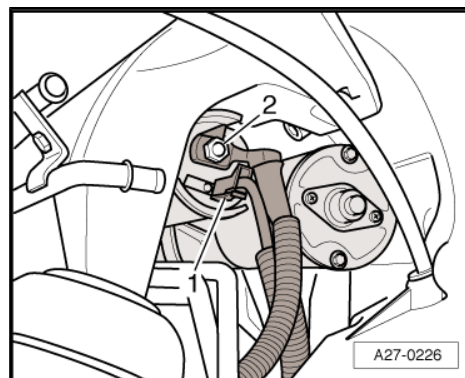
Tightening torques

Component	Nm
Starter to engine	65
Terminal 30/B+ to starter	16

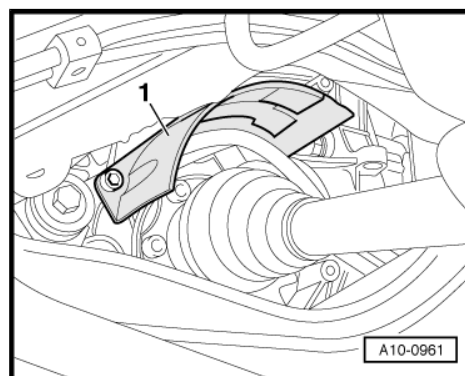
4.3 Vehicles with 6-cyl. bi-turbo engine

Removing

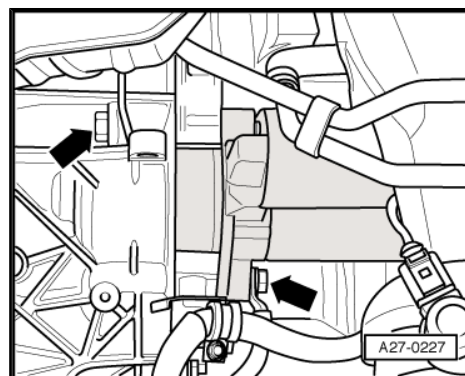
- Remove alternator ⇒ [page 25](#) .
- Unscrew wire for terminal 30/B+ -item 2-.
- Unplug electrical connector for terminal 50 -item 1-.



- Unbolt heat shield -1- for drive shaft (right-side).



- Unscrew bolts -arrows- and detach starter.



Installing

Installation is carried out in the reverse order; note the following:

- Install alternator ⇒ [page 25](#) ; observe notes on connecting battery.

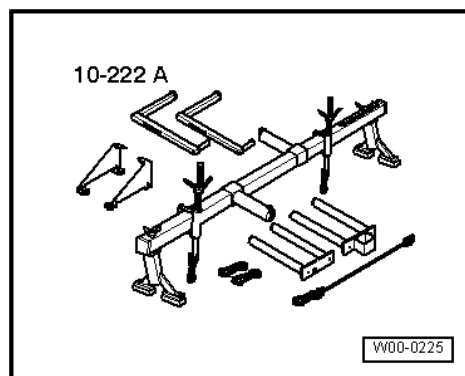
Tightening torques

Component	Nm
Starter to engine	65
Terminal 30/B+ to starter	16
Drive shaft heat shield to gearbox	23

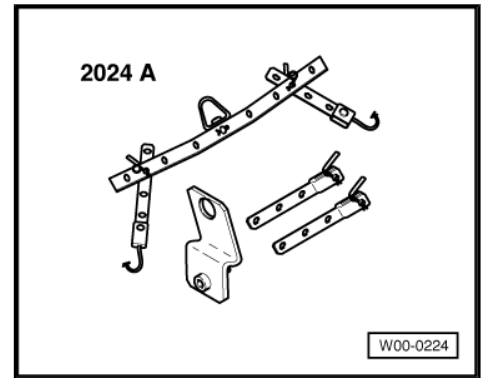
4.4 Vehicles with 6-cyl. TDI engine

Special tools and workshop equipment required

- ◆ Support bracket -10 - 222 A- with rack -10 - 222 A /1-

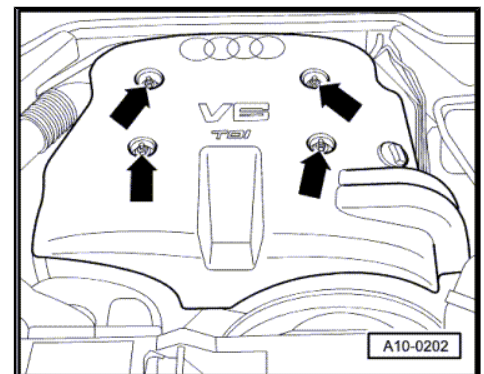


◆ Lifting tackle -2024 A-

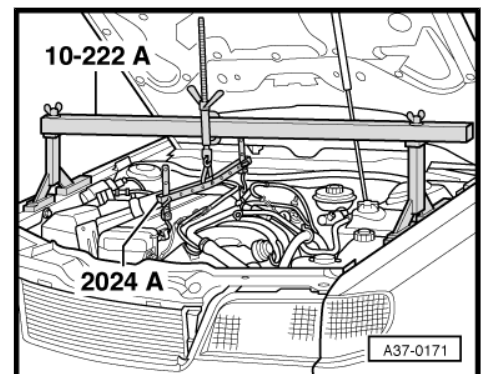


Removing

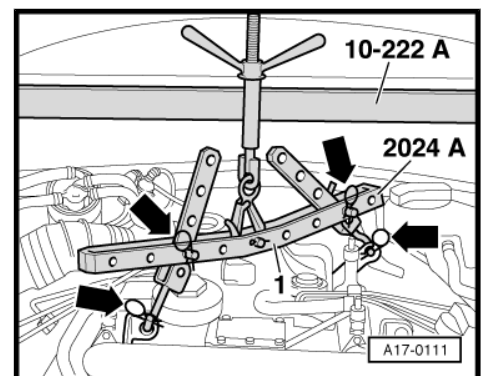
- With ignition switched off, disconnect earth cable at battery
⇒ [page 3](#) .
- Remove engine cover panel:
- ◆ Bolted version: remove cover caps, remove nuts -arrow- and lift off.
- ◆ Snap-in version: pull off from above.



- Place support bracket -10 - 222 A- on wing mounting flange.



- Remove eye of lifting tackle -2024 A- .
- Re-insert pin -1- in centre hole of lifting tackle and secure with split pin.
- Hook pin of lifting tackle -2024 A- onto spindle of support bracket -10 - 222 A- .
- Engage lifting tackle -2024 A- in lifting eyes at front and rear of engine.

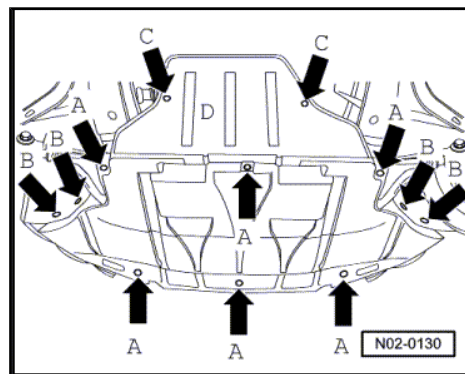


WARNING

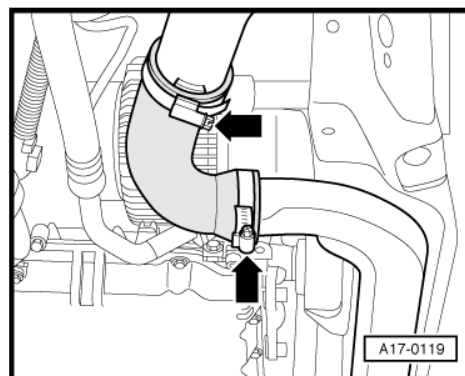
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Support hooks and locking pins on engine lifting equipment must be secured with split pins -arrows-.

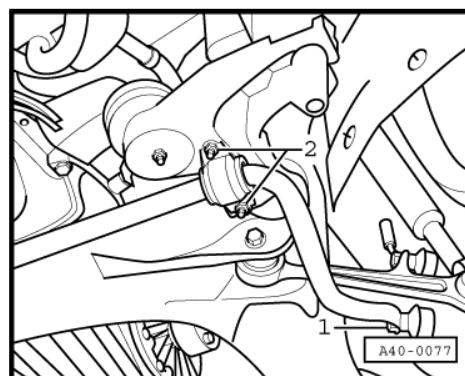
- Loosen fasteners -arrows A ... C- and remove front and rear noise insulation.



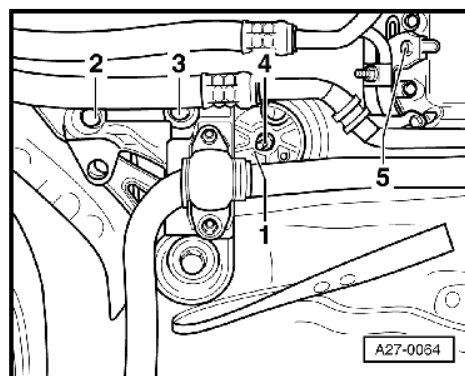
- Remove air intake hose (right-side) between charge air cooler and lock carrier -arrows-.



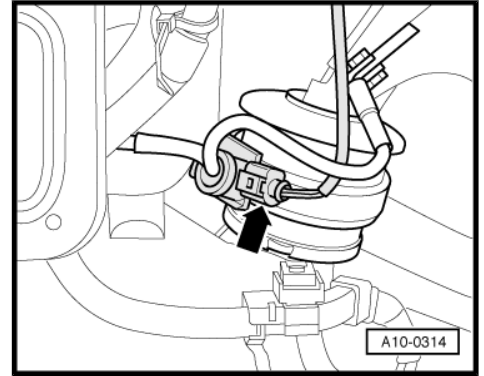
- Unbolt anti-roll bar from subframe -2- and pivot it downwards about attachment points -1-).



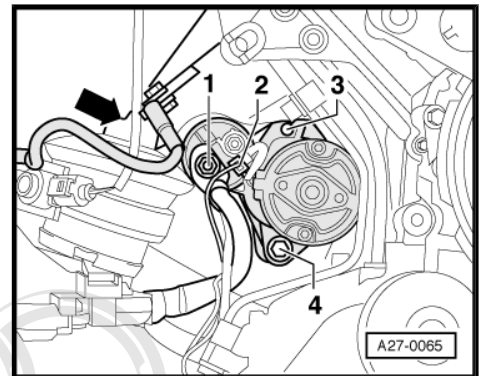
- Unscrew bolts -2, 3, 4- and remove bottom section of engine mounting -1-.



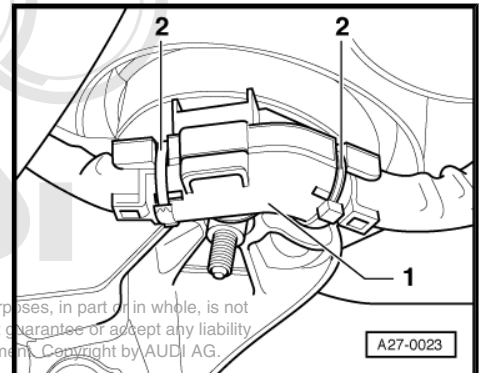
- Unplug electrical connector -arrow- at engine mounting (right-side).



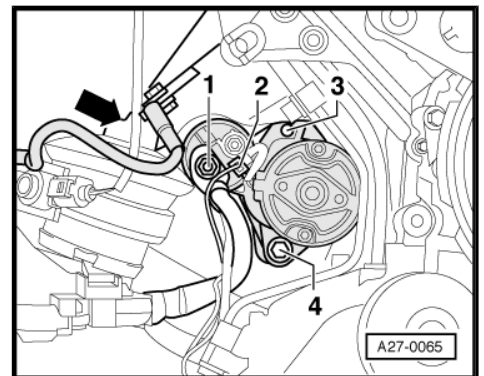
- Unscrew top bolt -arrow- and remove top section of engine mounting (with rubber sleeve).



- Cut through cable ties -2-, open bracket -1- for starter and alternator cable and take out cable.



- Unscrew bolt securing terminal 30/B+ -item 1-.
- Unplug electrical connector for terminal 50 -item 2-.
- Remove bolt securing starter -4- from engine side.
- Remove bolt securing starter -3- from gearbox side.



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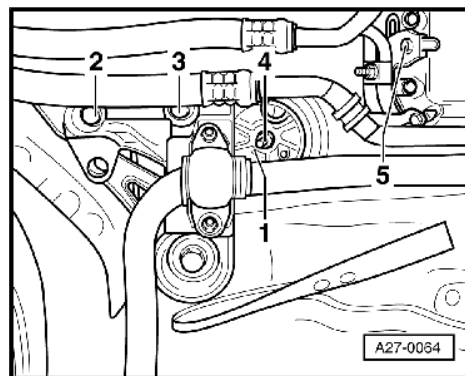
Vehicles with automatic gearbox:



Note

For better access to bolt on engine side, remove bolt -5- securing ATF pipes to sump .

- Remove starter bolt on engine side.



Note

For better access to bolt -1- on gearbox side, remove front right wheel and heat shield for drive shaft.

- Remove starter bolt on gearbox side.

All models:

- Take out starter.

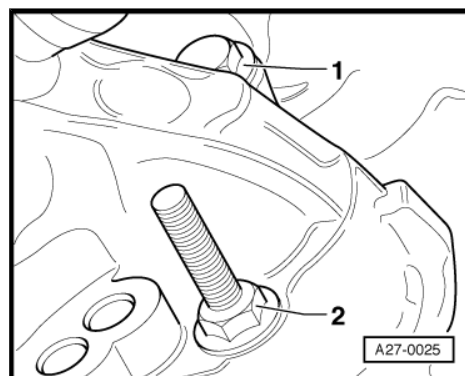
Installing

Installation is carried out in the reverse order; note the following:

- Install anti-roll bar ⇒ Rep. Gr. 40 .
- Connect battery. Additional steps required ⇒ [page 4](#) .

Tightening torques

Component	Nm
Starter to gearbox	16
Terminal 30/B+ to starter	16
Drive shaft heat shield to gearbox	23



5 Cruise control system for vehicles with throttle cable

5.1 Removing and installing cruise control system control unit -J213-

The cruise control system control unit -J213- is located behind the airbag unit on the front passenger's side.

Removing

- Remove glove box ⇒ Rep. Gr. 68 .
- Remove bolt -3- from speed nut -2-.
- Detach cruise control system control unit -J213- -item 1- and unplug connector.

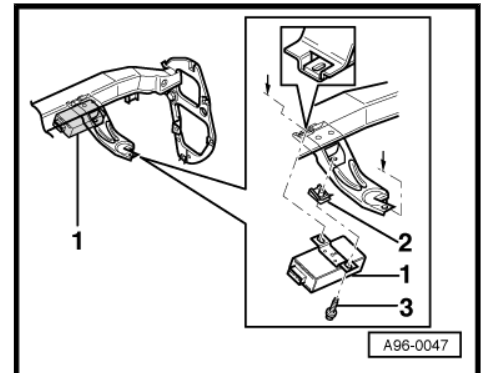
Installing

Installation is carried out in the reverse order; note the following:

- Install glove box ⇒ Rep. Gr. 68 .

Tightening torque

Component	Nm
Cruise control system control unit -J213- to bracket	3

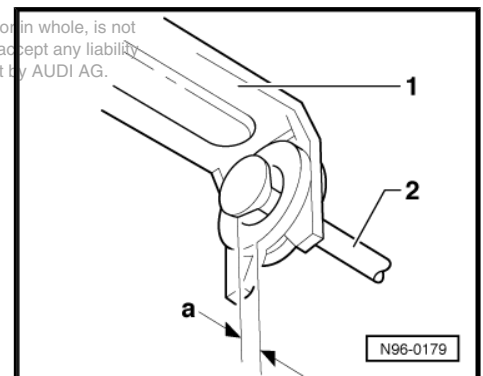


5.2 Adjusting linkage on actuator

- Start engine and run at idling speed.
- Throttle valve in idling speed position.
- Slacken lock nut on linkage to cruise control system vacuum unit.

Vehicles with 4-cyl. engine:

- Screw in linkage -2- as far as stop and then approx. 1 turn back.
- Check clearance between linkage -2- and actuator -1-.
- Dimension -a- = 0.5 ... 1.0 mm.

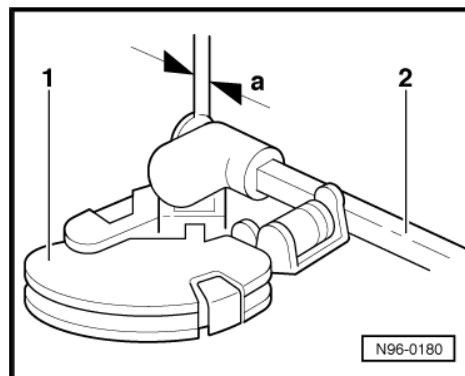


Vehicles with 6-cyl. engine:

- Screw in linkage -2- as far as stop and then approx. 1 turn back.
- Check clearance between linkage -2- and stop plate on cam plate -1-.
- Dimension -a- = 0.5 ... 1.0 mm.

All models:

- Tighten nut on linkage to cruise control system vacuum unit.



5.3 Removing and installing actuator

The installation position of the individual actuators can vary from the illustration shown depending on engine version.

Removing

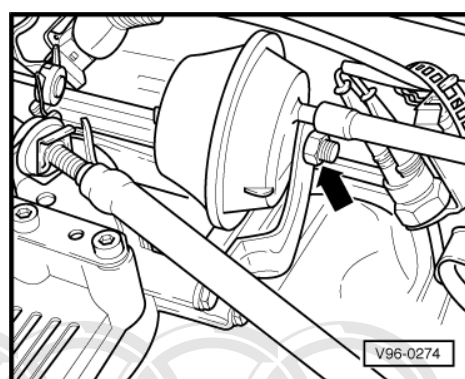
- Detach vacuum hose from vacuum unit.
- Disengage or unclip operating rod.
- Unscrew actuator from bracket -arrow-.

Installing

Install in reverse order.

Tightening torque

Component	Nm
Actuator to bracket	25



5.4 Removing and installing vacuum pump

Removing



Note

The vacuum pump is located beneath the ABS unit -5-.

- Remove front wheel housing liner (left-side) ⇒ Rep. Gr. 66.
- Unscrew nuts -3- and remove vacuum pump -1- with bracket -2- working from wheel housing.
- Remove vacuum pump with rubber bush from bracket.

4 - Hose routing to actuator

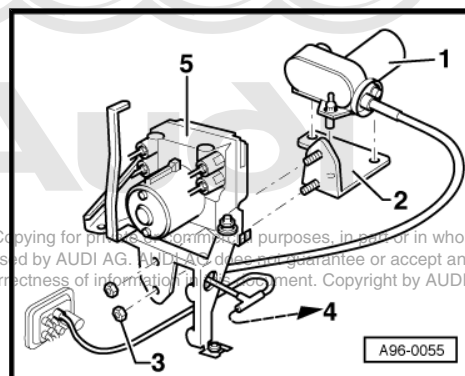
Installing

Installation is carried out in the reverse order; note the following:

- Install front wheel housing liner (left-side) ⇒ Rep. Gr. 66 .

Tightening torque

Component	Nm
Bracket for vacuum pump to bracket for ABS unit	5



5.5 Removing and installing vent valves

Removing

- Remove driver's storage compartment ⇒ Rep. Gr. 68 .
- Disconnect vacuum lines at vent valve for clutch pedal -1- and at vent valve for brake pedal -2-.
- Unplug electrical connector on vent valve for brake pedal.
- Press vent valve out of clip or unscrew vent valve.

Installing

Installation is carried out in the reverse order; note the following:



Note

To ensure a secure fit, the vent valve must not be re-fitted once it has been removed.

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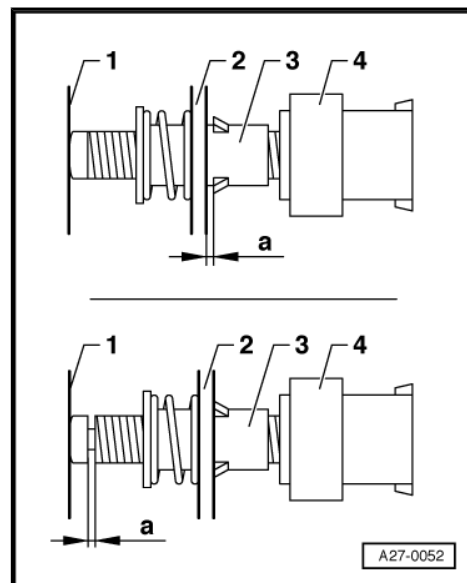
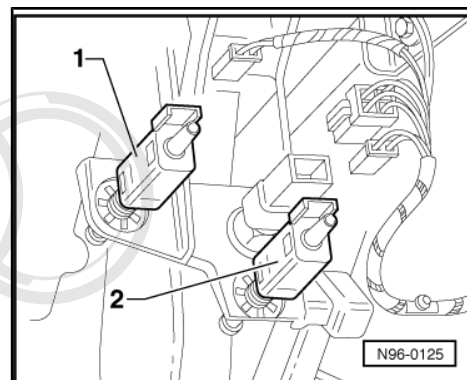
- Pedal in rest position.
- Use a 10 mm socket or similar to press vent valve into clip as far as stop. Do not screw in valve (a new type of clip was introduced as of 12.97).

The vent valve must be in the following position after installation:

a - 0 ... 0.7 mm

- 1 - Pedal stop surface
- 2 - Pedal bracket
- 3 - Clip
- 4 - Vent valve

- Connect vacuum lines and plug in electrical connector.
- Install driver's storage compartment ⇒ Rep. Gr. 68 .



5.6 Checking vacuum system for leaks

Procedure

- Disconnect vacuum line from vacuum pump and seal tight.
- Remove driver's storage compartment ⇒ Rep. Gr. 68 .
- Push in the actuator diaphragm, and at the same time press the brake pedal down to the point of resistance.
- Then release brake pedal.
- The diaphragm must not move.



Note

Malfunctions can be caused by incorrectly adjusted vent valves, leaking actuators or by cracks in the vacuum hoses.



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6 Cruise control system for vehicles with electronic throttle

6.1 Vehicles with TDI engine

In vehicles with TDI engine the functions of the cruise control system are controlled by the engine control unit.

There are no additional components other than the cruise control system operating switch in the steering column lever (left-side).

6.2 Vehicles with petrol engine

In vehicles with petrol engine and electronic engine power control (electronic throttle) the functions of the cruise control system are controlled by the engine control unit.

There are no additional components other than the cruise control system operating switch in the steering column lever (left-side).



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90 – Gauges, instruments

1 Instrument cluster (dash panel insert) - vehicles up to model year 1999

1.1 Fault message “dEF” in trip recorder display

If the control unit in the instrument cluster detects a fault in its permanent memory, the letters “dEF” will appear in the trip recorder display. If “dEF” is displayed:

- Renew instrument cluster ⇒ [page 54](#) .

Renewing instrument cluster

- ◆ The instrument cluster must not be dismantled.
- ◆ All warning and indicator lamps which have conventional bulbs can be renewed individually ⇒ Rep. Gr. 90 .
- ◆ If required, the instrument cluster can be replaced with an exchange unit.
- ◆ Complete the damage report form and return it together with the defective instrument cluster.
- ◆ Defective units must always be returned in their original packaging.
- ◆ When renewing the instrument cluster, the mileage recorder and service interval display can be adapted using vehicle diagnostic, testing and information system -VAS 5051- ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 .

1.2 Removing and installing instrument cluster

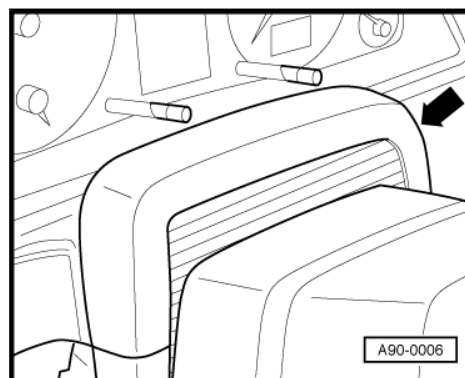
Removing

- If instrument cluster is renewed, determine input values with vehicle diagnostic, testing and information system -VAS 5051- ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 .
- Switch off ignition and take out ignition key.
- Move steering wheel down and to rear as far as possible, using full range of steering column adjuster.
- Tilt trim cover -arrow- towards rear.
- Lift off trim cover on instrument cluster.

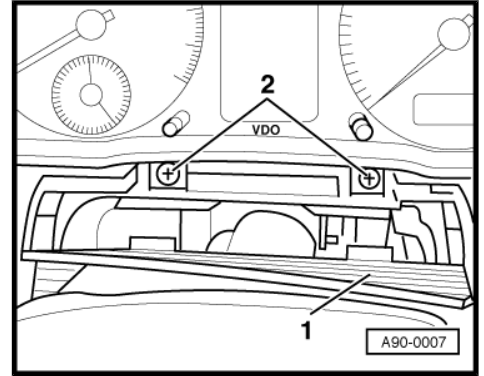


Note

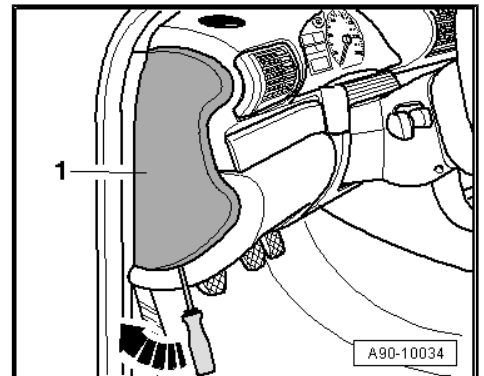
Apply masking tape on steering column trim to avoid damage.



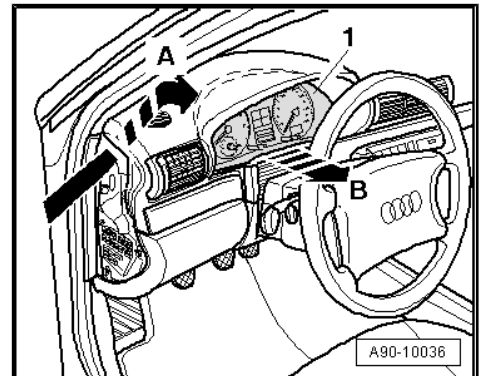
- Fold trim -1- to rear.
- Remove bolts -2-.



- Use screwdriver to pry off trim -1- on left-side of dash panel -arrow-.



- Reach through opening -arrow A- above fuse holder and push out instrument cluster -1- in direction of -arrow B-.
- If fitted, cut through cable tie on back of instrument cluster.



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- Unplug electrical connector -1- at instrument cluster by pulling retaining clip -2- upwards -arrow- and pulling off connector.

Installing

Installation is carried out in the reverse order; note the following:



Note

Refit all cable ties at the same locations when reinstalling.

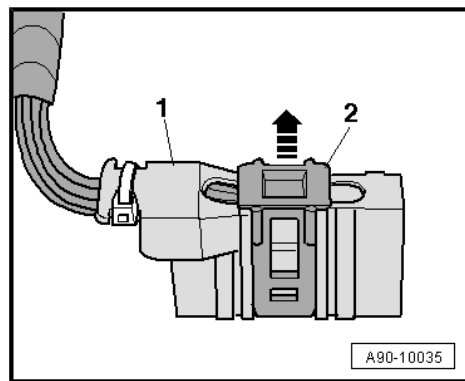
- Plug in electrical connectors.
- If fitted, secure wiring harness in position on the back of the instrument cluster with a cable tie.
- Perform a function test after installing instrument cluster.

If function test is OK:

- Enter input values for instrument cluster ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 .

Tightening torque

Component	Nm
Instrument cluster to dash panel	1.5



1.3 Bulb layout on instrument cluster - vehicles up to model year 1997

Lowline instrument cluster with mini-check system



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1 - Bulbs for instrument cluster

VDO version with additional instruments

- ☐ 9x
- ☐ 12 V, 1.1 W

VDO version without additional instruments

- ☐ 7x
- ☐ 12 V, 1.1 W

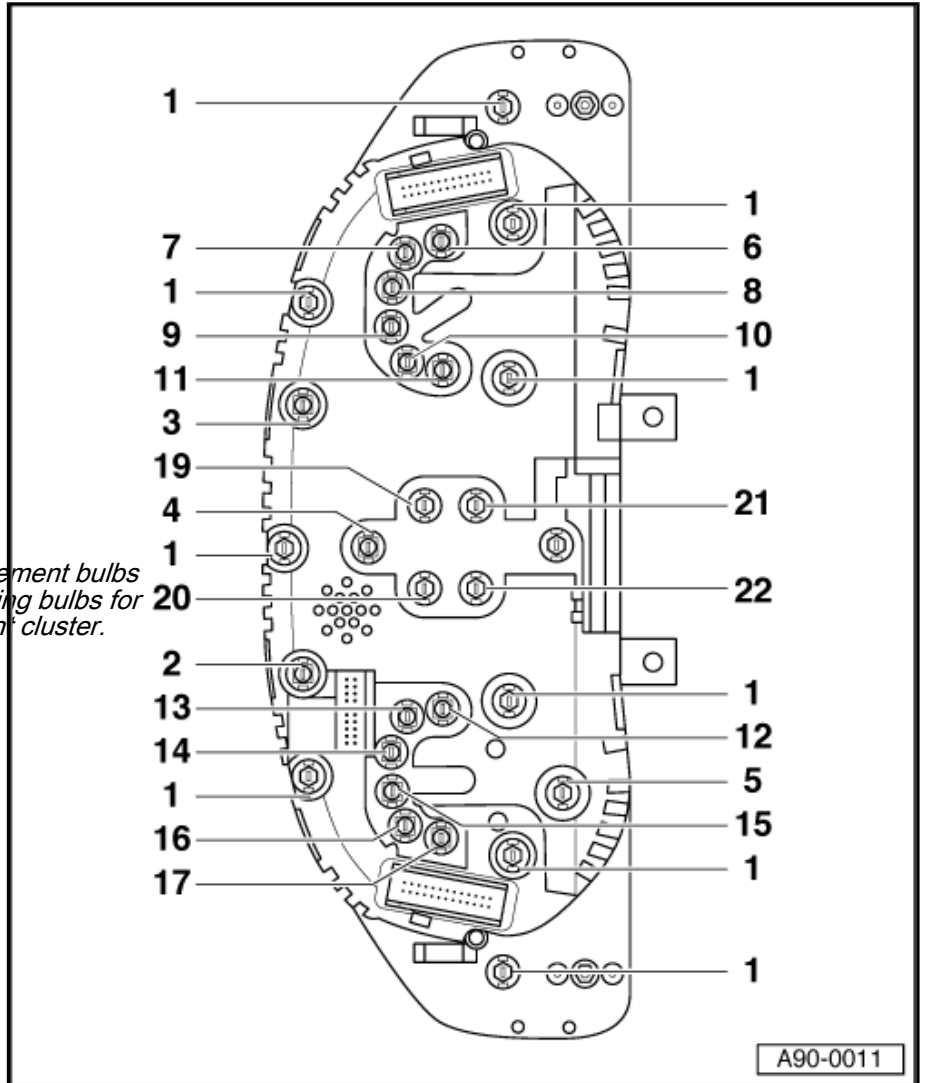
Nippon Seiki version

- ☐ 6x
- ☐ 12 V, 1.1 W



Note

Make sure to fit replacement bulbs with red caps when fitting bulbs for Nippon Seiki instrument cluster.



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2 - Right turn signal warning lamp -K94-☐ 12 V, 1.2 W**3 - Left turn signal warning lamp -K65-**☐ 12 V, 1.2 W**4 - Main beam warning lamp -K1-**☐ 12 V, 1.2 W**5 - Bulb for distance recorder display**☐ 12 V, 1.1 W**6 - Warning lamp for malfunction in engine electronics**☐ 12 V, 1.2 W**7 - Trailer operation warning lamp -K18-**☐ 12 V, 1.2 W**8 - Traction control system warning lamp -K86- (ASR/TCS)**☐ 12 V, 1.2 W**9 - Parking light warning lamp**☐ 12 V, 1.2 W**10 - Glow period warning lamp -K29-**☐ 12 V, 1.2 W**11 - Immobilizer warning lamp -K117-**☐ 12 V, 1.2 W**12 - CAT warning lamp**☐ 12 V, 1.2 W**13 - Airbag warning lamp -K75-**☐ 12 V, 1.2 W**14 - ABS warning lamp -K47-**☐ 12 V, 1.2 W**15 - Brake/handbrake warning lamp**☐ 12 V, 1.2 W**16 - Alternator warning lamp -K2-**☐ 12 V, 1.2 W**17 - Seat-belt warning system warning lamp -K19-**☐ 12 V, 1.2 W**19 - Coolant temperature and coolant shortage warning lamp -K28-**☐ 12 V, 1.2 W**20 - Oil pressure warning lamp -K3-**☐ 12 V, 1.2 W**21 - Brake system warning lamp -K118-**☐ 12 V, 1.2 W**22 - Reserve fuel warning lamp -K16-**☐ 12 V, 1.2 W

Highline instrument cluster with on-board computer

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1 - Bulbs for instrument cluster

- ☐ 9x
- ☐ 12 V, 1.1 W

2 - Right turn signal warning lamp -K94-

- ☐ 12 V, 1.2 W

3 - Left turn signal warning lamp -K65-

- ☐ 12 V, 1.2 W

4 - Main beam warning lamp - K1-

- ☐ 12 V, 1.2 W

5 - Bulb for distance recorder display

- ☐ 12 V, 1.1 W

6 - Warning lamp for malfunction in engine electronics

- ☐ 12 V, 1.2 W

7 - Trailer operation warning lamp -K18-

- ☐ 12 V, 1.2 W

8 - Traction control system warning lamp -K86- (ASR/ TCS)

- ☐ 12 V, 1.2 W

9 - Parking light warning lamp

- ☐ 12 V, 1.2 W

10 - Glow period warning lamp -K29-

- ☐ 12 V, 1.2 W

11 - Immobilizer warning lamp -K117-

- ☐ 12 V, 1.2 W

12 - CAT warning lamp

- ☐ 12 V, 1.2 W

13 - Airbag warning lamp -K75-

- ☐ 12 V, 1.2 W

14 - ABS warning lamp -K47-

- ☐ 12 V, 1.2 W

15 - Brake/handbrake warning lamp -K14-

- ☐ 12 V, 1.2 W

16 - Alternator warning lamp -K2-

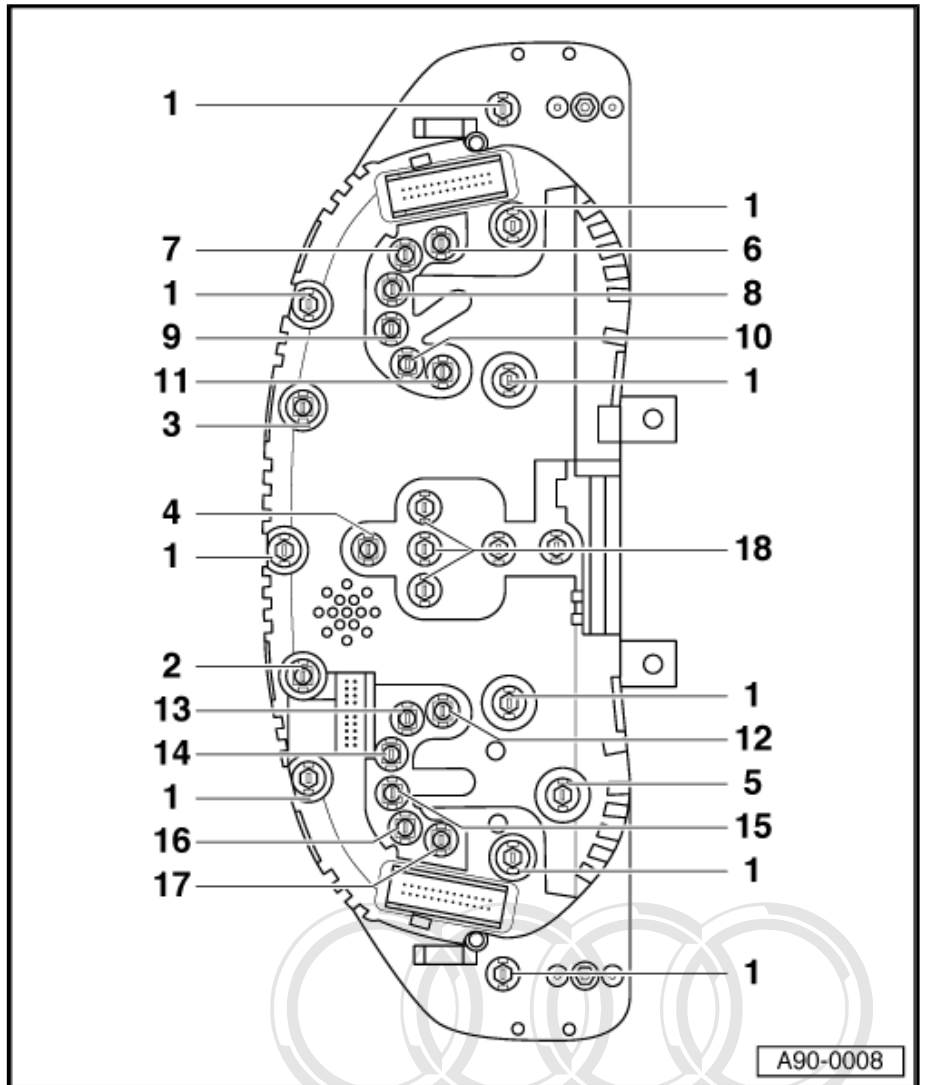
- ☐ 12 V, 1.2 W

17 - Seat-belt warning system warning lamp -K19-

- ☐ 12 V, 1.2 W

18 - Bulbs for on-board computer

- ☐ 5x
- ☐ 12 V, 1.1 W

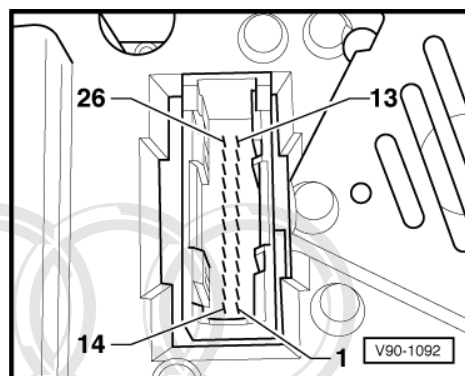


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1.4 Pin assignment at multi-pin connectors on instrument cluster - vehicles up to model year 1997

Multi-pin connector, 26-pin, blue

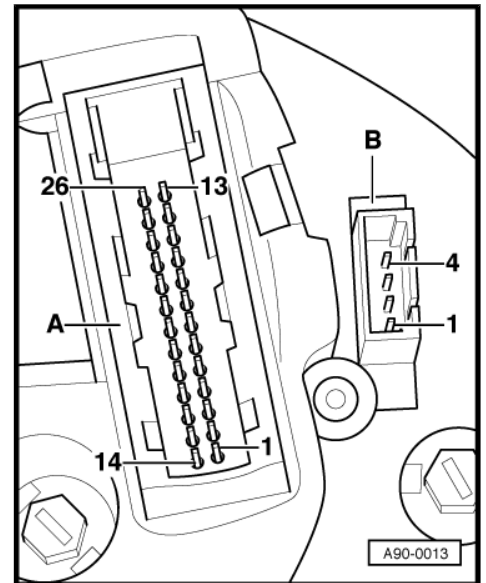
- 1 - Not used
- 2 - Buzzer activation
- 3 - Terminal 15
- 4 - Terminal 15
- 5 - Not used
- 6 - Terminal 61
- 7 - Handbrake/brake fault
- 8 - ABS (direct)
- 9 - Airbag (direct)
- 10 - CAT
- 11 - ABS (inverted)
- 12 - Airbag (inverted)
- 13 - Right parking light
- 14 - Ignition lock S contact
- 15 - Not used
- 16 - Not used
- 17 - Gong activation
- 18 - Oil pressure 1.8 bar
- 19 - Terminal 58d
- 20 - Coolant level
- 21 - Turn signal (right-side)
- 22 - Main beams
- 23 - Speedometer input
- 24 - Brake fluid
- 25 - Brake pad
- 26 - Left parking light



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Multi-pin connector, 26-pin, yellow

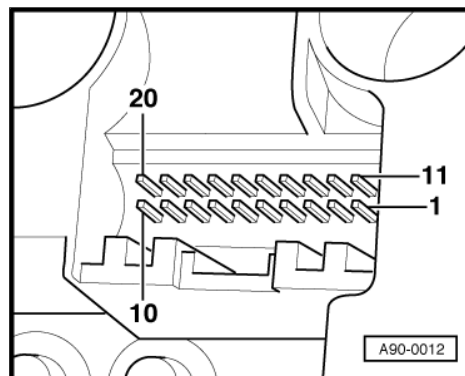
- 1 - Terminal 58
- 2 - Terminal 58
- 3 - Engine speed signal
- 4 - Air conditioner compressor
- 5 - Clock - output
- 6 - Road speed signal 1
- 7 - Road speed signal 2
- 8 - Door contact, driver's side
- 9 - Terminal 30
- 10 - Terminal 30
- 11 - Not used
- 12 - Fuel tank warning
- 13 - Turn signal (left-side)
- 14 - Not used
- 15 - Not used
- 16 - Belt buckle switch
- 17 - Not used
- 18 - Terminal 31
- 19 - Terminal 31
- 20 - Diagnosis lead
- 21 - Not used
- 22 - Not used
- 23 - Glow period warning lamp
- 24 - Immobiliser
- 25 - Fuel gauge sender
- 26 - Coolant temperature sender



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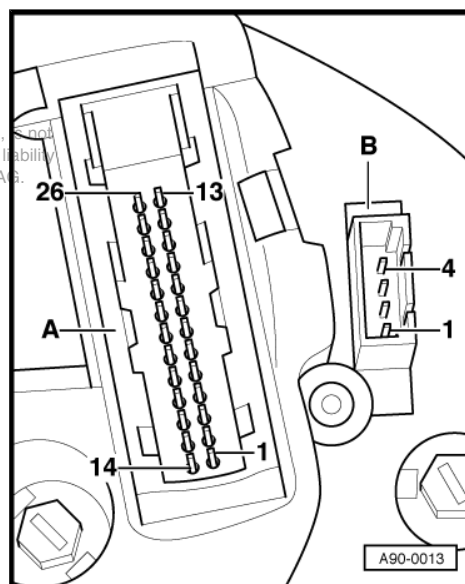
Multi-pin connector, 20-pin, black

- 1 - Fuel consumption signal
- 2 - Not used
- 3 - Not used
- 4 - Not used
- 5 - Ambient temperature
- 6 - Gear selection indicator
- 7 - Not used
- 8 - Not used
- 9 - Coolant level
- 10 - Hydraulic pressure
- 11 - On-board computer: reset
- 12 - Radio/telephone - clock
- 13 - Radio/telephone - data
- 14 - On-board computer, left
- 15 - Radio/telephone - enable
- 16 - Tail lights / dipped beams
- 17 - Glow plug relay
- 18 - On-board computer, right
- 19 - Brake light
- 20 - Not used



Multi-pin connector, 4-pin, black

- 1 - Oil temperature sender
- 2 - Not used
- 3 - Not used
- 4 - Not used



1.5 Bulb layout on instrument cluster - vehicles from model year 1998

Note

With two exceptions, all warning lamps are fitted with light-emitting diodes. The instrument cluster must be renewed in the event of failure of a warning lamp with light emitting diode.

Lowline instrument cluster

1 - Main beam warning lamp - 1.2 W (Nippon Seiki); 1.1 W (VDO)

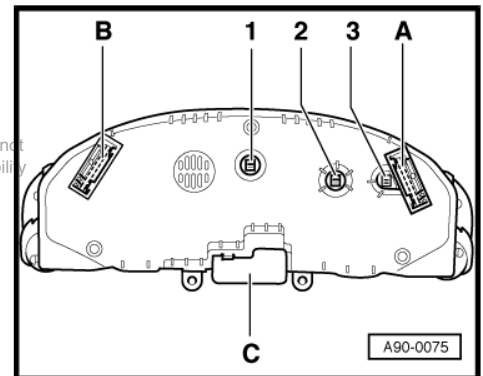
2 - Warning lamp for electronic stability program (ESP) - 1.2 W (only on vehicles with ESP)

3 - Warning lamp for trailer turn signal - 1.2 W; only on vehicles with towing bracket

A - Multi-pin connector for basic functions, 32-pin, blue

B - Multi-pin connector for additional functions, 32-pin, green

C - Cover (for vehicles with no ambient temperature display)



Note

If instrument cluster is renewed on vehicles with ambient temperature display or if ambient temperature display is retrofitted, remove cover -C- on Lowline versions.

Highline instrument cluster

1 - Main beam warning lamp - 1.2 W (Nippon Seiki); 1.1 W (VDO)

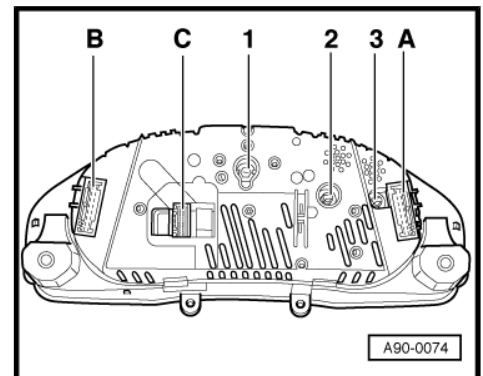
2 - Warning lamp for electronic stability program (ESP) - 1.2 W (only in vehicles with ESP)

3 - Warning lamp for trailer turn signal - 1.2 W; only in vehicles with towing bracket

A - Multi-pin connector for basic functions, 32-pin, blue

B - Multi-pin connector for additional functions, 32-pin, green

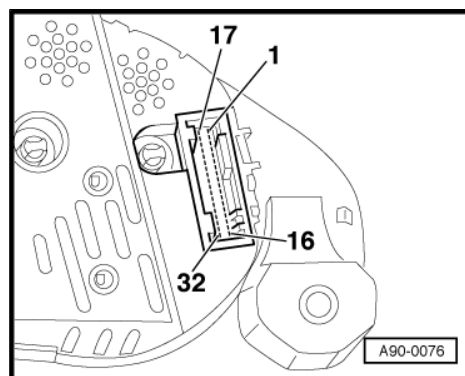
C - Multi-pin connector for multi-function display, 20-pin



1.6 Pin assignment at multi-pin connectors on instrument cluster - vehicles from model year 1998

Multi-pin connector, 32-pin, blue

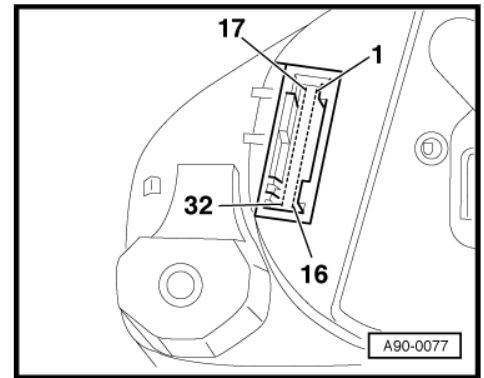
- 1 - Terminal 15
- 2 - Turn signal (right-side)
- 3 - Speedometer output 1
- 4 - Not used
- 5 - Fuel gauge sender
- 6 - Airbag
- 7 - Terminal 31 (sensor earth)
- 8 - Coolant temperature
- 9 - Terminal 31 (load earth)
- 10 - Oil pressure switch
- 11 - Engine speed signal
- 12 - Terminal 61
- 13 - Glow period warning lamp or CAT
- 14 - Self-levelling suspension
- 15 - Terminal 58d
- 16 - Trailer turn signal / fault in engine electrical system
- 17 - Main beams
- 18 - Turn signal (left-side)
- 19 - ABS
- 20 - Terminal 58s
- 21 - Door contact, driver's side
- 22 - Coolant level low
- 23 - Terminal 30
- 24 - Terminal 31 (load earth)
- 25 - K wire
- 26 - Right parking light
- 27 - Left parking light
- 28 - Speedometer input
- 29 - Brake fluid level/pressure
- 30 - S contact
- 31 - Belt buckle
- 32 - ESP



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Multi-pin connector, 32-pin, green

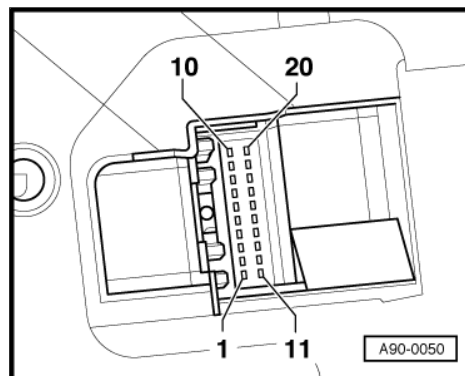
- 1 - Not used
- 2 - Transponder 1
- 3 - Not used
- 4 - Immobilizer
- 5 - W wire
- 6 - Boot lid/tailgate (Lowline version only)
- 7 - Brake pads (Highline version only)
- 8 - Not used
- 9 - Not used
- 10 - Fuel tank warning output signal for engine control unit (only on 6-cylinder TDI and on export versions for USA)
- 11 - Standing time output
- 12 - Air conditioner shut-off
- 13 - Handbrake
- 14 - Electronic throttle
- 15 - Parking lights
- 16 - Not used
- 17 - Transponder 2
- 18 - Not used
- 19 - Not used
- 20 - Not used
- 21 - Oil temperature
- 22 - Not used
- 23 - Not used
- 24 - Not used
- 25 - Not used
- 26 - Not used
- 27 - Not used
- 28 - Not used
- 29 - Terminal 58d (external dimmer potentiometer)
- 30 - Speedometer output 2
- 31 - Not used
- 32 - Not used



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Multi-pin connector, 20-pin, red

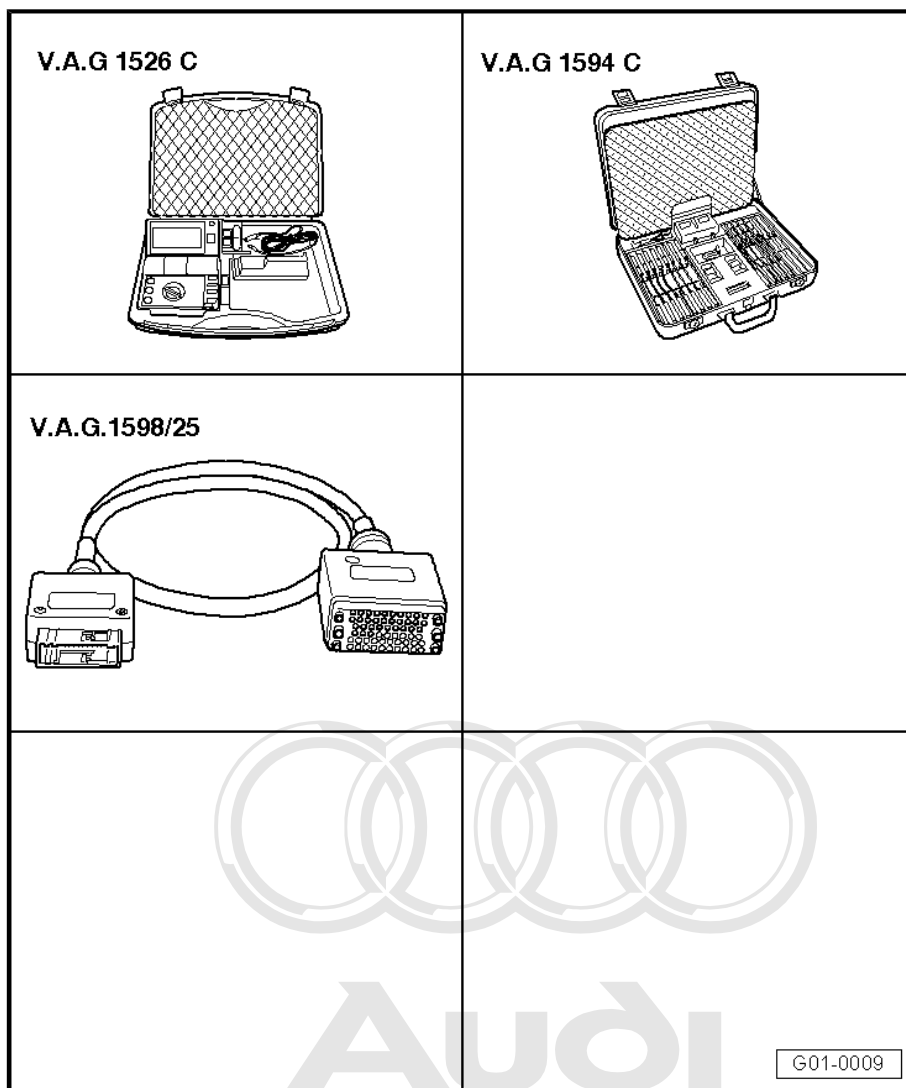
- 1 - Fuel consumption signal
- 2 - Not used
- 3 - Not used
- 4 - Not used
- 5 - Ambient temperature
- 6 - Selector lever position indicator
- 7 - Not used
- 8 - Not used
- 9 - Washer fluid low
- 10 - Hydraulic pressure
- 11 - On-board computer reset
- 12 - Clock signal for radio frequency display
- 13 - Data signal for radio frequency display
- 14 - On-board computer, left
- 15 - Enable signal for radio frequency display
- 16 - Tail lights / dipped beams (bulb monitor)
- 17 - Glow plug relay (on TDI engines the low-voltage monitor in the instrument cluster is disabled while the glow plugs are activated)
- 18 - On-board computer, right
- 19 - Brake light
- 20 - Not used

**1.7 Checking signal from speedometer sender -G22-**

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Special tools and workshop equipment required

- ◆ Hand-held multimeter - V.A.G 1526C-
- ◆ Auxiliary measuring set - V.A.G 1594C-
- ◆ Test box -V.A.G 1598A-
- ◆ Adapter -V.A.G 1598/4- for multi-pin connector, 26-pin
- ◆ Adapter -V.A.G 1598/25- for multi-pin connector, 32-pin



Procedure:

- Remove instrument cluster ➔ [page 54](#) .

Vehicles up to model year 1997:

- Connect test box -V.A.G 1598A- with adapter -V.A.G 1598/4- to multi-pin connector, 26-pin, blue.
- Connect hand-held multimeter to test continuity between socket "23" and earth.

Vehicles from model year 1998:

- Connect test box -V.A.G 1598A- with adapter -V.A.G 1598/25- to multi-pin connector, 32-pin, blue.
- Connect hand-held multimeter to test continuity between sockets "28" and "9".

All models:

- Raise vehicle with a lifting platform until front left wheel is free to turn.
- Rotate front left wheel.
- The continuity tester of the hand-held multimeter must emit brief high-pitched signals.

If continuity tester does not react as described:

- Check wiring connection between instrument cluster and speedometer sender -G22- according to current flow diagram.

If no fault is found in wiring:

- Renew speedometer sender -G22- .

1.8 Checking signal from fuel gauge sender -G-

Special tools and workshop equipment required

- ◆ Hand-held multimeter - V.A.G 1526C-
- ◆ Auxiliary measuring set - V.A.G 1594C-
- ◆ Test box -V.A.G 1598A-
- ◆ Adapter -V.A.G 1598/4- for multi-pin connector, 26-pin
- ◆ Adapter -V.A.G 1598/25- for multi-pin connector, 32-pin

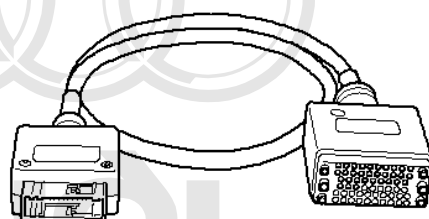
V.A.G 1526 C



V.A.G 1594 C



V.A.G.1598/25



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G01-0009

Procedure:

- Remove instrument cluster ⇒ [page 54](#) .

Vehicles up to model year 1997:

- Connect test box -V.A.G 1598A- with adapter -V.A.G 1598/4- to multi-pin connector, 26-pin, yellow.
- Connect hand-held multimeter to measure resistance between socket "25" and earth.

Vehicles from model year 1998:

- Connect test box -V.A.G 1598A- with adapter -V.A.G 1598/25- to multi-pin connector, 32-pin, blue.

- Connect hand-held multimeter to measure resistance between sockets “5” and “9”.

All models:

- Specification: ⇒ Rep. Gr. 20 .

If reading does not match specification:

- Check wiring connection between instrument cluster and fuel gauge sender -G- according to current flow diagram.

If no fault is found in wiring:

- Check fuel gauge sender -G- ⇒ Rep. Gr. 20 .

1.9 Checking signal from coolant temperature display sender -G2-

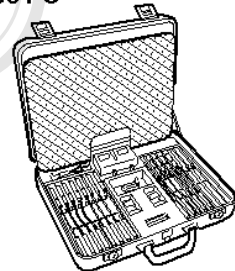
Special tools and workshop equipment required

- ◆ Hand-held multimeter - V.A.G 1526C-
- ◆ Auxiliary measuring set - V.A.G 1594C-
- ◆ Test box -V.A.G 1598A-
- ◆ Adapter -V.A.G 1598/4- for multi-pin connector, 26-pin
- ◆ Adapter -V.A.G 1598/25- for multi-pin connector, 32-pin

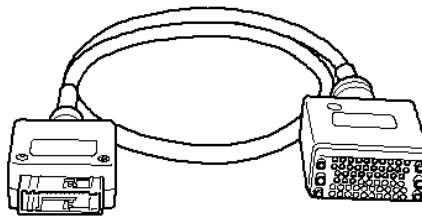
V.A.G 1526 C



V.A.G 1594 C



V.A.G.1598/25



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G01-0009

Procedure:

- Remove instrument cluster ⇒ [page 54](#) .

Vehicles up to model year 1997:

- Connect test box -V.A.G 1598A- with adapter -V.A.G 1598/4- to multi-pin connector, 26-pin, yellow.



- Connect hand-held multimeter to measure resistance between socket “26” and earth.

Vehicles from model year 1998:

- Connect test box -V.A.G 1598A- with adapter -V.A.G 1598/25- to multi-pin connector, 32-pin, blue.
- Connect hand-held multimeter to measure resistance between sockets “8” and “9”.

All models:

- Coolant temperature 90 °C: approx. 110 Ω.
- Coolant temperature 120 °C: approx. 50 Ω.

If reading does not match specification:

- Check wiring connection between instrument cluster and coolant temperature display sender -G2- according to current flow diagram.

If no fault is found in wiring:

- Renew coolant temperature display sender -G2- .



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2 Instrument cluster - vehicles from model year 2000

2.1 Fault message "dEF" in trip recorder display

If the control unit in the instrument cluster detects a fault in its permanent memory, the letters "dEF" will appear in the trip recorder display. If "dEF" is displayed:

- Renew instrument cluster ➔ [page 71](#) .

Renewing instrument cluster

- ◆ The instrument cluster must not be dismantled.
- ◆ If required, the instrument cluster can be replaced with an exchange unit.
- ◆ Complete the damage report form and return it together with the defective instrument cluster.
- ◆ Defective units must always be returned in their original packaging.
- ◆ When renewing the instrument cluster, the mileage recorder and service interval display can be adapted using vehicle diagnostic, testing and information system -VAS 5051- ➔ Electrical system, self-diagnosis; Rep. Gr. 01 .

2.2 Removing and installing instrument cluster



Note

All cable ties which are released or cut open when removing must be fitted in the same position when installing.

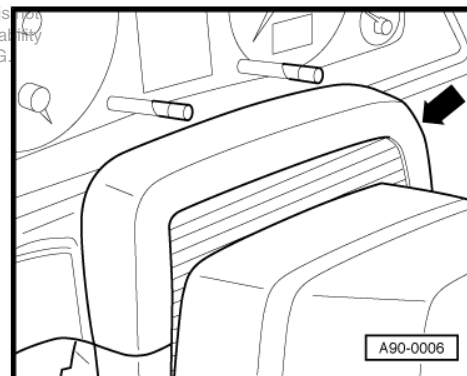
Removing

- If instrument cluster is renewed, determine input values with vehicle diagnostic, testing and information system -VAS 5051- ➔ Electrical system, self-diagnosis; Rep. Gr. 01 .
- Switch off ignition and take out ignition key.
- Move steering wheel down and to rear as far as possible, making use of full range of steering column adjuster.
- Tilt trim cover -arrow- towards rear.
- Lift off trim cover on instrument cluster.



Note

Apply masking tape on steering column trim to avoid damage.

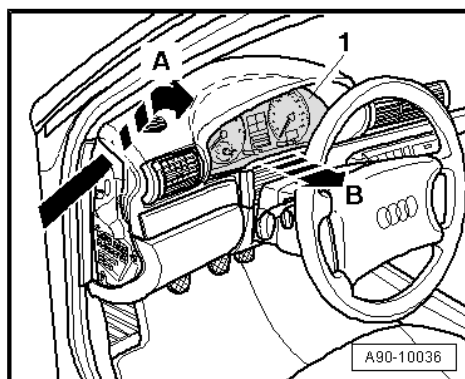
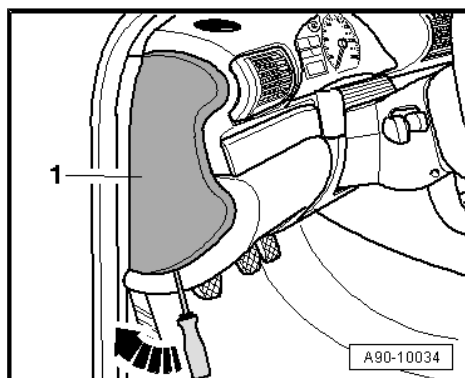
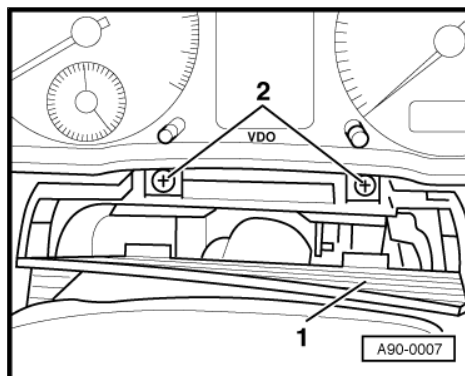


- Fold trim -1- to rear.
- Remove bolts -2-.

Audi

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- Use screwdriver to pry off trim -1- on left-side of dash panel -arrow-.
- Reach through opening -arrow A- above fuse holder and push out instrument cluster -1- in direction of -arrow B-.
- If fitted, cut through cable tie on back of instrument cluster.



- Unplug electrical connector -1- at instrument cluster by pulling retaining clip -2- upwards -arrow- and pulling off connector.

Installing

Installation is carried out in the reverse order; note the following:



Note

Refit all cable ties at the same locations when reinstalling.

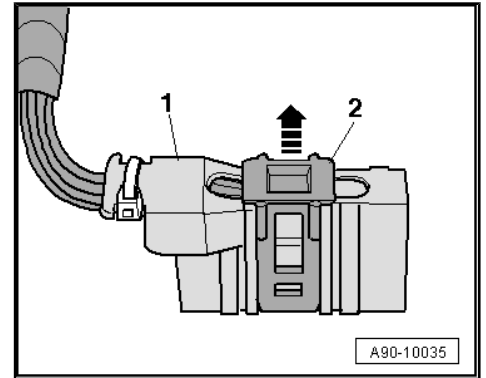
- Plug in electrical connectors.
- If fitted, secure wiring harness in position on the back of the instrument cluster with a cable tie.
- Perform a function test after installing instrument cluster.

If function test is OK:

- Enter input values for instrument cluster ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 .

Tightening torque

Component	Nm
Instrument cluster to dash panel	1.5



2.3 Multi-pin connectors on instrument cluster

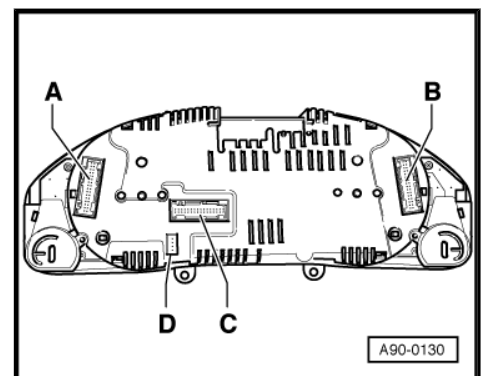


Note

All warning lamps in instrument cluster are fitted with light-emitting diodes. The instrument cluster must be renewed in the event of warning lamp failure.

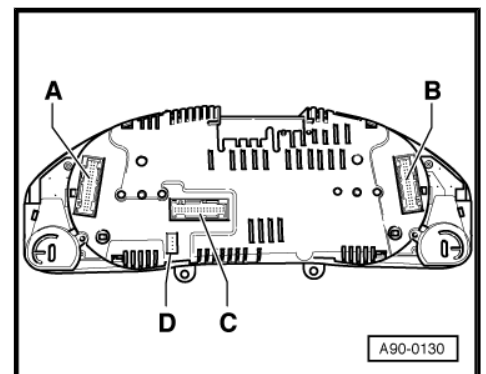
Midline instrument cluster

- A - Multi-pin connector, 32-pin, green
- B - Multi-pin connector, 32-pin, blue
- C - Not used
- D - Multi-pin connector, 4-pin, black, for radio-controlled clock



Highline instrument cluster

- A - Multi-pin connector, 32-pin, green
- B - Multi-pin connector, 32-pin, blue
- C - Multi-pin connector, 32-pin, grey
- D - Multi-pin connector, 4-pin, black, for radio-controlled clock

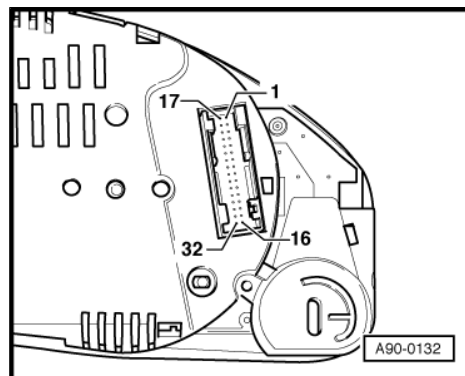


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2.4 Pin assignment at multi-pin connectors on instrument cluster

Multi-pin connector, 32-pin, blue

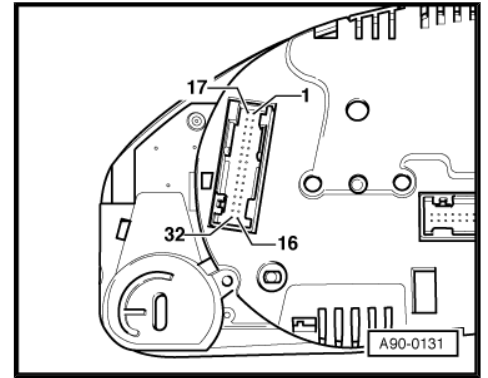
- 1 - Terminal 15
- 2 - Brake pad wear
- 3 - Speedometer (output 1)
- 4 - Not used
- 5 - Fuel gauge sender
- 6 - Fuel tank warning OBD 2
- 7 - Terminal 31 (sensor earth)
- 8 - Coolant temperature
- 9 - Terminal 31 (load earth)
- 10 - Oil pressure 2 (high)
- 11 - Engine speed signal
- 12 - Air conditioner shut-off
- 13 - Electronic throttle / glow period warning lamp
- 14 - Self-levelling suspension
- 15 - Terminal 58d
- 16 - Turn signal (trailer)
- 17 - Main beams
- 18 - Turn signal (left-side)
- 19 - Not used
- 20 - Terminal 58s
- 21 - Driver's door contact
- 22 - Coolant level low
- 23 - Terminal 30
- 24 - Terminal 31 (load earth)
- 25 - Fuel consumption signal
- 26 - Right parking light
- 27 - Left parking light
- 28 - Speedometer input
- 29 - Brake
- 30 - S contact
- 31 - Speedometer (output 2)
- 32 - ESP/ASR (TCS)



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Multi-pin connector, 32-pin, green

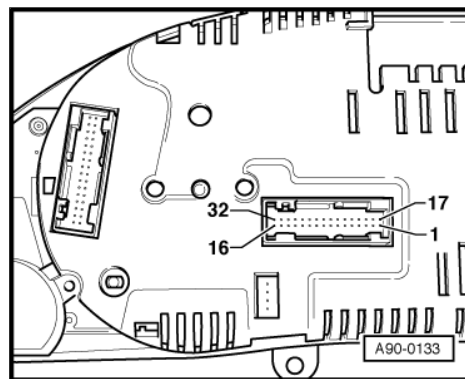
- 1 - Door contact (all doors)
- 2 - Transponder 1
- 3 - Not used
- 4 - Not used
- 5 - W wire
- 6 - Rear lid
- 7 - Turn signal (right-side)
- 8 - Not used
- 9 - Not used
- 10 - Airbag
- 11 - Standing time output
- 12 - Terminal 61/charge warning
- 13 - Parking brake / BRAKE
- 14 - CHECK
- 15 - Oil level / oil temperature
- 16 - Not used
- 17 - Transponder 2
- 18 - CAN high speed, power train (+)
- 19 - CAN high speed, power train (-)
- 20 - CAN high speed, power train (screening)
- 21 - ABS
- 22 - CAN low speed, convenience (+)
- 23 - CAN low speed, convenience (-)
- 24 - CAN low speed, convenience (screening)
- 25 - Bonnet
- 26 - Not used
- 27 - Belt buckle
- 28 - K wire
- 29 - Ambient temperature input
- 30 - Not used
- 31 - Selector lever display
- 32 - Not used



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Multi-pin connector, 32-pin, grey

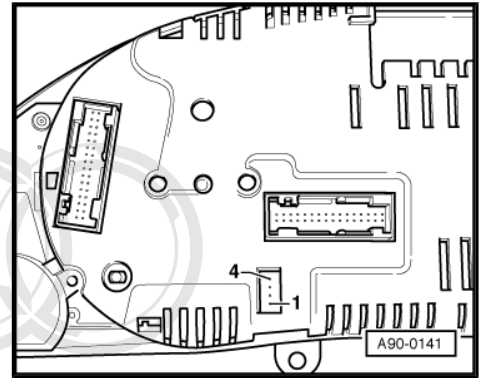
- 1 - Menu switch (menu)
- 2 - Menu switch (out A)
- 3 - Menu switch (out B)
- 4 - Menu switch (enter)
- 5 - CAN high speed, display (+)
- 6 - CAN high speed, display (-)
- 7 - CAN high speed, display (screening)
- 8 - Passenger's door contact
- 9 - Door contact, rear right
- 10 - Door contact, rear left
- 11 - Enable
- 12 - Clock
- 13 - Data
- 14 - Brake light
- 15 - Washer fluid level
- 16 - Tail lights / dipped beams
- 17 - On-board computer, left
- 18 - On-board computer, right
- 19 - On-board computer reset
- 20 - Not used
- 21 - Not used
- 22 - Not used
- 23 - Control group 1, Navigation system
- 24 - Control group 2, Navigation system
- 25 - Control group, Telematics
- 26 - Not used
- 27 - Not used
- 28 - Not used
- 29 - Not used
- 30 - Not used
- 31 - Not used
- 32 - Not used



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Multi-pin connector, 4-pin, black, for radio-controlled clock

- 1 - Radio-controlled clock signal (data)
- 2 - Radio-controlled clock 5V
- 3 - Not used
- 4 - Radio-controlled clock earth



2.5 Removing and installing radio-controlled clock



Note

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An instrument cluster with a radio-controlled clock can be identified by an aerial symbol at the top left of the clock display.

Removing

- Remove instrument cluster ⇒ [page 71](#) .
- Unplug electrical connector at radio-controlled clock.
- Release fasteners for radio-controlled clock at instrument cluster.
- Detach radio-controlled clock.

Installing

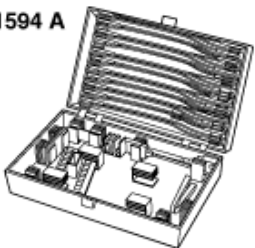
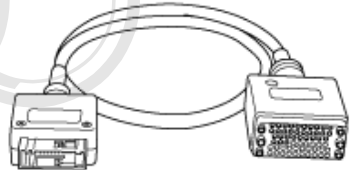
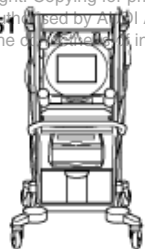
Install in reverse order.

2.6 Checking signal from speedometer sender -G22-

If there is a fault in the speed display on the speedometer, check whether the signal is present at the speedometer.

Special tools and workshop equipment required

- ◆ Hand-held multimeter - V.A.G 1526C-
- ◆ Auxiliary measuring set - V.A.G 1594C-
- ◆ Test box -V.A.G 1598A-
- ◆ Adapter -V.A.G 1598/25-
- ◆ Vehicle diagnostic, testing and information system - VAS 5051B- with diagnostic lead -VAS 5051/5A-

V.A.G 1526 A 	V.A.G 1594 A 
V.A.G 1598 A 	V.A.G.1598/25 
VAS 5051 	Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted. Used by Audi AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG. G20-0032

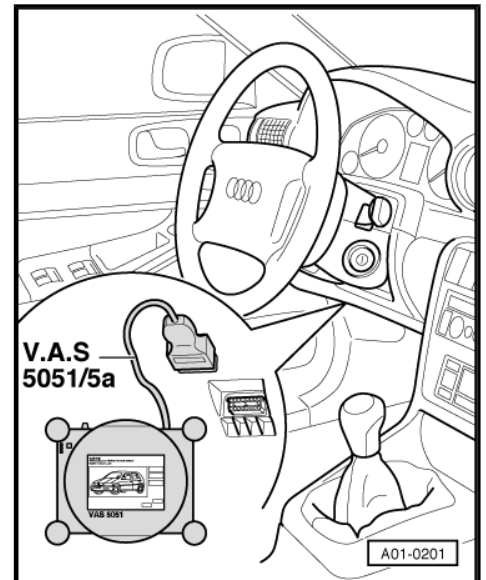
Procedure



WARNING

- ◆ *To avoid any risk of accidents when using test equipment while test-driving the vehicle, the test equipment must always be secured on the rear seat and operated from there by a second person.*
- ◆ *If test equipment is operated from the front passenger's seat, the occupant could suffer injury in the event of an accident if the front passenger's airbag is triggered.*

- Vehicle diagnostic, testing and information system -VAS 5051B- with diagnosis lead -VAS 5051/5A- connected, vehicle self-diagnosis and vehicle system "17 - instrument cluster" selected ⇒ Electrical system, self-diagnosis; Rep. Gr. 01.



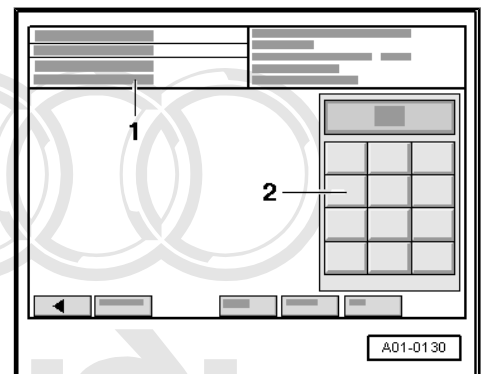
Display on -VAS 5051- :

- Select function "08 - Reading measured value block" from list -1-.



Display on -VAS 5051- :

- Use keypad -2- to enter 1 for "display group 001" and confirm by touching Q key.
- 1 - Enter display group
- Test-drive vehicle.



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Display on -VAS 5051- :

- Check readout in display zone -1-.
- Specification: current vehicle speed must be displayed (compare to speedometer -G21-).

If speed is indicated, but not displayed on speedometer -G21- :

- Renew instrument cluster ⇒ [page 71](#) .

If speed is not displayed:

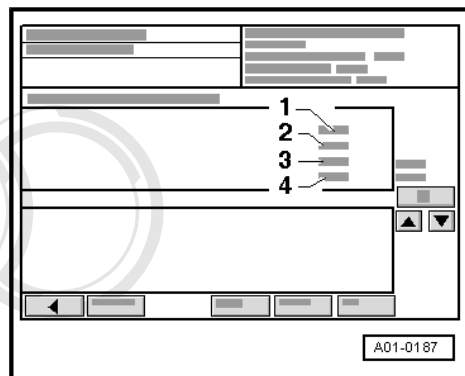
- Remove instrument cluster ⇒ [page 71](#) .
- Connect test box -V.A.G 1598A- with adapter -V.A.G 1598/25- to multi-pin connector, 32-pin, blue.
- Connect hand-held multimeter to test continuity between sockets “28” and “9”.
- Raise vehicle with a lifting platform until front left wheel is free to turn.
- Rotate front left wheel.
- The continuity tester of the hand-held multimeter must emit brief high-pitched signals.

If continuity tester does not react as described:

- Check wiring connection between instrument cluster and speedometer sender -G22- according to current flow diagram.

If no fault is found in wiring:

- Renew speedometer sender -G22- .



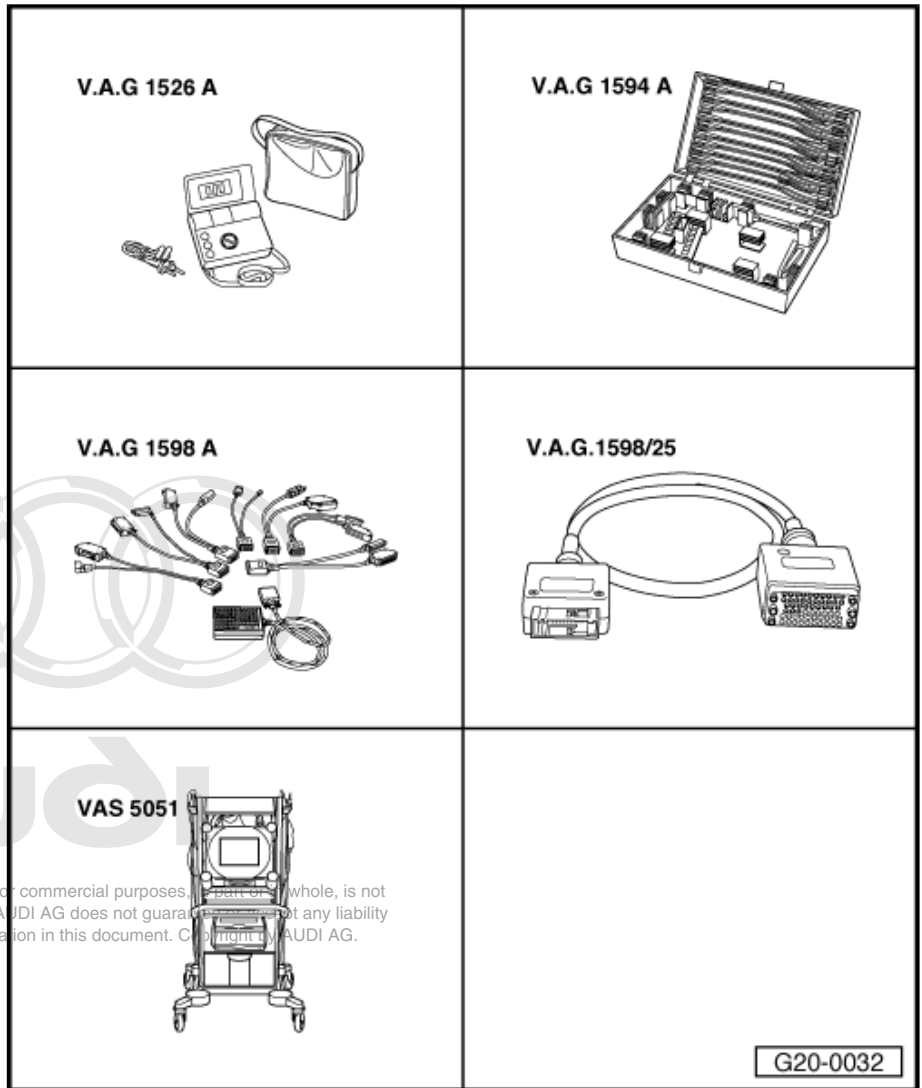
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2.7 Checking signal from fuel gauge sender -G-

If there is a fault with fuel gauge sender on instrument cluster, check whether signal is present at instrument cluster.

Special tools and workshop equipment required

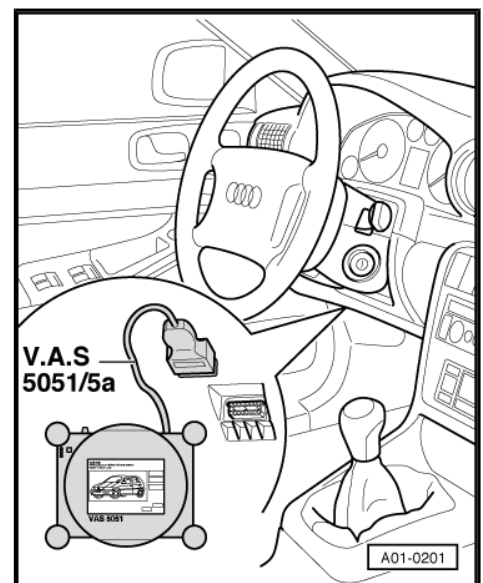
- ◆ Hand-held multimeter - V.A.G 1526C-
- ◆ Auxiliary measuring set - V.A.G 1594C-
- ◆ Test box -V.A.G 1598A-
- ◆ Adapter -V.A.G 1598/25-
- ◆ Vehicle diagnostic, testing and information system - VAS 5051B- with diagnostic lead -VAS 5051/5A-



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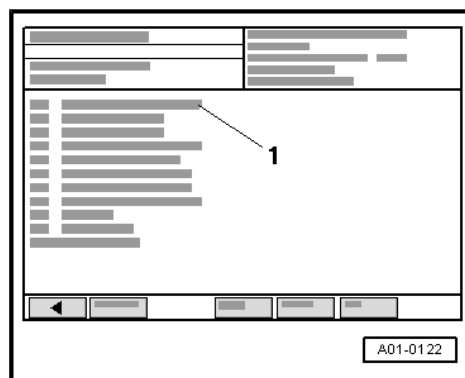
Procedure

- Vehicle diagnostic, testing and information system -VAS 5051B- with diagnosis lead -VAS 5051/5A- connected, vehicle self-diagnosis and vehicle system "17 - instrument cluster" selected ⇒ Electrical system, self-diagnosis; Rep. Gr. 01.



Display on -VAS 5051- :

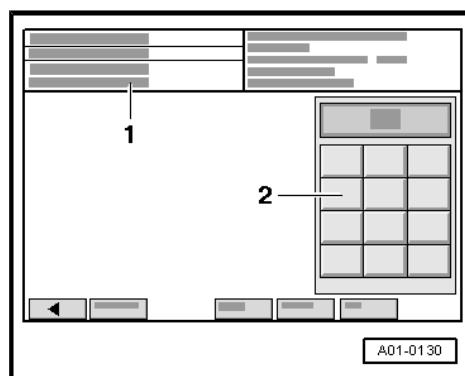
- Select function “08 - Reading measured value block” from list -1-.



Display on -VAS 5051- :

- Use keypad -2- to enter [2] for “display group 002” and confirm by touching [Q] key.

1 - Enter display group



Display on -VAS 5051- :

- Check readout in display zone -2-.
- Specification: approx. fuel level

If the fuel level is indicated, but not displayed on fuel gauge -G1- , the instrument cluster is defective.

- Renew instrument cluster ⇒ [page 71](#) .

If the fuel level is not indicated:

- Remove instrument cluster ⇒ [page 71](#) .
- Connect test box -V.A.G 1598A- with adapter -V.A.G 1598/25- to multi-pin connector, 32-pin, blue.
- Connect multimeter to measure resistance between sockets “5” and “7”.

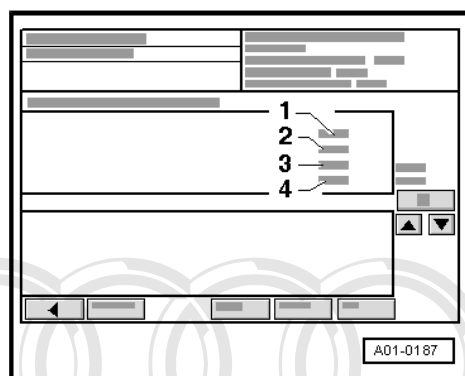
- Specification: ⇒ Rep. Gr. 20 .

If reading does not match specification:

- Check wiring connection between instrument cluster and fuel gauge sender according to current flow diagram.

If no fault is found in wiring:

- Check fuel gauge sender -G- ⇒ Rep. Gr. 20 .



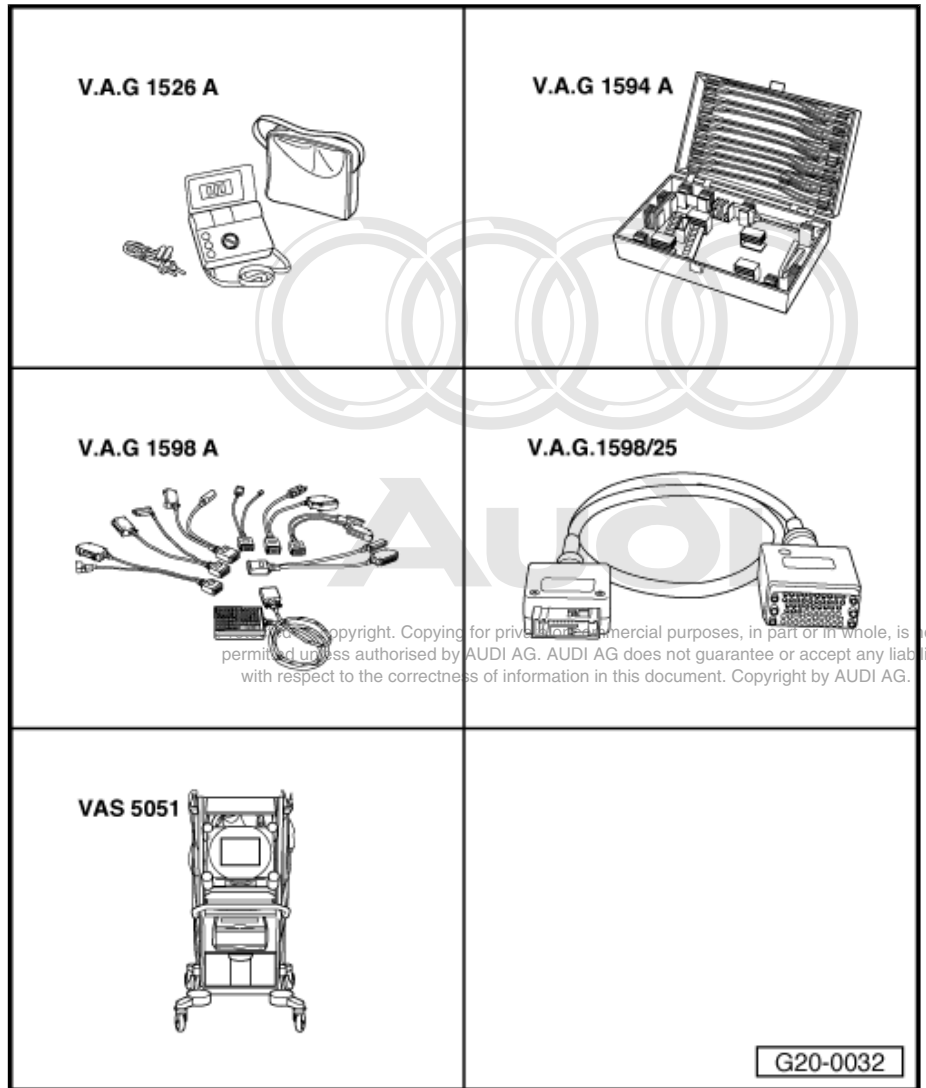
2.8 Checking signal from coolant temperature display sender -G2-

If there is a malfunction of the coolant temperature gauge in the instrument cluster, check whether the signal is present at the instrument cluster.

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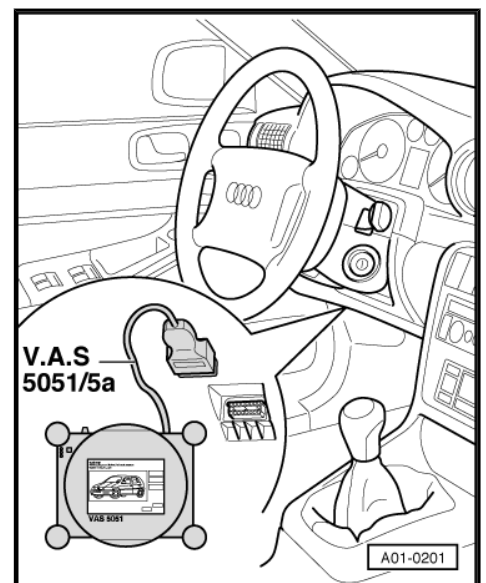
Special tools and workshop equipment required

- ◆ Hand-held multimeter - V.A.G 1526C-
- ◆ Auxiliary measuring set - V.A.G 1594C-
- ◆ Test box -V.A.G 1598A-
- ◆ Adapter -V.A.G 1598/25-
- ◆ Vehicle diagnostic, testing and information system - VAS 5051B- with diagnostic lead -VAS 5051/5A-



Procedure

- Vehicle diagnostic, testing and information system -VAS 5051B- with diagnosis lead -VAS 5051/5A- connected, vehicle self-diagnosis and vehicle system "17 - instrument cluster" selected ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 .



Display on -VAS 5051- :

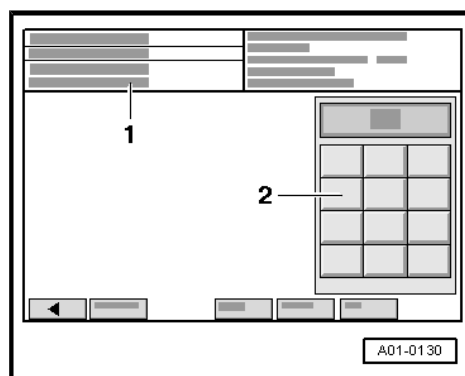
- Select function "08 - Reading measured value block" from list -1-.



Display on -VAS 5051- :

- Use keypad -2- to enter [3] for "display group 003" and confirm by touching [Q] key.

1 - Enter display group



Display on -VAS 5051- :

- Check readout in display zone -1-.
- Specification with engine cold: approx. ambient temperature
- Specification with engine warm: 80 ... 90 °C

If the coolant temperature is indicated, but not displayed on coolant temperature gauge -G3-, the instrument cluster is defective.

- Renew instrument cluster ⇒ [page 71](#) .

If the coolant temperature is not indicated:

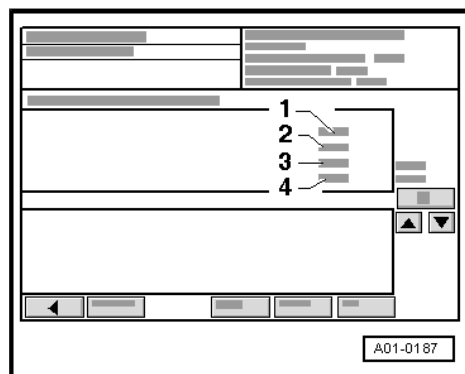
- Remove instrument cluster ⇒ [page 71](#) .
- Connect test box -V.A.G 1598A- with adapter -V.A.G 1598/25- to multi-pin connector, 32-pin, blue.
- Connect hand-held multimeter to measure resistance between sockets "7" and "8".
- Coolant temperature 90 °C: approx. 110 Ω.
- Coolant temperature 120 °C: approx. 50 Ω.

If reading does not match specification:

- Check wiring connection between instrument cluster and coolant temperature display sender -G2- according to current flow diagram.

If no fault is found in wiring:

- Renew coolant temperature display sender -G2- .



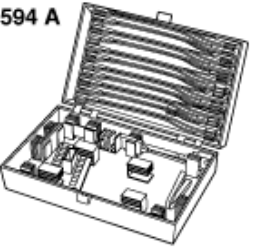
2.9 Checking fuel consumption signal

Note

- ◆ *On some engine versions for the Audi A4 the consumption signal is transmitted from the engine control unit to the instrument cluster via the CAN bus (power train).*
- ◆ *Faults in the communication between the engine control unit and the instrument cluster can only be detected via the self-diagnosis of the instrument cluster ⇒ Electrical system, self-diagnosis; Rep. Gr. 01.*

Special tools and workshop equipment required

- ◆ Hand-held multimeter - V.A.G 1526C-
- ◆ Auxiliary measuring set - V.A.G 1594C-
- ◆ Test box -V.A.G 1598A-
- ◆ Adapter -V.A.G 1598/25-

V.A.G 1526 A 	V.A.G 1594 A 
V.A.G 1598 A 	V.A.G.1598/25 
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Procedure

- Start engine and test-drive vehicle.
- Observe fuel consumption display in instrument cluster.

If the display constantly shows "0.0 ltr./100 km", the cause of the fault in most cases is a short circuit to earth in the signal wiring.

If the display constantly shows "51 ltr./100 km", the cause of the fault in most cases is an open circuit in the signal wiring.

- Switch off ignition.
 - Connect appropriate test box to engine control unit ⇒ Rep. Gr. 24 .
 - Remove instrument cluster ⇒ [page 71](#) and unplug blue 32-pin connector from instrument cluster.
 - Connect test box -V.A.G 1598A- with adapter -V.A.G 1598/25- to multi-pin connector, 32-pin, blue.
 - Connect hand-held multimeter to measure resistance as follows:
 1. Connect “+” test lead to socket “25” of adapter - V.A.G 1598/25- .
 2. Connect “-” test lead to socket for fuel consumption signal on test box for engine control unit ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
 - Specification: approx. 0 Ω.
 1. Connect “+” test lead to socket for fuel consumption signal on test box for engine control unit ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
 2. Connect “-” test lead to earth.
 - Connect hand-held multimeter to measure resistance as follows:
 - Specification: approx. ∞ Ω.
 - Check wiring according to current flow diagram if the specifications are not attained.
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- If the fuel consumption display does not match the actual fuel consumption:**
- Perform adaption of fuel consumption display ⇒ Electrical System, self-diagnosis; Rep. Gr. 01 .

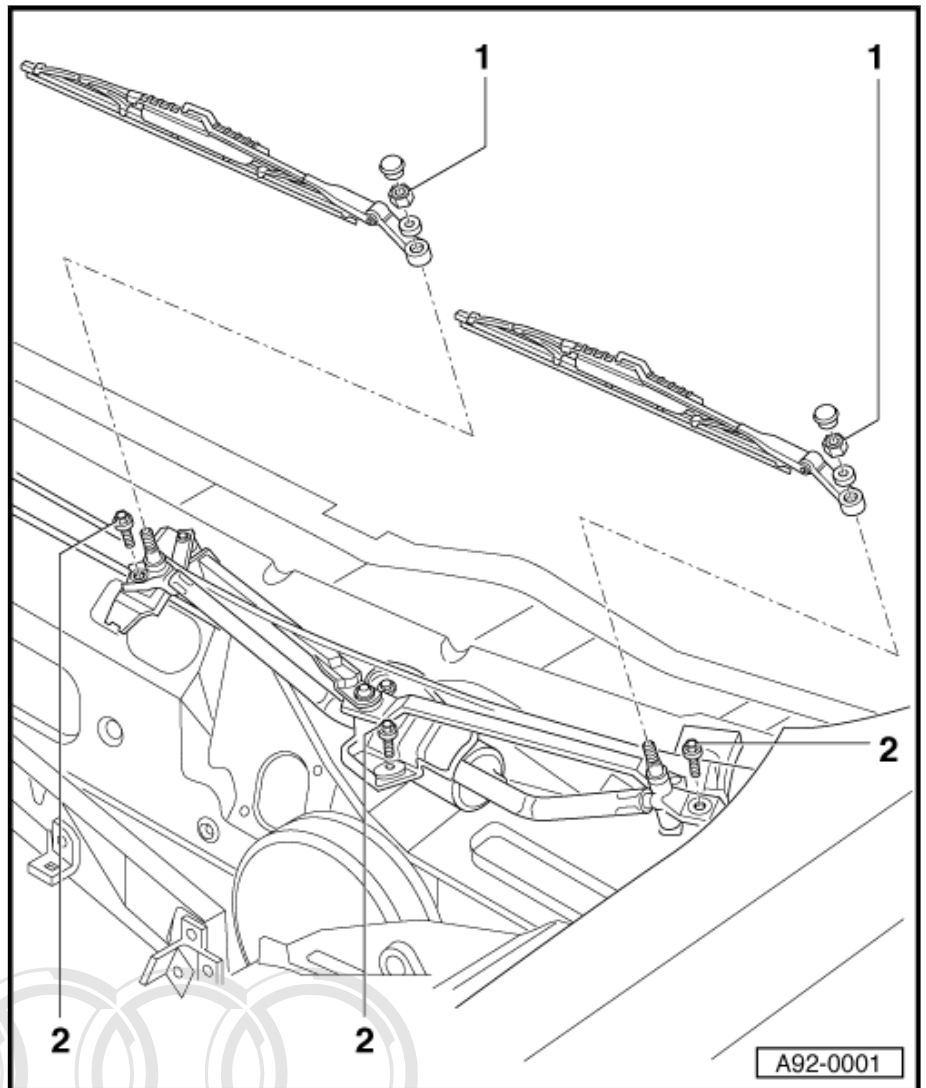
92 – Windscreen wash/wipe system

1 Servicing windscreen wiper system

1.1 Windscreen wiper system - exploded view of components

1 - Nut, 16 Nm

2 - Bolt, 8 Nm



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1.2 Renewing wiper blade

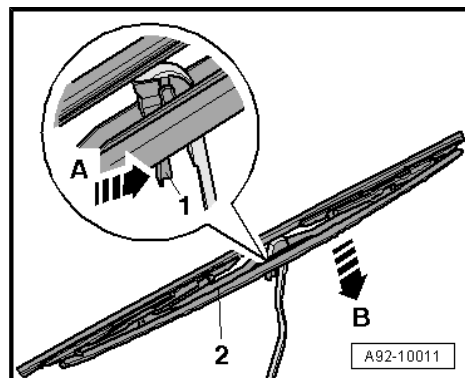
Removing

- Lift windscreen wiper arm away from windscreen and turn wiper blade at right angles to wiper arm.
- Release retaining clip -1- in direction of -arrow A-.
- Disengage wiper blade -2- in direction of -arrow B- from wiper arm and lift it off wiper arm.



Note

Make sure that the windscreen wiper arm does not drop onto the windscreen.



Installing

- Insert the new wiper blade into the windscreen wiper arm. Make sure wind deflector is facing downwards when installed.
- Press wiper blade upwards until retaining clip engages audibly in wiper arm.

1.3 Removing and installing wiper arms

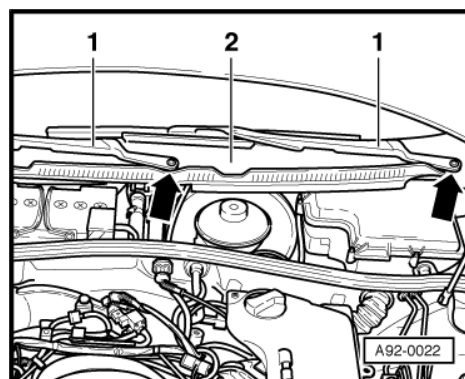
Removing

- Switch on ignition.
- Operate "touch-wipe function" and allow wiper arms to move to end position.
- Switch off ignition and take out ignition key.
- Pry cover caps off wiper arms with a screwdriver.
- Loosen nuts -arrows- several turns.
- Release wiper arms -1- from wiper shafts one after the other by tilting slightly.
- Remove nuts completely and detach wiper arms.



Note

If wiper arm cannot be released from wiper shaft, detach by using a commercially available puller.



Installing

Installation is carried out in the reverse order; note the following:

- Adjust wiper arms ⇒ [page 89](#) .

1.4 Adjusting wiper arms

Procedure

- Operate “touch-wipe function” and allow wiper arms to move to end position.
- Pry cover caps off wiper arms with a screwdriver.
- Loosen nuts -arrows- several turns.
- Release wiper arms -1- from wiper shafts one after the other by tilting slightly.
- Remove nuts completely and detach wiper arms.



Note

Disregard -item 2-.

- Switch on ignition.
- Operate “touch-wipe function” and allow wiper arms to move to end position.
- Switch off ignition.
- Attach wiper arm with fitted wiper blade to wiper shaft and position wiper blade in line with markings -1- on windscreen as follows:
- Check distance between tips of wiper blades and cowl panel grille at bottom edge of windscreen as follows:

Dimension -a-	+ 8 mm
= 20	– 5
Dimension -b-	+ 8 mm
= 28	– 5



Note

Dimensions indicate distance between tips of wiper blades and black cowl panel grille at bottom edge of windscreen.

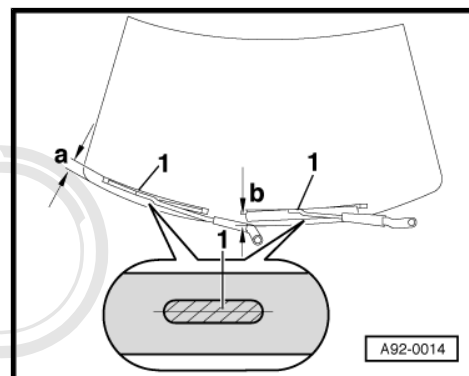
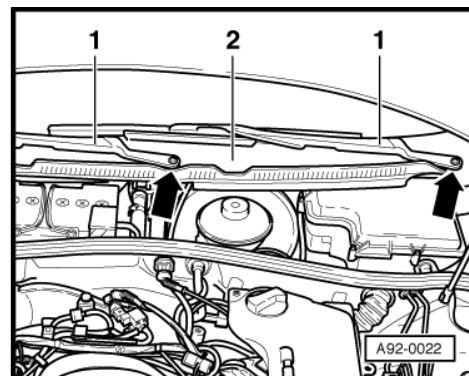
- Tighten nuts for wiper arms.
- Switch on ignition.
- Operate “touch-wipe function” and allow wiper arms to move to end position.
- Switch off ignition.
- Check setting of wiper arms again. Correct as necessary.

Tightening torque

Component	Nm
Wiper arm to wiper shaft	16

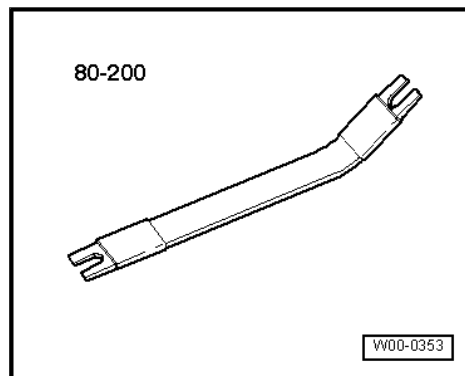
1.5 Removing and installing wiper motor

Special tools and workshop equipment required



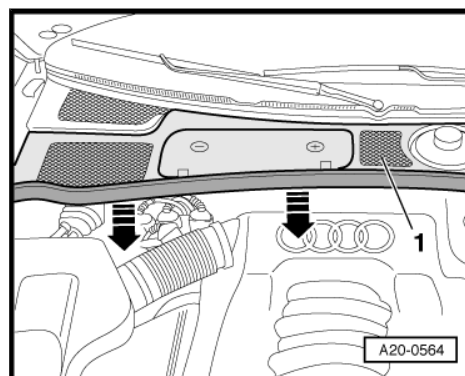
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◆ Removal lever -80 - 200-

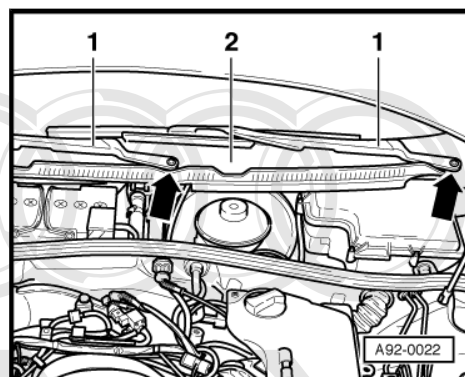


Removing

- If fitted, detach rubber seal of plenum chamber cover in direction of -arrow-.
- Remove plenum chamber cover -1- to front.



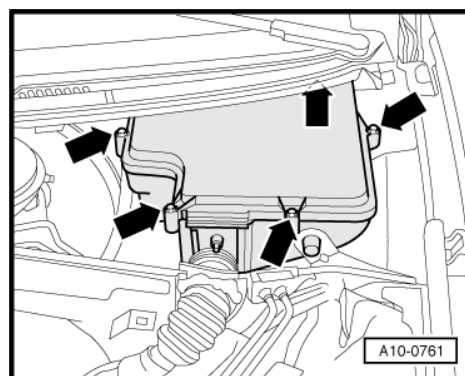
- Operate “touch-wipe function” and allow wiper arms to move to end position.
- Pry cover caps off wiper arms with a screwdriver.
- Loosen nuts -arrows- several turns.
- Release wiper arms -1- from wiper shafts one after the other by tilting slightly.
- Remove nuts completely and detach wiper arms.



Note

If wiper arm cannot be released from wiper shaft, detach by using a commercially available puller.

- Pull off retaining clips and detach left section of cowl panel grille -2-.
- Unscrew bolts -arrows-.
- Remove cover for electronics box (plenum chamber).



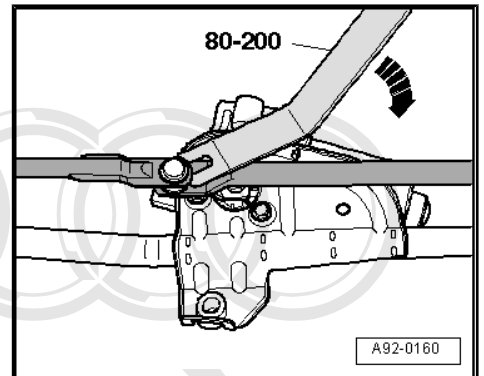
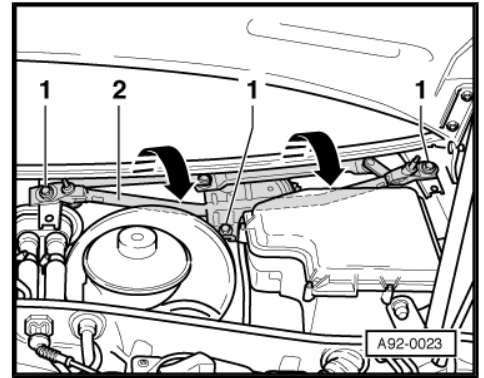
- Remove bolts -1-.



Note

Crank of wiper motor must be facing in direction of travel.

- Carefully pivot rear part of wiper frame -2- upwards (-arrows)- and take complete frame out of plenum chamber from right-hand side.
- Unplug electrical connector at wiper motor.
- Detach drive rod from wiper motor crank -arrow- using removal lever -80 - 200- .

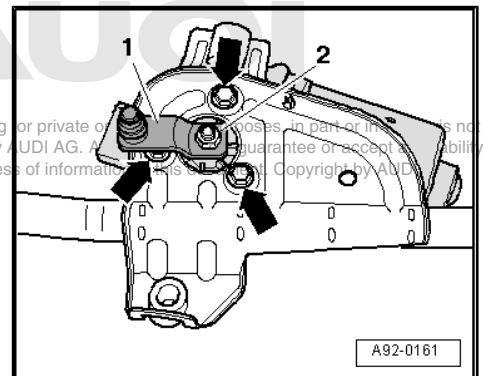


- Unscrew nut -2-.
- Pull crank -1- off wiper motor.
- Unscrew wiper motor from wiper frame -arrows-.

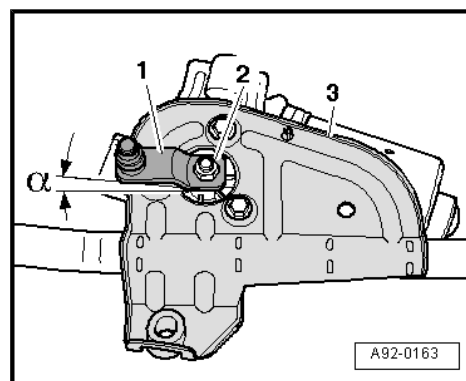
Installing

Installation is carried out in the reverse order; note the following:

- Secure wiper motor without crank to wiper frame -arrows-.
- Plug in electrical connector.
- Switch on ignition.
- Operate “touch-wipe function” and allow wiper motor to move to end position.
- Switch off ignition and take out ignition key.



- Align crank -1- with wiper frame -3-.
- Angle α = 2°
- Hold crank in position and hand-tighten nut -2- so setting is not altered.
- Then brace crank with an open-ended spanner and tighten nut fully.
- Switch on ignition.
- Operate "touch-wipe function" and allow wiper motor to move to end position.
- Check that angle α is attained; re-align if necessary.
- Insert wiper frame (wiper motor first) in plenum chamber.
- Fit and secure wiper motor together with wiper frame.
- Adjust wiper arms [⇒ page 89](#).



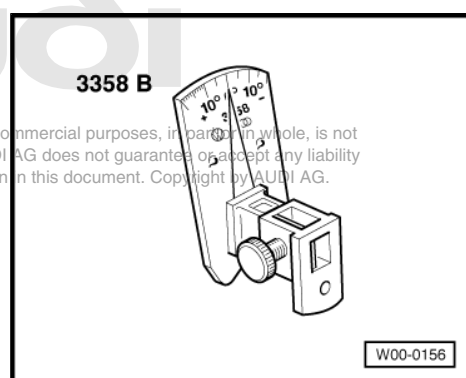
Tightening torques

Component	Nm
Wiper motor to wiper frame	9
Wiper crank to wiper motor	18
Wiper frame to plenum chamber	8

1.6 Eliminating wiper blade judder

Special tools and workshop equipment required

- ◆ Windscreen wiper setting tool -3358 B-



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Possible causes of wiper blade judder

- ◆ Window scratched.
- ◆ Wiper rubber slipped out of retaining clips or torn.
- ◆ Wiper arms/blades loose or bent.
- ◆ Wiper blades coated with wax or perished (out of shape).

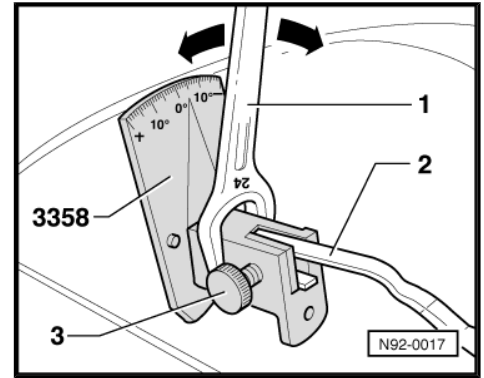
If the wiper blades are juddering and none of the causes listed apply, check and if necessary adjust the setting angle of the wiper arms before fitting new wiper blades.

Procedure

- Switch on ignition.
- Operate “touch-wipe function” and allow wiper arms to move to end position.
- Switch off ignition and take out ignition key.
- Remove wiper blade ⇒ [page 88](#) .
- Insert wiper arm -2- in windscreen wiper setting tool -3358 B- and secure wiper arm with locking screw -3-.
- Compare indicated angle with specified value.
 - Driver's side = $-3^{\circ} \pm 0^{\circ}$.
 - Passenger's side = $-3^{\circ} \pm 0^{\circ}$.

If setting angle is not OK:

- Apply open-end spanner (24 mm) -item 1- to windscreen wiper setting tool and adjust wiper arm by twisting as required -arrows-.
- Loosen locking screw -3- and pull wiper arm -2- out of windscreen wiper setting tool.
- Once again insert wiper arm -2- in windscreen wiper setting tool -3358 B- and secure wiper arm with locking screw -3-.
- Compare indicated angle with specified value.
- If necessary, repeat adjusting and checking procedure until specified value is attained.
- Detach windscreen wiper setting tool and fit wiper blade ⇒ [page 88](#) .



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2 Servicing windscreen washer system

2.1 Washer fluid reservoir (Audi A4) - exploded view of components

1 - 7 Nm

2 - Pump for windscreen washer system

- ☐ With washer fluid level sender on vehicles with auto-check system
- ☐ Pull pump/washer fluid level sender upwards out of rubber grommet

3 - Pump for headlight washer system

- ☐ Pull pump upwards out of rubber grommet

4 - Hose

- ☐ Clip in at the points marked and route to windscreen

F - Direction of travel

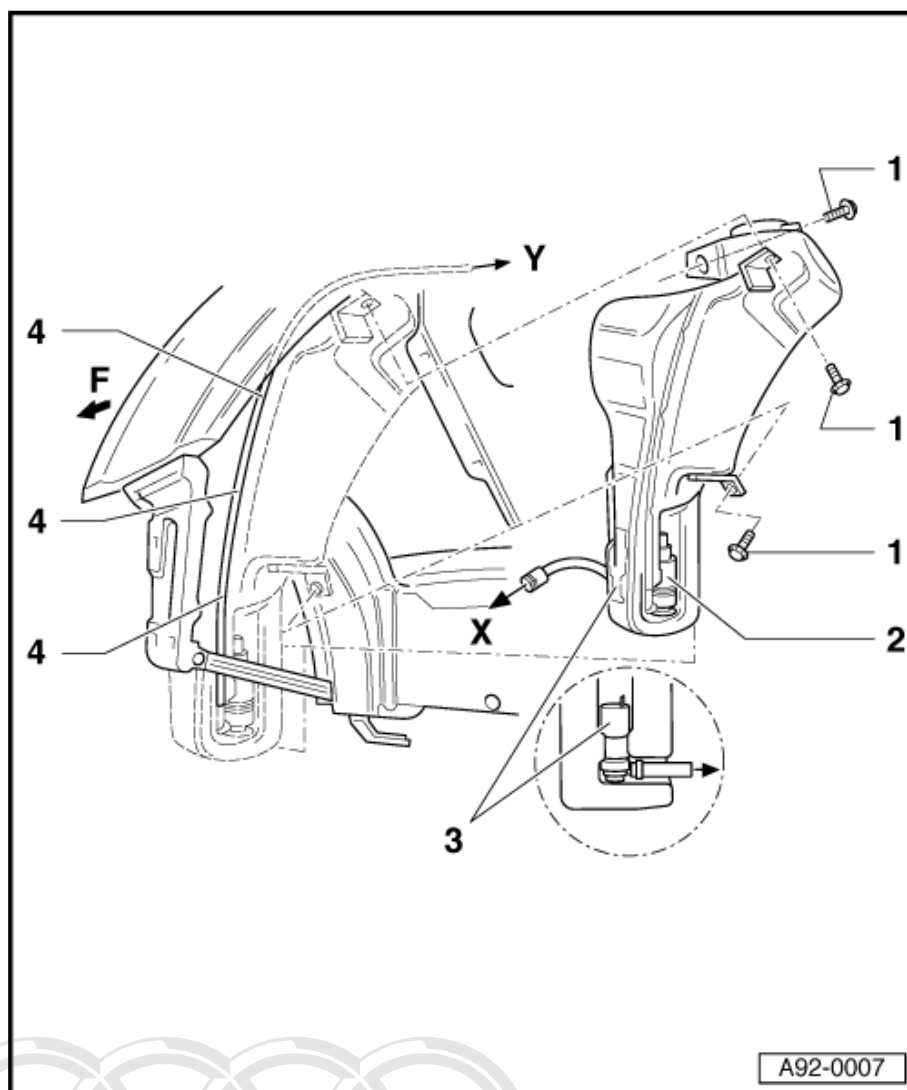
- ☐ Wheel housing shown from below (left-side)

X - Connection for washer fluid hose

- ☐ To washer jets for headlight washer system

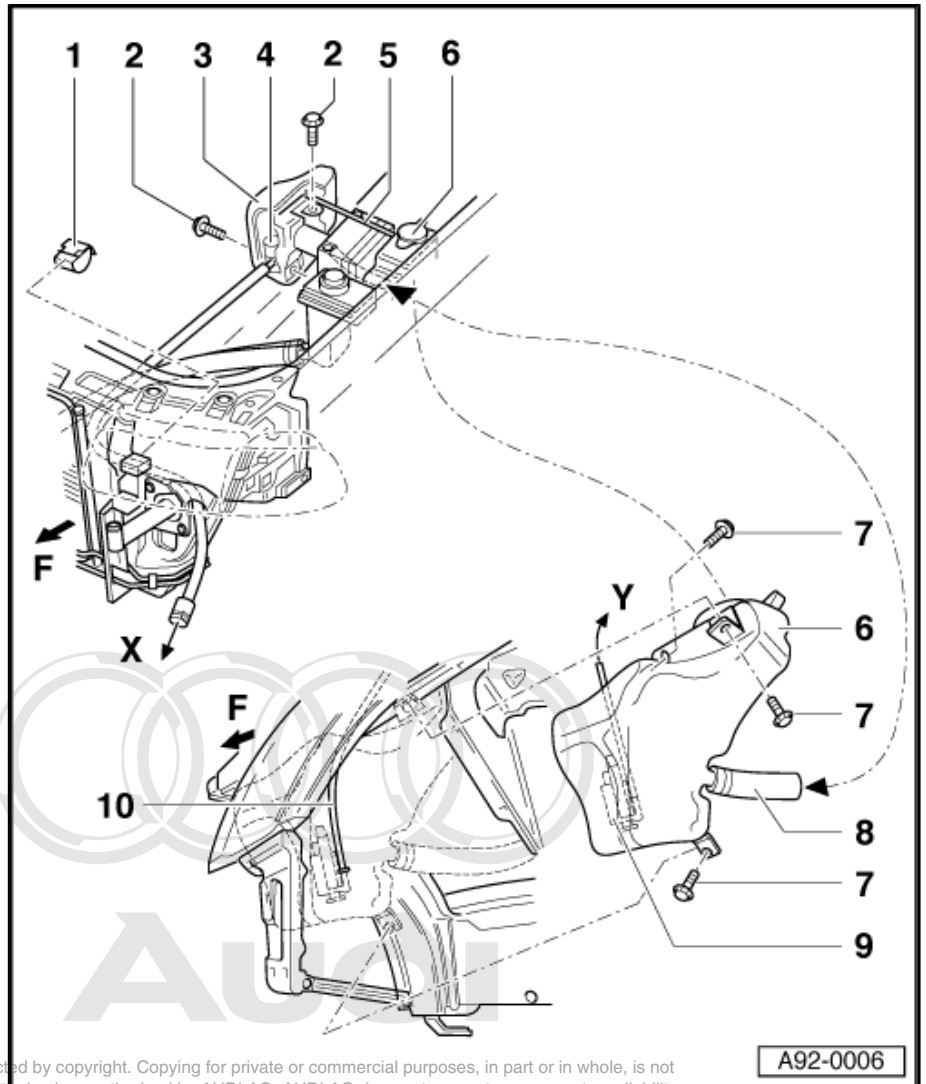
Y - Connection for washer fluid hose

- ☐ To washer jets for windscreen



2.2 Washer fluid reservoir (Audi S4/RS4) - exploded view of components

- 1 - Hose clip
- 2 - 7 Nm
- 3 - Washer fluid reservoir
 - ☐ For headlight washer system
- 4 - Pump for headlight washer system
 - ☐ Pull pump upwards out of rubber grommet
- 5 - Breather pipe
- 6 - Washer fluid reservoir
 - ☐ For windscreen washer system
 - ☐ Removing and installing
⇒ [page 96](#)
- 7 - 7 Nm
- 8 - Filler hose
 - ☐ For filling washer fluid reservoir for headlight washer system
- 9 - Pump for windscreen washer system
 - ☐ With washer fluid level sender on vehicles with auto-check system
 - ☐ Pull pump/washer fluid level sender upwards out of rubber grommet
- 10 - Hose
- F - Direction of travel
 - ☐ Wheel housing shown from below (left-side)
- X - Connection for washer fluid hose
 - ☐ To washer jets for headlight washer system
- Y - Connection for washer fluid hose
 - ☐ To washer jets for windscreen

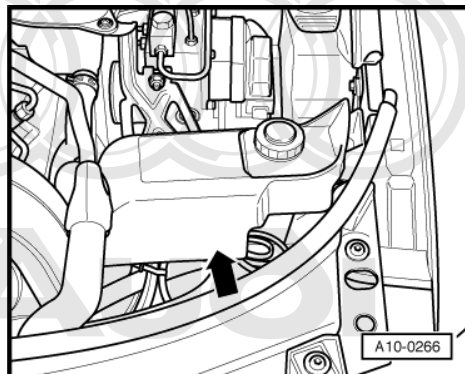


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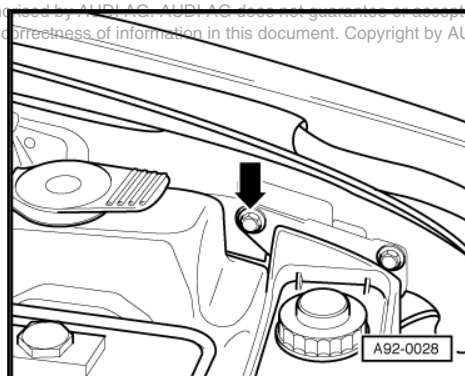
2.3 Removing and installing washer fluid reservoir

Removing

- If fitted, remove cover -arrow- from power steering reservoir.



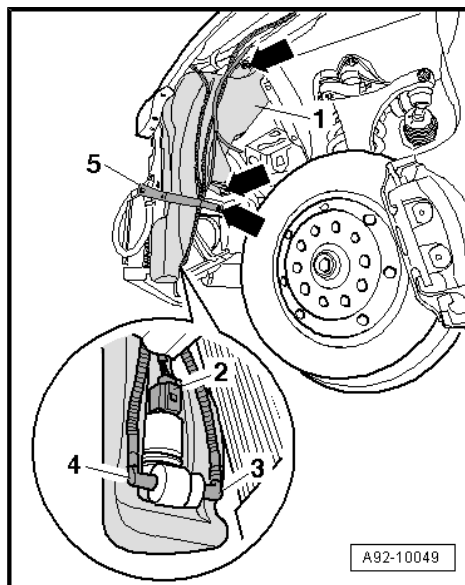
- Unscrew bolt -arrow-.



- Remove front wheel (left-side).
- Remove front wheel housing liner (left-side) ⇒ Rep. Gr. 66 .
- Unscrew bolts -arrows-.
- Swivel washer fluid reservoir -1- slightly to rear.

Audi S4/RS4:

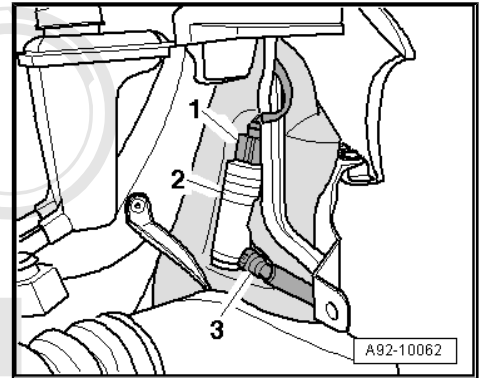
- Unplug electrical connector -2-.
- Mark washer fluid hoses -3- and -4- for re-installation on washer fluid pump.
- Detach washer fluid hoses at washer fluid pump.



- Unplug electrical connector -1- at washer fluid pump -2- for headlight washer system.
- Press release tab and pull off hose connector -3-.

Note

Shown with bumper and headlight removed for illustration purposes.

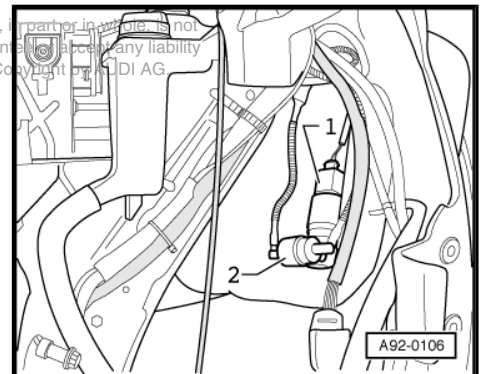


Audi A4:

- Unplug electrical connector -1-.
- Detach washer fluid hoses at washer fluid pump -2-.

Note

Shown with bumper and headlight removed for illustration purposes.



All models:

- Take out washer fluid reservoir downwards.

Installing

Installation is carried out in the reverse order; note the following:

- Install front wheel housing liner (left-side) ⇒ Rep. Gr. 66 .

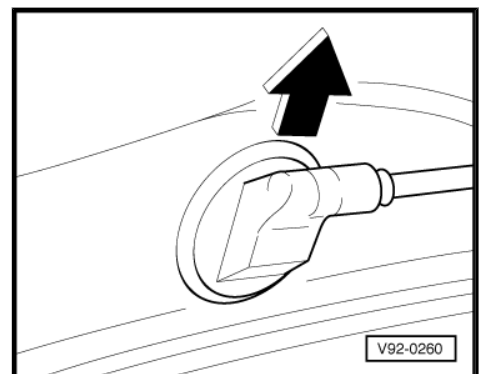
Tightening torques

Component	Nm
Filler neck for washer fluid reservoir to body	10
Washer fluid reservoir to body	7

2.4 Removing and installing washer jets - vehicles up to 01.1999

Removing

- Pull connection piece to rear to detach from washer jet -arrow-.
- Disconnect washer fluid hose from washer jet.



- Use small screwdriver to press retaining tab on washer jet to rear -arrow- while pressing connection piece slightly in opposite direction.
- Press washer jet -A- outwards out of bonnet.



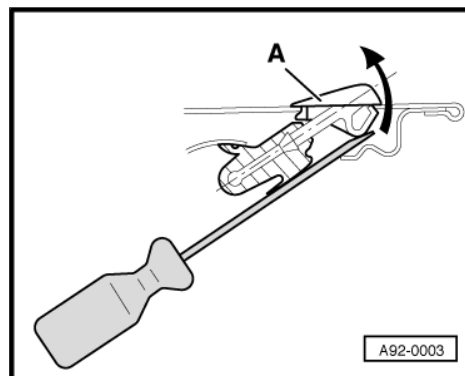
Note

Make sure not to press screwdriver against body panel.

Installing

Installation is carried out in the reverse order; note the following:

- Washer fluid hose must engage audibly in washer jet connection.

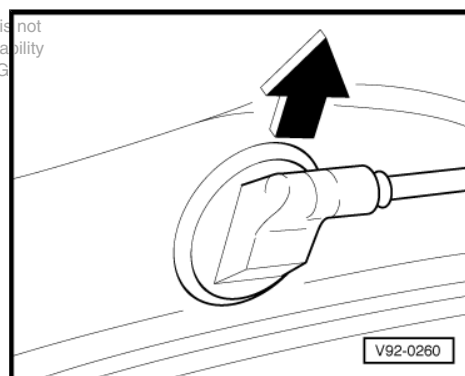


2.5 Removing and installing heated washer jets - vehicles up to 01.1999

Removing

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- Pull connection piece to rear to detach from washer jet -arrow-.
- Disconnect washer fluid hose from washer jet.
- Unplug electrical connector for heated washer jets.



- Use angled screwdriver to press retaining tab on washer jet to rear while applying light pressure in opposite direction to connection piece.
- Length of angled end: 20 ... 30 mm.
- Press washer jet outwards out of bonnet.



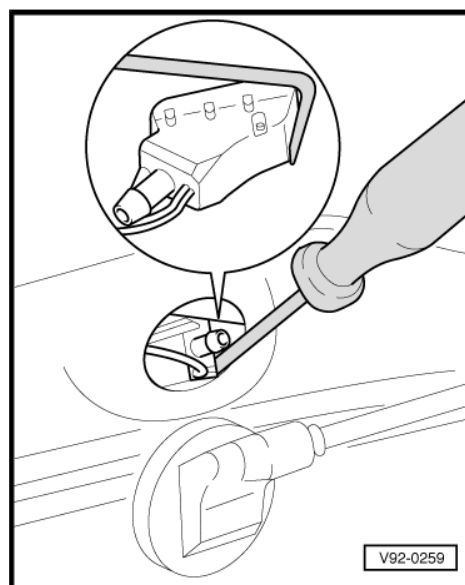
Note

Make sure not to press screwdriver against body panel.

Installing

Installation is carried out in the reverse order; note the following:

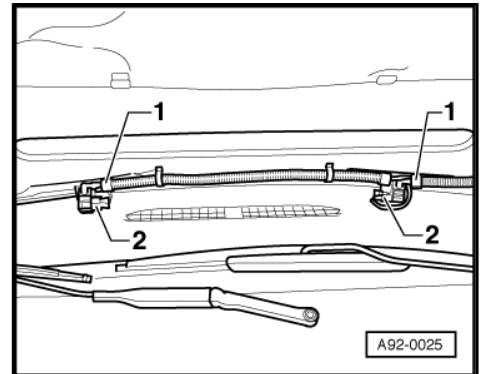
- Washer fluid hose must engage audibly in washer jet connection.



2.6 Removing and installing washer jets - vehicles from 02.1999

Removing

- Detach washer fluid hose -1- at corresponding washer jet.
- If fitted, unplug connector -2- for heated washer jets.

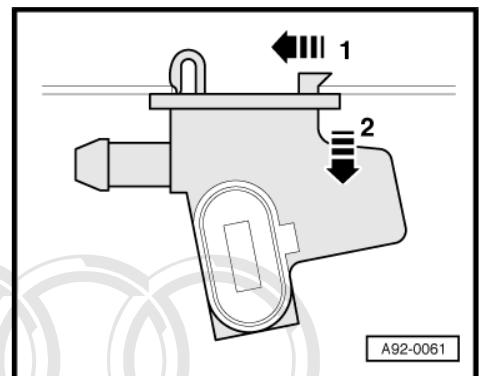


- Press washer jet forwards in direction of travel -arrow 1-.
- Remove washer jet downwards from bonnet -arrow 2-.

Installing

Installation is carried out in the reverse order; note the following:

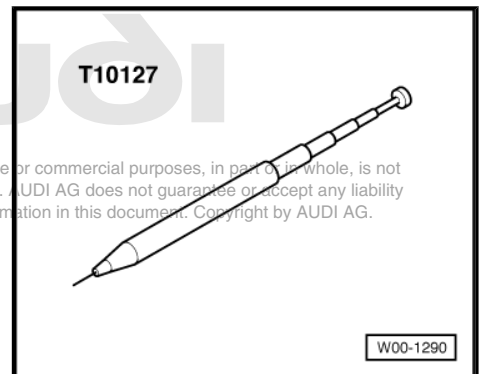
- Washer fluid hose must engage audibly in washer jet connection.



2.7 Adjusting washer jets

Special tools and workshop equipment required

- ◆ Adjusting tool -T10127- fitted with needle -3125/5 A-



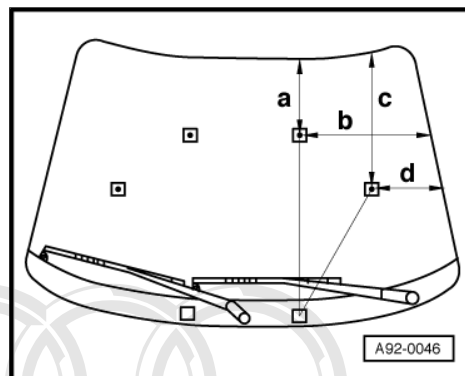
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Adjustment



Note

- ◆ *The setting dimensions are calculated from the side and from the top of the windscreen.*
- ◆ *The setting dimensions are calculated to allow for the motion of the vehicle when driving. When the vehicle is stationary the direction of the jets will be slightly different.*
- Use water-soluble pen to mark the four points on windscreen:
 - Dimension -a- = 290 ± 50 mm.
 - Dimension -b- = 470 ± 50 mm.
 - Dimension -c- = 510 ± 50 mm.
 - Dimension -d- = 230 ± 50 mm.
- Aim the jets individually at the points marked on the windscreen using adjusting tool -T10127- .



2.8 Routing and attachment of windscreen washer system hoses

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1 - Hose clip

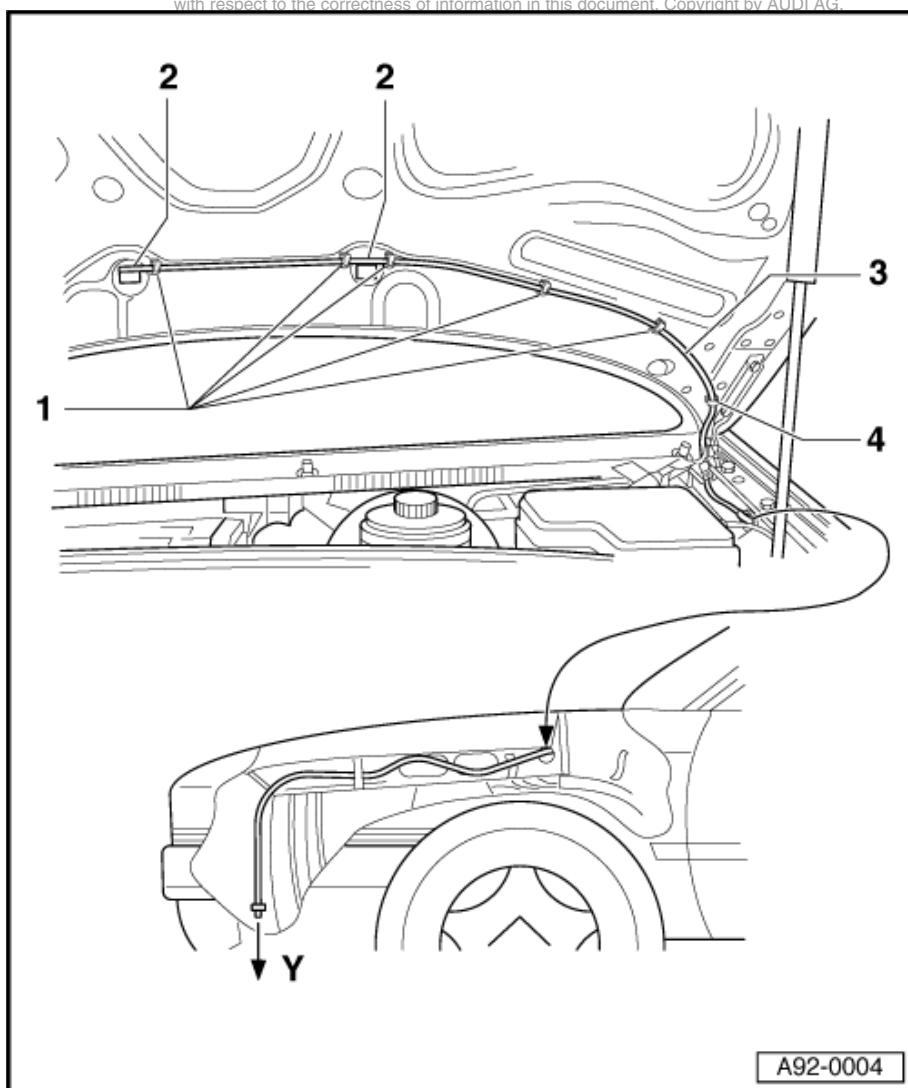
□ 5x

2 - Washer jets

3 - Hose

4 - Hose clip

Y - Connection to windscreen washer system pump



3 Servicing rear window wiper and washer system (Avant)

3.1 Rear window wiper on vehicles up to 01.1999 - exploded view of components

1 - Wiper blade

2 - Cap

☐ For rear window wiper

3 - Nut, 12 Nm

4 - Spring lock washer

5 - Wiper arm

☐ Removing and installing
⇒ [page 104](#)

6 - Washer jet

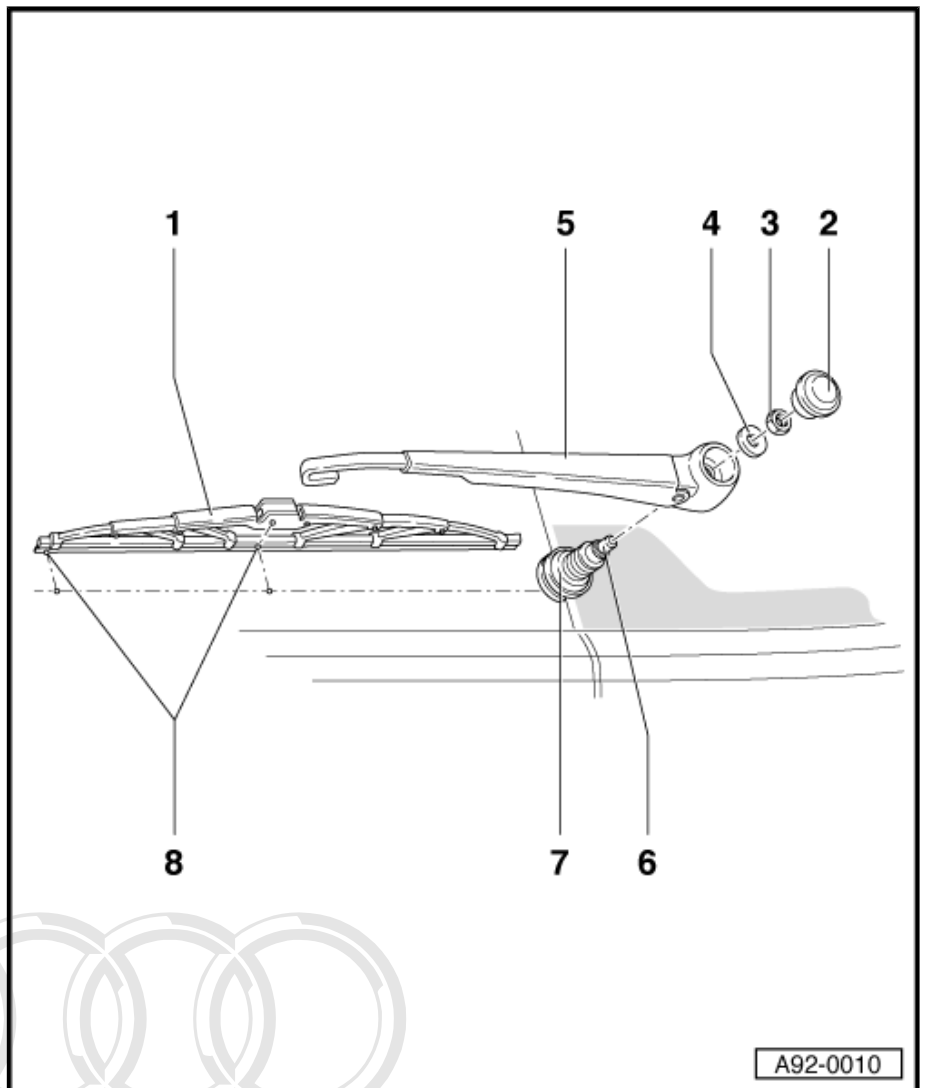
☐ Removing and installing
⇒ [page 103](#)

☐ Adjusting ⇒ [page 103](#)

7 - Drive shaft

☐ For rear window wiper

8 - Wiper rubber



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3.2 Rear window wiper on vehicles from 02.1999 - exploded view of components

1 - Wiper blade

2 - Cap

- ☐ For rear window wiper

3 - Washer jet

- ☐ Removing and installing
⇒ [page 103](#)
- ☐ Adjusting ⇒ [page 103](#)

4 - Nut, 12 Nm

5 - Wiper arm

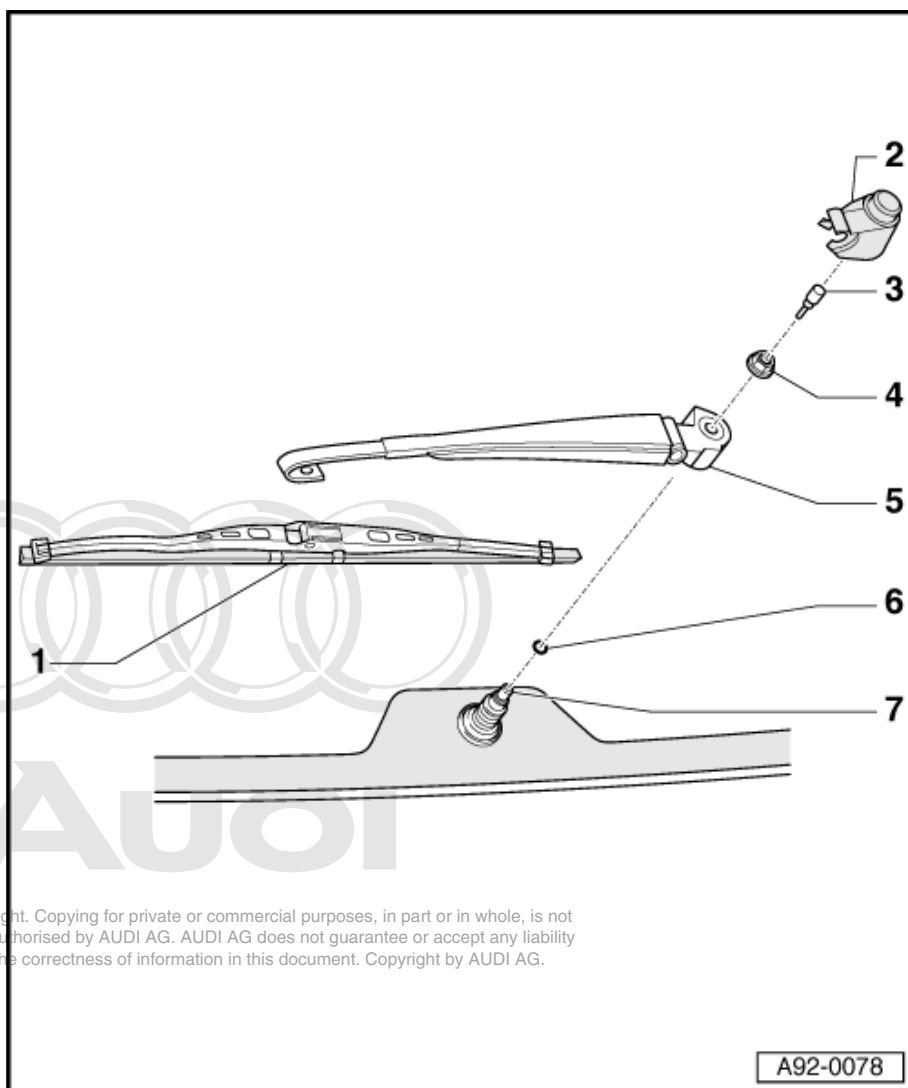
- ☐ Removing and installing
⇒ [page 104](#)

6 - O-ring

- ☐ Renewing

7 - Connecting pipe

- ☐ For washer jet
- ☐ Renewing ⇒ [page 107](#)



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A92-0078

3.3 Removing and installing washer jet

Removing

Vehicles up to 01.1999:

- Pry cap out of wiper arm.

Vehicles from 02.1999:

- Carefully pry apart ends of cap -1- and remove from wiper arm -arrow-.

All models:

- Carefully pull washer jet -2- out of connecting pipe.

Installing

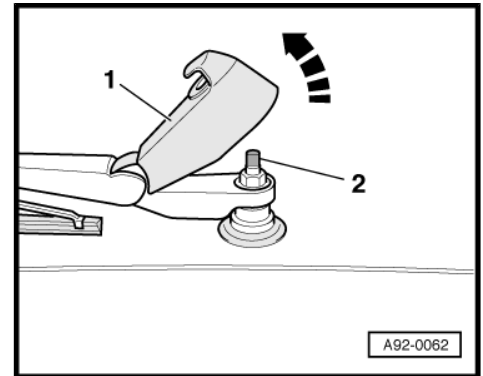
Installation is carried out in the reverse order; note the following:



Note

Renew O-ring.

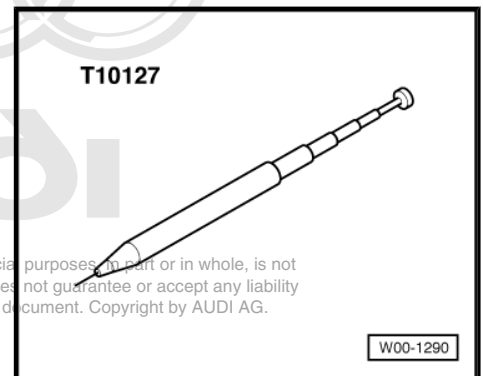
- Make sure that spray nozzle is facing upwards when inserting washer jet.



3.4 Adjusting washer jet - vehicles up to 01.1999

Special tools and workshop equipment required

- ◆ Adjusting tool -T10127- fitted with needle -3125/5 A-



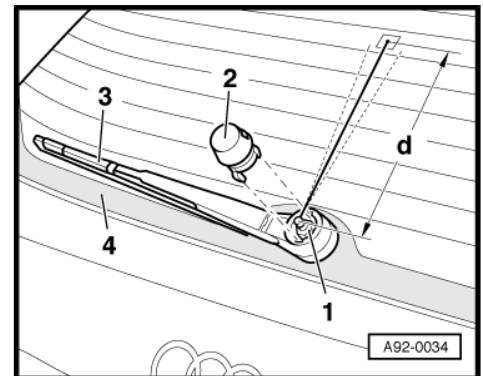
Procedure

- Pry cap -2- out of wiper arm.
- Adjust washer jet -1- using adjusting tool -T10127- so that fluid jet is sprayed onto rear window at distance -d- above wiper shaft.
- Dimension -d- = approx. 280 mm.



Note

Disregard -item 3- and -item 4-.



3.5 Adjusting washer jet - vehicles from 02.1999

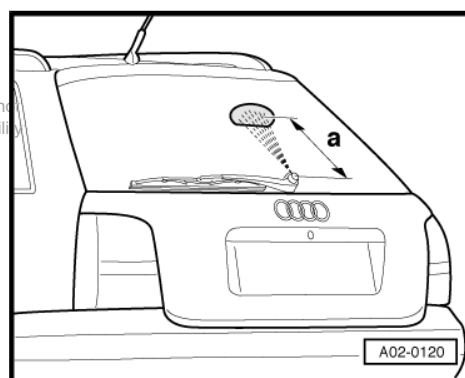
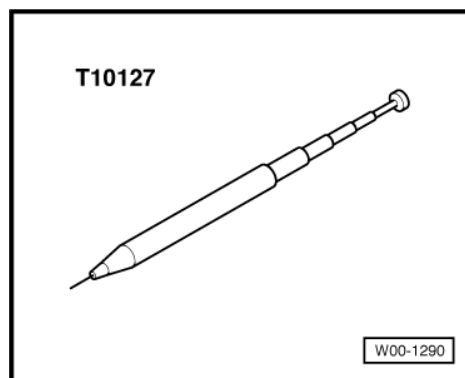
Special tools and workshop equipment required

- ◆ Adjusting tool -T10127- fitted with needle -3125/5 A-



Procedure

- Adjust washer jet using adjusting tool -T10127- so that fluid jet is sprayed onto rear window at distance -a- above wiper shaft.
- Dimension -a- = approx. 280 mm



3.6 Removing and installing wiper arm

Removing

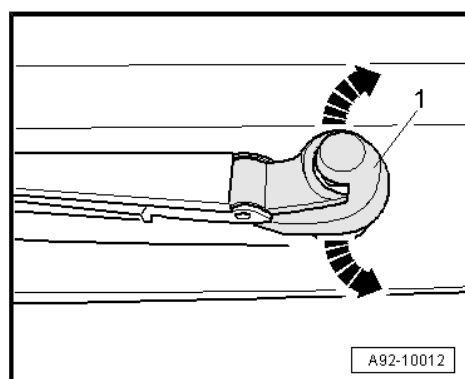
- Switch on ignition.
- Operate “rear wiper function” and allow wiper arm to move to end position.
- Switch off ignition and take out ignition key.

Vehicles up to 01.1999:

- Pry cap out of wiper arm.

Vehicles from 02.1999:

- Carefully pry cap -1- -arrows- apart slightly and lift off.



All models:

- Loosen nut -1- several turns.
- Release the wiper arm -2- from the wiper shaft by tilting slightly.
- Remove nut and detach wiper arm.

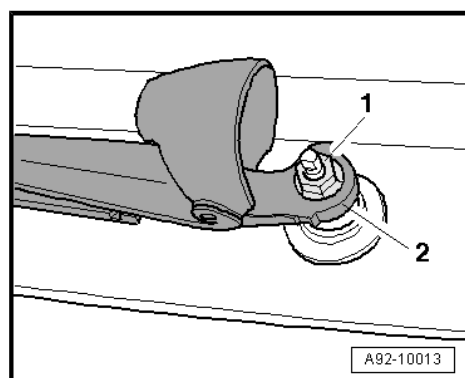
Installing

Installation is carried out in the reverse order; note the following:

- Adjust wiper arm ⇒ [page 105](#) .

Tightening torque

Component	Nm
Securing nut for wiper arm	12



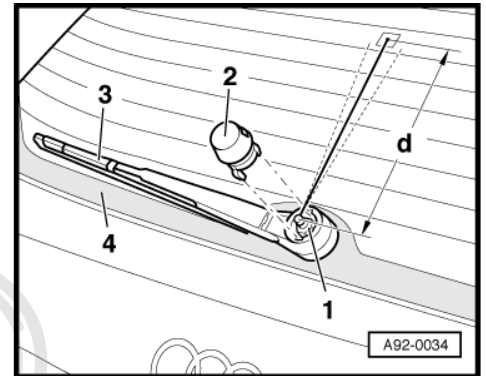
3.7 Adjusting wiper arm

Procedure

- Attach wiper arm with fitted wiper blade to wiper shaft and align wiper blade -3- parallel with lower heating filament on rear window -4-.
- Switch on ignition.
- Operate “rear wiper function” and allow wiper arm to move to end position.
- Check adjustment of wiper arm again. Correct as necessary.

Tightening torque

Component	Nm
Wiper arm to wiper shaft	12

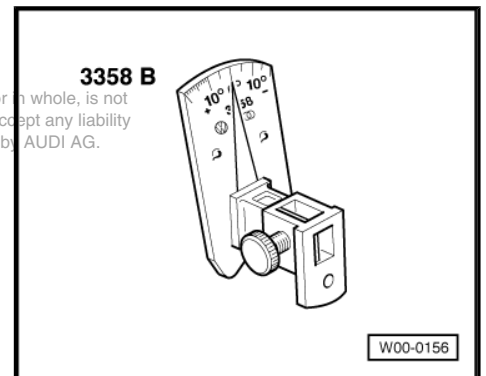


3.8 Eliminating rear window wiper judder

Special tools and workshop equipment required

- ◆ Windscreen wiper setting tool -3358 B-

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Possible causes of wiper blade judder

- ◆ Window scratched.
- ◆ Wiper rubber slipped out of retaining clips or torn.
- ◆ Wiper arm/blade loose or bent.
- ◆ Wiper blades coated with wax or perished (out of shape).

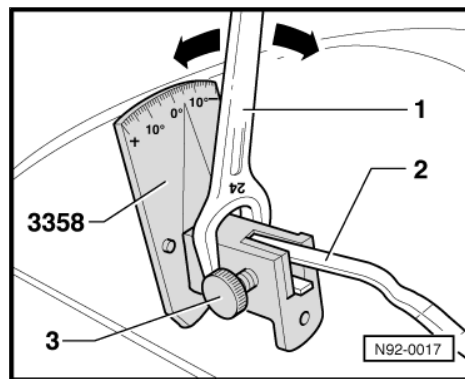
If the rear window wiper blade is juddering and none of the causes listed apply, check and if necessary adjust the angle of the wiper arm before fitting a new wiper blade.

Procedure

- Switch on ignition.
- Operate “rear wiper function” and allow wiper arm to move to end position.
- Switch off ignition and take out ignition key.
- Remove wiper blade.
- Insert wiper arm -2- in windscreen wiper setting tool -3358 B- and secure wiper arm with locking screw -3-.
- Compare indicated angle with specified value.
 - Setting angle: $0^\circ \pm 2^\circ$.

If setting angle is not OK:

- Apply open-end spanner (24 mm) -item 1- to windscreen wiper setting tool and adjust wiper arm by twisting as required -arrows-.
- Loosen locking bolt -3- and pull wiper arm -2- out of wiper setting tool.
- Once again insert wiper arm -2- in windscreen wiper setting tool -3358 B- and secure wiper arm with locking screw -3-.
- Compare indicated angle with specified value.
- If necessary, repeat adjusting and checking procedure until specified value is attained.
- Detach wiper setting tool and fit wiper blade.



3.9 Rear wiper motor - exploded view of components



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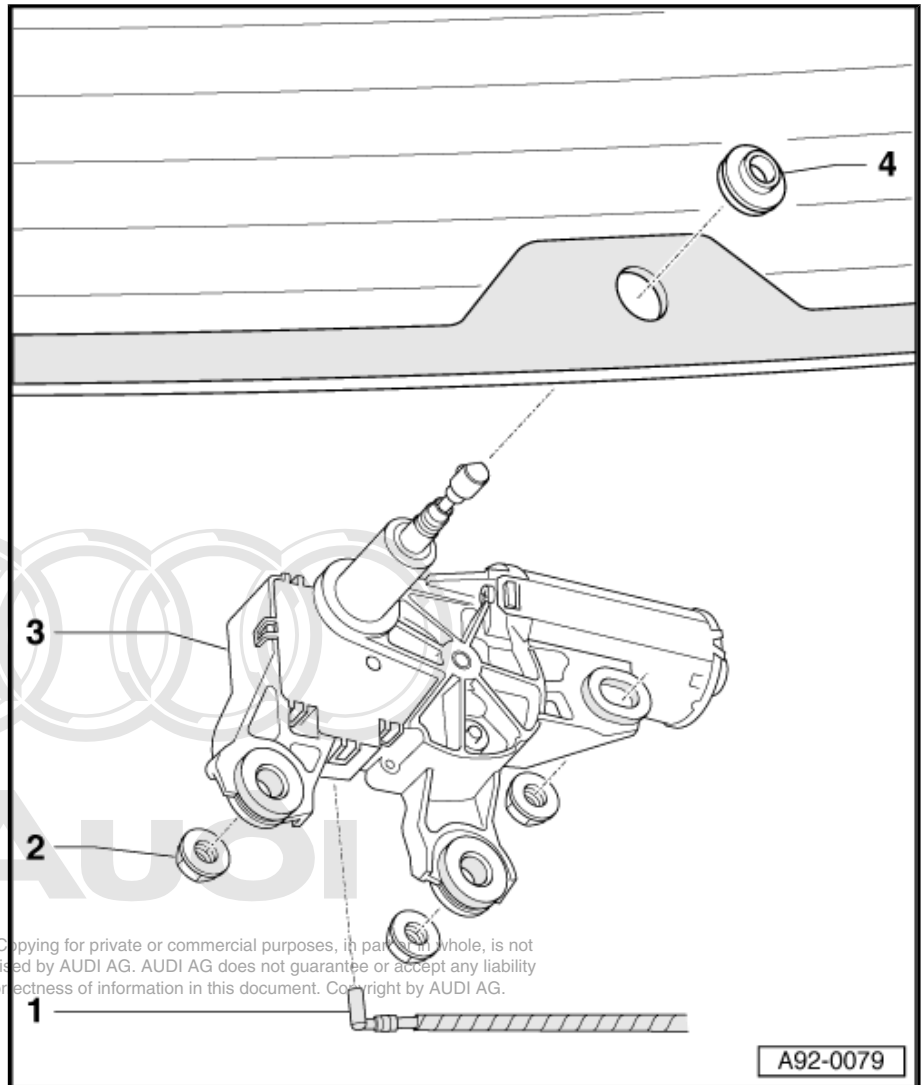
1 - Washer fluid hose

2 - Nut, 8 Nm

3 - Wiper motor

- ❑ Removing and installing
⇒ [page 108](#)
- ❑ With connecting pipe for
washer jet, renewing
⇒ [page 107](#)

4 - Rubber grommet



3.10 Renewing connecting pipe for washer jet

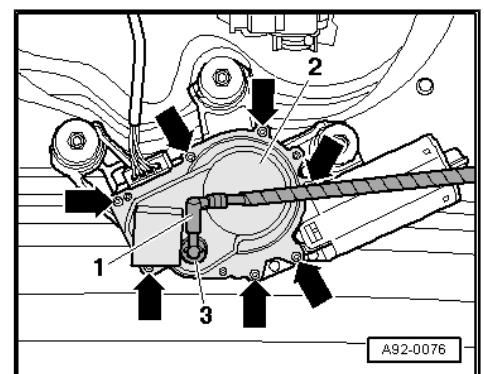


Note

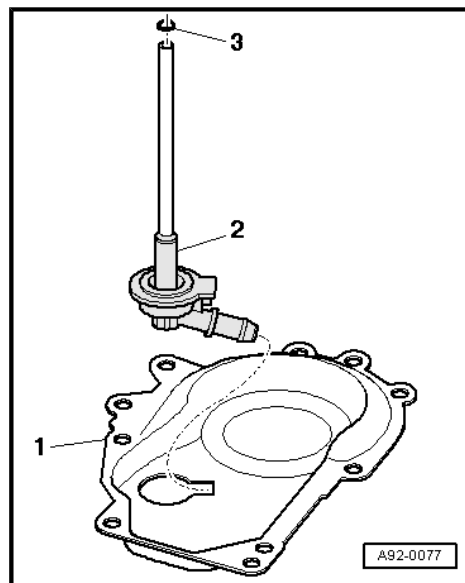
On vehicles with Valeo rear window wiper motor, a defective connecting pipe for washer jet can be replaced by fitting the repair set -8L0 998 711-. Renewing the entire Valeo rear window wiper motor is then not necessary.

Procedure

- Remove washer jet ⇒ [page 103](#) .
- Remove wiper arm ⇒ [page 104](#) .
- Remove trim at bottom of rear lid ⇒ Rep. Gr. 70 .
- Disconnect washer fluid hose -1- from connecting pipe -3- for washer jet.
- Unscrew bolts -arrows- and detach cover -2-.



- Renew drive shaft.
- Working from inside, insert connecting pipe -2- in cover -1-.
- Fit new seal on rear window wiper motor.
- Carefully insert connecting pipe in drive shaft and secure cover.
- Press washer fluid hose onto connecting pipe for washer jet.
- Washer fluid hose must engage audibly in washer jet connection.
- Install trim at bottom of rear lid ⇒ Rep. Gr. 70 .
- Adjust wiper arm ⇒ [page 105](#) .
- Insert washer jet with new O-ring -3- in connecting pipe.
- The spray nozzle must face upwards.
- Adjust washer jet.
- ♦ Vehicles up to 01.1999 ⇒ [page 103](#) .
- ♦ Vehicles from 02.1999 ⇒ [page 103](#) .



Tightening torque

Component	Nm
Cover to rear window wiper motor	1.2

3.11 Removing and installing rear window wiper motor

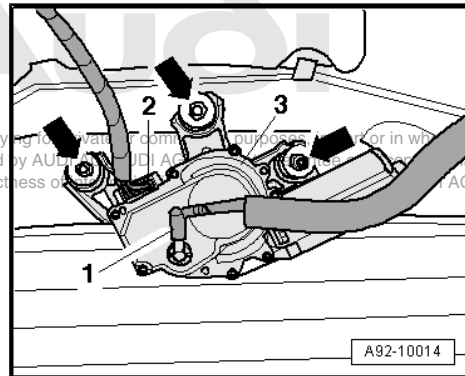
Removing

- Remove wiper arm ⇒ [page 104](#) .
- Remove trim at bottom of rear lid ⇒ Rep. Gr. 70 .
- Unplug electrical connector -2-.
- Disconnect washer fluid hose -1- from connecting pipe for washer jet.
- Remove nuts -arrows- and detach wiper motor -3-.

Installing

Installation is carried out in the reverse order; note the following:

- Carefully insert rubber grommet into hole in rear window.
- Press washer fluid hose onto connecting pipe for washer jet.
- Washer fluid hose must engage audibly in washer jet connection.
- Install trim at bottom of rear lid ⇒ Rep. Gr. 70 .
- Adjust wiper arm ⇒ [page 105](#) .



Component	Nm
Wiper motor to rear lid	8

3.12 Removing and installing washer fluid reservoir



Note

The washer fluid reservoir supplies both the windscreen and the rear window wash systems; it is located in the engine compartment (front left). Removing and installing ➔ [page 96](#).

Audi

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4 Servicing headlight washer system

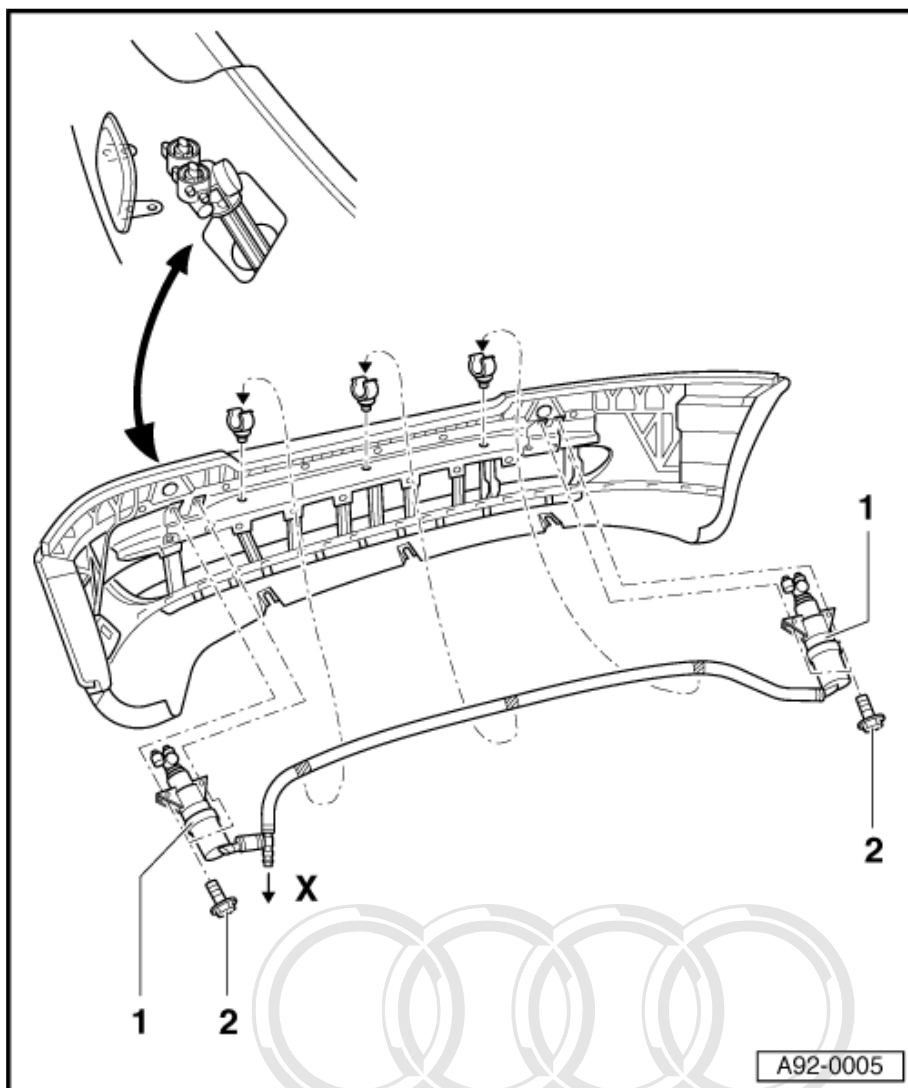
4.1 Headlight washer jets - exploded view of components

1 - Washer jets

- Removing and installing
⇒ [page 110](#)
- Adjusting ⇒ [page 111](#)

2 - 10 Nm

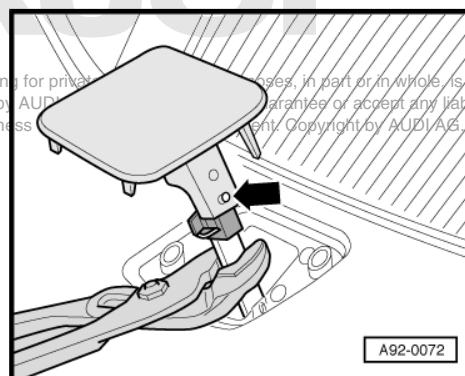
X - To washer fluid reservoir



4.2 Removing and installing headlight washer jets

Removing

- Remove front bumper ⇒ Rep. Gr. 63 .
- Pull cover of washer jet upwards away from bumper cover and carefully disengage retainers -arrow-.



- Press release tab and pull off washer fluid hose -1- from headlight washer jet.
- Unscrew bolts -2- and -4- and detach headlight washer jet -5- with adapter -3-.

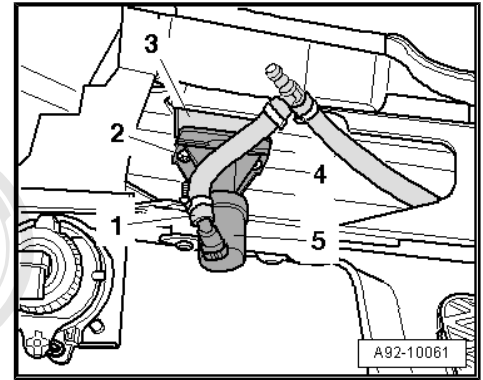
Installing

Installation is carried out in the reverse order; note the following:

- Install front bumper ⇒ Rep. Gr. 63 .

Tightening torque

Component	Nm
Washer jet to bumper	2.5

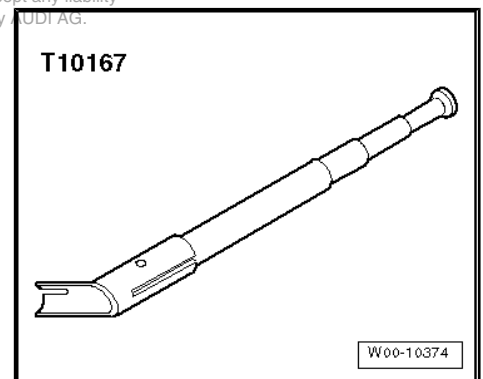


4.3 Adjusting washer jets - vehicles up to 01.1999

Special tools and workshop equipment required

- ♦ Adjusting tool -T10167-

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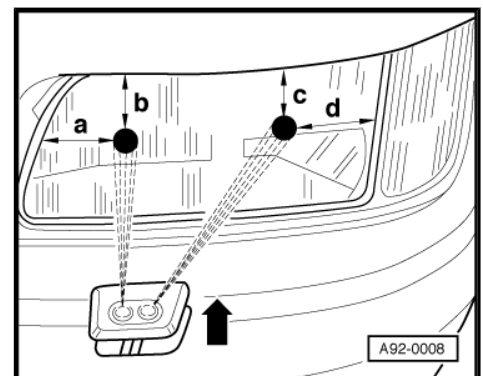
Adjustment



Note

The setting dimensions are calculated from the edges of the headlight lens.

- Use water-soluble pen to mark the two points on headlight lens:
- Dimension -a- = 65 mm.
- Dimension -b- = 50 mm.
- Dimension -c- = 40 mm.
- Dimension -d- = 90 mm.



4.4 Adjusting washer jets - vehicles from 02.1999



Note

The washer jets are pre-set at the factory and do not have to be adjusted following installation.



4.5 Removing and installing washer fluid reservoir



Note

The washer fluid reservoir supplies both the windscreen and the headlight washer systems; it is located in the engine compartment (front left). Removing and installing ⇒ [page 96](#).

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94 – Lights, bulbs, switches - exterior

1 Servicing halogen headlights without fog lights - vehicles up to 01.1999

1.1 Halogen headlights - exploded view of components



Note

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- ◆ *Fog lights can only be retro-fitted by installing triple light units; it is then also necessary to establish the appropriate wiring connections ➔ Current flow diagrams, Electrical fault finding and Fitting locations.*
- ◆ *If any work is performed which could affect the headlight setting, the headlights must be re-adjusted.*

1 - Headlight lens

2 - Retaining clip

- ☐ 7x
- ☐ Secures headlight lens to headlight housing
- ☐ Carefully lever off retaining clip using a screwdriver
- ☐ When fitting, press in retaining clip by hand

3 - Trim

- ☐ Engaged in headlight housing

4 - Seal

- ☐ For headlight lens
- ☐ Renewing

5 - Reflector

- ☐ Unclip from retaining rings to remove
- ☐ Press carefully into retaining rings when installing
- ☐ Do not touch inside of reflector

6 - Bulb for side lights

- ☐ 12 V, 4 W
- ☐ Renewing bulb
➔ [page 116](#)

7 - Dipped/main beam bulb

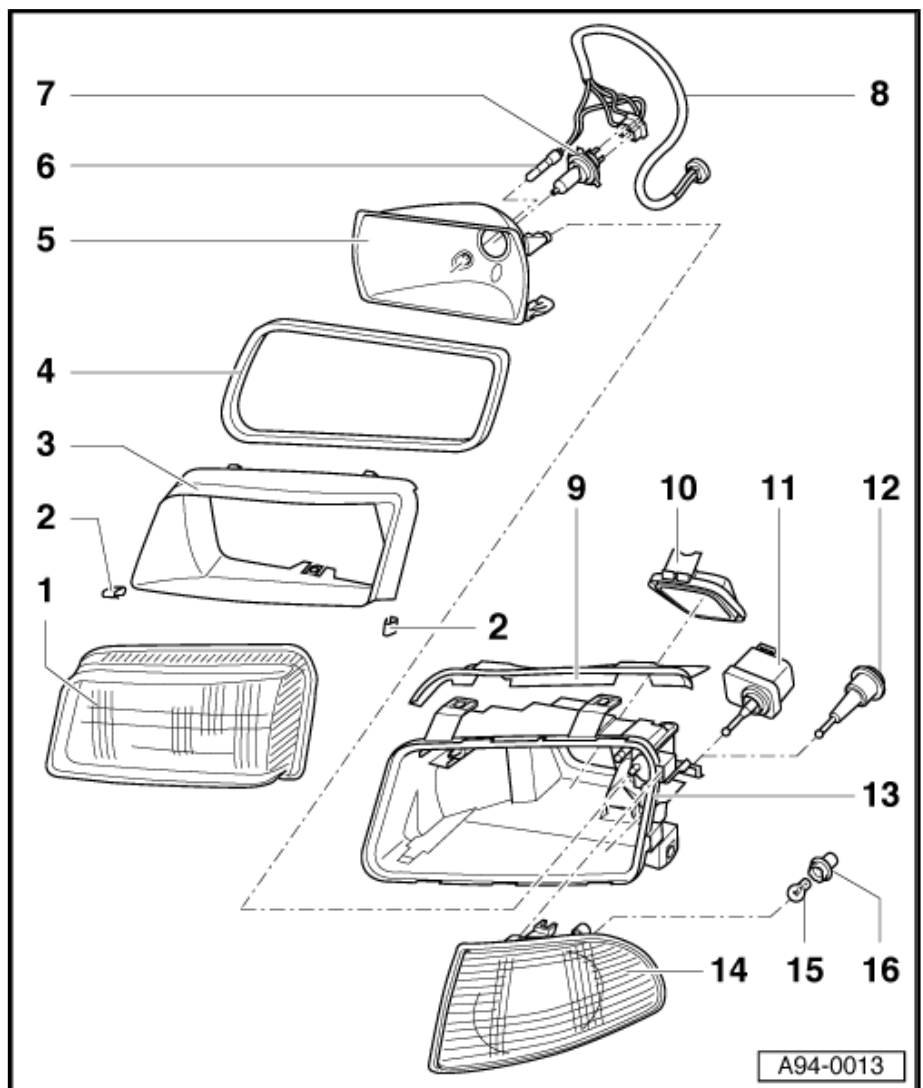
- ☐ 12 V, 60/55 W
- ☐ Renewing bulb
➔ [page 115](#)

8 - Wiring harness

- ☐ With connector housing and bulb holder for side light

9 - Cd strip

- ☐ Clipped to headlight



10 - Housing cover

11 - Headlight range control motor

- ☐ Headlight range control motor, left -V48-
- ☐ Headlight range control motor, right -V49-
- ☐ Removing and installing ⇒ [page 117](#)

12 - Locator for reflector

- ☐ Only on vehicles without headlight range control

13 - Headlight housing

- ☐ Removing and installing ⇒ [page 114](#)

14 - Turn signal

- ☐ Removing and installing ⇒ [page 148](#)

15 - Turn signal bulb

- ☐ 12 V, 21 W
- ☐ Orange
- ☐ Renewing bulb ⇒ [page 149](#)

16 - Bulb holder

- ☐ For turn signal



1.2 Removing and installing headlights

Removing

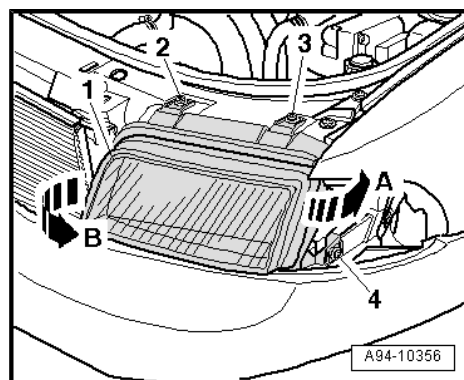


Note

Use adhesive tape to mask area beneath turn signal and headlight to prevent damage to paintwork.

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- Remove turn signal ⇒ [page 148](#) .
- Unscrew bolts -2, 3, 4-.
- Move headlight -1- slightly towards wing panel -arrow A- and pull inboard side of headlight out of pin -arrow B-.
- Unplug the electrical connectors.
- Detach headlight to front.



Installing

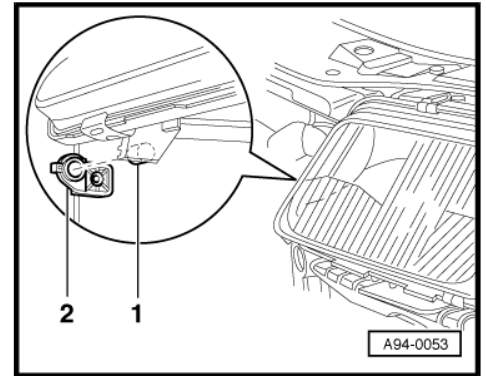
Installation is carried out in the reverse order; note the following:

- Engage pin -1- on headlight in guide -2- in centre area of vehicle.
- Align headlight with body contours (gap widths).



Note

Pay attention to area around wing panel opening when aligning headlight.



- Tighten bolts.
- Adjust headlights ⇒ Maintenance ; Booklet 802 .

Tightening torque

Component	Nm
Headlight to lock carrier	6

1.3 Adjusting headlights

Specifications and procedures for headlight adjustment ⇒ Maintenance ; Booklet 802 .

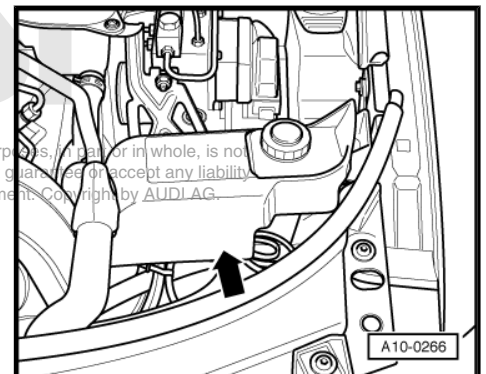
1.4 Renewing bulbs for dipped beam/main beam headlights

Removing

Headlight (left-side):

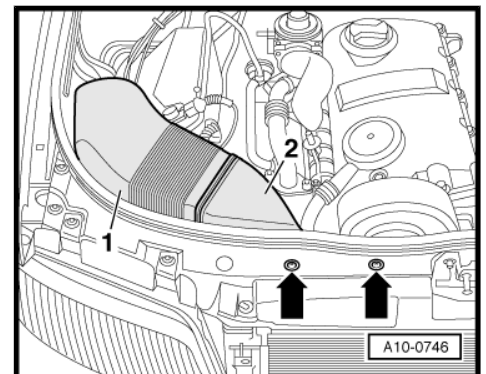
- If fitted, remove cover -arrow- from power steering reservoir.

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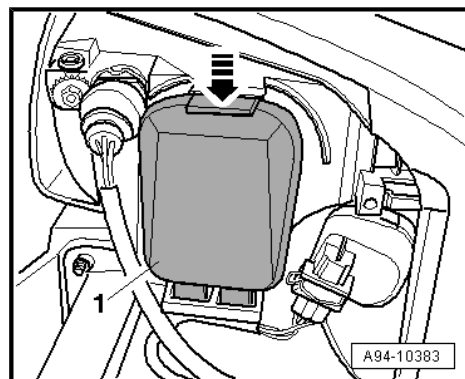
Headlight (right-side):

- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



Both sides (continued):

- Release retaining tab -arrow- and detach housing cover -1- from headlight housing.

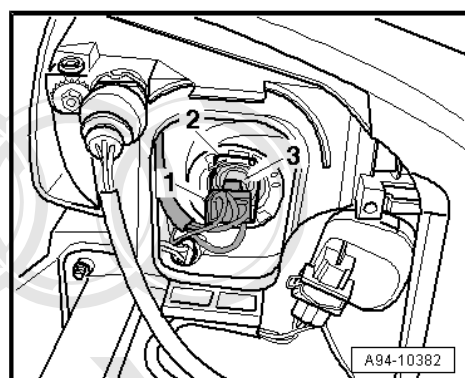


- Detach electrical connector -1- at dipped beam bulb.
- Disengage retaining clip -2- and remove bulb -3- from headlight housing.

Installing

Installation is carried out in the reverse order; note the following:

- Fit new bulb in housing; do not touch glass part of bulb with bare hands.
- Secure bulb with retaining clip.
- Plug in connector and close housing cover.

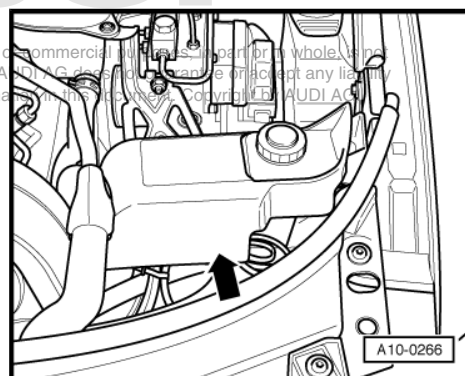


1.5 Renewing bulb for side lights

Removing

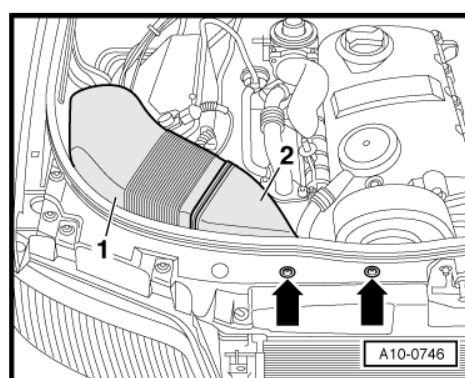
Headlight (left-side):

- If fitted, remove cover -arrow- from power steering reservoir.



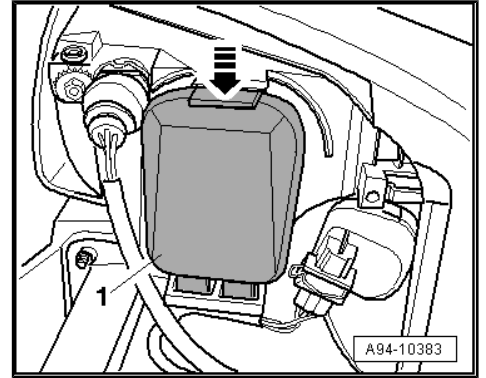
Headlight (right-side):

- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



Both sides (continued):

- Release retaining tab -arrow- and detach housing cover -1- from headlight housing.



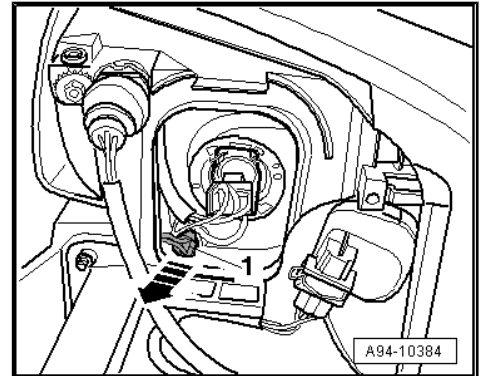
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- Pull bulb holder -1- out of headlight housing.
- Pull bulb for side lights out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

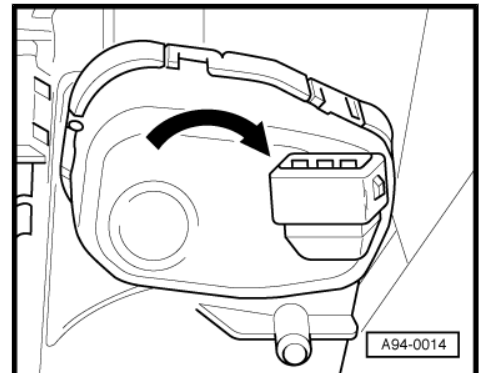
- Insert new bulb in bulb holder, taking care not to touch glass bulb with bare hands.
- Press bulb holder into reflector until you feel it engage.
- Plug in connector and close housing cover.



1.6 Removing and installing headlight range control motor

Removing

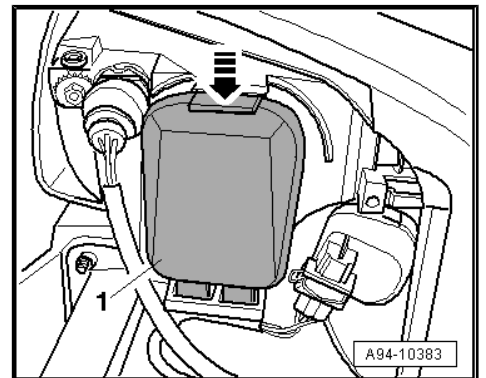
- Remove headlight ⇒ [page 114](#) .
- Release headlight range control motor: at right-side headlight by turning anti-clockwise; at left-side headlight by turning clockwise -arrow-.
- Pull ball head of actuator shaft out of ball socket by pivoting to the side.
- Detach headlight range control motor.



Installing

Installation is carried out in the reverse order; note the following:

- Release retaining tab -arrow- and detach housing cover -1- from headlight housing.
- Start by inserting ball head of actuator shaft in ball socket on reflector; to do so, pull reflector to rear.
- Secure housing cover.



Note

Perform headlight adjustment after removing and installing control motors ⇒ Maintenance ; Booklet 802 .

1.7 Installing repair kit for headlight housing

Renew headlight if one of the headlight mountings is broken.

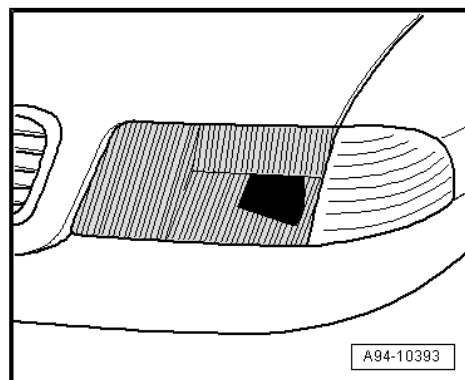
- Renew headlight ⇒ [page 114](#) .

1.8 Converting headlights for driving on the left or right side of the road

- ◆ When the car is driven in a country where vehicles travel on the opposite side of the road compared to the home country, masking foil must be applied to both headlights to prevent dazzling by the asymmetric dipped beams.
- ◆ Both headlight lenses must be masked to adapt the headlights from left-hand to right-hand traffic and vice versa.

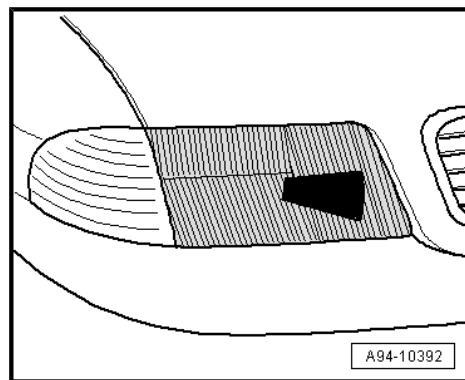
Applying masking foil for headlight (left-side)

- Thoroughly clean the headlight lens (it must be clean and dry).
- Remove protective backing from masking foil for headlight.
- Position the masking foil so the edge of the foil is aligned with the ridges on the headlight lens as shown in the illustration.
- Press the masking foil onto the headlight lens.



Applying masking foil for headlight (right-side)

- Thoroughly clean the headlight lens (it must be clean and dry).
- Remove protective backing from masking foil for headlight.
- Position the masking foil so the edge of the foil is aligned with the ridges on the headlight lens as shown in the illustration.
- Press the masking foil onto the headlight lens.



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2 Servicing halogen headlights with fog lights - vehicles up to 01.1999

2.1 Halogen headlights - exploded view of components



Note

If any work is performed which could affect the headlight setting, the headlights must be re-adjusted.

1 - Headlight lens

2 - Retaining clip

- ☐ 5x
- ☐ Secures headlight lens to headlight housing
- ☐ Carefully lever off retaining clip using a screwdriver
- ☐ When fitting, press in retaining clip by hand

3 - Trim

- ☐ Engaged in headlight housing

4 - Seal

- ☐ For headlight lens
- ☐ Renewing

5 - Reflector

- ☐ Twist out to remove reflector from adjuster

6 - Main beam bulb

- ☐ H7 - 12 V, 55 W
- ☐ Renewing bulb
⇒ [page 122](#)

7 - Fog light bulb

- ☐ H1 - 12 V, 55 W
- ☐ Renewing bulb
⇒ [page 150](#)

8 - Bulb for dipped beam headlights

- ☐ H7 - 12 V, 55 W
- ☐ Renewing bulb
⇒ [page 121](#)

9 - Wiring harness

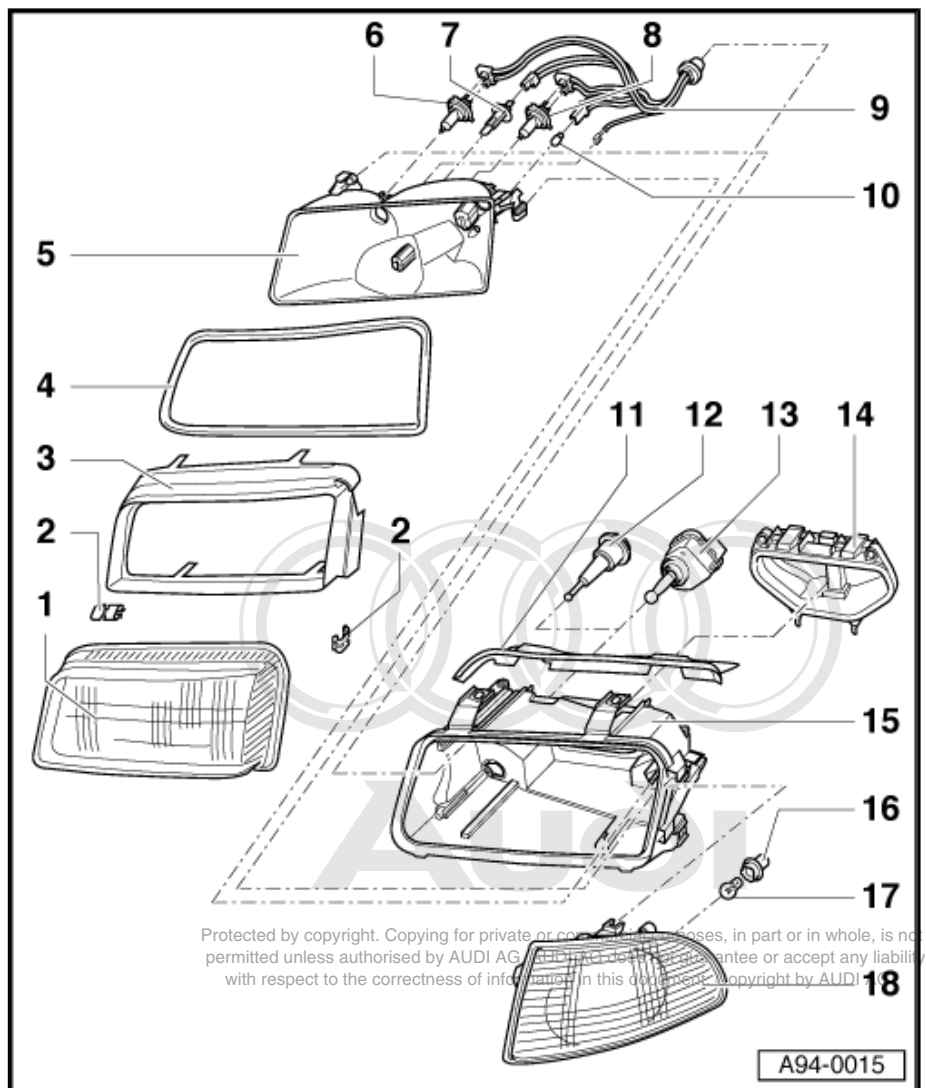
- ☐ With connector housing, bulb connector and bulb holder for side lights

10 - Bulb for side lights

- ☐ 12 V, 5 W (glass base)
- ☐ Renewing bulb ⇒ [page 123](#)

11 - Cd strip

- ☐ Clipped to headlight



12 - Locator for reflector

- ☐ Only on vehicles without headlight range control

13 - Headlight range control motor

- ☐ Headlight range control motor, left -V48-
- ☐ Headlight range control motor, right -V49-
- ☐ Removing and installing ⇒ [page 124](#)

14 - Housing cover

15 - Headlight housing

- ☐ Removing and installing ⇒ [page 120](#)

16 - Bulb holder

- ☐ For turn signal

17 - Turn signal bulb

- ☐ 12 V, 21 W
- ☐ Orange
- ☐ Renewing bulb ⇒ [page 149](#)

18 - Turn signal

- ☐ Removing and installing ⇒ [page 148](#)

2.2 Removing and installing headlights

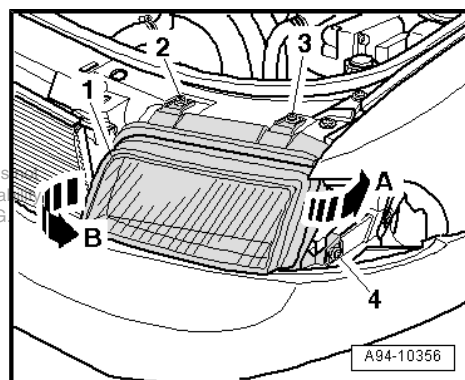
Removing



Note

Use adhesive tape to mask area beneath turn signal and headlight to prevent damage to paintwork.

- Remove turn signal ⇒ [page 148](#) .
- Unscrew bolts -2, 3, 4-.
- Move headlight -1- slightly towards wing panel -arrow A- and pull inboard side of headlight out of pin -arrow B-.
- Unplug the electrical connectors.
- Detach headlight to front.



Installing

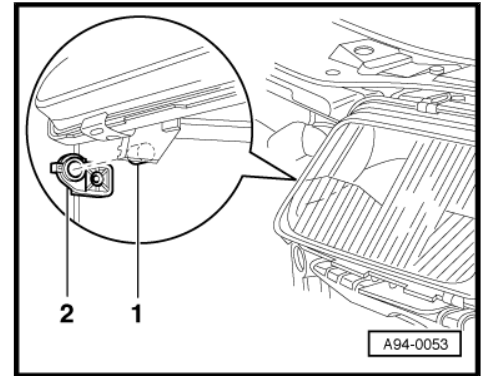
Installation is carried out in the reverse order; note the following:

- Engage pin -1- on headlight in guide -2- in centre area of vehicle.
- Align headlight with body contours (gap widths).



Note

Pay attention to area around wing panel opening when aligning headlight.



- Tighten bolts.
- Adjust headlights ⇒ Maintenance ; Booklet 802 .

Tightening torque

Component	Nm
Headlight to lock carrier	6

2.3 Adjusting headlights

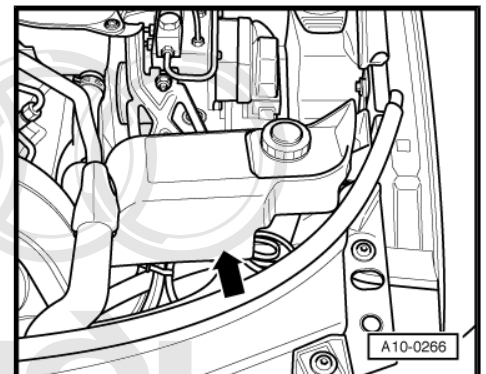
Specifications and procedures for headlight adjustment ⇒ Maintenance ; Booklet 802 .

2.4 Renewing bulbs for dipped beam headlights

Removing

Headlight (left-side):

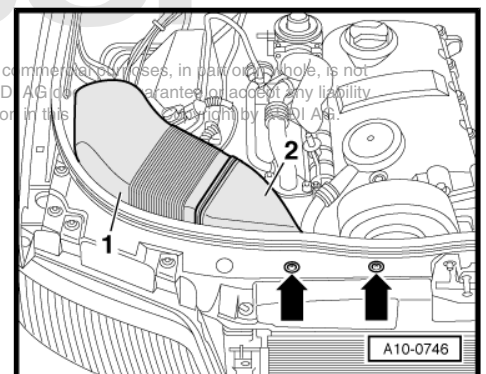
- If fitted, remove cover -arrow- from power steering reservoir.



Headlight (right-side):

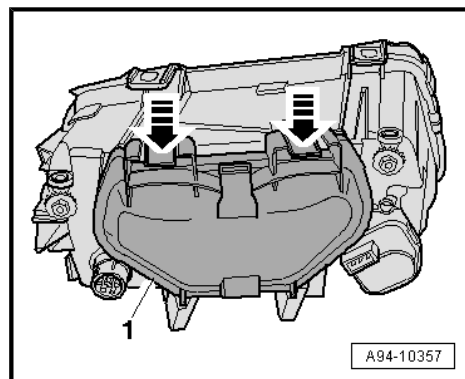
- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.

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Both sides (continued):

- Release retaining tabs -arrows- and detach housing cover -1- from headlight housing.

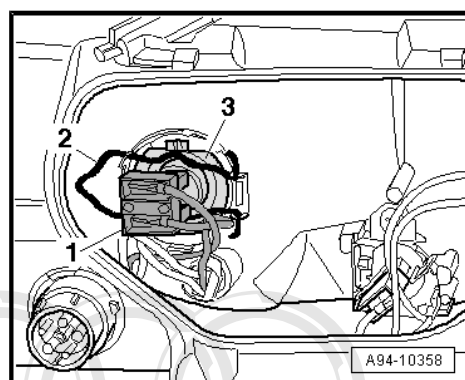


- Detach electrical connector -1- at dipped beam bulb.
- Disengage retaining clip -2- and remove bulb -3- from headlight housing.

Installing

Installation is carried out in the reverse order; note the following:

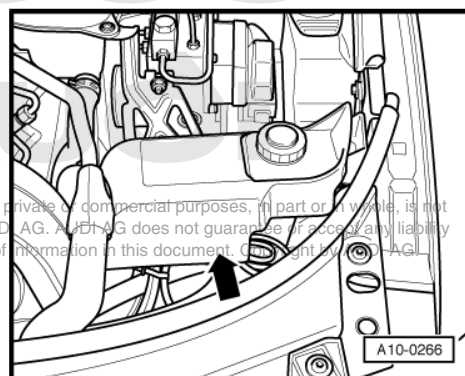
- Fit new bulb in housing; do not touch glass part of bulb with bare hands.
- Secure bulb with retaining clip.
- Plug in connector and close housing cover.



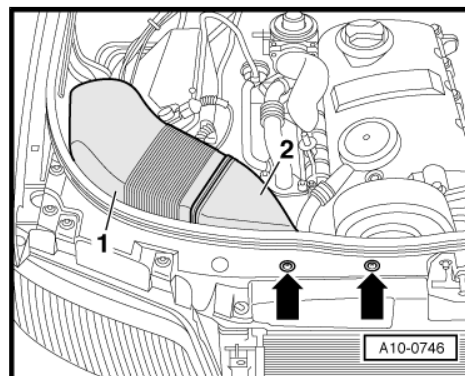
2.5 Renewing bulb for main beam headlights

Removing
Headlight (left-side):

- If fitted, remove cover -arrow- from power steering reservoir.


Headlight (right-side):

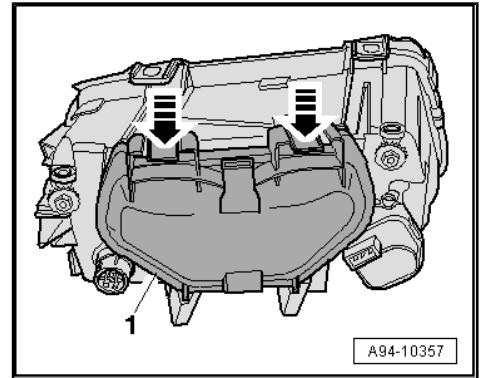
- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



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Both sides (continued):

- Release retaining tabs -arrows- and detach housing cover -1- from headlight housing.

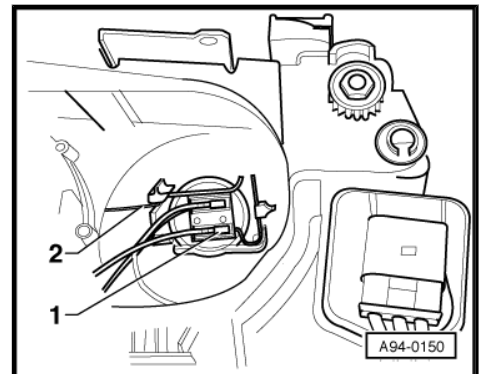


- Unplug electrical connector -1- at main beam bulb.
- Disengage retaining clip -2- and remove bulb from headlight housing.

Installing

Installation is carried out in the reverse order; note the following:

- Fit new bulb in housing; do not touch glass part of bulb with bare hands.
- Secure bulb with retaining clip.
- Plug in connector and close housing cover.

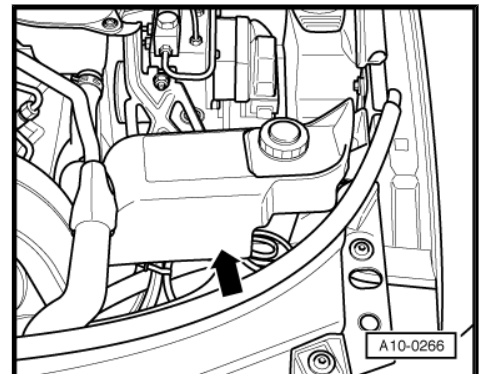


2.6 Renewing bulb for side lights

Removing

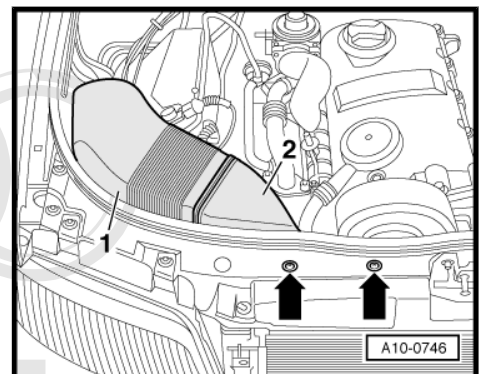
Headlight (left-side):

- If fitted, remove cover -arrow- from power steering reservoir.



Headlight (right-side):

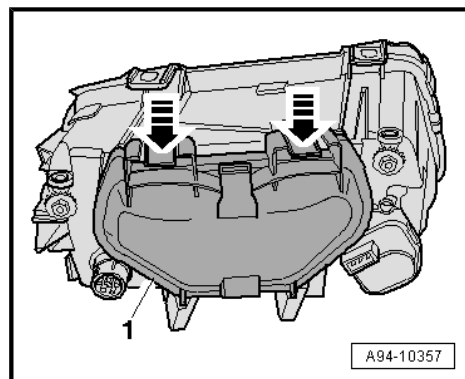
- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



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Both sides (continued):

- Release retaining tabs -arrows- and detach housing cover -1- from headlight housing.

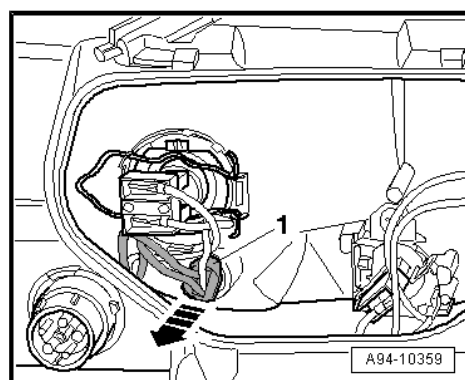


- Pull the bulb holder -1- together with bulb out of reflector in direction of -arrow-.
- Pull bulb for side lights out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

- Insert new bulb in bulb holder, taking care not to touch glass bulb with bare hands.
- Press bulb holder into reflector until you feel it engage.
- Close housing cover.



2.7 Removing and installing headlight range control motor

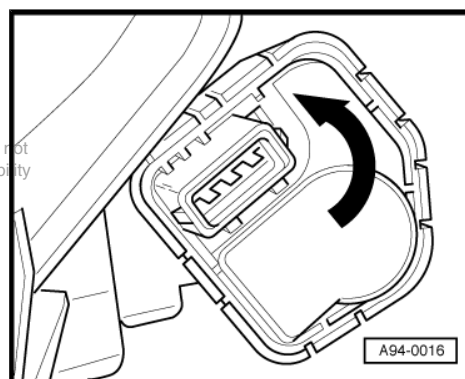


Note

Control motor can only be removed and installed after taking out headlight.

Removing

- Remove headlight ⇒ [page 120](#).
- Release headlight range control motor: at right-side headlight by turning anti-clockwise; at left-side headlight by turning clockwise -arrow-.
- Pull ball head on positioning shaft out of ball socket by moving it sideways towards the left (right-hand headlight) or towards the right (left-hand headlight).
- Detach headlight range control motor.



Installing

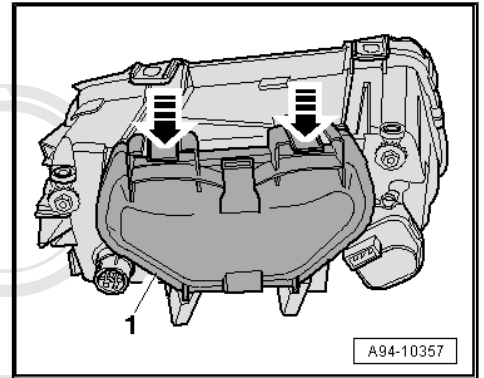
Installation is carried out in the reverse order; note the following:

- Release retaining tabs -arrows- and detach housing cover -1- from headlight housing.
- Start by inserting ball head of actuator shaft in ball socket on reflector; to do so, pull reflector to rear.
- Secure housing cover.



Note

Perform headlight adjustment after removing and installing control motors ⇒ Maintenance ; Booklet 802 .



2.8 Installing repair kit for headlight housing

Renew headlight if one of the headlight mountings is broken.

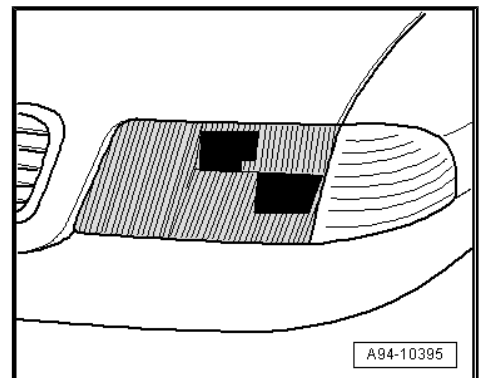
- Renewing headlight ⇒ [page 120](#) .

2.9 Converting headlights for driving on the left or right side of the road

- ◆ When the car is driven in a country where vehicles travel on the opposite side of the road compared to the home country, masking foil must be applied to both headlights to prevent dazzling by the asymmetric dipped beams.
- ◆ Both headlight lenses must be masked to adapt the headlights from left-hand to right-hand traffic and vice versa.

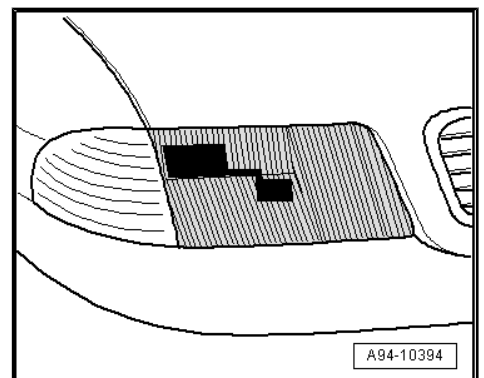
Applying masking foil for headlight (left-side)

- Thoroughly clean the headlight lens (it must be clean and dry).
- Remove protective backing from masking foil.
- Position the masking foil so the edge of the foil is aligned with the ridges on the headlight lens as shown in the illustration.
- Press the masking foil onto the headlight lens.



Applying masking foil for headlight (right-side)

- Thoroughly clean the headlight lens (it must be clean and dry).
- Remove protective backing from masking foil.
- Position the masking foil so the edge of the foil is aligned with the ridges on the headlight lens as shown in the illustration.
- Press the masking foil onto the headlight lens.



3 Servicing halogen headlights - vehicles from 02.1999

3.1 Halogen headlights - exploded view of components



Note

The headlights must be adjusted after any repair work which could affect the headlight settings.

1 - Headlight housing

- ☐ Removing and installing
⇒ [page 127](#)

2 - 6 Nm

3 - Seal

4 - Headlight range control motor

- ☐ Headlight range control motor, left -V48-
- ☐ Headlight range control motor, right -V49-
- ☐ Removing and installing
⇒ [page 132](#)

5 - Bulb holder

- ☐ For side lights

6 - Housing cover

- ☐ For main beam/side lights

7 - Electrical connector

- ☐ For main beam headlights

8 - Electrical connector

- ☐ For headlight range control motor

9 - Housing cover

- ☐ For dipped beam headlights

10 - Electrical connector

- ☐ For dipped beam headlights

11 - Main beam bulb

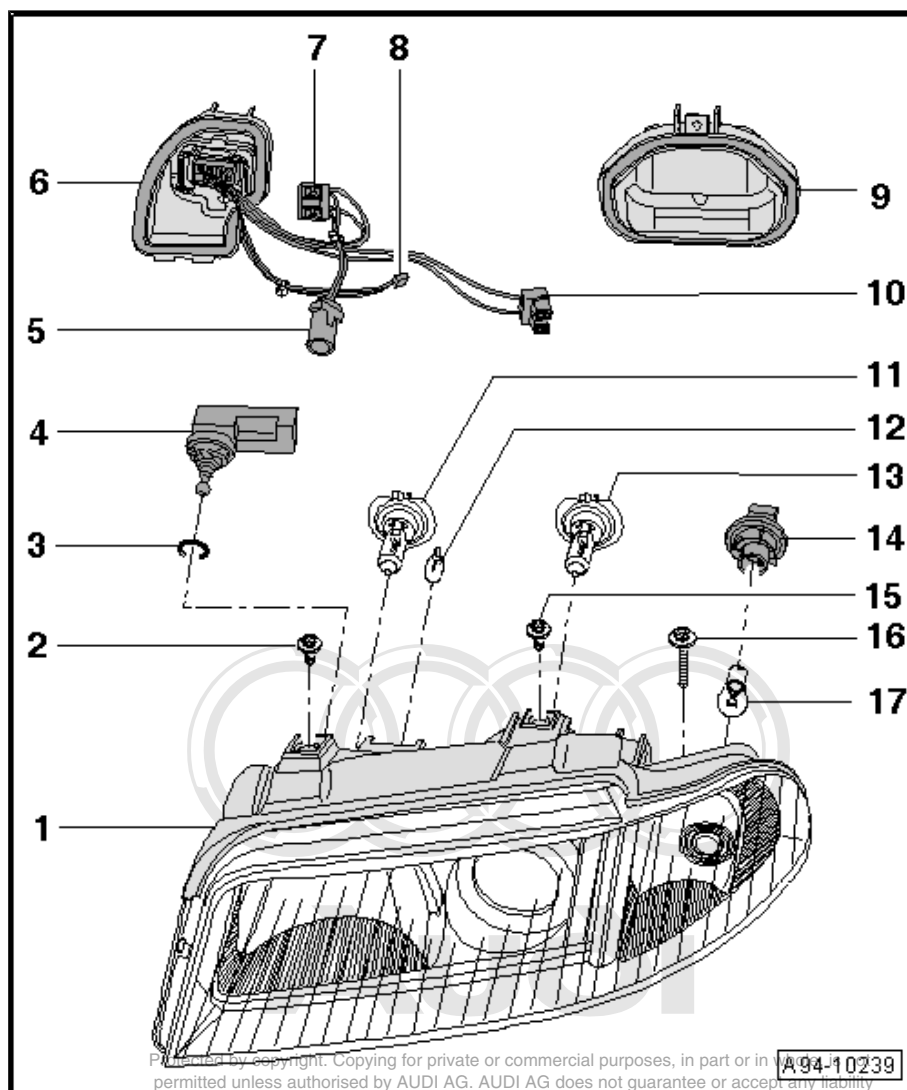
- ☐ H7 - 12 V, 55 W
- ☐ Renewing bulb ⇒ [page 129](#)

12 - Bulb for side lights

- ☐ 12 V, 5 W
- ☐ Renewing bulb ⇒ [page 131](#)

13 - Bulb for dipped beam headlights

- ☐ H7 - 12 V, 55 W
- ☐ Renewing bulb ⇒ [page 128](#)



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14 - Bulb holder

- ☐ For turn signal

15 - 6 Nm

16 - 6 Nm

17 - Turn signal bulb

- ☐ 12 V, 21 W
- ☐ Orange
- ☐ Renewing bulb ⇒ [page 132](#)

3.2 Removing and installing headlights

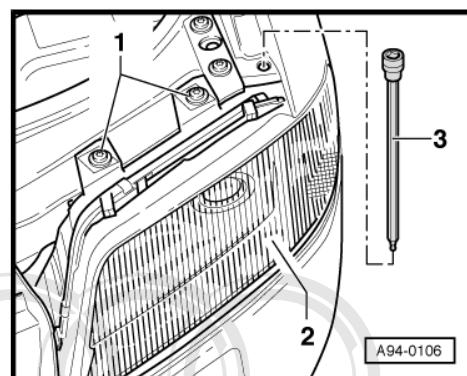
Removing

- Remove bolts -1-.
- Guide a long socket -3- through aperture and unscrew securing bolt at bottom of headlight housing -2-.



Note

Use a magnet if necessary to remove the bolt.

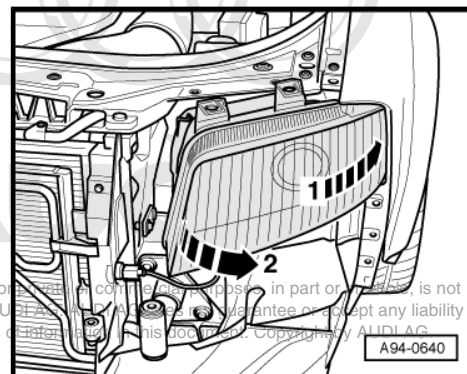


- Unplug electrical connector.
- Turn outer edge of headlight inwards behind wing -arrow 1- and pull headlight out of pin in centre area of vehicle -arrow 2-.
- Remove headlight.



Note

Illustration shows bumper removed for greater clarity.



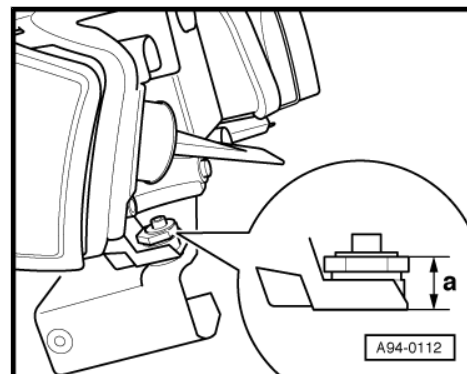
Installing

Installation is carried out in the reverse order; note the following:



Note

- ◆ After renewing headlight, measure and note down dimension -a- between plastic bolt and headlight housing on old headlight.
- ◆ On new headlight, set plastic bolt with respect to headlight housing according to original dimension -a- as noted previously.



- Insert outer edge of headlight inwards behind wing -arrow 1-.
- Engage pin on headlight in guide -arrow 2- in centre area of vehicle.
- Align headlight with body contours (gap widths).



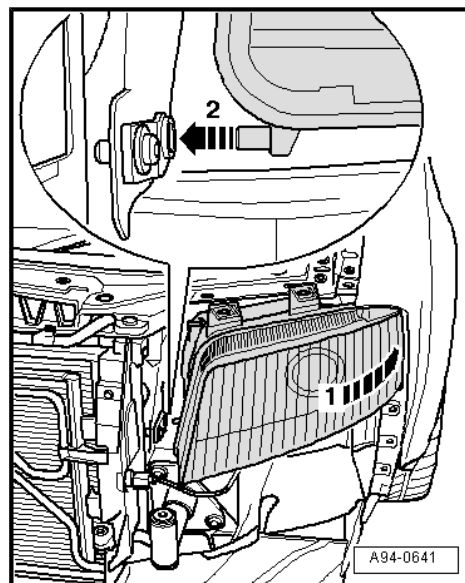
Note

- ♦ Pay attention to area around wing panel opening when aligning headlight.
- ♦ Illustration shows bumper removed for greater clarity.

- Tighten bolts.
- Adjust headlights ⇒ Maintenance ; Booklet 802 .

Tightening torque

Component	Nm
Headlight to lock carrier	6



3.3 Adjusting headlights

Specifications and procedures for headlight adjustment: ⇒ Maintenance ; Booklet 802 .

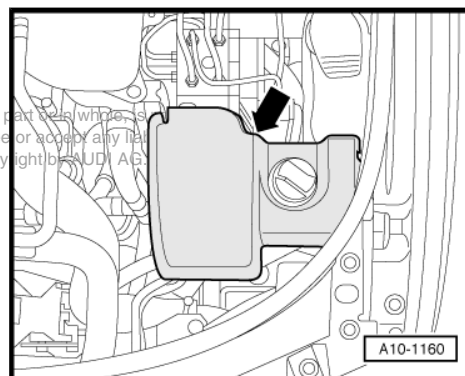
3.4 Renewing bulb for dipped beam headlights

Removing

Headlight (left-side):

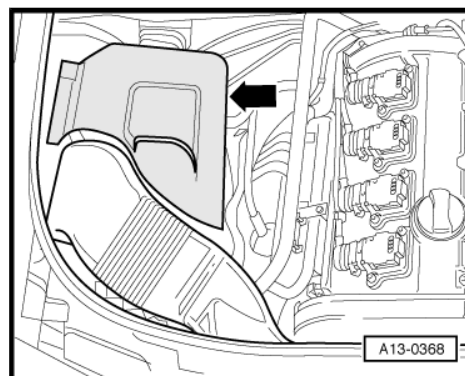
- Remove cover -arrow- from power steering reservoir.

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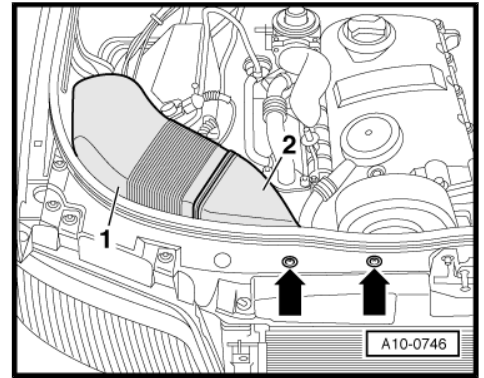


Headlight (right-side):

- Detach cover (right-side) -arrow- in engine compartment.

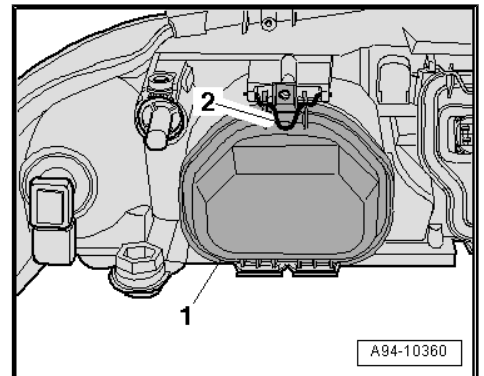


- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



Both sides (continued):

- Release retaining clip -2- and detach housing cover -1- from headlight housing.

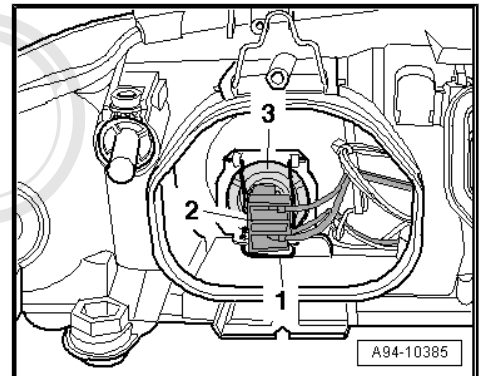


- Detach electrical connector -2- at dipped beam bulb.
- Disengage retaining clip -2- and remove bulb -3- from headlight housing.

Installing

Installation is carried out in the reverse order; note the following:

- Fit new bulb in housing; do not touch glass part of bulb with bare hands.
- Secure bulb with retaining clip.
- Re-attach connector.
- Close housing cover and secure with retaining clip.



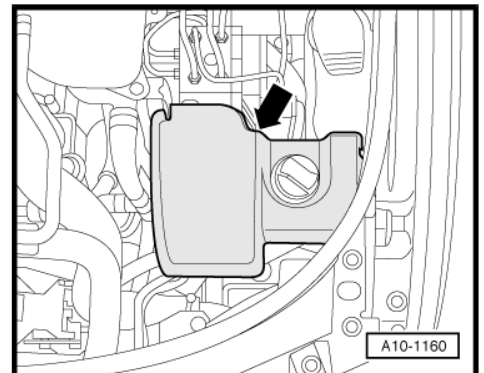
3.5 Renewing bulb for main beam headlights

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Removing

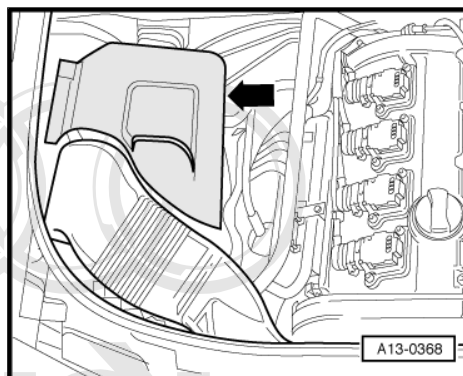
Headlight (left-side):

- Remove cover -arrow- from power steering reservoir.

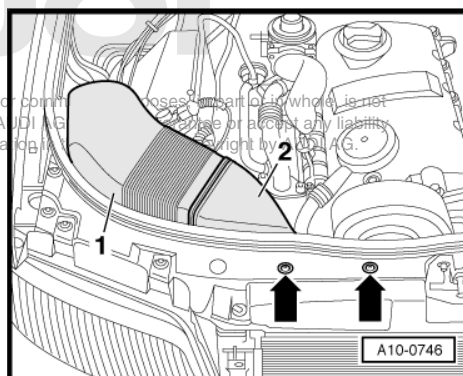


Headlight (right-side):

- Detach cover (right-side) -arrow- in engine compartment.

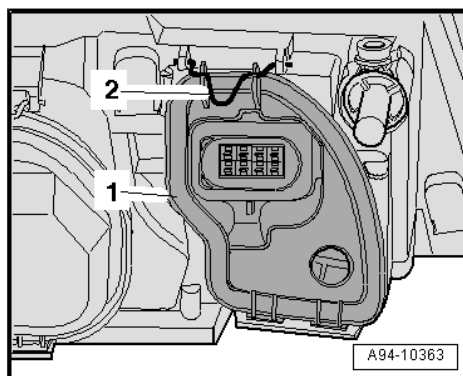


- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



Both sides (continued):

- Unplug electrical connector on housing cover.
- Release retaining clip -2- and detach housing cover -1- from headlight housing.

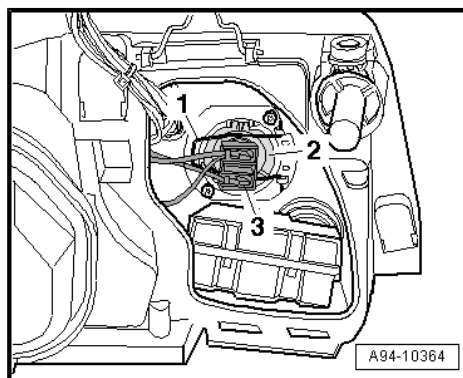


- Unplug electrical connector -3- at main beam bulb.
- Disengage retaining clip -1- and remove bulb -2- from headlight housing.

Installing

Installation is carried out in the reverse order; note the following:

- Fit new bulb in housing; do not touch glass part of bulb with bare hands.
- Secure bulb with retaining clip.
- Re-attach connector.
- Close housing cover and secure with retaining clip.

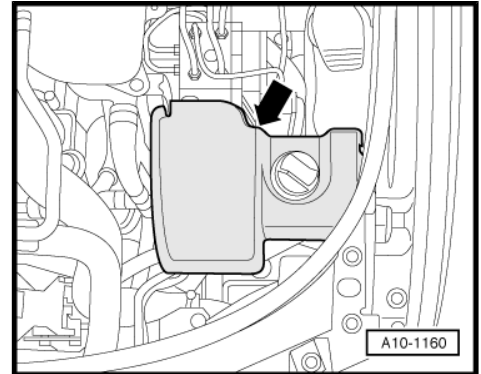


3.6 Renewing bulb for side lights

Removing

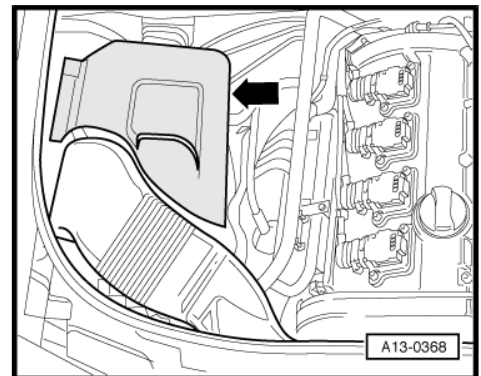
Headlight (left-side):

- Remove cover -arrow- from power steering reservoir.

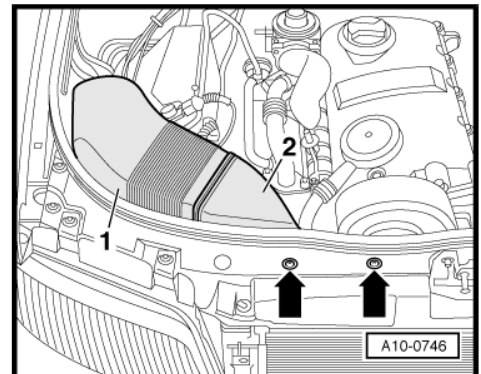


Headlight (right-side):

- Detach cover (right-side) -arrow- in engine compartment.



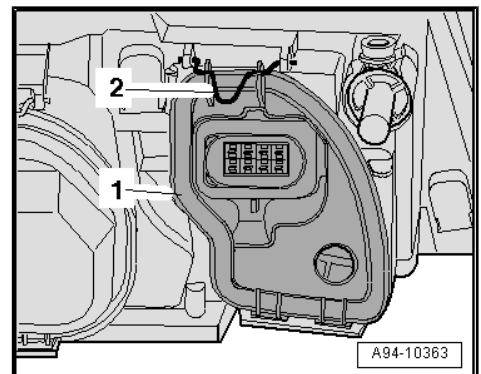
- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



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Both sides (continued):

- Unplug electrical connector on housing cover.
- Release retaining clip -2- and detach housing cover -1- from headlight housing.

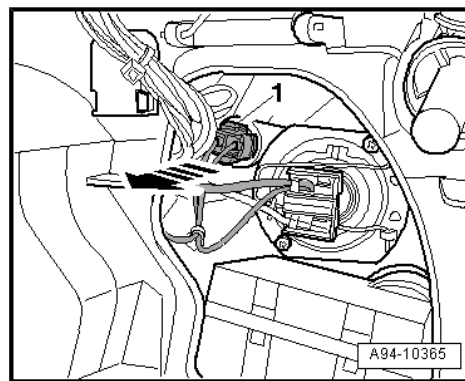


- Release the two retainer tabs and pull bulb holder -1- out of headlight housing -arrow-.
- Pull bulb for side lights out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

- Insert new bulb in bulb holder, taking care not to touch glass bulb with bare hands.
- Close housing cover and secure with retaining clip.



3.7 Renewing bulb for turn signal

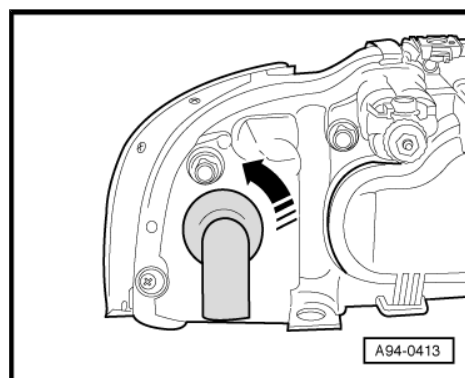
Removing

- Remove headlight ⇒ [page 127](#) .
- Turn bulb holder -arrow- anti-clockwise and pull it out of headlight housing.
- Screw bulb out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

- Fit new bulb in housing; do not touch glass part of bulb with bare hands.
- Install headlight ⇒ [page 127](#) .

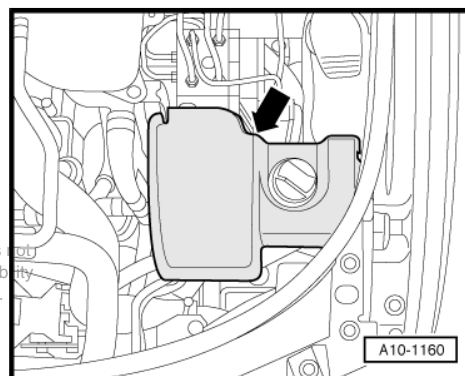


3.8 Removing and installing headlight range control motor

Removing

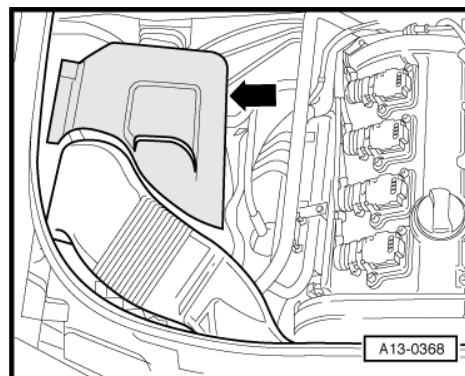
Headlight (left-side):

- Remove cover -arrow- from power steering reservoir.



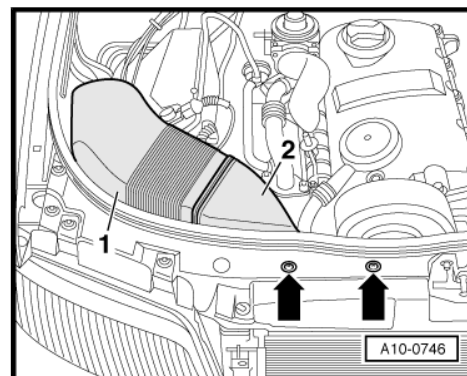
Headlight (right-side):

- Detach cover (right-side) -arrow- in engine compartment.



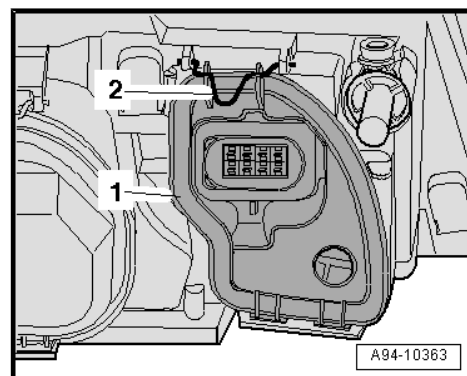
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- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.

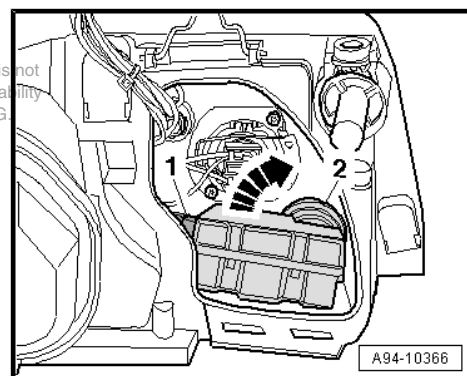


Both sides (continued):

- Unplug electrical connector on housing cover.
- Release retaining clip -2- and detach housing cover -1- from headlight housing.



- Release headlight range control motor -2-: at right-side headlight by turning anti-clockwise; at left-side headlight by turning clockwise -arrow-.
- Press ball head of actuator shaft downwards out of its mounting by tilting control motor.
- Unplug electrical connector -1-.



Installing

Installation is carried out in the reverse order; note the following:

- Start by inserting ball head of actuator shaft in mounting on reflector from below; to do so, pull reflector to rear.
- Close housing cover and secure with retaining clip.



Note

The headlights must always be re-adjusted if the control motors are removed and installed or renewed ⇒ Maintenance ; Booklet 802 .

3.9 Installing repair kit for headlight housing



Note

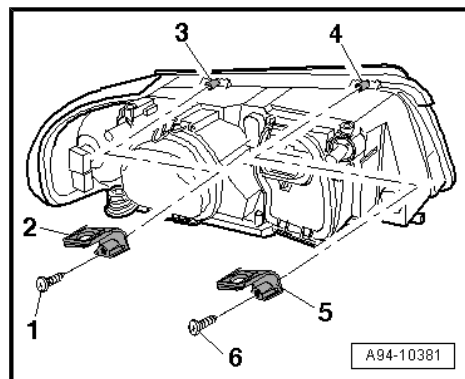
- ◆ *Broken-off headlight retaining tabs can be renewed by installing repair kit. Renewing the entire headlight is then not necessary.*
- ◆ *Different repair kits are available for both left and right side headlights ⇒ Parts catalogue .*

Procedure

- Remove headlight with broken retaining tab ⇒ [page 127](#) .
- Remove remnants of broken-off retaining tab -3- and -4- at headlight housing.
- Fit retaining tabs -2- and -5- from repair kit on headlight housing and secure with bolts -1- and -6-.

Tightening torque

Component	Nm
Headlight to lock carrier	6



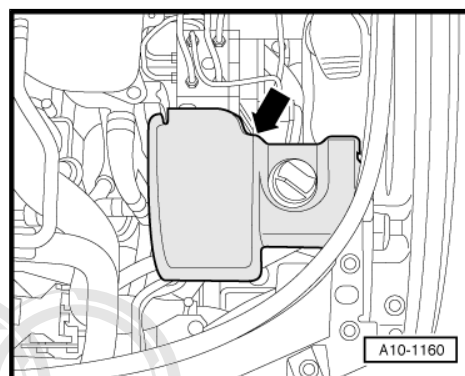
3.10 Converting headlights for driving on the left or right side of the road

When travelling in countries where the vehicle is to be driven on the other side of the road, both headlights must be adjusted to prevent dazzling by the asymmetric dipped beam.

Procedure

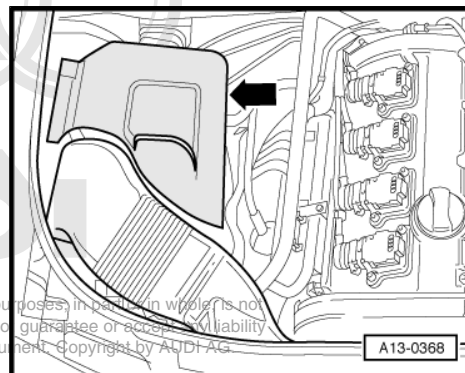
Headlight (left-side):

- Remove cover -arrow- from power steering reservoir.

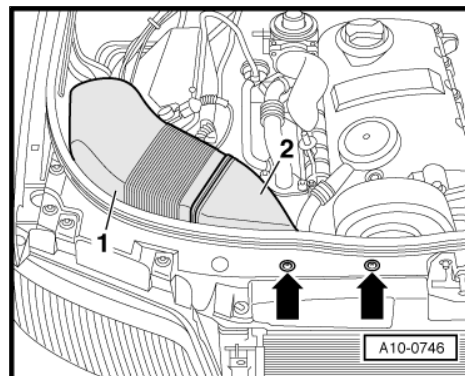


Headlight (right-side):

- Detach cover (right-side) -arrow- in engine compartment.



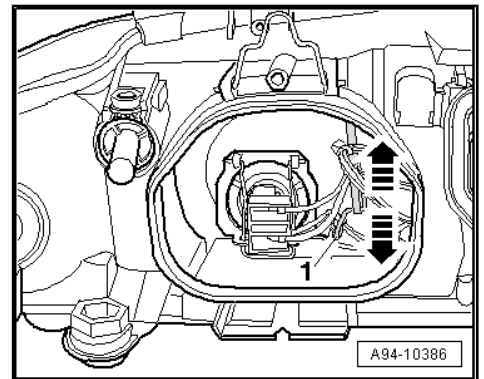
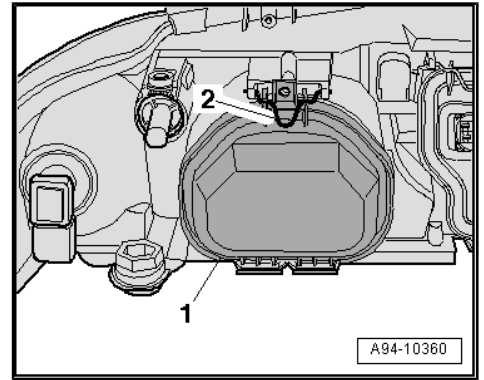
- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



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Both sides (continued):

- Release retaining clip -2- and detach housing cover -1- from headlight housing.
- Check position of adjustment lever -1- at both headlights.
 - Lever down = Driving on left
 - Lever up = Driving on right
- If necessary, swivel lever until it engages in desired position -arrow-.
- Close housing cover and secure with retaining clip.
- Repeat the procedure on the opposite side of vehicle.



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4 Servicing gas-discharge headlights

4.1 Gas discharge headlights - exploded view of components



Note

The headlights must be adjusted after any repair work which could affect the headlight settings.

1 - 1 Nm

2 - Headlight housing

- ❑ Removing and installing
⇒ [page 137](#)

3 - 6 Nm

4 - 6 Nm

5 - Seal

6 - Headlight range control motor

- ❑ Headlight range control motor, left -V48-
- ❑ Headlight range control motor, right -V49-
- ❑ Removing and installing
⇒ [page 144](#)

7 - Main beam bulb

- ❑ H7 - 12 V, 55 W
- ❑ Renewing bulb
⇒ [page 140](#)

8 - Bulb holder

- ❑ For side lights

9 - Electrical connector

- ❑ For headlight range control motor

10 - Electrical connector

- ❑ For main beam headlights

11 - Housing cover

- ❑ For main beam/side lights

12 - Electrical connector

- ❑ For control unit for gas discharge lamp

13 - Housing cover

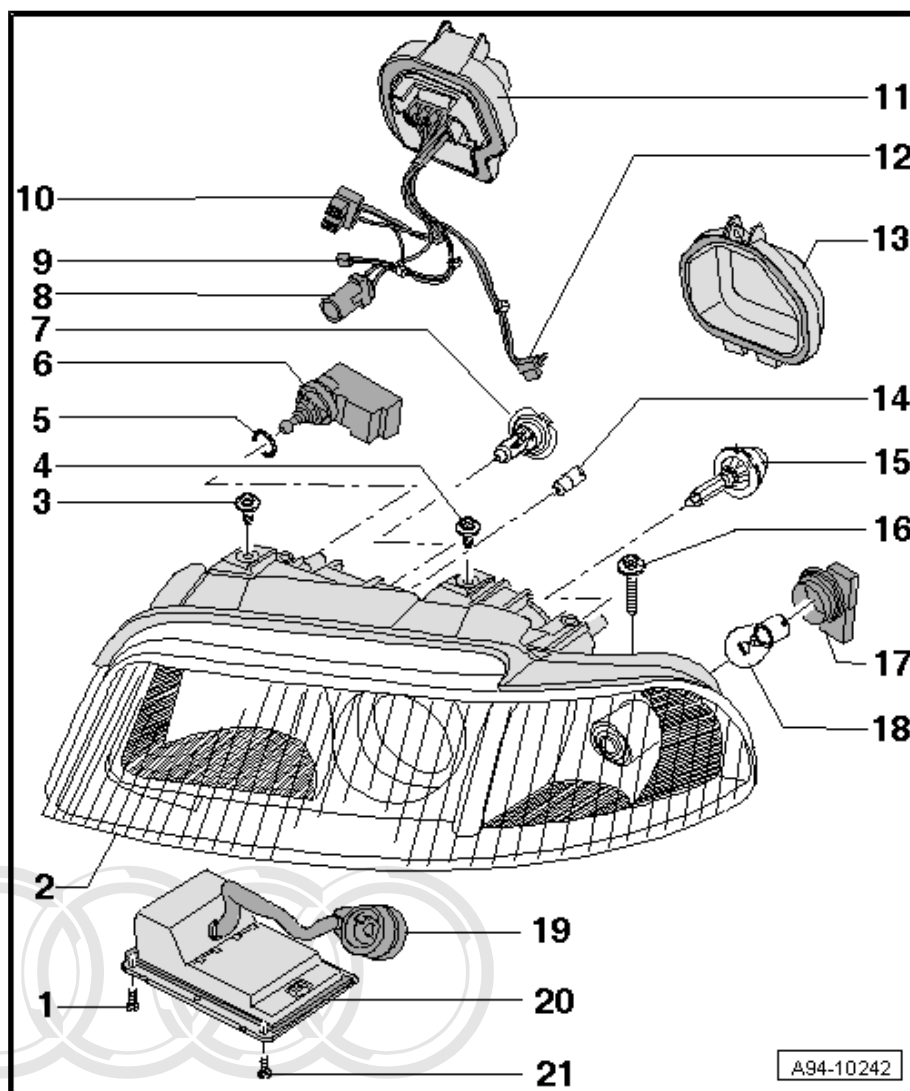
- ❑ For dipped beam headlights

14 - Bulb for side lights

- ❑ 12 V, 5 W
- ❑ Renewing bulb ⇒ [page 142](#)

15 - Gas discharge lamp

- ❑ 35 W, D2S



A94-10242

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- ☐ Renewing bulb ➤ [page 138](#)

16 - 6 Nm

17 - Bulb holder

- ☐ For turn signal

18 - Turn signal bulb

- ☐ 12 V, 21 W
- ☐ Orange
- ☐ Renewing bulb ➤ [page 143](#)

19 - Adapter lead

- ☐ For gas discharge lamp

20 - Control unit for gas discharge lamp

- ☐ Left gas discharge lamp control unit -J343-
- ☐ Right gas discharge lamp control unit -J344-
- ☐ With adapter lead
- ☐ Removing and installing ➤ [page 145](#)

21 - 1 Nm

4.2 Removing and installing headlights



WARNING

Always disconnect the battery earth strap before working on parts of the gas discharge headlights marked with yellow high-voltage warning symbols.

Removing

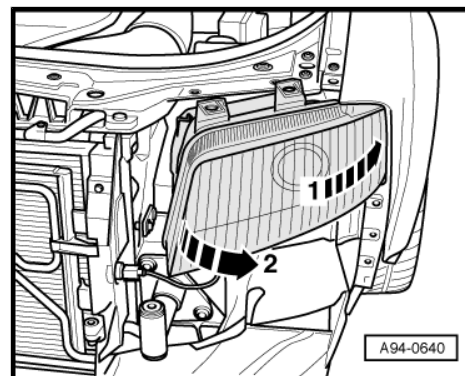
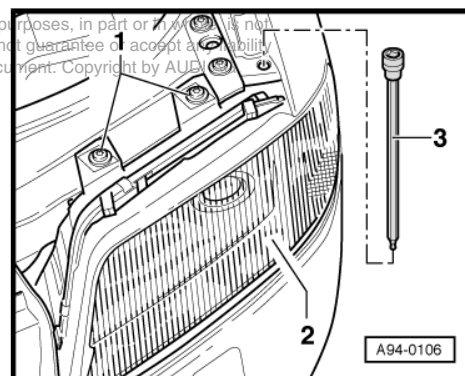
- With ignition switched off, disconnect earth cable at battery ➤ [page 3](#).
- Remove bolts -1-.
- Guide a long socket -3- through aperture and unscrew securing bolt at bottom of headlight housing -2-.



Note

Use a magnet if necessary to remove the bolt.

- Unplug electrical connector.
- Turn outer edge of headlight inwards behind wing -arrow 1- and pull headlight out of pin in centre area of vehicle -arrow 2-.
- Remove headlight.



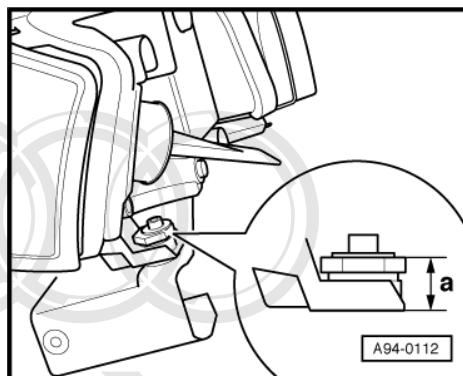
Installing

Installation is carried out in the reverse order; note the following:

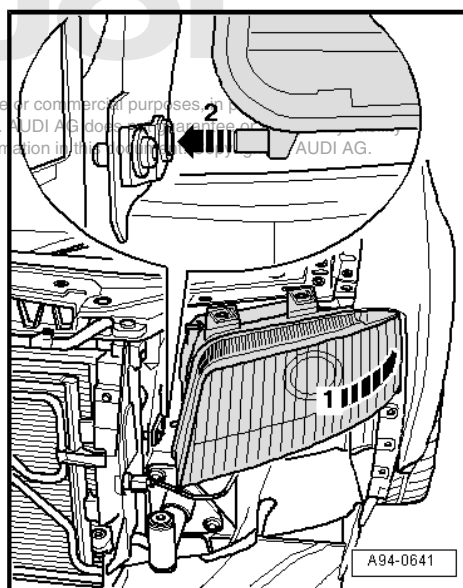


Note

- ◆ After renewing headlight, measure and note down dimension -a- between plastic bolt and headlight housing on old headlight.
- ◆ On new headlight, set plastic bolt with respect to headlight housing according to original dimension -a- as noted previously.



- Insert outer edge of headlight inwards behind wing -arrow 1-.
- Engage pin on headlight in guide -arrow 2- in centre area of vehicle.
- Align headlight with body contours (gap widths).



Note

Pay attention to area around wing panel opening when aligning headlight.

- Tighten bolts.
- Connect battery. Additional steps required ⇒ [page 4](#).
- Adjust headlights ⇒ Maintenance ; Booklet 802.

Tightening torque

Component	Nm
Headlight to lock carrier	6

4.3 Adjusting headlights

Specifications and procedures for headlight adjustment ⇒ Maintenance ; Booklet 802.

4.4 Renewing gas discharge lamp



WARNING

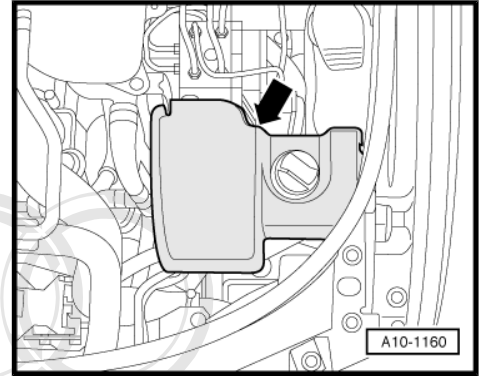
Always disconnect the battery earth strap before working on parts of the gas discharge headlights marked with yellow high-voltage warning symbols.

Removing

- With ignition switched off, disconnect earth cable at battery
⇒ [page 3](#).

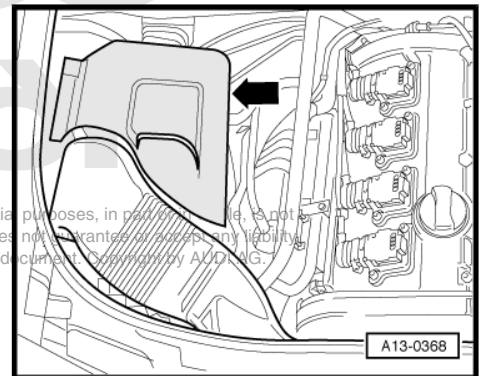
Headlight (left-side):

- Remove cover -arrow- from power steering reservoir.



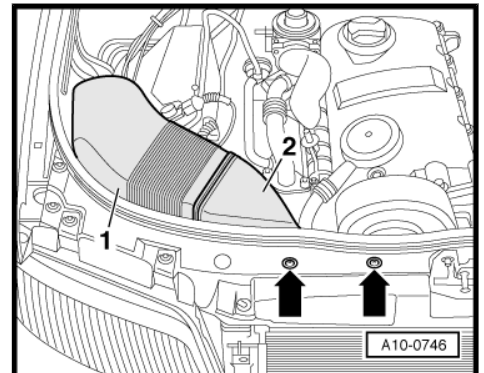
Headlight (right-side):

- Detach cover (right-side) -arrow- in engine compartment.



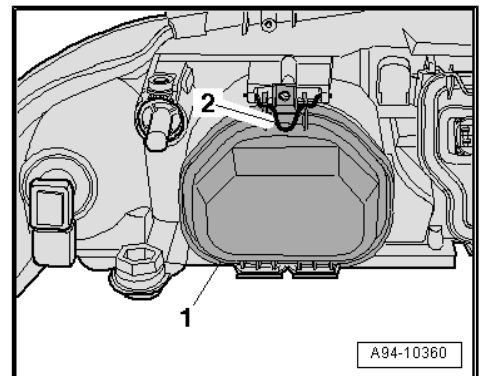
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- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.

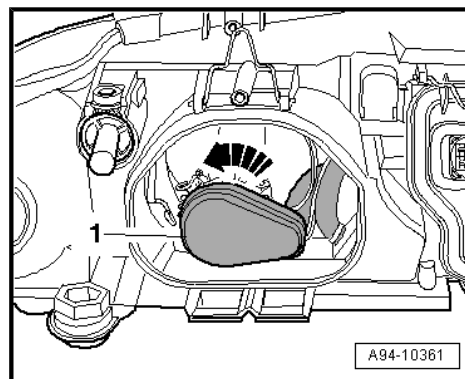


Both sides (continued):

- Release retaining clip -2- and detach housing cover -1- from headlight housing.



- Remove connector -1- for gas-discharge lamp by turning anti-clockwise -arrow-.



- Disengage retaining clip -2- and -3-.
- Pull gas-discharge lamp -1- out of headlight housing.

Installing

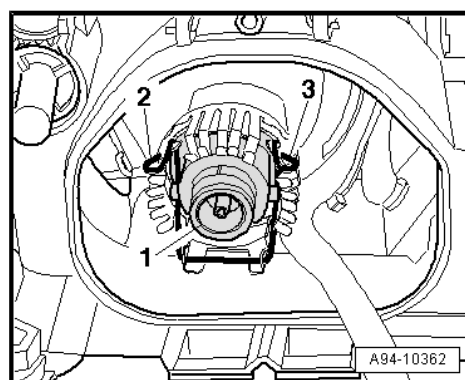
Installation is carried out in the reverse order; note the following:

- Insert new gas discharge lamp in headlight housing; do not touch glass part of bulb with bare hands.



Note

Note correct installation position: lug at top of bulb holder must engage in recess of gas discharge lamp.



- Secure gas discharge lamp with retaining clip.
- Re-attach connector.
- Close housing cover and secure with retaining clip.
- Connect battery. Additional steps required ⇒ [page 4](#).

4.5 Renewing bulb for main beam headlights

Removing



WARNING

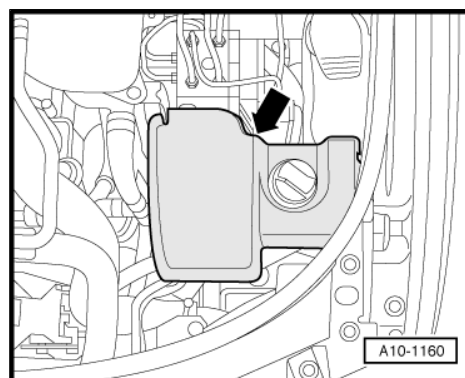
Always disconnect the battery earth strap before working on parts of the gas discharge headlights marked with yellow high-voltage warning symbols.

Removing

- With ignition switched off, disconnect earth cable at battery ⇒ [page 3](#).

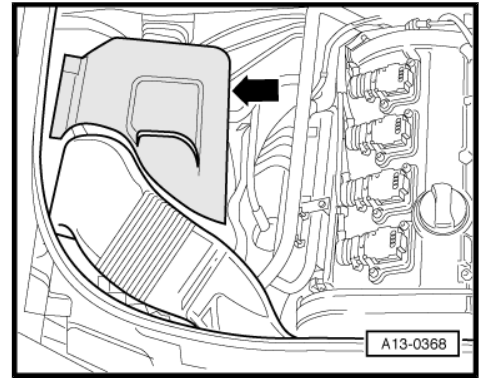
Headlight (left-side):

- Remove cover -arrow- from power steering reservoir.

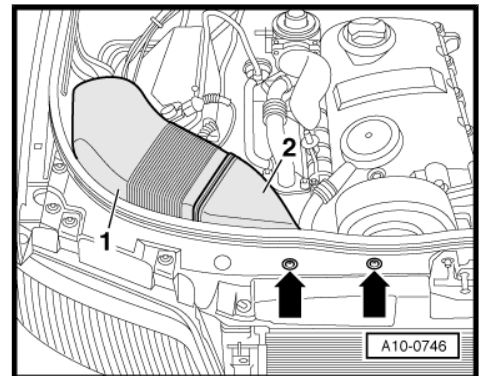


Headlight (right-side):

- Detach cover (right-side) -arrow- in engine compartment.

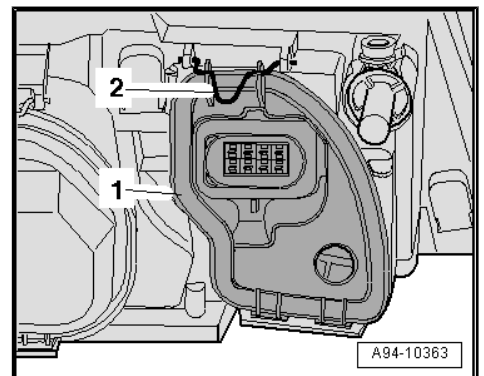


- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



Both sides (continued):

- Unplug electrical connector on housing cover.
- Release retaining clip -2- and detach housing cover -1- from headlight housing.

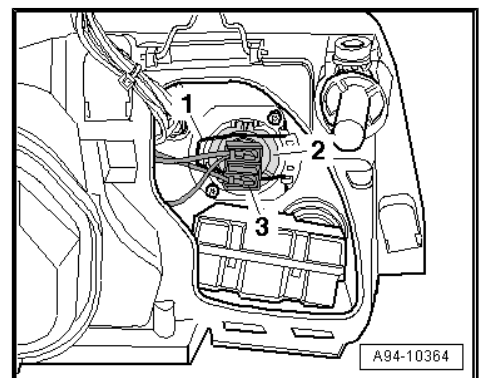


- Unplug electrical connector -3- at main beam bulb.
- Disengage retaining clip -1- and remove bulb -2- from headlight housing.

Installing

Installation is carried out in the reverse order; note the following:

- Fit new bulb in housing; do not touch glass part of bulb with bare hands.
- Secure bulb with retaining clip.
- Re-attach connector.
- Close housing cover and secure with retaining clip.
- Connect battery. Additional steps required ➔ [page 4](#) .



4.6 Renewing bulb for side lights

Removing



WARNING

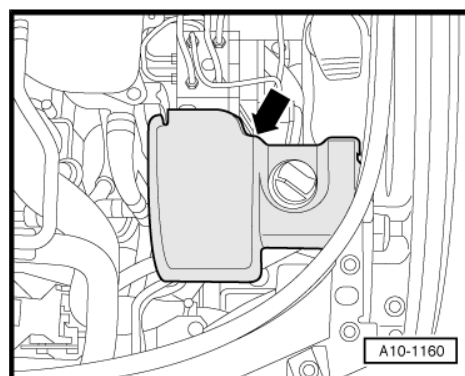
Always disconnect the battery earth strap before working on parts of the gas discharge headlights marked with yellow high-voltage warning symbols.

Removing

- With ignition switched off, disconnect earth cable at battery
⇒ [page 3](#).

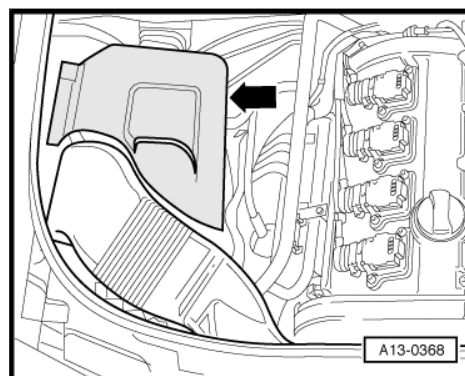
Headlight (left-side):

- Remove cover -arrow- from power steering reservoir.

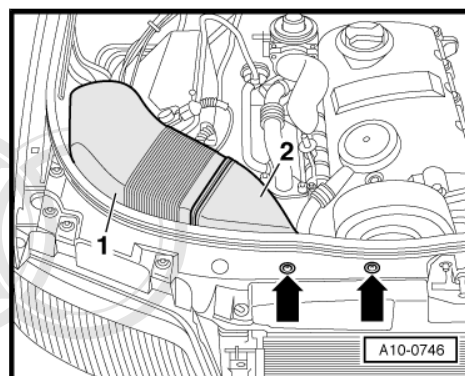


Headlight (right-side):

- Detach cover (right-side) -arrow- in engine compartment.

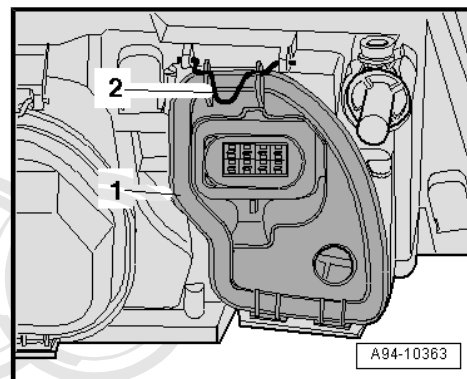


- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



Both sides (continued):

- Unplug electrical connector on housing cover.
- Release retaining clip -2- and detach housing cover -1- from headlight housing.

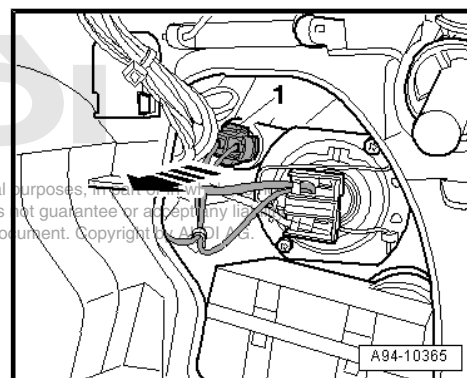


- Release the two retainer tabs and pull bulb holder -1- out of headlight housing -arrow-.
- Pull bulb for side lights out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

- Insert new bulb in bulb holder, taking care not to touch glass bulb with bare hands.
- Press bulb holder into headlight housing until you feel it engage.
- Close housing cover and secure with retaining clip.
- Connect battery. Additional steps required ⇒ [page 4](#).



4.7 Renewing bulb for turn signal

Removing

Headlight (left-side):

- Remove headlight ⇒ [page 137](#).

Headlight (right-side):

- Remove front wheel housing liner ⇒ Rep. Gr. 66.

Both sides (continued):

- Left-side: turn bulb holder -arrow- anti-clockwise and pull it out of headlight housing.
- Right-side: turn bulb holder clockwise and pull it out of headlight housing.
- Screw bulb out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

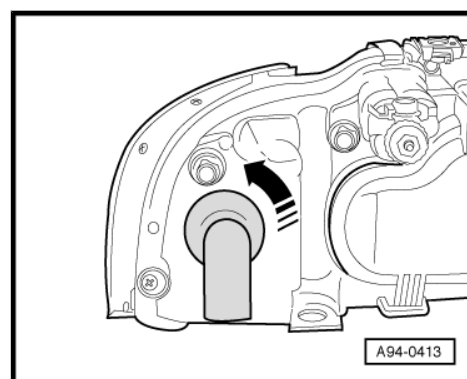
- Fit new bulb in housing; do not touch glass part of bulb with bare hands.

Headlight (left-side):

- Install headlight ⇒ [page 138](#).

Headlight (right-side):

- Install front wheel housing liner ⇒ Rep. Gr. 66.



4.8 Removing and installing headlight range control motor



WARNING

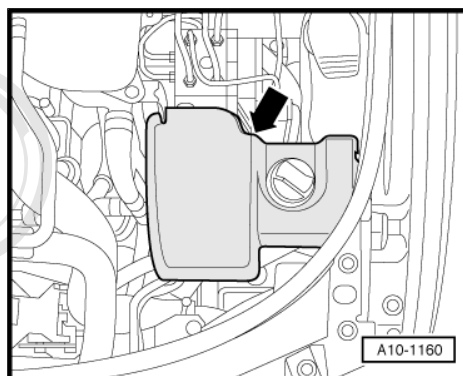
Always disconnect the battery earth strap before working on parts of the gas discharge headlights marked with yellow high-voltage warning symbols.

Removing

- With ignition switched off, disconnect earth cable at battery
⇒ [page 3](#).

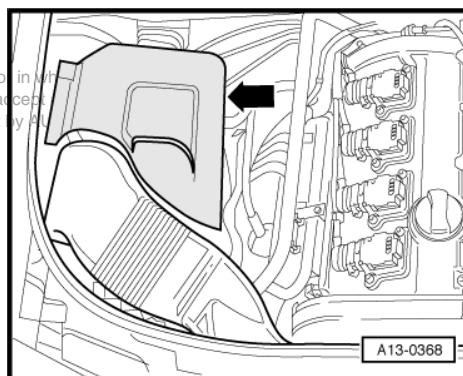
Headlight (left-side):

- Remove cover -arrow- from power steering reservoir.

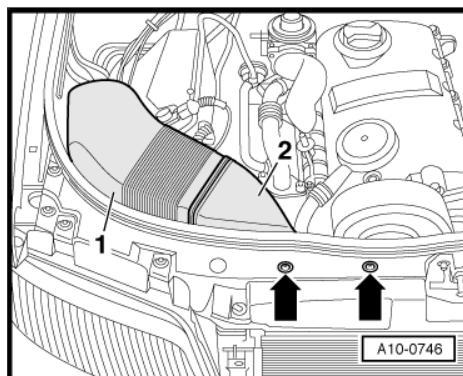


Headlight (right-side):

- Detach cover (right-side) -arrow- in engine compartment.

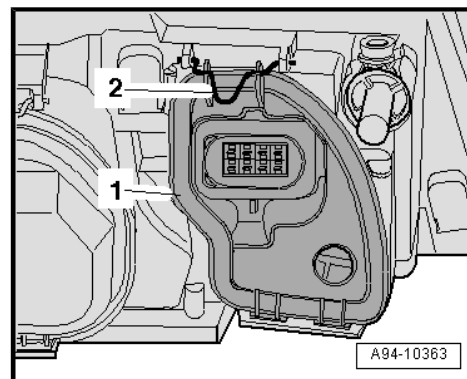


- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



Both sides (continued):

- Unplug electrical connector on housing cover.
- Release retaining clip -2- and detach housing cover -1- from headlight housing.

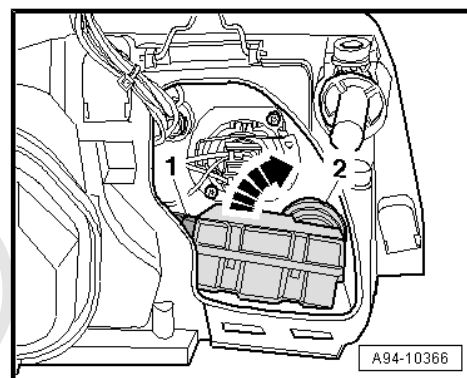


- Release headlight range control motor -2-: at right-side headlight by turning anti-clockwise; at left-side headlight by turning clockwise -arrow-.
- Press ball head of actuator shaft downwards out of its mounting by tilting control motor.
- Unplug electrical connector -1-.

Installing

Installation is carried out in the reverse order; note the following:

- Start by inserting ball head of actuator shaft in mounting on reflector from below; to do so, pull reflector to rear.
- Close housing cover and secure with retaining clip.
- Connect battery. Additional steps required ⇒ [page 4](#).



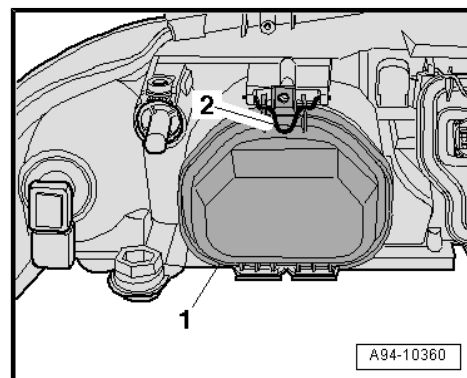
Note

The headlights must always be re-adjusted if the control motors are removed and installed or renewed ⇒ Maintenance, Booklet 802.

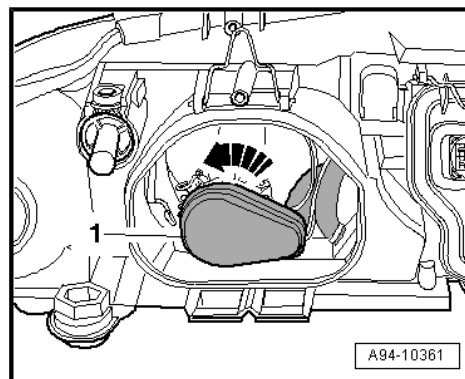
4.9 Removing and installing control unit for gas discharge lamp

Removing

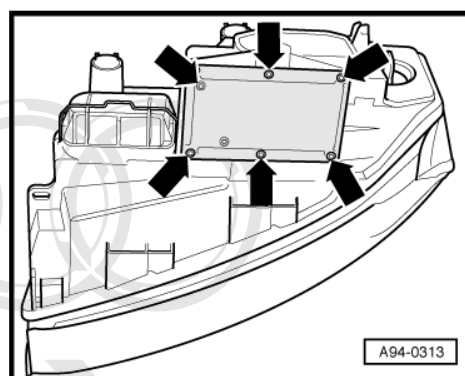
- Remove headlight ⇒ [page 137](#).
- Release retaining clip -2- and detach housing cover -1- from headlight housing.



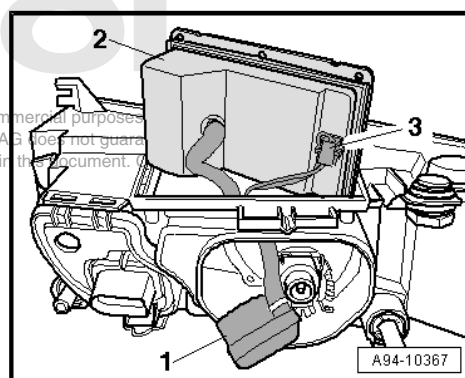
- Remove connector -1- for gas-discharge lamp by turning anti-clockwise -arrow-.



- Unscrew bolts -arrows-.
- Detach control unit for gas discharge lamp from headlight housing.



- Unplug electrical connector -3- at control unit for gas discharge lamp.
- Guide connector -1- for gas-discharge lamp out of headlight housing.
- Remove control unit for gas discharge lamp.



Installing

Installation is carried out in the reverse order; note the following:

- Check seal between control unit for gas discharge lamp and headlight housing.
- Close housing cover and secure with retaining clip.
- Install headlight ⇒ [page 138](#) .

Tightening torque

Component	Nm
Control unit for gas discharge lamp to headlight housing	1

4.10 Installing repair kit for headlight housing



Note

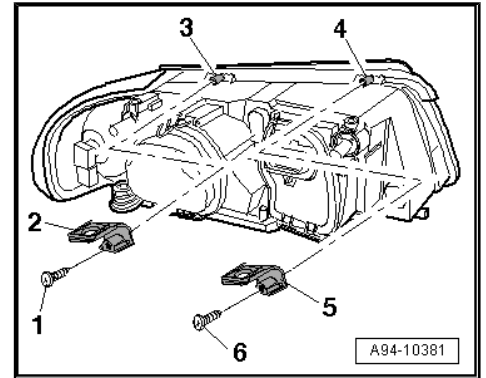
- ♦ *Broken-off headlight retaining tabs can be renewed by installing repair kit. Renewing the entire headlight is then not necessary.*
- ♦ *Different repair kits are available for both left and right side headlights ⇒ Parts catalogue .*

Procedure

- Remove headlight with broken retaining tab ⇒ [page 137](#) .
- Remove remnants of broken-off retaining tab -3- and -4- at headlight housing.
- Fit retaining tabs -2- and -5- from repair kit on headlight housing and secure with bolts -1- and -6-.

Tightening torque

Component	Nm
Headlight to lock carrier	6

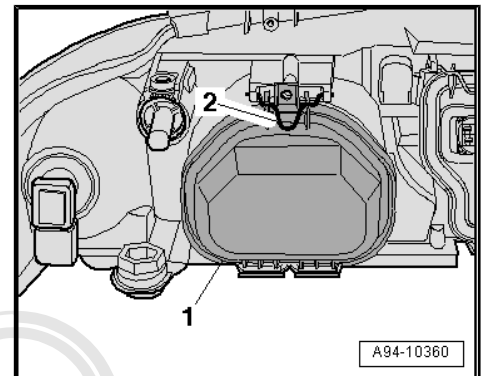


4.11 Converting headlights for driving on the left or right side of the road

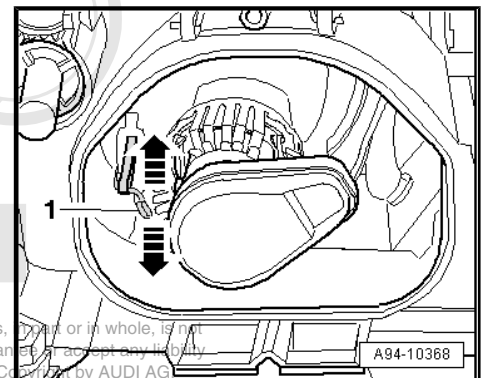
When travelling in countries where the vehicle is to be driven on the other side of the road, both headlights must be adjusted to prevent dazzling by the asymmetric dipped beam.

Procedure

- Remove headlight ⇒ [page 137](#) .
- Release retaining clip -2- and detach housing cover -1- from headlight housing.



- Check position of adjustment lever -1- at both headlights.
 - Lever down = Driving on left
 - Lever up = Driving on right
- If necessary, swivel lever until it engages in desired position -arrow-.
- Close housing cover and secure with retaining clip.
- Install headlight ⇒ [page 138](#) .
- Repeat the procedure on the opposite side of vehicle.



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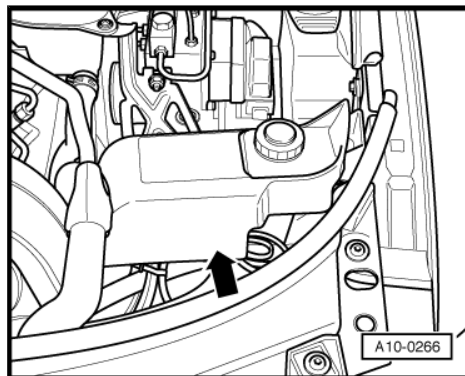
5 Servicing turn signals - vehicles up to 01.1999

5.1 Removing and installing housing for turn signals

Removing

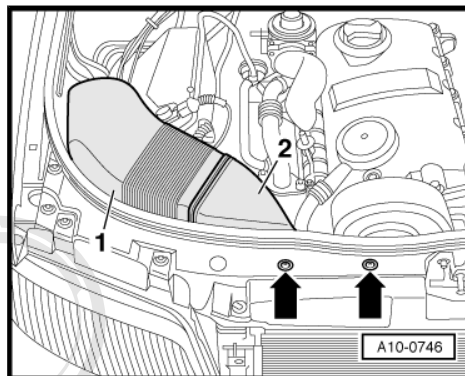
Headlight (left-side):

- If fitted, remove cover -arrow- from power steering reservoir.



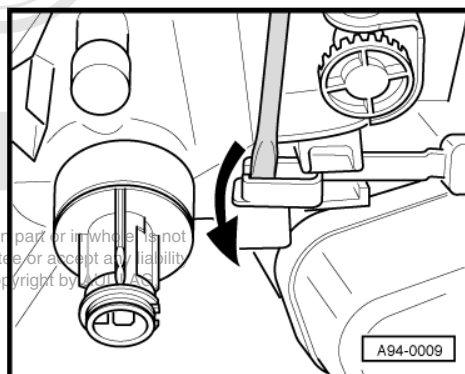
Headlight (right-side):

- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



Both sides (continued):

- Press retaining clip sideways out of catch -arrow- using a screwdriver.
- Located on headlight housing on vehicles without fog lights.
- Located on turn signal housing on vehicles with fog lights.

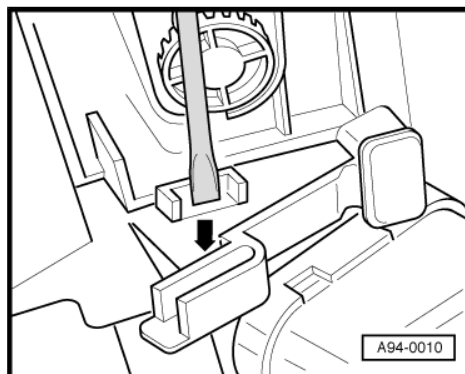


- Press down catch -arrow- and slide turn signal housing out towards the front.
- Unplug electrical connector.

Installing

Installation is carried out in the reverse order; note the following:

- Insert turn signal housing in headlight housing (guides must engage in mountings on headlight housing).
- Lock retaining clip in catch.



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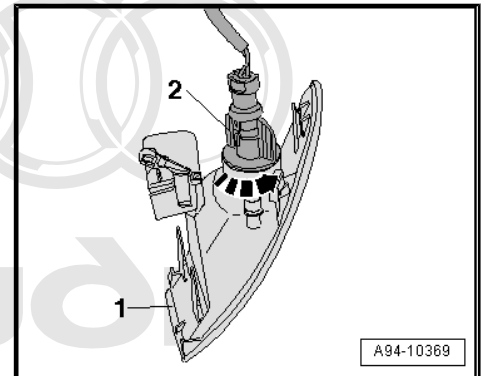
5.2 Renewing bulb for turn signal

Removing:

- Remove turn signal housing ➔ [page 148](#) .
- Turn bulb holder -2- anti-clockwise -arrow- and pull it out of turn signal housing -1-.
- Screw bulb out of bulb holder.

Installing

- Insert turn signal housing in headlight housing (guides must engage in mountings on headlight housing).
- Lock retaining clip in catch.



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6 Servicing fog lights - vehicles up to 01.1999

6.1 Removing and installing fog lights

The fog light is integrated in the headlight housing and cannot be renewed separately if defective.

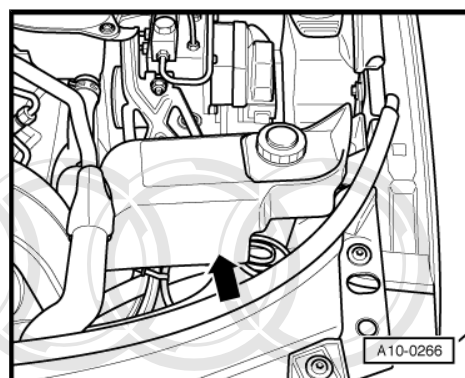
- Renewing headlight ⇒ [page 120](#) .

6.2 Renewing fog light bulb

Removing

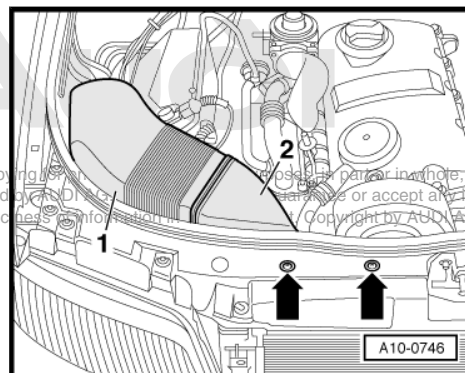
Headlight (left-side):

- If fitted, remove cover -arrow- from power steering reservoir.



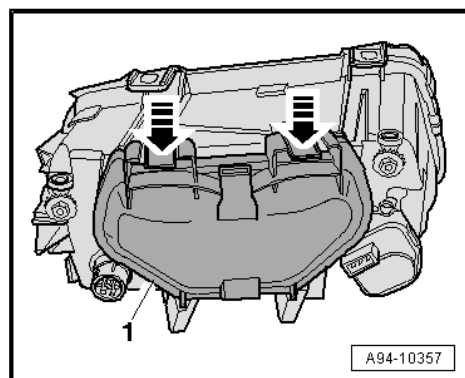
Headlight (right-side):

- Unscrew bolts -arrows-.
- Remove air ducts -1- and -2-.



Both sides (continued):

- Release retaining tabs -arrows- and detach housing cover -1- from headlight housing.

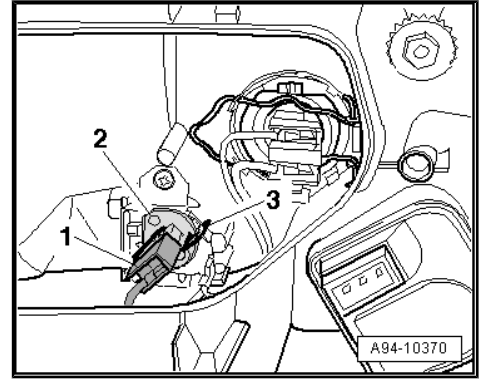


- Unplug electrical connector -1- at fog light bulb.
- Disengage retaining clip -3- and remove bulb -2- from headlight housing.

Installing

Installation is carried out in the reverse order; note the following:

- Fit new bulb in housing; do not touch glass part of bulb with bare hands.
- Secure bulb with retaining clip.
- Plug in connector and close housing cover.
- Adjust fog lights ⇒ Maintenance ; Booklet 802 .



6.3 Adjusting fog lights

Specifications and procedures for fog light adjustment ⇒ Maintenance ; Booklet 802 .



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7 Servicing fog lights - vehicles from 02.1999

7.1 Removing and installing fog lights - Audi A4

Removing

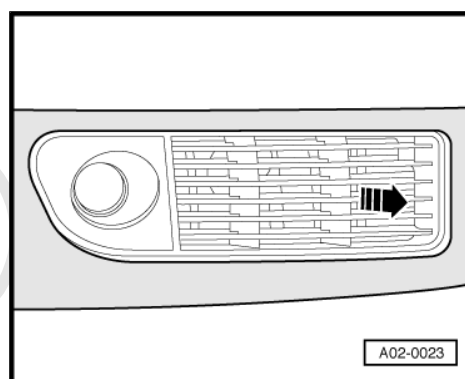
- Switch off ignition and take out ignition key.
- Turn light switch to position "0".

Vehicles with 6-cyl. TDI engine:

- Remove front bumper ⇒ Rep. Gr. 63 .

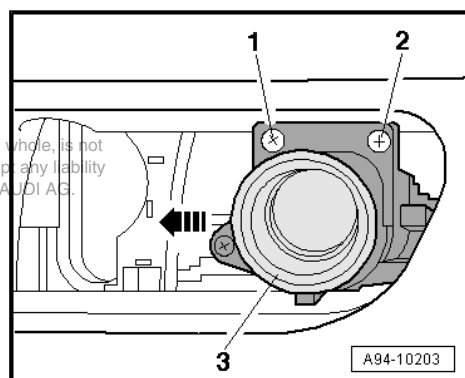
All models:

- Pull air intake grille -arrow- off lower part of bumper.



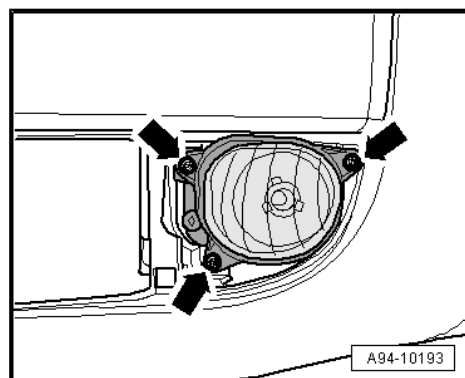
Fog light with two securing bolts:

- Unscrew bolts -1- and -2-.
- Take fog light housing -3- out of bumper in direction of -arrow-.
- Unplug electrical connector.



Fog light with three securing bolts:

- Unscrew bolts -arrows-.
- Take fog light housing out of bumper.
- Unplug electrical connector.



Installing

Installation is carried out in the reverse order; note the following:

- Adjust fog lights ⇒ Maintenance ; Booklet 802 .

Tightening torque

Component	Nm
Fog light to bumper	6

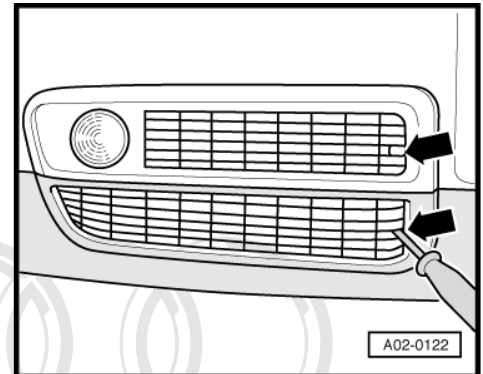
7.2 Removing and installing fog lights - Audi S4 / RS 4

Removing

- Switch off ignition and take out ignition key.
- Turn light switch to position "0".

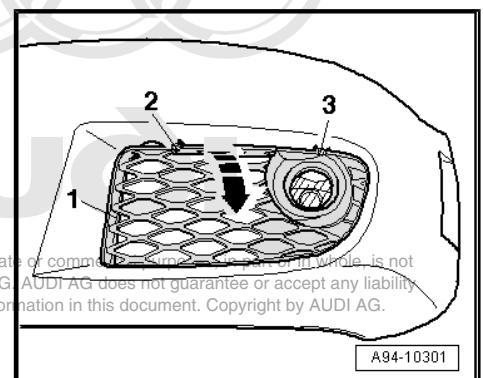
Audi S4:

- Release retaining hooks -arrows- using a screwdriver and detach air intake grille from bottom of bumper.
- Remove air intake grille by pivoting forwards.



Audi RS 4:

- Unscrew bolts -2- and -3-.
- Remove air intake grille -1- by pivoting forwards -arrow-.



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All models:

- Unscrew bolts -arrows-.
- Take fog light housing out of bumper.
- Unplug electrical connector.

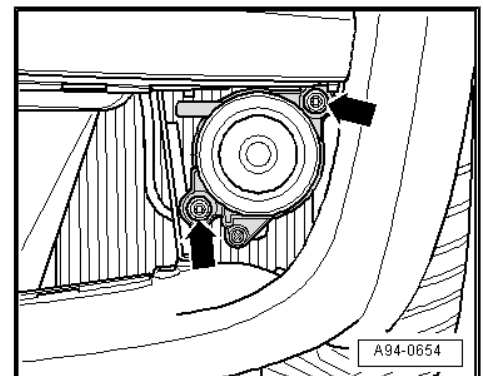
Installing

Installation is carried out in the reverse order; note the following:

- Adjust fog lights ⇒ Maintenance ; Booklet 802 .

Tightening torques

Component	Nm
Fog light to bumper	4



7.3 Removing and installing fog lights - Audi RS 4

Removing

- Unscrew bolts -arrows-.
- Take fog light housing out of bumper.
- Unplug electrical connector.

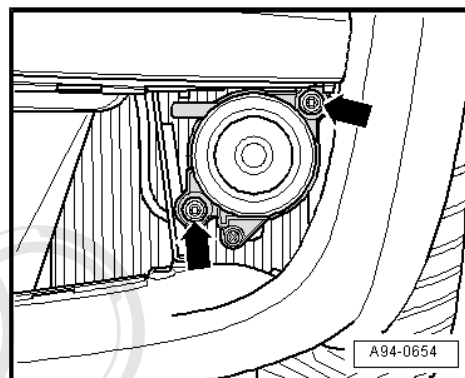
Installing

Installation is carried out in the reverse order; note the following:

- Adjust fog lights ⇒ Maintenance ; Booklet 802 .

Tightening torques

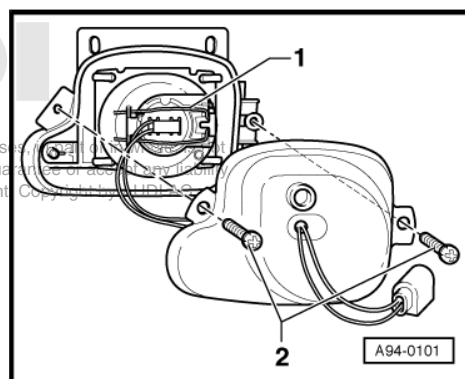
Component	Nm
Fog light to bumper	4



7.4 Renewing fog light bulbs - bolted cover

Removing

- Remove fog light ⇒ [page 152](#) .
- Remove cross-head bolts -2-.
- Disengage retaining clip -1- and remove bulb from fog light housing.



- Unplug bulb connectors -A- from wiring connector in housing cover.

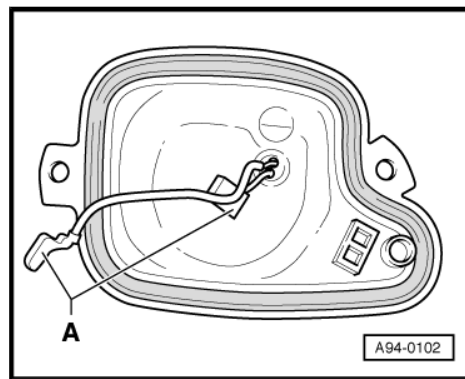
Installing

Installation is carried out in the reverse order; note the following:

- Fit new bulb in fog light housing; do not touch the glass part of the bulb with bare hands.
- Secure bulb with retaining clip.
- Plug in connector and close housing cover.
- Adjust fog lights ⇒ Maintenance ; Booklet 802 .

Tightening torque

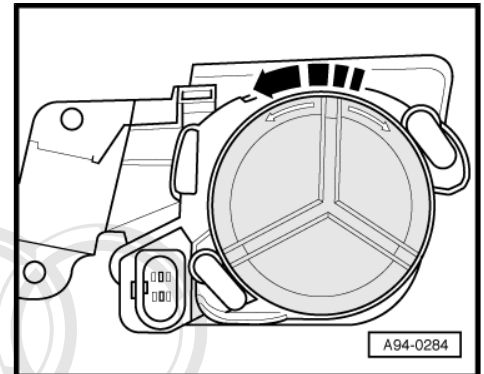
Component	Nm
Housing cover to fog light	1.2



7.5 Renewing fog light bulbs - bayonet-type cover

Removing

- Remove fog light ➔ [page 152](#) .
- Detach housing cover by turning anti-clockwise -arrow-.

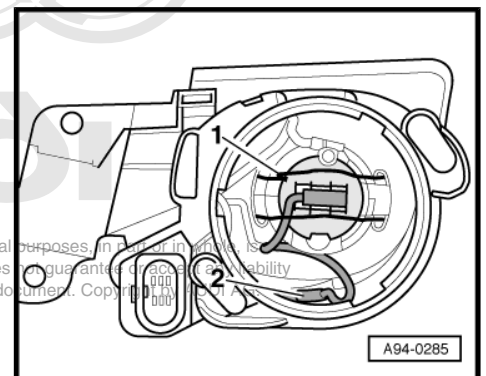


- Disengage retaining clip -1- and remove bulb from fog light housing.
- Unplug electrical connector -2-.

Installing

Installation is carried out in the reverse order; note the following:

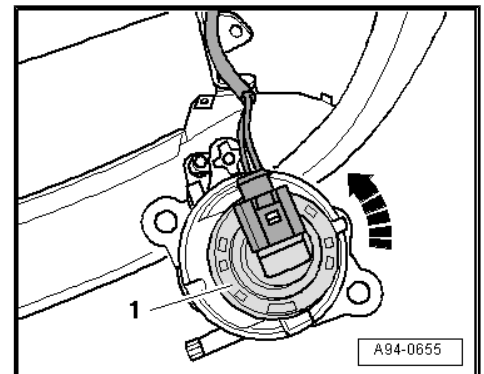
- Fit new bulb in fog light housing; **do not touch the glass part of the bulb with bare hands.**
- Secure bulb with retaining clip.
- Plug connector back in and close housing cover by turning in clockwise direction.
- Adjust fog lights ➔ Maintenance ; Booklet 802 .



7.6 Renewing fog light bulbs - Audi S4 / RS 4

Removing

- Remove fog light:
 - ♦ Audi S4 ➔ [page 153](#) .
 - ♦ Audi RS 4 ➔ [page 154](#) .
- Turn housing cover -1- anti-clockwise -arrow- and pull out of fog light housing.

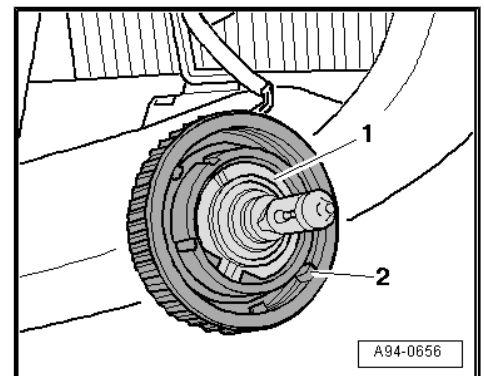


- Pull bulb -1- for fog light out of bulb holder -2-.

Installing

Installation is carried out in the reverse order; note the following:

- Insert new bulb in bulb holder, taking care not to touch glass bulb with bare hands.
- Close housing cover by turning in clockwise direction.
- Adjust fog lights ➔ Maintenance ; Booklet 802 .





7.7 Adjusting fog lights

Specifications and procedures for fog light adjustment ⇒ Maintenance ; Booklet 802 .



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8 Turn signal repeaters

8.1 Removing and installing turn signal repeaters

Removing

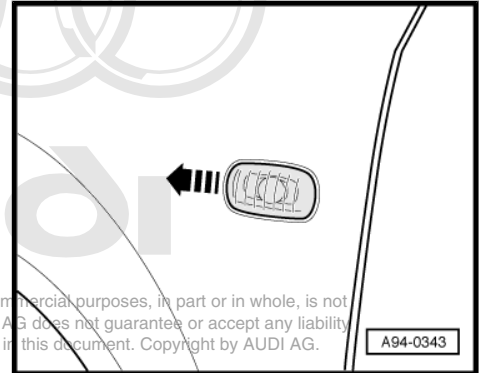
- Switch off ignition and take out ignition key.
- Press turn signal in direction of travel against retaining tab -arrow- and remove carefully from wing opening.
- Unplug electrical connector.



Note

Illustration shows vehicle from 02.1999.

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Installing

Install in reverse order.

9 Servicing rear lights (saloon) - vehicles up to 01.1999

9.1 Rear light - exploded view of components

1 - Electrical connector

- ☐ Contact assignment
⇒ Current flow diagrams, Electrical fault finding and Fitting locations

2 - Bulb carrier

- ☐ Removing and installing
⇒ [page 160](#)

3 - Body

4 - Nut with washer, 4 Nm

- ☐ 4x

5 - Bulb for brake light

- ☐ 12 V, 21/5 W

6 - Turn signal bulb

- ☐ 12 V, 21 W

7 - Reversing light bulb

- ☐ 12 V, 21 W

8 - Bulb for rear fog light

- ☐ 12 V, 21 W

9 - Additional wiring harness for tail light

- ☐ Clipped onto back of rear light

10 - Rear light housing

- ☐ Removing and installing
⇒ [page 159](#)
- ☐ Seal is bonded to rear light

11 - Rear light trim

- ☐ Painted in body colour
- ☐ Removing and installing ⇒ [page 160](#)



Note

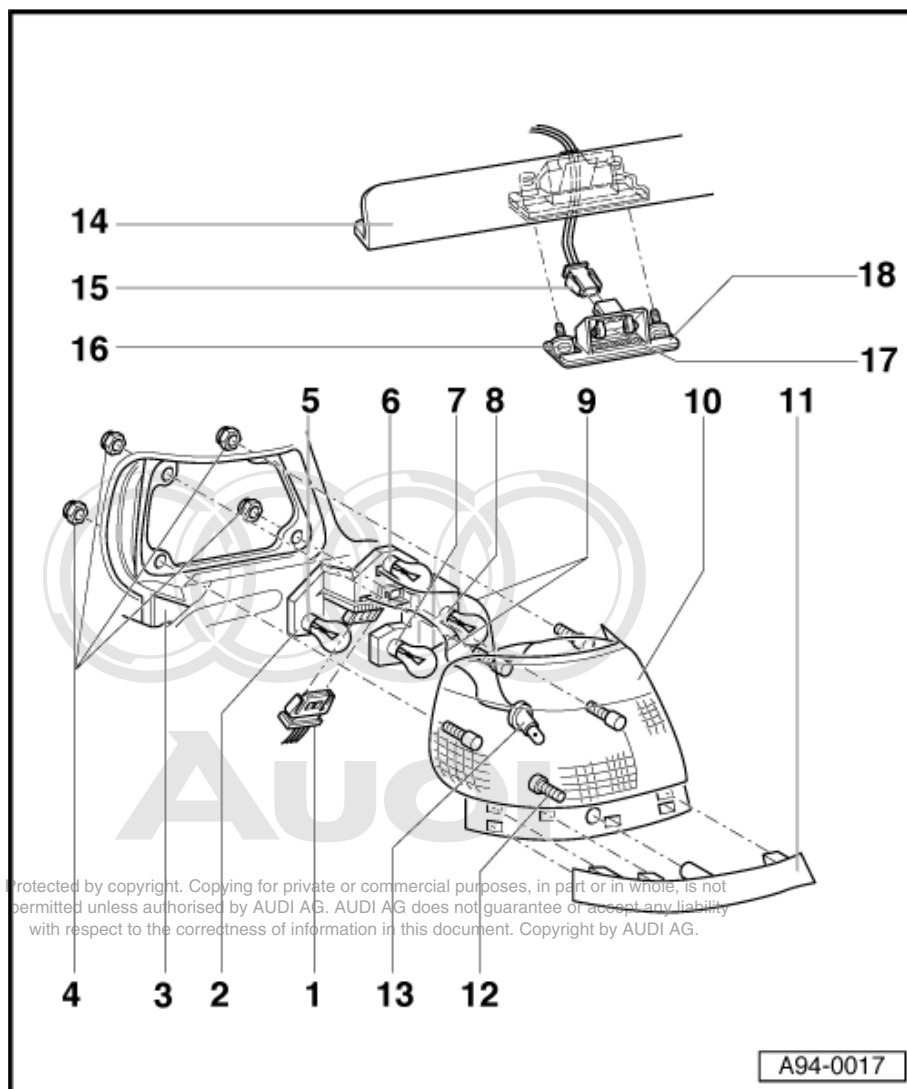
When performing repairs, trim can additionally be secured with self-tapping screw -item 12-.

12 - Self-tapping screw

- ☐ 4.2 x 9.5 mm
- ☐ Fit only when performing service work

13 - Bulb holder with tail light bulb

- ☐ 12 V, 5 W (glass base bulb)



14 - Handle trim

15 - Electrical connector

- For number plate light

16 - Self-tapping screw

17 - Bulb for number plate light

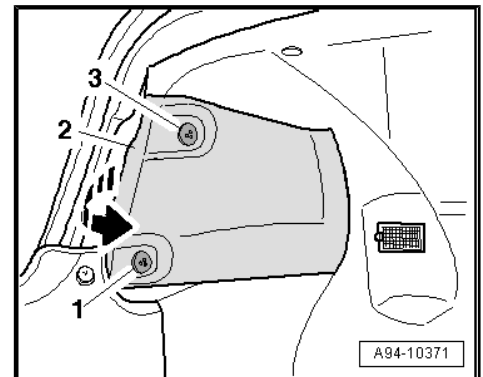
- 12 V, 5 W

18 - Number plate light with seal

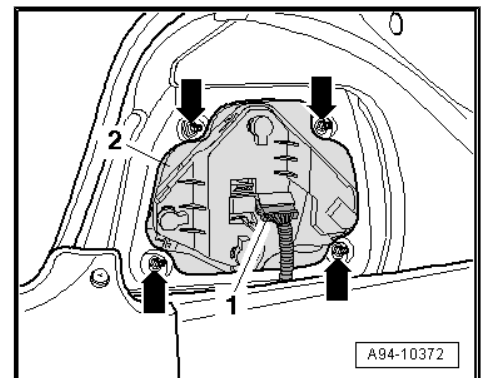
9.2 Removing and installing rear light

Removing

- Switch off ignition and take out ignition key.
- Turn light switch to position "0".
- Unscrew retaining clips -1- and -3-.
- Fold trim -2- to side -arrow-.



- Unplug electrical connector -1-.
- Unscrew nuts -arrows-.
- Detach rear light -2- towards outside.



Installing

Installation is carried out in the reverse order; note the following:



Note

Ensure that seal between body and rear light housing seals completely.

- Before tightening the securing nuts, align the rear light with the contours of the body (uniform gaps all round).

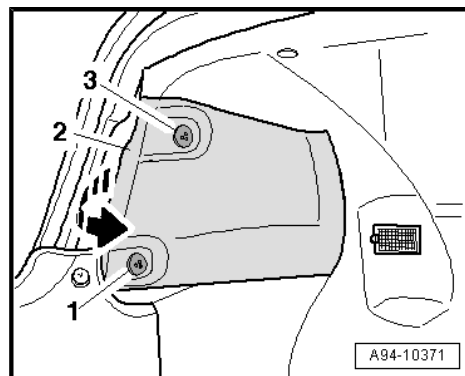
Tightening torque

Component	Nm
Rear light to body	4

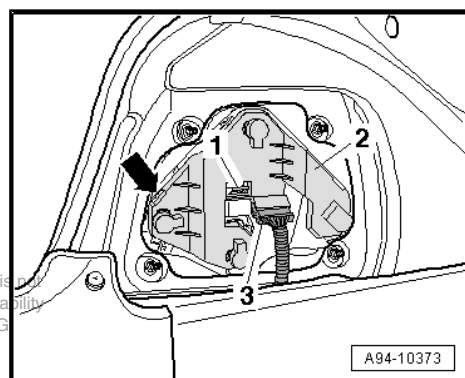
9.3 Removing and installing bulb carrier

Removing

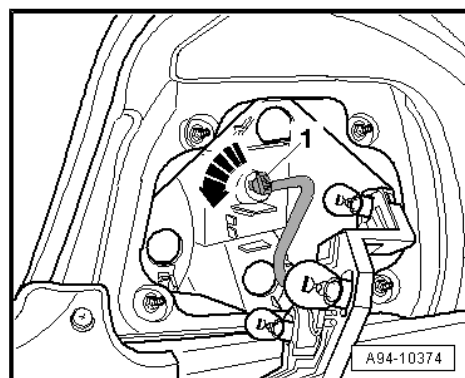
- Switch off ignition and take out ignition key.
- Turn light switch to position "0".
- Unscrew retaining clips -1- and -3-.
- Fold trim -2- to side -arrow-.



- Unplug electrical connector -3-.
- Press catch -1- upwards and release retaining clip -arrow-.
- Detach bulb carrier -2- in direction of passenger compartment out of rear light.
- Detach bulbs from bulb holders.



- Detach bulb holder -1- for tail light (turn bulb holder anti-clockwise -arrow-).
- Take bulb out of bulb holder.



Installing

Install in reverse order.

9.4 Removing and installing rear light trim

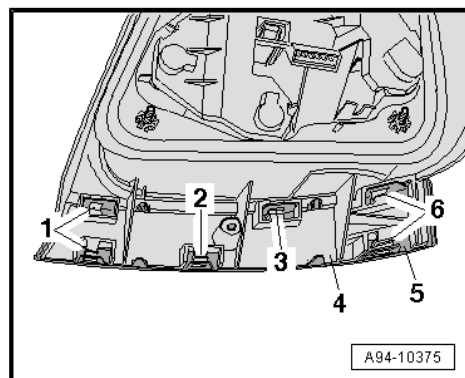
Removing

- Remove rear light ⇒ [page 159](#) .
- Release retaining lugs -1, 2, 3, 6- and detach trim -5- from rear light -4-.

Installing

Installation is carried out in the reverse order; note the following:

- Secure trim with 4.2x9.5 mm self-tapping screw to rear light if retaining lugs are broken off.



10 Servicing rear lights (saloon) - vehicles from 02.1999

10.1 Rear light - exploded view of components

1 - Rear light trim

- ☐ Painted in body colour
- ☐ Removing and installing
⇒ [page 163](#)



Note

When performing repairs, trim must additionally be secured with self-tapping screw - item 3.

2 - Rear light housing

- ☐ Removing and installing
⇒ [page 162](#)

3 - Self-tapping screw

- ☐ 4.2 x 9.5 mm
- ☐ Fit only when performing service work

4 - Bulb for brake light / tail light

- ☐ 12 V, 21/5 W

5 - Bulb carrier

- ☐ Removing and installing
⇒ [page 162](#)

6 - Nut, 4 Nm

7 - Seal

- ☐ Renew if damaged

8 - Bulb for rear fog light

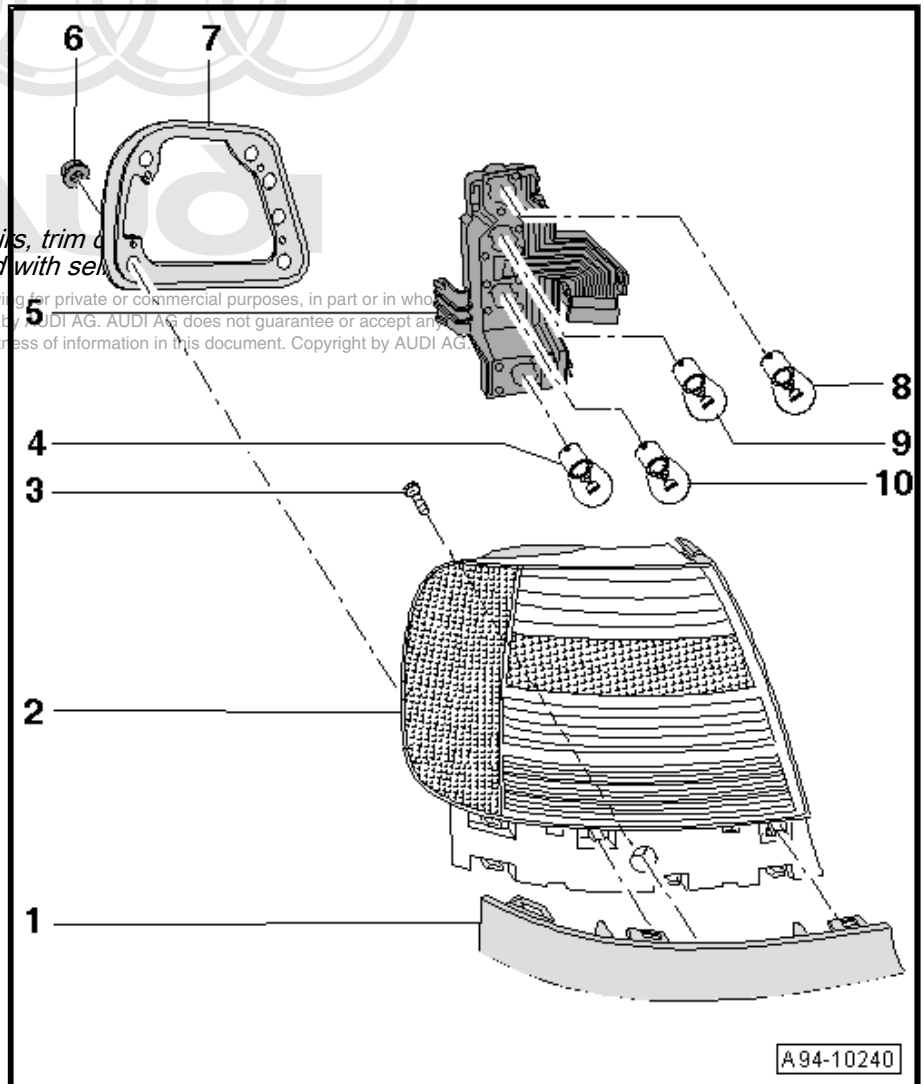
- ☐ 12 V, 21 W

9 - Turn signal bulb

- ☐ 12 V, 21 W

10 - Reversing light bulb

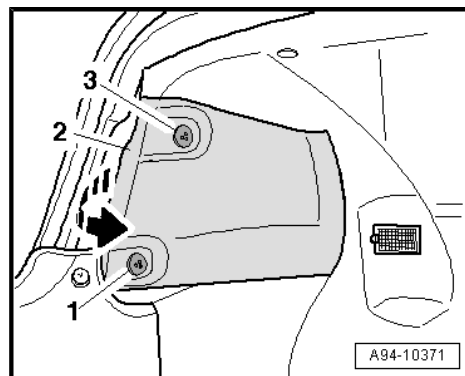
- ☐ 12 V, 21 W



10.2 Removing and installing rear light

Removing

- Switch off ignition and take out ignition key.
- Turn light switch to position "0".
- Unscrew retaining clips -1- and -3-.
- Fold trim -2- to side -arrow-.



- Unplug electrical connector -1-.
- Unscrew nuts -arrows-.
- Detach rear light -2- towards outside.

Installing

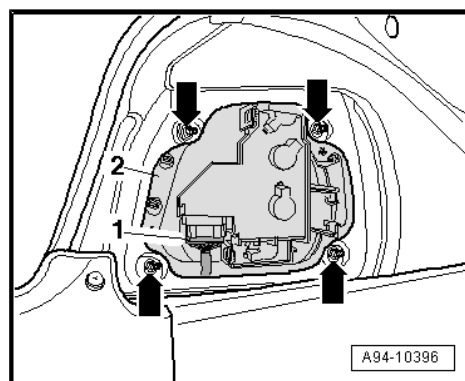
Installation is carried out in the reverse order; note the following:



Note

Ensure that seal between body and rear light housing seals completely.

- Before tightening the securing nuts, align the rear light with the contours of the body (uniform gaps all round).



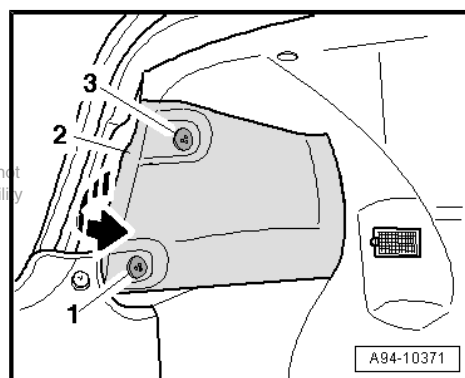
Tightening torque

Component	Nm
Rear light to body	4

10.3 Removing and installing bulb carrier

Removing

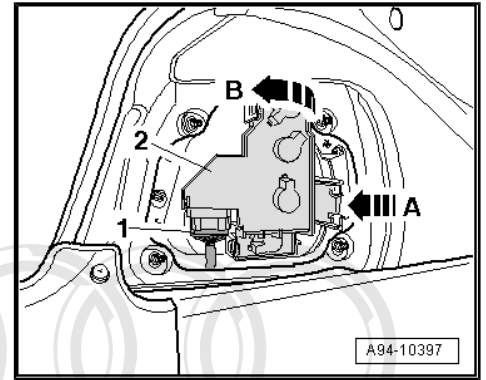
- Switch off ignition and take out ignition key.
- Turn light switch to position "0".
- Unscrew retaining clips -1- and -3-.
- Fold trim -2- to side -arrow-.



- Unplug electrical connector -1-.
- Press catch -arrow A-.
- Swivel bulb carrier -2- in direction of -arrow B- and detach from mountings on rear light.
- Detach bulbs from bulb holders.

Installing

Install in reverse order.



10.4 Removing and installing rear light trim

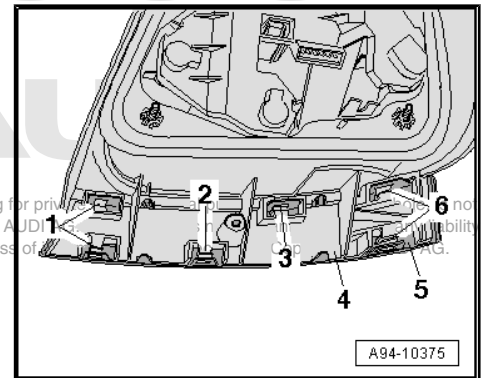
Removing

- Remove rear light ⇒ [page 162](#).
- Release retaining lugs -1, 2, 3, 6- and detach trim -5- from rear light -4-.

Installing

Installation is carried out in the reverse order; note the following:

- Secure trim with 4.2x9.5 mm self-tapping screw to rear light if retaining lugs are broken off.



11 Servicing rear lights (Avant)

11.1 Rear light - exploded view of components

1 - Rear light housing

- Removing and installing
⇒ [page 164](#)

2 - Bulb for brake light / tail light

- 12 V, 21/5 W

3 - Reversing light bulb

- 12 V, 21 W

4 - Nut, 4 Nm

5 - Body

6 - Bulb carrier

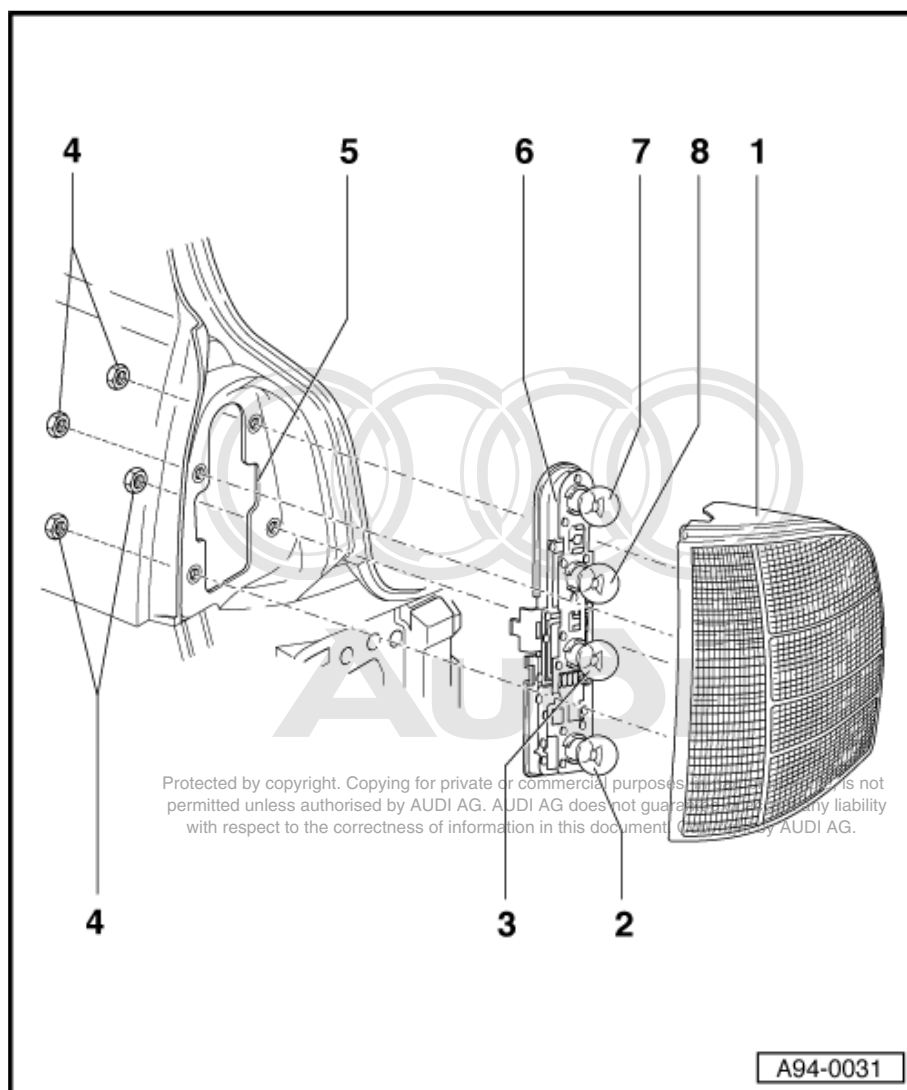
- Removing and installing
⇒ [page 165](#)

7 - Bulb for rear fog light

- 12 V, 21 W

8 - Turn signal bulb

- 12 V, 21 W



11.2 Removing and installing rear light

Removing

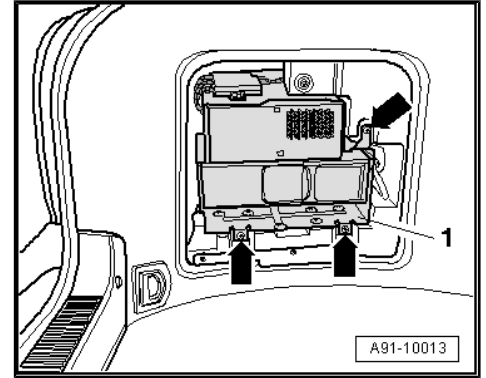
- Switch off ignition and take out ignition key.
- Turn light switch to position "0".
- Remove cover on luggage compartment side trim.

Left side of vehicle:

- Remove bolts -arrows- (if fitted).
- Detach retaining frame -1- for CD changer (navigation system).
- Lay aside retaining frame with connected wiring.

Right side of vehicle:

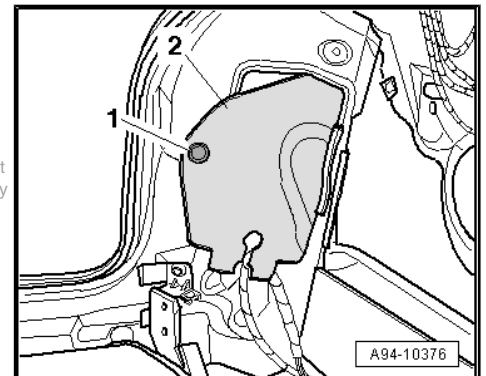
- Detach retaining strap for central locking pump.
- Lay aside central locking pump with wiring/hoses connected.



Both sides (continued):

- Release retaining clip -1- and detach insulation -2-.

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- Unplug electrical connector -6-.
- Remove nuts -1, 3, 4, 5-.
- Compress retaining tabs -arrows- on bulb housing -2- and remove rear light outwards.

Installing

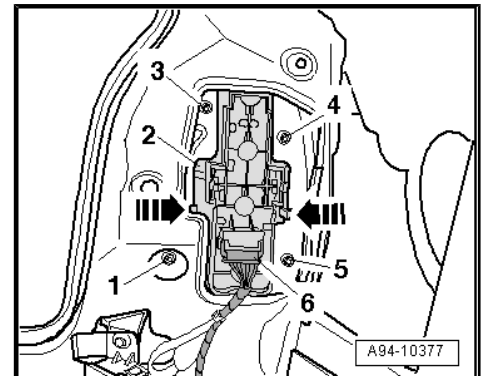
Installation is carried out in the reverse order; note the following:



Note

Ensure that seal between body and rear light housing seals completely.

- Before tightening the securing nuts, align the rear light with the contours of the body (uniform gaps all round).



Tightening torque

Component	Nm
Rear light to body	4
Retaining frame for CD changer (navigation system) to body	2

11.3 Removing and installing bulb carrier

Removing

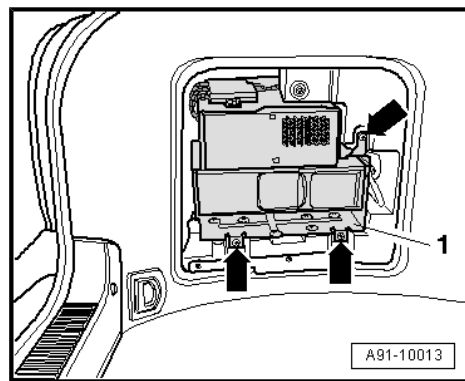
- Switch off ignition and take out ignition key.
- Turn light switch to position "0".
- Remove cover on luggage compartment side trim.

Left side of vehicle:

- Remove bolts -arrows- (if fitted).
- Detach retaining frame -1- for CD changer (navigation system).
- Lay aside retaining frame with connected wiring.

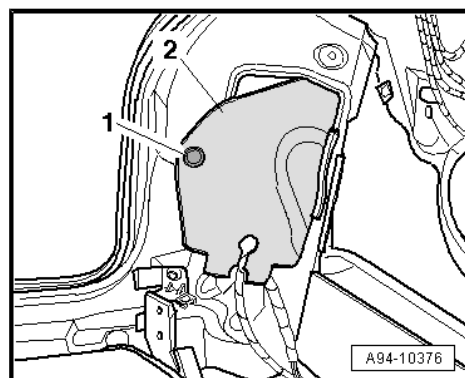
Right side of vehicle:

- Detach retaining strap for central locking pump.
- Lay aside central locking pump with wiring/hoses connected.



Both sides (continued):

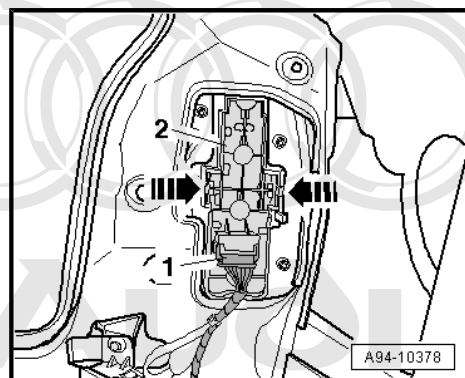
- Unclip retaining clip and detach insulation -2-.



- Unplug electrical connector -1-.
- Compress catches -arrows- and remove bulb carrier -2- from rear light towards passenger compartment.
- Detach bulbs from bulb holders.

Installing

Install in reverse order.



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12 Servicing high-level brake light

12.1 Removing and installing high-level brake light (saloon)

1 - Housing cover

2 - Bolt

3 - Bulb carrier

4 - Bulb

☐ 12 V, 5 W

5 - High-level brake light



Note

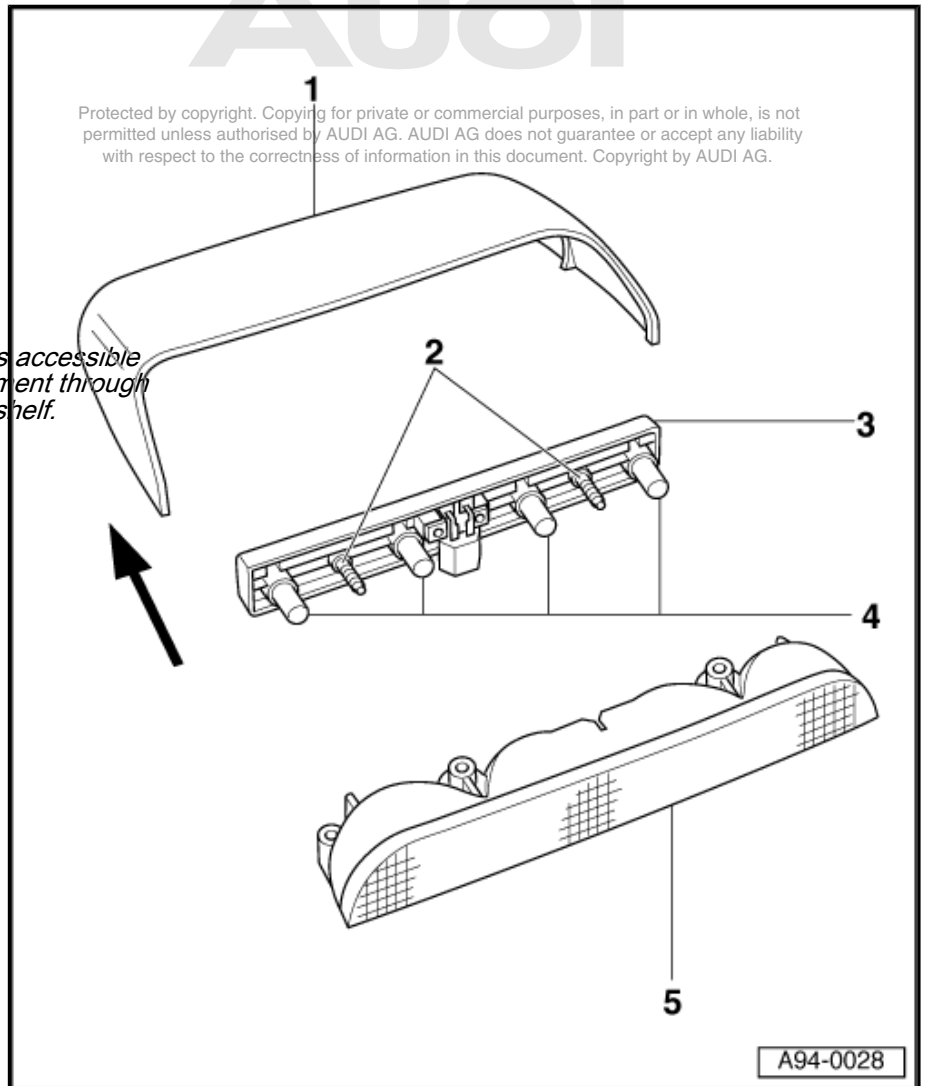
High-level brake light is accessible from luggage compartment through opening beneath rear shelf.

☐ Removing:

- Pull off housing cover -item 1- by hand in direction of -arrow-.
- Unplug electrical connector.
- Unscrew bolts -item 2- and detach bulb carrier -item 3-.
- Remove bulb -4- from bulb holder.
- Unscrew bolts and detach high-level brake light.

☐ Installing:

Install in reverse order.



12.2 Removing and installing high-level brake light (Avant)

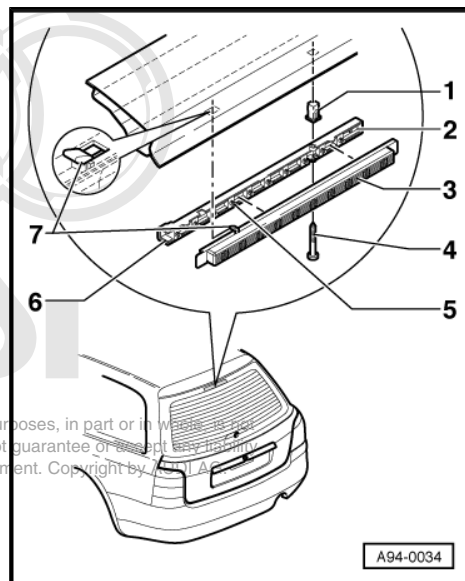
Removing

- Remove trim at top of rear lid ⇒ Rep. Gr. 70 .
- Unplug electrical connector -6-.
- Remove bolt -4-.
- Pull out high-level brake light -3- to the right and detach guide -7-.

1 - Spreader rivet

2 - Bulb carrier

5 - Bulb



- Carefully release retaining tabs -arrows- and remove lens -2- from bulb carrier -1-.
- Detach bulb -3- (12 V, 2.3 W) from bulb holder.

Installing

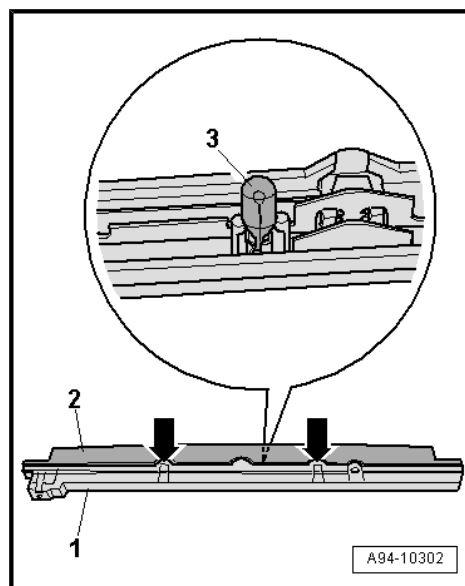
Installation is carried out in the reverse order; note the following:



Note

Take care not to damage seal on brake light.

- Install trim at top of rear lid ⇒ Rep. Gr. 70 .



13 Servicing number plate light

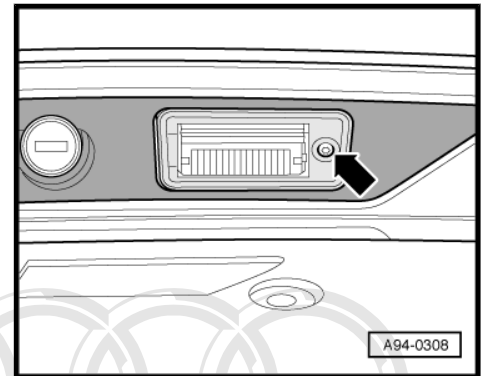
13.1 Removing and installing number plate light

Removing

- Turn light switch to position “0”.
- Unscrew bolt -arrow- in handle trim.
- Pry bulb carrier out of handle trim.
- Take bulb (12 V, 5 W) out of retainer.

Installing

Install in reverse order.



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14 Servicing steering column switch

14.1 Steering column switch - exploded view of components

1 - Socket head bolt, 0.5 Nm

2 - Steering column trim (bottom)

3 - Lever switch for lights, turn signals and dipped/main beam headlights

- ☐ On vehicles with cruise control: incorporates additional cruise control switch

- ☐ Pin assignment
⇒ [page 173](#)

- ☐ Removing and installing
⇒ [page 173](#)

4 - Steering column trim (top)

5 - Bolt, 3 Nm

6 - Clamp

7 - Socket head bolt, 0.5 Nm

8 - Lever switch for windscreen wiper/washer system

- ☐ On vehicles with driver information system: incorporates additional switch for DIS

- ☐ Pin assignment
⇒ [page 173](#)

- ☐ Removing and installing
⇒ [page 173](#)

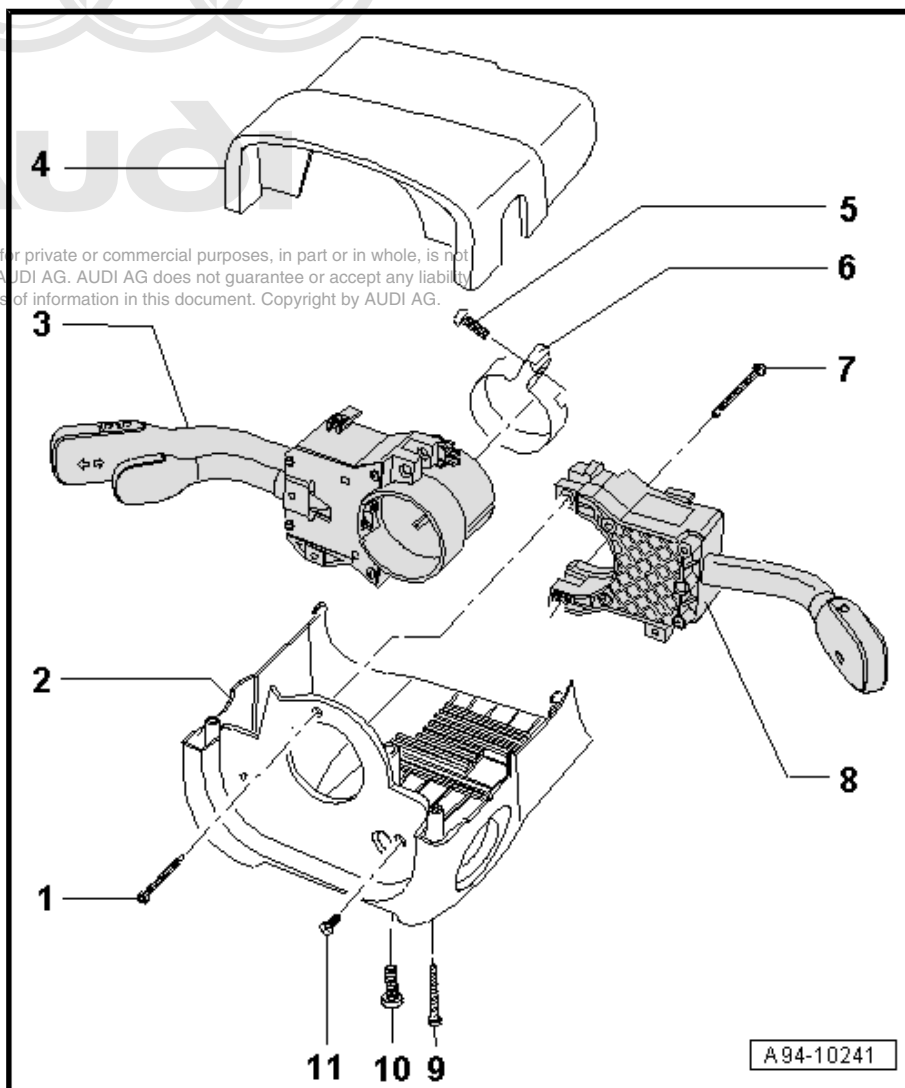
9 - Bolt, 0.6 Nm

- ☐ 2x

10 - Bolt, 0.6 Nm

11 - Bolt, 0.6 Nm

- ☐ 2x



14.2 Removing and installing steering column switch

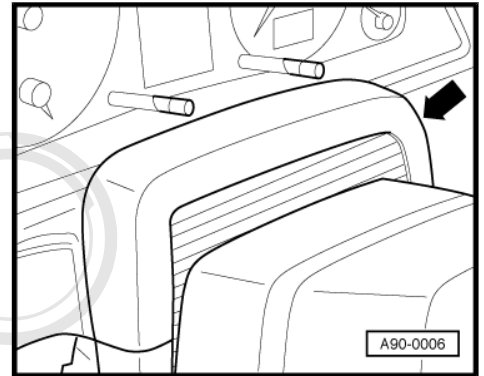
Removing

- Move steering wheel down and to rear as far as possible, making use of full range of steering column adjuster.
- Remove airbag unit and steering wheel ⇒ Rep. Gr. 69

- Tilt trim cover -arrow- towards rear.
- Lift off trim cover on instrument cluster.

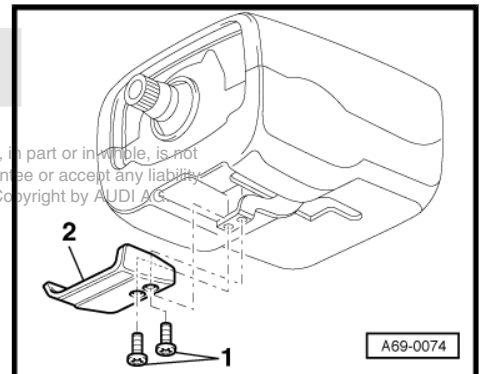
 Note

Apply masking tape on steering column trim to avoid damage.

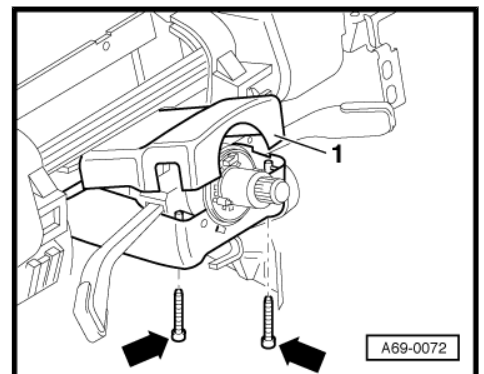


- Unscrew bolts -1- and detach handle trim -2- on actuator for mechanical steering column adjustment.

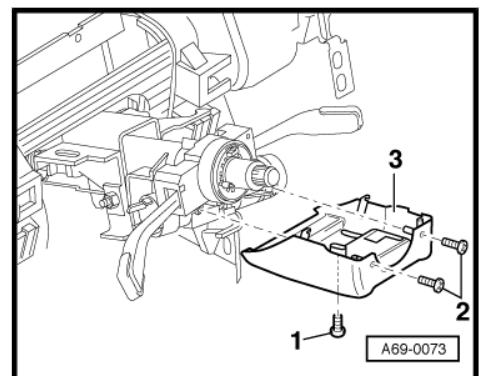
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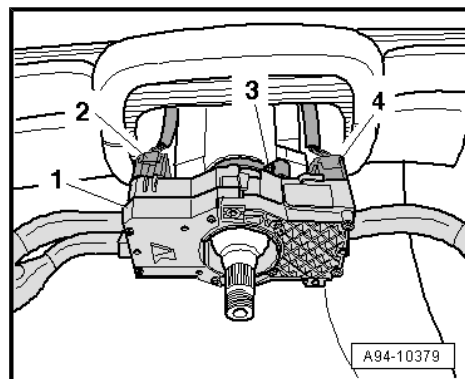
- Unscrew bolts -arrows-.
- Separate top trim -1- for steering column switch from bottom trim.



- Unscrew bolts -1- and -2-.
- Remove bottom trim -3- for steering column switch.



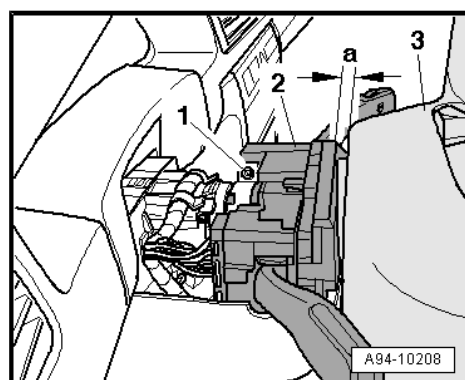
- Loosen bolt -3- of clamp until steering column switch -1- can be removed.
- Unplug electrical connectors -2- and -4- for steering column switch.



Installing

Installation is carried out in the reverse order; note the following:

- Make sure all electrical connectors are properly engaged.
- Install bottom trim for steering column switch.
- Fit steering wheel on steering column.
- Measure distance -a- between steering wheel -3- and steering column switch -2-.
- Dimension -a- = 5 mm.
- If dimension -a- is not OK, alter position of steering column switch with bottom trim on steering column.
- If dimension -a- is OK, tighten bolt -1-.
- Insert top trim for steering column switch in hooks for bottom trim, press both sections together and tighten bolts.
- Install steering wheel and airbag unit ⇒ Rep. Gr. 69 .
- Initiate basic setting for steering angle sender -G85- ⇒ Running Gear, self-diagnosis; Rep. Gr. 01 .



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Tightening torques

Component	Nm
Steering column switch to steering column	3
Trim for steering column switch	0.6
Trim (bottom) to steering column	0.6
Handle trim to mechanical steering column adjustment	3

14.3 Removing and installing lever switch for windscreen wiper/washer, driver information system, lights, turn signals, dipped/main beam headlights and cruise control system

Removing

- Remove steering column switch ⇒ [page 170](#) .
- Unscrew bolt -arrow-.
- Detach lever switch -item 1- for windscreen wiper/washer and driver information system from lever switch -item 2- for lights, turn signals, dipped/main beam headlights and cruise control system

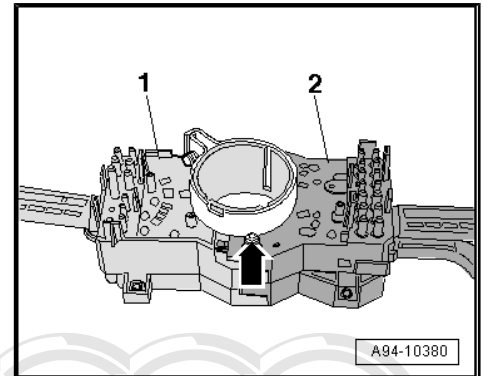
Installing

Installation is carried out in the reverse order; note the following:

- Make sure all retaining hooks and the electrical connectors are properly engaged.
- Install steering column switch ⇒ [page 172](#) .

Tightening torque

Component	Nm
Lever switch	0.5

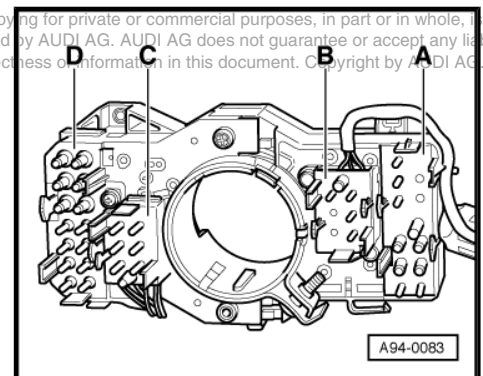


14.4 Pin assignment at steering column switch

Overview

- A - Connection for windscreen wiper switch
- B - Connection for driver information system and intermittent wiper function
- C - Connection for cruise control system
- D - Connection for turn signal switch

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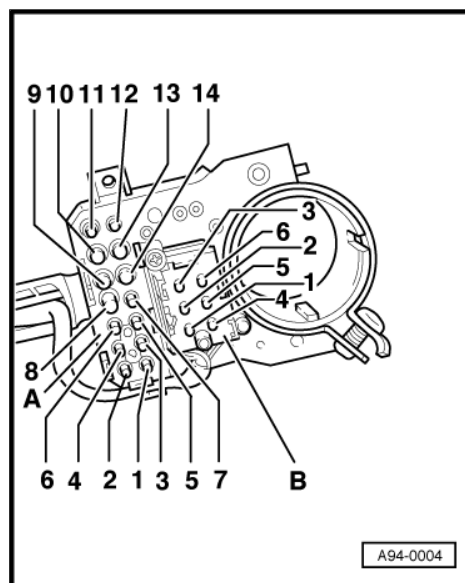


A - Connector, 14-pin, light switch, turn signal switch, switch for manual dipping and headlight flasher, parking light

- 1 - Light switch, terminal 58
- 2 - Switch, terminal 14
- 3 - Light switch and switch for manual dipping and headlight flasher, terminal 30
- 4 - Light switch and switch for manual dipping and headlight flasher, terminal 30
- 5 - Parking light switch, terminal PL
- 6 - Parking light switch, terminal P
- 7 - Parking light switch, terminal PR
- 8 - Light switch, contact 11 (daytime/urban running lights)
- 9 - Switch for manual dipping and headlight flasher, terminal 56b
- 10 - Switch for manual dipping and headlight flasher, terminal 56a
- 11 - Switch for manual dipping and headlight flasher, terminal 56
- 12 - Light switch, contact 1 (daytime/urban running lights)
- 13 - Light switch, terminal X
- 14 - Light switch, contact 3 (daytime/urban running lights)

B - Connector, 6-pin, cruise control system

- 1 - On and resume
- 2 - Resume
- 3 - Save
- 4 - Terminal 15
- 5 - On, resume and off (switch engaged at stop)
- 6 - Input from control unit, contact 3



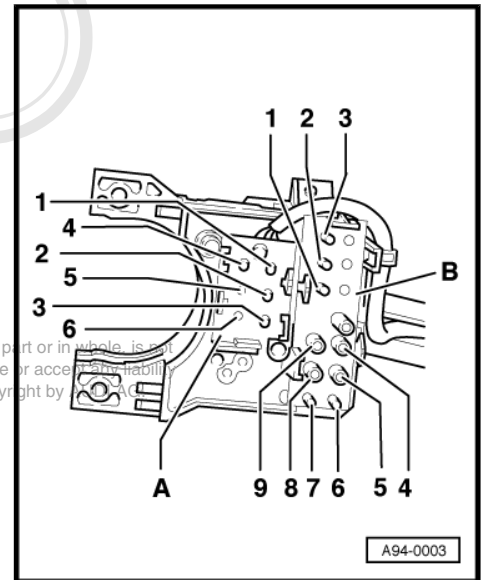
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A - Connector, 6-pin, on-board computer

- 1 - On-board computer, reset
- 2 - On-board computer, terminal 31
- 3 - On-board computer, right rocker
- 4 - On-board computer, left rocker
- 5 - Not used
- 6 - Not used

B - Connector, 13-pin, wiper switch

- 1 - Wiper switch, terminal J
- 2 - Wiper switch, terminal 53c
- 3 - Hazard warning light switch, terminal R
- 4 - Wiper switch, terminal 53b
- 5 - Wiper switch, terminal 53a
- 6 - Hazard warning light switch, terminal L
- 7 - Hazard warning light switch, terminal 49a
- 8 - Wiper switch, terminal 53e
- 9 - Wiper switch, terminal 53
- 10 - Not used
- 11 - Not used
- 12 - Not used
- 13 - Not used



15 Servicing lock cylinder and ignition/ starter switch

15.1 Removing and installing lock cylinder



Note

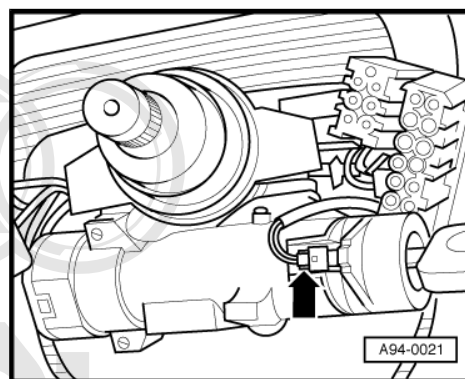
- ◆ The reader coil for the immobiliser is attached to the lock cylinder and cannot be renewed separately.
- ◆ The lock cylinder must be renewed if the reader coil is defective.
- ◆ When renewing lock cylinder, note immobiliser reader coil specifications ⇒ [page 198](#).

Special tools and workshop equipment required

- ◆ Steel wire or pin Ø approx. 1.5 mm

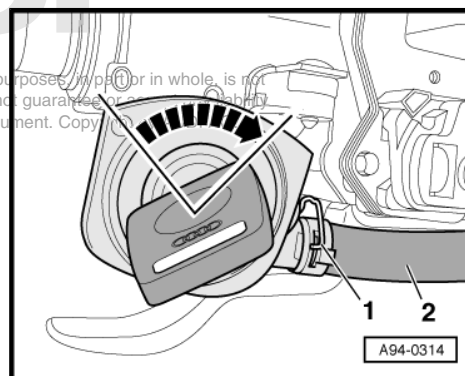
Removing

- Remove steering column switch ⇒ [page 170](#).
- Unplug electrical connector -arrow- at reader coil.



Vehicles with automatic gearbox:

- Shift selector lever to "P" position.
- Turn ignition key to "Ignition ON" position -arrow-.
- Then lift interlock lever -1- slightly and pull locking cable -2- out of ignition lock housing.

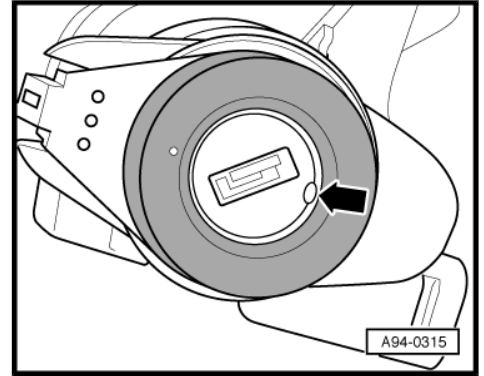


All models:



To remove the lock cylinder the spare key without illumination and remote control function is needed, as removal is only possible using a key with a flat handle.

- Turn spare key to ignition “ON” position, thus aligning recess in trim -arrow- with hole in ignition lock.



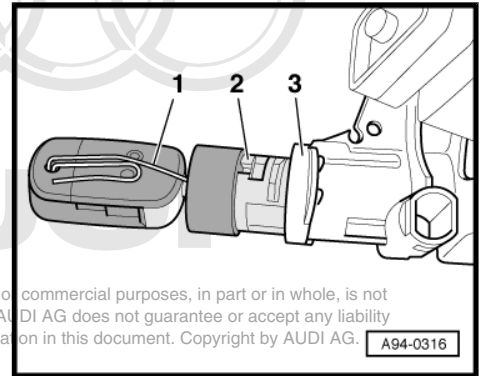
The correct ignition lock position is shown without ignition key for illustration purposes.

- Insert a steel wire or pin (Ø approx. 1.5 mm) -1- in hole as far as it will go, at the same time pulling lock cylinder -2- with reader coil out of steering lock housing -3-.



WARNING

The steering lock must not be operated without the lock cylinder, otherwise it would lock up completely. A locked-up steering lock must be renewed.

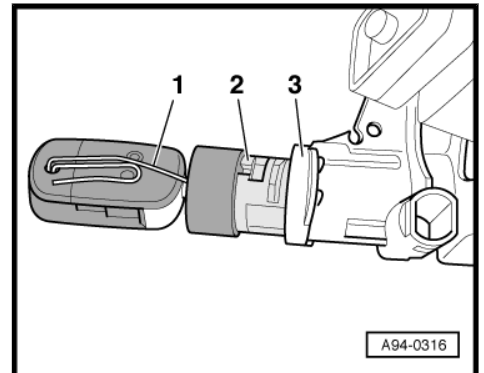


When renewing lock cylinder, note immobiliser reader coil specifications ⇒ [page 198](#).

Installing

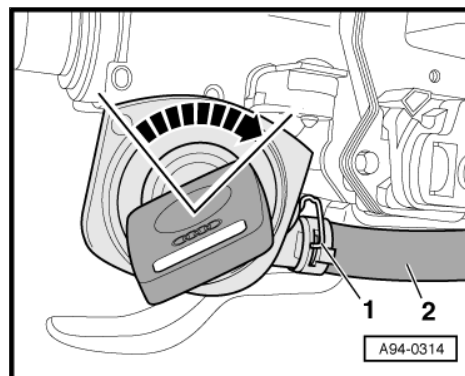
Installation is carried out in the reverse order; note the following:

- Insert spare ignition key into lock cylinder and turn to ignition “ON” position.
- Re-insert steel wire or pin -1- in hole on end face as far as it will go.
- Insert lock cylinder -2- with reader coil in steering lock housing -3-.
- Then pull out steel wire and press in lock cylinder firmly until catch engages audibly.
- Plug in electrical connector on immobiliser reader coil.



Vehicles with automatic gearbox:

- Turn ignition key to "Ignition ON" position -arrow-.
- Slide locking cable -2- into ignition lock housing until it engages audibly.
- Interlock lever -1- must make flush contact with ignition lock housing.
- Install steering column switch ⇒ [page 172](#) .



15.2 Removing and installing ignition/starter switch

Removing

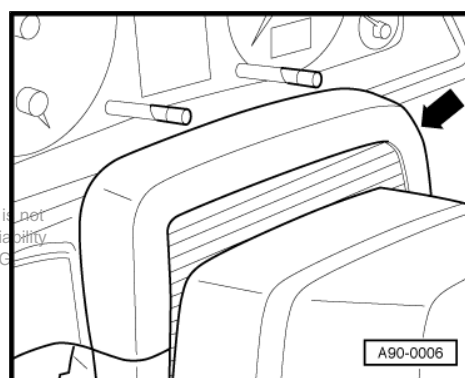
- Remove airbag unit and steering wheel ⇒ Rep. Gr. 69
- Tilt trim cover -arrow- towards rear.
- Lift off trim cover on instrument cluster.



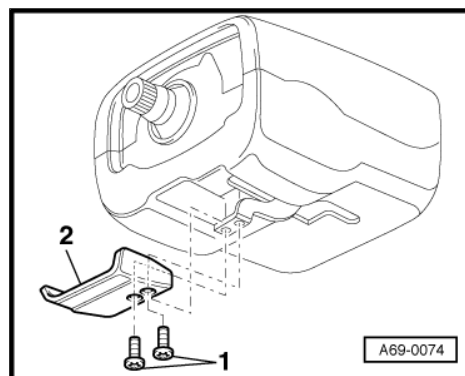
Note

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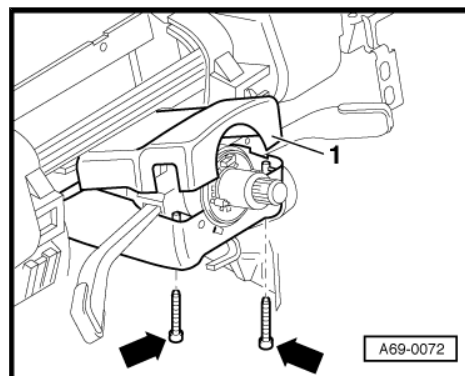
Apply masking tape on steering column trim to avoid damage.



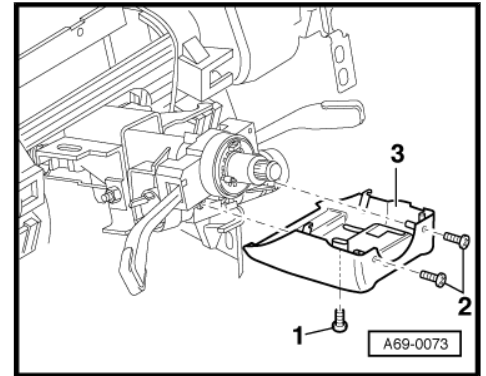
- Unscrew bolts -1- and detach handle trim -2- on actuator for mechanical steering column adjustment.



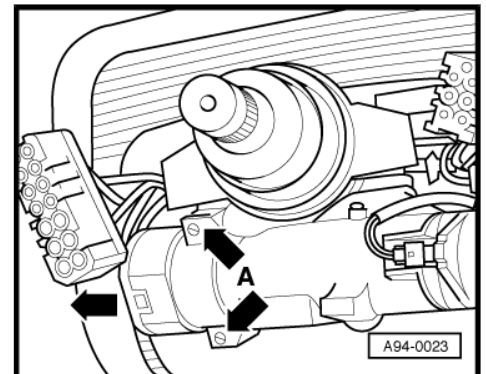
- Unscrew bolts -arrows-.
- Separate top trim -1- for steering column switch from bottom trim.



- Unscrew bolts -1- and -2-.
- Remove bottom trim -3- for steering column switch.



- Detach electrical connector -1- at ignition/starter switch.
- Remove sealing paint from both securing bolts -arrows-.
- Slacken off bolts -arrows- slightly and pull ignition/starter switch out of steering lock housing -2-.



Installing

Installation is carried out in the reverse order; note the following:



Ensure that the ignition/starter switch and lock cylinder are in the same position, e.g. ignition "ON", when installing.

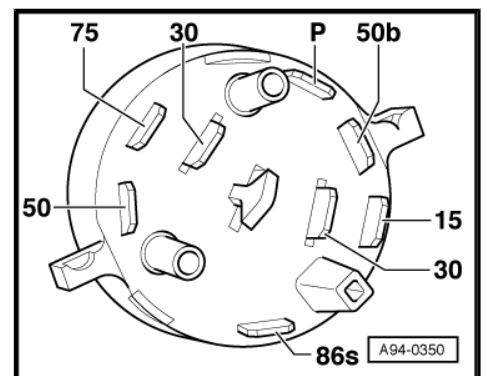
- Apply sealing paint to bolts -arrows- at steering lock housing -2-.
- Insert top trim for steering column switch in hooks for bottom trim, press both sections together and tighten bolts.
- Install steering wheel and airbag unit → Rep. Gr. 69

Tightening torques

Component	Nm
Trim for steering column switch	0.6
Trim (bottom) to steering column	0.6
Handle trim to mechanical steering column adjustment	3

15.3 Pin assignment on ignition/starter switch

- 15 - Terminal 15
- 30 - Terminal 30
- 50 - Terminal 50
- 50b - Terminal 50b
- 75 - Terminal 75
- 86s - Terminal 86s
- P - Park position



16 Servicing parking aid

16.1 Parking aid - exploded view of components

1 - Parking aid control unit - J446-

- ☐ Under rear bench seat on right
- ☐ Removing and installing
⇒ [page 181](#)

2 - Rear parking aid warning buzzer -H15-

Saloon:

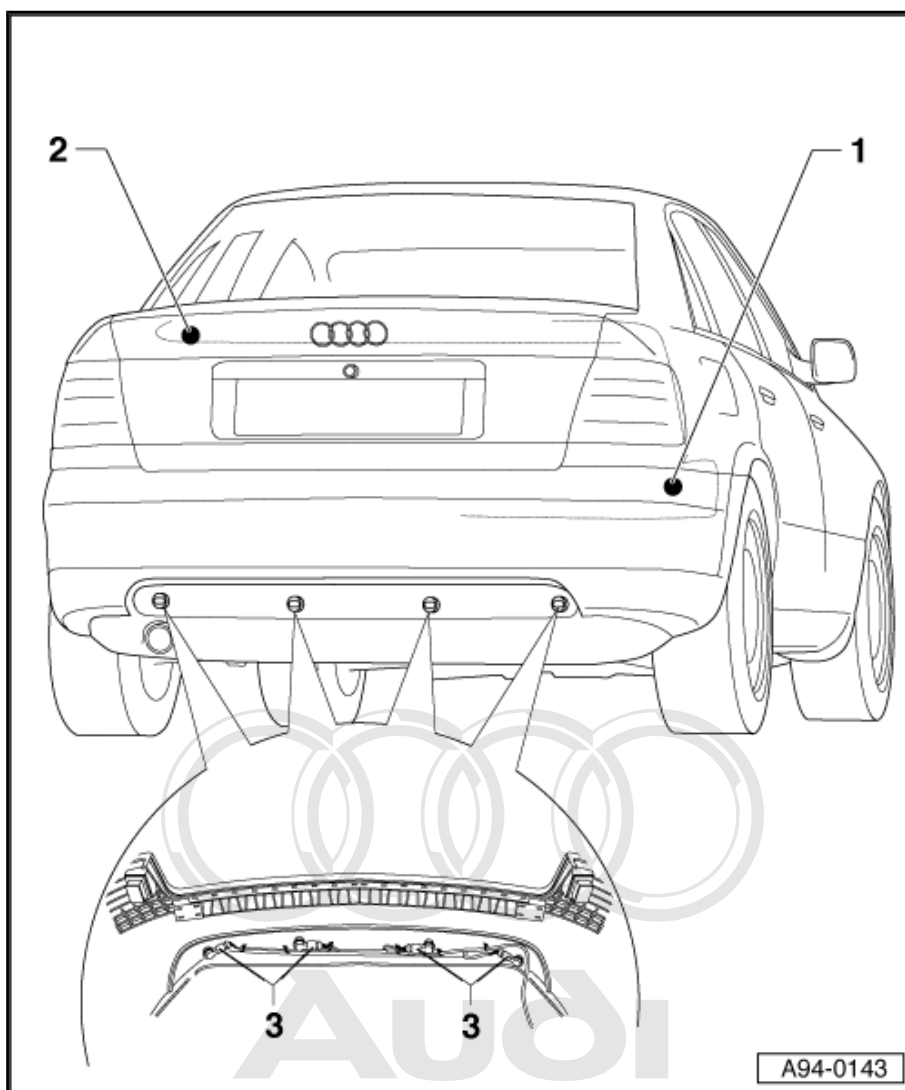
- ☐ Behind luggage compartment side trim (left-side)
- ☐ Removing and installing
⇒ [page 181](#)

Avant:

- ☐ Behind luggage compartment side trim (left-side)
- ☐ Removing and installing
⇒ [page 181](#)

3 - Parking aid senders

- ☐ In rear bumper
- ☐ Removing and installing
⇒ [page 182](#)



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16.2 Removing and installing parking aid control unit -J446-

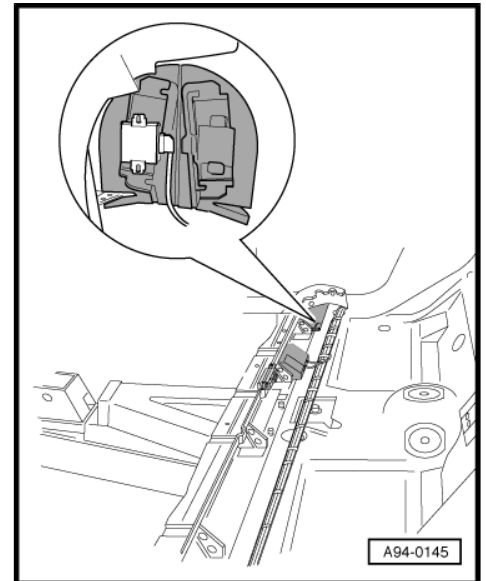
Removing

- Remove rear seat bench ⇒ Rep. Gr. 72 .
- Carefully pull foam casing with parking aid control unit -J446- out from behind panel.
- Fold foam casing apart and unplug electrical connector.
- Take parking aid control unit -J446- out of foam casing.

Installing

Installation is carried out in the reverse order; note the following:

- Install rear seat bench ⇒ Rep. Gr. 72 .
- Parking aid control unit -J446- must be encoded after renewing ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 .



16.3 Removing and installing rear parking aid warning buzzer -H15- (saloon)

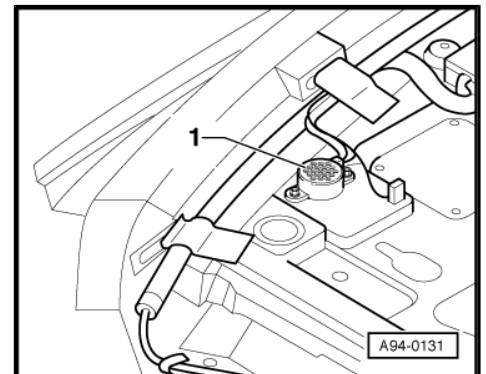
Removing

- ◆ Fitting location: on C-pillar (rear left).
- Switch off ignition and take out ignition key.
- Remove C/D-pillar trim ⇒ Rep. Gr. 70 .
- Unplug electrical connector.
- Unscrew threaded pin for fasteners using a TORX screwdriver.
- Lift out warning buzzer -1-.

Installing

Installation is carried out in the reverse order; note the following:

- Install C/D pillar trim ⇒ Rep. Gr. 70 .



16.4 Removing and installing rear parking aid warning buzzer -H15- (Avant)

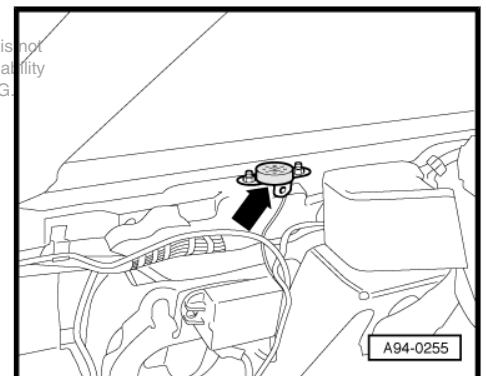
Removing

- ◆ Fitting location: rear left next to suspension turret.
- Remove luggage compartment side trim (left-side) ⇒ Rep. Gr. 70 .
- Unplug electrical connector.
- Pry out warning buzzer upwards -arrow-.

Installing

Installation is carried out in the reverse order; note the following:

- Install luggage compartment side trim (left-side) ⇒ Rep. Gr. 70 .



16.5 Removing and installing senders for parking aid (rear)

Removing



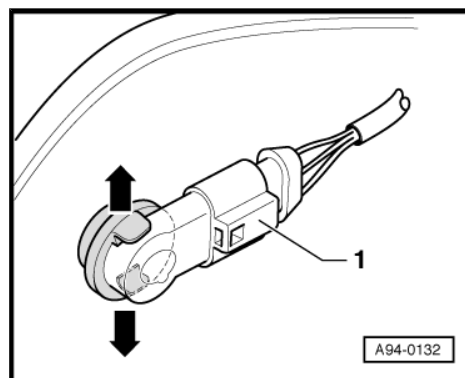
Note

Senders can be taken out without removing rear bumper cover.

- Reach behind the bumper cover.
- Unplug electrical connector -1- at sender.
- Pull both retainer tabs outwards -arrows- until sender can be pressed out inwards.

Installing

Install in reverse order.



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17 Servicing automatic headlight range control

17.1 Automatic headlight range control - exploded view of components

1 - Headlight range control motor

- ☐ Headlight range control motor, left -V48-
- ☐ Headlight range control motor, right -V49-
- ☐ Removing and installing on vehicles with halogen headlights without fog lights, up to 01.1999
⇒ [page 117](#)
- ☐ Removing and installing on vehicles with halogen headlights with fog lights up to 01.1999
⇒ [page 124](#)
- ☐ Removing and installing on vehicles with halogen headlights from 02.1999 ⇒ [page 132](#)
- ☐ Removing and installing on vehicles with gas-discharge headlights
⇒ [page 144](#)

2 - Vehicle level sender, front left -G78-

- ☐ At front left track control link
- ☐ Removing and installing
⇒ [page 184](#)

3 - Vehicle level sender, rear left -G76-

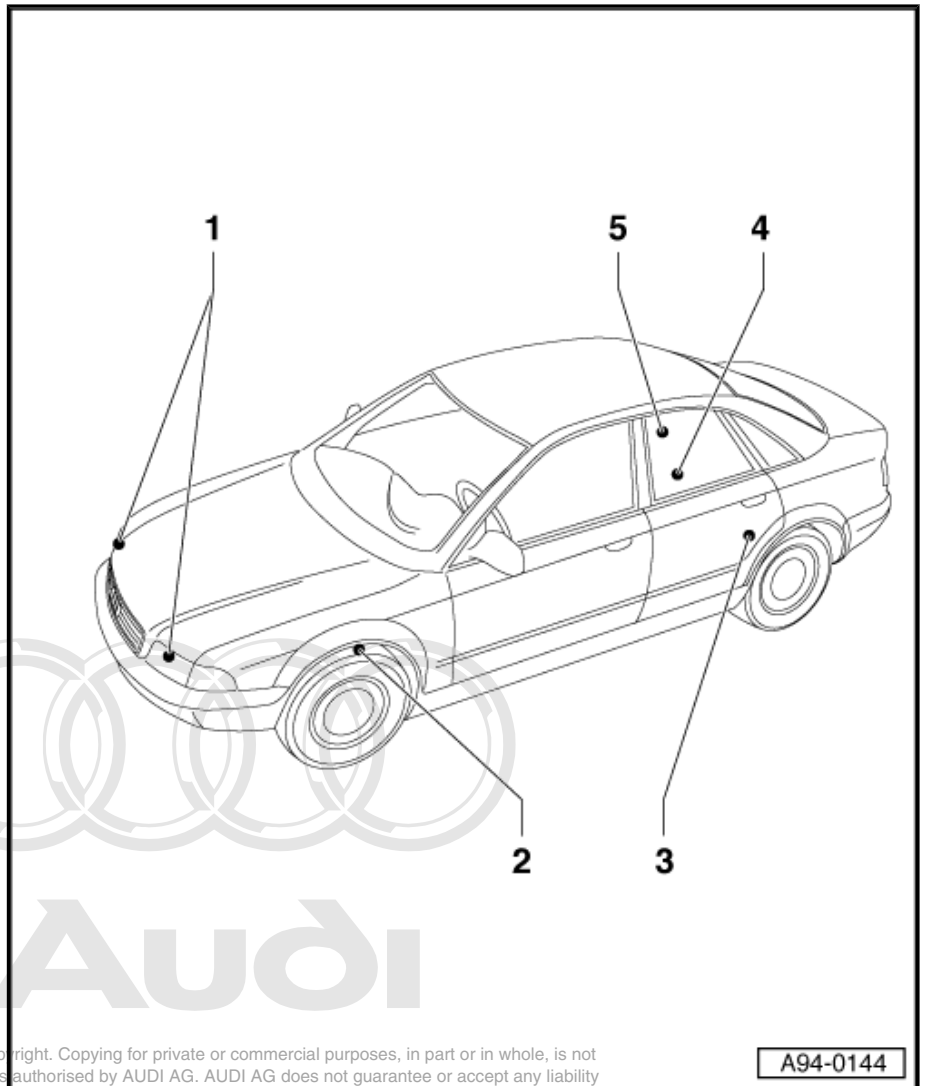
- ☐ For vehicles with four-wheel drive
- ☐ On rear left suspension link
- ☐ Removing and installing ⇒ [page 185](#)

4 - Vehicle level sender, rear left -G76-

- ☐ For vehicles with front wheel drive
- ☐ On rear axle
- ☐ Removing and installing ⇒ [page 185](#)

5 - Headlight range control unit -J431-

- ☐ Under rear bench seat on right
- ☐ Removing and installing ⇒ [page 184](#)



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A94-0144

17.2 Removing and installing headlight range control unit -J431-

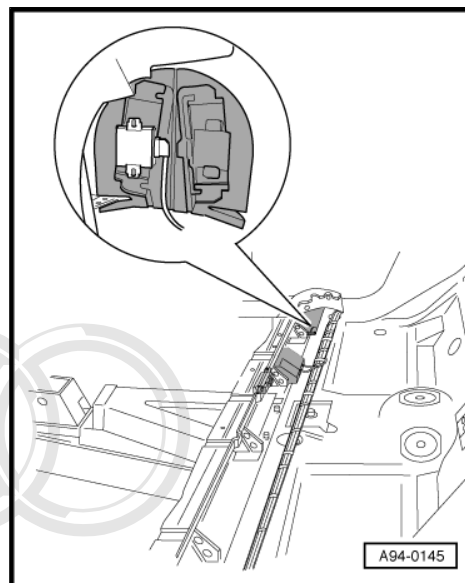
Removing

- Remove rear seat bench ⇒ Rep. Gr. 72 .
- Carefully pull foam casing with headlight range control unit - J431- out from behind panel.
- Fold foam casing apart and unplug electrical connector
- Take headlight range control unit -J431- out of foam casing.

Installing

Installation is carried out in the reverse order; note the following:

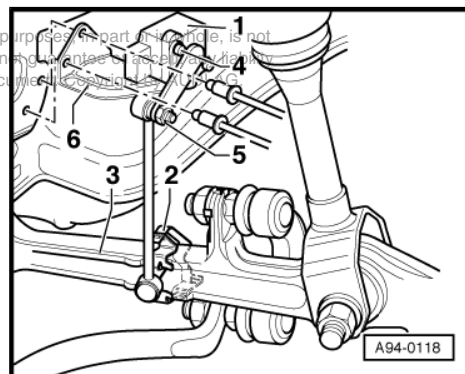
- Install rear seat bench ⇒ Rep. Gr. 72 .
- Headlight range control unit -J431- must be encoded after re-newing ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 .



17.3 Removing and installing front left vehicle level sender -G78-

Removing

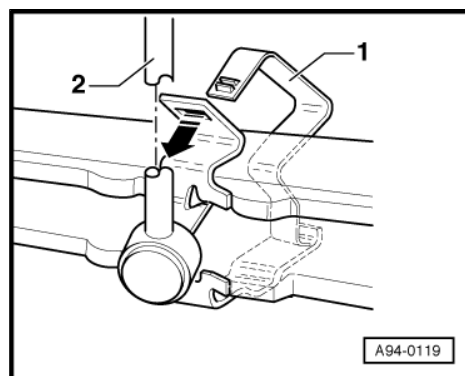
- Remove front wheel (left-side).
- Unscrew nut -5- and bolts -4-.
- Pull out linkage from front left vehicle level sender -G78- .
- Detach front left vehicle level sender -G78- -item 1-.
- Unplug electrical connector.



- Carefully compress retainer -1- -arrow- and detach operating rod -2- from lower transverse link.

Installing

Install in reverse order.



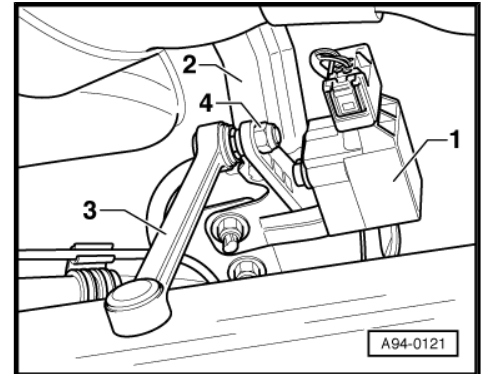
17.4 Removing and installing rear left vehicle level sender -G76- - vehicles with front-wheel drive

Removing

- Unplug electrical connector.
- Unscrew nut -4- and the two bolts on rear left vehicle level sender -G76- -item 1-.
- Detach rear left vehicle level sender -G76- from retaining plate -2-.
- Remove bolt on operating rod -3-.
- Remove operating rod from rear axle.

Installing

Install in reverse order.



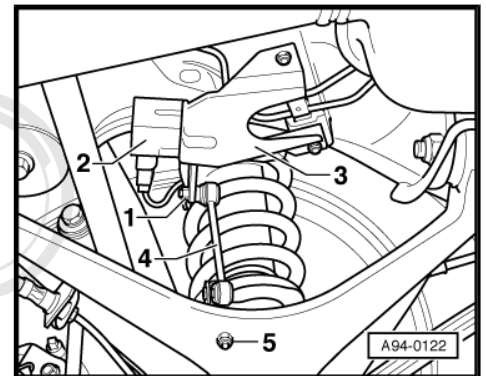
17.5 Removing and installing rear left vehicle level sender -G76- - vehicles with four-wheel drive

Removing

- Unplug electrical connector.
- Unscrew nut -1- and the two bolts on rear left vehicle level sender -G76- -item 2-.
- Detach rear left vehicle level sender -G76- from retaining plate -3-.
- Remove bolt -5- on operating rod -4-.
- Remove operating rod from rear suspension link.

Installing

Install in reverse order.



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96 – Lights, bulbs, switches - interior

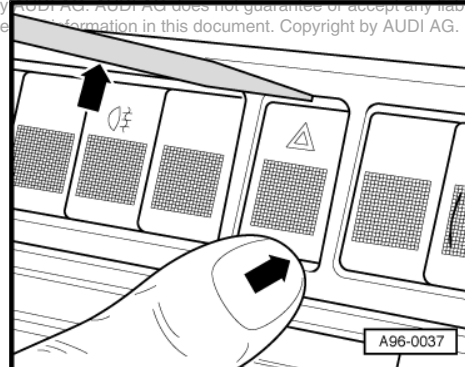
1 Servicing switches

1.1 Removing and installing hazard warning light switch -E3- - vehicles up to 01.1999

The hazard warning light relay -J2- is integrated in the hazard warning light switch -E3- and cannot be renewed separately if defective.

Removing

- Use adhesive strip to mask area above switches.
- Use a small screwdriver to pry off cover on hazard warning light switch -E3- in direction of -arrow- (use your finger to support cover at bottom if necessary).

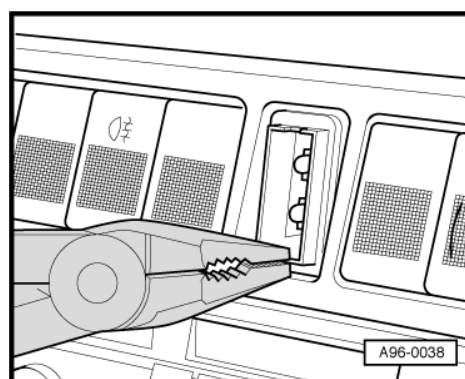


- Pull hazard warning light switch -E3- out of switch mounting using universal or flat-nose pliers.
- Unplug electrical connector.

Installing

Installation is carried out in the reverse order; note the following:

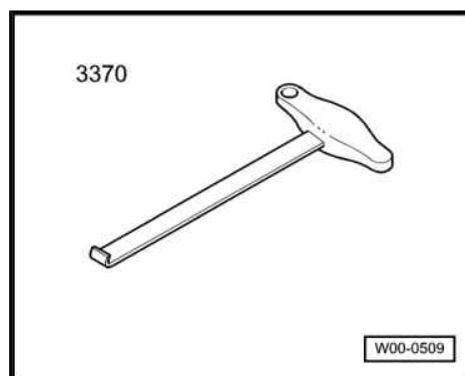
- Carefully press cover onto pushbutton switch until it engages audibly.
- Press pushbutton switch with fitted cover into mounting in dash panel.



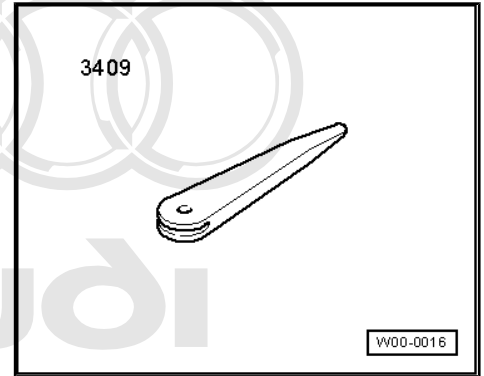
1.2 Removing and installing hazard warning lights button -E229- - vehicles from 02.1999

Special tools and workshop equipment required

- ◆ Front-end hook -3370-



◆ Removal wedge -3409-



Removing

- Remove radio/monitor navigation system ⇒ Rep. Gr. 91 .



Note

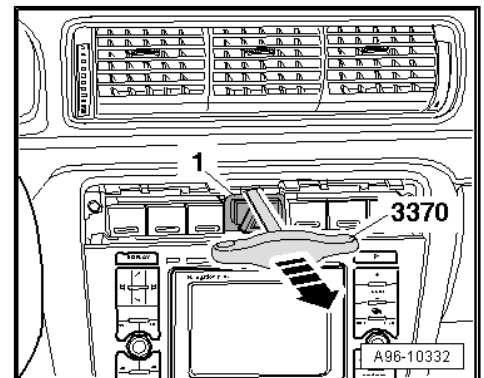
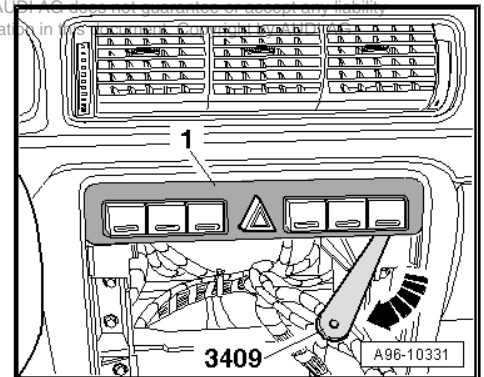
Electrical connectors remain connected.

- Use removal wedge -3409- to carefully release trim -1-.
- Carefully remove hazard warning lights button -E229- -item 1- from switch mounting using front-end hook -3370- .
- Unplug electrical connector.

Installing

Installation is carried out in the reverse order; note the following:

- Push switch into mounting in dash panel and ensure it is properly engaged.



1.3 Removing and installing headlight range control regulator -E102- - vehicles up to 01.1999

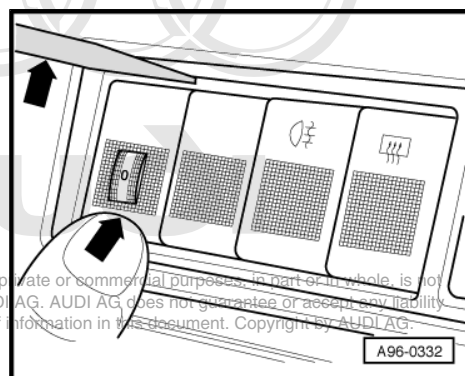
Removing

- Use adhesive strip to mask area above switches.
- Use a small screwdriver to pry off cover on headlight range control regulator -E102- in direction of -arrow- (support bottom cover with finger if necessary).
- Pull headlight range control regulator -E102- out of switch mounting using universal or flat-nose pliers.
- Unplug electrical connector.

Installing

Installation is carried out in the reverse order; note the following:

- Carefully press cover onto pushbutton switch until it engages audibly.
- Press pushbutton switch with fitted cover into mounting in dash panel.

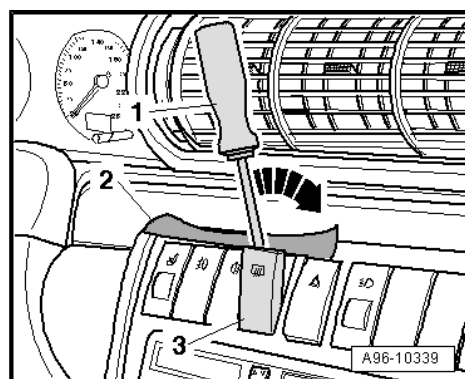


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1.4 Removing and installing switches in centre console - vehicles up to 01.1999

Removing

- Use adhesive strip to mask area above switches -2-.
- Use a small screwdriver -1- to pry off cover -3- on switch in direction of -arrow- (support bottom cover with finger if necessary).

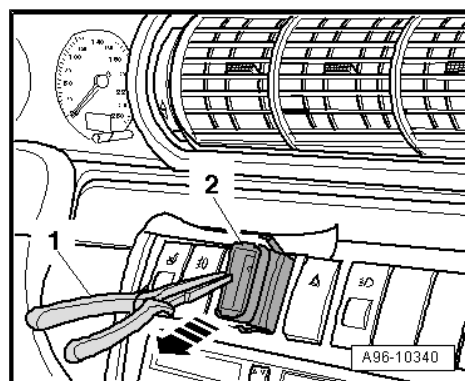


- Use universal or flat-nose pliers -1- to pull switch -2- out of switch mounting.
- Unplug electrical connector.

Installing

Installation is carried out in the reverse order; note the following:

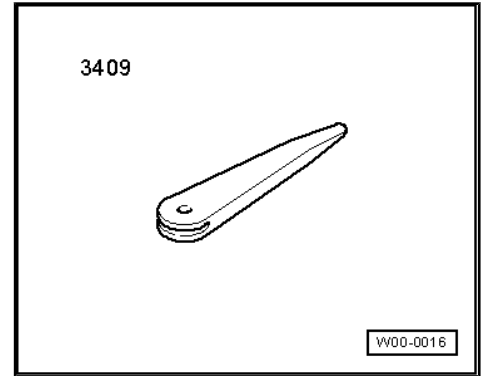
- Carefully press cover onto pushbutton switch until you hear it engage.
- Press pushbutton switch with fitted cover into mounting in dash panel.



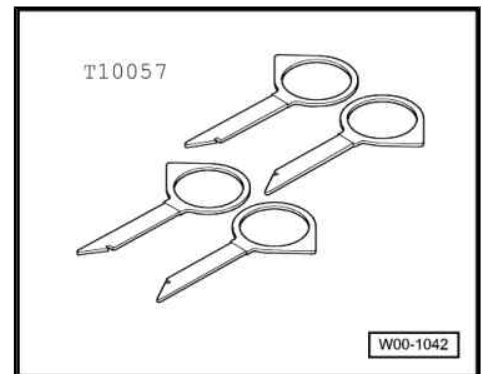
1.5 Removing and installing switches in centre console - vehicles from 02.1999

Special tools and workshop equipment required

◆ Removal wedge -3409-



◆ Radio release tool -T10057-



Removing

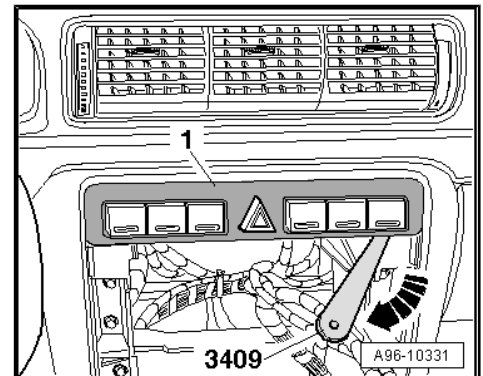
- Remove radio/monitor navigation system ⇒ Rep. Gr. 91 .



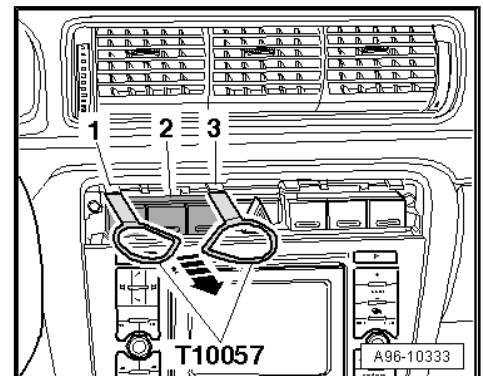
Note

Electrical connectors remain connected.

- Use removal wedge -3409- to carefully release trim -1-.



- Release clips -1- and -3- using radio release tool -T10057- .
- Carefully pull switch mounting -item 2- with switch out of dash panel in direction of -arrow-.



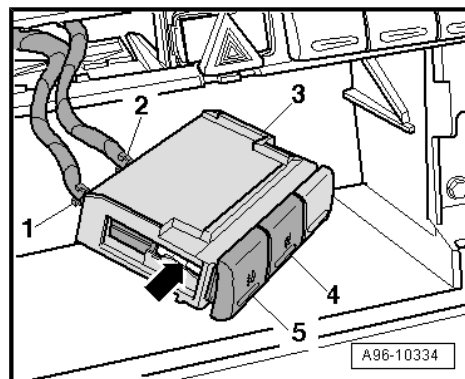
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- Unplug electrical connectors -1- and -2-.
- Press retaining spring -arrow- and press switches -4- and -5- from the rear out of switch mounting -3-.

Installing

Installation is carried out in the reverse order; note the following:

- Push switch unit into mounting in dash panel and ensure it is properly engaged.

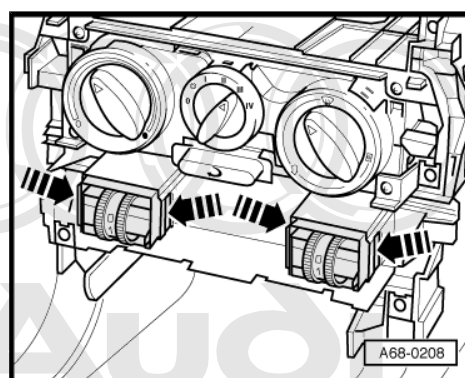


1.6 Removing and installing front seat heating switches - vehicles from 02.1999

Removing

Vehicles with no air conditioner:

- Remove trim for heater controls ⇒ Rep. Gr. 80 .
- Use small screwdriver to carefully release retaining hooks -arrows-.
- Take out front seat heating switch.



Vehicles with air conditioner:

- Remove operating and display unit for air conditioner -E87- ⇒ Rep. Gr. 87 .
- Use small screwdriver to carefully release retaining clips -arrows-.
- Remove seat heating switches -2- and -3- from operating and display unit for air conditioner -E87- -item 1-.

Installing

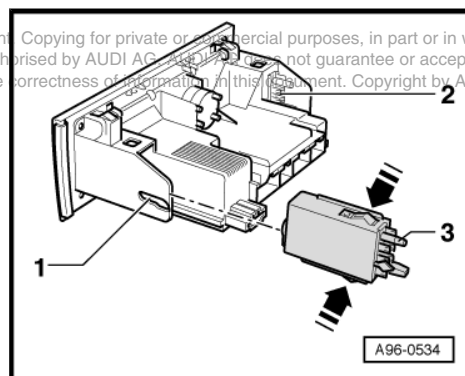
Installation is carried out in the reverse order; note the following:

Vehicles with no air conditioner:

- Install trim for heater controls ⇒ Rep. Gr. 80 .

Vehicles with air conditioner:

- Install operating and display unit for air conditioner -E87- ⇒ Rep. Gr. 87 .



1.7 Removing and installing switch for glove box light

The switch for glove box light is integrated in the glove box light and cannot be renewed separately in the event of a fault.

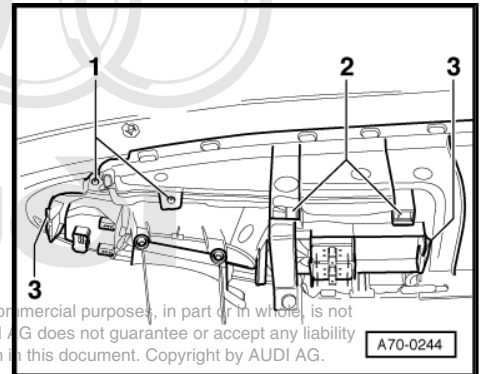
- Renewing glove box light ⇒ [page 212](#)

1.8 Removing and installing mirror adjustment switch

Removing

- Remove front door trim ⇒ Rep. Gr. 70 .
- Detach insulation and soundproofing mat from door trim ⇒ Rep. Gr. 70 .
- Remove bolts -1-.
- Release retaining hooks -2- and retaining clips -3-.
- Remove top section of handle recess from front of door trim.

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- Carefully release retaining hooks -1- in direction of -arrow-.
- Release retaining lugs -4- and remove mirror adjustment motor -3- from top section of handle recess.

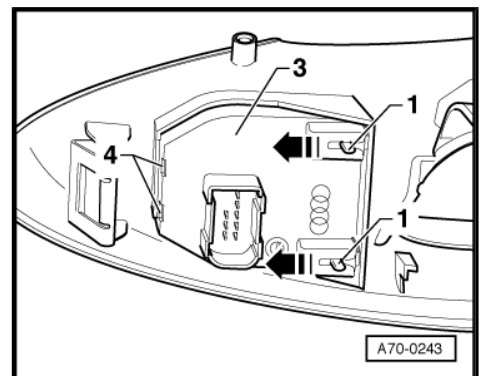
Installing

Installation is carried out in the reverse order; note the following:

- Fit insulation and soundproofing mat to door trim ⇒ Rep. Gr. 70 .
- Install front door trim ⇒ Rep. Gr. 70 .

Tightening torque

Component	Nm
Top section of handle recess to door trim	1.5



1.9 Removing and installing window switches (driver's side)

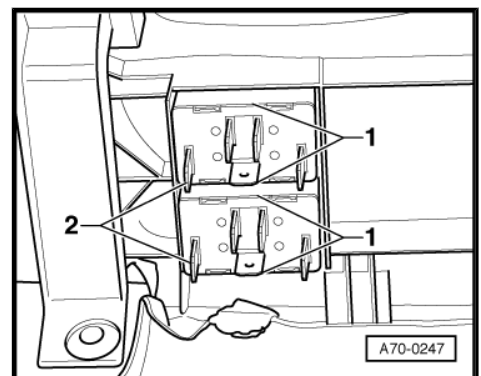
Removing

- Remove front door trim ⇒ Rep. Gr. 70 .
- Detach insulation and soundproofing mat from door trim ⇒ Rep. Gr. 70 .
- Use small screwdriver to carefully release retaining hooks -1-.
- Press switch -2- for window lifter out of switch mounting.

Installing

Installation is carried out in the reverse order; note the following:

- Press switch into switch mounting until retaining hooks engage.
- Fit insulation and soundproofing mat to door trim ⇒ Rep. Gr. 70 .
- Install front door trim ⇒ Rep. Gr. 70 .



1.10 Removing and installing central locking switch

Removing

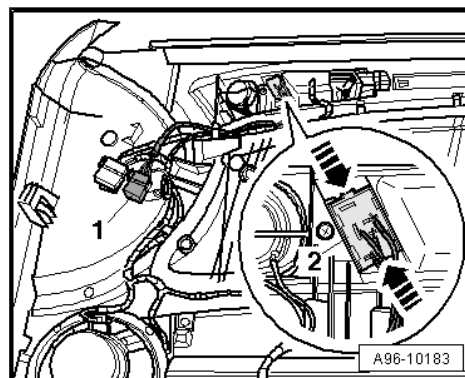
- Remove front door trim ⇒ Rep. Gr. 70 .

- Detach insulation and soundproofing mat from door trim ⇒ Rep. Gr. 70 .
- Take electrical wiring -1- out of retainer.
- Release clips -arrows- and press central locking switch -2- out of driver's door trim towards interior.

Installing

Installation is carried out in the reverse order; note the following:

- Fit insulation and soundproofing mat to door trim ⇒ Rep. Gr. 70 .
- Install front door trim ⇒ Rep. Gr. 70 .



1.11 Removing and installing navigation system operating unit -E199-

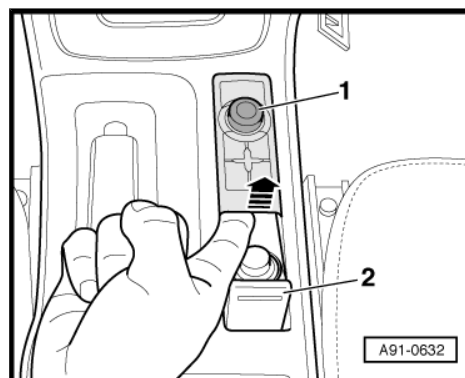
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Removing

- Switch off ignition and take out ignition key.
- Open flap -2- for cigarette lighter.
- Press function selection switch 2 -E272- -item 1- out of opening from below as shown.
- Unplug electrical connector.

Installing

Install in reverse order.



1.12 Removing and installing window switch (front passenger's side)

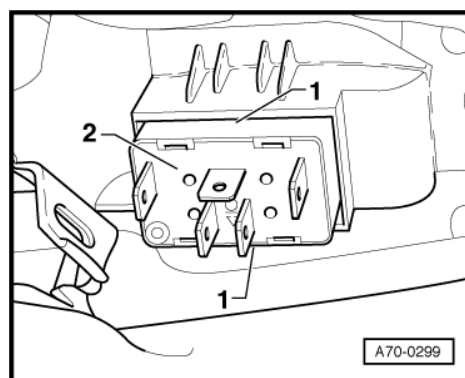
Removing

- Remove front door trim ⇒ Rep. Gr. 70 .
- Detach insulation and soundproofing mat from door trim ⇒ Rep. Gr. 70 .
- Use small screwdriver to carefully release retaining hooks -1-.
- Pull switch -2- for window lifter out of switch mounting.

Installing

Installation is carried out in the reverse order; note the following:

- Press switch into switch mounting until retaining hooks engage.
- Fit insulation and soundproofing mat to door trim ⇒ Rep. Gr. 70 .
- Install front door trim ⇒ Rep. Gr. 70 .



1.13 Removing and installing window switch (rear)

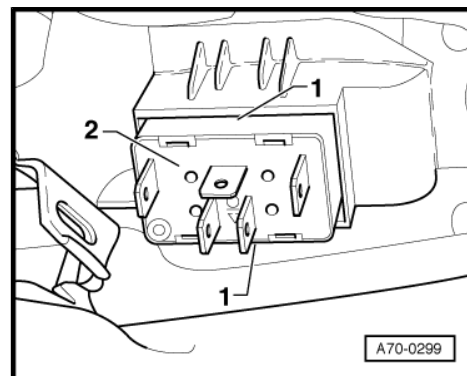
Removing

- Remove rear door trim ⇒ Rep. Gr. 70 .
- Detach insulation and soundproofing mat from door trim ⇒ Rep. Gr. 70 .
- Use small screwdriver to carefully release retaining hooks -1-.
- Pull switch -2- for window lifter out of switch mounting.

Installing

Installation is carried out in the reverse order; note the following:

- Press switch into switch mounting until retaining hooks engage.
- Fit insulation and soundproofing mat to door trim ⇒ Rep. Gr. 70 .
- Install rear door trim ⇒ Rep. Gr. 70 .



1.14 Removing and installing door contact switch

The door contact switch is located in the door lock and cannot be renewed separately if defective.

- Renewing front door lock ⇒ Rep. Gr. 57 .
- Renewing rear door lock ⇒ Rep. Gr. 58 .

1.15 Removing and installing interior monitoring deactivation switch -E183-

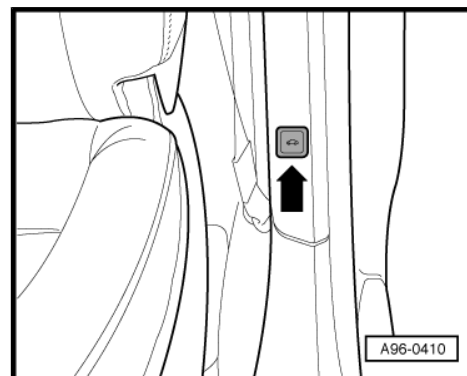
Removing

- Switch off ignition and take out ignition key.
- Remove B-pillar trim on driver's side ⇒ Rep. Gr. 70 .
- Unplug electrical connector.
- Use small screwdriver to press in fastener of switch on side.
- Press interior monitoring switch -E183- -arrow- to front out of B-pillar trim.

Installing

Installation is carried out in the reverse order; note the following:

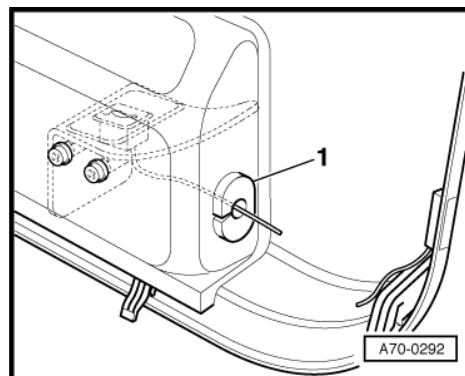
- Install B-pillar trim ⇒ Rep. Gr. 70 .



1.16 Removing and installing rear lid release switch -E165- - USA vehicles

Removing

- Remove front door trim ⇒ Rep. Gr. 70 .
- Detach insulation and soundproofing mat from door trim ⇒ Rep. Gr. 70 .
- Unscrew bolts
- Lift console slightly out of door trim and unplug electrical connector.
- Remove console with rear lid release switch -E165- out of door trim.
- Detach grommet -1-.



Installing

Installation is carried out in the reverse order; note the following:

- Fit insulation and soundproofing mat to door trim ⇒ Rep. Gr. 70 .
- Install front door trim ⇒ Rep. Gr. 70 .

Tightening torque

Component	Nm
Console to door trim	1.5

1.17 Removing and installing sliding sunroof adjustment regulator -E139- with sliding sunroof lift/lower switch -E59- - vehicles up to 01.1999

Removing

- Remove interior light/reading light (front) ⇒ [page 204](#) .
- Detach rotary knob -1- for interior light/reading light -arrow A-.
- Remove bolt -2-.
- Lift out sliding sunroof adjustment regulator -E139- with sliding sunroof lift/lower switch -E59- -item 3- from interior light/reading light -arrow B-.

Installing

Installation is carried out in the reverse order; note the following:

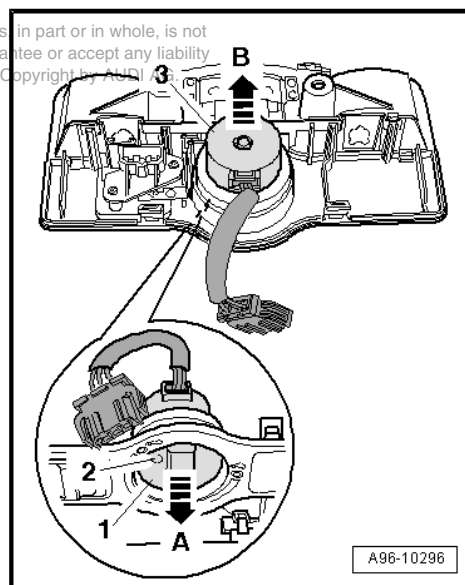
- Install interior light/reading light (front) ⇒ [page 204](#) .

Tightening torque

Component	Nm
Sliding sunroof adjustment regulator -E139- with sliding sunroof lift/lower switch -E59- to interior light/reading light	1.5

The sliding sunroof adjustment regulator -E139- and the sliding sunroof lift/lower switch -E59- are integrated in the interior light/reading light (front) and cannot be renewed separately if defective.

- Renewing interior light/reading light (front) ⇒ [page 205](#) .



1.18 Removing and installing sliding sunroof adjustment regulator -E139- with sliding sunroof lift/lower switch -E59- - vehicles from 02.1999

Removing

- Remove interior light/reading light (front) ➤ [page 205](#) .
- Unplug electrical connector -2-.
- Unscrew bolts -arrows-.
- Detach sliding sunroof adjustment regulator -E139- with sliding sunroof lift/lower switch -E59- -item 1- from interior light/reading light.

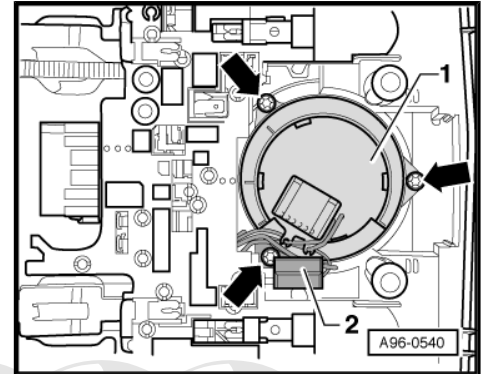
Installing

Installation is carried out in the reverse order; note the following:

- Install interior light/reading light (front) ➤ [page 205](#) .

Tightening torque

Component	Nm
Sliding sunroof adjustment regulator -E139- with sliding sunroof lift/lower switch -E59- to interior light/reading light	1.5



1.19 Removing and installing rear lid contact switch -F111- (for luggage compartment light) - vehicles up to 01.1999

Removing

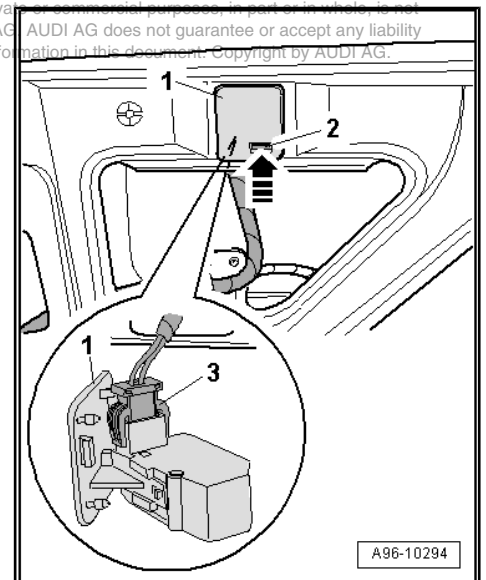
- Remove trim on rear lid ➤ Rep. Gr. 70 .
- Unplug electrical connector -3-.
- Release retaining clip -2- in direction of -arrow- and swivel rear lid contact switch -F111- -item 1- out of rear lid trim.

Installing

Installation is carried out in the reverse order; note the following:

- Install trim on rear lid ➤ Rep. Gr. 70 .

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1.20 Removing and installing rear lid contact switch with separately replaceable microswitch

Removing

- Remove rear lid lock ⇒ Rep. Gr. 55 .
- Use flat screwdriver to pry plastic tab -3- off retaining pins -1-.
- Fold plastic tab completely to rear.
- First pull contact switch -2- to one side and then upwards out of lock for rear lid.

Installing

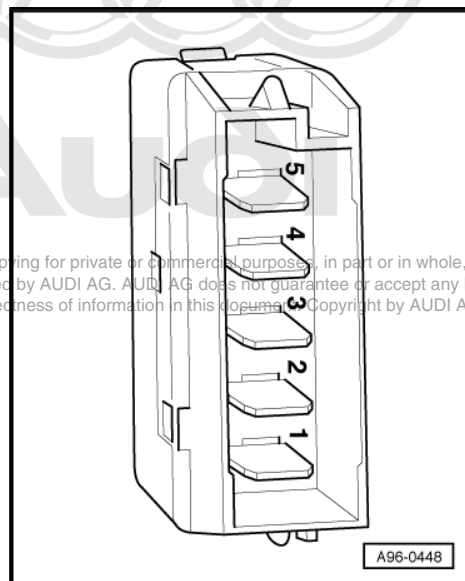
Installation is carried out in the reverse order; note the following:



Note

Make sure washers are properly positioned between plastic tab and lock for rear lid.

- Install rear lid lock ⇒ Rep. Gr. 55 .

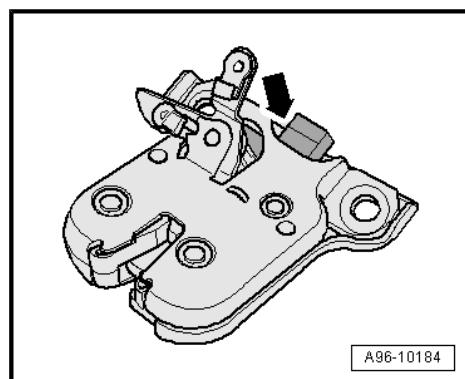


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1.21 Removing and installing rear lid contact switch with integrated microswitch

The rear lid contact switch is located in rear lid lock -arrow- and cannot be renewed separately if defective.

- Renewing rear lid lock ⇒ Rep. Gr. 55 .



1.22 Removing and installing 12 V socket in luggage compartment

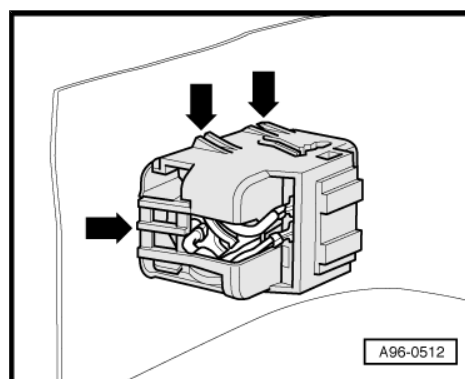
Removing

- Remove luggage compartment side trim ⇒ Rep. Gr. 70 .
- Release retaining clips -arrows- on back of luggage compartment side trim and detach 12 V socket.

Installing

Installation is carried out in the reverse order; note the following:

- Socket must be open when installing.
- Install luggage compartment side trim ⇒ Rep. Gr. 70 .



2 Servicing immobiliser

Vehicles up to model year 1997

The immobiliser control unit is secured to the dash panel carrier beneath the driver's storage compartment. Removing and installing ⇒ [page 197](#) .

The immobiliser is monitored by the self-diagnosis function and can be checked via the self-diagnosis function of the electrical system ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 .

Vehicles from model year 1998

The immobiliser control unit is integrated into the instrument cluster, i.e. it can only be renewed together with the instrument cluster ⇒ ["1.2 Removing and installing instrument cluster", page 54](#) .

The immobiliser is monitored by the self-diagnosis function and can be checked via the self-diagnosis function of the electrical system ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 .

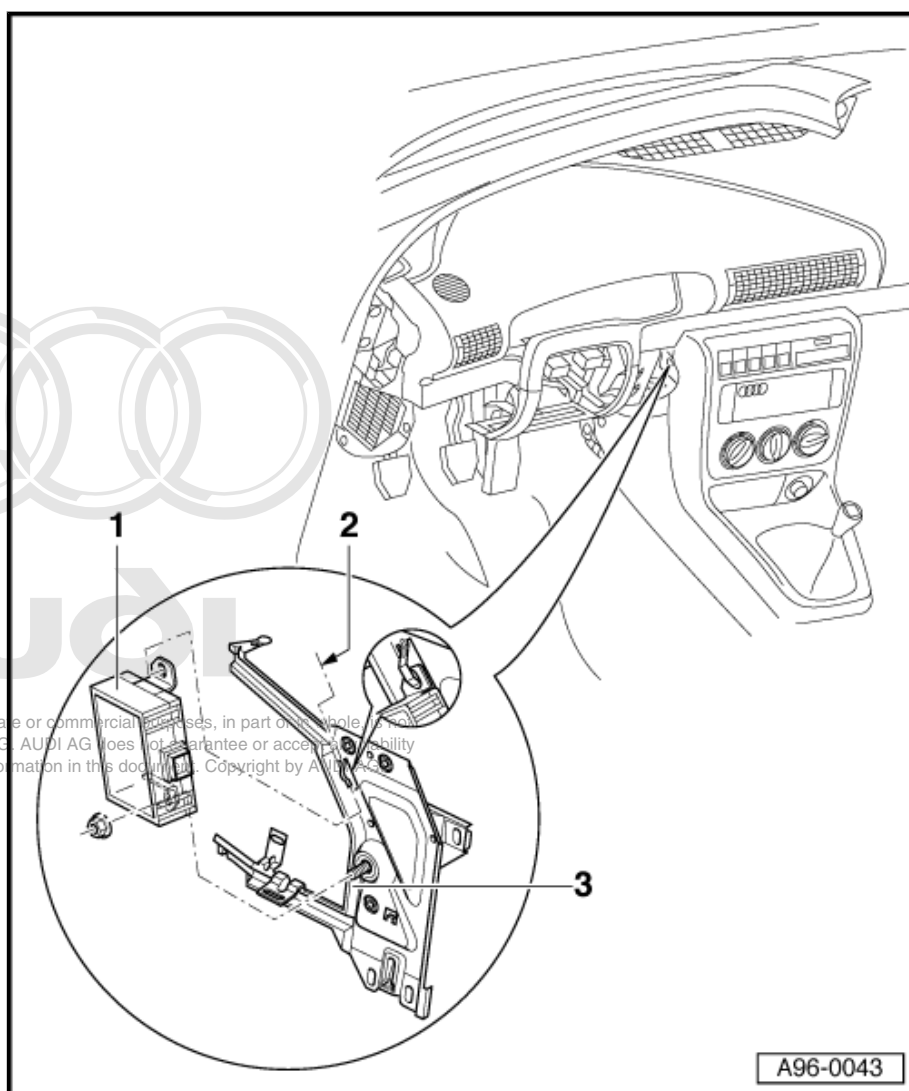
2.1 Removing and installing immobiliser control unit -J362- - vehicles up to model year 1997

1 - Immobiliser control unit - J362-

- ☐ Removing:
 - Remove driver's storage compartment ⇒ Rep. Gr. 68 .
 - Remove nut on dash panel carrier -item 3-.
 - Disengage immobiliser control unit -J362- at top from retaining tab -item 2-.
 - Unplug electrical connector.
- ☐ Install in reverse order, paying attention to the following:
 - Tighten nut on immobiliser control unit -J362- to 6 Nm.
 - **Install driver's storage compartment ⇒ Rep. Gr. 68 .**

2 - Retaining tab

3 - Dash panel carrier



2.2 Pin assignment on connector for immobiliser control unit -J362- - vehicles up to model year 1997

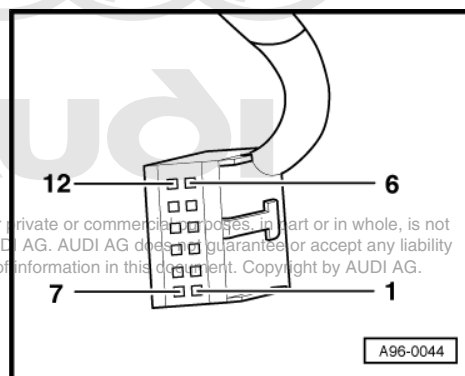
Electrical connector, 12-pin



Note

Use adapter -V.A.G 1598/11- and test box -V.A.G 1598A- for measurements at connector for immobiliser control unit -J362- .

- 1 - Not used
- 2 - Coil to ignition/starter switch (signal wire)
- 3 - Coil to ignition/starter switch (screen wire)
- 4 - Not used
- 5 - Not used
- 6 - Warning lamp
- 7 - Not used
- 8 - Not used
- 9 - Engine control unit (W wire)
- 10 - Diagnosis lead
- 11 - Earth
- 12 - Terminal 15



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2.3 Defective transponder and/or loss of key

- ◆ The transponder is integrated into the vehicle key and cannot be renewed separately.
- ◆ The complete vehicle key must be replaced if the transponder is defective.
- Order a new replacement key with vehicle-specific lock number from your importer (or distribution centre), quoting vehicle identification number.
- Adapt all vehicle keys ⇒ Electrical System, self-diagnosis; Rep. Gr. 01 .

2.4 Renewing reader coil

- ◆ The reader coil is integrated into the lock cylinder and cannot be renewed separately.
- ◆ The complete lock cylinder must be replaced if the reader coil is defective.
- Remove lock cylinder for steering/ignition lock ⇒ [page 176](#) .
- Install replacement lock cylinder with any lock number, but do not change the door locks.



Note

The customer will have to use two different keys for the vehicle until the new lock cylinder is supplied.

- Order a new lock cylinder with vehicle-specific lock number from your importer (or distribution centre), quoting vehicle identification number.
- Exchange replacement lock cylinder with ordered, vehicle-specific lock cylinder.

2.5 Procedure for renewing lock set or instrument cluster

Note

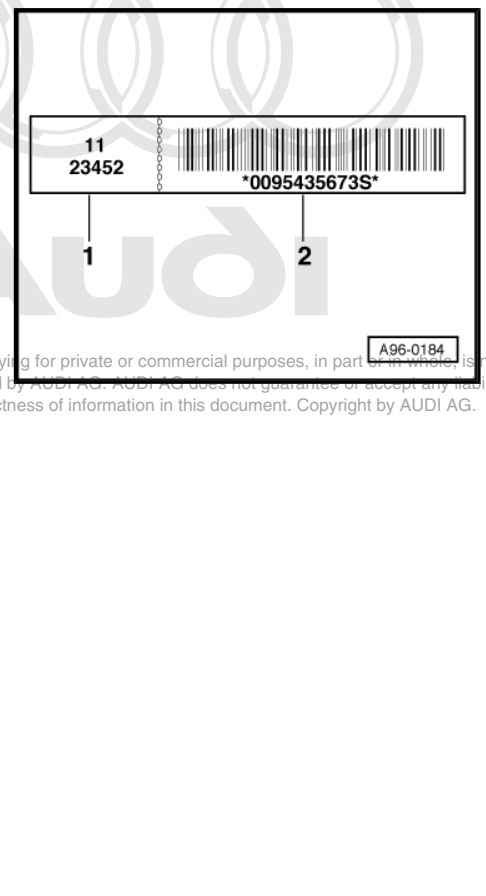
To guarantee that the immobiliser can be identified later, the following steps must be carried out when changing the lock set or instrument cluster.

1. Lock set with 2-part sticker

Note

The sticker on the key tag of the new lock set serves to identify the mechanical locking.

- Detach the right-hand sticker -2- (with bar code) from key tag of new lock set and dispose of it.
- Pull remaining left-hand sticker -1- (without bar code) off new key tag and stick it onto customer's key tag in place of previous left-hand sticker.



2. Immobiliser

- ◆ For security reasons, the secret number for the immobiliser is encoded. The encoded secret number (PIN = Personal Identification Number) is made up of 7 digits.
- ◆ The PIN can only be used in combination with the vehicle diagnosis, testing and information system -VAS 5051B-.
- ◆ The 7-digit PIN must be obtained via the importer (or distribution centre) on the basis of the 14-digit identification number of immobiliser/engine control unit.
- ◆ The PIN is only valid for one day, after which a new number has to be requested.

Note

The PIN is of no use to the customer or other dealerships.

- Determine PIN ⇒ Electrical System, self-diagnosis; Rep. Gr. 01 .

2.6 System test

Note

The immobiliser is deactivated for a period of 5 minutes after every successful log-in function: the operation of the system should not be tested during this period.

- Switch off ignition for at least 5 minutes.

- Cover reader coil with a slotted metal plate, for example by positioning a suitable washer on ignition lock and inserting ignition key through hole into ignition lock.

or

- Disconnect reader coil wire at connector between ignition/starter switch and instrument cluster.
- Start engine.
- The engine should not run and the warning lamp should start flashing.
- Initiate self-diagnosis of immobiliser and interrogate fault memory ⇒ Electrical system, self-diagnosis; Rep. Gr. 01 .

One of the following two fault messages should appear on the display:

- ◆ Key signal too low

or

- ◆ Immobiliser reader coil -D2-
- Erase fault memory and end output.



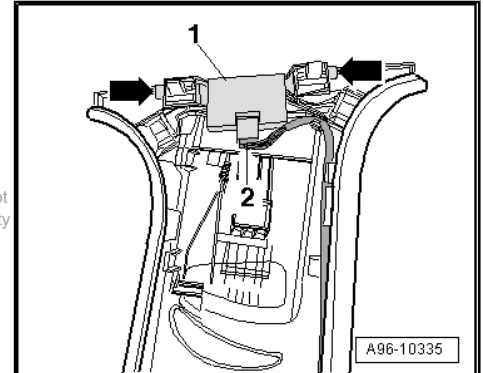
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3 Servicing ultrasonic interior monitor

3.1 Removing and installing anti-theft alarm ultrasonic sensor

Removing

- Remove upper B-pillar trim ⇒ Rep. Gr. 70 .
- Unscrew bolts -arrows-.
- Detach housing for ultrasonic sensor -1-.
- Unplug electrical connector -2-.



- Release retaining tabs -arrows- on rubber covers -1- and -3-.
- Detach rubber covers from sensors on housing for ultrasonic sensor -2-.

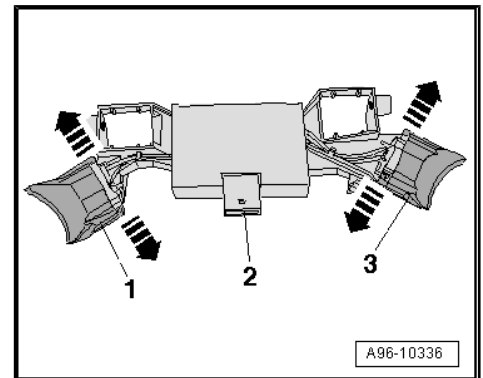
Installing

Installation is carried out in the reverse order; note the following:

- Install upper B-pillar trim ⇒ Rep. Gr. 70 .

Tightening torque

Component	Nm
Housing for ultrasonic sensor to B-pillar trim	1.5



3.2 Removing and installing ultrasonic sensor control unit -J347-

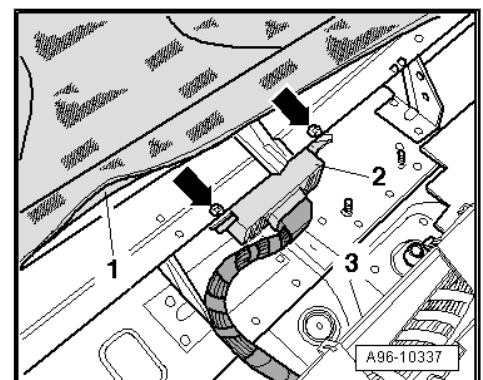
Removing

- Remove seat bench ⇒ Rep. Gr. 72 .
- Lift floor covering -1- slightly in area above ultrasonic sensors control unit -J347- .
- Unscrew bolts -arrows-.
- Remove ultrasonic sensor control unit -J347- -item 2-.
- Unplug electrical connector -3-.

Installing

Installation is carried out in the reverse order; note the following:

- Install seat bench ⇒ Rep. Gr. 72 .



3.3 Removing and installing horn for anti-theft alarm

Removing

- Remove luggage compartment side trim (left-side) ⇒ Rep. Gr. 70 .
- Unscrew bolts -arrows-.
- Remove retaining frame -2-.

Avant:

- Take out amplifier with bass loudspeaker (on left in luggage compartment) ⇒ Rep. Gr. 91 .

All models:

- Remove insulation -1-.
- Remove bolt -1-.
- Take out horn -2- for anti-theft alarm from behind body opening.
- Unplug electrical connector.
- Unscrew nut in order to remove bracket for horn for anti-theft alarm.

Installing

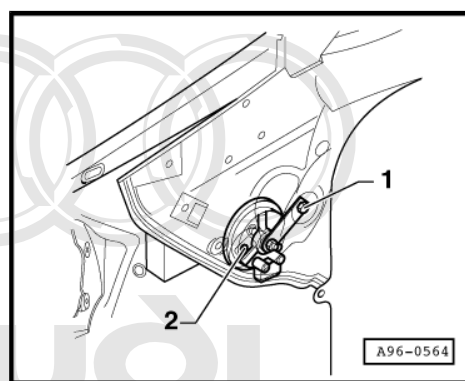
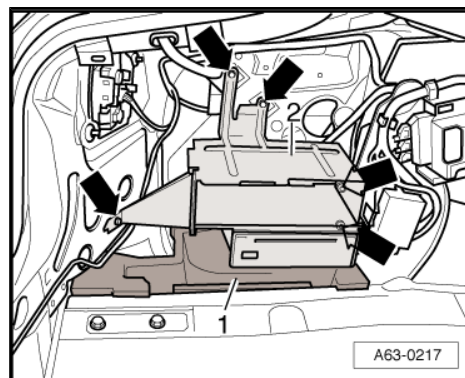
Installation is carried out in the reverse order; note the following:

Avant:

- Install amplifier with bass loudspeaker ⇒ Rep. Gr. 91 .

All models:

- Install luggage compartment side trim (left-side) ⇒ Rep. Gr. 70 .



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Tightening torques

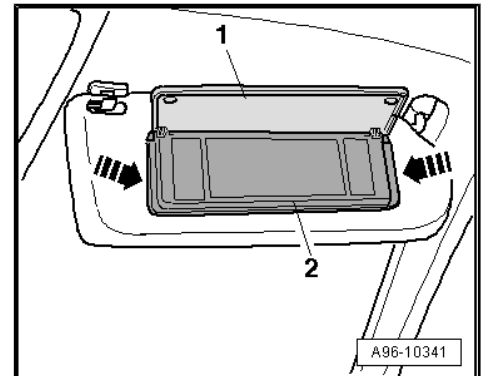
Component	Nm
Horn for anti-theft alarm to bracket	5
Bracket for horn for anti-theft alarm to body	5
Retaining frame to body	3.5

4 Servicing interior lights

4.1 Removing and installing light for vanity mirror - vehicles up to 01.1999

Removing

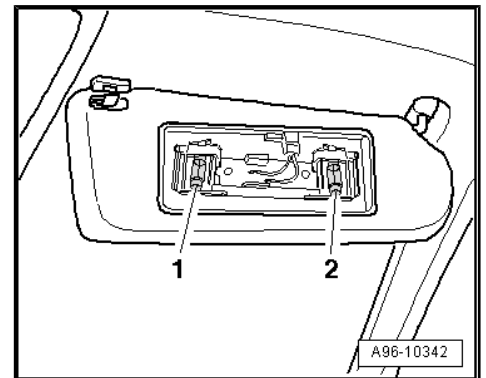
- Open cover -1- on vanity mirror.
- Carefully lever out mirror element -2- at both sides -arrows- from frame in sun visor.



- Take bulb -1- or -2- (12 V, 10 W) out of bulb holder.

Installing

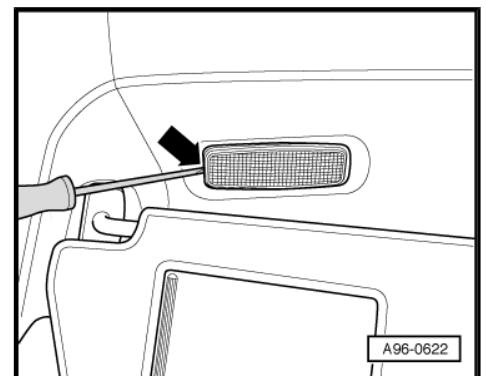
Install in reverse order.



4.2 Removing and installing light for vanity mirror - vehicles from 02.1999

Removing

- Carefully pry out light for vanity mirror at slot using a flat screwdriver -arrow-.
- Unplug electrical connector.

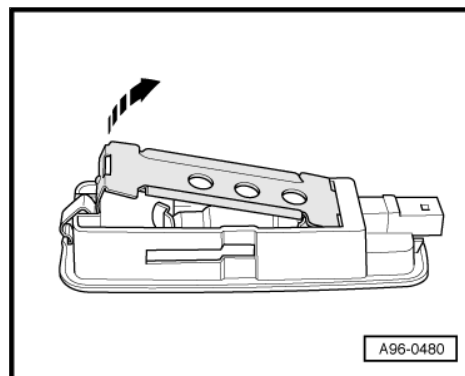


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- Detach cover over bulb -arrow-.
- Remove bulb (12 V, 5 W) from bulb holder on reverse side of vanity mirror light.

Installing

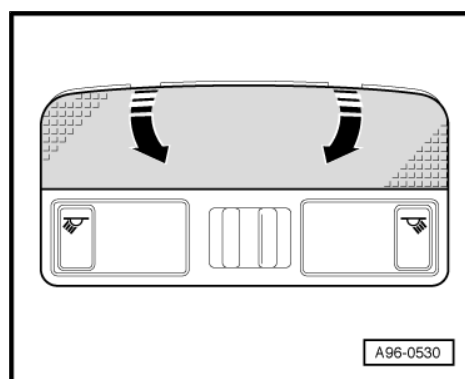
Install in reverse order.



4.3 Removing and installing interior light/reading light (front) - vehicles up to 01.1999

Removing

- Switch off ignition and take out ignition key.
- Release lens for interior light/reading light -arrows-.



- Unscrew bolts -1- and -2-.
- Release retainer tabs -arrows- and take interior light/reading light out of headliner.
- Unplug electrical connector.

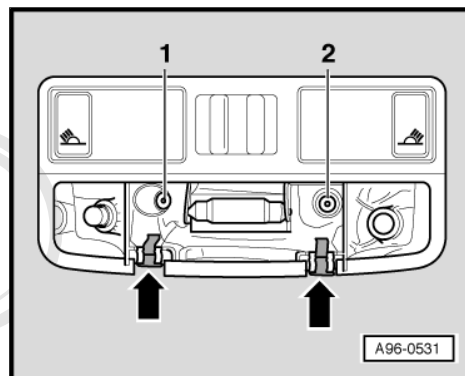
Installing

Installation is carried out in the reverse order; note the following:

- Fit interior light and secure.
- Press on lens for interior light/reading light until it engages.

Tightening torque

Component	Nm
Interior light/reading light to headliner	1



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4.4 Renewing interior light/reading light bulbs (front) - vehicles up to 01.1999

Removing

- Switch off ignition and take out ignition key.
- Release lens for interior light/reading light -arrows-.

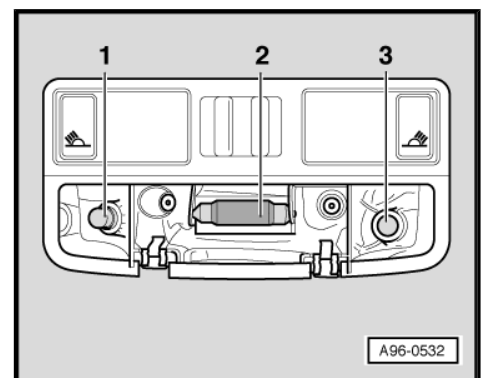
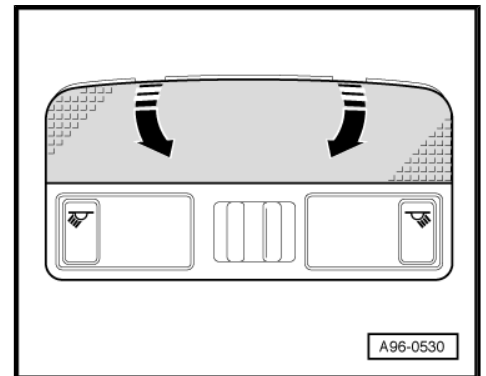
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- Take bulb -2- for interior light (12 V, 10 W) out of clamp-type bulb holder.
- Unscrew bulb -1- or -3- for reading light (12 V, 10 W) from bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

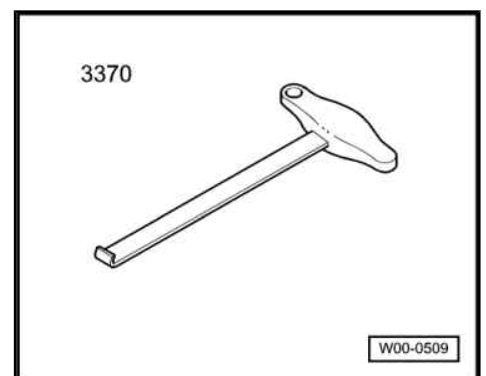
- Press on lens for interior light/reading light until it engages.



4.5 Removing and installing interior light/reading light (front) - vehicles from 02.1999

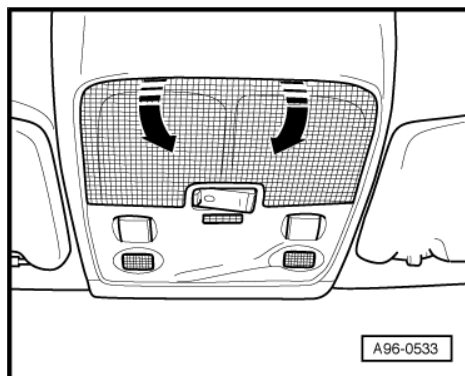
Special tools and workshop equipment required

- ◆ Front-end hook -3370-

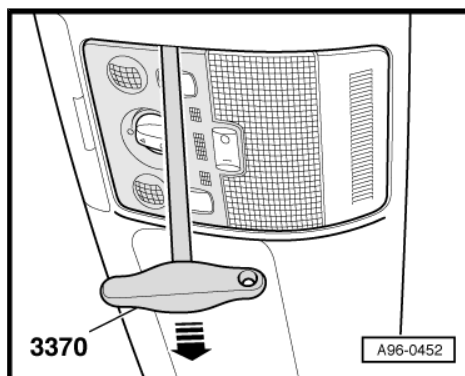


Removing

- Release lens for interior light -arrows-.



- Carefully remove reading light cover using front-end hook -3370- -arrow-.

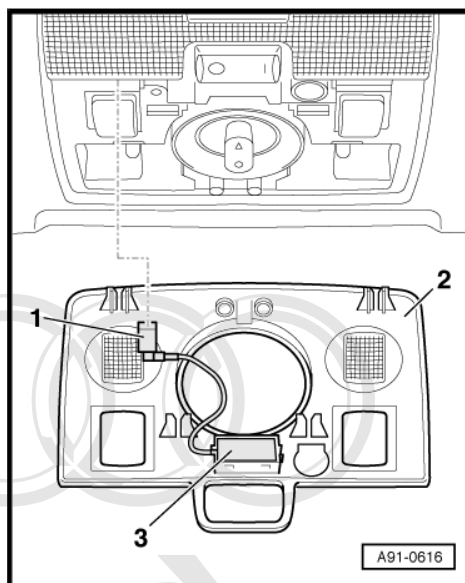


- If fitted, unplug connector -1- for hands-free microphone -3-.



Note

Disregard -item 2-.



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- Unscrew bolts -1- and -2-.
- Release retainer tabs -arrows- and take interior light/reading light out of headliner.
- Unplug the electrical connectors.

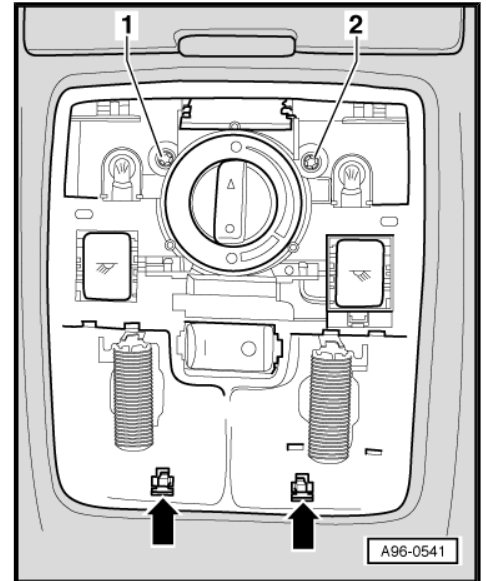
Installing

Installation is carried out in the reverse order; note the following:

- Fit interior light and secure.
- Press on cover for reading lights and lens for interior light until they engage.

Tightening torque

Component	Nm
Interior light to roof trim	1



4.6 Removing and installing LED for back-ground lighting - vehicles from 02.1999

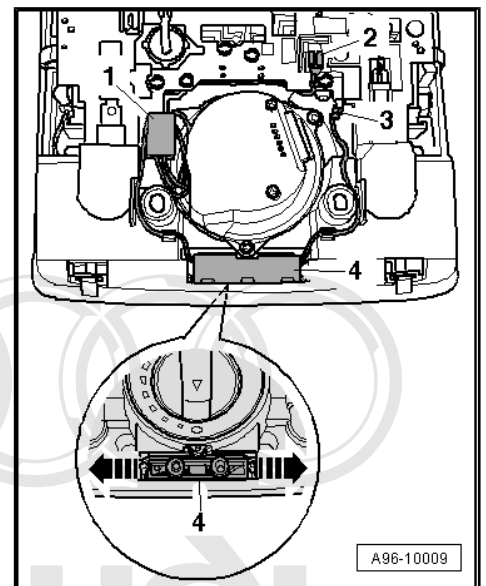
Removing

- Remove interior light/reading light (front) ⇒ [page 205](#) .
- Unplug electrical connectors -1, 2, 3-.
- Release retaining clips -arrows- and remove LED for back-ground lighting -4- from interior light/reading light.

Installing

Installation is carried out in the reverse order; note the following:

- Install interior light/reading light (front) ⇒ [page 205](#) .

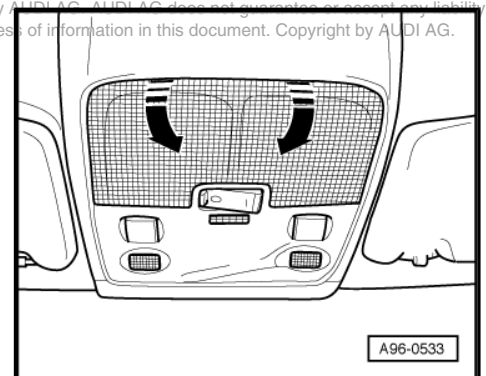


4.7 Renewing interior light bulbs (front) - vehicles from 02.1999

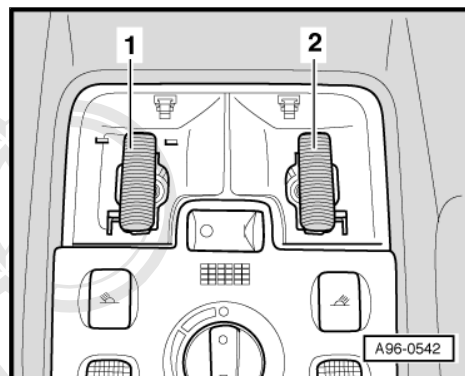
Removing

- Release lens for interior light -arrows-.

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- Disengage small lenses -1- and -2- over bulbs.

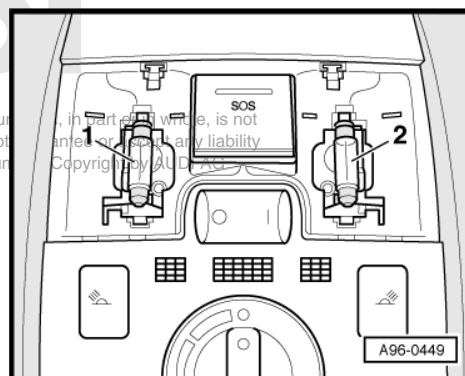


- Take bulb -1- or -2- (12 V, 10 W) out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

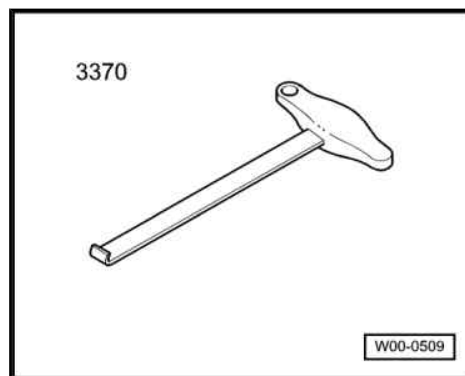
- Press on lens for interior light until it engages.



4.8 Renewing reading light bulbs (front) - vehicles from 02.1999

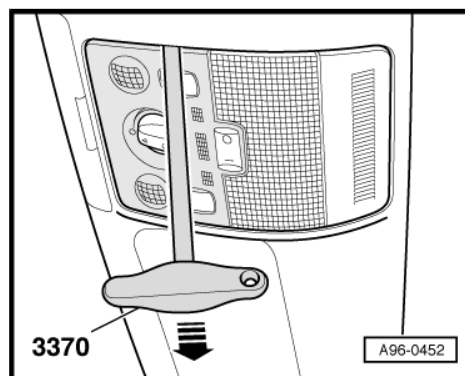
Special tools and workshop equipment required

- ◆ Front-end hook -3370-



Removing

- Carefully remove reading light cover using front-end hook -3370- -arrow-.

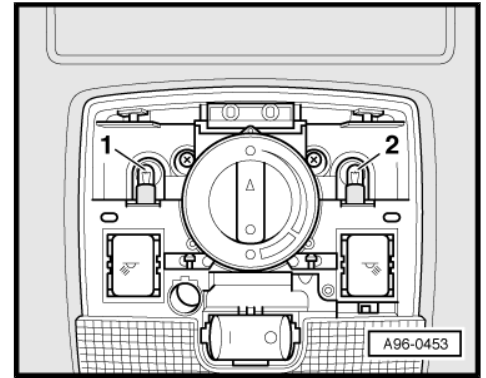


- Screw bulb -1- or -2- (12 V, 5 W) out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

- Press on cover for reading light until it engages.



4.9 Removing and installing front passenger side airbag deactivated warning lamp - K145- - vehicles from 02.1999

If the front passenger side airbag deactivated warning lamp - K145- is defective, the entire interior light/reading light must be renewed ⇒ [page 205](#).

4.10 Removing and installing interior light/reading light (rear) - vehicles up to 01.1999

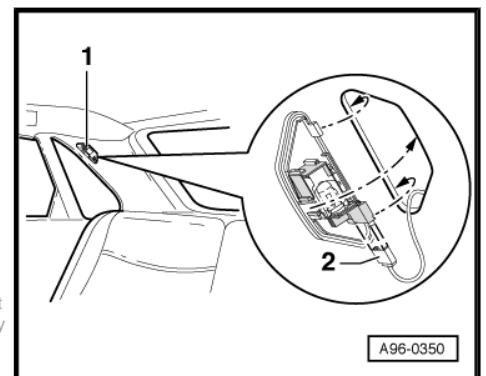
Removing

- Use a flat screwdriver to press in retaining tab and pry out interior light/reading light (rear) -1-.
- Unplug electrical connector -2-.
- Take bulb (12 V, 5 W) on reverse side of interior light/reading light (rear) out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

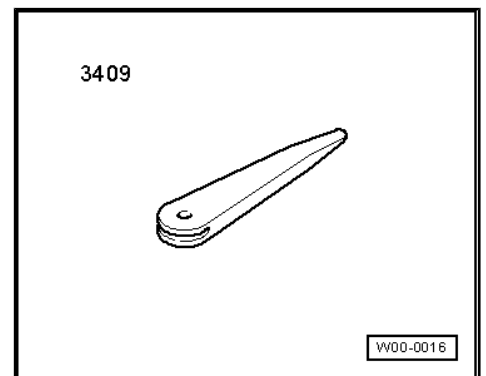
- Insert interior light/reading light (rear) in opening and engage on opposite side.



4.11 Removing and installing interior light/reading light (rear) - vehicles from 02.1999

Special tools and workshop equipment required

- ◆ Removal wedge -3409-



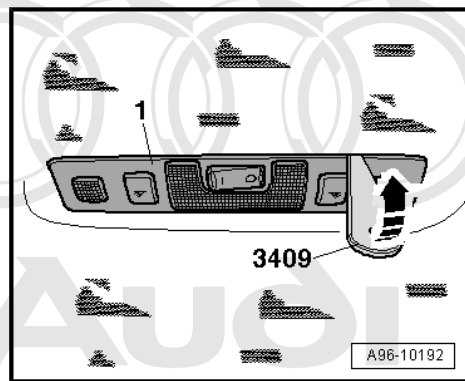
Removing

- Carefully pry interior light/reading light -1- out of headliner using removal wedge -3409- -arrow-.
- Unplug electrical connector.

Installing

Installation is carried out in the reverse order; note the following:

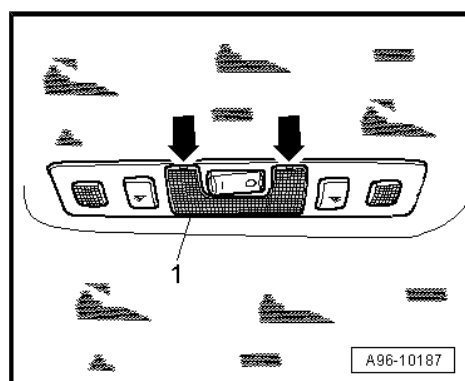
- Insert interior light in opening in headliner and clip into place.



4.12 Renewing interior light bulb (rear) - vehicles from 02.1999

Removing

- Use flat screwdriver to unclip lens -1- from interior light at locations marked with -arrows-.

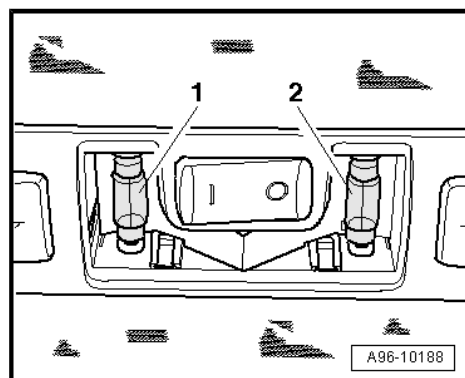


- Take bulb -1- or -2- (12 V, 10 W) out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

- Press on lens for interior light until it engages.



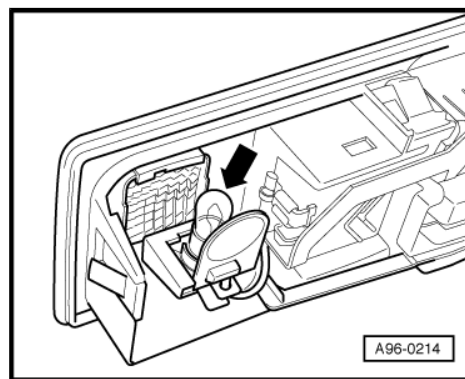
4.13 Renewing reading light bulb (rear) - vehicles from 02.1999

Removing

- Remove interior light/reading light (rear) ⇒ [page 209](#) .
- Unscrew bulb -arrow- from bulb holder (12 V, 5 W) on back of reading light.

Installing

Install in reverse order.



4.14 Removing and installing illumination for heater controls

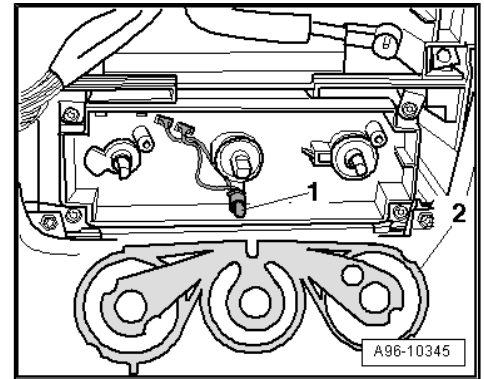
Removing

- Remove radio ⇒ Rep. Gr. 91 .
- Remove heater controls ⇒ Rep. Gr. 80 .
- Carefully unclip light strip -2- for rotary control knob from heater controls.
- Detach bulb -1- (12 V, 1,2 W) from bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

- Install heater controls ⇒ Rep. Gr. 80 .
- Install radio ⇒ Rep. Gr. 91 .



4.15 Removing and installing illumination for operating and display unit for air conditioner -E87-

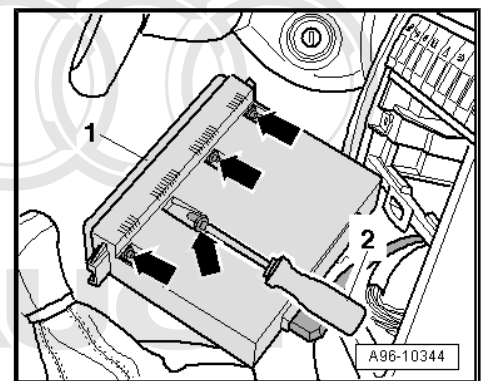
Removing

- Remove radio ⇒ Rep. Gr. 91 .
- Remove operating and display unit for air conditioner -E87- ⇒ Rep. Gr. 87 .
- Remove bulbs -arrows- (12 V, 2 W) from operating and display unit for air conditioner -E87- -item 1-.

Installing

Installation is carried out in the reverse order; note the following:

- Install operating and display unit for air conditioner -E87- ⇒ Rep. Gr. 87 .
- Install radio ⇒ Rep. Gr. 91 .



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4.16 Removing and installing ashtray light (front)

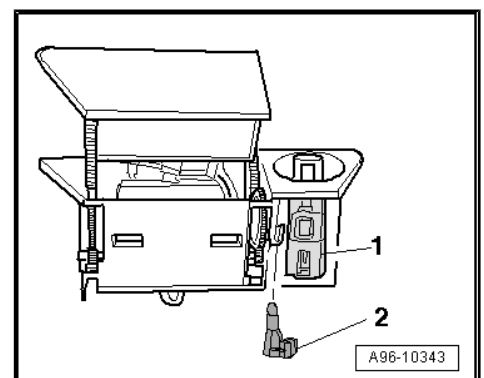
Removing

- Switch off ignition and take out ignition key.
- Remove front ashtray ⇒ Rep. Gr. 68 .
- Release retaining clip and pull bulb holder for ashtray light to rear.
- Take out ashtray light -2- towards the rear from lighter -1-.

Installing

Installation is carried out in the reverse order; note the following:

- Press on bulb holder for ashtray light until retaining clip engages.
- Install front ashtray ⇒ Rep. Gr. 68 .



4.17 Removing and installing glove box light

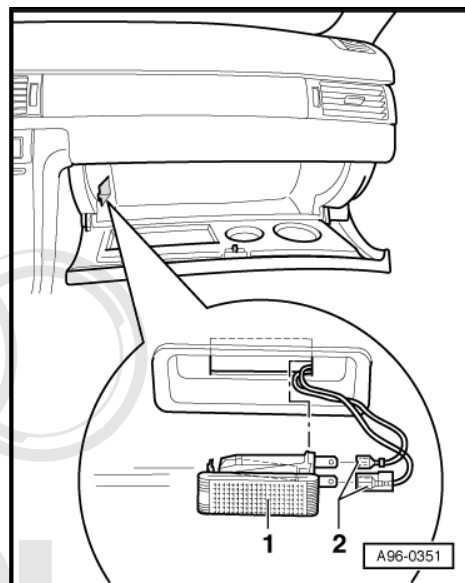
Removing

- Use a flat screwdriver to press in retaining tab and pry out glove box light -1-.
- Unplug electrical connectors -2-.
- Take bulb (12 V, 5 W) on reverse side of glove box light out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

- Insert glove box light in opening and engage on opposite side.



4.18 Removing and installing bulb for door opener light

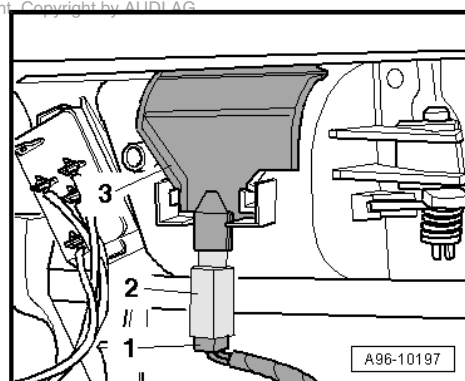
Removing

- Remove door trim ⇒ Rep. Gr. 70 .
- Remove bulb -2- from light strip -3-.
- Unplug connector -1- from bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

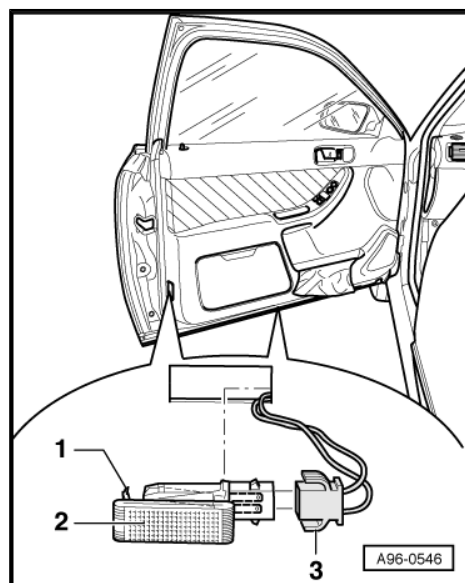
- Insert bulb for door opener light in light strip and engage.
- Install door trim ⇒ Rep. Gr. 70 .



4.19 Removing and installing door safety light and entry light

Removing

- Use a flat screwdriver to press in retaining tab -1- and pry out door safety light/entry light -2-.
- Unplug electrical connector -3-.



- If fitted, carefully pry off cover from door safety light -arrow-.

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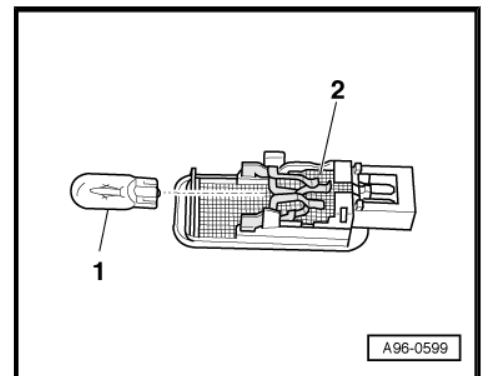
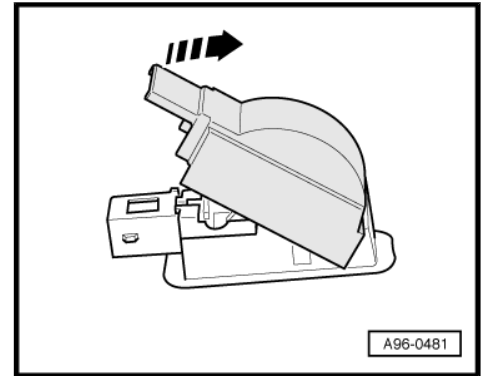
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- Take bulb -1- (12 V, 5 W) on back of door safety light/entry light out of bulb holder -2-.

Installing

Installation is carried out in the reverse order; note the following:

- If fitted, fit cover onto door safety light.
- Insert door safety light/entry light in opening and engage on opposite side.



4.20 Removing and installing footwell lights

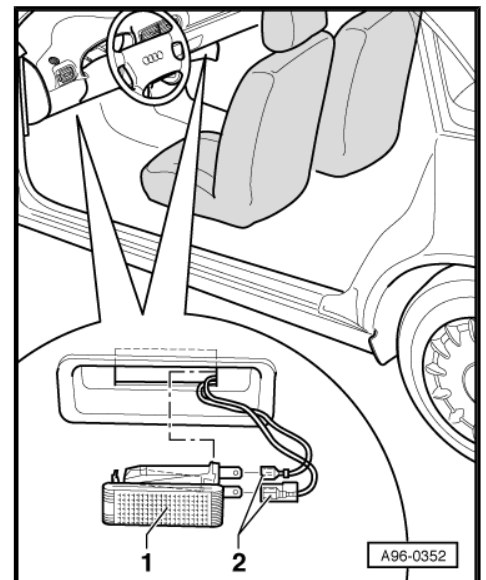
Removing

- Use a flat screwdriver to press in retaining tab and pry out footwell light -1-.
- Unplug electrical connectors -2-.
- Take bulb (12 V, 5 W) on reverse side of footwell light out of bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

- Insert footwell lights in opening and engage on opposite side.



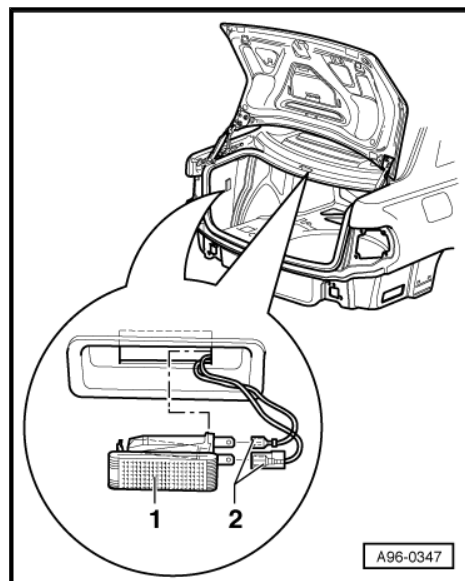
4.21 Removing and installing luggage compartment lights (saloon)

- Use a flat screwdriver to press in retaining tab and pry out luggage compartment light -1-.
- Unplug electrical connectors -2-.
- Take bulb (12 V, 5 W) on reverse side of luggage compartment light out of bulb holder.

Installing

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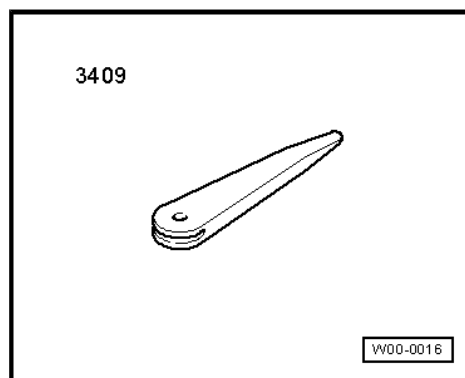
- Insert luggage compartment light in opening and engage on opposite side.



4.22 Removing and installing luggage compartment light (Avant)

Special tools and workshop equipment required

- ◆ Removal wedge -3409-



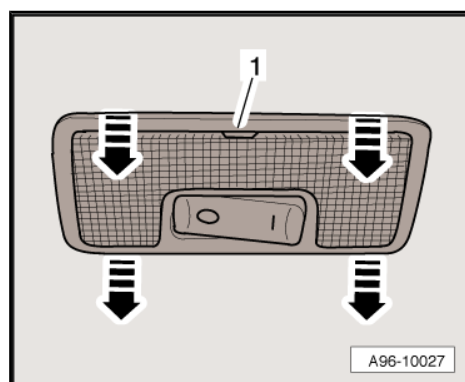
Removing

- Switch off luggage compartment light.
- Carefully pry luggage compartment light -1- at both ends out of headliner using removal wedge -3409- -arrow-.
- Unplug electrical connector.

Installing

Installation is carried out in the reverse order; note the following:

- Insert luggage compartment light in headliner and engage.

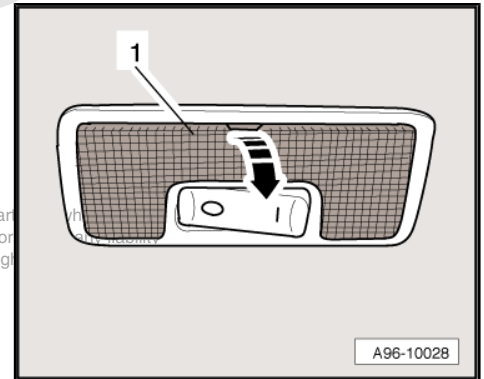


4.23 Removing and installing bulb for luggage compartment light (Avant)

Removing

- Switch off luggage compartment light.
- Unclip lens -1- at luggage compartment light -arrow-.

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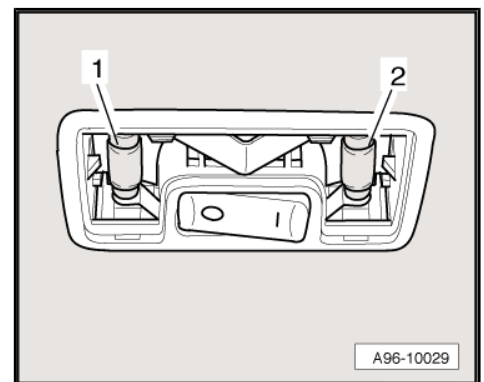


- Take bulb -1- or -2- (12 V, 5 W) out of clamp-type bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

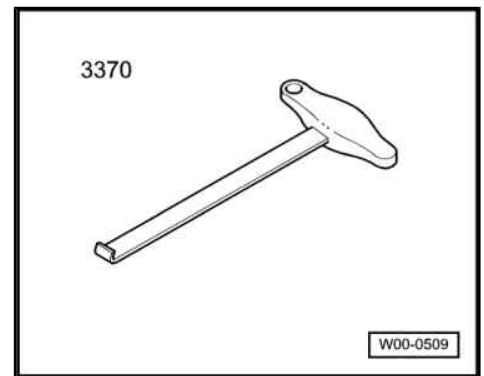
- Press on cover for luggage compartment light until it engages.



4.24 Removing and installing rear lid light (Avant)

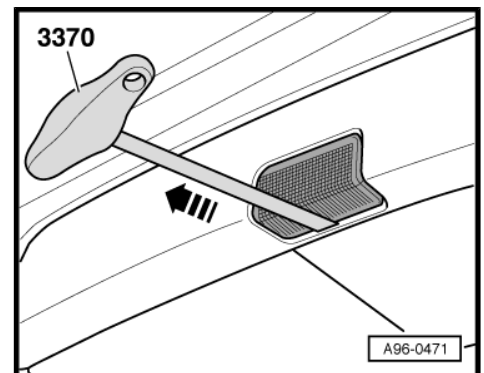
Special tools and workshop equipment required

- ◆ Front-end hook -3370-



Removing

- Carefully pull rear lid light in direction of -arrow- using front-end hook -3370-.
- Unplug electrical connector.

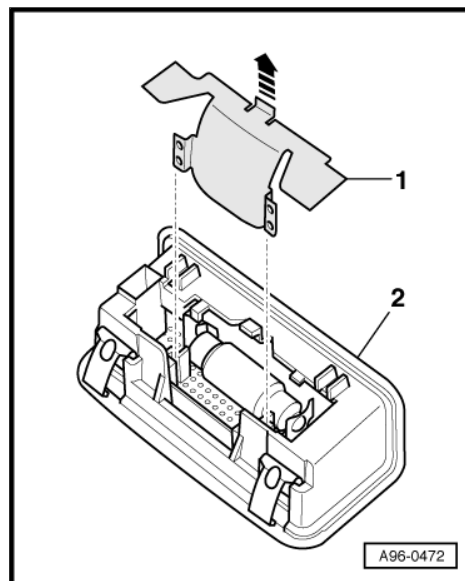


- If fitted, pull reflector -1- out of rear lid light -2-.
- Remove bulb (12 V, 6 W) for rear lid light from bulb holder.

Installing

Installation is carried out in the reverse order; note the following:

- Insert rear lid light in opening and engage on opposite side.



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5 Servicing lock cylinder heating

5.1 Removing and installing control unit for lock cylinder heating

Removing

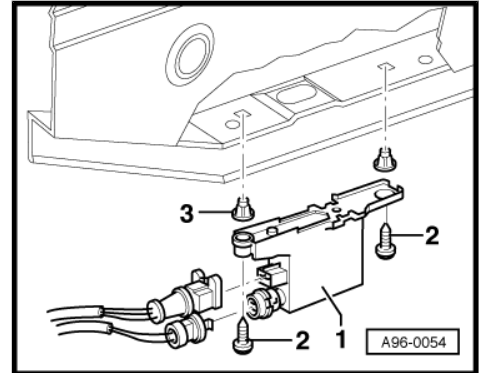
- Remove front door trim ⇒ Rep. Gr. 70 .
- Remove bolts -2-.
- Unplug electrical connectors
- Remove control unit -1- for lock cylinder heating.

3 - Plastic nut

Installing

Installation is carried out in the reverse order; note the following:

- Install front door trim ⇒ Rep. Gr. 70 .



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6 Servicing horn

6.1 Removing and installing horn

Removing

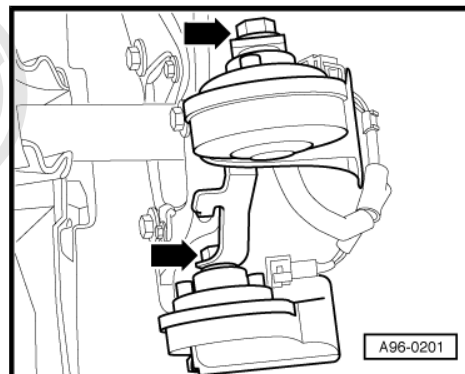
- Remove noise insulation.
- Unscrew nuts -arrows- and remove horns.
- Unplug the electrical connectors.

Installing

Install in reverse order.

Tightening torque

Component	Nm
Horn to bracket	12

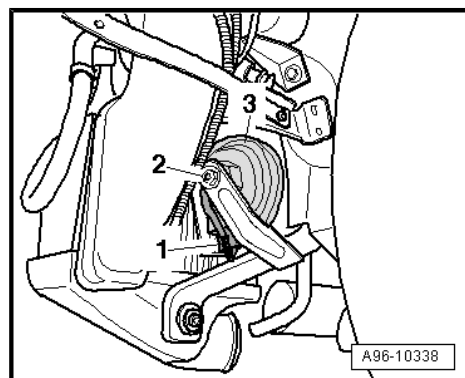


6.2 Removing and installing horn - Audi RS 4

Removing

Horn (left-side):

- Remove wheel housing liner (left-side) ⇒ Rep. Gr. 66 .
- Unplug electrical connector -1-.
- Unscrew nut -2- and remove horn -3-.



Horn (right-side):

- Remove noise insulation.
- Unscrew nut -1- and remove horn -3-.
- Unplug electrical connector -2-.

Installing

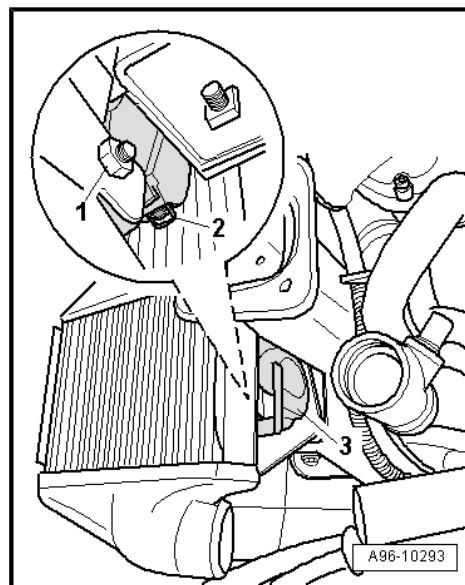
Installation is carried out in the reverse order; note the following:

Horn (left-side):

- Install wheel housing liner (left-side) ⇒ Rep. Gr. 66 .

Tightening torque

Component	Nm
Horn to bracket	12



7 Heated steering wheel

7.1 Servicing heated steering wheel

- Remove airbag unit and steering wheel ⇒ Rep. Gr. 69
- Use current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations to check wiring connections.



Note

Steering wheel must be renewed if heated steering wheel is defective.



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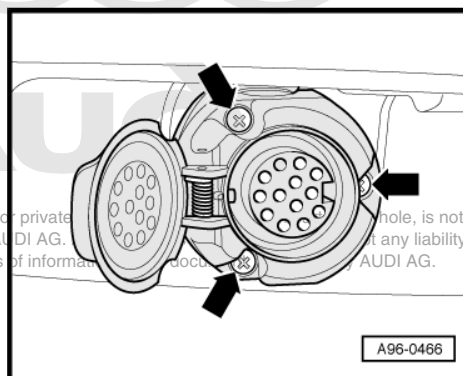
8 Servicing socket for towing bracket

8.1 Removing and installing socket for towing bracket

Removing

- Switch off ignition and take out ignition key.
- Unscrew bolts -arrows-.
- Detach connection socket from retaining plate.

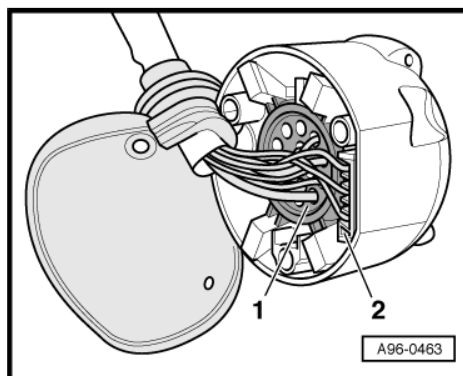
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- Unplug connector -2- for contact switch for rear fog light cut-out and press connector -1- out of socket.

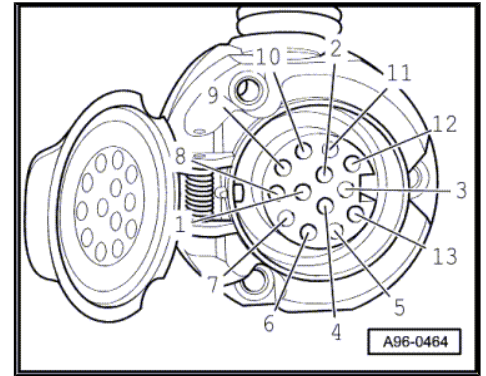
Installing

Install in reverse order.



8.2 Pin assignment at socket for towing bracket

- 1 - Terminal BL - turn signal (left-side)
- 2 - Terminal NSL - rear fog light
- 3 - Terminal 31 - earth
- 4 - Terminal BR - turn signal (right-side)
- 5 - Terminal 58 R - tail light (right-side)
- 6 - Terminal 54 - brake light
- 7 - Terminal 58 L - tail light (left-side)
- 8 - Terminal RF - reversing light
- 9 - Terminal 30a (battery +)
- 10 - Not used
- 11 - Not used
- 12 - Not used
- 13 - Terminal 31 - earth

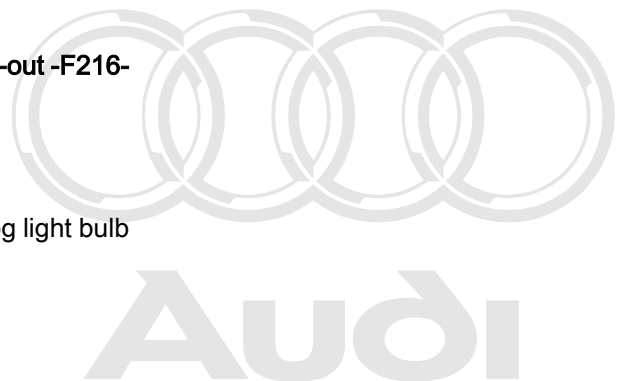


Pin assignment on rear fog light cut-out relay in trailer towing attachment -J269- (model year 1995 vehicles)

- 2 - To trailer socket -U10-
- 4 - To rear fog light bulb (left-side) -L46- and rear fog light bulb (right-side) -L47-
- 8 - To rear fog light switch -E18-

Pin assignment on contact switch for rear fog light cut-out -F216- (vehicles from model year 1996)

- 1 - To rear fog light switch -E18-
- 2 - Not used
- 3 - To rear fog light bulb (left-side) -L46- and rear fog light bulb (right-side) -L47-



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97 – Wiring

1 Relay carriers, fuse holders

1.1 Connector points and connectors - overview

Exact assignment of connectors can be found in appropriate current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

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1 - Connector point (right-side)

- ☐ At bottom of A-pillar

2 - Connector for front right ABS speed sensor

- ☐ In passenger's footwell next to fresh air blower

3 - 1-pin connector, red (for air-bag)

- ☐ On right side of dash panel, behind cover

4 - Connector for radio/dash panel wiring harness

- ☐ Beneath centre console on centre tunnel
- ☐ Protected with foam tubing

5 - Connector for rear right door wiring harness (loud-speaker/window lifter)

- ☐ Clipped into B-pillar in centre behind bellows

6 - Connector for lock cylinder switch/anti-theft alarm system

- ☐ Attached with retainer to top centre of door

7 - Connector for rear right ABS speed sensor

- ☐ Attached to ABS wiring harness under bench seat on right

8 - Connector for illuminated vanity mirror

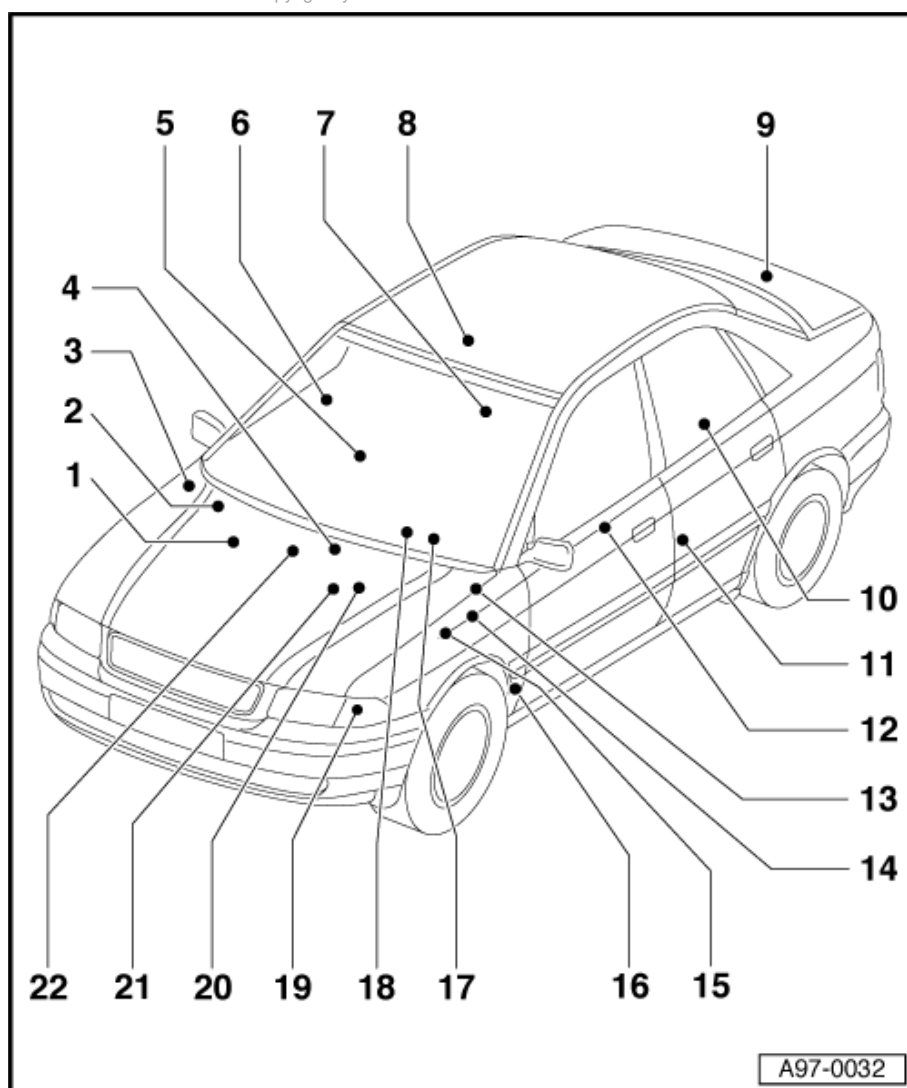
- ☐ Positioned behind interior light (centre)
- ☐ Protected with foam tubing

9 - Connector for lock cylinder switch/anti-theft alarm system

- ☐ Attached to inside of rear lid (left-side)
- ☐ Protected with foam tubing

10 - Connector for rear left ABS speed sensor

- ☐ On wiring harness under bench seat (left-side)



11 - Connector for rear left door wiring harness (loudspeaker/window lifter)

- ☐ Clipped into B-pillar in centre behind bellows

12 - Connector for lock cylinder switch/anti-theft alarm system

- ☐ Attached with retainer to top centre of door

13 - Connector point for engine wiring harness

- ☐ Attached at extreme bottom position in electronics box (plenum chamber)

14 - Connector for front left ABS speed sensor

- ☐ Attached in footwell at bottom left

15 - Relay carrier with connector point

- ☐ Attached at bottom of left footwell, at extreme front position

16 - Left A-pillar connector point

- ☐ At bottom of A-pillar

17 - Connector for airbag coil connector

- ☐ Clipped in at top right behind trim for steering column switch

18 - Connector for horn slip ring

- ☐ Clipped in at top right behind trim for steering column switch

19 - Connector point

With connector for radiator fan

With connector for air conditioner ambient temperature sensor

With connector for air conditioner high-pressure switch

With connector for magnetic clutch

With connector for air conditioner speed sensor

- ☐ Attached with retainer at ABS hydraulic unit

20 - Connector for alternator

- ☐ Attached to wiring harness above gearbox with cable tie

21 - Connector for reversing light switch

- ☐ Attached with retainer to side of gearbox

22 - Connector for heated windscreen washer jets

- ☐ Routed in bonnet reinforcements

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1.2 Control units and electrical components for vehicles up to model year 1997 - overview

1 - Battery

- ☐ In plenum chamber

2 - Connector point (right-side)

- ☐ At bottom of A-pillar

3 - Control unit for cruise control system -J213-

- ☐ Above glove box

4 - Airbag control unit -J234-

- ☐ Beneath centre console on centre tunnel

5 - Automatic gearbox control unit -J217-

- ☐ In front of passenger's seat beneath floor covering

6 - Electrical connector, 16-pin -T16- - diagnostic connector

- ☐ In rear ashtray

7 - Central locking motor with control unit for interior lights switch-off delay and anti-theft alarm system -V94-

- ☐ With infrared or radio remote control
- ☐ In luggage compartment (right-side).

8 - Control unit for ultra-sonic sensors -J347-

- ☐ Under rear seat bench

9 - ABS control unit -J104-

- ☐ Beneath rear seat bench (left-side)

10 - Control unit for lock cylinder heating

- ☐ Control unit for lock cylinder heating, left -J210-
- ☐ Control unit for lock cylinder heating, right -J211-
- ☐ In top of front door

11 - Instrument cluster

12 - Fuse holder

- ☐ On left of dash panel
- ☐ Removing and installing ⇒ [page 226](#)

13 - Left A-pillar connector point

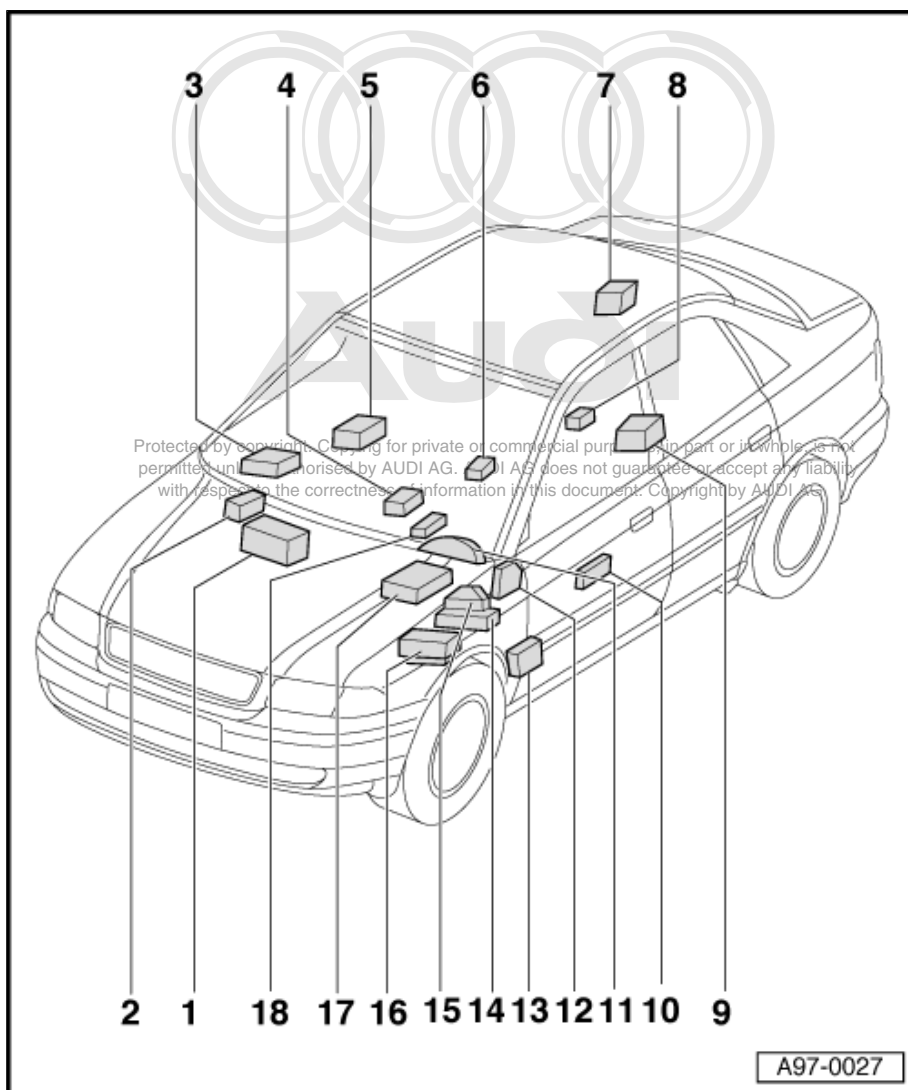
- ☐ At bottom of A-pillar

14 - 13-position relay carrier

- ☐ Beneath dash panel on driver's side
- ☐ Removing and installing ⇒ [page 228](#)

15 - Micro central electrics

- ☐ Beneath dash panel on driver's side



- ☐ Removing and installing ⇒ [page 227](#)

16 - 8-position relay carrier

- ☐ Beneath dash panel on driver's side
- ☐ Removing and installing ⇒ [page 228](#)

17 - Electronics box (plenum chamber)

- ☐ With engine control unit, auxiliary relay carrier and additional fuse holder
- ☐ Removing and installing ⇒ [page 231](#)

18 - Immobiliser control unit -J362-

- ☐ Beneath dash panel on centre console

1.3 Control units and electrical components for vehicles from model year 1998 - overview

1 - Control unit for cruise control system -J213-

- ☐ Behind glove box on central tube for dash panel

2 - Operating and display unit for air conditioner/ Climatronic -E87-

- ☐ In centre console

3 - Automatic gearbox control unit -J217-

- ☐ In front of passenger's seat beneath floor covering

4 - Automatic anti-dazzle interior mirror -Y7-

- ☐ On windscreen

5 - Headlight range control unit -J431-

- ☐ Under rear bench seat on right

6 - Parking aid control unit -J446-

- ☐ Under rear bench seat on right

7 - Control unit for ultra-sonic sensors -J347-

- ☐ Behind luggage compartment side trim above wheel housing (left side)

8 - Control unit for navigation system with CD drive -J401-

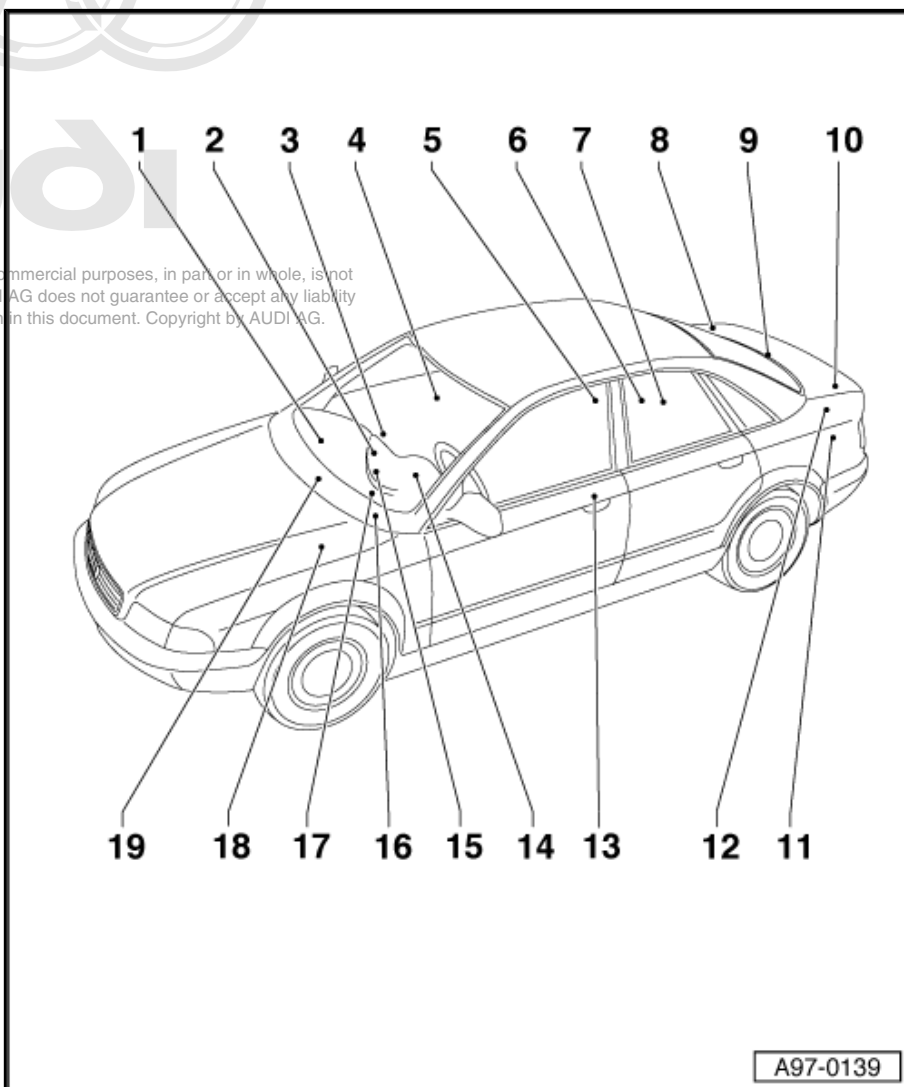
- ☐ In luggage compartment (right-side).

9 - Navigation aerial -R50- - GPS

- ☐ Beneath rear shelf (centre)

10 - BOSE power amplifier

- ☐ On left of luggage compartment



A97-0139

11 - Telephone transmitter and receiver unit -R36-

- ☐ On left of luggage compartment

12 - CD changer -R41-

- ☐ On left of luggage compartment

13 - Control unit for lock cylinder heating, left -J210-

- ☐ In top of front door

14 - Combi-processor in dash panel insert -J218-

- ☐ Integrated in instrument cluster

15 - Radio -R-

- ☐ In centre console

16 - Engine control unit

- ☐ In electronics box (plenum chamber)

17 - Operating electronics control unit for navigation -J402-

- ☐ Behind instrument cluster on central tube for dash panel

18 - ABS control unit -J104-

- ☐ On hydraulic unit in engine compartment

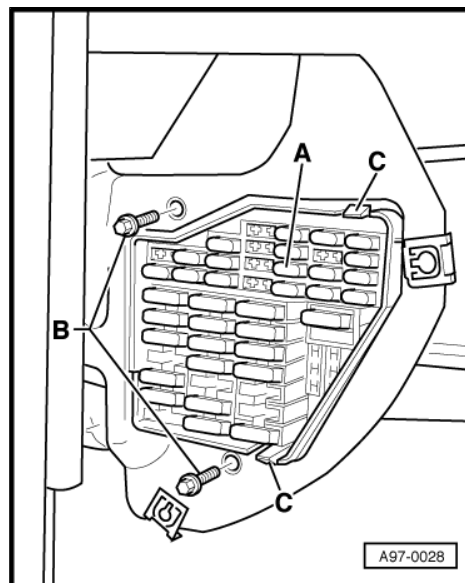
19 - Airbag control unit -J234-

- ☐ Beneath centre console on centre tunnel

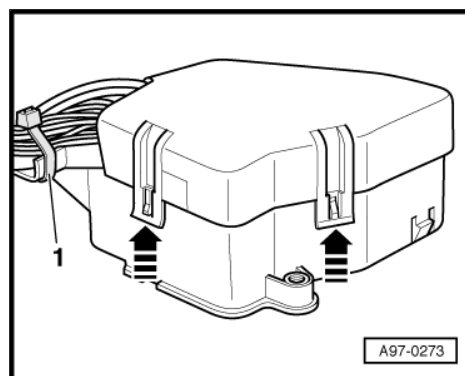
1.4 Removing and installing fuse holder

Removing

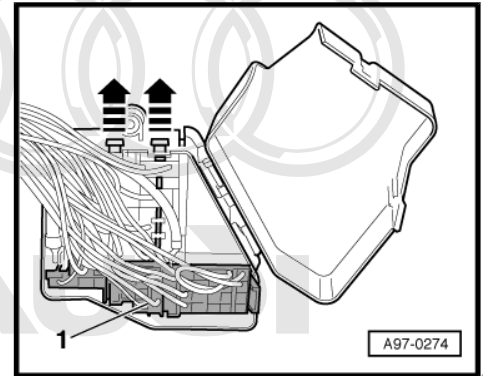
- With ignition switched off, disconnect earth cable at battery
⇒ [page 3](#) .
- Remove driver's storage compartment ⇒ Rep. Gr. 68 .
- Unscrew bolts -B- for fuse holder -A-.
- Release top and bottom retaining clips -C- and detach fuse holder from central tube for dash panel.
- Disengage wiring harness at central tube for dash panel and move it clear.



- Cut open cable tie -1-.
- Release cover for fuse holder -arrows-.
- Detach fuses at fuse holder.



- Detach retaining strip for connectors -arrows- and take connectors out of fuse holder.
- Unclip socket -1-.



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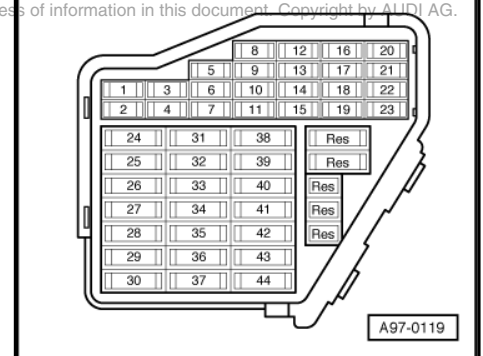
Note

Exact assignment of contacts in fuse holder can be found in applicable current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

Installing

Installation is carried out in the reverse order; note the following:

- Install driver's storage compartment ⇒ Rep. Gr. 68 .
- Connect battery. Additional steps required ⇒ [page 4](#) .



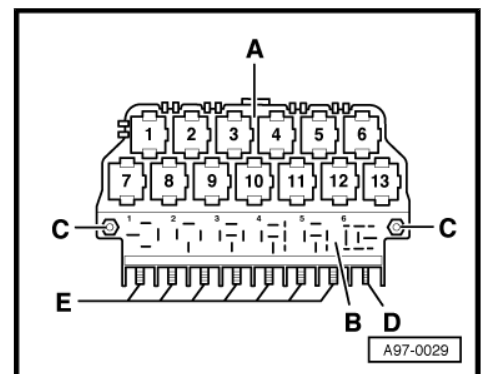
Tightening torque

Component	Nm
Fuse holder to central tube for dash panel	2

1.5 Removing and installing micro central electrics

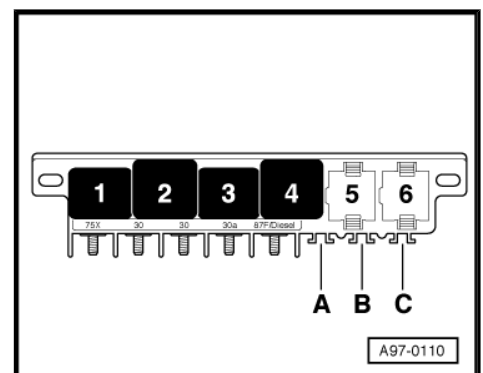
Removing

- With ignition switched off, disconnect earth cable at battery ⇒ [page 3](#) .
- Remove driver's storage compartment ⇒ Rep. Gr. 68 .
- Mark assignment of wires at screw connections -E- and -D-.
- Unscrew nuts -C-.
- Remove micro central electrics -B-.



Note

Exact assignment of micro central electrics can be found in appropriate current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.



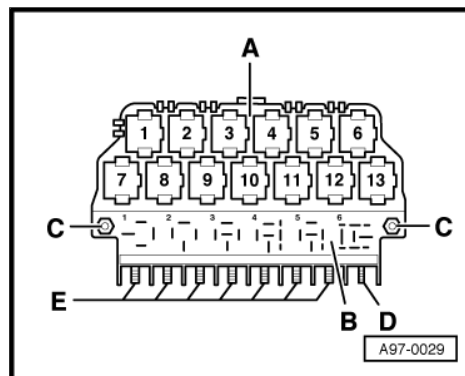
Installing

Installation is carried out in the reverse order; note the following:

- Attach wires at screw connections -E- and -D- according to markings.
- Install driver's storage compartment ⇒ Rep. Gr. 68 .
- Connect battery. Additional steps required ⇒ [page 4](#) .

Tightening torques

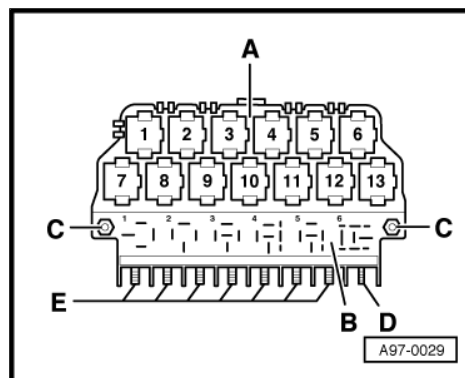
Component	Nm
Micro central electrics to retainer	2
Screw connection for electrical wires	11



1.6 Removing and installing 13-position relay carrier

Removing

- With ignition switched off, disconnect earth cable at battery ⇒ [page 3](#) .
- Remove driver's storage compartment ⇒ Rep. Gr. 68 .
- Unscrew nuts -C-.
- Detach micro central electrics -B- with wires -E- and -D- connected.
- Remove 13-position relay carrier -A-.
- Unclip fuse holders from 13-position relay carrier.
- Pull out relays or control units and then unclip corresponding relay carrier.



Note

Exact assignment of 13-position relay carrier can be found in applicable current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

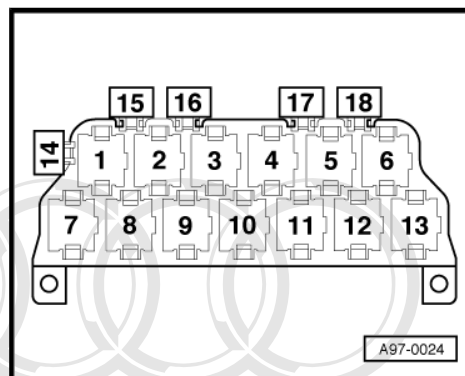
Installing

Installation is carried out in the reverse order; note the following:

- Install driver's storage compartment ⇒ Rep. Gr. 68 .
- Connect battery. Additional steps required ⇒ [page 4](#) .

Tightening torque

Component	Nm
13-position relay carrier with micro central electrics to retainer	2



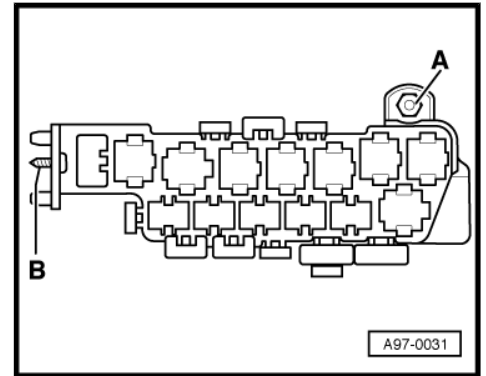
1.7 Removing and installing 8-position relay carrier

Removing

- With ignition switched off, disconnect earth cable at battery ⇒ [page 3](#) .
- Remove driver's storage compartment ⇒ Rep. Gr. 68 .

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- Remove 13-position relay carrier ⇒ [page 228](#) .
- Unscrew nut -A- and self-tapping screw -B-.
- Unclip fuse holders from 8-position relay carrier.
- Pull out relays or control units and then unclip corresponding relay carrier.
- Pull 8-position relay carrier out of retainer.



Note

Exact assignment of 8-position relay carrier can be found in applicable current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

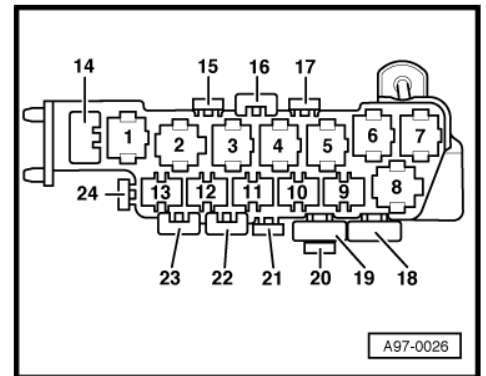
Installing

Installation is carried out in the reverse order; note the following:

- Install 13-position relay carrier ⇒ [page 228](#) .
- Install driver's storage compartment ⇒ Rep. Gr. 68 .
- Connect battery. Additional steps required ⇒ [page 4](#) .

Tightening torque

Component	Nm
8-position relay carrier to retainer	2



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1.8 Removing and installing A-pillar connector point (left-side)

Removing

- With ignition switched off, disconnect earth cable at battery ⇒ [page 3](#) .
- Remove lower A-pillar trim ⇒ Rep. Gr. 70 .
- Press retaining clip in direction of -arrow- and detach connector point -1- from A-pillar.
- Unclip fuse holder from connector point.
- Pull out relays or control units and then unclip corresponding relay carrier.



Note

Exact assignment of connector point can be found in appropriate current flow diagram ⇒ *Current flow diagrams, Electrical fault finding and Fitting locations*.

Installing

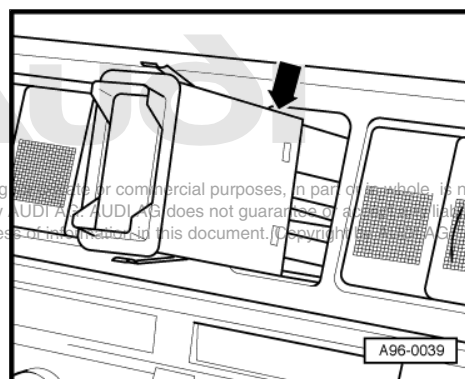
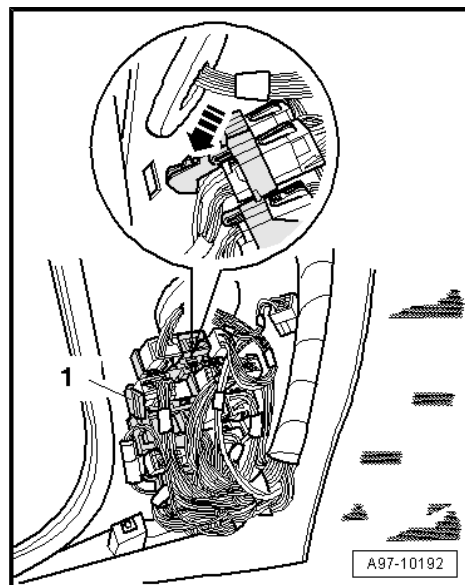
Installation is carried out in the reverse order; note the following:

- Install lower A-pillar trim ⇒ Rep. Gr. 70 .
- Connect battery. Additional steps required ⇒ [page 4](#) .

1.9 Removing and installing hazard warning light relay -J2- - vehicles up to 01.1999

The hazard warning light relay -J2- -arrow- is integrated in the hazard warning light switch -E3- and cannot be renewed separately if defective.

- Renewing hazard warning light switch -E3- ⇒ [page 186](#) .



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1.10 Removing and installing A-pillar connector point (right-side)

Removing

- With ignition switched off, disconnect earth cable at battery ➤ [page 3](#) .
- Remove lower A-pillar trim ➤ Rep. Gr. 70 .
- Press retaining clip in direction of -arrow- and detach connector point -1- from A-pillar.
- Unclip fuse holder from connector point.
- Pull out relays or control units and then unclip corresponding relay carrier.



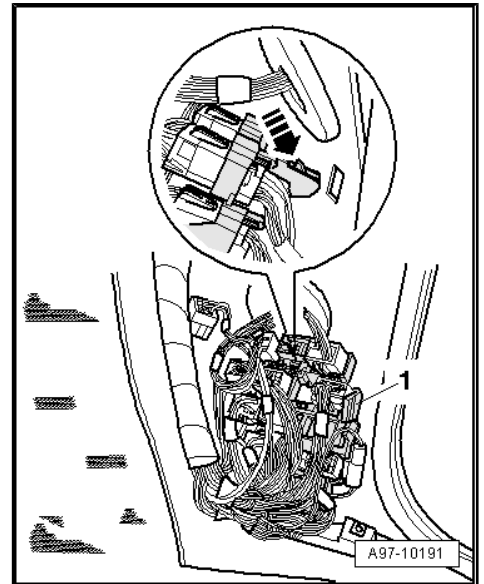
Note

Exact assignment of connector point can be found in applicable current flow diagram ➤ Current flow diagrams, Electrical fault finding and Fitting locations.

Installing

Installation is carried out in the reverse order; note the following:

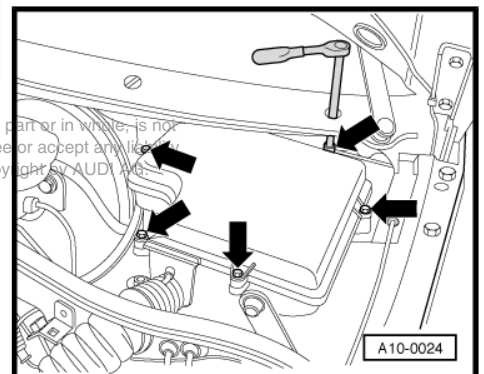
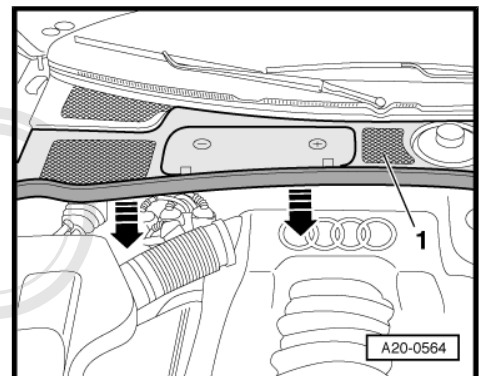
- Install lower A-pillar trim ➤ Rep. Gr. 70 .
- Connect battery. Additional steps required ➤ [page 4](#) .



1.11 Removing and installing electronics box (plenum chamber)

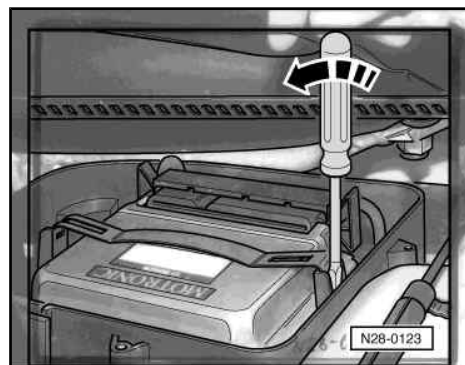
Removing

- Operate "touch-wipe function" and allow wiper arms to move to vertical position.
- Switch off ignition and take out ignition key.
- With ignition switched off, disconnect earth cable at battery ➤ [page 3](#) .
- If fitted, detach rubber seal of plenum chamber cover in direction of -arrow-.
- Remove plenum chamber cover -1- to front.
- Pry cap out of left section of cowl panel grille.
- Unscrew bolts -arrows-.
- Remove cover for electronics box (plenum chamber).



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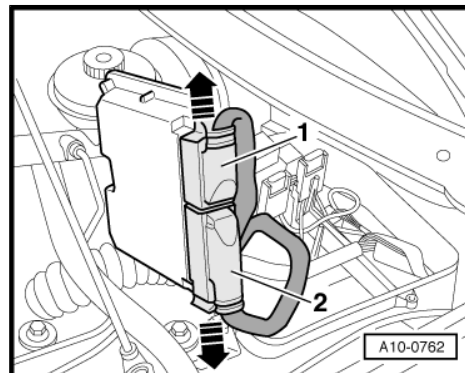
- Use screwdriver to carefully pry off retaining strap -arrow-.



- Lay aside engine control unit with connectors -1- and -2- attached.

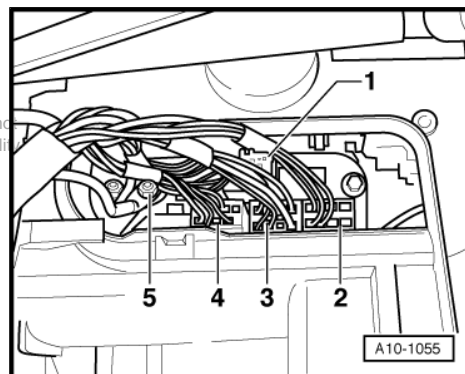

Note

Disregard -arrows-.

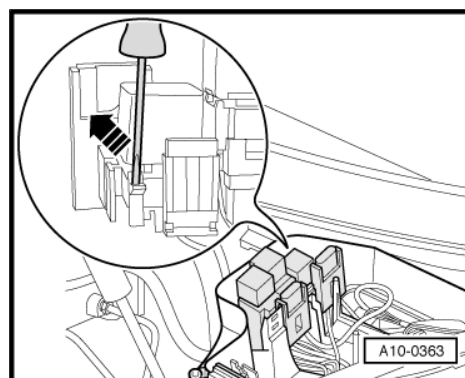


- Unplug electrical connectors -1 ... 4- at connector console.
- If fitted, unscrew electrical wire -5-.

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- If fitted, release retaining clip -arrow- and lift auxiliary relay carrier out of electronics box.
- Unplug connectors at rear of connector console.
- Pull engine wiring harness together with rubber grommet through opening in electronics box (plenum chamber).



- Remove the 2 nuts -A-.
- Lift electronics box at rear until studs are free.
- Pull electronics box out of mount -B-.

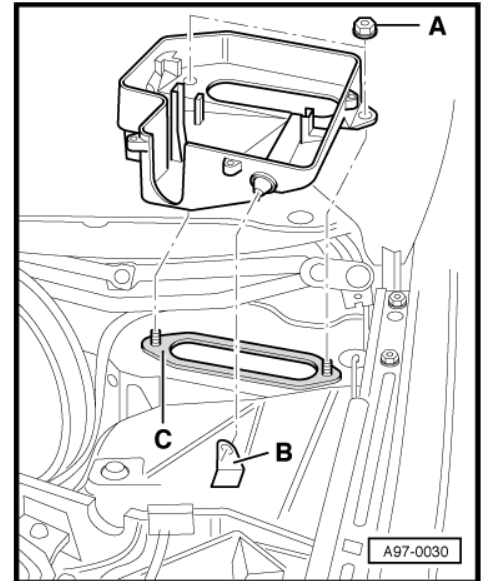
Installing

Installation is carried out in the reverse order; note the following:

- When fitting seal -C-, ensure that the opening in the body is not covered.
- Connect battery. Additional steps required ⇒ [page 4](#) .

Tightening torques

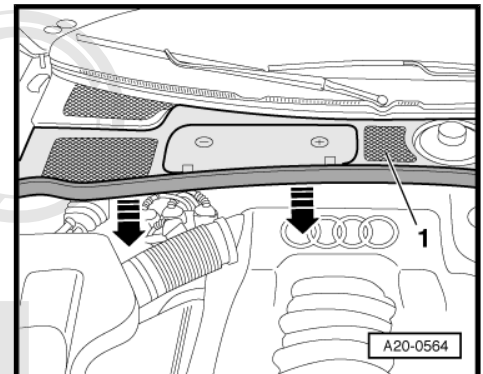
Component	Nm
Electronics box (plenum chamber) to body	4
Cover to electronics box (plenum chamber)	4
Screw connection for electrical wires	9



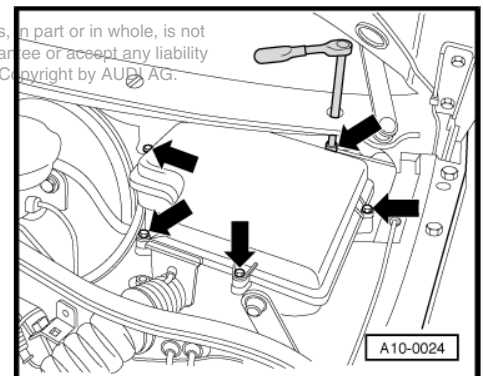
1.12 Removing and installing 3-position relay carrier in electronics box (plenum chamber)

Removing

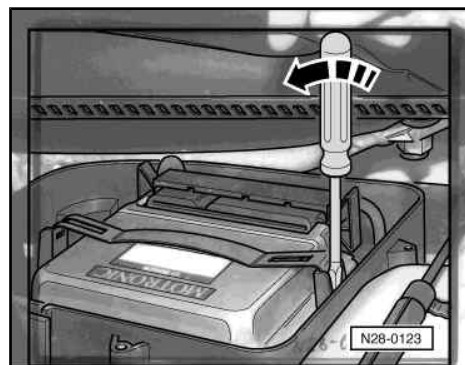
- Operate “touch-wipe function” and allow wiper arms to move to vertical position.
- Switch off ignition and take out ignition key.
- With ignition switched off, disconnect earth cable at battery ⇒ [page 3](#) .
- If fitted, detach rubber seal of plenum chamber cover in direction of -arrow-.
- Remove plenum chamber cover -1- to front.



- Pry cap out of left section of cowl panel grille.
- Unscrew bolts -arrows-.
- Remove cover for electronics box (plenum chamber).



- Use screwdriver to carefully pry off retaining strap -arrow-.

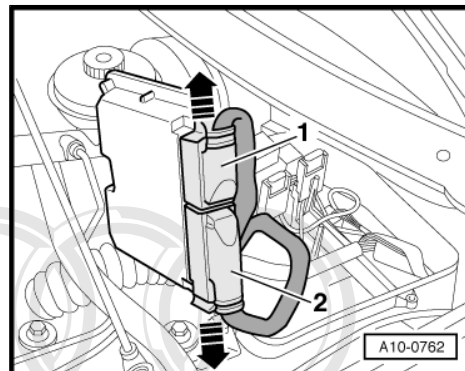


- Lay aside engine control unit with connectors -1- and -2- attached.

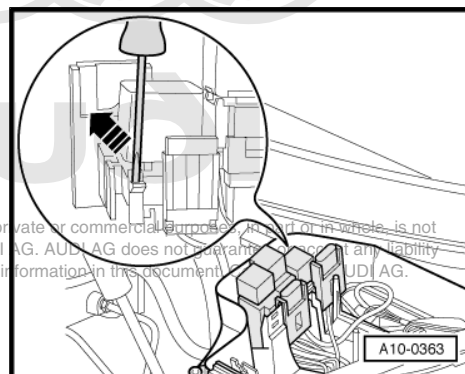


Note

Disregard -arrows-.



- Release retaining clip -arrow- and lift 3-position relay carrier out of electronics box.
- Pull out relays or control units and unclip corresponding sockets for multi-pin connectors.



Note

Exact assignment of 3-position relay carrier in electronics box (plenum chamber) can be found in applicable current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

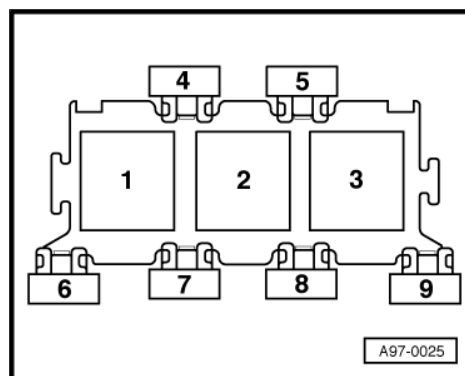
Installing

Installation is carried out in the reverse order; note the following:

- Connect battery. Additional steps required ⇒ [page 4](#) .

Tightening torque

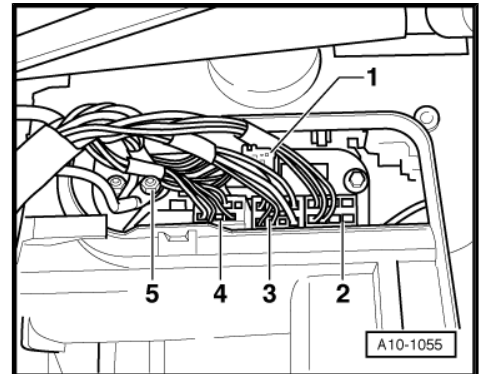
Component	Nm
Cover to electronics box (plenum chamber)	3



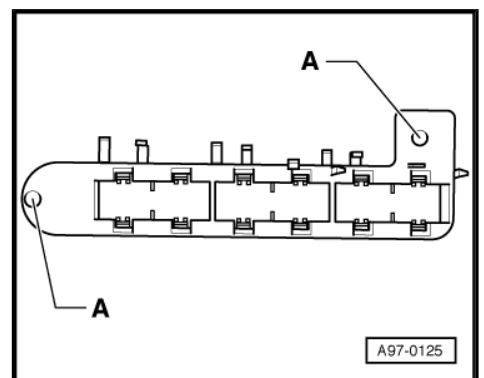
1.13 Removing and installing connector point in electronics box (plenum chamber)

Removing

- Remove electronics box (plenum chamber) ⇒ [page 231](#) .
- Unplug electrical connectors -1 ... 4- at connector console.
- If fitted, unscrew electrical wire -5-.



- Unscrew bolts -A-.
- Disengage wiring harness at connector point.
- Turn connector point and take it out of opening in plenum chamber.
- Release retaining clips and remove socket from connector point.
- Unclip connector housing from connector point.
- Detach connector point.



Note

Exact assignment of connector point in electronics box (plenum chamber) can be found in appropriate current flow diagram ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

Installing

Installation is carried out in the reverse order; note the following:

- Connect battery. Additional steps required ⇒ [page 4](#) .

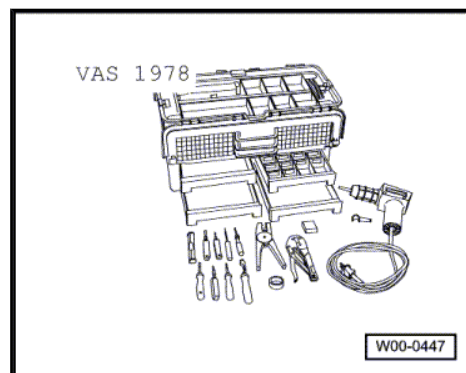
Tightening torques

Component	Nm
Connector point in electronics box (plenum chamber) to body	3
Screw connection for electrical wires	9

2 Repairing wiring and plug connectors

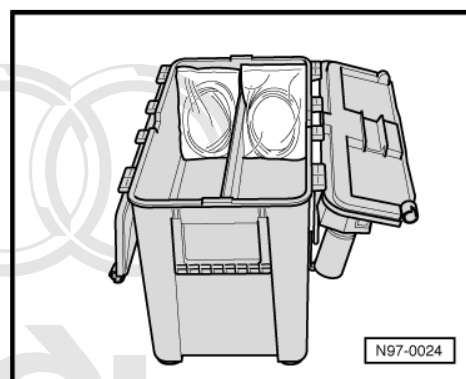
Special tools and workshop equipment required

- ◆ Wiring harness repair set -VAS 1978-



Note

- ◆ *Wiring harness and connector repairs on the vehicle electrical system are only to be performed using wiring harness repair set -VAS 1978-.*
- ◆ *An instruction manual is included in the wiring harness repair set -VAS 1978-, in which the procedure for repairs is described in detail.*



2.1 General information on repairs to the vehicle electrical system



Caution

- ◆ *Wiring harness and connector repairs on the vehicle electrical system are only to be performed using wiring harness repair set -VAS 1978-.*
- ◆ *Pay attention to the relevant regulations in the individual countries.*
- ◆ *Disconnecting the battery earth cable prevents accidents when working on the vehicle electrical system. With ignition switched off, disconnect earth cable at battery ⇒ **page 3**.*
- ◆ *Pay attention to stickers on vehicle pointing out components with high voltage. Remaining voltage must be dissipated before commencing repair work.*

- ◆ Before commencing repair work, always eliminate cause of damage, e.g. sharp body edges, defective electrical components, corrosion etc.
- ◆ Do not loosen earth straps on body if this can be avoided (danger of corrosion).
- ◆ Further information, for example about removal and installation of individual components, can be found in the appropriate Workshop Manual.

2.2 Notes on repairs to wiring harnesses and connectors

- ◆ Soldering is not permitted when repairing the vehicle electrical system.
- ◆ Do not perform repairs on heat-shrink sleeves. Route a new wire along the defective wire if necessary.
- ◆ Screened wires, e.g. on speed senders and knock sensors, are NOT to be repaired. These wires must be replaced complete if damaged.
- ◆ Only use yellow wires for repairs to wiring. Mark location of repair with yellow insulating tape.
- ◆ Yellow wiring and locations with yellow insulating tape on wiring harness designate a previous repair.

2.3 Notes on repairs on airbag and belt tensioner wiring harness



Caution

- ◆ *To maintain the repair standards required by the Audi factory, repairs on the airbag and belt tensioner wiring harnesses may only be performed on the in-vehicle wiring using wiring harness repair set -VAS 1978- and genuine spare parts (connector housings, contacts, wiring).*
 - ◆ *Wires on the individual airbag modules are NOT to be repaired.*
 - ◆ *If wires or connectors at airbag modules are damaged, the corresponding airbag modules must be renewed for safety reasons.*
- ◆ Repair operations must be recorded in the Audi Service Schedule under "Workshop entries" with a brief outline of the repair work completed, company stamp and signature.
 - ◆ Any warranty claims made under the AUDI AG factory warranty are invalid if airbag wiring harness repairs have not been performed using genuine replacement parts and wiring harness repair set -VAS 1978- .

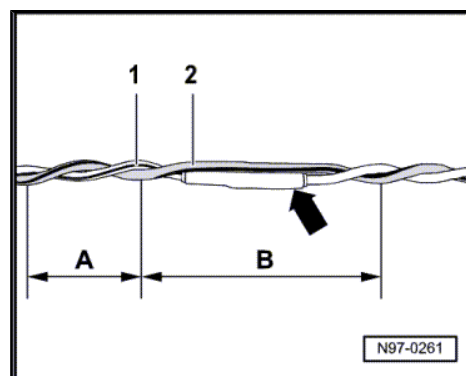


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2.4 Notes for repairs on CAN bus wires

- ◆ Use an unscreened two-wire line -1- and -2- (cross-section 0.35 mm² or 0.5 mm²) as CAN bus wire.
- ◆ The CAN bus wires are colour-coded as follows:

Drive CAN High	orange/black
Convenience CAN High	orange/green
Infotainment CAN High	orange/violet
CAN Low (all)	orange/brown
- ◆ Only use yellow wires for repairs to wiring. Mark location of repair with yellow insulating tape.
- ◆ Both bus wires must be of the same length when repairing. When twisting the wires -1- and -2-, length of twist -A- = 20 mm must be attained.
- ◆ When making repairs, there must be no untwisted section of wire which is longer than -B- = 50 mm, e.g. in the vicinity of heat-shrink sleeves -arrow-.



2.5 Repairing wiring with cross-section 0.22 mm² or 0.35 mm²

Procedure

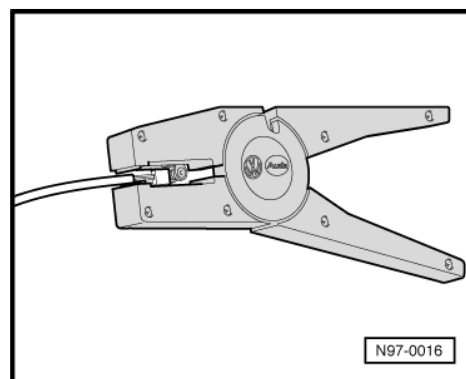


Note

- ◆ *Wiring harness repair set -VAS 1978- contains repair wires of three different cross-sections (0.5 mm², 1.5 mm², 4.0 mm²) and the corresponding crimp connectors.*
- ◆ *0.5 mm² repair wire must be used for repairing 0.35 mm² wire.*

Perform the repair as follows:

- Strip the ends of the 0.22 mm² or 0.35 mm² wires to a length of 12 ... 14 mm using the stripping pliers -VAS 1978/3- .
- Fold back half of the stripped wire ends.
- Strip the ends of the 0.5 mm² repair wire to a length of 6 ... 7 mm using the stripping pliers -VAS 1978/3- .

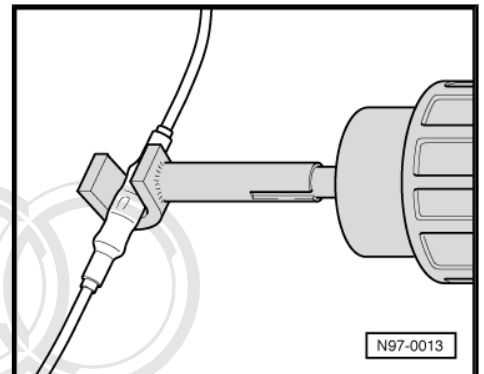
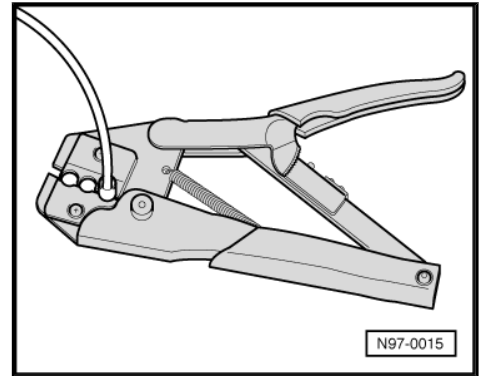


- Slip crimp connector over ends of wires and crimp on both sides using crimping tool -VAS 1978/1- .

 Note

Be sure to select the correct red crimp insert -VAS 1978/24- for 0.5 mm² wires.

- Do NOT crimp the insulation on the wires.
- After crimping, you must shrink-fit the crimp connector using the hot-air blower, 220 V/ 50 Hz -VAS 1978/14- and hot-air blower shrink fitting -VAS 1978/15- .
- Crimp connector must be heated working outwards from centre until it is completely sealed and adhesive emerges.
- Set the hot air blower to the correct temperature; refer to ⇒ operating manual for -VAS 1978- .
- When shrink-fitting, ensure no other wires, plastic components or insulating materials are damaged by the hot nozzle.
- If repair wire was previously wrapped, yellow insulating tape must again be wound around this point; reattach wire with a cable tie if necessary.
- Connect battery. Additional steps required ⇒ [page 4](#) .



2.6 Renewing aerial wires

A new repair concept has been developed for repairing aerial wires. Instead of a complete aerial wire, connecting wires of different lengths and various adapter leads are now available as replacement parts.

Spare parts are listed in the Electronic Parts catalogue (ETKA):
⇒ Special catalogue; Electrical connectors; Genuine accessories; Subgroup 35; from chart 035-20 .

 Note

- ◆ *Aerial wires are NOT to be repaired. The wiring must be renewed using connecting wires and adapter leads available as genuine replacement parts.*
- ◆ *These genuine replacement parts are suitable for all wire cross-sections and aerial wires which have to be renewed.*
- ◆ *Renewing of individual aerial connectors during repair work is not intended.*
- ◆ *The replacement wires can be used for all previously fitted wiring cross-sections on all Audi models.*
- ◆ *All adapter leads and connecting wires are suitable for all transmission and reception signals.*
- ◆ *The repair method can also be used for testing and service installation purposes (e.g. retrofitting).*

2.7 Aerial wire - exploded view

Example:

Aerial wire from radio to aerial defective

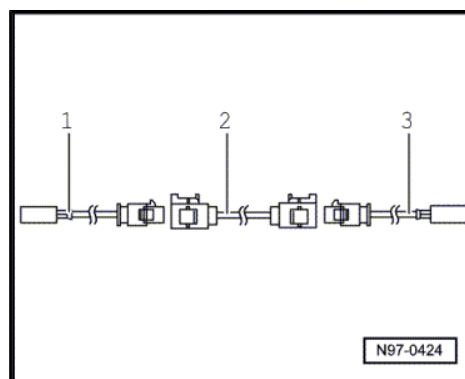
The following are required for repair purposes:

- 1 - Adapter wire for connection to radio; length approx. 30 cm
- 2 - Connecting wire; available in various lengths
- 3 - Adapter wire for connection to aerial; length approx. 30 cm

- Unplug connectors of defective aerial wire from devices.
- Determine routing of defective aerial wire in vehicle and measure out overall length of aerial connection to be replaced in vehicle.

Total length of aerial connection = length of adapter leads -1- and -3- required as well as connecting wire -2-.

- Subtract 60 cm from total length of aerial connection measured to calculate required length of connecting wire needed.
- Procure the necessary adapter leads and connecting wire in the calculated length as genuine replacement parts as per the Parts catalogue.
- Cut connectors off defective aerial wire.
- Leave rest of defective aerial wire in vehicle.
- Connect adapter leads to units in vehicle.
- Fit connectors with a piece of foam sheathing to prevent rattling noise.
- Lay and secure connecting wire parallel to old aerial wire.



Note

Aerial wires must not be kinked or bent excessively. Bending radius must not be less than 50 mm.

- Attach connecting wire to adapter leads.
- To prevent rattling noise, apply a suitable piece of foam sheathing to aerial connectors.
- Check operation.

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