

Workshop Manual FABIA 2000 ►

Electrical System Edition 08.99



List of Supplements to Workshop Manual

FABIA 2000 ►

Electrical System

Edition 08.99

Supplement	Edition	Subject	Article Number
	08.99	Basic Edition	S00.5304.00.20
1	11.99	Supplement to Basic Edition	S00.5304.01.20
2	03.00	Coding the immobilizer	S00.5304.02.20
3	05.00	Modifications and supplements in Rep. Gr. 27, 92, 94, 96	S00.5304.03.20
4	04.01	Navigation system, parking aid, telephone preinstallation, radio operation, warning system, text revisions	S00.5304.04.20
5	06.01	Modifications in Rep. Gr. 27, 90, 91 and 94	S00.5304.05.20
6	09.01	Xenon headlight	S00.5304.06.20
7	02.02	Dash panel insert with WIV	S00.5304.07.20
8	06.02	Dash panel insert, on-board power network control unit, roof antenna	S00.5304.08.20
9	06.03	Dash panel insert with WIV, 1.2 ltr./47 kW, 1.4 ltr./55 kW TDI PD and 1.9 ltr./96 kW TDI PD Engines, Radio with CAN databus communication, Additional brake light	S00.5304.09.20
10	10.03	Modifications MR04	S00.5304.10.20
11	05.04	Dash panel insert, on-board power network control unit, fog light	S00.5304.11.20
12	12.04	Battery, rear window washer system, battery - main fuse box	S00.5304.12.20

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27 – Starter, Power supply

27-1 Battery



WARNING!

Disconnect earth strap from the battery before commencing work on the electrical system.

When working on the battery wear proper protection and observe safety precautions.

Please observe the following additional instructions after working on the airbag system or on the electrical belt tighteners for the safety belts:

- ◆ Switch off the ignition before attaching the battery.
- ◆ Nobody should be in the vehicle when the battery is being connected.

Battery handling instructions

- ◆ Neither grease nor oil the battery terminals.
- ◆ The battery terminals must only be fitted by hand without using any force in order to avoid damaging the battery housing.
- ◆ The tightening torque of the additional terminals at the battery is 6 Nm -arrow-.

After connecting the battery perform:

- Encode radio sets fitted with anti-theft coding
⇒ Operating Instructions for car radio.
- Set the clock ⇒ Inspection and Maintenance;
Rep. Gr. 02.
- Initialise power windows ⇒ Inspection and Maintenance;
Rep. Gr. 02.
- Perform automatic test sequence ⇒ Inspection and Maintenance;
Rep. Gr. 02.



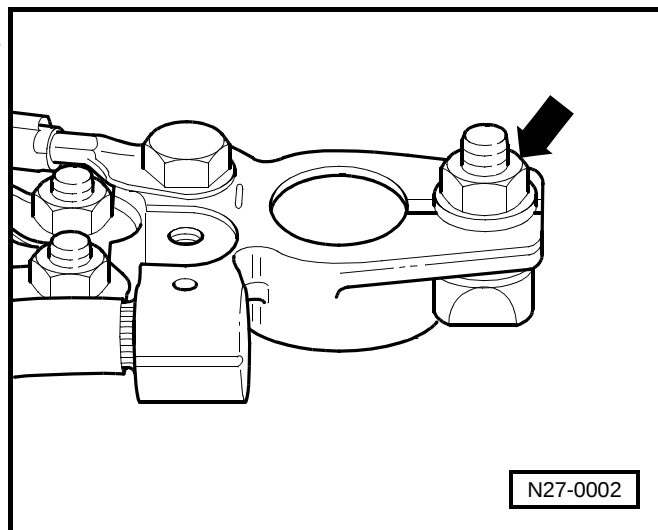
Note

If the fault memory of the engine control unit is erased, generate readiness code ⇒ Relevant Engine - Fuel Injection; Rep. Gr. 01.



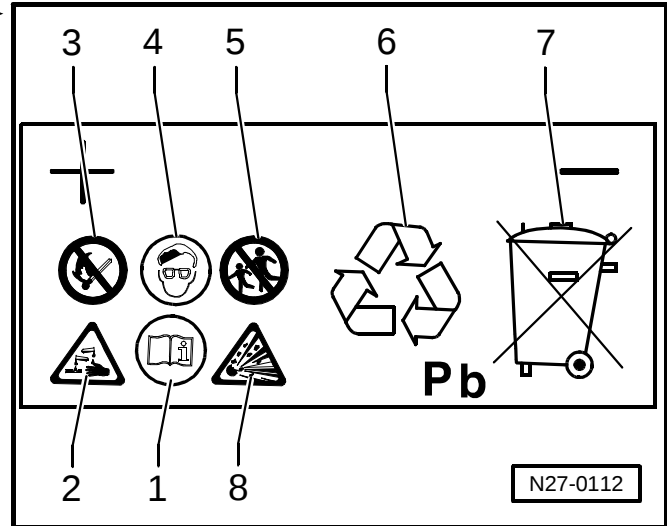
Note

When the battery is reconnected remember to check the vehicle equipment (radio, clock, convenience electrics etc.) as specified in the Workshop Manual or the Owner's Manual.



Warning instructions and safety precautions for lead acid batteries ►

- 1 - Observe the instructions on the battery, in the Workshop Manual Electrical System and in the Owner's Manual.
- 2 - Risk of acid burns:
 - ♦ Battery acid is highly caustic, for this reason always wear protective gloves and eye protection.
 - ♦ Do not tilt battery as otherwise acid may flow out of the vent openings.
- 3 - No fire, sparks, naked lights or smoking:
 - ♦ Avoid creating sparks when handling cables and electrical equipment.
 - ♦ Avoid short circuits.
- 4 - Wear eye protection.
- 5 - Keep acid and batteries away from children.
- 6 - Disposal:
 - ♦ Old batteries must be disposed of in compliance with the country specific regulations.
- 7 - Never dispose of old batteries as domestic waste!
- 8 - Risk of explosion:
 - ♦ A highly explosive gas mixture is produced when charging batteries.



Inspecting electrolyte level

- Only top up with distilled water if the electrolyte level has dropped below the „MIN“ marking

Note

- ♦ If the battery electrolyte level exceeds the „MAX“ marking the electrolyte will leak from the battery during operation (it is necessary to skim off electrolyte). An electrolyte level that is too low (below „MIN“ marking) shortens the battery life considerably. Top up with distilled water.
- ♦ The battery plugs must always be inserted when charging the battery, measuring the voltage and conducting a test under load.
- ♦ Always insert the plugs with an O-ring after completing the test of the electrolyte density.

Measuring no-load voltage

Special tools, test and measuring equipment and auxiliary items required

- ♦ Handheld multimeter (e.g. -V.A.G 1526A-)
- Switch off ignition.
- Disconnect earth strap of the battery.

Wait at least 2 hours during which the battery must not be subjected to any load or charge:

- Use the handheld multimeter to measure the battery voltage.

The battery no-load voltage must not fall below 12.5 V.

If the handheld multimeter indicates 12.5 V or more, the battery voltage is O.K.

If the handheld multimeter a battery voltage of less than 12.5 V:

- Charge battery ⇒ 27-1 page 4.

After charging wait at least 2 hours during which the battery must not be subjected to any load or charge:

- Use the handheld multimeter to measure the battery voltage.

The battery no-load voltage must not fall below 12.5 V.

- If the no-load voltage is not O.K., replace the battery.

Measuring voltage under load

- Disconnect earth strap of the battery.
- The voltage can be tested by using a battery tester (e.g. -V.A.G 1498-).

The load current and the minimum voltage differ according to the capacity of the battery, refer to the sticker on the tester or the table below.

Battery capacity [Ah]	Cold test current [A]	Load current [A]	Minimum voltage (limit value) [V]
36	175	100	10,0
40 - 49	220	200	9,2
50 - 60	265 - 280	200	9,4
61 - 80	300 - 380	300	9,0
81 - 110	380 - 500	300	9,5

If the voltage measured under a load lasting for 5 to 10 seconds is less than the minimum voltage:

- Replace battery.

Explanations regarding battery load test:

The battery voltage drops during this test as a result of the high load on the battery (a high current flows).

If the battery is O.K., the voltage drops only as far as the minimum voltage.

If the battery is faulty or only has a weak charge, the battery voltage will drop very rapidly below the specified minimum voltage.

After completion of the test, this low voltage is retained for a lengthy period, the voltage rises only slowly again.

If the voltage measured under a load lasting for 5 to 10 sec. is less than the minimum voltage, then the battery is discharged or defective and the electrolyte level must be checked.

Testing electrolyte density

- ♦ The electrolyte density, in combination with the voltage measurement (under load), provides accurate information concerning the charge level of the battery. Use a hydrometer for the test.
- ♦ The greater the density of the electrolyte extracted from the battery, the more the float rises. The electrolyte density can be read off on the scale as a specific weight (in kg/dm³).

The following measurements must be achieved:

Charge state in moderate climatic zones	Specific density (in kg/dm ³)
discharged	1,15
half charged	1,22
well charged	1,28

Charge state in tropical climatic zones	Specific density (in kg/dm ³)
discharged	1,08
half charged	1,16
well charged	1,23

Charging battery



Caution!

The battery plugs must always be securely tightened when charging the battery, measuring the voltage and conducting a test under load to ensure they are really sealed.

Do not smoke or use a naked light in rooms in which batteries are being charged. The reason is that a gas is formed by the charging process in the battery and this gas can easily ignite.

Frozen batteries must be replaced.

Special tools, test and measuring equipment and auxiliary items required

- ♦ Battery charger.

**Note**

- ◆ *The battery must be at a temperature of at least 10 °C.*
- ◆ *Batteries must not be quick-charged otherwise they may suffer damage.*
- ◆ *If a severely discharged battery is quick-charged, it will not accept any charge current or will be indicated as properly charged too soon as a result of so-called »surface charging«. Such batteries then appear to be OK.*

Charging a battery

- Switch off battery charger.
- Switch off ignition.
- First of all, disconnect the earth strap of the battery and then the positive cable of the battery.
- Connect positive cable of the battery charger to the positive terminal of the battery.
- Connect negative cable of the battery charger to the negative terminal of the battery.
- Set the charge current on the battery charger according to the battery capacity.
- Switch on battery charger.

Procedure for charging a severely discharged battery**Explanations regarding severely discharged batteries:**

Batteries which have not been operational for a long time, e.g. in stock vehicles, discharge themselves.

A battery is severely discharged if the no-load voltage has dropped below 11.6 V. Measure no-load voltage
⇒ 27-1 page 2.

If a battery is severely discharged, the battery electrolyte (sulphuric acid/water mixture) consists practically only of water as the sulphuric acid portion is greatly reduced.

Severely discharged batteries sulphate, i.e. the entire surface of the plates of the battery harden.

If a severely discharged battery is re-charged immediately after losing its charge, the sulphate deposit forms again.

If such batteries are not re-charged, the plates continue to harden and this restricts the battery's ability to accept a charge. This results in a loss of battery power.

Severely discharged batteries must be charged with a low charge current by adopting the following procedure:

- Set the charge current to no more than 10 % of the battery capacity, i.e. the charge current for a 60 Ah battery is thus of maximum 6 A (Amperes).

Charge battery ⇒ 27-1 page 5.

Severely discharged batteries must on no account be quick-charged.

Battery with a magic eye

Identification marks

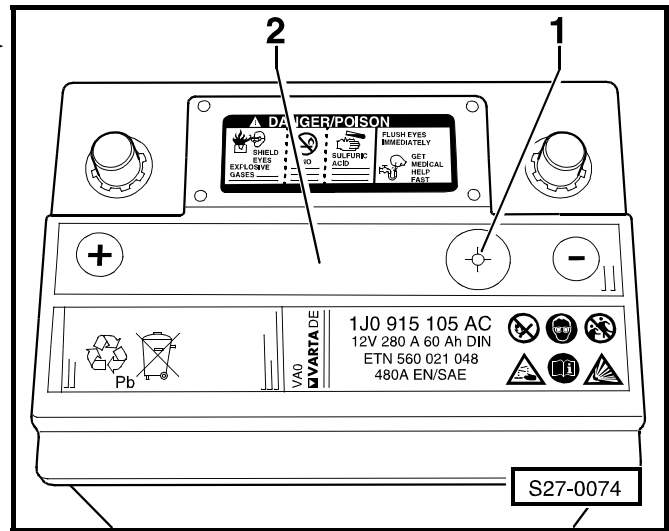
- ♦ The magic eye -1- informs one about the acid level and the charge left in the battery.
- ♦ There are three different eye colours which can be obtained:

green - the battery is adequately charged up

black - the battery is flat

colourless or yellow - the acid is in a critical condition, top up with distilled water ⇒ 27-1 page 6

We recommend to replace batteries which are older than 5 years of age.



Topping up the electrolyte level

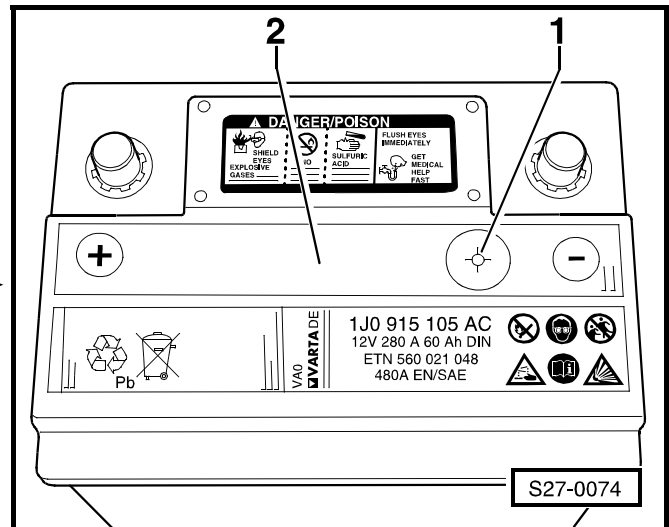
Special tools, test and measuring equipment and auxiliary items required

- ♦ Filling bottle -V.A.S 5045-



Note

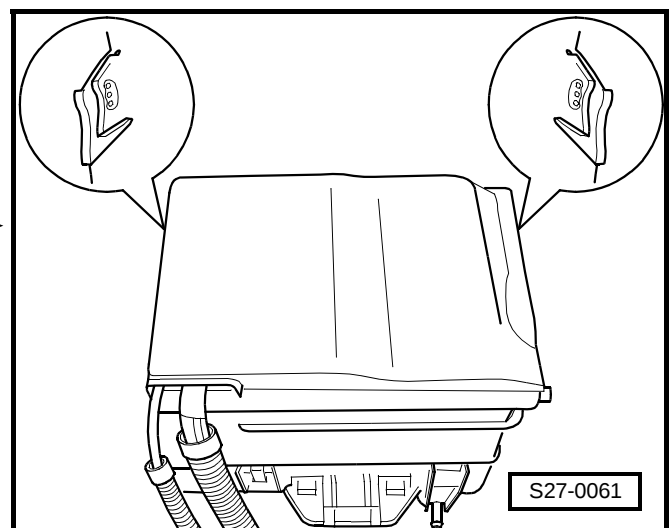
- ♦ The supports on the filling bottle -V.A.S 5045- prevent overfilling of the battery when topping up with distilled water.
- ♦ The battery handling instructions should be observed when working on the battery ⇒ 27-1 page 1.
- Pull the protective foil -2- off the battery.
- Screw out the plugs.
- Fill up the filling bottle -V.A.S 5045- with distilled water.
- Top up -V.A.S 5045- with distilled water.
- Screw in the plugs.
- Glue on the protective foil.



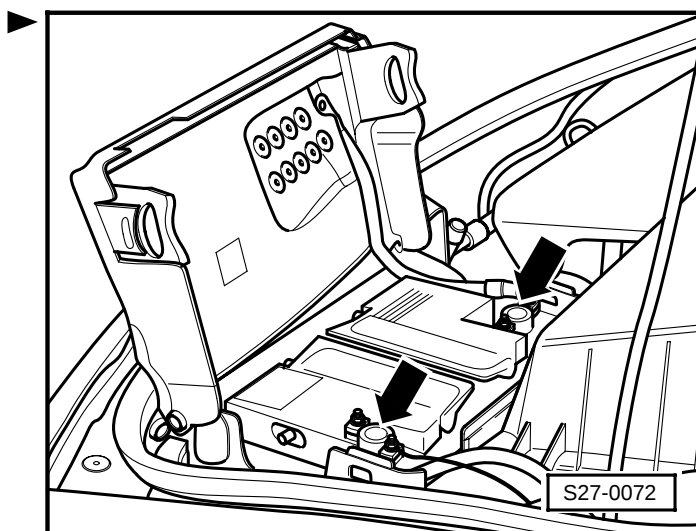
Removing and installing the battery

Removing ► 06.01

- Press the two catches on the right and left of the fuse carrier on the battery outwards and fold the fuse carrier and cover open.

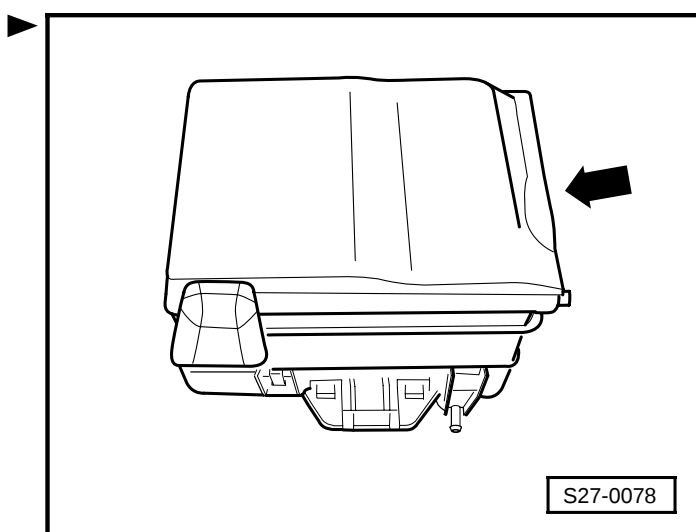


- Disconnect the two battery terminals -arrows-.

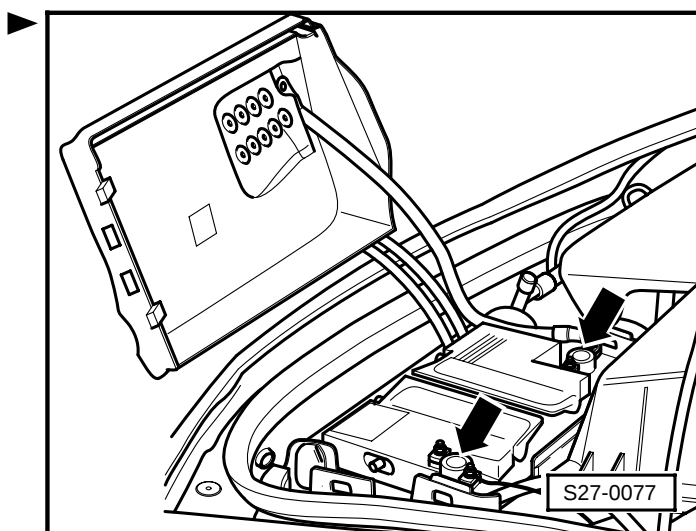


Removing 07.01 ►

- Lift the fuse carrier -arrow- from the battery tray and place to the side.



- Disconnect the two battery terminals -arrows-.



Continued for all vehicles

- First of all, disconnect the earth strap of the battery and then the positive cable of the battery.
- Release screw -arrow- (22 Nm) and remove the locking plate. ►
- Remove battery from tray.

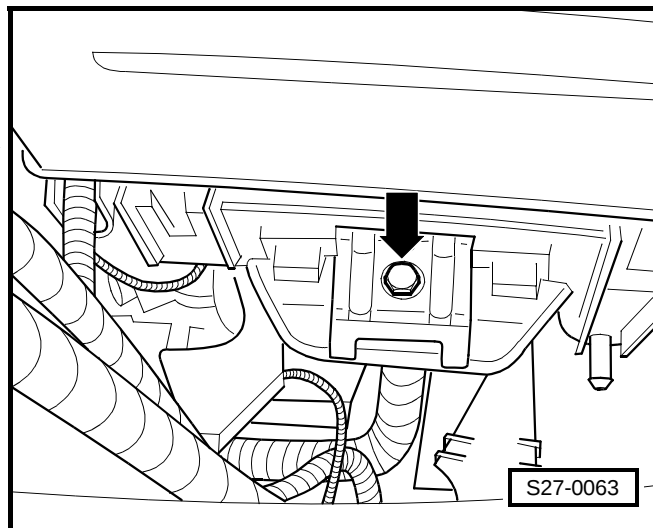
Installing

- Installation is carried out in the reverse order.



Note

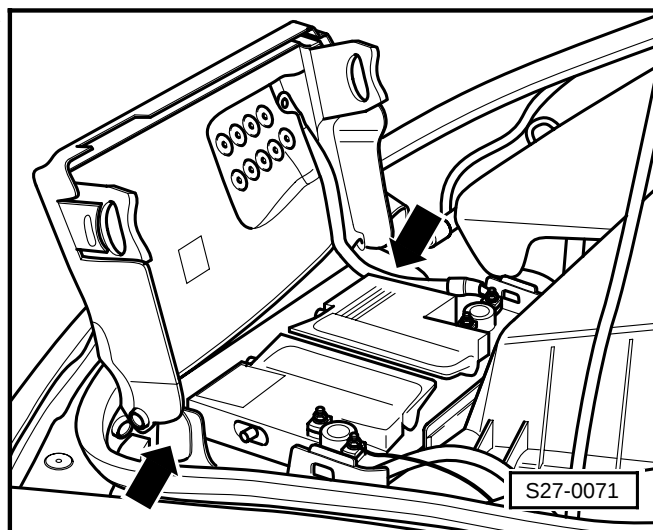
For vehicles ► 06.01 press the catches -arrows- when lifting the fuse carrier and its cover. ►



Removing and installing the battery tray

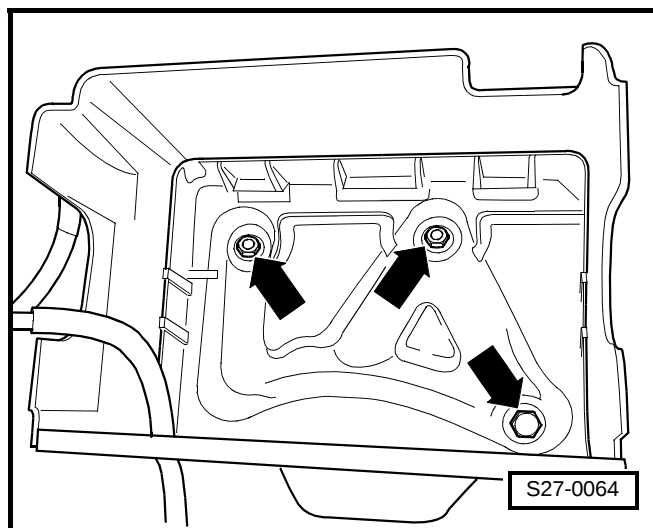
Removing

- First remove the battery ⇒ 27-1 page 6.
- Unclip the fuse carrier and cover from the battery tray.
- Unhook the cable harness from the battery tray.
- Release the 3 screws -arrows- (20 Nm) and remove battery tray. ►



Installing

- Installation is carried out in the reverse order.



27-2 Starter

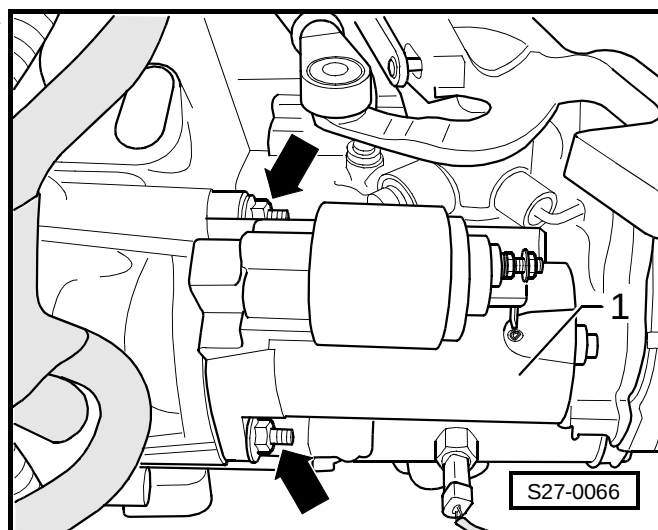
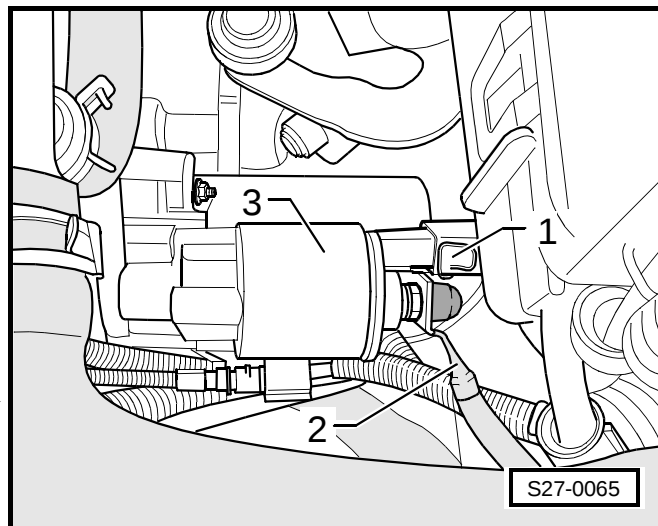
Removing and installing the starter

First remove:

- Engine cover ⇒ Engine, Mechanics; Rep. Gr. 10.
- Noise insulation ⇒ Engine, Mechanics; Rep. Gr. 10.

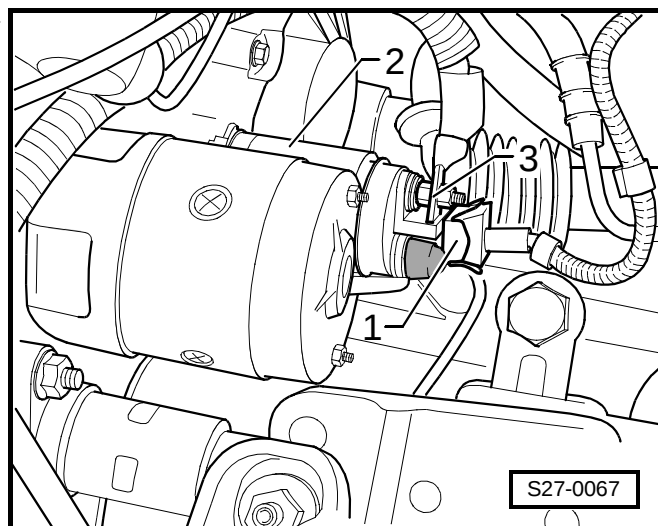
Removing

- Disconnect connector -1- (terminal 50).
- Unscrew cable -2- (terminal 30) from the solenoid switch -3- (13 Nm).
- Release both hexagon nuts -arrows- (65 Nm) and remove the starter from below -1-.



Only for gearbox 002:

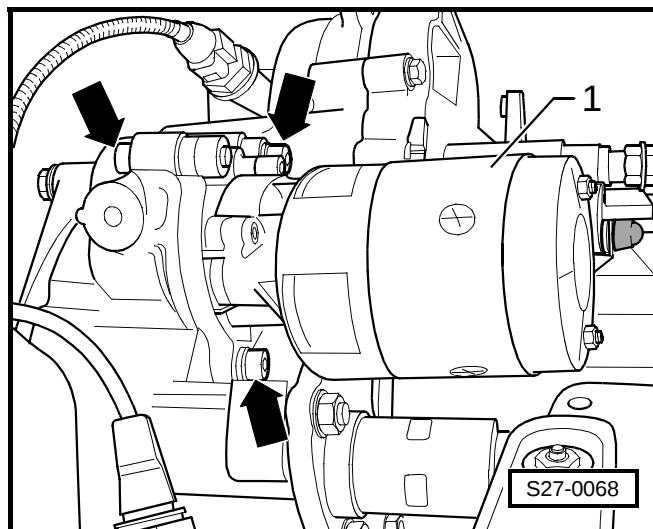
- Disconnect connector -1- (terminal 50).
- Unscrew cable -3- (terminal 30) from the solenoid switch -2- (13 Nm).



- Release the three Allan screws -arrows- (65 Nm) and remove the starter from the top -1-.

Installing

- Carry out the installation in the same way in reverse order.



27-3 Alternator

Removing and installing the alternator

Fixing the B+ wire to the generator

Tightening torque for the fixing nut of the B+ cable -arrow- is 15 Nm.



Note

- ◆ The screw connection for the B+ cable at the compact generator is identified with B1+!
- ◆ If the B+ cable is not attached with the specified tightening torque, this may result in the following risks:
- ◆ The battery will not charge fully.
- ◆ Complete failure of vehicle electrics/electronics (breakdown).
- ◆ Risk of fire resulting from sparking.
- ◆ Damage resulting from overvoltages on electronic components and control units.

Checking the carbon brushes of the AC generator

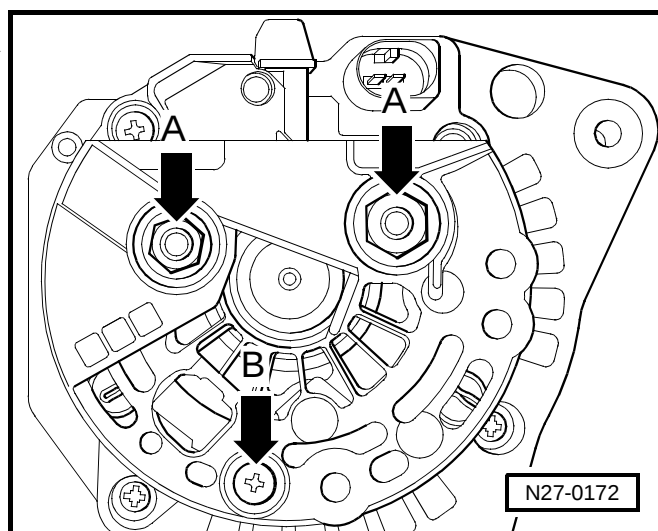
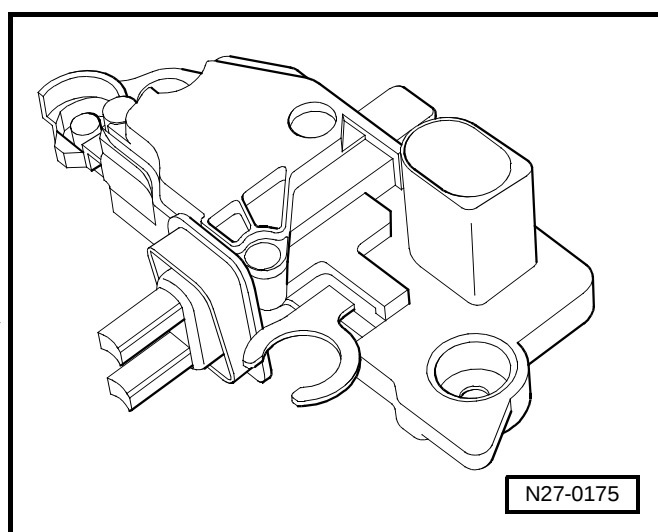
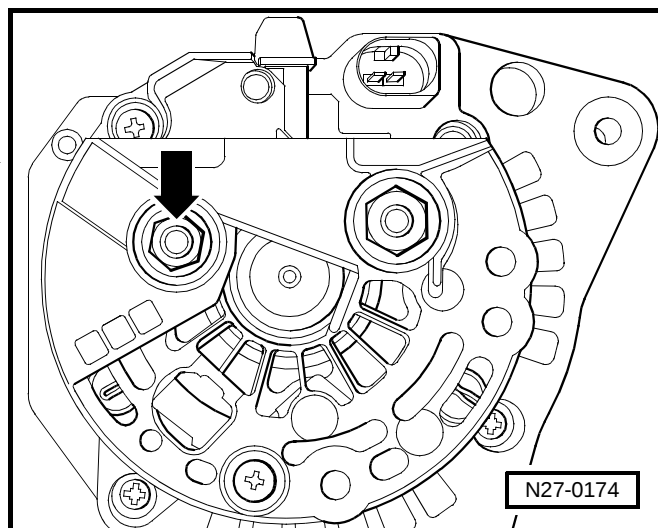
Length of carbon brushes when new = 12 mm

Wear limit = 5 mm

Tolerance of carbon brushes to each other = +1 mm

Removing and installing the voltage regulator

- Unscrew the fixing nuts -arrows A- and release the fixing screw -arrow B- of the protective cap.
- Remove the protective cap.

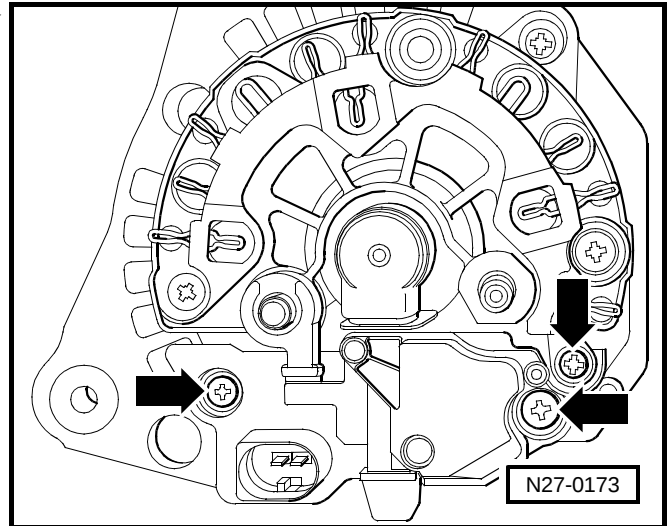


- Unscrew the bolts -arrows- attaching the voltage regulator and take off the voltage regulator. ►

Removing and installing the V-ribbed belt pulley on the AC generator

Special tools, test and measuring equipment and auxiliary items required

- ◆ Torque wrench
- ◆ Socket insert S1 -T30032 (3310)-



- Use the socket insert -T30032 (3310)- to release or attach the V-ribbed belt pulley from/to the AC generator. ►

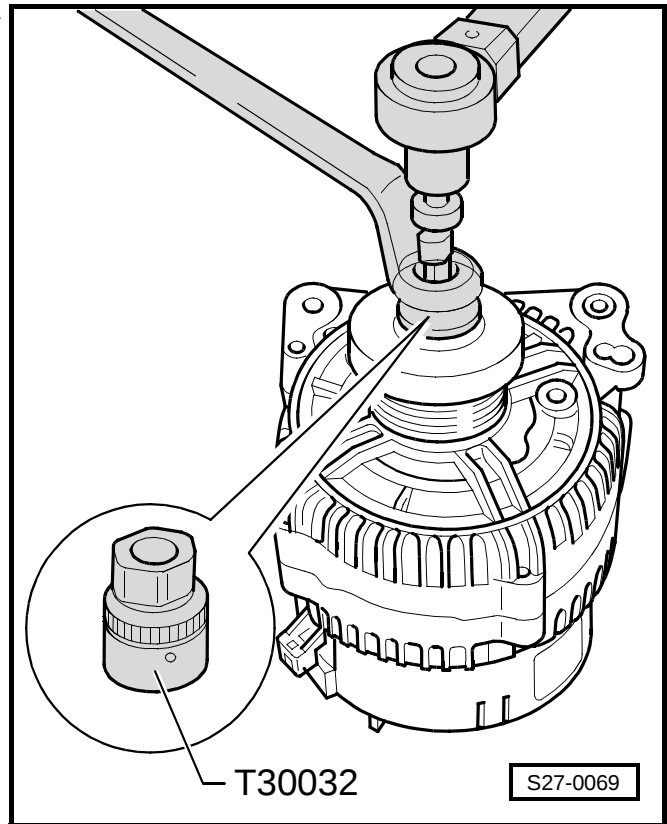
Tightening torque of nut attaching ribbed V-belt pulley of generator is 65 Nm.

Removing and installing the V-ribbed belt pulley with free wheel

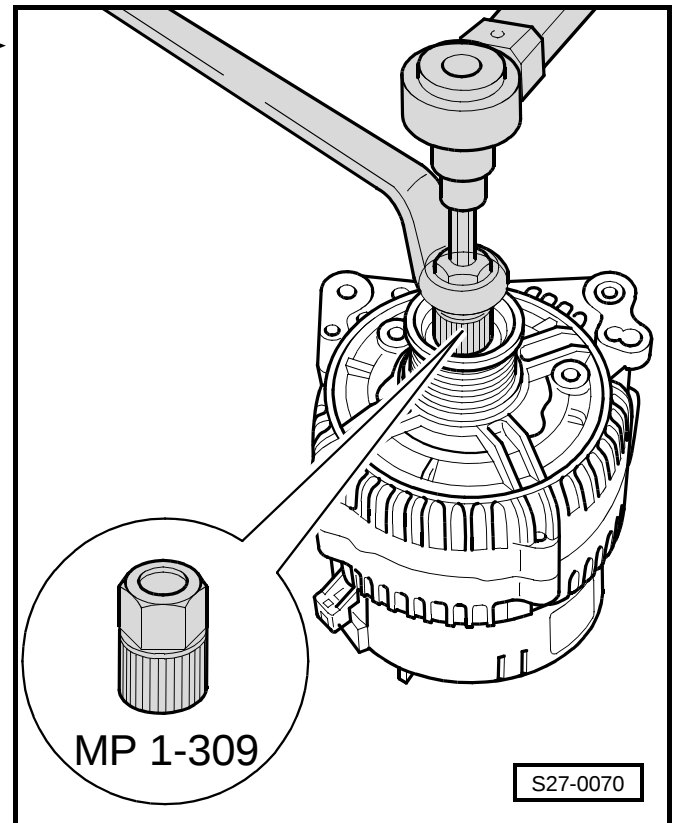
Special tools, test and measuring equipment and auxiliary items required

- ◆ Torque wrench
- ◆ Universal adapter for removing and installing ribbed V-belt pulley -MP 1-309- (-3400-)
- Removing the installed V-ribbed belt pulley ⇒ 27-3 page 2.
- Insert universal adapter for removing and installing ribbed V-belt pulley -MP 1-309- (-3400-) into free-wheel belt pulley.
- Screw freewheel belt pulley first of all by hand onto drive shaft of alternator as far as the stop.

To mount the free wheel pulley adapt the torque spanner as follows:



- Release socket insert for removing and installing ribbed V-belt pulley and pull it off the handle part.
- Turn handle part of part of torque wrench 180 degrees and re-insert socket insert.
- Position direction of rotation of torque wrench to left.
- Adjust a tightening torque of 80 Nm on the torque wrench.
- Position the hexagon socket, SW 6 mm on the drive shaft of the AC generator.
- Counterhold universal adapter for removing and installing poly V-belt pulley -MP 1-309- with ring wrench size 17 and tighten freewheel belt pulley to a torque of 80 Nm by turning drive shaft left by means of torque wrench.
- Clip the protective cap onto the free wheel pulley.



27-4 Removing and installing the cruise control (CC)

Apart from the CC control switch in the left steering-column switch there are no additional components.

Repairing the CC ⇒ Engine, Fuel Injection; Rep. Gr. 24 and ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

90 – Gauges, Instruments

90-1 Dash panel insert

Removing and installing the dash panel insert



WARNING!

Disconnect earth strap from the battery before commencing work on the electrical system.



Note

- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ Carry out additional operations if the battery earth strap is disconnected and connected ⇒ Chapter 27-1.

Removing



Note

It is not necessary to remove the steering wheel. For reasons of clarity the steering wheel is not shown in the following illustrations.

- Pull the steering wheel out fully and lock it in its lowest position.
- Unclip the cover -1- and put it to one side.
- Screw out both screws -2- (1.4 Nm).
- Pull the dash panel insert -3- out slightly and disconnect the two plug connections.
- Remove the dash panel insert completely.

Installing

- Installation is carried out in the reverse order.

If the dash panel insert has been replaced because of a fault, it is then necessary to carry out the following procedures:

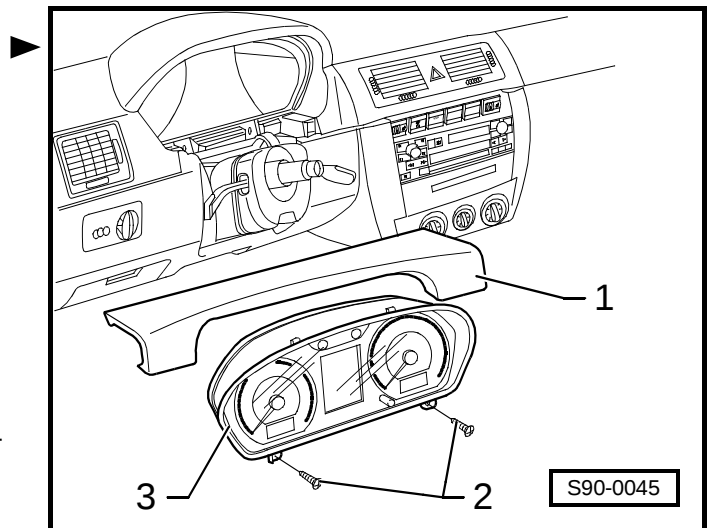
- Check coding of the dash panel insert or code dash panel insert.



Note

For vehicles with dash panel insert 6Y0 920 xxx x, the dash panel insert must be coded or adaptation at Vehicle Diagnosis, Measurement and Information System -VAS 5051- must be performed.

- Adapt odometer reading.
- Adapt service interval display.



— Adapt immobiliser.

The dash panel insert - a rear view



Note

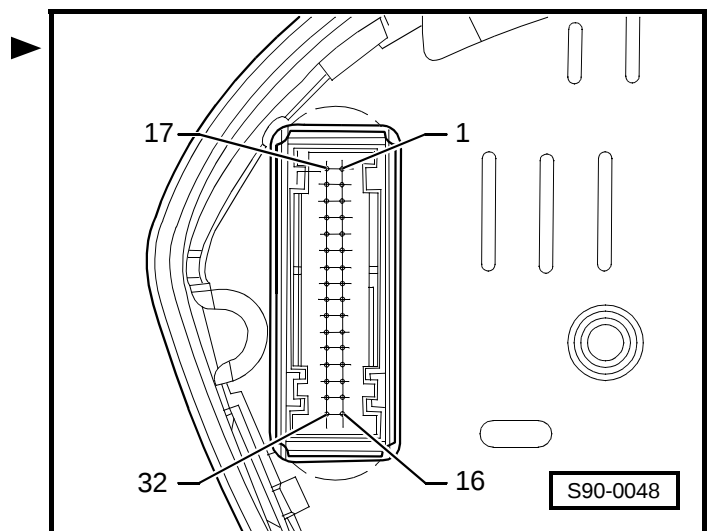
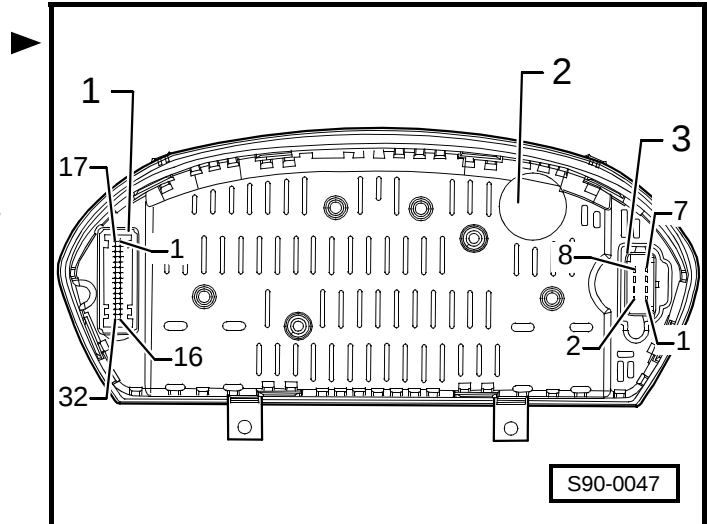
- ♦ The dash panel insert must not be disassembled.
- ♦ For fault finding perform self-diagnosis ⇒ Chap. 90-2.

- 1 - 32-pin plug connection, green; contact assignment
⇒ 90-1 page 2
- 2 - Warning buzzer
- 3 - 8-pin plug connection, black; contact assignment
⇒ 90-1 page 3

Contact assignment of plug connections on the dash panel insert

32-pin plug connection, green

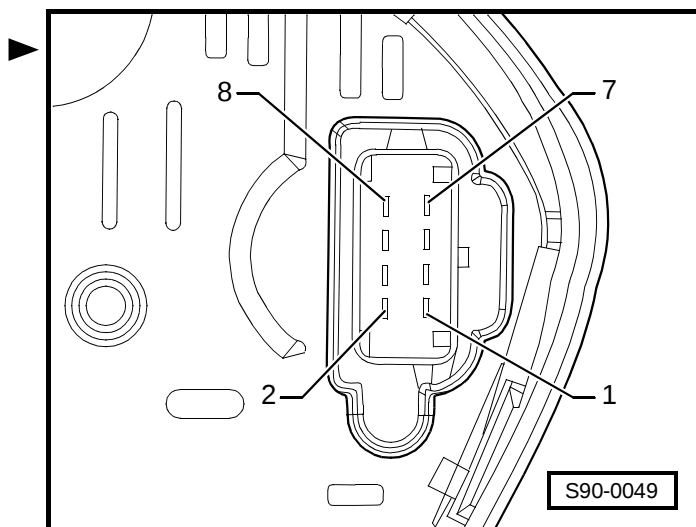
- 1 - Transponder coil
- 2 - Main beam
- 3 - Low beam
- 4 - Sender for the oil level/temperature (vehicles with WIV)
- 5 - Speedometer, output
- 6 - Speedometer, input
- 7 - Drive CAN databus (low)
- 8 - Drive CAN databus (high)
- 9 - Convenience system CAN databus (high)
- 10 - Convenience system CAN databus (low)
- 11 - MFD - top function selection
- 12 - MFD - bottom function selection
- 13 - Brake light bulb failure
- 14 - not assigned
- 15 - Fuel gauge
- 16 - Low coolant level
- 17 - Transponder coil
- 18 - Rear fog light
- 19 - Fog lights
- 20 - Belt buckle
- 21 - Handbrake
- 22 - Brake fluid level
- 23 - Oil pressure switch
- 24 - Wake-up CAN databus (electrical system control unit)
- 25 - Drive CAN databus (screening)
- 26 - Convenience CAN databus (screening)
- 27 - MFD Reset/level 1/2
- 28 - not assigned
- 29 - Driving lights bulb failure
- 30 - Washwater deficit (only for the Elegance vehicles)
- 31 - Outside temperature



32 - Terminal 31 (sensor)

8-pin plug connection, black

- 1 - Brake wear
- 2 - not assigned
- 3 - not assigned
- 4 - Parking light on the right
- 5 - Terminal 15
- 6 - Parking light on the left
- 7 - Terminal 30
- 8 - Terminal 31



Warning light symbols in dash panel insert

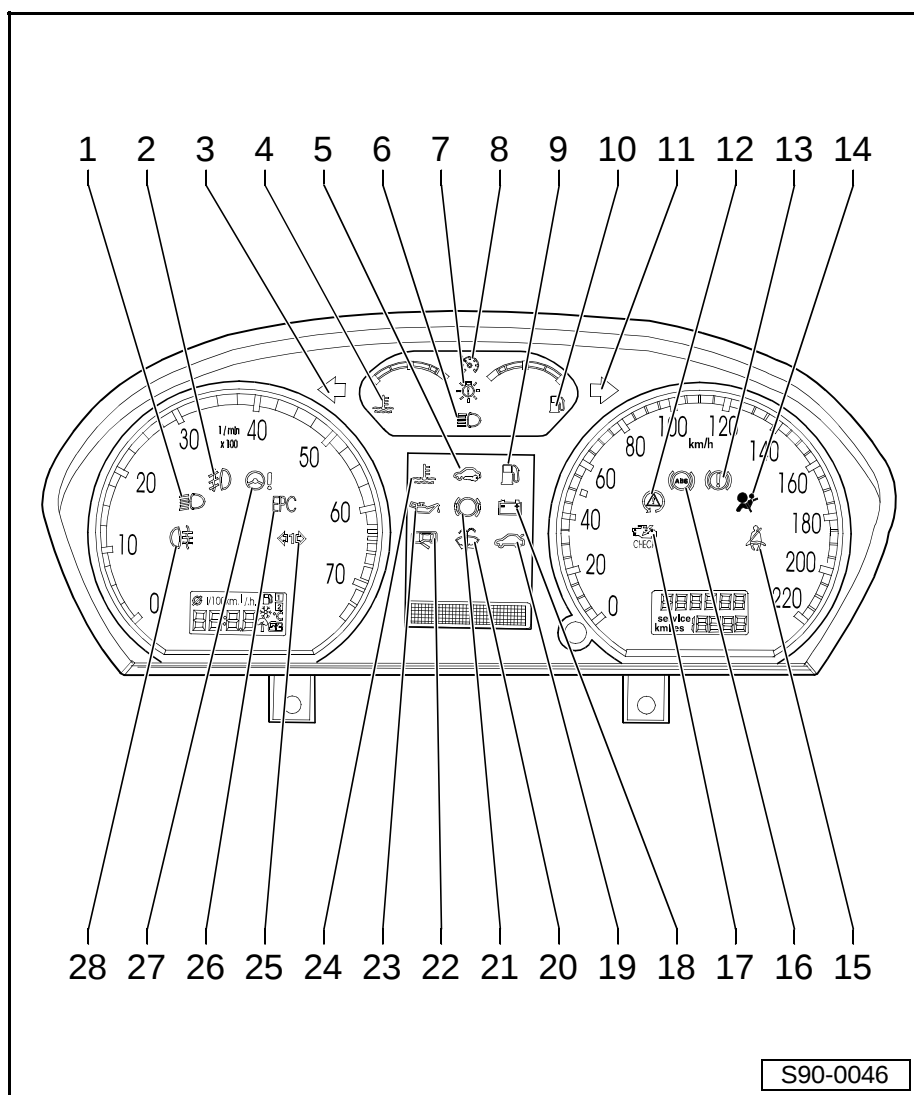


Note

The dash panel insert must not be disassembled.

Dash panel insert (6Y1 xxx xxx x, 6Y2 xxx xxx x and 6Y0 920 xxx xxx C)

- 1 - Low beam
- 2 - Fog lights
- 3 - Left turn signal light
- 4 - Coolant temperature/low coolant level
- 5 - Immobilizer
- 6 - Main beam
- 7 - Bulb failure
- 8 - Cruise control system
- 9 - Fuel reserve
- 10 - Fuel reserve
- 11 - Right turn signal light
- 12 - ESP/TCS warning light
- 13 - Brake indicator/brake system fault indicator
- 14 - Airbag
- 15 - Seat belt
- 16 - ABS
- 17 - Exhaust warning light
- 18 - Charge indicator
- 19 - Tailgate open
- 20 - Washwater deficit
- 21 - Brake pad wear
- 22 - Door open
- 23 - Oil pressure/oil level
- 24 - Coolant temperature/low coolant level
- 25 - Trailer turn signal lights
- 26 - Electronic throttle
- 27 - Electric power steering
- 28 - Rear fog light

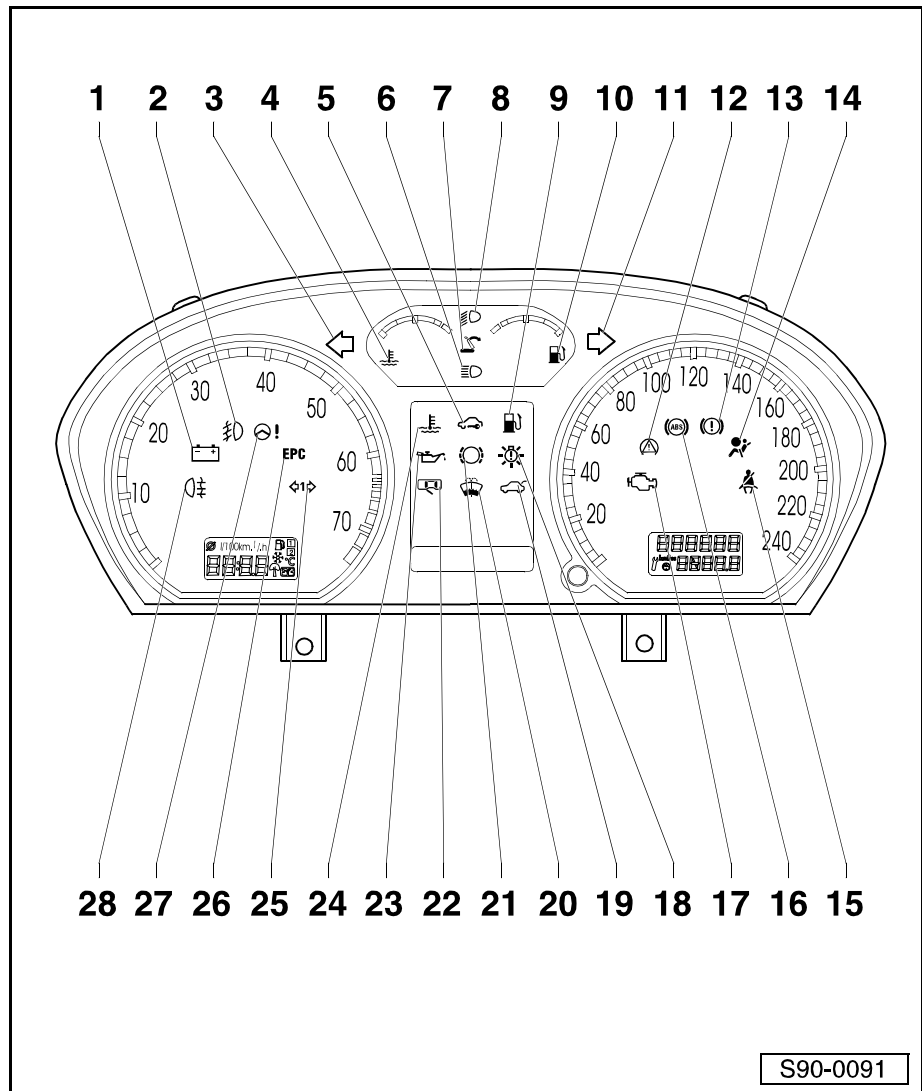


Dash panel insert (6Y0 920 xxx x)

Dash panel inserts 6Y0 920 xxx x are newly installed in the vehicles as of model year 03. These dash panel inserts can be distinguished from the older version according to Part No. and arrangement of warning lights in the dash panel insert.

For dash panel insert version with MAXI DOT the display replaces the function of all warning lights in the center panel of the dash panel insert.

- 1 - Charge indicator
- 2 - Fog lights
- 3 - Left turn signal light
- 4 - Coolant temperature/low coolant level
- 5 - Immobilizer
- 6 - Main beam
- 7 - Rear backrest lock
- 8 - Low beam
- 9 - Fuel reserve
- 10 - Fuel reserve
- 11 - Right turn signal light
- 12 - ESP/TCS warning light
- 13 - Brake indicator/brake system fault indicator
- 14 - Airbag
- 15 - Seat belts
- 16 - ABS
- 17 - Exhaust warning light
- 18 - Bulb failure
- 19 - Tailgate open
- 20 - Washwater deficit
- 21 - Brake pad wear
- 22 - Door open
- 23 - Oil pressure/oil level
- 24 - Coolant temperature/low coolant level
- 25 - Trailer turn signal lights
- 26 - Electronic throttle
- 27 - Electric power steering
- 28 - Rear fog light



Service interval display

Operation

The electronic control of the service interval display consists of

- ♦ a time counter
- and
- ♦ two distance counters.

The electronic control analyses the contents of the counters so that the customer is informed either

- ◆ after a defined period of time has elapsed

or

- ◆ after a defined distance has been reached

by the service interval display that a service is required (depending on what occurs first).

Reset the service interval display ⇒ Inspection and Maintenance.

90-2 Self-diagnosis of the dash panel insert I

General Instructions

Technology of the dash panel insert

The dash panel insert is available in three versions. The basic version (Classic). Version with multifunction display and additional warning lights (Comfort) and version similar to Comfort with bulb failure indicator (Elegance).

The multifunction display is integrated in the rev counter.

The following functions are indicated in the multifunction display:

- ◆ Digital clock
- ◆ Driving time and distance
- ◆ Average speed
- ◆ Average fuel consumption
- ◆ Momentary fuel consumption
- ◆ Outside temperature

The basic version and the version with MAXI DOT display are fitted only with a digital clock in the rev counter.

An LCD is provided in the speedometer for the odometer, trip counter and service interval display (SID).

The warning lights are designed as LEDs and cannot be replaced.

The dash panel insert is controlled by a microprocessor and features a comprehensive self-diagnosis. If faults occur in the system components, fault codes are stored in the fault memory of the dash panel insert.



Note

The following description relates to the vehicle system tester -V.A.G 1552-. The use of the fault reader -V.A.G 1551- with integrated printer is similar. A minor deviation on the display read-out is possible.

In addition, the following adaptation functions can be performed:

- ◆ Correction of fuel level display
- ◆ adjustment of service interval display
- ◆ adjustment of odometer when the dash panel insert is replaced
- ◆ Adaptation of the speedometer constant when the dash panel insert is replaced

Information on replacing the dash panel insert

- ◆ The dash panel insert must not be disassembled.
- ◆ If a replacement dash panel insert is fitted, the odometer reading and the service interval display can be adapted using the vehicle system tester -V.A.G 1552- ⇒ Chap. 90-4.
- ◆ The immobilizer must be reset ⇒ Chap. 96-1.

If the control unit in the dash panel insert detects a fault in the programmed memory, the read-out „dEF“ appears in the trip counter.

- If the read-out „dEF“ appears, replace the dash panel insert ⇒ Chap. 90-1.

Initiating self-diagnosis of the dash panel insert

Special tools, test and measuring equipment and auxiliary items required

- ◆ Vehicle system tester -V.A.G 1552-
- ◆ Diagnostic cable -V.A.G 1551/3-

Test requirements

- Always check the coding of the dash panel insert by referring to the table of codes ⇒ Chap. 90-3.

Test conditions

- Fuses o.k.
- Battery voltage at least 11 volts
- All electrical components must be switched off.

Connecting vehicle system tester -V.A.G 1552-

The diagnostic connection is located on the left next to the storage compartment on the driver's side.

- Unclip cover and remove downward.
- Connect vehicle system tester -V.A.G 1552- with diagnostic cable -V.A.G 1551/3-.
- Switch on ignition.

Readout on display:



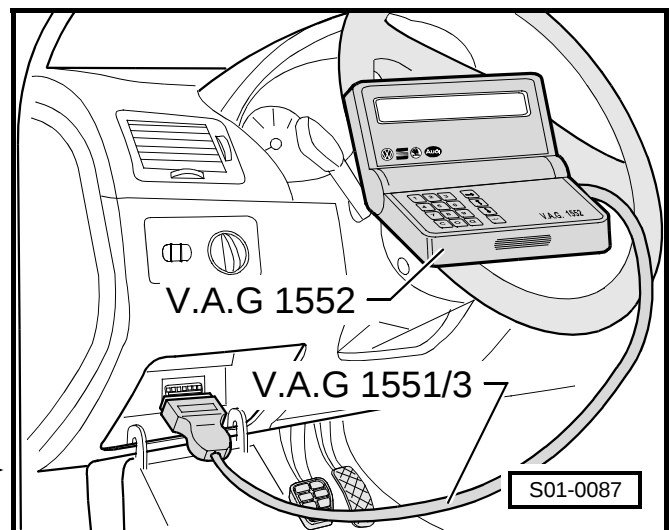
Note

If there is no readout on the display: ⇒ Operating instructions of the vehicle system tester.

- Enter address word **1 7** „dash panel insert“ and confirm entry with the **Q** key.

Readout on display:

- ◆ 6Y1919870B: Number of the dash panel insert
- ◆ COMBIINSTRUMENT: Designation of component



Vehicle system test
Enter address word XX

HELP

6Y1919870B COMBIINSTRUMENT VDO X09 ->
Coding 20141 WSC xxxxx

- ◆ VDO: Manufacturer's identification
- ◆ X09: Software version of dash panel insert (other readouts are possible).
- ◆ Coding 20141: Coding of the dash panel insert
- ◆ WSC xxxxx: Workshop code

**Note**

Check coding by referring to the table of codes

⇒ Chap. 90-3.

– Press ☐.

Readout on display:

- ◆ TMBMC46Y0Y7000001: Vehicle number
- ◆ SKZ7Z0W0204038: 14-digit identification number for immobilizer control unit

– Press ☐.

If one of the following messages appears in the display, carry out fault finding as stated in the fault finding programme diagnostic cable ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

TMBMC46Y0Y7000001 SKZ7Z0W0204038 ->

Vehicle system test HELP
The control unit does not respond!

Vehicle system test HELP
Fault in communication build-up

Vehicle system test HELP
K cable does not connect to earth

Vehicle system test HELP
K cable does not connect to pos. term.

– Move forward in the programme with the key ☐.

Self-diagnosis functions

The following functions are possible:

- 02 - Interrogating fault memory ⇒ 90-2 page 3
- 03 - Final control diagnosis ⇒ Chap. 90-3
- 05 - Erasing fault memory ⇒ 90-2 page 4
- 06 - Ending output ⇒ 90-2 page 4
- 07 - Coding control unit ⇒ Chap. 90-3
- 08 - Reading measured value block ⇒ Chap. 90-4
- 10 - Adaptation ⇒ Chap. 90-4
- 11 - Log-in procedure ⇒ Chap. 90-4

Interrogating fault memory

**Note**

The displayed fault information is not constantly updated, this only occurs when self-diagnosis is initiated or if function 05 „Erase fault memory“ is selected.

Readout on display:

- Enter function „Interrogate fault memory“ and confirm with .

Vehicle system test HELP
Select function XX

The number of faults stored appears in the display.

► X faults detected!

The stored faults are displayed in sequence.

- Find the fault displayed in the fault table and rectify the fault ⇒ Chap. 90-3.

If „No fault detected“ is shown in the display and if the key  is pressed, the programme returns to the initial position.

► No fault detected! ->

Readout on display:

► Vehicle system test HELP
Select function XX

If anything else appears on the display: ⇒ Operating instructions of the vehicle system tester.

- End output (Function 06) ⇒ 90-2 page 4.

Erasing fault memory



Note

The contents of the fault memory are output automatically after the fault memory is erased. If it is not possible to erase the fault memory, interrogate the fault memory once again and rectify any faults.

Requirements:

- Fault memory was interrogated ⇒ 90-2 page 3.
- All faults were rectified.

After interrogating the fault memory:

Readout on display:

► Vehicle system test HELP
Select function XX

- Select function   „Erase fault memory“ and confirm with .

Readout on display:

► Vehicle system test ->
Fault memory erased!

The fault memory is now erased.

- Press .

Readout on display:

► Vehicle system test HELP
Select function XX



Note

- ♦ *If the following message is displayed the test sequence is incorrect.*
- ♦ *Carefully follow the test sequence step by step: first interrogate the fault memory, if necessary rectify faults and then erase the fault memory.*

► Vehicle system test ->
Fault memory was not interrogated

Ending output

- Select function   „End output“ and confirm with .

Readout on display:

► Vehicle system test HELP
Enter address word XX

- Switch off ignition.

- Separate vehicle system tester -V.A.G 1552-.

90-3 Self-diagnosis of the dash panel insert II

Fault table for the dash panel insert



Note

- ◆ All the possible faults which can be detected by the vehicle system tester -V.A.G 1552- are listed below according to the 5-digit fault code.
- ◆ Before replacing components found to be defective first check the wiring and plug connections to these components as well as the earth cables according to the current flow diagram.
- ◆ After repair once again interrogate the fault memory using vehicle system tester -V.A.G 1552- and then erase the memory.
- ◆ All static and sporadic faults are stored in the fault memory. A fault is detected as static if it exists for at least 2 seconds. If the fault is then no longer present, it is stored as a sporadic (temporary) fault. „SP“ appears on the right of the display.
- ◆ After switching on the ignition, all the faults which exist are set to sporadic and are not stored as static faults unless they continue to exist after completing the check.
- ◆ If a sporadic fault no longer occurs during 50 driving cycles (ignition on for at least 5 minutes, road speed > 30 km/h), it is erased.

Display -V.A.G 1552-		Possible cause of fault	Possible effects	Rectifying fault
00562 Sender for oil level/temperature - E266	Short circuit after the positive Short circuit after the earth an implausible signal	◆ Open circuit in wiring or short circuit to positive or to earth in the cable connection between - E266 and the dash panel insert ◆ Sender - E266 defect	upon switching on the ignition the yellow warning light for the oil level blinks	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace sender - E266.
00771 Fuel gauge sender -G	Open circuit in wiring or short circuit to positive Short circuit to earth	◆ Open circuit in wiring or short circuit to positive or to earth in the cable connection between fuel gauge sender -G- and dash panel insert ◆ Fuel gauge sender - G- defective	Fuel gauge is on empty	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Reading measured value block 002 ⇒ Chap. 90-4 – Test fuel gauge ⇒ Chapter 90-4
00779 Outside temp. sensor -G17	Open circuit in wiring or short circuit to positive Short circuit to earth	◆ Open circuit in wiring or short circuit to positive or to earth in the cable connection between outside temp. sensor -G17- and dash panel insert ◆ Outside temp. sensor -G17- faulty	Only „- - -“ appear in the display of the multifunction display	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Reading measured value block 002 ⇒ Chap. 90-4. – Replace outside temp. sensor -G17-.

Display -V.A.G 1552-		Possible cause of fault	Possible effects	Rectifying fault
01086 Speedometer sender -G22	Signal too high	♦ Sender for speedometer defective	Speedometer display OK	– Reading measured value block 001 ⇒ Chap. 90-4. – Replace speedometer sender -G22-.
01128 Immobiliser reader coil -D2		♦ Wiring from reading coil to dash panel insert defective ♦ Reading coil with cable defective	Engine does not start and warning light flashes	– Check reading coil with wiring (visual inspection), if necessary replace reading coil. – Erase the fault memory and then interrogate it again ⇒ Chapter 90-2.
01176 Key	Signal too low	♦ Reader coil or cable defective (contact resistance or loose contact)	Engine does not start and warning light flashes	– Check reading coil with wiring (visual inspection), if necessary replace reading coil.
	not authorised	♦ Electronics in ignition key (Transponder) missing or not operating ♦ The mechanically correct ignition key not adjusted electronically	Engine does not start and warning light flashes Engine does not start and warning light flashes	– Replace ignition key and re-adjust all ignition keys ⇒ Chapter 96-1. – Re-adjust all ignition keys and check proper operation ⇒ Chapter 96-1.
01177 Engine control unit	not authorised	♦ Engine control unit not adjusted ♦ Data BUS not O.K.	Engine does not start and warning light flashes	– Adjust the engine control unit ⇒ Chapter 96-1. – Check data BUS ⇒ Chapter 90-9.
01179 Key programming wrong		♦ Key programming wrong	Warning lamp flashes rapidly	– Re-adjust all ignition keys and check proper operation ⇒ Chapter 96-1.
01197 Drive databus: incorrect software status		♦ A control unit on the data BUS drive is wrongly coded	♦ Poor vehicle handling ♦ possibly wrong displays in the dash panel insert	– Check data BUS ⇒ Chapter 90-9. – Interrogate fault memory of gateway ⇒ Chapter 90-8.
01312 Drive databus	defective	♦ Data BUS defective ♦ Short circuit to positive ♦ Short circuit to earth	♦ Poor vehicle handling ♦ possibly wrong displays in the dash panel insert	– Check data BUS ⇒ Chapter 90-9.

Display -V.A.G 1552-		Possible cause of fault	Possible effects	Rectifying fault
01314 Engine control unit	please read out fault memory	◆ Data BUS defective ◆ Engine control unit defective	◆ Poor vehicle handling ◆ possibly wrong displays in the dash panel insert	– Check data BUS ⇒ Chapter 90-9. – Interrogate fault memory of engine control unit ⇒ Engine, Fuel Injection; Rep. Gr. 01.
01315 Gearbox control unit	No communication	◆ Data BUS defective ◆ Gearbox control unit defective	◆ Poor vehicle handling ◆ possibly wrong displays in the dash panel insert	– Check data bus ⇒ Chapter 90-9 – Read out fault memory of gearbox control unit ⇒ Automatic Gearbox; Rep. Gr. 01.
01316 Brake control unit	no communication please read out the fault memory	◆ Data BUS defective ◆ ABS control unit defective	◆ Poor vehicle handling ◆ possibly wrong displays in the dash panel insert	– Check data BUS ⇒ Chapter 90-9. – Read out the fault memory of the ABS control unit ⇒ Running Gear; Rep. Gr. 45.
01321 Airbag control unit -J234	No communication	◆ Data BUS defective ◆ Airbag control unit defective	possibly wrong displays in the dash panel insert	– Check data BUS ⇒ Chapter 90-9. – Read out fault memory of the airbag control unit ⇒ Body Work; Rep. Gr. 01.
01322 Multi-function unit control unit -J501	No communication	◆ Data BUS defective ◆ Control unit defective	possibly wrong displays in the dash panel insert	– Check data BUS ⇒ Chapter 90-9. – Read out fault memory of vehicle electrical system control unit ⇒ Chapter 90-5.
01336 Group convenience data bus	defective	◆ Data BUS defective	No self-diagnosis is possible	– Check data BUS ⇒ Chapter 90-9.
65535 Control unit defective		◆ Control electronics in dash panel insert defective	no displays in dash panel insert	– Replace dash panel insert ⇒ Section 90-1.

Actuator diagnosis

The final control diagnosis is a part of the electrical test. Final control diagnosis can be used to test the following components, depending on the equipment version:

For example the versions for vehicles with WIV:

- ◆ Rev counter
- ◆ Coolant temperature gauge

- ◆ Fuel gauge
 - ◆ Speedometer
 - ◆ Displays
 - ◆ Coolant temperature/coolant level warning light
 - ◆ Warning lamp for the vehicle immobiliser
 - ◆ Fuel reserve warning light
 - ◆ Oil pressure warning light
 - ◆ Oil level warning light
 - ◆ Brake pad warning light
 - ◆ Brake system warning light
 - ◆ Seat belt warning light
 - ◆ Warning buzzer/gong
- If final control diagnosis reveals a fault, the dash panel insert should be replaced.

Initiating a final control diagnosis



Note

- ◆ *If the engine is running or the vehicle is moved, it is either not possible to initiate final control diagnosis of the dash panel insert or the final control diagnosis is interrupted.*
 - ◆ *It is possible to quit the test sequence at any time by pressing key [C].*
 - ◆ *During the test sequence only the warning lights for the corresponding vehicle equipment come on.*
 - ◆ *On vehicles with MAXI DOT display, the warning lights fitted in the center panel of the dash panel insert usually do not come on.*
- Connect vehicle system tester -V.A.G 1552- and select „dash panel insert“ (address word 17); ignition is switched on ⇒ Chapter 90-2.

Readout on display:

- Function [0] [3] enter „Final control diagnosis“ and confirm with [Q].

Readout on display:

The pointer of the rev counter moves across the full range and then indicates approx. „3000“.

- Press [].

Readout on display:

The pointer of the coolant temperature gauge moves across the full range and then moves to the halfway point.

- Press [].

Readout on display:

The pointer of the fuel gauge moves across the full range and then moves to the halfway point.

►

Vehicle system test	HELP
Select function XX	

►

Actuator diagnosis	->
Rev counter	

►

Actuator diagnosis	->
Temp. gauge	

►

Actuator diagnosis	->
Fuel gauge	

- Press ☐.

Readout on display:

The pointer of the speedometer moves across the full range and then indicates approx. „100“.

► Actuator diagnosis ->
Speedometer

- Press ☐.

Readout on display:

All the segments of the display in the speedometer and in the rev counter are actuated and become visible.

All segments of the display are also activated successively and become visible on MAXI DOT display, if available.

► Actuator diagnosis ->
Segment test

- Press ☐.

Readout on display:

The warning light for the glow period -K29- lights up.

► Actuator diagnosis ->
Glow period warning lamp -K29

- Press ☐.

Readout on display:

The coolant temperature/low coolant level warning light comes on.

► Actuator diagnosis ->
Overheating light

- Press ☐.

Readout on display:

The warning light for the vehicle immobiliser lights up.

00502 = Warning light for the vehicle immobiliser

► Actuator diagnosis ->
00502 /Literature

- Press ☐.

Readout on display:

The fuel reserve warning light -K105 comes on.

► Actuator diagnosis ->
Fuel reserve warning light-K105

- Press ☐.

Readout on display:

The oil pressure warning light -K3 (red) comes on.

► Actuator diagnosis ->
Oil pressure warning light -K3

- Press ☐.

Readout on display:

The oil level warning light (yellow) comes on.

00501 = Oil level warning light.

► Actuator diagnosis ->
00501 (Information in the literature)

- Press ☐.

Readout on display:

Warning light indicating a low wash water level -K106- comes on.

► Actuator diagnosis ->
Warning light indicating a low wash water

- Press ☐.

Readout on display:

Brake pad warning light -K32- comes on.

► Actuator diagnosis ->
Brake pad warning light -K32

- Press ☐.

Readout on display:

The brake system warning light -K7- comes on.



Actuator diagnosis	->
Brake system warning light -K7	

- Press ☐.

Readout on display:

The seat belt warning light -K19- comes on.



Actuator diagnosis	->
Seat belt warning light -K19	

- Press ☐.

Readout on display:

The gong is operated. A gong signal sounds (at intervals).



Actuator diagnosis	->
Gong	

- Press ☐.

Readout on display:

The buzzer is actuated. A continuous warning signal sounds.



Actuator diagnosis	->
Buzzer/gong -H3	

- Press ☐.

Readout on display:

- Press ☐.

The actual values are again displayed on the dash panel insert.



Actuator diagnosis	->
END	

Readout on display:



Vehicle system test	HELP
Select function XX	

Coding dash panel insert

Spare part dash panel inserts are already coded.

- Connect vehicle system tester -V.A.G 1552- and select „dash panel insert“ (address word 17); ignition is switched on ⇒ Chapter 90-2.
- Check the coding.

If the coding is not correct for the vehicle version code the dash panel insert.



Note

For vehicles with dash panel insert 6Y0 920 xxx x the coding of the dash panel insert must be performed at Vehicle Diagnosis, Measurement and Information System -VAS 5051-.

Readout on display:



Vehicle system test	HELP
Select function XX	

- Function enter „Code control unit“ and confirm entry with .

Readout on display:



Coding control unit
Enter code number XXXXX (0-32000)

- Enter code number by referring to table of codes and confirm entry with .

Table of codes**For vehicles with dash panel insert 6Y1 xxx xxx x und 6Y2 xxx xxx x**

XX	Vehicle equipment: ¹⁾
0	No equipment
1	Brake pad warning light
2	Seat belt warning light
4	Windshield washer system warning light
8	not assigned
16	Clock function actuated in MFD
X	Country:
0	Germany
1	Europe and Rest of World
2	USA
3	Canada
4	Great Britain
5	Japan
6	Saudi Arabia
7	Australia
X	No. of cylinders (usually 4)
X	Engine fitted:
1	1.0/37 kW; 1.4/44 kW; 1.4/50 kW; 1.4/55 kW ²⁾ ; 1.9/74 kW TDI PD
2	1.4/55 kW ³⁾ ; 1.4/74 kW; 2.0/85 kW; 1.9/47 kW SDI

¹⁾ The individual functions are added and the result formed by the first two places of the code number

²⁾ Vehicles with automatic gearbox

³⁾ Vehicles fitted with a manual gearbox

For vehicles with dash panel insert 6Y0 920 xxx x

XX	Vehicle equipment: ¹⁾
00	No equipment
01	Brake pad warning light
02	Seat belt warning light
04	Windshield washer system warning light
08	Warning light for failure of a light bulb
16	Warning light indicating an open door
X	Country:
0	Germany
1	Europe and Rest of World
2	USA
3	Canada
4	Great Britain
5	Japan
6	Saudi Arabia
7	Australia
X	Service intervals
0	Fixed service intervals (QG0)
1	WIV with variable service intervals (QG1)
2	WIV with fixed service intervals for changing the oil (QG2)
3	no service messages
X	The calibration constants of the tachometer
1	Constant 23984 (signal source - CAN) valid for all types of engines
1	Constant 3775 (signal source - tachometer sensor) valid for vehicles with 1.4 ltr./ 55 kW ²⁾ ; 1.4 ltr./55 kW TDI PD and 1.9 ltr./74 kW TDI PD Engines
2	Constant 3904 (signal source - tachometer sensor) valid for vehicles with 1.2 ltr./40 kW; 1.2 ltr./47kW; 1.4 ltr./55 kW ³⁾ ; 1.4 ltr./74 kW; 2.0 ltr./ 85 kW; 1.9 ltr./47 kW SDI and 1.9 ltr./96 kW TDI PD Engines

¹⁾ The individual functions are added and the result formed by the first two places of the code number

²⁾ For models with an automatic gearbox

³⁾ for vehicles with manual gearbox

The control unit coding appears in the display, e.g. 20141 ►

— Press ☐.

```
6Y1919870B COMBIINSTRUMENT VDO X09  ->
Coding  20141                               WSC  xxxxxx
```

Readout on display:

— Press ☐.

```
TBMC46Y0Y7000001      SKZ7Z0W0204038  ->
```

Readout on display:

— Select function ☐ ☐ „End output“ and confirm with ☐.

```
Vehicle system test      HELP
Select function XX
```

90-4 Self-diagnosis of the dash panel insert III

Reading measured value block

Readout on display:

- Enter function **[0]** **[8]** „Read measured value block“ and confirm the entry with key **[Q]**.

Readout on display:

- Enter display group number ⇒ 90-4 page 1.

►

Vehicle system test Select function XX	HELP
---	------

►

Read measured value block Enter display group number XXX	HELP
---	------

List of display groups



Note

- ♦ The display always shows the actual values of the senders and sensors. These may differ in view of the fact that the values which appear in the dash panel insert are shown filtered!
- ♦ If the actual coolant temperature is between approx. 80 C to 100 C, it is always 90 C which appears in the display of the dash panel insert!

Measured value block 001

Reading measured value block 1 →				Readout on display
50 km/h	2400 rpm	Oil p2< min.	0: 0 h	
				Time
				Sender for oil pressure
				• Oil p2< min. • Oil p2 o.k.
				Engine speed
				• 0 to 9990 rpm
				Vehicle speed
				• 0 through 300 km/h

Measured value block 002

Reading measured value block 2 →				Readout on display
2390 km	43 ltr.	62 Ohms	23.0°C	
				Outside temperature (only for the Comfort and Elegance models)
				• -40 to +70 °C
				Fuel tank sender
				• if open circuit 510 Ω
				• if short circuit 0 Ω
				Fuel gauge
				• 0 to 100 ltr.
				Odometer

Measured value block 003

Reading measured value block 3 →				Readout on display
85,0 °C	o.k. ¹⁾	89.0 °C ¹⁾		
				not assigned
				Engine oil temperature
				Test signal from oil level sender
				• OK - the oil level and signal is OK
				• not OK - the oil level is too low or poor signal
				Coolant temperature

¹⁾ Only for vehicles with WIV.

Measured value block 005 (only valid for vehicles with WIV)

Reading measured value block 5 →				Readout on display
15	21	-----		
				The number of days which can elapse before a service is required ¹⁾
				The number of km. which are left to drive before a service is required ²⁾
				The number of days which have elapsed since a scheduled service was not performed ¹⁾
				The number of km. which have been driven since a scheduled service was not performed ²⁾

¹⁾ Value in days.

2) Value in hundreds of kilometres



Note

- ◆ Only the last two values will be displayed if the service interval has not been reached yet.
- ◆ The first two values will be displayed if the service interval has already been reached.

Measured value block 006 (only valid for vehicles with WIV)

Reading measured value block 6				→	Readout on display
10 mm	18 mm	14 mm		open	
					Status sender for the engine hood
					• open up - the engine hood is closed • close - the engine hood is open
					The average value of the oil level deviations from the critical level over the last 100 km which were analysed
					The highest deviation of the oil level from the critical level during the service interval
					The minimum deviation of the oil level from the critical level during the service interval

Measured value block 007 (only valid for vehicles with WIV)

Reading measured value block 7				→	Readout on display
40 mm					
					not assigned
					not assigned
					not assigned
					the current oil level according to the oil level sender

Measured value block 012 (only valid for vehicles with WIV)

Reading measured value block 12				→	Readout on display
Channel 40: 86		Channel 41: 210			
					not assigned
					The number of days since the last inspection service
					not assigned
					The number of km. driven since the last inspection service ¹⁾

¹⁾ Value in hundreds of kilometres

Measured value block 013 (only valid for vehicles with WIV)

Reading measured value block 13 →		Readout on display
Channel 42: 150	Channel 43: 300	
		not assigned
		The maximum distance in km which limits the service interval ¹⁾
		not assigned
		The minimum distance in km which limits the service interval ¹⁾

¹⁾ Value in hundreds of kilometres

Measured value block 014 (only valid for vehicles with WIV)

Reading measured value block 14 →		Readout on display
Channel 44: 730	Channel 49: 365	
		not assigned
		The minimum value of the service interval in days
		not assigned
		The maximum value of the service interval in days

Measured value block 015 (only valid for vehicles with WIV)

Reading measured value block 15 →		Readout on display
Channel 45: 2	Channel 46: 630	
		not assigned
		the amount of fuel consumed since the last service interval in terms of litres per cylinder ¹⁾
		not assigned
		Oil quality
		• 1 - oil within specification for QG2 • 2 - oil within specification for QG1

¹⁾ Only operational for petrol engines.

Measured value block 016 (only valid for vehicles with diesel engines with WIV)

Reading measured value block 16 →		Readout on display	
Channel 47: 0	Channel 48: 0		
		not assigned	
		Counter of thermal oil load ¹⁾	
		not assigned	
		Oil smoke counter ¹⁾	

¹⁾ Value in hundreds of kilometres

Measured value blocks 022, 023 and 024

⇒ Chapter 96-1

Measured value block 025

Reading measured value block 25 →		Readout on display	
1			
		not assigned	
		not assigned	
		not assigned	
		Generation of the vehicle immobiliser	
		• 1 = 3. generation	

Measured value block 050

Reading measured value block 50 →		Readout on display	
2390 km	2400 rpm	26,0°C	85.0°C
		Coolant temperature	
		Engine oil temperature	
		Engine speed	
		Odometer	

Measured value block 201

Reading measured value block 201 3904			→	Readout on display
				not assigned
				not assigned
				not assigned
				currently selected tachometer constant (number of impulses per km.)
				• 3775 - for vehicles with 1.4 ltr./55 kW¹⁾; 1.4 ltr./55 kW TDI PD and 1.9 ltr./74 kW TDI PD Engines (signal source - tachometer sensor) • 3904 - for vehicles with 1.2 ltr./40 kW; 1.2 ltr./47kW; 1.4 ltr./55 kW²⁾; 1.4 ltr./74 kW; 2.0 ltr./85 kW; 1.9 ltr./47 kW SDI and 1.9 ltr./96 kW TDI PD Engines (signal source - tachometer sensor) • 23984 - for all types of engines (signal source - CAN)

¹⁾ For models with an automatic gearbox

²⁾ for vehicles with manual gearbox

Adjustment

The following changes can be made with the „adjustment“ function:

- ◆ Adjustment of momentary fuel consumption gauge
- ◆ adjustment (reset) of service interval display (SID)
- ◆ adjustment of odometer when the dash panel insert is replaced
- ◆ Adaptation of the speedometer constant when the dash panel insert is replaced
- ◆ adjustment of fuel gauge
- ◆ adjustment of service interval display

What are retrieved are the individual functions by entering the respective number of the adjustment channel (see adjustment table ⇒ 90-4 page 7).

adjustment table:

adjustment channel	adjustment function
02	adjustment (reset) of service interval display
03	adjustment of momentary fuel consumption gauge ⇒ 90-4 page 13 (only for dash panel inserts 6Y1 xxx xxx x und 6Y2 xxx xxx x)
04	Language versions (only for dash panel insert with maxi DOT display) - 1 = German, 2 = English, 3 = French, 4 = Italian, 5 = Spanish, 6 = Portuguese, 7 = not assigned, 8 = Czech
05	Adjust OIL value (km intervals - in thousands of kilometres), usually 15 - only for QG0
06	Adjust INSP value (km intervals - in thousands of kilometres), usually 30 - only for QG0
07	Adjust INSP value (time intervals - in months), usually 12 - only for QG0
09	Adjustment of the odometer reading ⇒ 90-4 page 8
10	Service interval data for oil service (OIL service) - distance counter ⇒ 90-4 page 9 - only for QG0
11	Service interval data for inspection service (INSP service) - distance counter ⇒ 90-4 page 9 - only for QG0
12	Service interval data for inspection service (INSP service) - counter for days ⇒ 90-4 page 9 - only for QG0
16	adjustment of tachometer constant ⇒ 90-4 page 14 (only for dash panel inserts 6Y1 xxx xxx x und 6Y2 xxx xxx x)
21	adjustment of the ignition keys ⇒ Chapter 96-1
30	adjustment of fuel gauge ⇒ 90-4 page 14
39 - 49	Service intervals ⇒ 90-4 page 11 - only for QG1 and QG2
50	adjustment of the vehicle immobiliser ⇒ Chapter 96-1

**Note**

- ◆ First perform a log-in procedure before adapting the odometer reading in channel 9 and the speedometer constant in channel 16 ⇒ 90-4 page 16.
- ◆ Subsequently proceed with function „10 - adjustment“.

Performing function „10 - adjustment“

Readout on display:

- Function **1** **0** enter „Adjustment“ and confirm with **Q**.

Readout on display:

- Enter the desired adjustment channel (adjustment table ⇒ 90-4 page 7).

►

Vehicle system test	HELP
Select function XX	

►

Adjustment
Enter channel number XX

Note

After altering an adjustment value or quitting an adjustment channel, it is necessary to once again perform the function „10 -adjustment“ in order to select another adjustment channel!

Adapting odometer reading

Note

- ♦ *The distance which the vehicle has covered can be read off from the faulty dash panel insert or be determined on the basis of the service schedule.*
- ♦ *The total distance indicated by the new dash panel insert must not be more than 100 km prior to adjustment.*
- ♦ *The total distance entered for the new dash panel insert must be greater than 100 km.*



WARNING!

The total distance can only be adapted once and in a positive direction.

It is no longer possible to correct the entry if an incorrect entry is made and confirmed. The dash panel insert must then be replaced with a new one again.

Example:

The faulty dash panel insert has an odometer reading of 89627 km. This km reading can be transferred to the new dash panel insert as follows:

- First perform a log-in procedure ⇒ 90-4 page 16.
- Enter the channel number **0** **9** and exit with **Q**.

Readout on display:

- Press **Q**.

►

Channel 9	Adjustment	0	->
Kilometer reading in 10 km	-	-	

Note

It is only possible to make a direct entry with the keypad of the Vehicle system tester -V.A.G 1552-!

Readout on display:

►

Channel 9	adjustment	0	Q
Enter adjustment value	XXXXX		

The last digit of the kilometer reading must be rounded up to the next full 10 km. The adjustment value which is then obtained for an odometer reading of 89627 km is

0	8	9	6	3	
X					Hundred thousands: 100000 through 900000 km
	X				Ten thousands: 10000 to 90000 km
		X			Thousands: 1000 to 9000 km
			X		Hundreds: 100 to 900 km
				X	Tens: 10 to 90 km
					Ones: rounded up to the next ten

- Enter adjustment value with the keypad.

Readout on display:

```

Channel 9      adjustment      0      Q
Enter adjustment value 08963

```

- Confirm the entry with **Q**.

Readout on display:

Channel 9 Adjustment	8963	->
Kilometer reading in 10 km	-	-

- Press .

The numerical value (km reading) entered now appears in the display of vehicle system tester -V.A.G 1552-. Check the numbers entered and the numerical order carefully.

If the displayed km reading is not correct, e.g. because an input error was made, press **(C)** and repeat the entry with the correct adaptation value.

Readout on display:

Channel 9	adjustment	8963	Q
Store changed value?			

- Confirm the entry with **Q**.

Readout on display:

Channel 9 Adjustment	8963	->
Changed value stored		

The kilometer reading (89630) which has been entered now appears in the kilometer display of the dash panel insert.

- Press .

Readout on display:

Vehicle system test HELP
Select function XX

Adjusting the service interval display when replacing the dash panel insert (QG0)

If the dash panel insert is replaced, the current service interval data for:

- ◆ Oil service (OIL service), distance in km
- ◆ Inspection service (INSP service), distance in km

and

- ◆ Inspection service (INSP service), enter in days in the new dash panel insert.

- The data must be read before removing the faulty dash panel insert.

**Note**

If it is not possible to read the data (dash panel insert faulty), it is then necessary to enter the data from the vehicle service schedule into the odometer display.

- Select the adjustment channels individually as stated in the table:

adjustment table:

adjustment channel	Service event
10	OIL service (or OIL)
11	INSP service
12	INSP service

Read-out on display of new dash panel insert after entering channel number 10:

Channel 10	Adjustment	150	->
actual value OIL in 100 km	-	-	

The selected channel and the current counter reading for the service event are displayed in the top line.

The nominal values of the service events state the value from which the distance and time counters of the service interval display count back ⇒ Inspection and Maintenance.

The adjustment values for adjustment channels 10 through 12 are calculated based on the difference between the respective nominal value and the actual driven value of the vehicle (time, total distance).

- Press ☐.

Readout on display:

Channel 10	Adjustment	150	->
Enter adjustment value	XXXXX		

**Note**

- ♦ The adjustment value must be entered as a 5-digit number (e.g. 00090 for adjustment value 90, equals a distance of 9,000 km to the next service inspection).
- ♦ If an adjustment value of 256 is entered, the adjustment value jumps to the maximum value of 255 after key **Q** is pressed.

- Enter new adjustment value.

Example:

The total distance which the new vehicle has travelled is found to be 6000 km on the basis of the faulty dash panel insert (or of the service schedule). The customer has covered this distance within 160 days.

It is necessary to adjust all the of service events in the new dash panel insert in order to obtain the following adjustment values:

- ♦ Channel 10: 15000 km - 6000 km = 9000 km (adjustment value 90)
- ♦ Channel 11: 30000 km - 6000 km = 24000 km (adjustment value 240)
- ♦ Channel 12: 360 days - 160 days = 200 days (adjustment value 200)

**Note**

The time counter for the INSP service can be adjusted by a maximum of 360 days.

Readout on display:

- Confirm with

Readout on display:

- Confirm with

Readout on display:

- Press

Readout on display:

► Channel 10 adjustment 90 Q
actual value OIL in 100 km - -

► Channel 10 adjustment 100 Q
Store changed value?

► Channel 10 Adjustment 100 ->
Changed value stored

► Vehicle system test HELP
Select function XX

Adapting the service interval display when replacing the dash panel insert (QG1 and QG2)

If the dash panel insert is replaced, the current service interval data must be entered into the new dash panel insert.

**Note**

- ♦ If the original values are not entered the service intervals will again be set back to zero and the service message will be delayed.
- ♦ The adjustment channels 42, 43, 44, 45, 49 will be automatically adjusted once the dash panel insert has been coded.
- ♦ Adjustment channel 39 will be automatically set to 1 - ON.

An adjustment table for the service intervals

adjustment channel	For vehicles	Counter contents
39	QG0, QG1 and QG2	An analysis of the oil level ♦ 1 - on ♦ 0 - off
40	QG1 and QG2	The number of km driven since the last inspection service (in km hundreds)
41	QG1 and QG2	The number of days since the last inspection service
42	QG1 and QG2	The minimum distance which limits the service interval (in hundreds of kilometres)

adjustment channel	For vehicles	Counter contents
43	QG1 and QG2	The maximum distance which limits the service interval (in hundreds of kilometres)
44	QG1 and QG2	the maximum number of days which limit the service interval
45	QG1 and QG2	Oil quality ♦ 1 - oil within specification for QG2 ♦ 2 - oil within specification for QG1
46	QG1 and QG2	the amount of fuel consumed since the last service interval
47	QG1 and QG2	Oil smoke counter (in hundreds of kilometres) - only for diesel engines
48	QG1 and QG2	Counter of thermal oil load (in hundreds of kilometres) - only for diesel engines
49	QG1 and QG2	the minimum number of days which limit the service interval

Example:

A total distance driven of 1500 km since the last inspection service for the vehicle was calculated based on the defect dash panel insert. The customer has covered this distance within 21 days. Fuel consumption was 40 litres per cylinder during the running of the vehicle.

In the new dash panel insert it is necessary to adapt all of the service intervals in order to obtain the following adjustment values:

- ♦ Channel 40: 1500 km (adjustment value 00015)
- ♦ Channel 41: 21 days (adjustment value 00021)
- ♦ Channel 46: 40 litres (adjustment value 00040)

Adjust momentary fuel consumption gauge

**Note**

- ♦ *Adjustment of momentary fuel consumption gauge can only be performed on vehicles fitted with multi-function display and dash panel inserts (6Y1 xxx xxx x and 6Y2 xxx xxx x).*
- ♦ *It is only possible to make an entry of between 85% and 115%.*
- ♦ *The entry must be made in steps of 5%.*

— Enter and confirm with .

Readout on display:

— Press .



Channel 3	Adjustment	100	->
		-	-

**Note**

It is only possible to make a direct entry with the keypad of the Vehicle system tester -V.A.G 1552-!

Readout on display:

- Enter adjustment value in range 00085 - 00115.

►

Channel 3	Adaptation	100	
Enter adjustment value			xxxxxx



Note

If a value of more than 00115 or less than 00085 is entered the „adjustment“ function is ended and it is then necessary to recommence with the function „10 - adjustment“!

Readout on display:

- Confirm with .

►

Channel 3	adjustment	100	Q
Enter adjustment value		00093	

Readout on display:

- Confirm with .

►

Channel 3	adjustment	093	Q
		-	-

Readout on display:

- Confirm with .

►

Channel 3	adjustment	093	Q
Store changed value?			

Readout on display:

- Press .

►

Channel 3	adjustment	093	->
Changed value stored			

Readout on display:

- Select function „End output“ and confirm with .

►

Vehicle system test			HELP
Select function XX			

Adjustment of the speedometer constant when replacing the dash panel insert



Note

- ♦ *Adjust the speedometer constant in accordance with the equipment.*
- ♦ *The adjustment of speedometer constant can only be performed on vehicles fitted with dash panel inserts (6Y1 xxx xxx x and 6Y2 xxx xxx x).*

- Performing the log-in procedure ⇒ 90-4 page 16.
- Enter and confirm with .

Readout on display:

- Press .

►

Channel 16	Adjustment	0	->
		-	-



Note

It is only possible to make a direct entry with the keypad of the Vehicle system tester -V.A.G 1552-!

Readout on display:

►

Channel 16	adjustment	0	Q
Enter adjustment value		XXXXX	

	adjustment value
Vehicles with 1.0/37 kW, 1.4/44 kW, 1.4/50 kW, 1.9/74 kW TDI Engines and all engines with automatic gearbox	03775
Vehicles with 1.2/40 kW, 1.4/55 kW, 1.4/74 kW, 2.0/85 kW and 1.9/47 kW SDI Engines	03904

- Enter adjustment value via the keypad (e.g. 03775).

Readout on display:

- Confirm with .

Readout on display:

- Press .

- Confirm with .

Readout on display:

- Press .

Readout on display:

- Select function   „End output“ and confirm with .

Channel 16	adjustment	0	Q
Enter adjustment value 03775			
Channel 16	Adjustment	3775	->
		-	-
Channel 16	adjustment	3775	Q
Store changed value?			
Channel 16	Adjustment	3775	->
Changed value stored			
Vehicle system test			HELP
Select function XX			

Testing fuel gauge (adjustment)

If the fuel gauge indicates a fuel level that is too high or too low, it is possible to correct (adapt) the pointer of the fuel gauge in the dash panel insert, if necessary.

- Perform final control diagnosis for the dash panel insert ⇒ Chapter 90-3.

If the final control diagnosis does not reveal any fault, it is then necessary to test the operation of the fuel gauge sender:

- Check the resistances of the fuel gauge sender in the measured value block ⇒ 90-4 page 1.

If the measured value block does not display a short circuit or open circuit in the wiring or in the fuel gauge sender, proceed with the test:

- Switch off ignition.
- Completely empty fuel tank and then fill with 6 litres of fuel.
- Connect vehicle system tester -V.A.G 1552- and switch on ignition.
- Enter address word   for „dash panel insert“ and confirm the entry with .

Readout on display:

- Press .

6Y1919870B COMBIINSTRUMENT	VDO	X09	->
Coding	20141	WSC	xxxxx

Readout on display:

- Function **1** **0** enter „Adjustment“ and confirm with **Q**.

Readout on display:

- Enter **3** **0** and confirm with **Q**.

Readout on display:



Note

- ♦ The adjustment value 128 is the average fuel tank sender characteristic curve set at the factory.
- ♦ It is only possible to make a direct entry with the keypad of the Vehicle system tester -V.A.G 1552- in the value range from 120 to 136!

- Press **Q**.

Readout on display:

- Enter an adjustment value in range 00120 - 00136.



Note

If a value of more than 00136 or less than 00120 is entered the „adjustment“ function is ended and it is then necessary to recommence with the function „10 - adjustment“!

Readout on display:

- Confirm with **Q**.

Readout on display:

The fuel gauge is correctly adjusted if the pointer is in the red area (reserve) on the right as shown in the illustration!

- Confirm with **Q**.

If the pointer position is O.K.:

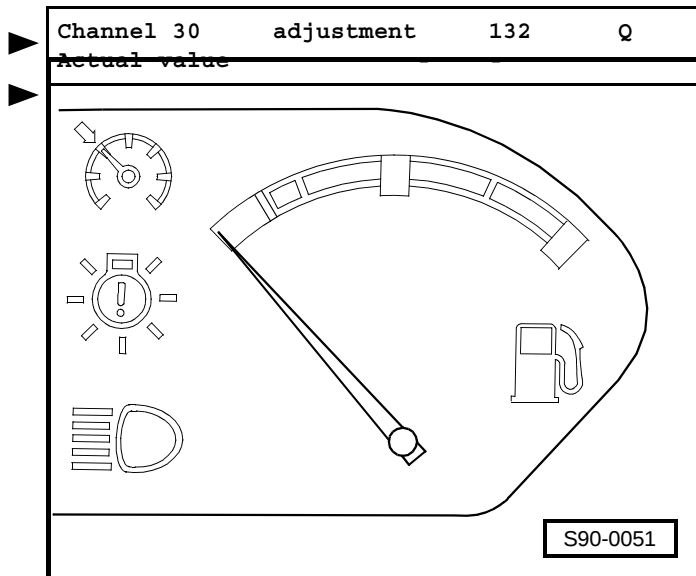
Vehicle system test HELP
Select function XX

Adjustment
Enter channel number XX

Channel 30 Adjustment 128 ->
Actual value - -

Channel 30 Adaptation 128
Enter adjustment value xxxxxx

Channel 30 adjustment 128 Q
Enter adjustment value 00132



Channel 30 adjustment 132 Q
Store changed value?

Channel 30 Adjustment 132 ->
Changed value stored

Vehicle system test HELP
Select function XX

Readout on display:

- Confirm with **Q**.

Readout on display:

- Press **Q**.

Readout on display:

- Select function 0 6 „End output“ and confirm with Q.

 Note

The fuel gauge sender must only be replaced if it is not possible to correctly adjust the fuel gauge.

Performing the log-in procedure

 Note

For vehicle system testers with a new version of the program card, the message „Coding 2“ can be displayed instead of the „log-in procedure“.

- Connect vehicle system tester -V.A.G 1552- and switch on ignition ⇒ Chapter 90-2.

Readout on display:



Vehicle system test	HELP
Select function XX	

- Enter function 1 1 „Login procedure“ and confirm entry with Q.

Readout on display:



Login procedure	
Enter code number XXXXX	

- Enter code number 13861.

Readout on display:



Log-in procedure	Q
Enter code number 13861	

- Confirm with Q.

Readout on display:



Vehicle system test	HELP
Select function XX	

90-5 Self-diagnosis of the electric system control unit I

Initiating self-diagnosis

Special tools, test and measuring equipment and auxiliary items required

- ◆ Vehicle system tester -V.A.G 1552-
- ◆ Diagnostic cable -V.A.G 1551/3, 3A, 3B nebo 3C-

Test conditions

- Coding of the vehicle voltage control unit O.K.
⇒ Chap. 90-6
- Fuses according to current flow diagram O.K.
- Battery voltage at least 11 V
- all electrical components must be switched off

Connecting vehicle system tester -V.A.G 1552-

The diagnostic connection is located on the left next to the storage compartment on the driver's side.

- Unclip cover and remove downward.
- Connect vehicle system tester -V.A.G 1552- with appropriate cable. ►
- Switch on ignition.

Readout on display:



Note

If there is no readout on the display: ⇒ Operating instructions of the vehicle system tester

- Enter address word for „vehicle voltage control unit“ and confirm the entry with .

After approx. 5 secs the display will show: ►

- ◆ 6Q0937049: Number of the electric system control unit
- ◆ ELECTRIC SYSTEM-CU: Designation of component
- ◆ 1524: Software version of dash panel insert (other readouts are possible)
- ◆ Coding 09402: Coding the vehicle voltage control unit
- ◆ WSC xxxxx: Workshop code

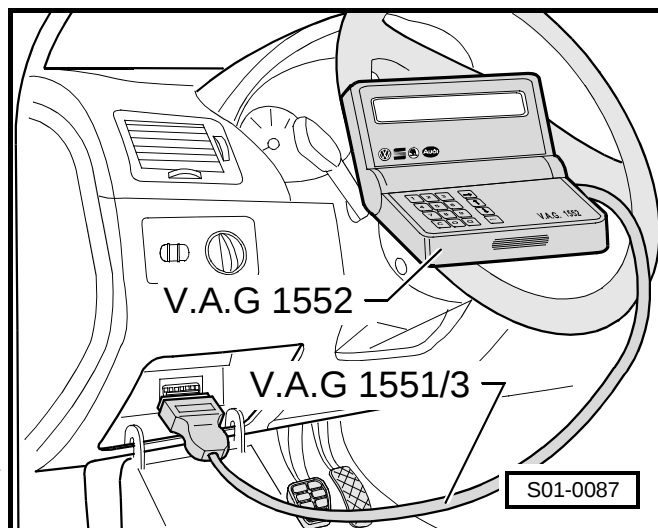


Note

*Check coding by referring to the table of codes
⇒ Chap. 90-6.*

- Press .

If one of the following messages appears in the display, carry out fault finding as stated in the fault finding pro- ►



Vehicle system test
Enter address word XX

HELP

6Q0937049 VEHICLE VOLTAGE-CU.
1524

Vehicle system test
The control unit does not respond!

HELP

gramme diagnostic cable $\Rightarrow$ Current Flow Diagrams,
Electrical Fault Finding and Fitting Locations.

or

or

or

- Move forward in the programme with the key .

Vehicle system test
Fault in communication build-up

[illegible]

```
|Vehicle system test                                HELP  
K cable does not connect to pos. term.
```

Self-diagnosis functions

The following functions are possible:

- 02 - Interrogating fault memory ⇒ 90-5 page 2
- 03 - Final control diagnosis ⇒ Chap. 90-6
- 05 - Erasing fault memory ⇒ 90-5 page 3
- 06 - Ending output ⇒ 90-5 page 3
- 07 - Coding control unit ⇒ Chap. 90-6
- 08 - Reading measured value block ⇒ Chap. 90-7
- 10 - Adaptation ⇒ Chap. 90-7
- 11 - Log-in procedure ⇒ Chap. 90-4

Interrogating fault memory



Note

The fault information displayed is not constantly updated, but only when self-diagnosis is initiated, or with the function 05 „Erase fault memory“.

Readout on display:

- Enter function **0 2** for „Interrogate fault memory“ and confirm entry with **Q**.

The number of faults stored appears on the display.

The stored faults are displayed in sequence.

- Find the fault message displayed in the fault table and rectify the fault $\Rightarrow$ Chap. 90-6.

If „No fault detected“ the program returns to its initial position after key ☐ is pressed.

Readout on display:

If anything else appears on the display: $\Rightarrow$ Operating instructions of the vehicle system tester.

- End output (Function 06) $\Rightarrow$ 90-5 page 3.

```
Vehicle system test                HELP
Select function XX
```

```
X faults detected!
```

```
No fault detected!          ->
```

```
Vehicle system test                                HELP
Select function XX
```

Erasing fault memory



Note

The contents of the fault memory are output automatically after the fault memory is erased. If it is not possible to erase the fault memory, interrogate the fault memory once again and rectify any faults.

Requirements:

- Fault memory interrogated $\Rightarrow$ 90-5 page 2.
- All faults rectified.

After interrogating the fault memory:

Readout on display:

- Select function **[0][5]** „Erase fault memory“ and confirm entry with **[Q]**.

Readout on display:

The fault memory is now erased.

- Press ☐.

Readout on display:



Note

- ◆ *If the following message is displayed the test sequence is incorrect:*
- ◆ *Carefully follow the test sequence step by step: first interrogate the fault memory, if necessary rectify faults and then erase the fault memory.*

Vehicle system test HELP
Select function XX

```

Vehicle system test          ->
Fault memory erased!

```

Vehicle system test HELP

Select function XX

```
Vehicle system test ->
Fault memory was not interrogated
```

Ending output

- Select function **0 6** „End output“ and confirm entry with **Q**.

Readout on display:

- Switch off ignition.
- Separate vehicle system tester -V.A.G 1552-.

Vehicle system test HELP
Enter address word XX

90-6 Self-diagnosis of the vehicle voltage control unit II

Fault table for the vehicle voltage control unit



Note

- ◆ All the possible faults which can be detected by the vehicle voltage control unit and can be displayed by -V.A.G 1552- are listed below according to the 5-digit fault code.
- ◆ Before replacing components found to be defective first check the wiring and plug connections to these components as well as the earth cables according to the current flow diagram.
- ◆ After repair always interrogate the fault memory using vehicle system tester -V.A.G 1552- and erase the memory.
- ◆ All static and sporadic faults are stored in the fault memory. A fault is detected as static if it exists for at least 2 seconds. If the fault is then no longer present, it is stored as a sporadic (temporary) fault. „/SP“ appears on the right of the display.
- ◆ After switching on the ignition, all the faults which exist are set to sporadic and are not stored as static faults unless they continue to exist after completing the check.
- ◆ If a sporadic fault no longer occurs during 50 driving cycles (ignition on for at least 5 minutes, road speed > 30 km/h), it is erased.

Readout on - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
00883 Ignition/starter switch -D (terminal S)	Implausible signal	◆ Loose contact ◆ Corrosion at plug connections ◆ Switch defective	Operating problems	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace switch.
00884 Ignition/starter switch -D (terminal X)	Implausible signal			
00885 Ignition/starter switch -D (terminal 50)	Implausible signal			
00886 Turn signal switch - E2	Implausible signal			
00887 Hazard warning light push-button - E229	Implausible signal	◆ Loose contact ◆ Corrosion at plug connections ◆ Push-button defective	Operating problems	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace push-button.
00888 Intermittent wiper switch -E22	Implausible signal	◆ Loose contact ◆ Corrosion at plug connections ◆ Switch defective	Operating problems	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace switch.

Readout on - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
00889 Horn plate -H	Implausible signal	◆ Loose contact ◆ Corrosion at plug connections ◆ Push-button defective	Operating problems	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace push-button.
00890 Heated rear window push-button - E230	Implausible signal			
00891 Remote tailgate release push-button - E233	Implausible signal			
00893 Tailgate release push-button -E234	Implausible signal			
00895 CCS/AICC operating unit -E45	Implausible signal	◆ Loose contact ◆ Corrosion at plug connections ◆ Switch defective	Operating problems	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace switch.
00896 Tailgate locking unit -F256	Implausible signal	◆ Loose contact ◆ Corrosion at plug connections ◆ The tailgate lock is defective	Operating problems	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace tailgate lock.
00897 Windscreen washer pump -V5	Implausible signal	◆ Loose contact ◆ Corrosion at plug connections ◆ Windscreen washer pump defective	Operating problems	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace windscreen washer pump.
00899 Wiper motor fuse - S128	defective	◆ Loose contact ◆ Corrosion at plug connections ◆ Fuse No. 41 defective	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace fuse.
00900 Horn/dual tone fuse -S194	defective	◆ Loose contact ◆ Corrosion at plug connections ◆ Fuse No. 40 defective		

Readout on - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
00901 Reversing lights	Implausible signal	- Loose contact/short circuit - Corrosion at plug connections - Reversing light switch defective	Operating problems	- Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. - Check connectors. - Replace reversing light switch.
	Short circuit to positive			
00902 Remote tailgate release fuse -S195	defective	- Loose contact - Corrosion at plug connections - Fuse No. 31 defective	no operation	- Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. - Check connectors. - Replace fuse.
00903 Exterior mirror heater fuse -S196	defective	- Loose contact - Corrosion at plug connections - Fuse No. 38 defective	no operation	- Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. - Check connectors. - Replace fuse.
00905 Reversing light fuse -S40	defective	- Loose contact - Corrosion at plug connections - Fuse No. 13 defective	no operation	- Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. - Check connectors. - Replace fuse.
00906 Horn/dual tone horn -H1	Short circuit to positive	- Short-circuit in cable connection - Horn defective	no operation	- Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. - Check connectors. - Replace horn.
00907 Load management intervention		Data bus fault	Poor vehicle handling	Perform self-diagnosis of engine control unit ⇒ Engine - Fuel Injection; Rep. Gr. 01.
00909 Windscreen wiper motor -V (stage 1/2)	defective	- Loose contact - Corrosion at plug connections - Windscreen wiper motor defective	Operating problems	- Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. - Check connectors. - Replace windscreen wiper motor.
00920 Heated exterior mirror (24/25)	Short circuit to positive	- Loose contact - Corrosion at plug connections - Short-circuit to positive terminal in the wiring	no operation	- Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. - Check connectors.
00924 Headlight cleaning system relay -J39	Short circuit to earth	- Loose contact - Corrosion at plug connections - Relay defective	no operation	- Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. - Check connectors. - Replace relay.

Readout on - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
00925 Fuse (30) for the interior lights - S261	defective	◆ Loose contact ◆ Corrosion at plug connections ◆ Fuse No. 4 defective	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace fuse.
00966 Turn signal light fuse -S151	defective	◆ Loose contact ◆ Corrosion at plug connections ◆ Fuse No. 44 defective	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace fuse.
00969 Heated rear window fuse -S41	defective	◆ Loose contact ◆ Corrosion at plug connections ◆ Fuse No. 39 defective		
00971 Relay for heated windscreen -J410 (up to 04.02)	Short circuit to positive	◆ Loose contact ◆ Corrosion at plug connections ◆ Short-circuit to positive terminal in the wiring	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace relay.
00974 Switch heated windscreen -E180 (up to 04.02)	Short circuit to positive	◆ Loose contact ◆ Corrosion at plug connections ◆ Short-circuit to positive terminal in the wiring	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace switch.
00975 Heated rear window -Z1	Short circuit to positive	◆ Short-circuit in the wiring to the rear window	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace rear window.
00989 Consumer switch-off fuse -S157	defective	◆ Loose contact ◆ Corrosion at plug connections ◆ Fuse defective	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace fuse.
00991 Interior lighting	Short circuit to positive	◆ Short circuit in the wiring	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors.

Readout on - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
01024 Rain sensor -G213	No signal	◆ Line interruption ◆ Sensor defective	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace rain sensor -G213.
01044 Control unit wrongly coded				– Code control unit according to table ⇒ 90-6 page 8.
01054 Terminal 30 - voltage supply relay - J317	Short circuit to positive	◆ Loose contact ◆ Corrosion at plug connections ◆ Short-circuit in the wiring to the interior lights	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace relay.
01070 Starter relay -J53	Short circuit to earth	◆ Loose contact/short-circuit to earth ◆ Corrosion at plug connections ◆ Relay defective	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace relay.
01117 Load signal for alternator terminal DF	Implausible signal	◆ Loose contact ◆ Corrosion at plug connections ◆ AC generator defective	no operation	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace AC generator.
01147 Tailgate locking motor -V120		◆ Loose contact ◆ Corrosion at plug connections ◆ Tailgate locking motor defective	Operating problems	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace tailgate locking motor.
01236 Selector lever lock solenoid -N110	Short circuit to earth	◆ Loose contact/short-circuit to earth ◆ Corrosion at plug connections ◆ Solenoid defective	Operating problems	– Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors. – Replace solenoid.
01312 Drive databus	defective	◆ Short circuit to positive ◆ Short circuit to earth ◆ Data BUS defective	◆ Poor vehicle handling ◆ possibly wrong displays in the dash panel insert	– Check data BUS ⇒ Chapter 90-9.

Readout on - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
01314 Engine control unit	No communication	◆ Data BUS defective ◆ Engine control unit defective	◆ Poor vehicle handling ◆ possibly wrong displays in the dash panel insert	– Check data BUS ⇒ Chapter 90-9. – Read fault memory of engine control unit. ⇒ Engine - Fuel Injection; Rep. Gr. 01.
01316 Brake control unit	No communication	◆ Data BUS defective ◆ ABS control unit defective	◆ Poor vehicle handling ◆ possibly wrong displays in the dash panel insert	– Check data BUS ⇒ Chapter 90-9. – Read out fault memory of ABS control unit ⇒ Chassis; Rep. Gr. 45.
01317 Control unit with display in dash panel insert -J285	No communication	◆ Data BUS defective ◆ Dash panel insert defective	No setting or incorrect display	– Check data BUS ⇒ Chapter 90-9. – Read out dash panel insert fault memory ⇒ Chapter 90-2.
01320 Climatronic control unit -J255	No communication	◆ Data BUS defective ◆ Air conditioning system control unit defective	◆ Poor vehicle handling ◆ Air conditioning system does not operate	– Check data BUS ⇒ Chapter 90-9. – Read out air conditioning system fault memory ⇒ Heating, Air conditioning; Rep. Gr. 01.
01321 Airbag control unit - J234	No communication	◆ Data BUS defective ◆ Airbag control unit defective	◆ possibly wrong displays in the dash panel insert	– Check data BUS ⇒ Chapter 90-9. – Read out fault memory of the airbag control unit ⇒ Body Work; Rep. Gr. 01.
01330 Convenience system central control unit -J393	No communication	◆ Data BUS defective ◆ Central locking control unit defective	Central locking does not operate	– Check data BUS ⇒ Chapter 90-9. – Read out fault memory of central locking control unit ⇒ Body Work; Rep. Gr. 01.
01598 Vehicle battery voltage	Signal too low	◆ Battery discharged ◆ Battery defective	Engine does not start	– Charging battery. – Test battery ⇒ Chapter 27-1.
65535 Control unit defective		◆ Control unit defective		– Replacing control unit ⇒ Chapter 97-2.

Actuator diagnosis

The final control diagnosis is a part of the electrical test. Final control diagnosis can be used to test the following components, depending on the equipment version:

- ◆ Warning lamp for hazard warning light system
- ◆ Windscreen wiper motor (stage 1 and 2)

- ◆ Heated rear window
- ◆ Heated rear window warning light
- ◆ Horn/dual tone horn
- ◆ Power supply relay for interior lighting
- ◆ Interior lighting
- ◆ Actuation of tailgate remote unlocking
- ◆ Headlight cleaning system relay (only if fitted)
- ◆ Exterior mirror heater
- ◆ Heated exterior mirror warning light (not used)
- ◆ Reversing lights (for equipment of automatic gearbox)

Initiating a final control diagnosis



Note

It is possible to quit the test sequence at any time by pressing key **[C]**.

- Connect vehicle system tester -V.A.G 1552- and select „Vehicle voltage control unit“ (address word 09); ignition is switched on for this step ⇒ Chapter 90-5.

Readout on display:

► Vehicle system test HELP
Select function XX

- Function **[0]** **[3]** select „Final control diagnosis“ and confirm with **[Q]**.

Readout on display:

► Actuator diagnosis ->
Warning lamp for hazard warninglight system

The warning lamp in the hazard warning light switch flashes.

- Press **[]**.

Readout on display:

► Actuator diagnosis ->
Windscreen wiper motor -V (stage 1/2)

The windscreen wiper operates in stage 1.

- Press **[]**.

Readout on display:

► Actuator diagnosis ->
Windscreen wiper motor -V (stage 1/2)

The windscreen wiper operates in stage 2.

- Press **[]**.

Readout on display:

► Actuator diagnosis ->
Heated rear window -Z1

Rear window heater is switched on.

- Press **[]**.

Readout on display:

► Actuator diagnosis ->
Heated rear window warning lamp -K10

The warning lamp lights up.

- Press **[]**.

Readout on display:

► Actuator diagnosis ->
Horn/dual tone horn -H1

The horn is audible.

- Press **[]**.

Readout on display:

The relay must click.

— Press ☐.

Readout on display:

The interior lighting is on (interior lighting switch on „door control“).

— Press ☐.

Readout on display:

The tailgate opens.

— Press ☐.

Readout on display:

The headlamp cleaning system is operated for a short time.

— Press ☐.

Ignore read-out.

— Press ☐.

Readout on display:

The mirror heater is switched on.

— Press ☐.

Readout on display:

Ignore read-out.

— Press ☐.

Readout on display:

— Press ☐.

Readout on display:

►

Actuator diagnosis	->
Voltage supply relay tml.30-J317	

►

Actuator diagnosis	->
Interior lighting	

►

Actuator diagnosis	->
Actuation of tailgate remote unlocking	

►

Actuator diagnosis	->
HCS relay -J39	

►

Actuator diagnosis	->
Consumer cut-off	

►

Actuator diagnosis	->
Heated exterior mirrors (Z4/Z5)	

►

Actuator diagnosis	->
Warning lamp for heated ext. mirrors -K153	

►

Actuator diagnosis	->
END	

►

Vehicle system test	HELP
Select function XX	

Coding the vehicle voltage control unit

- Connect vehicle system tester -V.A.G 1552- and select „Vehicle voltage control unit“ (address word 09); ignition is switched on for this step ⇒ Chapter 90-5.

Readout on display:

►

Vehicle system test	HELP
Select function XX	

- Select function „code the control unit“ and confirm with .

Readout on display:

►

Coding control unit
Enter code number XXXXX (0-32000)

- Enter code number by referring to table of codes and confirm with .

Table of codes

Complete with the individual values according to equipment.

Equipment	Value
Activation of the function EKP ¹⁾ - for vehicles from 07.01	16384
Rear window wiper with Convenience circuit	08192
not used	04096
not used	02048
Impulse-controlled tailgate remote release	01024
Rain sensor fitted	00512
Headlight cleaning system relay fitted	00256
Heated exterior mirrors	00128
heatable windscreen - for vehicles up to 04.02	00064
heated seats	00032
four-door version (two-door version = 0) - for vehicles up to 04.02	00016
Identification of rear backrest position - for vehicles as of 04.02	
Interior lighting control ²⁾	00008
electrical load management active ³⁾	00004
electrical tailgate remote release fitted	00002
Trailer coupling fitted	00001

¹⁾ Fuel prepumping when opening the driver door (pressure rise before switching the ignition on)

²⁾ when removing the ignition key (separation of S-contact) the interior light comes on

³⁾ Controlled power user shut-off (heatable rear window, heatable seats, heatable exterior mirror, air conditioning system) when there is high loading on the generator



Note

If the tailgate remote release is contact-controlled enter 0.

e. g.: Vehicle with

Rear window wiper with Convenience circuit	08192
Impulse-controlled tailgate remote release	01024
heated exterior mirror	00128
heated seats	00032
4-door version	00016
Interior lighting control	00008
Tailgate remote release fitted	00002

Code number: 09402

The display shows the control unit coding, e.g. 09402): ►

– Press ☐.

Readout on display: ►

– Select function „End output“ and confirm with .

6Q0937049 VEHICLE VOLT.-CU.	1524
Coding 09402	WSC xxxxx

Vehicle system test	HELP
Select function XX	

90-7 Self-diagnosis of the vehicle voltage control unit III

Reading measured value block

Readout on display:

- Select function **0 8** „Read measured value block“ and confirm the entry with key **Q**.

Readout on display:

- Enter display group number ⇒ 90-7 page 1.

▶

Vehicle system test	HELP
Select function XX	

▶

Reading measured value block
Enter display group number XXX

List of display groups

Measured value block 001

Reading measured value block 1				→	Readout on display
activated	off	off	off	off	
					Terminal 15
					♦ Off - ignition off
					♦ On - ignition on
					Terminal X
					♦ Off - switched off using the ignition key
					♦ On - switched on using the ignition key
					Terminal 50
					♦ Off - switched off using the ignition key
					♦ On - switched on using the ignition key
					Terminal S
					♦ activated - ignition key inserted
					♦ disactivated - ignition key withdrawn

Measured value block 002

Reading measured value block 2				→	Readout on display
11.8 V	activated	off	off		
					Hazard warning lights
					◆ off
					◆ on
					Left, right turn signal lights
					◆ off
					◆ on
					Load management intervention
					◆ activated
					◆ not activated
					Battery voltage

Measured value block 003

Reading measured value block 3				→	Readout on display
off	off	off	Stage 4		
					Intermittent wipe potentiometer
					◆ Stage 1
					◆ Stage 2
					◆ Stage 3
					◆ Stage 4
					Windscreen wiper in stage 2 position
					◆ off
					Windscreen wiper in stage 1 position
					◆ off
					Intermittent wipe position
					◆ off
					◆ on

Measured value block 004

Reading measured value block 4				→	Readout on display
off	not activated	not activated	off		
					Engine hood contact
					♦ off - engine hood open
					♦ on - engine hood closed
					Horn contact
					♦ not activated
					♦ activated
					Rear window heater pushbutton
					♦ not activated
					♦ activated
					Windscreen washer pump
					♦ off
					♦ on

Measured value block 005

Reading measured value block 5				→	Readout on display
Door open	Door closed	Door closed	Door closed		
					Rear right door
					♦ Door closed - Door closed
					♦ Door open - Door open
					Rear left door
					♦ Door closed - Door closed
					♦ Door open - Door open
					Front passenger door
					♦ Door closed - Door closed
					♦ Door open - Door open
					Driver door
					♦ Door closed - Door closed
					♦ Door open - Door open

Measured value block 006

Reading measured value block 6 →			Readout on display
on	on		
			not assigned
			not assigned
		Switch for luggage compartment lighting (additional contact for tailgate locking)	
		◆ off ◆ on ◆ not fitted	
		Switch for the central locking system (additional contact for tailgate locking)	
		◆ off ◆ on ◆ not fitted	

Measured value block 007

Reading measured value block 7 →			Readout on display
not activated	not fitted	off	
			not assigned
		Service position of lock	
		◆ off ◆ on ◆ not fitted	
		Tailgate remote release interior push-button	
		◆ activated ◆ not activated ◆ not fitted	
		Tailgate handle push-button	
		◆ activated ◆ not activated ◆ not fitted	

Measured value block 008

Reading measured value block 8				→	Readout on display
not fitted	off	rev. g. off	not fitted		
				Heated windscreen push-button	
				◆ activated	
				◆ not activated	
				◆ not fitted	
				Reversing light switch	
				◆ Rev. g. off - reverse gear not engaged	
				◆ Rev. g. on - reverse gear engaged	
				◆ not fitted	
				Heated exterior mirror switch	
				◆ off	
				◆ on	
				◆ not fitted	
	Headlamp cleaning system				
	◆ off				
	◆ on				
	◆ not fitted				

Measured value block 009

Reading measured value block 9				→	Readout on display
activated	not activated	not activated	not activated		
					CC switch - acceleration (RES)
				◆	activated
				◆	not activated
					CC switch - brake phase (SET)
				◆	activated
				◆	not activated
					CC switch in intermediate position ON - locked (OFF)
				◆	activated
				◆	not activated
					CC switch - locked (OFF)
				◆	activated - switch in position ON
				◆	not activated - locked

Adjustment

The following changes can be made and stored with the „Adaptation“ function:

- ◆ Terminal 30G disconnect-restore
- ◆ Switch-off time for heated windscreen
- ◆ Switch-off time for heated exterior mirrors
- ◆ Switch-off time for heated rear window
- ◆ Time for tailgate remote unlocking after locking
- ◆ Convenience driving direction indicator, activation time
- ◆ Convenience driving direction indicator, number of cycles
- ◆ Additional wiper cycle after washing
- ◆ Headlight cleaning system (actuation frequency of the wiper lever required for the washing the headlights)

What are retrieved are the individual functions by entering the respective number of the adjustment channel (see adjustment table ⇒ 90-7 page 6).



Note

- ◆ *In the case of adjustment of the individual channels on control units with index B (6Q0937049B) and without an index (6Q0937049) one should first select function 11 - Login ⇒ Chapter 90-4 and then enter code number 21343.*
- ◆ *The function 11 - Login - is no longer needed from the control units with Index C (6Q0937049C).*

Adaptation table

adjustment channel	adjustment function	Range of values on the time range indicator	Basic value on the display Basic value for the time
01	Terminal 30G disconnect-restore	1 ... 253 40.96 s ... 173 min	44 30 min
02	Switching-off time for the heatable windscreen (for vehicles up to 04.02)	1 ... 253 40.96 s ... 173 min 254 infinite activation time	29 20 min
03	Switch-off time for heated exterior mirrors	1 ... 253 40.96 s ... 173 min 254 infinite activation time	29 20 minutes (for vehicles up to 04.02)
			254 without switching off (for vehicles as of 05.02)
04	Switch-off time for heated rear window	1 ... 253 40.96 s ... 173 min 254 infinite activation time	29 20 min
05	Time for tailgate remote unlocking	1 ... 254 320 ms ... 81.6 seconds	3 1 second
06	Convenience driving direction indicator, activation time	40 ms ... 10 seconds	25 1 second

adjust- ment chan- nel	adjustment function	Range of values on the time range indicator	Basic value on the display Basic value for the time
07	Convenience driving direction indicator, number of cycles	0 ...255	3
08	Additional wiper cycle after washing	0 ... 255 s	5 5 second
09	Headlight cleaning system (ac- tuation frequency of the wiper lever required for the washing the headlights)	0 ...255	5

Performing function 10 „Adaptation“

Readout on display:

- Function **1** **0** enter „Adjustment“ and confirm with **Q**.

Readout on display:

- Enter the desired adjustment channel (adjustment table ⇒ 90-7 page 6).



Note

Perform adaptation according to vehicle equipment.

The adjustment process is explained taking the example of channel „04 - switch-off time of the heated rear window“. Adaptation is performed in a similar way for the other adaptation channels.

- Enter the channel number **0** **4** and exit with **Q**.

Readout on display:

- Press **□** key.

Readout on display:

- Refer to the „Adaptation table“ for the desired adaptation value and enter it with the keypad.

Readout on display:

- Confirm the entry with **Q**.

Readout on display:

- Press **□** key.

Readout on display:

- Confirm the entry with **Q**.

Readout on display:

- Press **□** key.

Readout on display:

Adaptation is completed.

Vehicle system test **HELP**
Select function XX

Adjustment
Enter channel number XX

Channel 04 Adjustment 0
()

Channel 04 Adjustment 0
Enter adjustment value XXXXX

Channel 04 Adjustment 0 **Q**
Enter adjustment value 00020

Channel 04 Adjustment 20
()

Channel 04 Adjustment 20 **Q**
Store changed value?

Channel 04 Adjustment 20
Changed value stored

Vehicle system test **HELP**
Select function XX

90-8 Self-diagnosis of the Gateway

Initiating self-diagnosis

Special tools, test and measuring equipment and auxiliary items required

- ◆ Vehicle system tester -V.A.G 1552-
- ◆ Diagnostic cable -V.A.G 1551/3A, 3B oder 3C-

Test requirements

- Always check the Gateway coding complies with the table of codes.

Test conditions

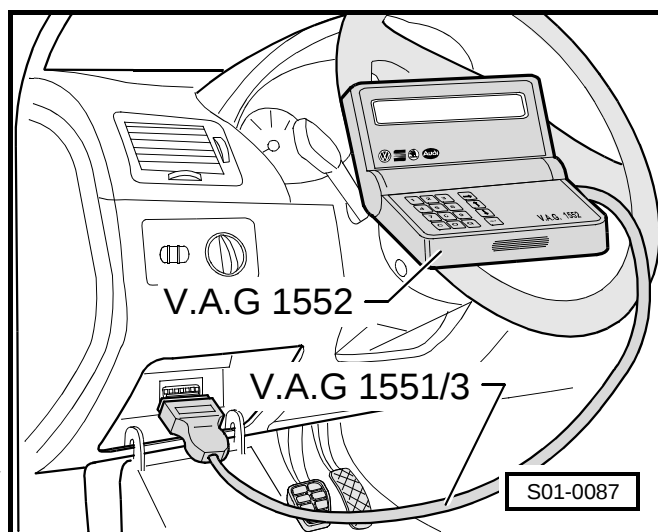
- Fuses according to current flow diagram O.K.
- Battery voltage at least 11 volts
- All electrical components switched off

Connecting vehicle system tester -V.A.G 1552-

The diagnostic connection is located on the left next to the storage compartment on the driver's side.

- Unclip cover and remove downward.
- Connect vehicle system tester -V.A.G 1552- with appropriate cable. ►
- Switch on ignition.

Readout on display:



Vehicle system test HELP
Enter address word XX



Note

If there is nothing on the display ⇒ Operating instructions for the vehicle system tester.

- Enter address word **19** „Gateway databus“ and confirm the entry with **Q**

After approx. 5 secs the display will show e.g.:

- ◆ 6N0909901: Number of the Gateway
- ◆ Gateway K <-> CAN: Designation of component
- ◆ 1522: Softwareversion of Gateway
- ◆ Coding 00014: Coding of the Gateway
- ◆ WSC xxxxx: Workshop code

6N0909901 Gateway K <-> CAN 1522
Coding 00014 WSC xxxxx



Note

Check coding with the table of codes.

- Press **□**.

If one of the following messages appears in the display, carry out fault finding as stated in the fault finding pro- ►

Vehicle system test HELP
The control unit does not respond!

gramme diagnostic cable ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

►	Vehicle system test Fault in communication build-up	HELP
►	Vehicle system test K cable does not connect to earth	HELP
►	Vehicle system test K cable does not connect to pos. term.	HELP

— Move forward in the test program with .

Self-diagnosis functions

The following functions are possible:

- 02 - Interrogating fault memory ⇒ 90-8 page 2
- 05 - Erasing fault memory ⇒ 90-8 page 5
- 06 - Ending output ⇒ 90-8 page 6
- 07 - Coding control unit ⇒ 90-8 page 6
- 08 - Reading measured value block ⇒ 90-8 page 7

Interrogating fault memory



Note

The displayed fault information is not constantly updated, this only occurs when self-diagnosis is initiated or if function 05 „Erase fault memory“ is selected.

Readout on display:

- Select function „Interrogate fault memory“ and confirm with .

The number of faults stored appears on the display.

The stored faults are displayed in sequence by pressing the arrow key.

- Find the fault displayed in the fault table and rectify the fault ⇒ 90-8 page 3.

If „No fault detected“ the program returns to its initial position after key is pressed.

Readout on display:

If anything else appears in the display ⇒ Operating instructions for vehicle system tester.

- End output (Function 06) ⇒ 90-8 page 6.

►	Vehicle system test Select function XX	HELP
►	X faults detected!	
►	No fault detected!	->
►	Vehicle system test Select function XX	HELP

Fault table for the Gateway



Note

- ◆ All the possible faults which can be detected by the vehicle system tester -V.A.G 1552- are listed below according to the 5-digit fault code.
- ◆ After repair always interrogate the fault memory using vehicle system tester -V.A.G 1552- and erase the memory.
- ◆ All static and sporadic faults are stored in the fault memory. A fault is detected as static if it exists for at least 2 seconds. If the fault is then no longer present, it is stored as a sporadic (temporary) fault. „/SP“ appears on the right of the display.
- ◆ After switching on the ignition, all the faults which exist are set to sporadic and are not stored as static faults unless they continue to exist after completing the check.
- ◆ If a sporadic fault no longer occurs during 50 driving cycles (ignition on for at least 5 minutes, road speed > 30 km/h), it is erased.

Display - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
00778 Steering angle sender -G85	No communication	◆ Data BUS defective ◆ Sender not fitted	No self-diagnosis is possible	— Check data bus ⇒ Chapter 90-9
01044 Control unit wrongly coded		◆ Control unit not coded in accordance with configuration	No self-diagnosis is possible	— Code control unit.
01300 Navigation system with CD drive control unit -J401	No communication	◆ Data BUS defective ◆ Control unit not fitted	No self-diagnosis is possible	— Check data bus ⇒ Chapter 90-9
01301 Language input control unit -J507	No communication	◆ Data BUS defective ◆ Control unit not fitted	No self-diagnosis is possible	— Check data bus ⇒ Chapter 90-9
01303 Telephone transmitter and receiver unit -R36	No communication	◆ Data BUS defective ◆ Control unit not fitted	No self-diagnosis is possible	— Check data bus ⇒ Chapter 90-9
01304 Radio	No communication	◆ Data BUS defective ◆ Control unit not fitted	No self-diagnosis is possible	— Check data bus ⇒ Chapter 90-9
01308 Roof electronics control unit	No communication	◆ Data BUS defective ◆ Control unit not fitted	No self-diagnosis is possible	— Check data bus ⇒ Chapter 90-9
01309 Power steering control unit -J500	No communication	◆ Data BUS defective ◆ Control unit not fitted	No self-diagnosis is possible	— Check data bus ⇒ Chapter 90-9
01310 Self-levelling suspension control unit -J197	No communication	◆ Data BUS defective ◆ Control unit not fitted	No self-diagnosis is possible	— Check data bus ⇒ Chapter 90-9
01312 Drive databus	defective	◆ Data BUS defective	No self-diagnosis is possible	— Check data bus ⇒ Chapter 90-9
01314 Engine control unit	No communication	◆ Data BUS defective ◆ Control unit not fitted	No self-diagnosis is possible	— Check data bus ⇒ Chapter 90-9

Display - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
01315 Gearbox control unit	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01316 Brake control unit	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01317 Control unit with display in dash panel insert -J285	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01318 Injection pump control unit -J399	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01319 Distance control unit - J428	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01320 Climatronic control unit -J255	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01321 Airbag control unit - J234	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01322 Multi-function unit control unit -J501	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01324 Four-wheel drive control unit -J492	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01325 Tyre pressure monitor control unit -J502	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01326 Multi-function steering wheel control unit -J453	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01327 Park aid control unit - J446	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01330 Convenience system central control unit - J393	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01331 Door control unit driver's side -J386	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01332 Door control unit front passenger's side - J387	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9

Display - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
01333 Door control unit rear left -J388	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01334 Door control unit rear right -J389	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01335 Seat/mirror position control unit Driver's side	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
01336 Group convenience data bus	defective	♦ Data BUS defective	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9
	in single-filament operation			
01341 CU with display in dash panel insert on CAN Comfort version -J285	No communication	♦ Data BUS defective ♦ Control unit not fitted	No self-diagnosis is possible	– Check data bus ⇒ Chapter 90-9

Erasing fault memory



Note

The contents of the fault memory are output automatically after the fault memory is erased. If it is not possible to erase the fault memory, interrogate the fault memory once again and rectify any faults.

Requirements:

- Fault memory was interrogated ⇒ 90-8 page 2.
- All faults were rectified.

After interrogating the fault memory:

Readout on display:

- Select function **0** **5** „Erase fault memory“ and confirm with **Q**.

Readout on display:

The fault memory is now erased.

- Press **Q**.

Readout on display:

►	Vehicle system test Select function XX	HELP
►	Vehicle system test Fault memory erased!	->
►	Vehicle system test Select function XX	HELP

**Note**

- ♦ If the following message is displayed the test sequence is incorrect.
- ♦ Carefully follow the test sequence step by step: first interrogate the fault memory, if necessary rectify faults and then erase the fault memory.

Vehicle system test ->
Fault memory was not interrogated

Ending output

- Select function „End output“ and confirm with .

Readout on display:

- Switch off ignition.
- Separate vehicle system tester -V.A.G 1552-.

Vehicle system test HELP
Enter address word XX

Coding control unit

- Connect vehicle system tester -V.A.G 1552- and select „Gateway data bus“ (address word 19); ignition is switched on for this step ⇒ 90-8 page 1.

Readout on display:

- Select function „code the control unit“ and confirm with .

Readout on display:

- Enter code number by referring to table of codes and confirm with .

Vehicle system test HELP
Select function XX

Coding control unit
Enter code number XXXXX (0-32767)

Table of codes

Control units on data BUS drive	Coding number
Automatic gearbox	00001
ABS	00002
Airbag	00004
Power steering	00008

Add up the coding numbers of the fitted control units, e.g.

ABS + Airbag + Power steering
00002 + 00004 + 00008 = 00014

**Note**

The control units for the engine, dash panel and the control units on the data BUS Comfort version are not coded.

The display shows the control unit coding, (e.g. 00014):

- Press .

6N0909901 Gateway K <-> CAN 1522
Coding 00014 WSC xxxxxx

Readout on display:

- Select function **0 6** „End output“ and confirm with **Q**.

▶

Vehicle system test

HELP

Select function XX

Reading measured value block

Readout on display:

- Select function **0 8** „Read measured value block“ and confirm the entry with key **Q**.

Readout on display:

- Enter display group number ⇒ 90-8 page 7.

▶

Vehicle system test

HELP

Select function XX

▶

Read measured value block

HELP

Enter display group number XXX

List of display groups

The data BUS connections are displayed.

 **Note**

If a control element has not been fitted in accordance with the equipment, the relevant value is not displayed.

Measured value block 125

Reading measured value block 125				→	Readout on display
Engine 1	Gearbox 0	ABS 1	Combi 1		
					Dash panel insert
					♦ Combi 1 - Data BUS connection OK
					♦ Combi 0 - Data BUS connection not OK
					ABS control unit
					♦ ABS 1 - Data BUS connection OK
					♦ ABS 0 - Data BUS connection not OK
					Automatic gearbox control unit
					♦ Gearbox 1 - Data BUS connection OK
					♦ Gearbox 0 - Data BUS connection not OK
					Engine control unit
					♦ Engine 1 - Data BUS connection OK
					♦ Engine 0 - Data BUS connection not OK

Measured value block 126

Reading measured value block 126				→	Readout on display
Steering angle 0	Airbag 1	Steering 1	D pump 0		
					Injection pump control unit ◆ D pump 1 - Data BUS connection OK ◆ D pump 0 - Data BUS connection not OK
					power-assisted steering control unit ◆ Steering 1 - Data BUS connection OK ◆ Steering 0 - Data BUS connection not OK
					Airbag control unit ◆ Airbag 1 - Data BUS connection OK ◆ Airbag 0 - Data BUS connection not OK
					Steering angle sender ◆ Steering angle 1 - Data BUS connection OK ◆ Steering angle 0 - Data BUS connection not OK

Measured value block 127

Reading measured value block 127				→	Readout on display
El. CU 0	FWD 0	Distance 0	Clima 1		
					Climatronic control unit ◆ Clima 1 - Data BUS connection OK ◆ Clima 0 - Data BUS connection not OK
					Distance control unit ◆ Distance 1 - Data BUS connection OK ◆ Distance 0 - Data BUS connection not OK
					Four-wheel drive control unit ◆ FWD 1 - Data BUS connection OK ◆ FWD 0 - Data BUS connection not OK
					Multifunction unit control unit ◆ El. CU 1 - Data BUS connection OK ◆ El. CU 0 - Data BUS connection not OK

Measured value block 130

Reading measured value block 130 →				Readout on display
Two-wire	Central 1	D door 1	FP door 1	
				Door control unit front passenger's side
				◆ FP door 1 - Data BUS connection OK
				◆ FP door 0 - Data BUS connection not OK
				Door control unit driver's door
				◆ D door 1 - Data BUS connection OK
				◆ D door 0 - Data BUS connection not OK
				Central control unit for convenience system
				◆ Central 1 - Data BUS connection OK
				◆ Central 0 - Data BUS connection not OK
				Status data BUS Comfort version
				◆ Two-wire - OK
				◆ Single-wire - fault

Measured value block 131

Reading measured value block 131 →				Readout on display
Door RL 1	Door RR 1	Memory 0		
				not assigned
				Seat/mirror position control unit driver's side
				◆ Memory 1 - Data BUS connection OK
				◆ Memory 0 - Data BUS connection not OK
				Door control unit rear right
				◆ Door RR 1 - Data BUS connection OK
				◆ Door RR 0 - Data BUS connection not OK
				Door control unit rear left
				◆ Door RL 1 - Data BUS connection OK
				◆ Door RL 0 - Data BUS connection not OK

Measured value block 132

Reading measured value block 132				→	Readout on display
Combi 1	Steering wheel 0	Clima 1	Tyres 0		
					Tyre pressure monitor control unit ♦ Tyres 1 - Data BUS connection OK ♦ Tyres 0 - Data BUS connection not OK
					Air conditioning control unit ♦ Clima 1 - Data BUS connection OK ♦ Clima 0 - Data BUS connection not OK
					Steering angle sender ♦ Steering wheel 1 - Data BUS connection OK ♦ Steering wheel 0 - Data BUS connection not OK
					Dash panel insert ♦ Combi 1 - Data BUS connection OK ♦ Combi 0 - Data BUS connection not OK

Measured value block 140

Reading measured value block 140				→	Readout on display
Radio 1	Navigation 0	Telephone 1			
					Telephone control unit ♦ Telephone 1 - Data BUS connection OK ♦ Telephone 0 - Data BUS connection not OK
					Navigation control unit ♦ Navigation 1 - Data BUS connection OK ♦ Navigation 0 - Data BUS connection not OK
					Radio control unit ♦ Radio 1 - Data BUS connection OK ♦ Radio 0 - Data BUS connection not OK
					not assigned

90-9 Data BUS

Two data BUS wiring with a different priority are elements of the electrical system of the vehicle:

- ◆ Data BUS drive priority 1
- ◆ Data BUS Comfort priority 2

Both data BUS wiring are interlinked in the vehicle voltage control unit via the Gateway.

The existence of a data BUS connection can be checked via measured value blocks 125 through 127 (data BUS drive) and 130 through 132 (data BUS Comfort) of the Gateway ⇒ Chap. 90-8.

Checking the data BUS drive

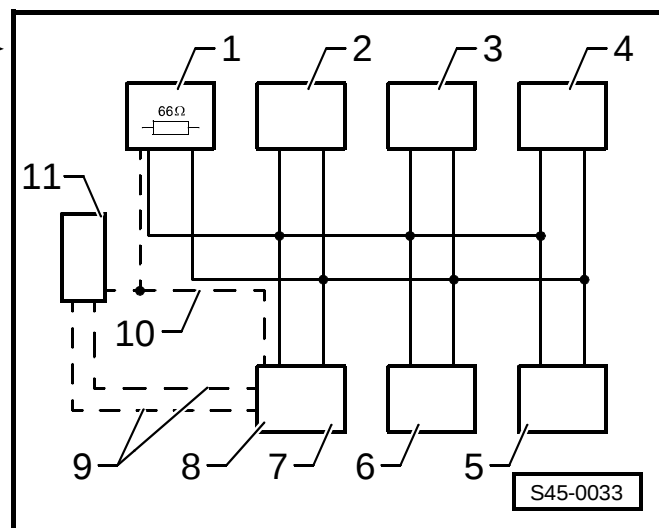
To check the data BUS drive, first disconnect the connectors from all the control units (engine control unit -J220-, automatic gearbox control unit -J217-, ABS control unit -J104-, power steering control unit -J500-, control unit with display in dash panel insert -J218-, airbag control unit -J234- and vehicle voltage control unit -J519-). Only then is it possible to check the data BUS wiring for short circuits and for short circuits to earth and positive terminal.

The central terminating resistor (66 Ω) is located in the motronic control unit.

When working use the updated current flow diagrams ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

Data BUS drive - overview

- 1 - Motronic control unit -J220-; Central terminating resistor 66 Ω
- 2 - Automatic gearbox control unit -J217-; only on vehicles fitted with automatic gearbox
- 3 - Control unit for ABS / ABS with EDL -J104-
- 4 - Power-assisted steering control unit -J500-
- 5 - Control unit with display in dash panel insert -J218-
- 6 - Airbag control unit -J234-
- 7 - Vehicle voltage control unit -J519-
- 8 - Gateway; ensures the diagnosis communication between control unit, diagnostic devices and K cable
- 9 - Data BUS, switched for new direct communicative generation of diagnostic units via Data BUS.
- 10 - K cable
- 11 - Diagnostic connection



Special tools, test and measuring equipment and auxiliary items required

- ◆ Hand multimeter (e.g. -V.A.G 1526 A-)
- ◆ Adapter cable set (e.g. -V.A.G 1594 A -)
- ◆ Test box -V.A.G 1598/31-
- ◆ Current flow diagram

Test condition

- Ignition off.

Procedure

Test terminating resistance of data bus:

- Unlock connector at engine control unit and unplug it.
- Connect test box -V.A.G 1598/31- to the engine control unit. The wiring loom to the engine control unit is not connected. 
- Test the central terminating resistor in the engine control unit.
- For this perform a resistance measurement between the test box bushes ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

Specified value: 60 to 72 Ω

If the measured value is not within the nominal value range:

- Replace engine control unit ⇒ Chapter 24-8.

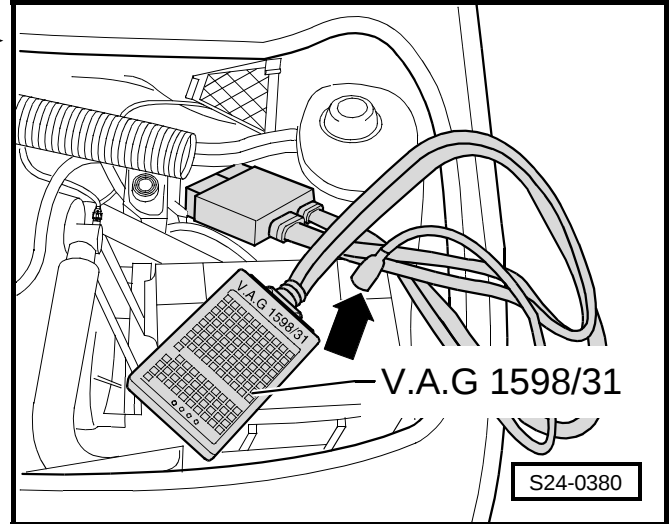
If the measured value is within the nominal value range:

- Unplug test box -V.A.G 1598/31- from engine control unit.
- Connect test box -V.A.G 1598/31- at wiring loom of engine control unit.
- Check the data BUS wiring for short circuit.
- For this perform a resistance measurement between the test box bushes ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

Specified value: $\infty \Omega$

If the nominal value is reached (there is no short-circuit between the cables):

- Test data BUS cables for a short-circuit to the positive battery terminal or earth or for interruption ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.



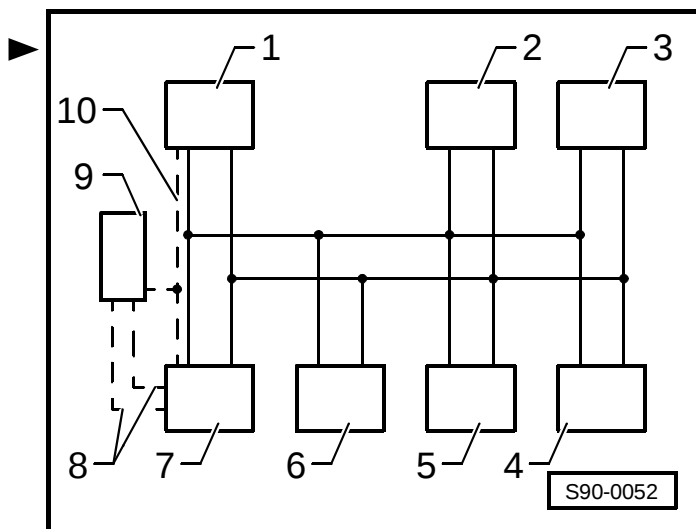
Checking the data BUS Comfort version

To test the data BUS Comfort version, first disconnect the connectors of all control units (vehicle voltage control unit for convenience system -J393-, climatronic control unit -J255-, door control unit rear right for convenience system -J389, door control unit rear left for convenience system -J388-, door control unit front right for convenience system -J387, door control unit front left for convenience system -J386-, control unit for the vehicle electric system -J519-). Only then is it possible to check the data BUS wiring for short circuits, for short circuits to earth and short circuits for positive terminal, if necessary for open circuit.

When working use the updated current flow diagrams
 ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

Data BUS Convenience system

- 1 - Vehicle voltage control unit for convenience system -J393-
- 2 - Climatronic control unit -J255-
- 3 - Door control unit rear right for convenience system -J389-
- 4 - Door control unit rear left for convenience system -J388-
- 5 - Door control unit front right for convenience system -J387-
- 6 - Door control unit front left for convenience system -J386-
- 7 - Vehicle voltage control unit -J519-
- 8 - Data BUS, switched for new direct communicative generation of diagnostic units via Data BUS
- 9 - Diagnostic connection
- 10 - K cable



Special tools, test and measuring equipment and auxiliary items required

- ◆ Hand multimeter (e.g. -V.A.G 1526 A-)
- ◆ Adapter cable set (e.g. -V.A.G 1594 A -)
- ◆ Current flow diagram

Test condition

- Ignition off.

Procedure

- Remove the black 18-pin plug (T18a/XS2) from the Vehicle voltage control unit.
- Connect the hand multimeter (e.g. -V.A.G 1526 A-) with cables from the Adapter cable set (e.g. -V.A.G 1594 A-) to contact 9 (CAN-L) and contact 12 (CAN-H) .
- Check the data BUS wiring for short circuit.

If the nominal value is reached (there is no short-circuit between the cables):

- Test data BUS cables for a short-circuit to the positive battery terminal or earth if necessary for interruption
 ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

Specified value: $\infty \Omega$

If the specified values are reached:

- Proceed with test.
- Re-connect all control units.
- Interrogate fault memory of all control units.

If one of faults 1309, 1312, 1314, 1315, 1316, 1317, 1321 occurs:

- Replace the relevant control unit (the relevant control units).

91 – Radio, Two-Way Radio, Mobile Phone

91-1 Radio systems I

General Instructions

**WARNING!**

Disconnect earth strap from the battery before commencing work on the electrical system.

**Note**

- ◆ *Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.*
- ◆ *Carry out additional operations if the battery earth strap is disconnected and connected ⇒ Chapter 27-1.*
- ◆ *Additional information ⇒ Operating Instructions for car radio.*
- ◆ *When retrofitting equipment, carrying out repair work or fault finding ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations and ⇒ Installation Instructions for car radio.*
- ◆ *Detailed assembly information, e.g. detaching and attaching trim panels Body Fitting Work.*

Overview of radio systems

1 - Radio

- ☐ in cover of centre console
- ☐ removing and installing
⇒ 91-1 page 2

2 - Treble speaker

- ☐ nominal resistance = 4 Ω
- ☐ in exterior mirror trim panel on inside
- ☐ removing and installing
⇒ 91-1 page 3

3 - Roof aerial

- ☐ with aerial amplifier
- ☐ removing and installing
⇒ 91-1 page 5

4 - Bass speaker

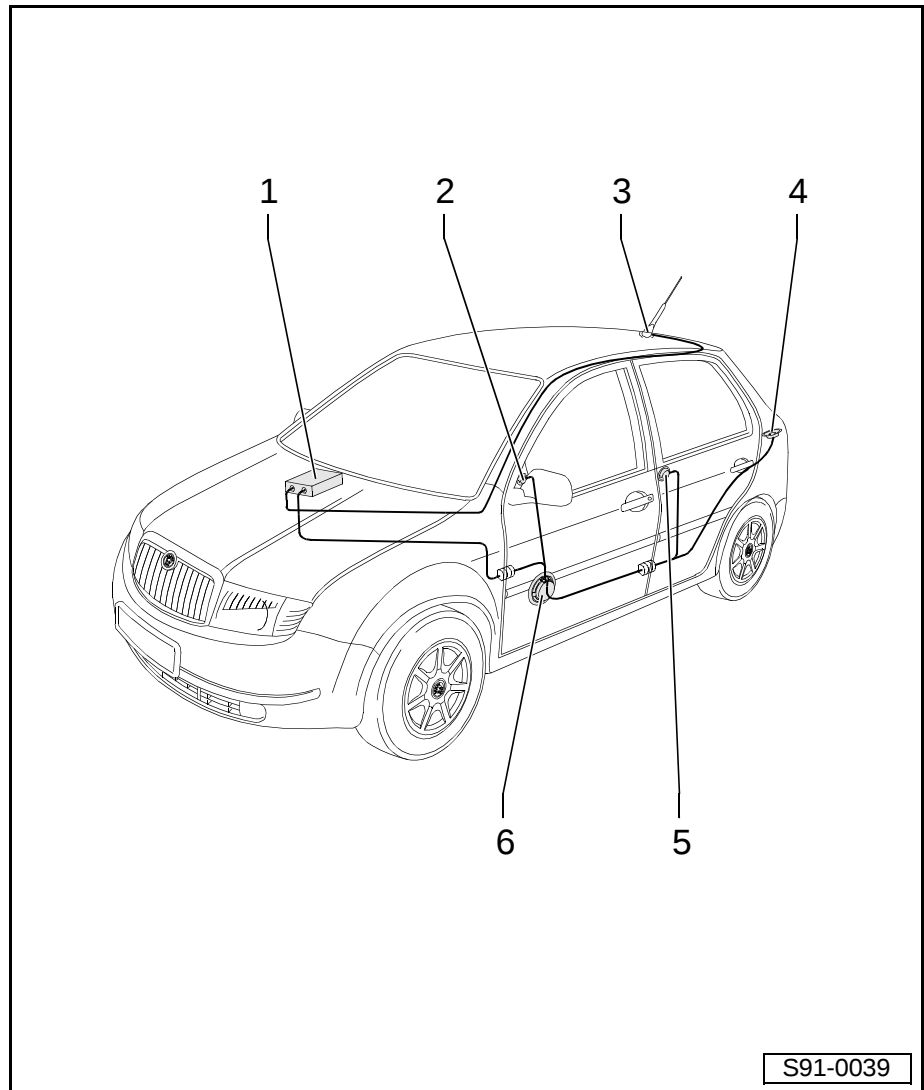
- ☐ nominal resistance = 4 Ω
- ☐ removing and installing
⇒ 91-1 page 4

5 - Treble speaker

- ☐ nominal resistance = 4 Ω
- ☐ next to door handle
- ☐ removing and installing ⇒
⇒ 91-1 page 4

6 - Bass speaker

- ☐ nominal resistance = 4 Ω
- ☐ in door trim panel
- ☐ removing and installing
⇒ 91-1 page 3



Removing and installing radio

Special tools, test and measuring equipment and auxiliary items required

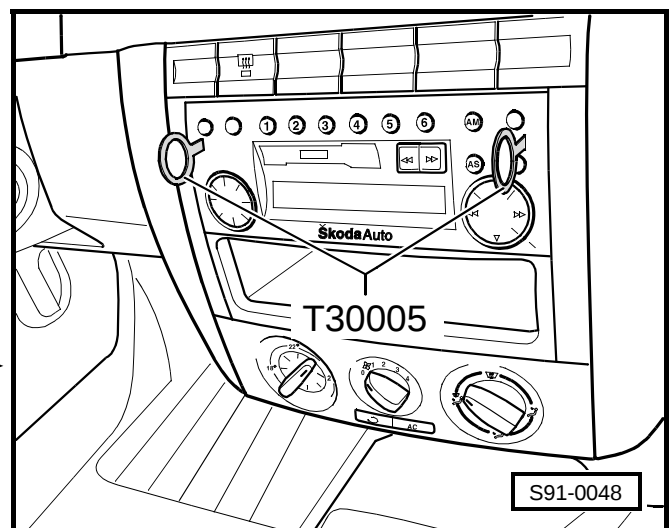
- ◆ Release tool -T30005-

Removing



Note

- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ If the radio is replaced, advise the customer of the new code number.
- Insert release tool into the release slot (see figure) until it locks in place.
- Remove radio from the dash panel using the grab rings on the release tool.



**Note**

- ◆ Release tool -T30005- must not be pushed to the side or twisted for removing the radio.
- ◆ In order to pull off the release tool again, press in the side catches at the radio set.
- Remove aerial cable.
- Disconnect plug connections.

Installing

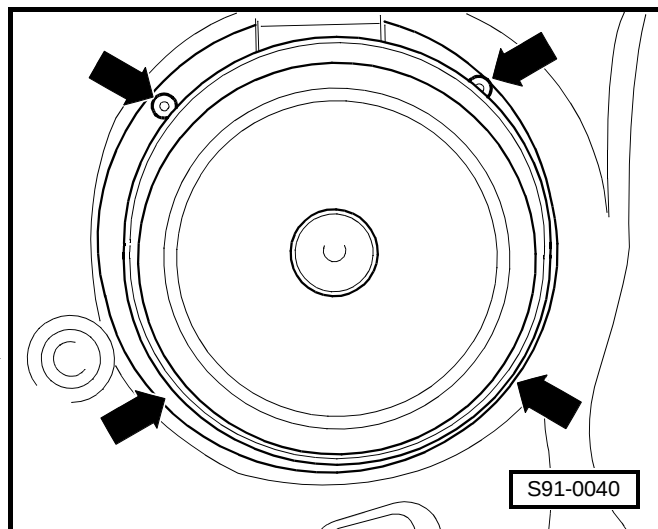
- Connect aerial cable.
- Insert the connectors.
- Carefully insert radio into dash panel until it locks in the installation slot.
- Connect earth cable of the battery.

**Note**

Perform additional work after connecting battery
⇒ Chapter 27-1.

Removing and installing loudspeakers**Removing and installing the front bass speaker****Removing:**

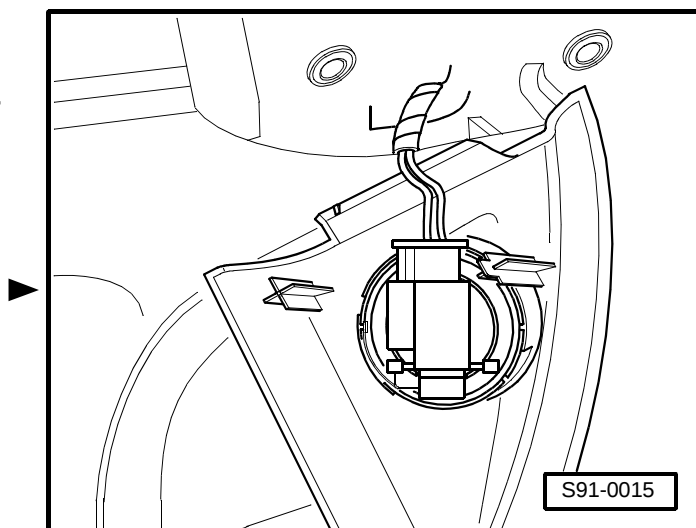
- Remove front door trim panel ⇒ Body Fitting Work; Rep. Gr. 70.
- Disconnect the socket connector at the loudspeaker.
- Use a suitable drill to drill open the four rivets -arrows- and take out the faulty speaker.

**Installing:**

- Installation undertaken in the reverse order.
- Attach the new speaker with matching blind rivets.

Removing and installing the front treble speaker**Removing:**

- Unclip the exterior mirror cover.
- Separate the electrical plug connections.
- Unclip the speaker from the trim panel.

**Installing:**

- Installation undertaken in the reverse order.

Removing and installing the rear treble speaker

Removing:

- Unclip the speaker from the trim panel.
- Separate the electrical plug connections.
- Carefully unclip the treble speaker -1- from the mounting.
- Take speaker out of door trim panel.

Installing:

- Installation undertaken in the reverse order.

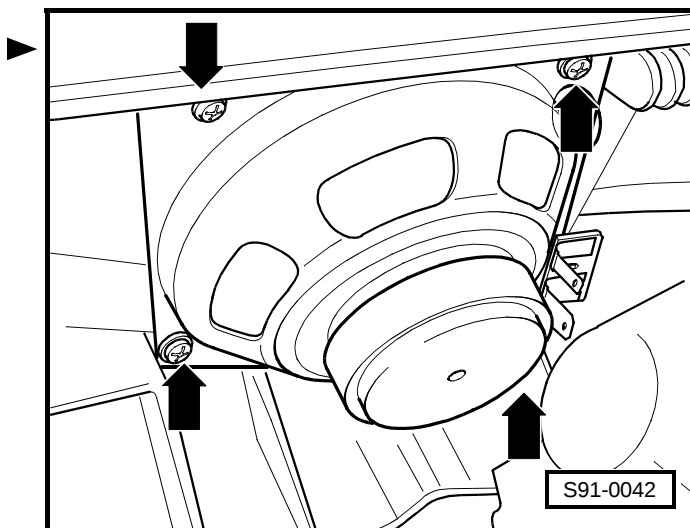
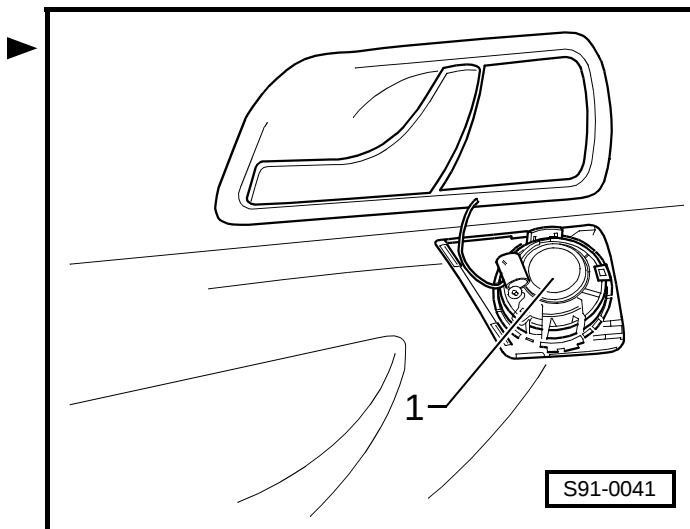
Removing and installing the rear bass speaker

Removing:

- Open tailgate.
- Turn back luggage compartment cover on the left and right.
- Separate the electrical plug connections.
- Remove securing screws -arrows- and take out speaker.

Installing:

- Installation undertaken in the reverse order.



Removing and installing the roof aerial

Roof aerial for radio and mobile phone



Note

On vehicles fitted only with radio, only the aerial cable for the mobile phone is not fitted ⇒ item 4 in 91-1 page 5.

1 - Aerial rod

- ☐ removable for vehicles up to MJ 2002
- ☐ designed to fold away on vehicles from MJ 2003, component of the foot of the antenna ⇒ item 2

2 - Aerial base

- ☐ Amplifier for roof aerial is installed in base of aerial
- ☐ removing and installing: Lower the moulded inner roof at the rear ⇒ Body work; Rep. Gr. 70.

3 - Aerial cable for radio

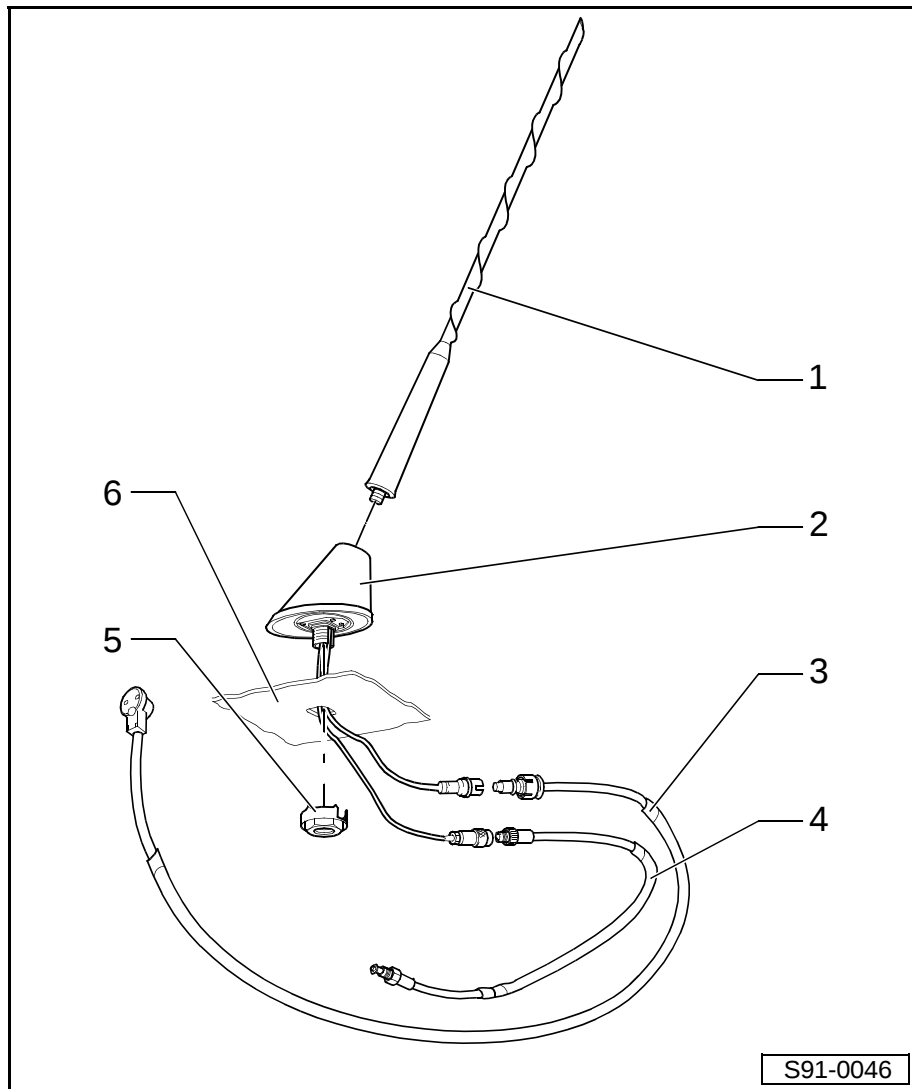
- ☐ from roof aerial to radio set (centre console)

4 - Aerial cable for phone

- ☐ from roof aerial to control unit for telephone operating electronics

5 - 3 Nm

6 - Roof



Roof aerial for operating the radio, telephone and radio navigation system

Note

Just the aerial cable for the telephone is missing on vehicles which are only fitted only with a radio and radio navigation system ⇒ item 4 in 91-1 page 6.

1 - Foldable antenna

- ☐ The amplifier for the roof antenna and the antenna for the radio navigation system are installed in the foot of the antenna
- ☐ removing and installing:
Lower the moulded inner roof at the rear ⇒ Body work;
Rep. Gr. 70.

2 - Antenna cable for the radio navigation

- ☐ from roof aerial to navigation (centre console)

3 - Aerial cable for radio

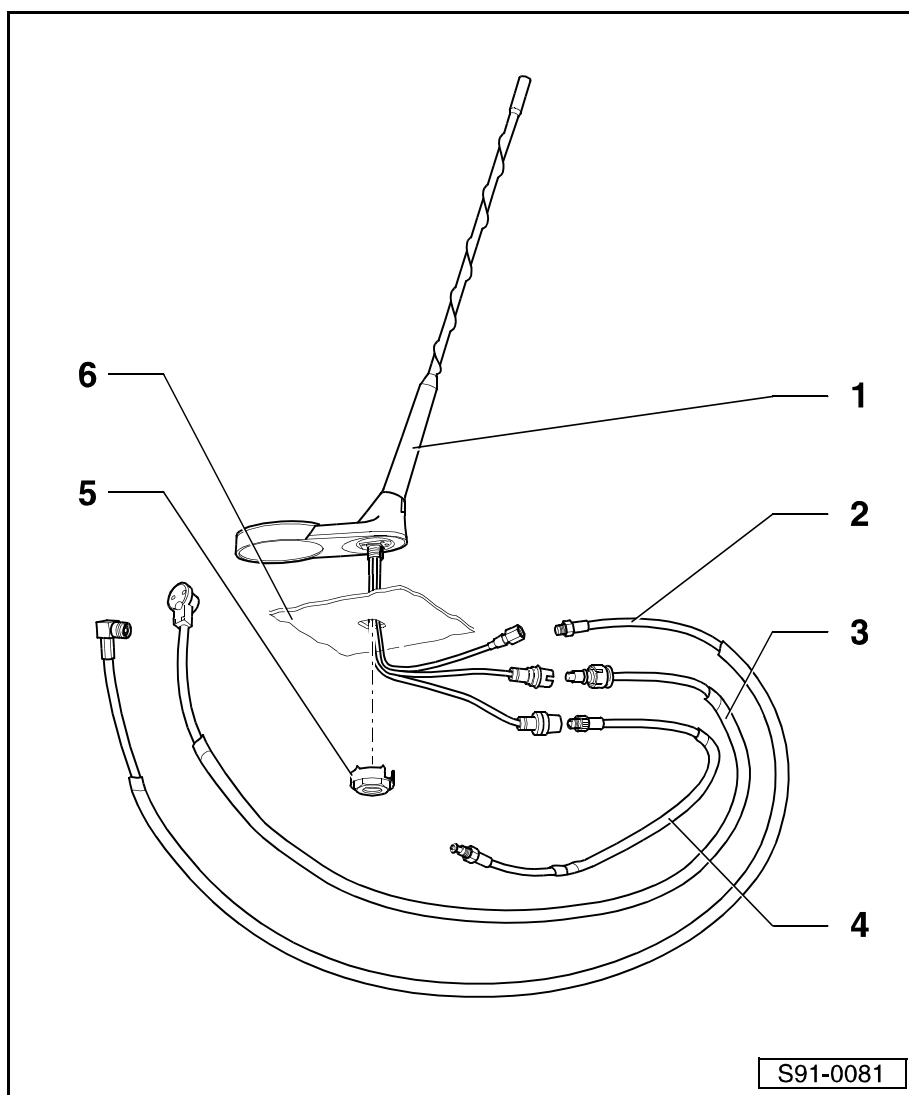
- ☐ from roof aerial to radio set (centre console)

4 - Aerial cable for phone

- ☐ from roof aerial to control unit for telephone operating electronics

5 - 3 Nm

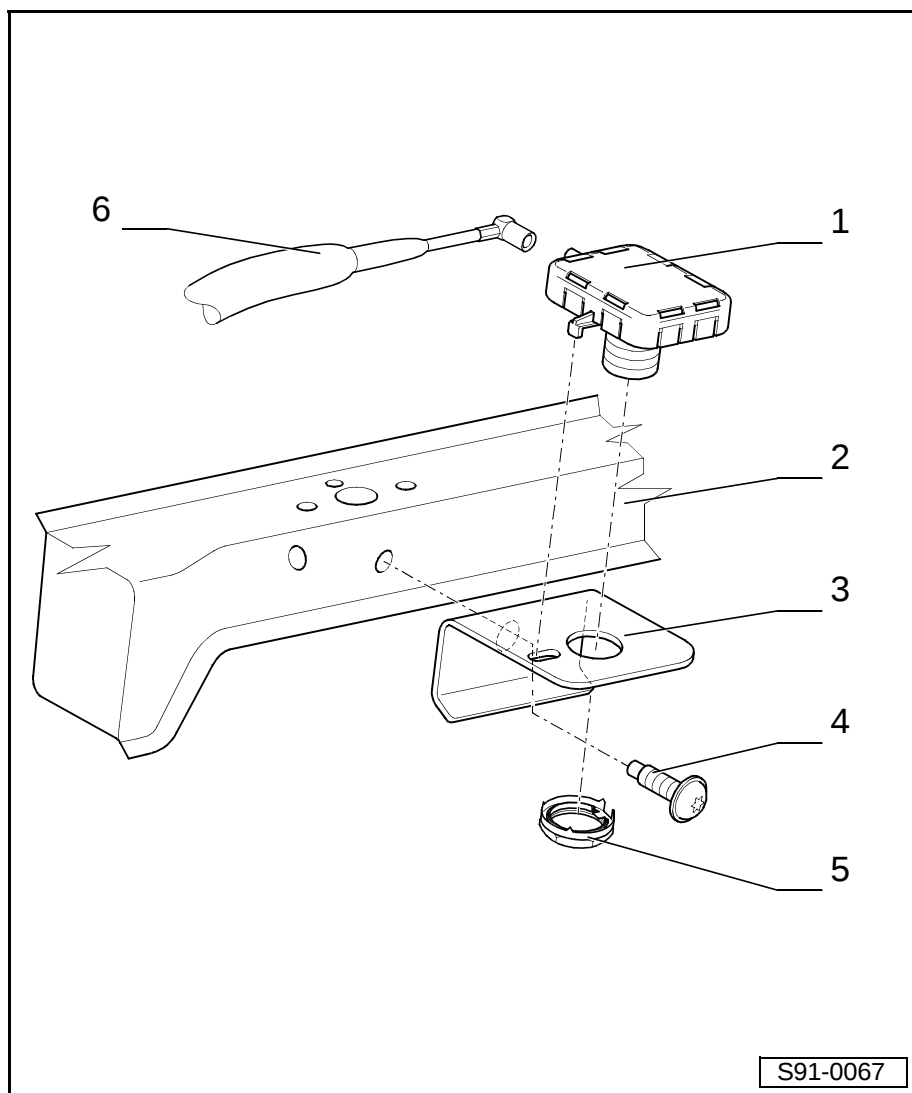
6 - Roof



Removing and installing the concealed navigation system aerial

The navigation system aerial is built into the dash panel insert in limousine vehicles with a roller roof.

- 1 - Concealed aerial
- 2 - Central tube for dash panel insert
- 3 - Aerial holder
- 4 - 8 Nm
- 5 - 3 Nm
- 6 - Antenna cable for navigation
 - from the concealed aerial to the navigation system



S91-0067

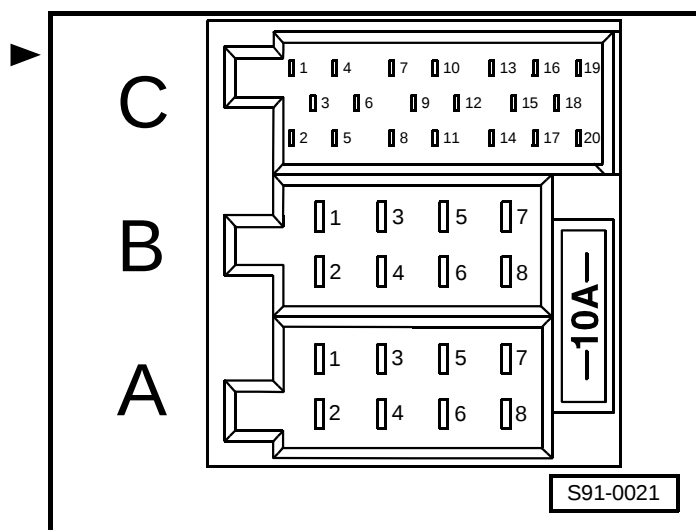
Contact assignment of multipin plug connections A, B, C on rear of radio

Radios MS 202, 402, 502 and Symphony

Multipin plug connection a, 8-pin

- 1 - „Gala“ function (volume adaptation)
- 2 - Mute (telephone mode)
- 3 - Self-diagnosis/K wire
- 4 - Connection for ignition key-controlled On / Off
- 5 - Terminal 30 (not assigned to radio sets Symphony)
- 6 - Lighting (tml. 58b)
- 7 - Terminal 30
- 8 - Terminal 31

Multipin plug connection B, 8-pin



S91-0021

- 1 - Speaker + rear right
- 2 - Speaker - rear right
- 3 - Speaker + front right
- 4 - Speaker - front right
- 5 - Speaker + front left
- 6 - Speaker - front left
- 7 - Speaker + rear left
- 8 - Speaker - rear left

Multipin plug connection C, part 1, yellow

- 1 - Line Out left rear, LR
- 2 - Line Out right rear, RR
- 3 - Line Out, earth
- 4 - Line Out left front, LF
- 5 - Line Out right front, RF
- 6 - Switched positive for sound amplifier

Multipin plug connection C, part 2, green

- 7 - Telephone input signal, TEL+
- 8 - Second display, CLOCK (for radio sets with CAN databus communication CAN High)
- 9 - Second display, DATA (for radio sets with CAN databus communication CAN Low)
- 10 - Second display, ENA (not assigned for radio sets with CAN databus communication)
- 11 - Remote control, REM (not assigned for radio sets with CAN databus communication)
- 12 - Telephone input signal, TEL-

Multipin plug connection C, part 3, blue

- 13 - CD changer, DATA IN
- 14 - CD changer, DATA OUT
- 15 - CD changer, CLOCK
- 16 - CD changer, voltage supply (+), terminal 30
- 17 - CD changer, control signal
- 18 - CD changer, left and right channel, earth
- 19 - CD changer, left channel, CD/L
- 20 - CD changer, right channel, CD/R

91-2 Radio systems II

Self-diagnosis of radio system



Note

At present only valid for the radio sets *Symphony* and *radio-navigation system (RNS)*.

Connecting vehicle system tester V.A.G 1552

Special tools, test and measuring equipment and auxiliary items required

- ◆ Vehicle system tester -V.A.G 1552- with cable
-VAG 1551/3, 3A, 3B oder 3C-

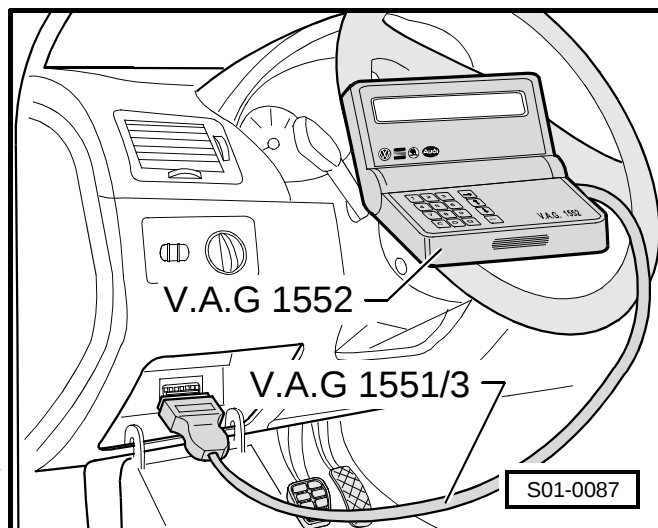
Test conditions

- All fuses must be OK in compliance with the current flow diagram.
- Battery voltage at least 11 volts

The diagnostic connection is located on the left next to the storage compartment on the driver's side.

- Unclip cover and remove downward.
- Connect vehicle system tester -V.A.G 1552- with appropriate cable. ►
- Switch on ignition.

Readout on display:



Vehicle system test
Enter address word XX

HELP



Note

If there is nothing on the display ⇒ Operating instructions for the vehicle system tester.

- Enter for „Radio“ and confirm entry with the key.

Interrogating control unit version

Readout on display:

- ◆ 3B0035186C: Version number of radio control unit
- ◆ Radio: System denomination
- ◆ 0103 : Software version number
- ◆ 0400 : Coding control unit
- ◆ WSC 00000: Workshop code

Navigation system readout in display during self-diagnosis „Diag“.

- Press key.

If one of the following messages appears in the display, carry out fault finding as stated in the fault finding programme diagnostic cable ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. ►

3B0035186C	Radio	0103->
Coding 0405		WSC 00000

Vehicle system test	HELP
The control unit does not respond!	

►	Vehicle system test Fault in communication build-up	HELP
►	Vehicle system test K cable does not connect to earth	HELP
►	Vehicle system test K cable does not connect to pos. term.	HELP

— Move forward in the programme with the key ☐.

Overview of self-diagnosis functions

The following functions are possible:

- 01 - Interrogating control unit version ⇒ 91-2 page 1
- 02 - Interrogating fault memory ⇒ 91-2 page 2
- 03 - Actuator diagnosis ⇒ 91-2 page 5
- 05 - Erasing fault memory ⇒ 91-2 page 4
- 06 - Ending output ⇒ 91-2 page 11
- 07 - Coding control unit ⇒ 91-2 page 6
- 08 - Reading measured value block ⇒ 91-2 page 7

Interrogating fault memory



Note

The displayed fault information is not constantly updated, this only occurs when self-diagnosis is initiated or if function 05 „Erase fault memory“ is selected.

Readout on display:

- Enter function ☐ ☐ „Interrogate fault memory“ and confirm with ☐.

The number of faults stored appears on the display.

The stored faults are displayed in sequence.

- Find the fault displayed in the fault table ⇒ 91-2 page 3 and rectify fault.

If „No fault detected“ is shown in the display and if the key ☐ is pressed, the programme returns to the initial position.

Readout on display:

If anything else appears in the display ⇒ Operating instructions for vehicle system tester

- End output (function 06).

►	Vehicle system test Select function XX	HELP
►	X faults detected!	
►	No fault detected!	->
►	Vehicle system test Select function XX	HELP

Fault table



Note

- ◆ All the possible faults which can be detected by the vehicle system tester -V.A.G 1552- are listed below according to the 5-digit fault code.
- ◆ Before replacing components found to be defective first check the wiring and plug connections to these components as well as the earth cables according to the current flow diagram.
- ◆ After repair always interrogate the fault memory using vehicle system tester -V.A.G 1552- and erase the memory.
- ◆ All static and sporadic faults are stored in the fault memory. A fault is detected as static if it exists for at least 2 seconds. If the fault is then no longer present, it is stored as a sporadic (temporary) fault. „/SP“ appears on the right of the display.
- ◆ After switching on the ignition, all the faults which exist are set to sporadic and are not stored as static faults unless they continue to exist after completing the check.
- ◆ If a sporadic fault no longer occurs during 50 driving cycles (ignition on for at least 5 minutes, road speed > 30 km/h), it is erased.

Display - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
00668 El. syst. voltage tml. 30	Signal too low	◆ Battery voltage below 9.5 V, battery insufficiently charged ◆ Battery defective ◆ AC generator defective	poor or no function of radio set	– Read measured value block 001 ⇒ 91-2 page 7. – Test battery, recharge if necessary ⇒ Chapter 27-1. – Inspecting AC generator ⇒ Chap. 27-3.
00849 S contact on ignition starter switch D	Open circuit	◆ Ignition lock housing defective ◆ Line interruption or short-circuit ◆ Radio defective	◆ switched on radio set switches off automatically after approximately 1 hour ◆ the switched on radio set does not switch on automatically after switching the ignition on and off	– Read measured value block 001 ⇒ 91-2 page 7. – Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Inspect and if necessary replace ignition lock housing ⇒ Chap. 94-6.
00852 Loudspeaker v	Short circuit Open circuit	◆ Short-circuit between the cables or to earth to one of the front loudspeakers ◆ Line interruption to one of the front loudspeakers ◆ Loudspeaker defective	◆ one front loudspeaker does not work ◆ one front bass speaker does not work	– Performing actuator diagnosis ⇒ 91-2 page 5. – Read measured value block 002 ⇒ 91-2 page 7. – Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Replacing loudspeaker ⇒ Chapter 91-1.

Display - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
00853 Loudspeaker h	Short circuit Open circuit	♦ Short-circuit between the cables or to earth to one of the rear loudspeakers ♦ Line interruption to one of the rear loudspeakers ♦ Loudspeaker defective	one rear loudspeaker does not work	– Performing actuator diagnosis ⇒ 91-2 page 5. – Read measured value block 003 (if necessary 002) ⇒ 91-2 page 7. – Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Replacing loudspeaker ⇒ Chapter 91-1.
00855 Link to CD changer	No communication	♦ Wiring to CD changer defective ♦ CD changer defective ♦ Radio defective	CD-changer function not Ok	– Read measured value block 006 (if necessary 005) ⇒ 91-2 page 7. – Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Replacing radio ⇒ Chapter 91-1. – Replacing CD changer ⇒ Chapter. 91-6.
00856 Aerial at radio	Short circuit Open circuit	♦ Aerial cable defective ♦ Aerial cable not plugged ♦ Aerial defective	no or poor radio reception	– Read measured value block 004 (if necessary 003) ⇒ 91-2 page 7. – Test wiring ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Inspecting aerial. – Replacing aerial ⇒ Chapter 91-1.
01044 Control unit wrongly coded		Radio functions are not coded	♦ Radio functions or sound not OK ♦ implausible entries in the fault memory	– Code the radio ⇒ 91-2 page 6.
65535 Control unit defective		Radio defective	Function of radio set not OK	– Replacing radio ⇒ Chapter 91-1.

Erasing fault memory



Note

The contents of the fault memory are output automatically after the fault memory is erased. If it is not possible to erase the fault memory, interrogate the fault memory once again and rectify any faults.

Requirements:

- Fault memory was interrogated.
- All faults were rectified.

After interrogating the fault memory:

Readout on display:

- Select function **0** **5** „Erase fault memory“ and confirm with **Q**.

Readout on display:

The fault memory is now erased.

- Press **Q**.

Readout on display:



Note

- ♦ If the following message is displayed the test sequence is incorrect:
- ♦ Carefully follow the test sequence step by step: first interrogate the fault memory, if necessary rectify faults and then erase the fault memory.

► Vehicle system test **HELP**
Select function XX

► Vehicle system test ->
Fault memory erased!

► Vehicle system test **HELP**
Select function XX

► Vehicle system test ->
Fault memory was not interrogated

Actuator diagnosis

With the actuator diagnosis the following parts are activated in the sequence indicated:

- 1 - Loudspeaker
- 2 - Output radio display dash panel insert



Note

Point 2 is also performed if dash panel inserts which do not have a radio display, are fitted.

Special tools, test and measuring equipment and auxiliary items required

- ♦ Vehicle system tester -V.A.G 1552- with cable -V.A.G 1551/3, 3A, 3B oder 3C-
- Fuses o.k.

Procedure

- Connect vehicle system tester -V.A.G 1552- and select radio (address word 56); ignition is switched on ⇒ 91-2 page 1.

Readout on display:

- Enter function 02 „Final control diagnosis“.

Readout on display:

- Confirm entry with the key **Q**.

Readout on display:

The loudspeakers are tested with a test current.

► Vehicle system test **HELP**
Enter address word XX

► Vehicle system test **HELP**
03 - Final control diagnosis **Q**

► Actuator diagnosis
Loudspeaker

If a loudspeaker circuit is recognized as faulty by the system, it is stored as a fault message in the fault memory.

- Interrogating fault memory.
- Repair wiring or the loudspeaker if necessary, erase fault memory and repeat final control diagnosis.

If actuator diagnosis test is o.k.:

- Press ☐ key.

Readout on display:

- Press ☐ key.

Readout on display:

- Press ☐ key.

Readout on display:

- Interrogate fault memory and erase ⇒ 91-2 page 4.
- Ending output ⇒ 91-2 page 11.

►	Actuator diagnosis Output radio display dash panel insert
►	Actuator diagnosis END
►	Vehicle system test Enter address word XX
	HELP

Code radio

The following can be coded on the radio:

- ♦ Identification of country
- ♦ Sound tuning
- ♦ Number of loudspeakers
- ♦ Configuration of the system (aerial, CD changer, CAN databus communication)

Table of codes

X					Coding number for the country
0					Europe and Rest of World
	X				Coding number for sound tuning
	0				Basic setting
		X			Coding number for number of passive rear loudspeakers
		2			2 passive front loudspeakers
		4			4 passive loudspeakers
			X		Coding number for sound system correction
			0		No correction
				X	Coding number for radio configuration
				1	Radio with active roof aerial (without CD changer and CAN databus communication)
				3	Radio with CD changer and active roof aerial (without CAN databus communication)
				5	Radio with active roof aerial and CAN databus communication (without CD changer)
				7	Radio with active roof aerial, CD changer and CAN databus communication

Conduct coding

- Enter function ☐ ☐ „code control unit“.
- Confirm entry with the key ☐.

Readout on display:

►	Coding control unit Enter code number XXXXX (0-32000)
---	--

- Enter code number as specified in the table of codes
⇒ 91-2 page 6.

Readout on display, e.g.:

►

Code control unit	HELP
Enter code number 00405	(0-32000)

- Confirm entry with the key **Q**.

Readout on display:

►

Vehicle system test	HELP
Enter address word XX	

- Ending output ⇒ 91-2 page 11.

Reading measured value block

For fault finding, display the status of the input signals in the measured value blocks.

Procedure

- Connect vehicle system tester -V.A.G 1552- and select address word **3 7** for the Navigation system.

Readout on display:

►

Vehicle system test	HELP
Select function XX	

- Enter function **0 8** „Read measured value block“ and confirm the entry with **Q** key.

Readout on display:

►

Reading measured value block
Enter display group number XXX

- Enter the desired three-digit display group number and confirm entry with the **Q** key.

Measured value block 001

⇒ Chap. 91-4, Measured value block 001

Measured value block 002 for Radio Symphony

Reading measured value block 2				→	Readout on display
Lsp. FL	o.k.	Lsp. FR	OK		
					Status of speaker front right
					♦ o.k.
					♦ Short circuit
					♦ Open circuit
				Speaker front right	
					Status of speaker front left
					♦ o.k.
					♦ Short circuit
					♦ Open circuit
				Speaker front left	

Measured value block 002 for other radios (except radio Symphony)

Reading measured value block 2				→	Readout on display
Lsp. front	o.k.	Lsp. rear	o.k.		
			Status of loudspeaker rear ¹⁾		
			◆ o.k.		
			◆ Short circuit		
◆ Open circuit					
Loudspeaker rear ¹⁾					
Status of loudspeaker front					
◆ o.k.					
◆ Short circuit					
◆ Open circuit					
Loudspeaker front					

¹⁾ Display only in the case of passive rear loudspeakers.

Measured value block 003 for Radio Symphony

Reading measured value block 3				→	Readout on display
Lsp. RL	Open circuit	Lsp.RR	Open circuit		
			Status of speaker rear right		
			◆ o.k.		
			◆ Short circuit		
			◆ Open circuit ¹⁾		
			Speaker rear right		
			Status of speaker rear left		
			◆ o.k.		
			◆ Short circuit		
			◆ Open circuit ¹⁾		
			Speaker rear left		

¹⁾ Display also if no speaker is fitted.

Measured value block 003 for other radios (except radio Symphony)

Reading measured value block 3 →			Readout on display
active	Aerial	o.k.	
			not assigned
			Status of aerial
			◆ o.k. ◆ Short circuit ◆ Open circuit
		Aerial	
		Type of aerial	
			◆ active (e.g. roof aerial with aerial amplifier) ◆ passive

Measured value block 004 for Radio Symphony

Reading measured value block 4 →			Readout on display
active aerial		o.k.	
			not assigned
			Status of aerial
			◆ o.k. ◆ Short circuit ◆ Open circuit
		not assigned	
		Type of aerial	
			◆ active (e.g. roof aerial with aerial amplifier) ◆ passive

Measured value block 004 for other radios (except radio Symphony)

Reading measured value block 4 →			Readout on display
0	Telephone	off	
			Status of input telephone mute
			◆ Telephone in operation = „on“ ◆ Telephone off = „off“
		Telephone	
		not assigned	
		Status of control output of active amplifier	
			◆ 0 = Status N.O.K ◆ 1 = Short circuit to earth

Measured value block 005 for Radio Symphony

Reading measured value block 5			→	Readout on display
0	Telephone	off		
				Status of input telephone mute
				◆ Telephone in operation = „on“ ◆ Telephone off = „off“
				Telephone
				not assigned
				Status of control output of active amplifier
				◆ 0 = O.K. ◆ 1 = Short circuit to earth

Measured value block 005 for other radios (except radio Symphony)

Reading measured value block 5			→	Readout on display
CD link	o.k.			
				Status of CD link
				◆ o.k. ◆ n.o.k.¹⁾
				CD link

¹⁾ Display also if no CD changer is fitted.

Measured value block 006 for Radio Symphony

Reading measured value block 6			→	Readout on display
CD link	o.k.			
				Status of CD link
				◆ o.k. = „OK“ ◆ n.o.k. = „n.o.k.“¹⁾
				CD link

¹⁾ Display also if no CD changer is fitted.

Ending output

- Select function **0** **6** „End output“ and confirm with **Q**.

Readout on display:



Vehicle system test	HELP
Enter address word XX	

- Switch off ignition.
- Separate vehicle system tester -V.A.G 1552-.

91-3 Radio-Navigation System (RNS) I



Note

- ◆ *Disconnect earth strap from the battery before commencing work on the electrical system.*
- ◆ *Determine the anti-theft code of the radio set before disconnecting the battery.*
- ◆ *After connecting the battery, carry out the anti-theft coding of the radio set, set clock, on vehicles with power windows, initialise these ⇒ Rep. Gr. 02; Inspection and Maintenance.*

General description

The Navigation System (also known as the Radio-Navigation System = RNS) combines the functions of a navigation system with those of a high-performance RDS car radio.

The double DIN housing of the system contains

- ◆ an RDS car radio
- ◆ a 5" colour liquid crystal display
- ◆ a navigation system with GPS satellite receiver
- ◆ a CD-ROM drive for the navigation system

The aerial for the radio, telephone and navigation mode is linked to the navigation system by a plug connection.

The radio functions can be enlarged by means of the connection facilities for a 6-CD changer.

A TV input on the rear of the housing makes it possible to use TV and video functions.

Fault finding

The Radio-Navigation System is equipped with self-diagnosis.

For fault finding, initiate self-diagnosis and interrogate the information stored with the vehicle system tester -V.A.G 1552-.

Self-diagnosis of radio unit in RNS

Radio unit and navigation unit have different address words.

The procedure for conducting self-diagnosis of the radio unit is identical to the self-diagnosis of the radio system ⇒ Chap. 91-2.

Self-diagnosis of navigation unit in the RNS I

Measures for rectifying current and model-specific faults ⇒ Operating Instructions of Navigation System.

**Note**

The description which follows relates only to the vehicle system tester V.A.G 1552 using programme card 5.0 or higher.

Connecting vehicle system tester V.A.G 1552**Special tools, test and measuring equipment and auxiliary items required**

- ◆ Vehicle system tester -V.A.G 1552- with cable
- VAG 1551/3, 3A, 3B nebo 3C-

Test conditions

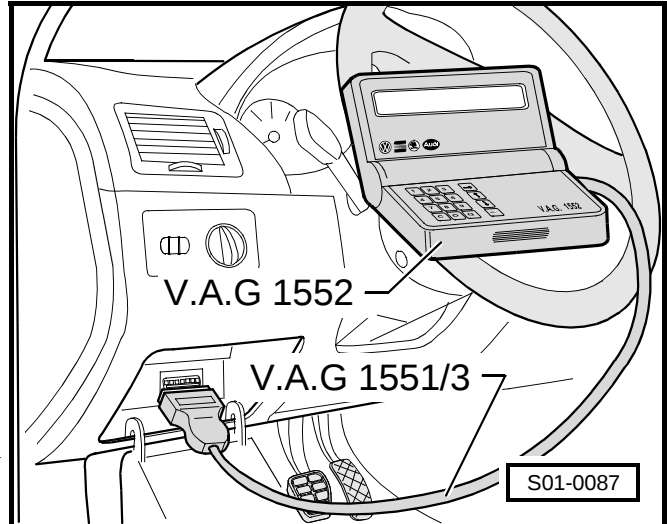
- All fuses must be OK in compliance with the current flow diagram.
- Battery voltage at least 11 V

The diagnostic connection is located on the left next to the storage area of the driver side.

- Connect vehicle system tester -V.A.G 1552- with appropriate cable. ►

Switch on ignition.

Readout on display:



Vehicle system test
Enter address word XX

HELP

**Note**

If there is no read-out on the display: ⇒ Operating instructions of the vehicle system tester.

- Enter 37 for „Navigation“ and confirm entry with the key.

Interrogating control unit version

Readout on display:

- ◆ 3B0919887 A: Control unit version number of navigation unit in RNS housing
- ◆ Navigation: System denomination
- ◆ 0002: Software version number
- ◆ 00000: Coding control unit
- ◆ WSC 00000: Workshop code

Navigation system readout in display during self-diagnosis „Diag“.

3B0919887 A navigace 0002->
Coding 00000 WSC 00000

**Note**

- ◆ Radio unit and navigation unit have different control unit version numbers.
- ◆ The control unit version number displayed is not the part number for the complete Radio-Navigation System.
- ◆ The part number for the complete Radio-Navigation System is indicated on a sticker on the housing of the Radio-Navigation System!

If one of the following messages appears in the display, carry out fault finding as stated in the fault finding programme diagnostic cable ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

►	Vehicle system test The control unit does not respond!	HELP
►	Vehicle system test Fault in communication build-up	HELP
►	Vehicle system test K wire does not connect to earth	HELP
►	Vehicle system test K wire does not connect to positive	HELP

– Move forward in the programme with the key ☐.

Self-diagnosis functions

The following functions are possible:

- 01 - Interrogating control unit version ⇒ 91-3 page 2
- 02 - Interrogating fault memory ⇒ 91-3 page 3
- 03 - Final control diagnosis ⇒ Chap. 91-4
- 05 - Erasing fault memory ⇒ 91-3 page 4
- 06 - Ending output ⇒ 91-3 page 4
- 08 - Reading measured value block ⇒ Chap. 91-4
- 10 - Adaptation ⇒ Chap. 91-4

Interrogating fault memory



Note

The fault information displayed is not constantly updated, but only when self-diagnosis is initiated, or with the function 05 „Erase fault memory“.

Readout on display:

- Enter function ☐ ☐ „Interrogate fault memory“ and confirm entry with ☐.

The number of faults stored appears on the display.

The stored faults are displayed in sequence.

- Refer to the fault table with the fault displayed and rectify fault.

If „No fault detected“ is shown in the display and if the key ☐ is pressed, the programme returns to the initial position.

Readout on display:

If anything else appears on the display: ⇒ Operating instructions of the vehicle system tester.

- End output (function 06).

►	Vehicle system test Select function XX	HELP
►	X faults detected!	
►	No fault detected!	->
►	Vehicle system test Select function XX	HELP

Erasing fault memory

Note

The contents of the fault memory are output automatically after the fault memory is erased. If it is not possible to erase the fault memory, interrogate the fault memory once again and rectify any faults.

Requirements:

- Fault memory was interrogated.
- All faults rectified.

After interrogating the fault memory:

Readout on display:



Vehicle system test Select function XX	HELP
---	------

- Select function **05** „Erase fault memory“ and confirm entry with **Q**.

Readout on display:



Vehicle system test Fault memory erased!	->
---	----

The fault memory is now erased.

- Press **Q**.

Readout on display:



Vehicle system test Select function XX	HELP
---	------

Note

- ♦ If the following message is displayed the test sequence is incorrect:
- ♦ Carefully follow the test sequence step by step: first interrogate the fault memory, if necessary rectify faults and then erase the fault memory.



Vehicle system test Fault memory was not interrogated	->
--	----

Ending output

- Select function **06** „End output“ and confirm entry with **Q**.

Readout on display:



Vehicle system test Enter address word XX	HELP
--	------

- Switch off ignition.
- Separate vehicle system tester -V.A.G 1552-.

Fault table

Note

- ♦ All the possible faults which can be detected by the vehicle system tester -V.A.G 1552- are listed below according to the 5-digit fault code.
- ♦ Before replacing components found to be defective first check the wiring and plug connections to these components as well as the earth cables according to the current flow diagram.
- ♦ After repair once again interrogate the fault memory using vehicle system tester -V.A.G 1552- and then erase the memory.

- ♦ All static and sporadic faults are stored in the fault memory. A fault is detected as static if it exists for at least 2 seconds. If the fault is then no longer present, it is stored as a sporadic (temporary) fault. „/SP“ appears on the right of the display.
- ♦ After switching on the ignition, all the faults which exist are set to sporadic and are not stored as static faults unless they continue to exist after completing the check.
- ♦ If a sporadic fault no longer occurs during 50 driving cycles (ignition on for at least 5 minutes, road speed > 30 km/h), it is erased.

Readout on -V.A.G 1552-		Possible cause of fault	Possible effects	Rectifying fault
00668 El. syst. voltage tml. 30 ¹⁾	Signal too low	♦ Battery voltage below 9.5 V ♦ Battery insufficiently charged ♦ Battery defective ♦ AC generator defective ♦ Large number of electrical components switched on	Poor or no function of navigation unit	– Read measured value block ⇒ Chap. 91-4. – Test battery, charge if necessary ⇒ Rep. Gr. 27; Electrical System. – Test alternator ⇒ Rep. Gr. 27; Electrical System. – Switch off all electrical components.
00854 Output radio display dash panel insert ²⁾	No communication	♦ Wiring defective ♦ Radio-Navigation System defective ♦ Dash panel insert defective	No data transfer between Radio-Navigation System and dash panel insert, readout in display of dash panel insert not o.k.	– Read measured value block ⇒ Chap. 91-4. – Test wiring according to current flow diagram. – Conduct self-diagnosis of dash panel insert, replace dash panel insert if necessary ⇒ Chap. 90-2. – Replace Radio-Navigation System.
00862 Navigation (GPS) aerial - R50/R52	Open/short to positive/short to earth	♦ Wiring defective ♦ Navigation (GPS) aerial defective	Navigation system not operating correctly (positioning)	– Read measured value block ⇒ Chap. 91-4. – Test wiring according to current flow diagram. – Test navigation (GPS) aerial, replace if necessary.

Readout on -V.A.G 1552-		Possible cause of fault	Possible effects	Rectifying fault
00867 Link to ABS control unit	No signal	◆ Wiring defective ◆ Wheel sensor defective ◆ ABS control unit defective	Navigation not o.k.	– Perform adaptation of wheel pulses ⇒ Chap. 91-4. – Read measured value block ⇒ Chap. 91-4. – Perform ABS self-diagnosis. – Test wiring according to current flow diagram.
01311 Databus: Information	No signal	◆ Wiring defective ◆ Radio-Navigation System defective ◆ Sound System (DSP) defective	Function of Sound System (DSP) not o.k.	– Read measured value block ⇒ Chap. 91-4. – Test wiring according to current flow diagram.
65535 Control unit defective		Radio-Navigation System defective	Navigation system not operating properly	– Replace Radio-Navigation System.

¹⁾ This fault may also be stored if the starter has been operated for more than 10 sec.!

²⁾ Each time a fault is rectified and the fault memory is erased, it is then necessary to perform an operational check of the second display and to then once again interrogate the fault memory!

91-4 Radio-Navigation System (RNS) II

Self-diagnosis of navigation unit in RNS II

Actuator diagnosis



Note

Final control diagnosis is not of significance for repair measures.

Reading measured value block

The input signals and voltages required for the operation of the Radio-Navigation System are constantly monitored by the self-diagnosis.

For fault finding, display the status of the input signals in the measured value blocks.

Procedure

- Connect vehicle system tester -V.A.G 1552- and select address word 37 for Navigation and confirm with .

Readout on display:

►

Vehicle system test	HELP
Select function XX	

- Enter 08 for the function „Read measured value block“ and confirm entry with the key.

Readout on display:

►

Read measured value block	Q
Enter display group number XXX	

- Enter the desired three-digit display group number and confirm entry with the key.

Measured value block 001

Reading measured value block 1 →				Readout on display
0	12.3 V	60 %	on	
				Status S contact • Can be checked during continuous output of measured values • Withdraw ignition key = readout „off“ • Switch on S contact again = readout „on“
				Dimming of radio lighting in percent (only with headlights "on") • 0 to 99%
				Voltage terminal 30 • Measured behind filter
				Vehicle speed signal from speedo • 0 or 1 (4 pulses for each revolution of tyre)

Measured value block 002

Reading measured value block 2 →				Readout on display
rev. g. off	Tml. 15 on			
				Status terminal 15 • Ignition switched on = „tml. 15 on.“ • Ignition switched off = „tml. 15 off.“
				Status of reversing light switch • Reverse gear engaged = „rev. g. on.“ • Reverse gear not engaged = „rev. g. off.“

Measured value block 003

Reading measured value block 3		→	Readout on display	
GPS aerial	o.k.			
		Status GPS receiver		
		• o.k. • interrupted		
		GPS receiver		

Measured value block 004

Reading measured value block 4		→	Readout on display	
ext. displ.		o.k.		
		Status external display		
		• o.k. • n.o.k.¹⁾		
		External display (dash panel insert)		

¹⁾ Readout also if dash panel insert without second display is fitted.

Measured value block 005

Reading measured value block 5		→	Readout on display	
Databus		o.k.		
		Databus status		
		• o.k. • n.o.k.		
		Databus		

Measured value block 006

Reading measured value block 6				→	Readout on display
left	0 km/h	right	0 km/h		
			Vehicle speed right in km/h		
		Right wheel speed sensor			
	Vehicle speed left in km/h				
Left wheel speed sensor					

Adjustment

The Navigation System also makes use of the tyre circumference and the pulses of wheel speed sensors for calculating the distance.

The following changes can be stored with the Adaptation function:

- ◆ Tyre size
- ◆ Number of pulses of wheel speed sensors

The individual functions are retrieved by entering the relevant number of the adaptation channel (refer to adaptation table).

adjustment table:

adjustment channel	adjustment function
01	Tyre circumference in mm
02	Number of pulses of wheel speed sensors

 Note

After changing an adaptation value or ending an adaptation channel, it is once again necessary to perform the function 10 „Adaptation“ in order to select another adaptation channel!

Adapting tyre circumference

 Note

It is only necessary to adapt the tyre circumference if the Navigation System is replaced.

- Enter function 10 „Adaptation“ and confirm entry with the  key.

Readout on display:

- Enter 01 and confirm entry with the  key.

Readout on display:

The channel selected and the tyre circumference currently stored in mm appear in the top line.

Adjustment		
Enter channel number XX		
Channel 1	Adaptation	1930
	(- -)	

- Press ☐ key.

Readout on display:



```
Channel 1      Adaptation      1930
Enter adjustment value XXXXX
```

- Enter new tyre circumference. Place a 0 (zero) in front of the 4-digit number, e.g. 01915 ⇒ Table for tyre circumferences.

- Confirm entry with the ☐ key.

Readout on display:



```
Channel 1      adjustment      1915      Q
                (-      -)
```

- Confirm entry with the ☐ key.

Readout on display:



```
Channel 1      adjustment      1915      Q
Store changed value?
```

- Confirm entry with the ☐ key.

Readout on display:



```
Channel 1      Adaptation      1915
Changed value stored
```

- Press ☐ key.

- Enter 06 for the function „End output“.

Table for tyre circumferences



Note

- ♦ The tyre sizes of the relevant tyre circumferences can be obtained by referring to the table below. These tyre sizes are then used for adapting the tyre circumference to the Radio-Navigation System.
- ♦ It is only necessary to adapt the tyre circumference if the Navigation System is replaced.
- ♦ It is not necessary to carry out adaptation after fitting tyres of different size for the RNS system is calibrated automatically.

Tyre designation	Tyre circumference (mm)
155/80 R13	1765
165/70 R14	1795
185/60 R14	1765
185/55 R15	1785
195/50 R15	1760

Adapting pulses of wheel speed sensors



Note

It is only necessary to adapt the wheel speed sensors if the Navigation System is replaced.

- Enter function 10 „Adaptation“ and confirm entry with the ☐ key.

Readout on display:



```
Adjustment
Enter channel number XX
```

- Enter 02 and confirm entry with the ☐ key.

Readout on display:



```
Channel 2      Adaptation      45
                (-      -)
```


**Note**

- ◆ *Code number is enclosed together with the unit number of the radio set ⇒ Operating Instructions.*
 - ◆ *For safety reasons the radio card with the code number should not be kept in the vehicle. Determine the code number from the customer, if it is not known.*
 - ◆ *Each unit has its own code number. If the Radio-Navigation System is replaced, the code number of the new unit must also be used. The new code number must be handed over to the customer together with the unit documentation.*
- Switch on the radio navigation system.

The readout „SAFE“ appears in the display. In addition the text „Please enter a numerical code“ and the numerical series „0000“ appear.

- Enter the code number indicated on the radio card by marking the digits on the selection field for letters and numbers and confirming.
- Confirm the code by pressing on the right-hand rotary knob/pushbutton.

The unit is enabled and is now operational.

If the code number has been correctly entered, the LED located at the top right of the unit must flash when the ignition key is withdrawn. If the LED flashes, the Radio-Navigation System is operational and the electronic anti-theft lock is activated.

If an incorrect code number has inadvertently been entered for cancelling the lock, „SAFE“ appears in the display, first of all as a flashing readout and then as a constant readout. It is only possible to repeat the procedure for cancelling the electronic anti-theft lock twice.

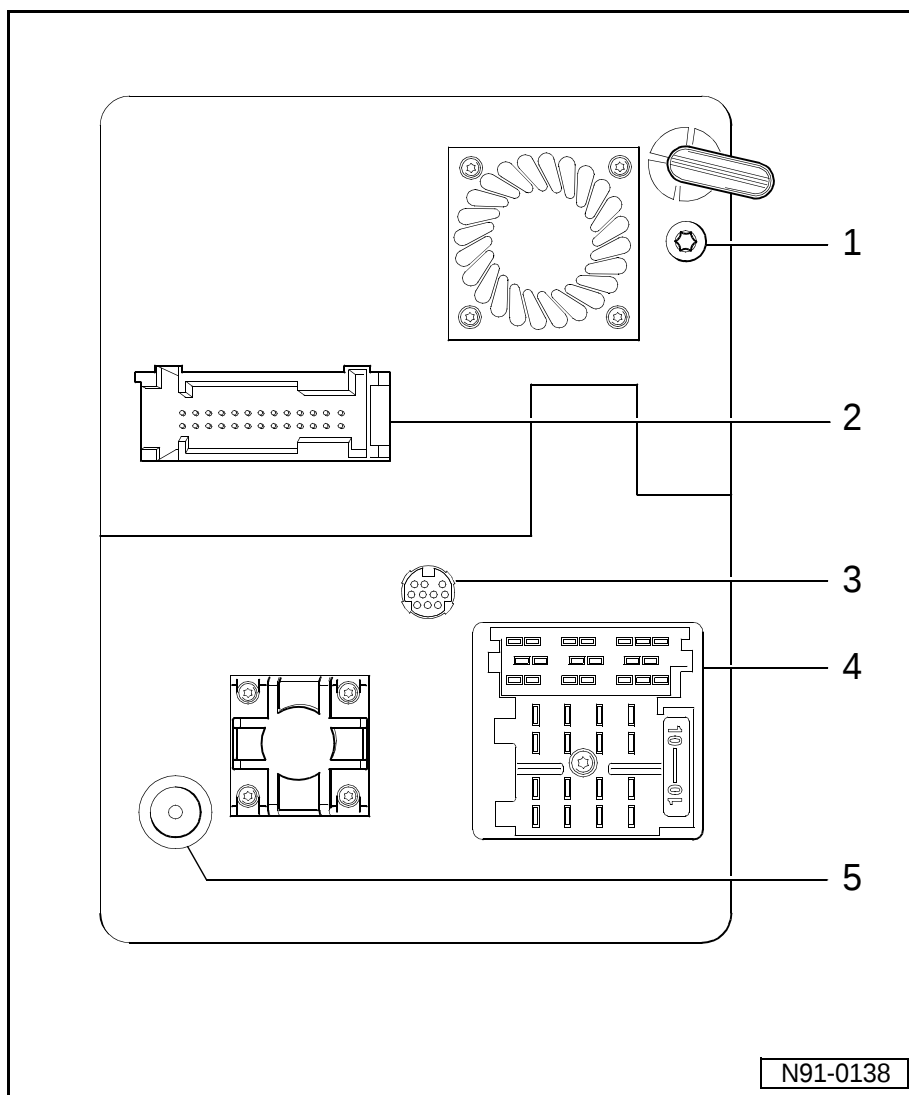
If an incorrect code number is entered once again, the unit is blocked for about 1 hour.

It is only possible to carry out a further attempt to cancel the electronic anti-theft lock after this blocking period has elapsed.

During the blocking period the unit must remain switched on and the ignition key must be left in the ignition lock. After the blocking period has elapsed, the number of attempts in the display disappears and the electronic anti-theft lock can be cancelled again as described above.

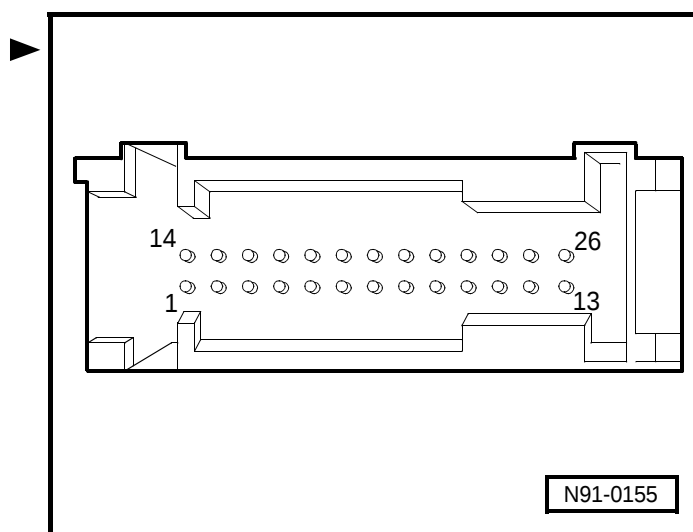
Plug connections at Radio-Navigation System

- 1 - Connection for navigation system aerial**
- 2 - 26-pin plug connection for navigation sensor**
Contact assignment ⇒ 91-4 page 8
- 3 - RGB connection (video)**
This connection is not assigned
- 4 - Multipin plug connection I, II, III**
Contact assignment ⇒ 91-4 page 9
- 5 - Connection for the radio antenna**



Contact assignment of 26-pin plug connection for navigation sensor

26-pin plug connection



- 1 - not assigned
- 2 - not assigned
- 3 - not assigned
- 4 - Terminal 15 (ignition)
- 5 - Left wheel speed sensor output (ABS signal)
- 6 - not assigned
- 7 - not assigned
- 8 - not assigned
- 9 - not assigned
- 10 - not assigned
- 11 - not assigned
- 12 - not assigned
- 13 - Navigation CAN bus (high)
- 14 - not assigned
- 15 - not assigned
- 16 - not assigned
- 17 - Reversing light switch
- 18 - Right wheel speed sensor output (ABS signal)
- 19 - not assigned
- 20 - not assigned
- 21 - not assigned
- 22 - not assigned
- 23 - not assigned
- 24 - not assigned
- 25 - Navigation CAN bus (low)

Contact assignment of multipin plug connections I, II, III

The multipin plug connection I, -T20-, consists of 3 parts which are colour-coded:

Multipin plug connection I, part 1, yellow

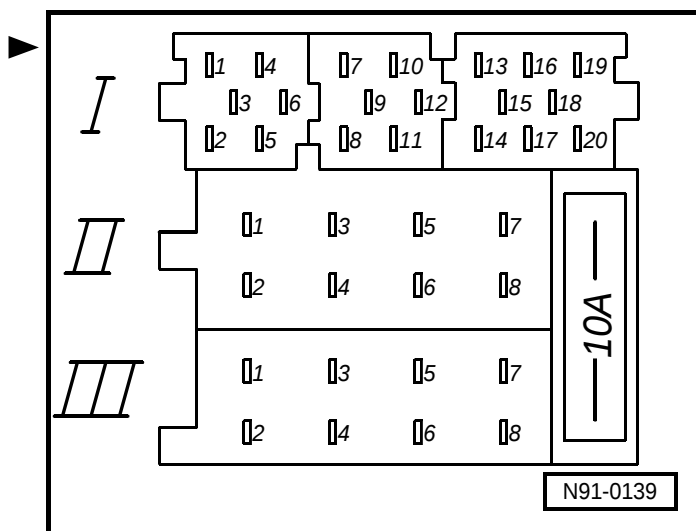
- 1 - Line Out left rear, LR
- 2 - Line Out right rear, RR
- 3 - Line Out, earth
- 4 - Line Out left front, LF
- 5 - Line Out right front, RF
- 6 - Switched positive for the sound amplifier

Multipin plug connection I, part 2, green

- 7 - Telephone input signal, TEL+
- 8 - Second display, CLOCK
- 9 - Second display, DATA
- 10 - Second display, ENA
- 11 - Remote control, REM
- 12 - Telephone input signal, TEL-

Multipin plug connection I, part 3, blue

- 13 - CD changer, DATA IN
- 14 - CD changer, DATA OUT
- 15 - CD changer, CLOCK
- 16 - CD changer, voltage supply (+), terminal 30



- 17 - CD changer, control signal
- 18 - CD changer, left and right channel, earth
- 19 - CD changer, left channel, CD/L
- 20 - CD changer, right channel, CD/R

Multipin plug connection II, -T8a-, 8-pin, brown

- 1 - Speaker + rear right
- 2 - Speaker - rear right
- 3 - Speaker + front right
- 4 - Speaker - front right
- 5 - Speaker + front left
- 6 - Speaker - front left
- 7 - Speaker + rear left
- 8 - Speaker - rear left

Multipin plug connection III, -T8a-, 8-pin, black

- 1 - Gala (volume adaptation)
- 2 - Mute (telephone mode)
- 3 - Self-diagnosis/K wire
- 4 - Connection for ignition key-controlled On / Off
- 5 - Terminal 30 - Anti-theft lock control signal, SAFE
- 6 - Lighting (tml. 58b)
- 7 - Terminal 30
- 8 - Terminal 31

Removing and installing Radio-Navigation System



Note

The part number for the complete Radio-Navigation System is indicated on a sticker on the housing of the Radio-Navigation System!

Special tools, test and measuring equipment and auxiliary items required

- ◆ Release tool -T 10057- (two sets)

Removing:

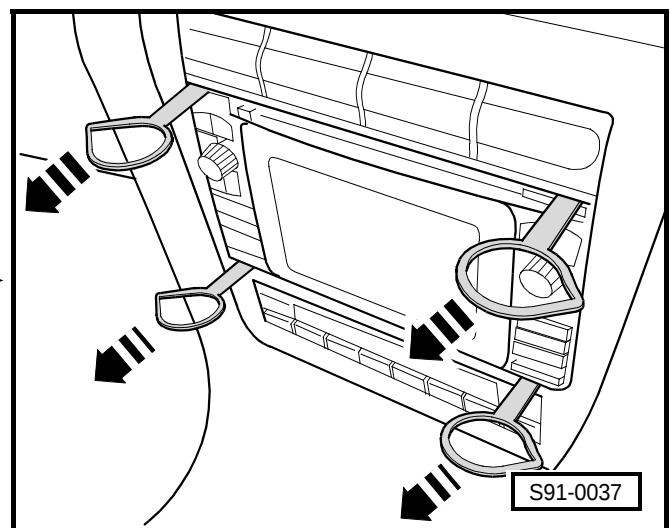


Note

Determine the code number of the Radio-Navigation System before removing it. If the Radio-Navigation System is replaced, the electronic anti-theft lock should be activated (refer to Operating Instructions). The new code number must be advised to the customer.

- Insert release tools into the slots until they lock in place.
- Pull Radio-Navigation System out of the dash panel by holding at the eyes of the release tools.
- Unlock plug connections and separate.

Pull off release tools:



- Press locking catch -arrow- and pull out release tools. ►

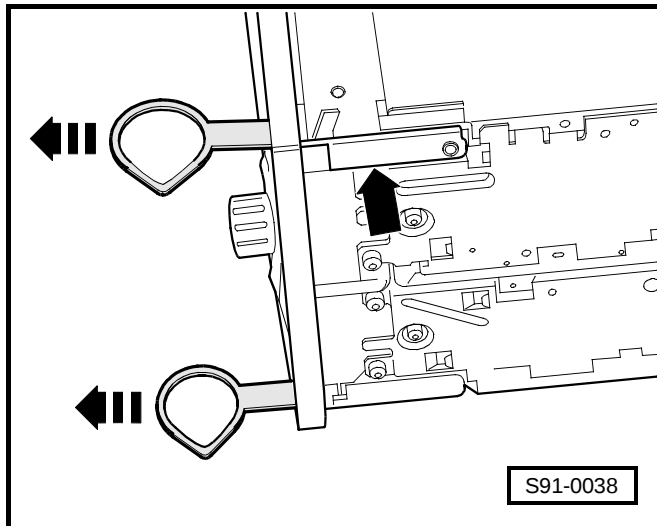
Installing:

- Fit together plug connections at Radio-Navigation System.
- Insert Radio-Navigation System straight into the dash panel until it locks in place.



Note

When inserting the RNS unit on no account press on the display or on the operating buttons otherwise they may be damaged.



S91-0038

Control unit for traffic information over the radio -J559- (TMC box)

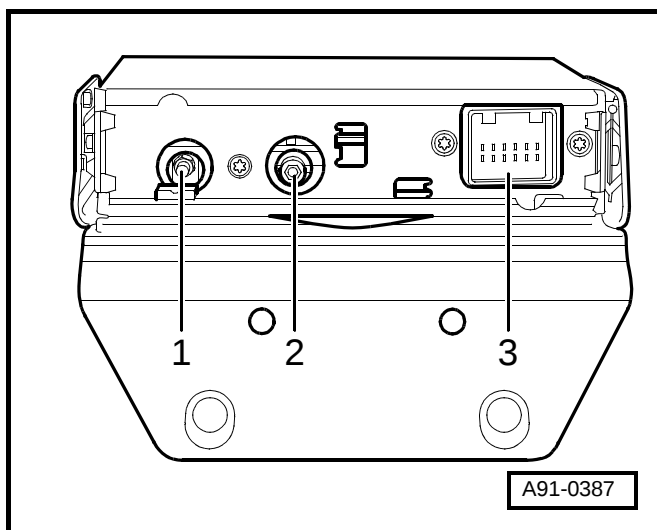


Note

This only applies for the Radio-Navigation System with colour display.

Plug connections on the control unit for traffic information over the radio -J559-

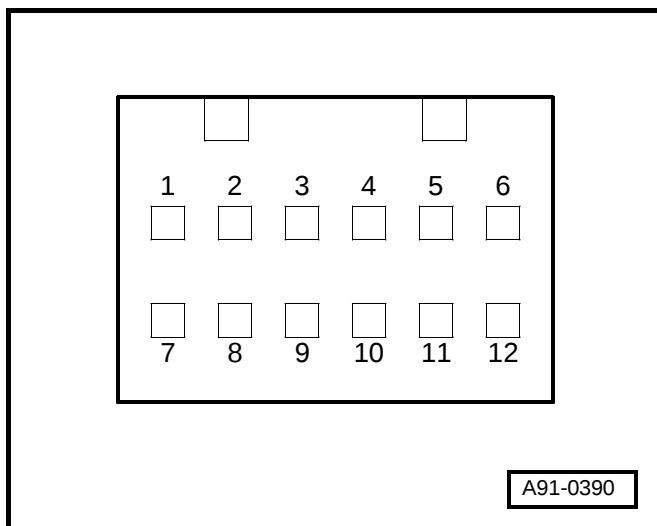
- 1 - Connection for the antenna cable coming from the roof antenna
- 2 - Connection for the antenna cable coming from the radio navigation unit
- 3 - 12-pin plug connection, contact assignment
⇒ 91-4 page 11



A91-0387

Contact assignment of 12-pin plug connection ►

- 1 - not assigned
- 2 - Convenience system CAN databus (low)
- 3 - Convenience system CAN databus (high)
- 4 - not assigned
- 5 - not assigned
- 6 - Terminal 30
- 7 - not assigned
- 8 - Navigation CAN bus (low)
- 9 - Navigation CAN bus (high)
- 10 - not assigned
- 11 - not assigned
- 12 - Terminal 31



A91-0390

Removing and installing the control unit for traffic information over the radio -J559-

Removing

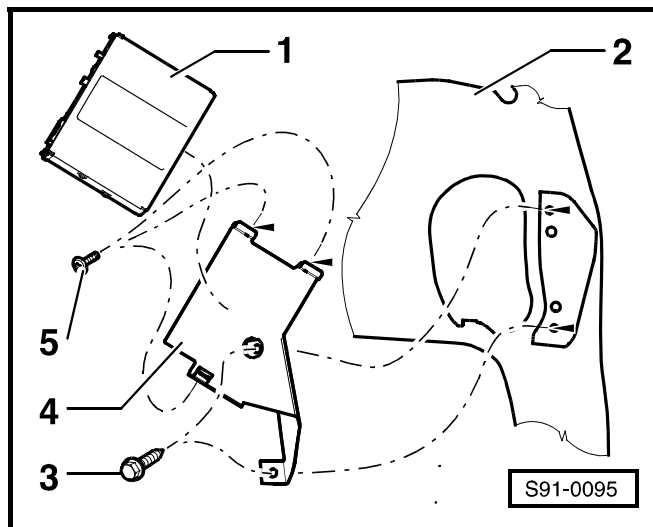
The control unit for traffic information over the radio -J559- (TMC box) is located behind the middle part of the left dash panel insert.

- Removing the dash panel ⇒ Body Work; Rep. Gr. 70.

- Pull off the plug connector and the antenna cable on the control unit -1-.
- Screw out screws -5- (1.4 Nm) and remove the control unit -1- from the bracket -4-.
- Remove screws -3- (4 Nm) and take out holding bracket -4- from the dash panel crossmember -2-.

Installing

- Installation is carried out in the reverse order.



91-5 Telephone preinstallation



Note

- ◆ Disconnect earth strap from the battery before commencing work on the electrical system.
- ◆ Determine the anti-theft code of the radio set before disconnecting the battery.
- ◆ After connecting the battery, carry out the anti-theft coding of the radio set, set clock, on vehicles with power windows, initialise these ⇒ Rep. Gr. 02; Inspection and Maintenance.

On vehicles fitted with telephone preinstallation, it is possible to retrofit mobile phones (portables).

Mobile phones always require their own operating electronics, a so-called interface box, for operation in SKODA vehicles. This creates the link between the mobile phone and the components installed in the vehicle by means of a standardised VDA plug connection.

Whatever type of mobile phone is used, determine from the particular telephone manufacturer which interface box can be used. Interface boxes without a VDA connector require an appropriate adapter (available from e.g. Votex).

Telephone preinstallation 1

Overview

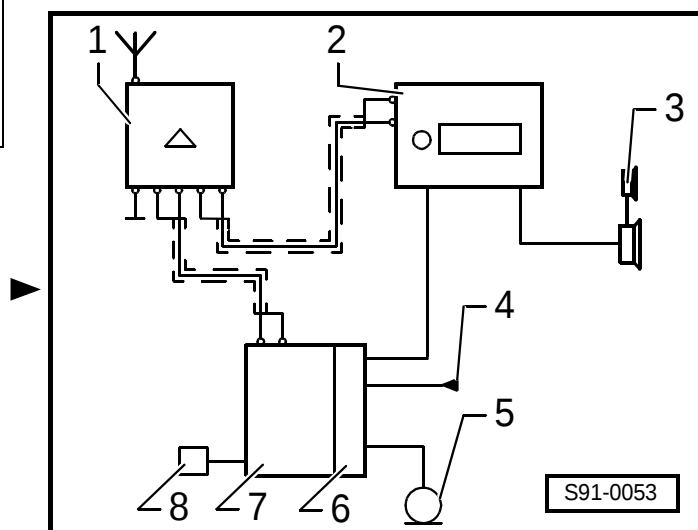
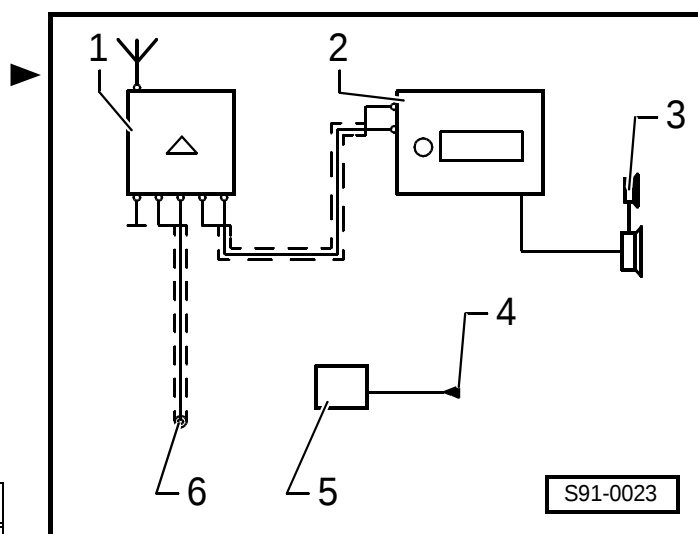
- 1 - Roof aerial for radio and mobile phone
- 2 - Radio
- 3 - Door speakers
- 4 - Voltage supply
- 5 - Telephone preinstallation connector ⇒ 91-5 page 1
- 6 - Aerial cable for phone

Connector assignment (item 5)

Contact	Assignment
1	Terminal 15a
2	Terminal 58b
3	Terminal 31
4	not assigned

Telephone preinstallation 2

Overview



- 1 - Roof aerial for radio and mobile phone
- 2 - Radio
- 3 - Door speakers
- 4 - Voltage supply for telephone system
- 5 - Telephone microphone ⇒ 91-5 page 3
- 6 - VDA plug connection for control unit of telephone operating electronics (interface box) - connector assignment ⇒ 91-5 page 2
- 7 - Telephone operating electronics control unit -J412- (interface box) ⇒ 91-5 page 3
- 8 - Plug connection for linking to interface box ⇒ 91-5 page 2

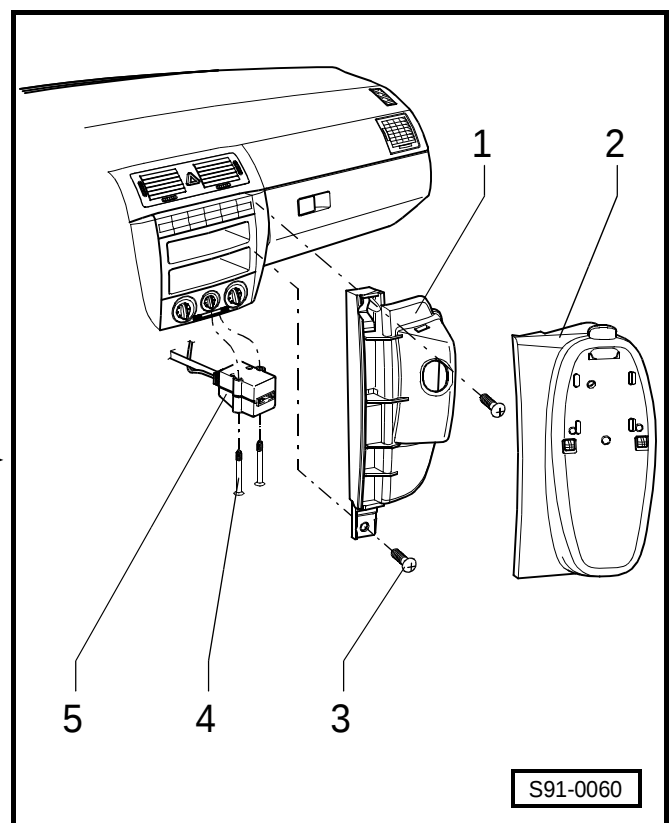
Connector assignment

Contact	Assignment
1	Terminal 31
2	not assigned
3	Vehicle speed signal
4	To radio connector A (mute)
5	not assigned
6	not assigned
7	To radio connector C, part 2, contact 12 (telephone input signal, TEL-)
8	not assigned
9	Telephone microphone -R38
10	Terminal 15a
11	Terminal 30a
12	Terminal 58b
13	not assigned
14	not assigned
15	not assigned
16	To radio connector C, part 2, contact 7 (telephone input signal, TEL-)
17	not assigned
18	Telephone microphone -R38

Assembly overview of mobile phone mount

Mount for mobile phone

- 1 - Mount for mobile phone
- 2 - Cover of mobile phone mount (pull to take off)
- 3 - 3.5 Nm
- 4 - 3.5 Nm
- 5 - Plug connection for linking to interface box



Removing and installing telephone operating electronics control unit -J412-

Removing

- Removing the dash panel centre part ⇒ Rep. Gr. 70; Body Work.
- Pull off aerial cable -2-.
- Separate plug connections and remove telephone operating electronics control unit -1- from mount in dash panel.

Installing

Installation is carried out in the reverse order.

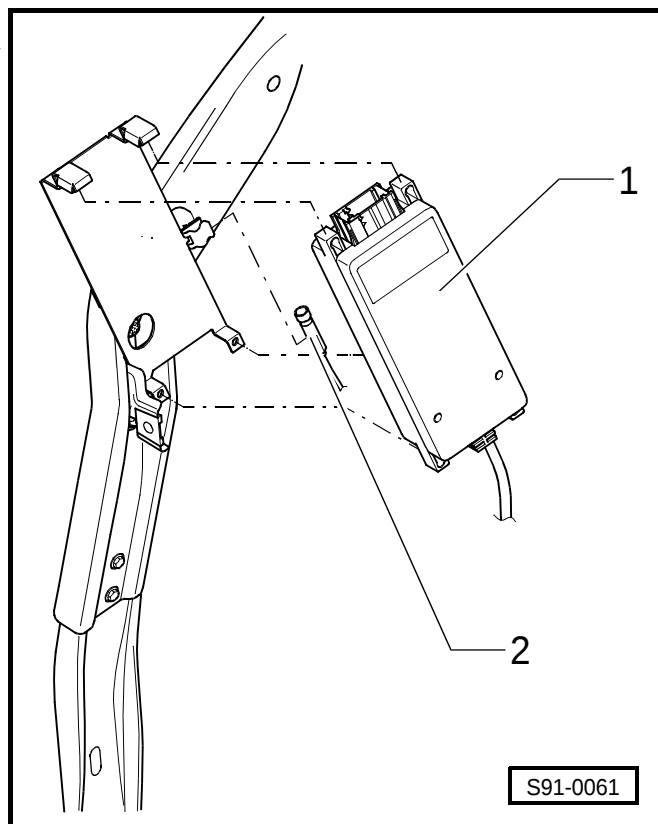
Removing and installing microphone

Removing

- Remove interior light ⇒ Chap. 92-2.
- Separate plug connection and take off microphone by pulling.

Installing

Installation is carried out in the reverse order.



91-6 CD changer

General instructions

**WARNING!**

Disconnect earth strap from the battery before commencing work on the electrical system.

**Note**

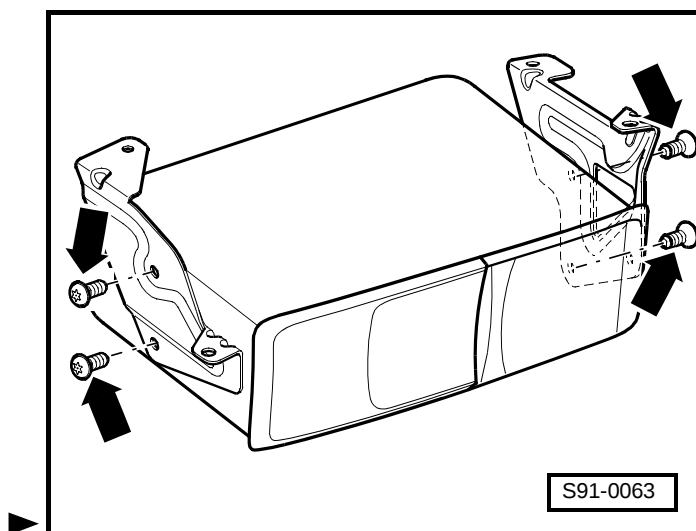
- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ When the battery is reconnected perform the following operations depending on the vehicle equipment: Encode the radio, re-set the clock; on vehicles fitted with power windows, initialise them ⇒ Inspection and Maintenance.

Removing and installing CD changer

The CD changer is located below the front passenger seat.

Removing

- Remove front passenger seat ⇒ Rep. Gr. 72; Body Fitting Work.
- Separate plug connection.
- Remove side covers of seat frame ⇒ Rep. Gr. 72; Body Fitting Work.
- Take out the 4 screws -arrows- (1 Nm).
- Take out CD changer.



Installing

- Carry out the installation in the same way in reverse order.

92 – Windscreen Wiper and Washer System

92-1 Windscreen Washer System



WARNING!

Disconnect earth cable of battery before working on the electrical system.



Note

- ◆ Before disconnecting the battery, determine the radio code of radio sets fitted with anti-theft coding.
- ◆ When the battery is re-connected, perform the following operations depending on the vehicle equipment: encode radio, re-set clock, initialise power windows ⇒ Inspection and Maintenance.

Removing and installing windshield washer fluid reservoir

removing:

- Take off the front bumper ⇒ Body Fitting Work; Rep. Gr. 63.
- Unplug the connector -1- at the washer pump.
- Detach the hoses from the pump -2-.
- Unscrew the two nuts -arrows- and take off the windscreen washer fluid reservoir to the front.

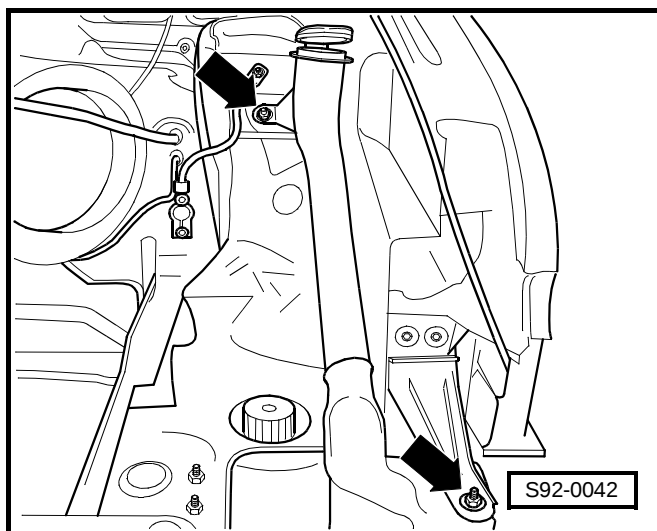
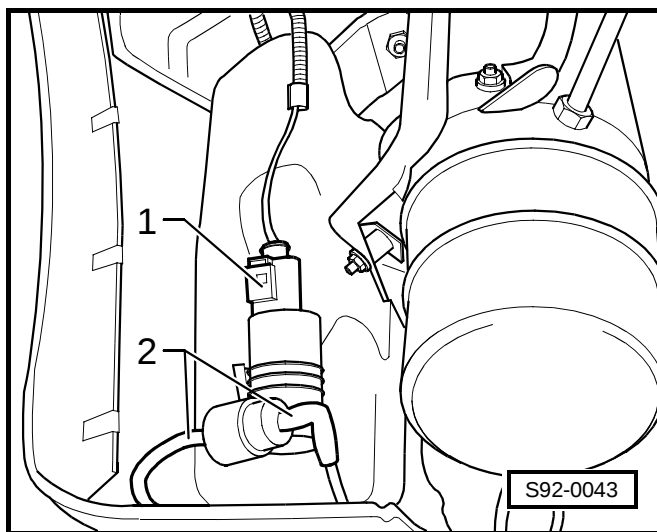


Note

The engine compartment is shown without battery and radiator to simplify the illustration.

Installing

- Installation of the battery is carried out in the reverse order.



Removing and installing spray nozzles for windscreen washer system

Removing

- Take off the wiper arms ⇒ Chap. 92-2.
- Remove the scuttle ⇒ Body Fitting Work; Rep. Gr. 66.
- Carefully lever the angled pieces off the spray nozzles from below and lift the nozzles up and out. ►

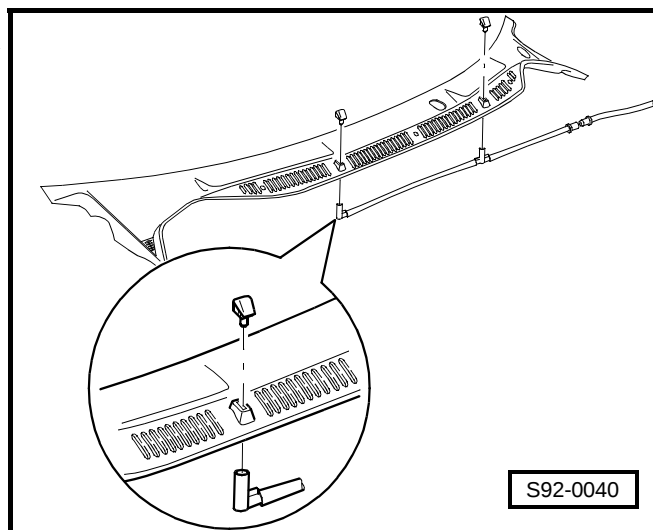


Note

The spray nozzles cannot be adjusted.

Installing

- Installation of the battery is carried out in the reverse order.



92-2 Windscreen Wiper and Washer System



WARNING!

Disconnect earth strap from the battery before commencing work on the electrical system.



Note

- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ When the battery is reconnected perform the following operations depending on the vehicle equipment: Encode the radio, re-set the clock; on vehicles fitted with power windows, initialise them ⇒ Inspection and Maintenance.

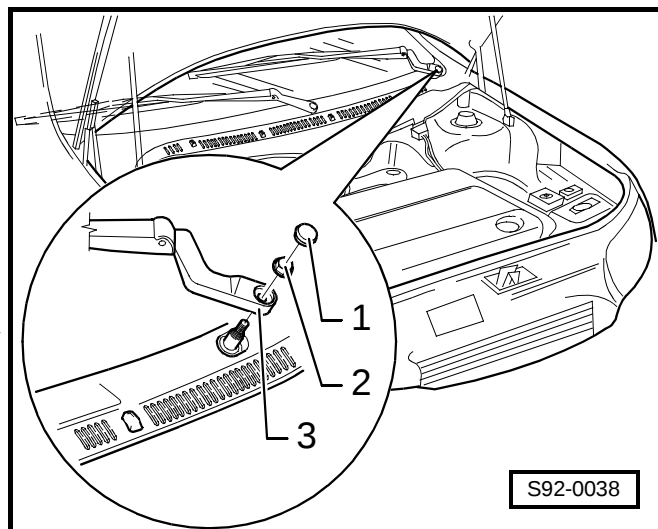
Removing and installing the windscreen wiper and washer system

Removing and installing the wiper arms



Note

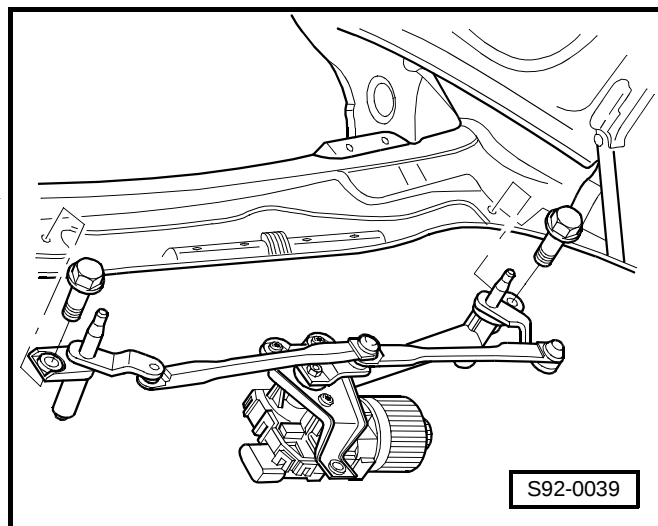
- ◆ The wiper arms of the scuttle must be removed in order to be able to take off the wiper frame with linkage and wiper motor.
 - ◆ Before removing the wiper arms ensure that the wiper motor is in the park position. This is important in order to correctly set the park position when re-installing the wiper arms.
 - ◆ Wiping is deactivated on vehicles fitted with anti-theft alarm when the engine hood is open.
- Use a screwdriver to lever off the two caps -1-.
 - Release the hexagon nuts (20 Nm) -2-, but do not unscrew completely.
 - Move the wiper arms -3- slightly until they detach.
 - Now fully unscrew the nuts and remove the wiper arms.
 - Carry out the installation in the same way in reverse order.



S92-0038

Removing wiper motor with linkage

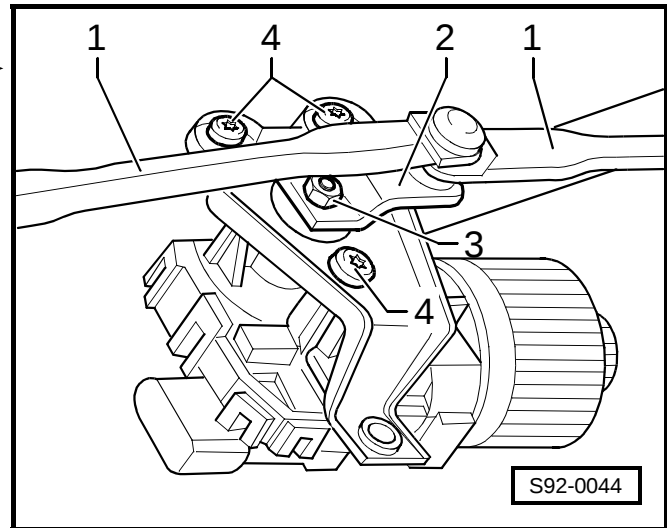
- Unscrew the two hexagon bolts (5 Nm).
- Unplug the connector at the wiper motor.
- Take out the wiper motor together with the linkage.
- Carry out the installation in the same way in reverse order.



S92-0039

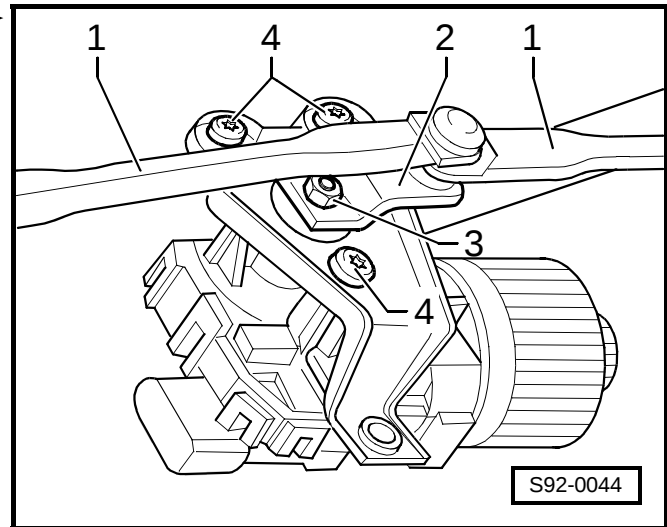
Removing wiper motor

- Use a large screwdriver to lever rod -1- off fixture -2-. ►
- Unscrew hexagon nut -3- (20 Nm) at the fixture.
- Remove the fixing screws (8 Nm) -4-.



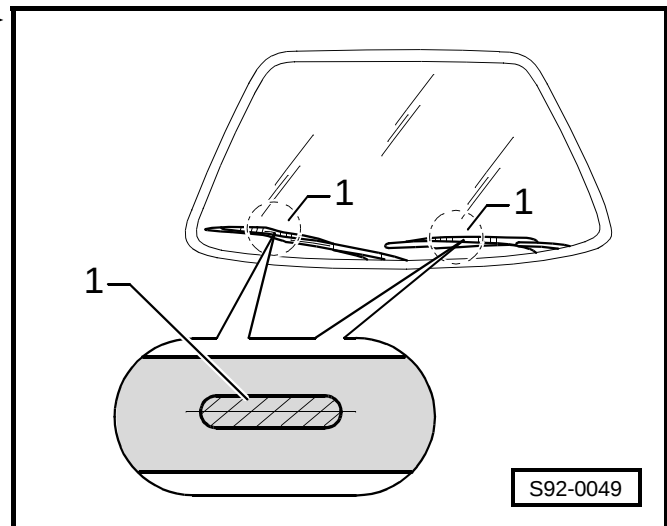
Installing wiper motor

- First plug in the connector to the wiper motor and run it until it is in park position by operating the wiper switch.
- Unplug the connector again and attach the wiper motor with the fixing screws -4- (5 Nm). ►
- Fit on the fixtures -2- so that they form a straight line with the rods.
- Tighten the hexagon nut fully (20 Nm).



Setting park position of windscreen wiper blades

- Run wiper motor until it is in park position.
- Position wiper blades on the marking -1- on the windscreen, align and tighten nuts. ►
- Operate the flick wipe.
- If necessary, align wiper arms once again and tighten nuts (20 Nm).



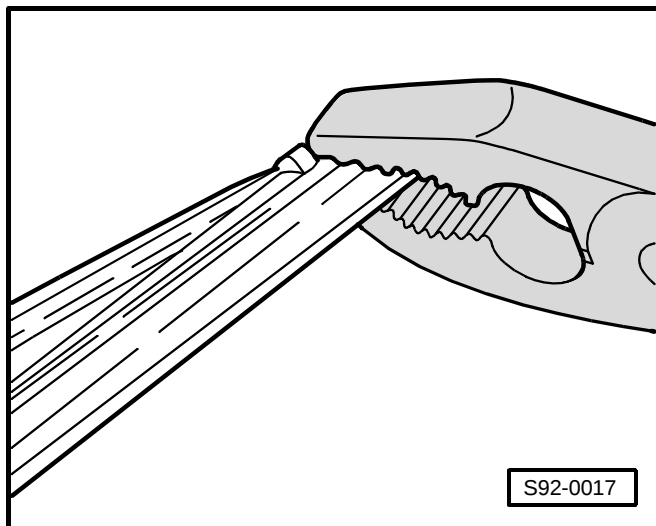
Note

Tolerance between wiper blade and marking -1-: 5 mm

Removing and installing wiper rubber

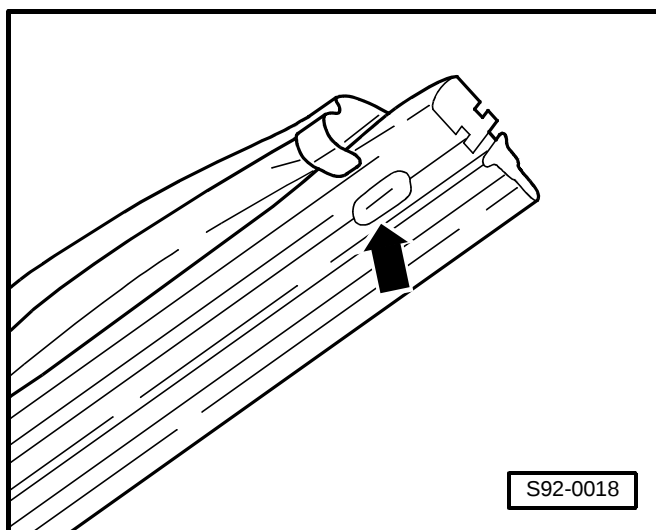
Removing

- Use combination pliers to compress both steel rails at the closed side of the wiper rubber, take them out of the top clip to the side and pull rubber complete with rail out of the remaining clips of the wiper blade. ►



Installing

- Fit new wiper rubber into the bottom clips of the wiper blade. ►
- Insert both rails into the first groove of the wiper rubber so that the recesses of the rails point towards the rubber and lock into the rubber lugs of the groove.
- Use combination pliers to again compress both steel rails and rubber and insert into the top clip so that the lugs of the clip on both sides engage in the retaining slots -arrow- of the wiper rubber.



92-3 Rear Window Wiper and Washer System



WARNING!

Disconnect earth strap from the battery before commencing work on the electrical system.

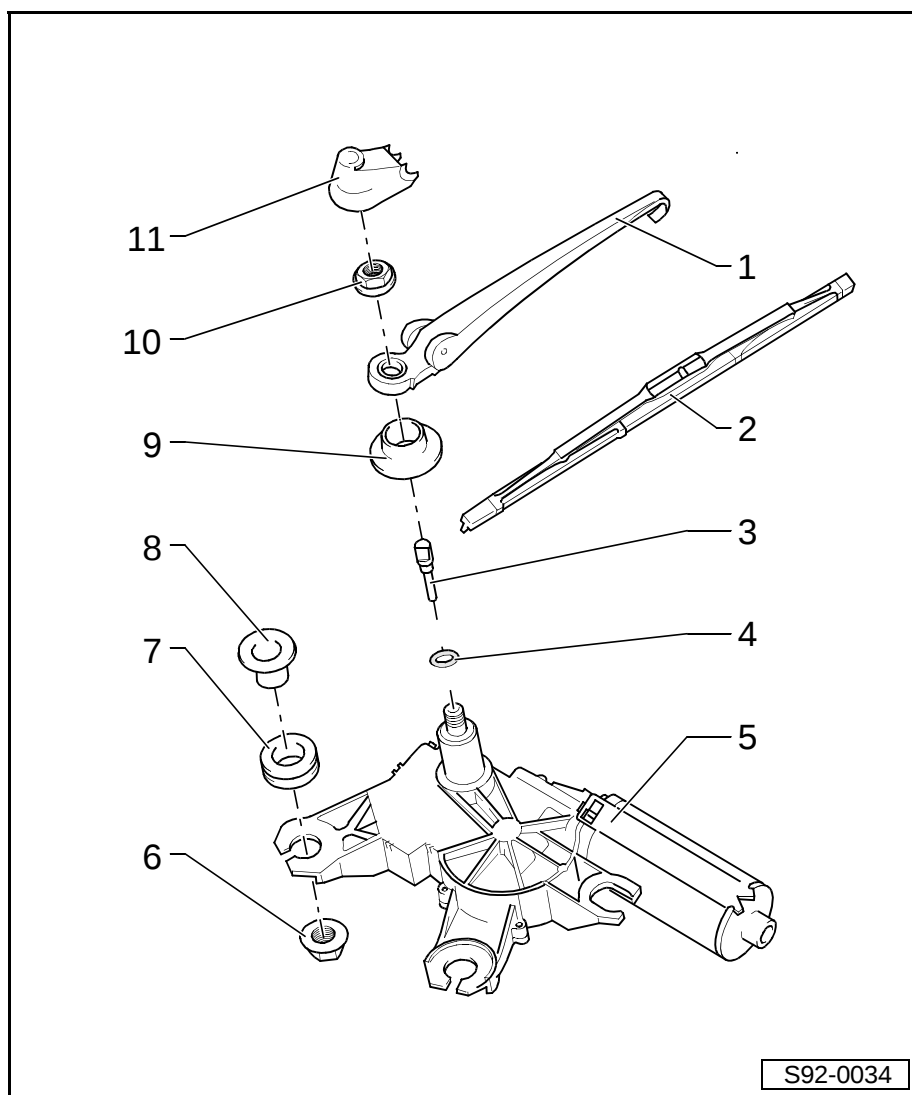


Note

- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ When the battery is reconnected perform the following operations depending on the vehicle equipment: Encode the radio, re-set the clock; on vehicles fitted with power windows, initialise them ⇒ Inspection and Maintenance.

Rear window wiper system - Summary of components

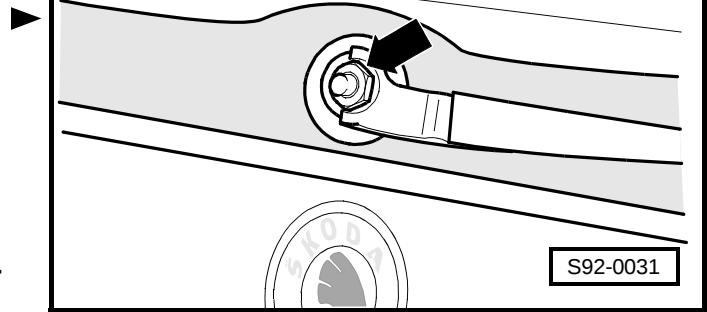
- 1 - Wiper arm**
 - ❑ setting park position ⇒ 92-3 page 2
 - ❑ removing and installing ⇒ 92-3 page 2
- 2 - Wiper blade**
 - ❑ Removing and installing wiper rubber ⇒ Chap. 92-2
- 3 - Spray nozzle**
 - ❑ adjust ⇒ 92-3 page 3
 - ❑ replace ⇒ 92-3 page 3
- 4 - Gasket ring**
- 5 - Wiper motor**
 - ❑ removing and installing ⇒ 92-3 page 2
- 6 - Hexagon nut M6, 8 Nm**
- 7 - Rubber ring**
- 8 - Spacer**
- 9 - Gasket**
- 10 - Hexagon nut waf 13**
 - ❑ 15 Nm
- 11 - Cap**



Removing and installing rear window wiper

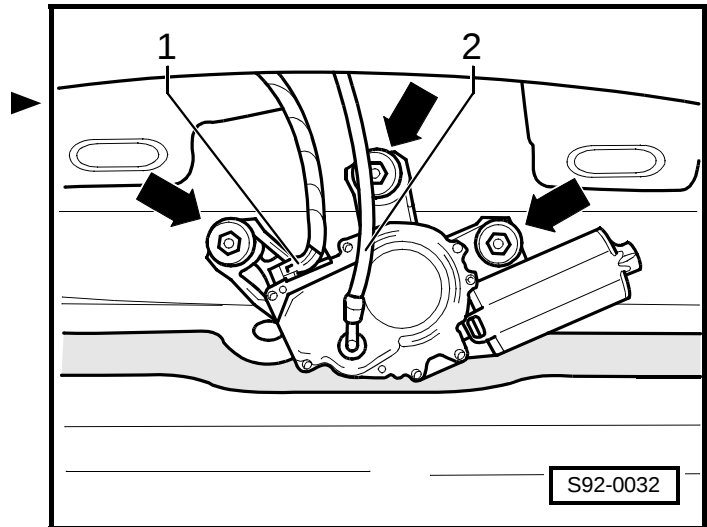
Detaching and attaching wiper arm

- Raise cap.
- Release hexagon nut (12 Nm) -arrow-.
- Raise wiper arm and detach by moving backwards and forwards in the taper.
- Unscrew hexagon nut and take off wiper arm.
- Installation is carried out in the reverse order.



Removing and installing rear window wiper motor

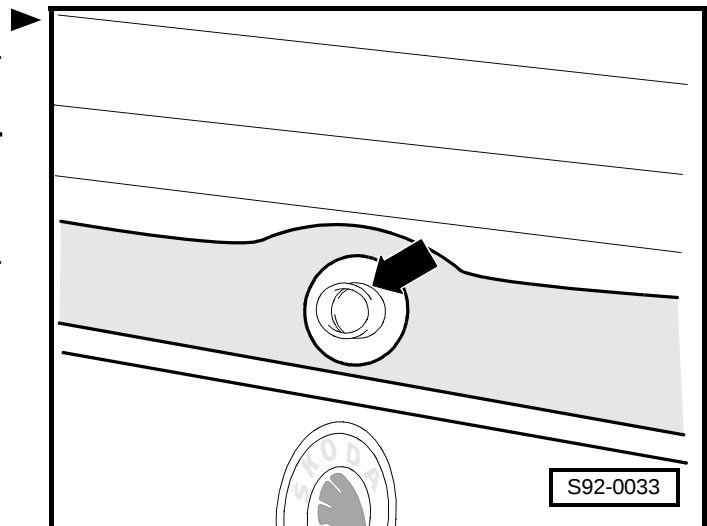
- Take off bottom trim panel of tailgate ⇒ Body Work; Rep. Gr. 70.
- Unplug the connector -1- on the wiper motor.
- Detach hose -2- from the washer nozzle.
- Unscrew hexagon nuts (7 Nm) -arrows- and remove wiper motor.
- Installation is carried out in the reverse order.



When installing the wiper motor, ensure that the seal in the rear window is positioned as shown in the illustration.

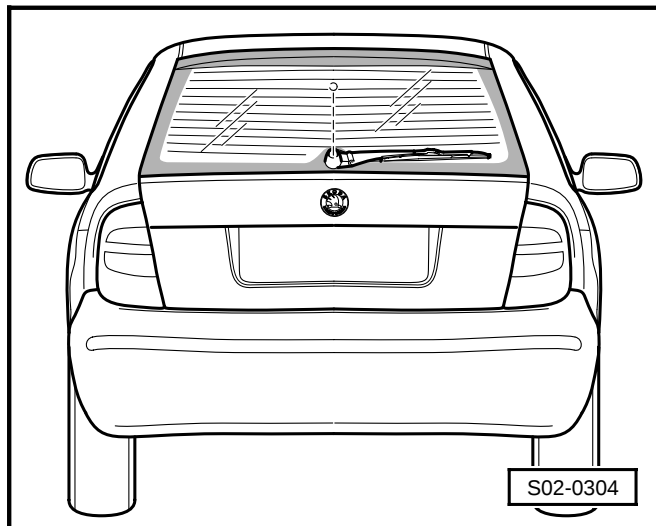
Setting park position of rear window wiper

The wiper blade must be positioned parallel to the bottom heating element -arrows- on the right of the rear window.



Adjusting the spray nozzles

The spray should strike the rear window as shown in the illustration when the vehicle is stationary. ►



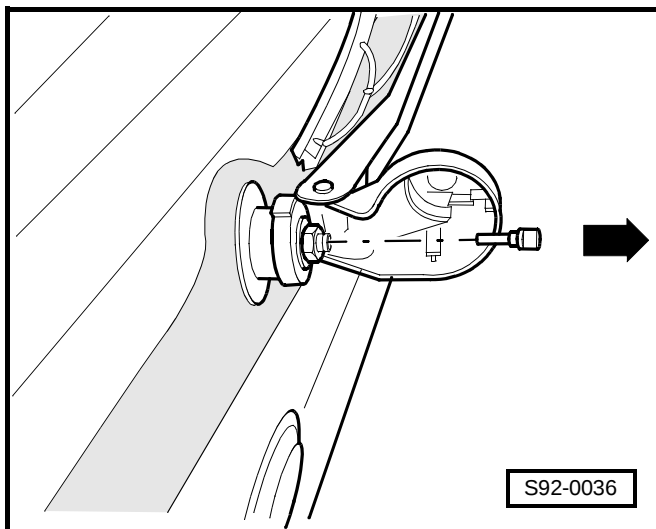
Replacing spray nozzle FABIA

Removing

- Run wiper until it is in park position.
- Open cap of rear window wiper.
- Use suitable pliers to carefully pull out spray nozzle in direction of arrow. ►

Installing

- Push spray nozzle fully into the wiper shaft so that the opening of the spray nozzle is facing vertically up. ►



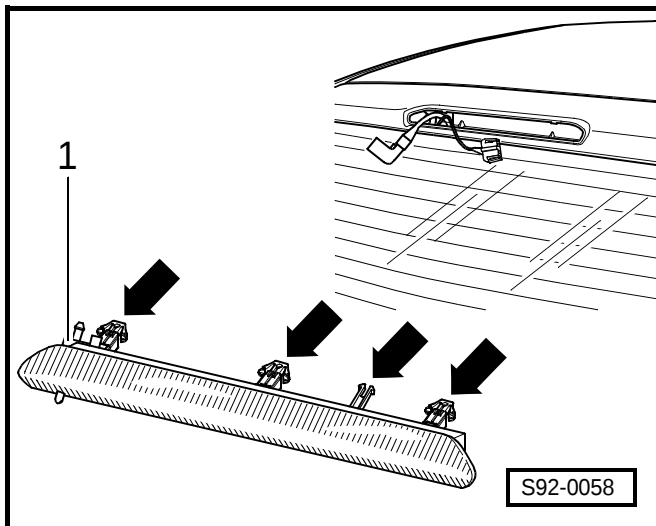
Replacing spray nozzle FABIA Combi

Removing

- Remove tailgate trim panel ⇒ Rep. Gr. 70; Body Work.
- Detach clips holding brake light -arrows- and pull brake light out of vehicle. ►
- Detach connector and hose to washer nozzle.
- Pull out spray nozzle -1-.

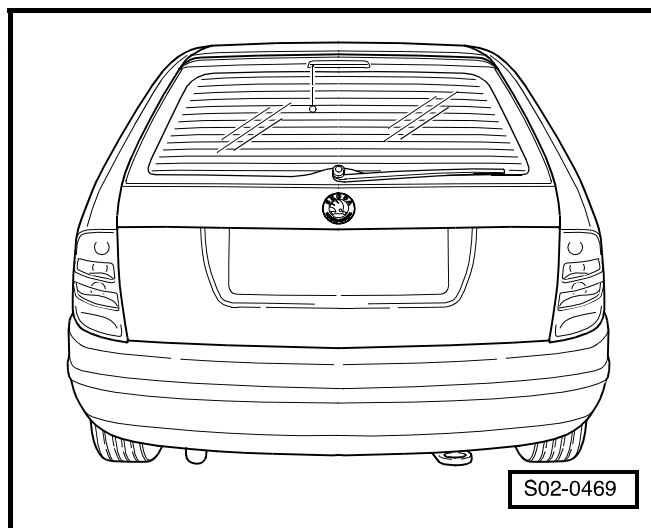
Installing

- Push in spray nozzle so that the spray nozzle opening is pointing vertically down.



Adjusting the spray nozzles

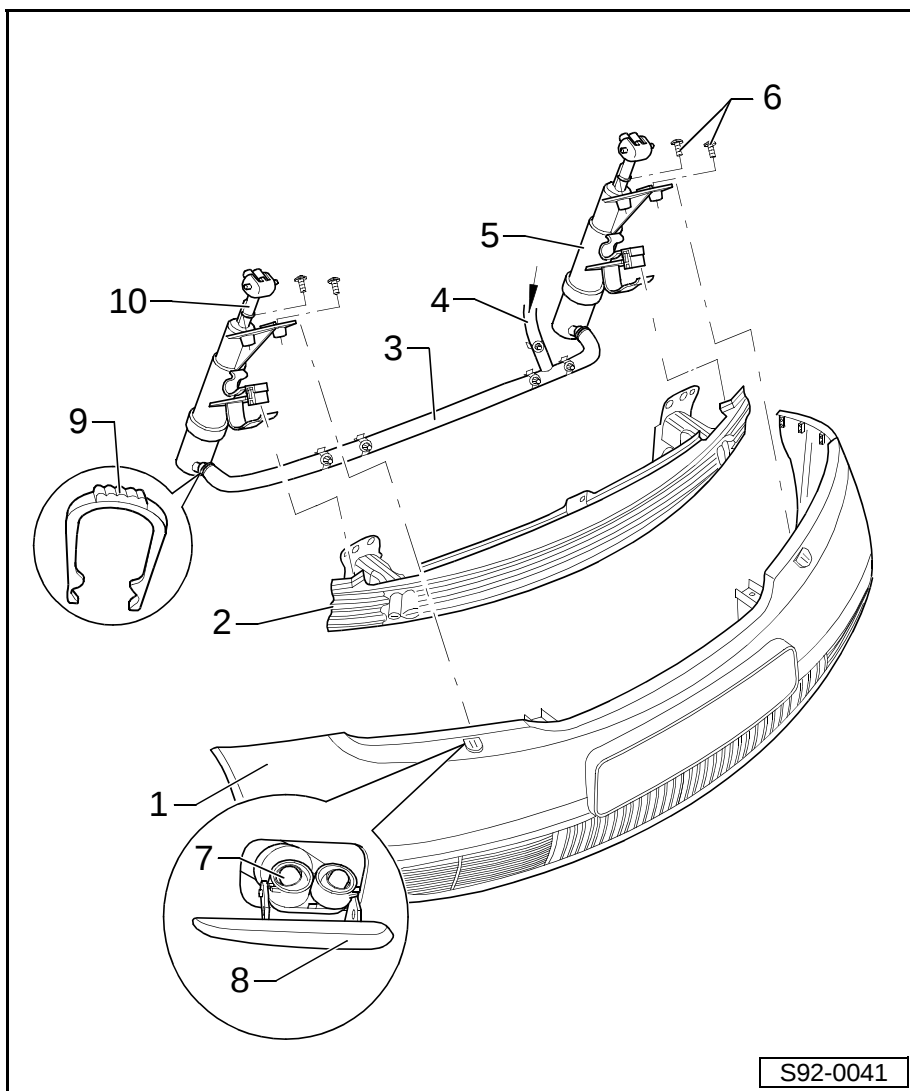
The spray should strike the rear window as shown in the illustration when the vehicle is stationary. ►



92-4 Headlamp cleaning system

Summary of components

- 1 - Front bumper
- 2 - Front cross member
- 3 - Hose to the cleaning water reservoir
- 4 - Hose to the cleaning water reservoir
- 5 - Cylinder with spray nozzles
 - ❑ removing and installing
⇒ 92-4 page 2
- 6 - 2.5 Nm
- 7 - Spray nozzle
 - ❑ adjust ⇒ 92-4 page 1
- 8 - Cap
- 9 - Clip
 - ❑ Hose joint ⇒ 92-4 page 1
- 10 - Spray nozzle holder
 - ❑ removing and installing
⇒ 92-4 page 1



Adjusting the spray nozzles

Adjust the spray nozzles in such a way that the jet hits the centre of the the headlamp evenly.

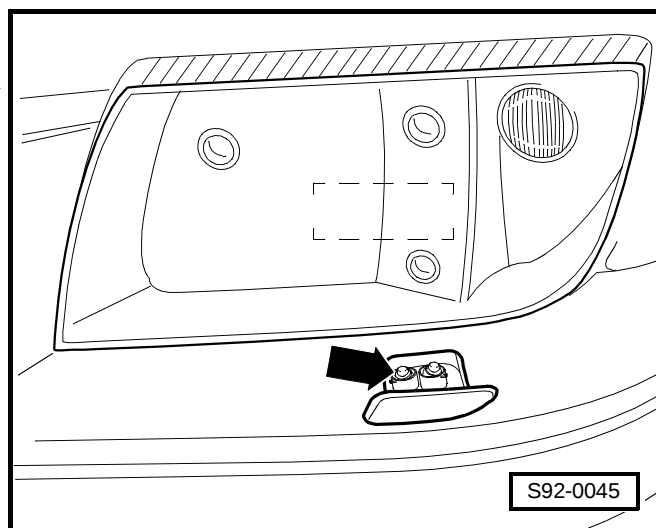
- Pull out the stray nozzle -arrow- up to the stop and using a suitable tool, e.g. needle, set the spray range

Removing and installing the spray nozzle holder



Note

The spray nozzle holder can be installed and removed even when the bumper is fitted.



Removing

- Carefully remove and hold the spray nozzle holder.
- Using a screwdriver slightly raise the securing clip -arrow- ►
- Pull out the spray nozzle holder.

Installing

- Slide the spray nozzle holder in the cylinder securing clip.
- Adjust the spray nozzles ⇒ 92-4 page 1.

Removing and installing the cylinder

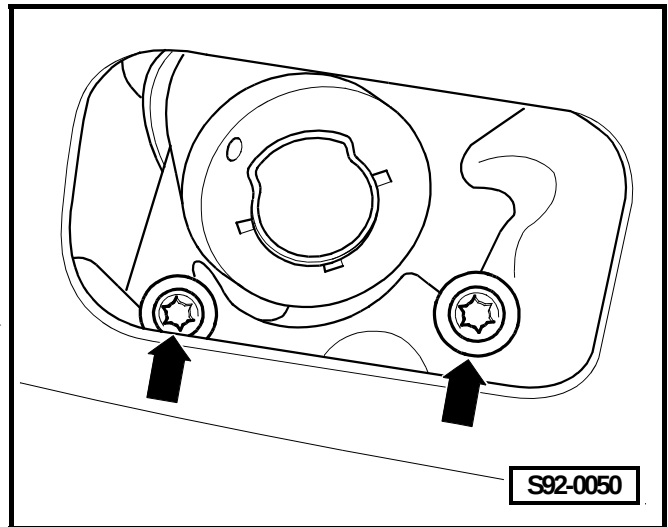
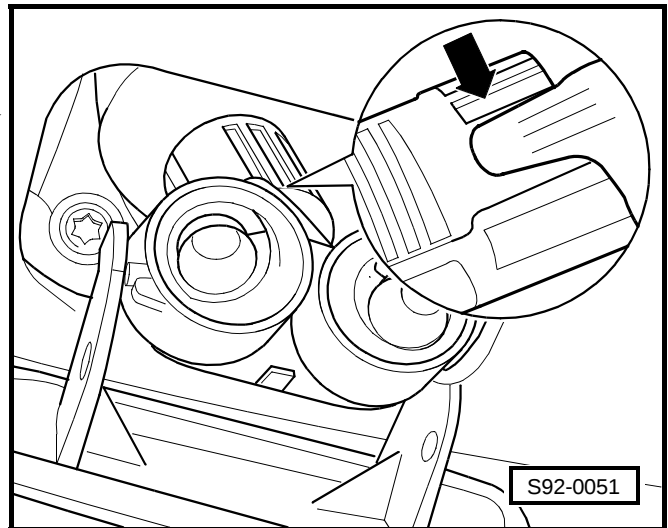
Removing



Note

The bumper must be removed ⇒ Body Work; Rep. Gr. 63.

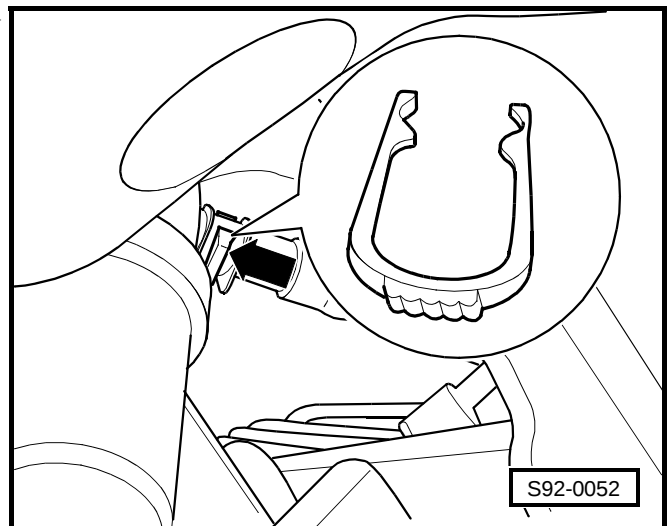
- Remove the relevant headlamp ⇒ Chap. 94-1.
- Remove the spray nozzle holder ⇒ 92-4 page 1.
- Release both screws -arrows- on the cylinder. ►



- Pull off the hose connection clip and remove hose. ►

Installing

- Carry out the installation in the same way in reverse order.
- Adjust the spray nozzles ⇒ 92-4 page 1.



94 – Exterior Lights, Bulbs and Switches

94-1 Main headlight - halogen headlight



WARNING!

Disconnect earth strap from the battery before commencing work on the electrical system.

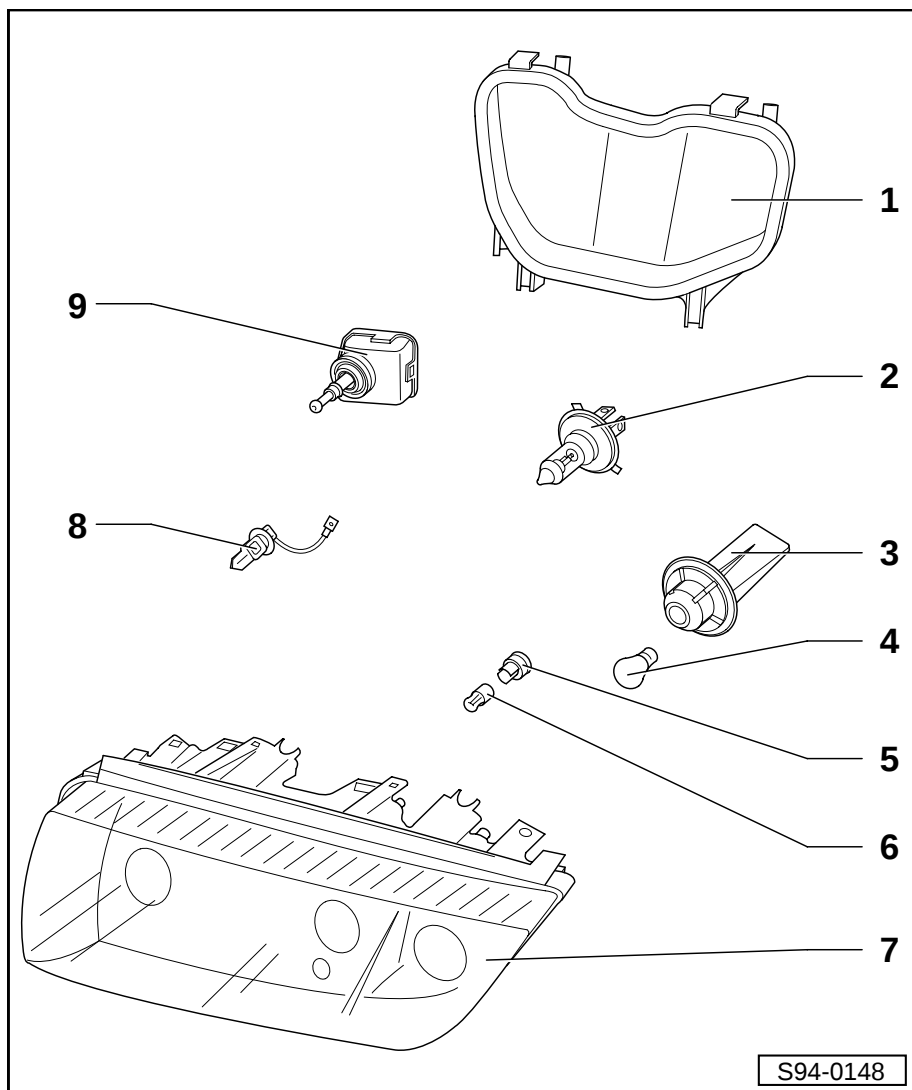


Note

- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ Carry out additional operations if the battery earth strap is disconnected and connected ⇒ Chapter 27-1.

Summary of components

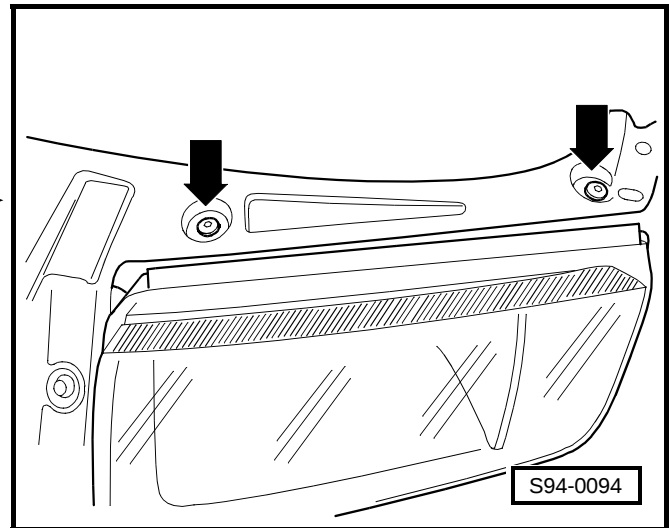
- 1 - Cover
- 2 - Light bulb for low beam light
 - Light bulb H7, 12 V, 55 W
 - replace ⇒ 94-1 page 3
- 3 - Lamp socket for the turn signal light
- 4 - Light bulb for the turn signal light
 - Bulb 12 V, 21 W
 - replace ⇒ 94-1 page 3
- 5 - Bulb socket for parking light
- 6 - Light bulb for the parking light
 - Bulb 12 V, 5 W
 - replace ⇒ 94-1 page 3
- 7 - Headlight housing
 - adjust ⇒ Inspection and Maintenance; Rep. Gr. 02
 - removing and installing ⇒ 94-1 page 2
- 8 - Light bulb for main beam
 - Bulb H3, 12 V, 55 W
 - replace ⇒ 94-1 page 4
- 9 - Headlight range control motor
 - removing and installing ⇒ 94-1 page 5



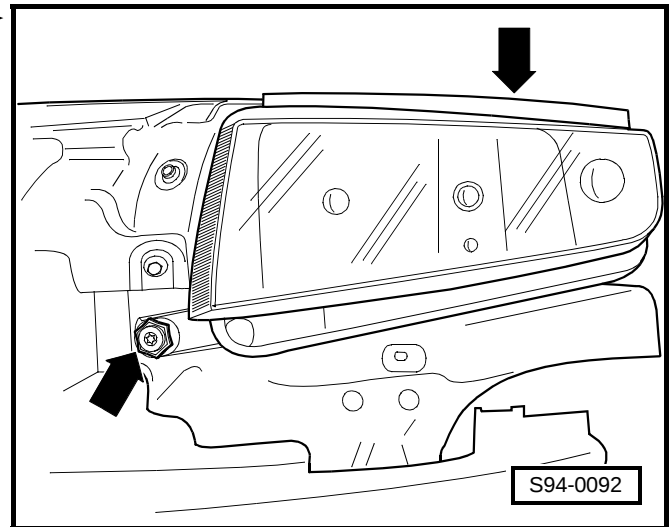
Removing and installing headlight

Removing

- Remove front bumper ⇒ Body Work; Rep. Gr. 63.
- Remove the two screws -arrows- (3.5 Nm).
- Separate the electrical plug connection.



- Unscrew the two fixing screws -arrows- (5 Nm).
- Remove the headlight forwards.



Installing



Note

The headlights along with both plastic fixing and setting elements must be aligned when replacing body parts such as the lock carrier or bumpers.

- Further installation occurs in reverse order.
- Adjust the headlight ⇒ Inspection and Maintenance; Rep. Gr. 02.

Adjust the fog light beam

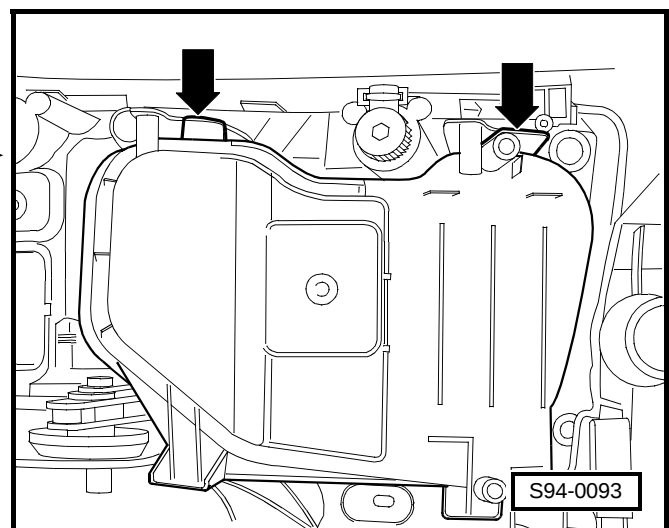
Adjust ⇒ Inspection and Maintenance; Rep. Gr. 02.

Replacing bulbs in headlights



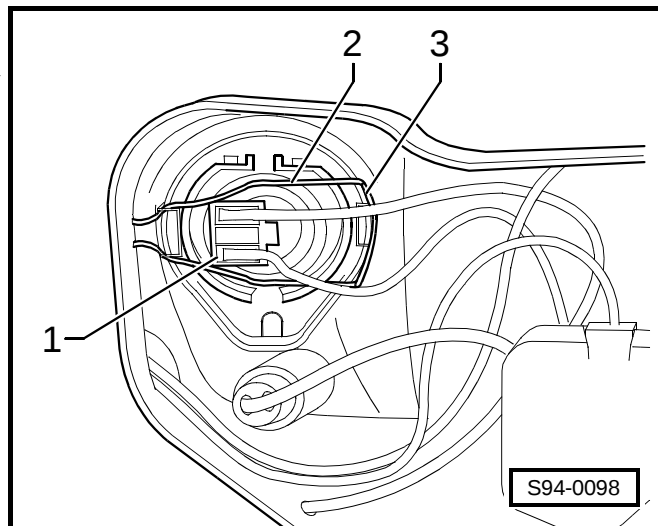
Note

- ♦ Do not touch the glass when installing the bulb. Your fingers will leave traces of grease on the glass which then evaporate when the bulb is switched on causing it to cloud.
- ♦ Wear gloves and safety spectacles when changing the lamps.
- Remove first the cover by pressing down -arrows- and then remove the cover towards the rear.



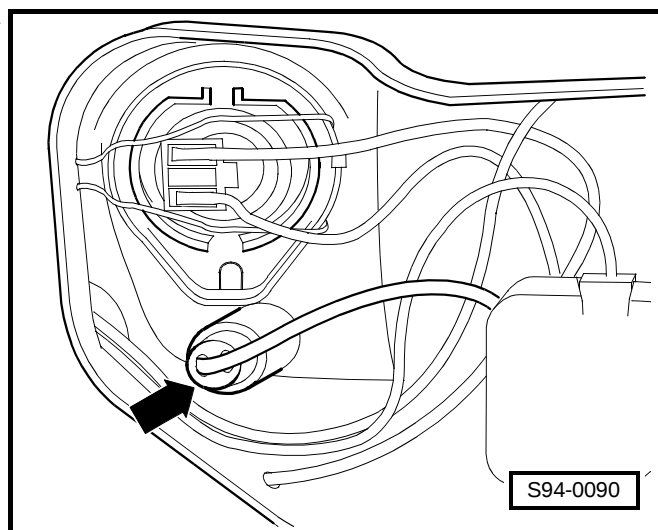
Replacing bulb for low beam light

- Separate plug connection -1-.
- Release wire spring clamp -2- above the locking lugs -3- and remove light bulb.



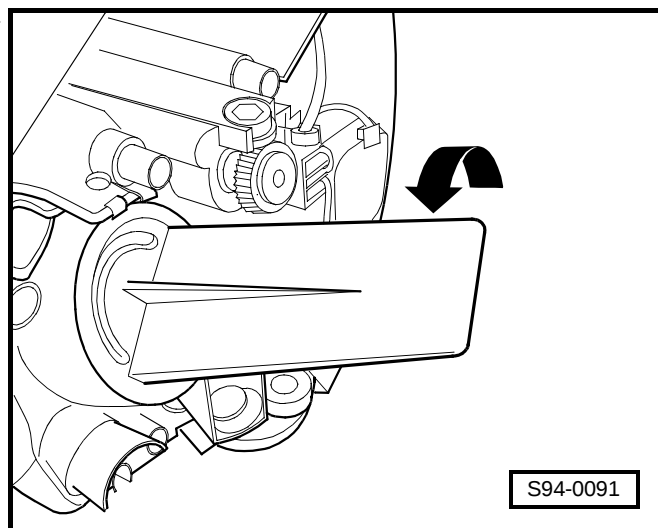
Replacing bulb for the side light

- Pull out the light bulb and socket on the connector -arrow-.
- After replacing the bulb, press socket and bulb fully into the reflector.



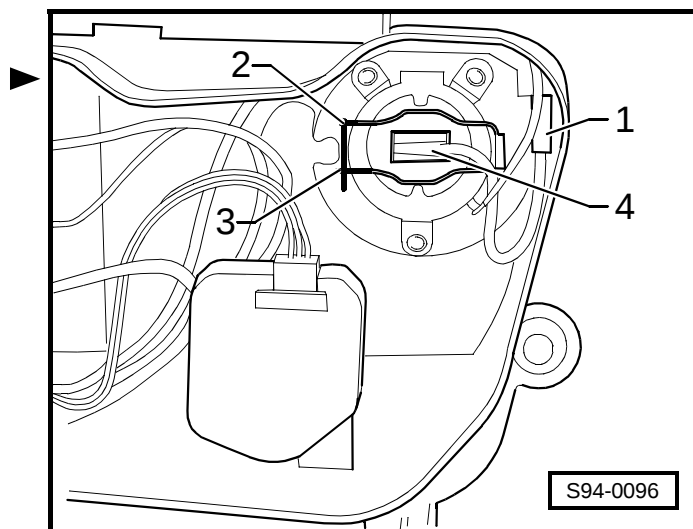
Replacing bulb for the turn signal light

- Turn the lamp socket to the left -arrow- and remove.



Replacing bulb for the main beam

- Disconnect the connector -1- and release the wire spring clamp -2- from the locking lug -3-.
- Take out the light bulb -4-.



Replacing bulb for the fog light

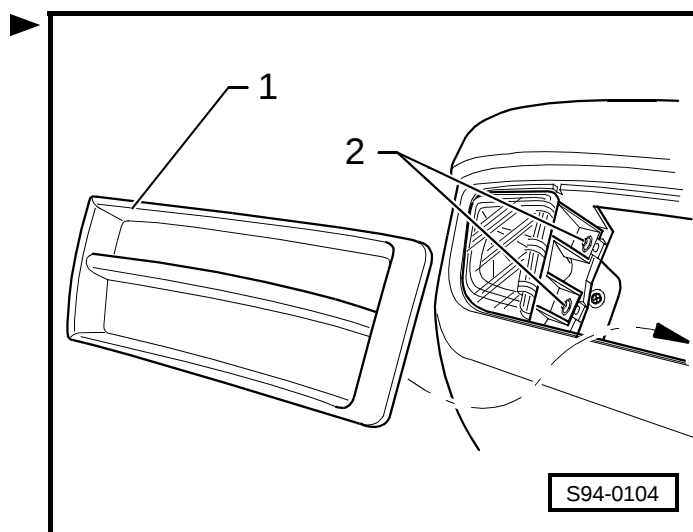


Note

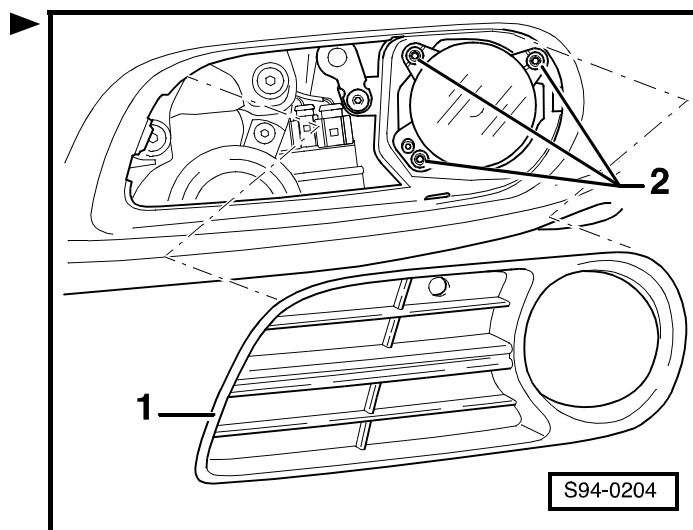
For easy access remove the fog light.

- Unclip the cover -1- and screw out the screws -2-.
- Remove the fog light.

Vehicles up to MY 2004

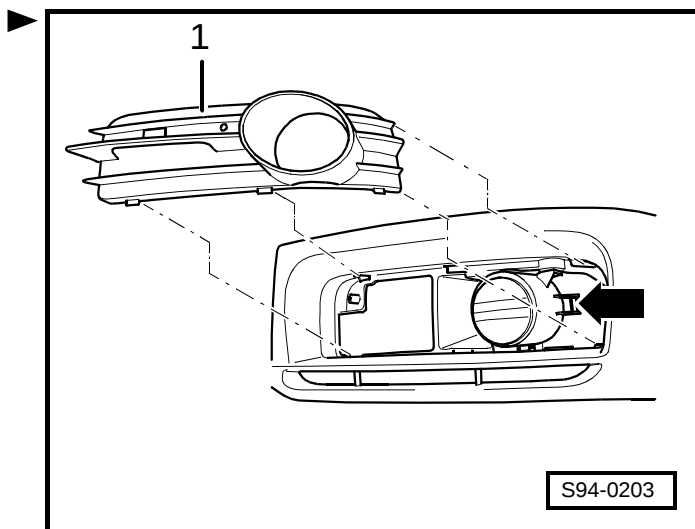


Vehicles as MY 2005



Vehicles RS

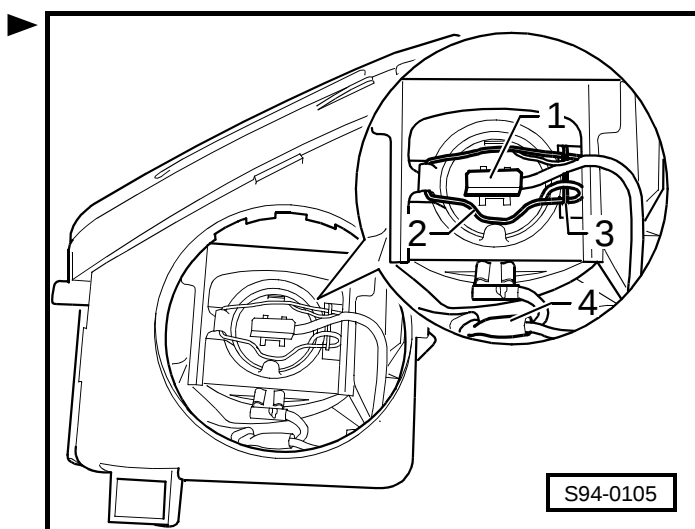
- Remove cover by pressing the clamp -arrow- to the left (for the left fog light to the right) and then remove the cover towards the rear.

For all vehicles

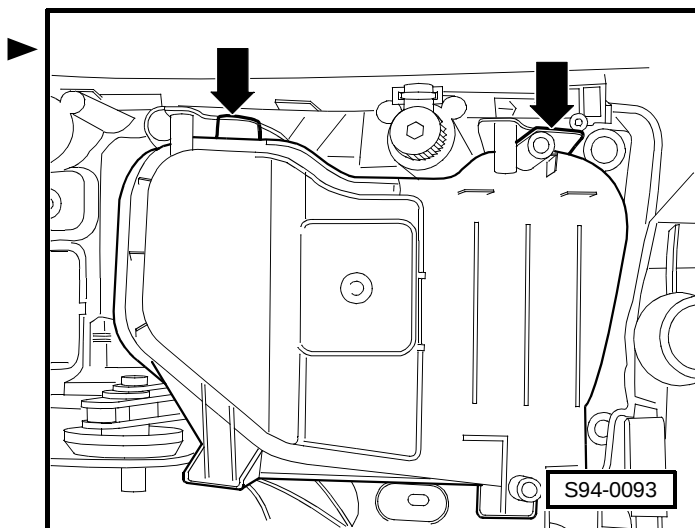
- Disconnect the connector -4- and release the wire spring clamp -2- from the locking lugs -3-.
- Take out the light bulb -1-.

Removing and installing the headlight range control motor**Note**

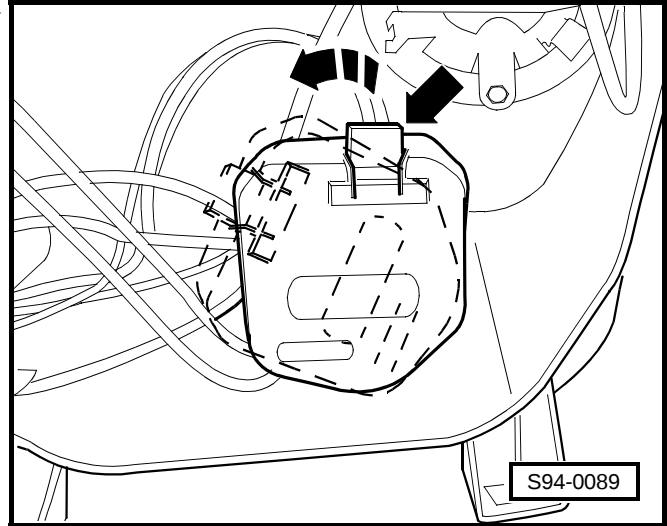
If the positioning motors for the headlight range control are removed and installed or replaced, always check the setting of the headlight beam with the headlight beam setting device. The angle of the inclination is indicated on the rubber headlight housing.

**Removing**

- Remove the cover by pressing down the clamps -arrows- and then remove the cover towards the rear.

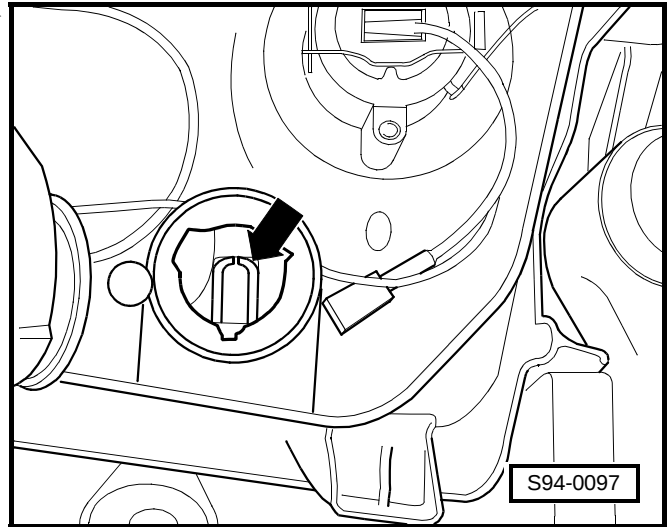


- Disconnect the plug connection at the control motor -arrow-.
- Release the control motor by turning to the left (for the left headlight) -arrow- and Take the motor downwards out of the catch on the reflector (for the right headlight release by turning to the right and take the motor upwards out of the catch on the reflector).



Installing

- Fit the spherical positioning shaft of the control motor in the ball head mount -arrow- (left headlight from the top, right headlight from the bottom). Hold the reflector with the hand at the appropriate height while doing this.
- Unlock the control motor by turning it in its initial position.

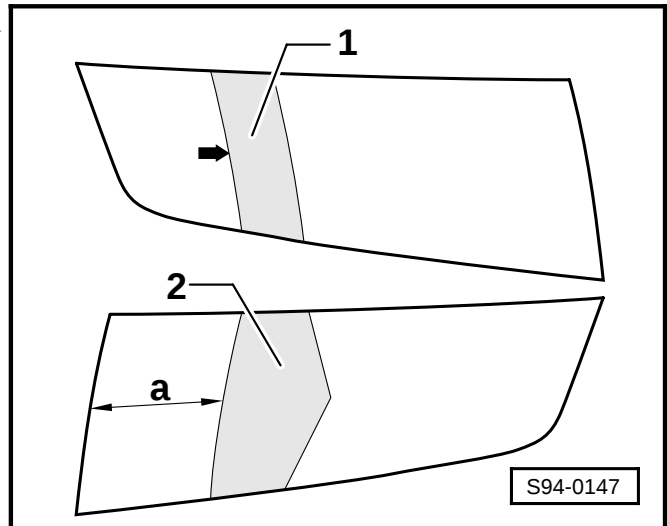


Ungluing a halogen headlight

The halogen headlights should have self-adhesive foil glued over them when driving in countries which drive on the right or the left thereby preventing blinding of the drivers travelling in the opposite direction.

Left-hand drive vehicles in left-hand traffic

- Glue the self-adhesive quadratic foil -1-, as shown in the figure, onto the parting plane (line) -arrow- on the right-hand side of the headlight glass.
- Glue the self-adhesive arrow foil -2-, as shown in the figure, onto the left-hand side of the headlight glass.
- Observe the dimension -a- (67 mm)



Right-hand drive vehicles in right-hand traffic

- Proceed according to the description above but place the self-adhesive quadratic foil on the left-hand headlight glass and the self-adhesive arrow foil on the right-hand headlight glass.

Replace headlight fixing brackets

If the top and side headlight fixing brackets are broken off, new top supports and side clamps with the corresponding fixing screws can be ordered according to the spare parts catalogue.

**Note**

The side clamps can be ordered only for vehicles manufactured after 01.02. When ordering one must pay attention, if it is a side clamp for the left or the right headlight.

94-2 Side Turn Signal Lamps

Removing and installing side turn signal lamps



WARNING!

Disconnect earth cable of battery before working on the electrical system.



Note

- ◆ Before disconnecting the battery, determine the radio code of radio sets fitted with anti-theft coding.
- ◆ When the battery is re-connected, perform the following operations depending on the vehicle equipment: encode radio, re-set clock, initialise power windows
⇒ Inspection and Maintenance.

Removing

- Take the 2 screws -4- (1.5 Nm) out of the wheelhouse. ►
- Press the turn signal lamp out from the inside with your hand.



Note

- ◆ Cover over the paintwork with a suitable protection (e.g. textile adhesive tape).
- ◆ The catch -arrow- is positioned at the front right or front left side of the vehicle, respectively.
- Pull the turn signal lamp out of the wing.
- Pull the housing -1- out of the rubber grommet -3-.
- The bulb -2- can now also be pulled out for replacing.

Installing

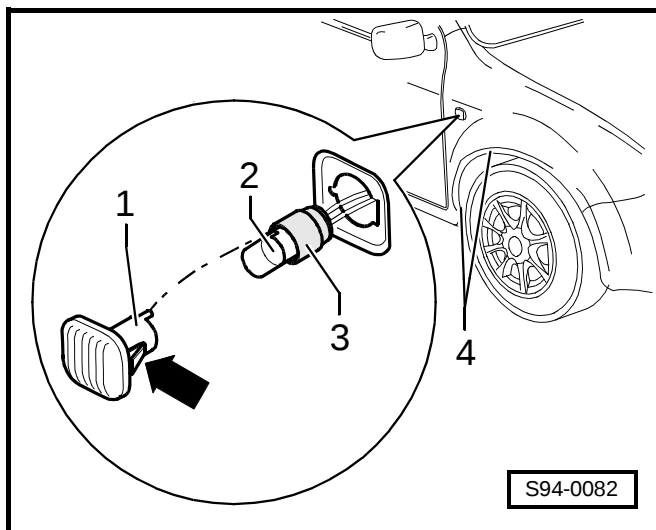
- Installation of the battery is carried out in the reverse order.



Note

When installing the housing -1-, ensure that the guide lugs engage in the recesses of the socket.

- The housing of the turn signal lamp -1- must lock in place in the wing.



94-3 Rear Lamps



WARNING!

Disconnect earth cable of battery before working on the electrical system.



Note

- ◆ Before disconnecting the battery, determine the radio code of radio sets fitted with anti-theft coding.
- ◆ When the battery is re-connected, perform the following operations depending on the vehicle equipment: encode radio, re-set clock, initialise power windows
⇒ Inspection and Maintenance.

Assembly overview

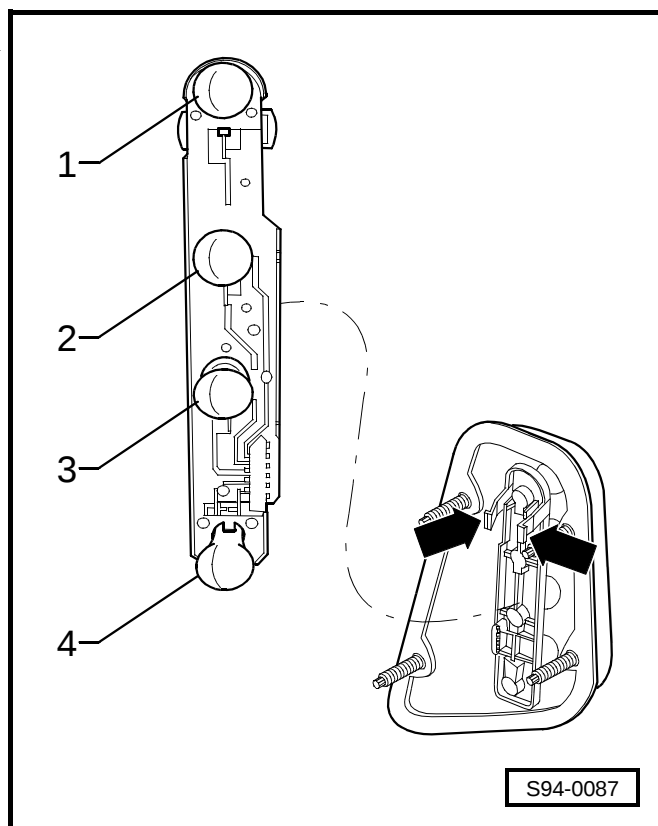
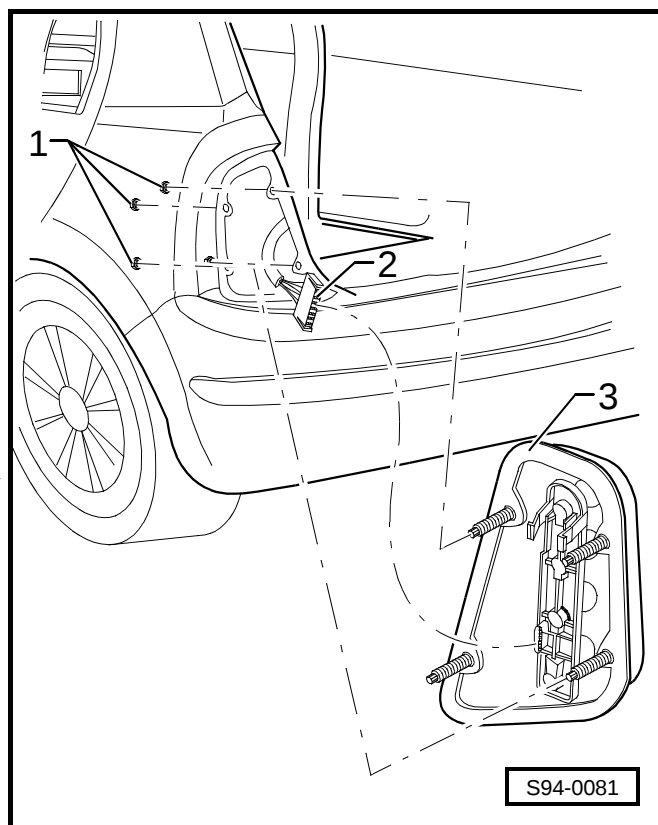
- 1 - M5 nut (3 Nm)
- 2 - Plug connector
- 3 - Rear lamp with bulb holder; removing and installing bulb holder ⇒ 94-3 page 1

Removing and installing bulb holder and bulbs

Removing

- Press together the two locking arms and remove the bulb holder. ►

- 1 - Bulb for brake light (12 V/21 W)
- 2 - Bulb for turn signal light (12 V/21 W)
- 3 - Bulb for reversing light (12 V/21 W)
- 4 - Two-filament bulb for rear fog light and left tail light (12 V/21 W/4 W) or bulb for right tail light (12 V/4W), respectively



Removing and installing rear lamp

Removing

- Open the tailgate/boot lid.
- Take off side trim panel.
- Separate the electric plug connection -2-.
- Unscrew the hexagon nuts -1- (3 Nm).
- Take the rear lamp -3- out to the rear.

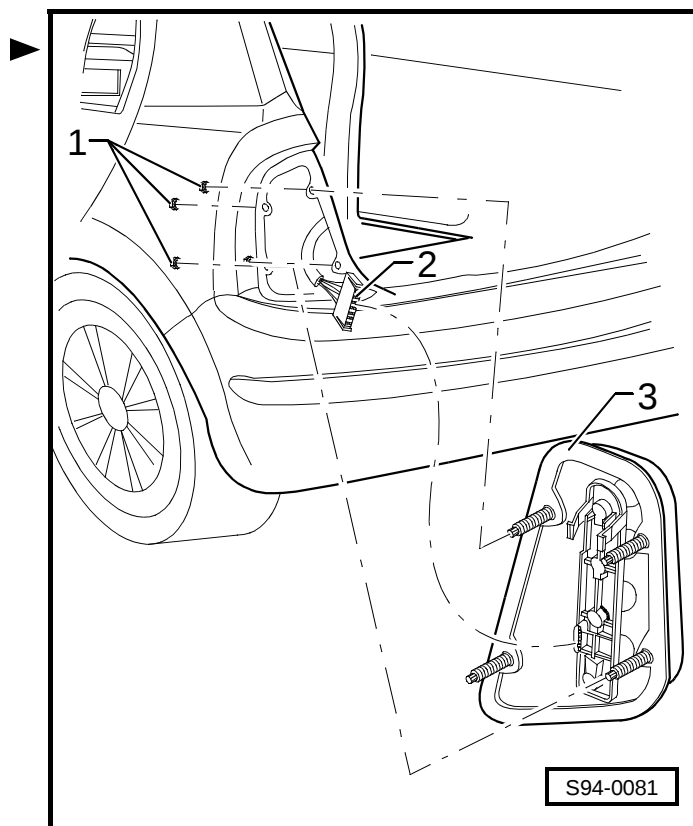
Installing



Note

When installing, ensure that the seal between the body and the rear lamp housing provides a proper seal.

- Installation of the battery is carried out in the reverse order.
- Before tightening the nuts, match up the rear lamp to the bodywork (uniform size of gap all round).



94-4 Licence Plate Lighting

**WARNING!**

Disconnect earth cable of battery before working on the electrical system.

**Note**

- ◆ Before disconnecting the battery, determine the radio code of radio sets fitted with anti-theft coding.
- ◆ When the battery is re-connected, perform the following operations depending on the vehicle equipment: encode radio, re-set clock, initialise power windows
⇒ Inspection and Maintenance.

Removing and installing licence plate light

Removing

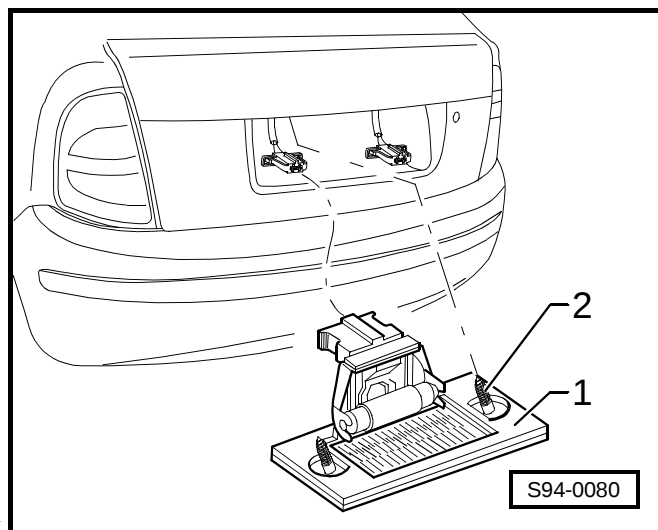
**Note**

The illustration shows only the left-hand licence plate light.

- Slacken the 2 cross-head screws -2- (2 Nm) at the light lens -1-.
- Take off the lamp.
- Take the bulb (12 V, 5 W) out of the socket.

Installing

- Installation of the battery is carried out in the reverse order.



94-5 Additional brake light



WARNING!

Disconnect earth strap from the battery before commencing work on the electrical system.



Note

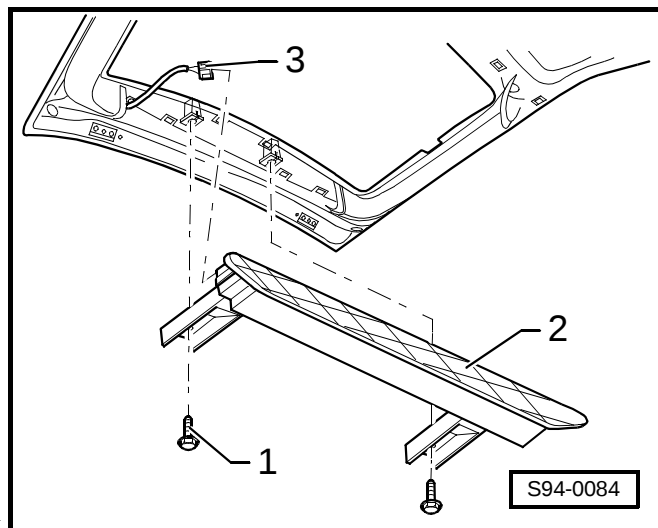
- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ Carry out additional operations if the battery earth strap is disconnected and connected ⇒ Chapter 27-1.

Removing and installing additional brake light - FABIA

The additional brake lamp is installed in the top part of the tailgate.

Removing

- Open tailgate.
- Take off centre trim panel of tailgate ⇒ Body Work; Rep. Gr. 70.
- Remove the two fixing screws -1- (1.5 Nm).
- Unplug the connector -3- and take off the additional brake lamp -2-.



Installing

- Installation undertaken in the reverse order.



Note

The additional brake lamp does not have a bulb but is fitted with a LED.

Removing and installing additional brake light - FABIA Combi

Procedure ⇒ Chapter. 92-3, Replacing spray nozzle FABIA Combi.

94-6 Steering column switch



WARNING!

Disconnect earth strap from the battery before commencing work on the electrical system.



Note

- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ When the battery is reconnected perform the following operations depending on the vehicle equipment: Encode the radio, re-set the clock; on vehicles fitted with power windows, initialise them ⇒ Inspection and Maintenance.

Removing and installing steering column switch

Removing

- Remove steering wheel ⇒ Body Fitting Work; Rep. Gr. 69.
- Remove restoring ring together with slip ring ⇒ Body Fitting Work; Rep. Gr. 69.
- Release the clamping screw -2- (2.8 Nm) and take off the steering column switch. ►

Installing

If the steering column switch has been taken off, it is necessary to set the clearance -a- between steering wheel and coil spring housing.

- Install the steering column switch.
- Install steering wheel ⇒ Body Fitting Work; Rep. Gr. 69.
- Align the steering column switch so that it is horizontal.
- Now set the clearance -a-.

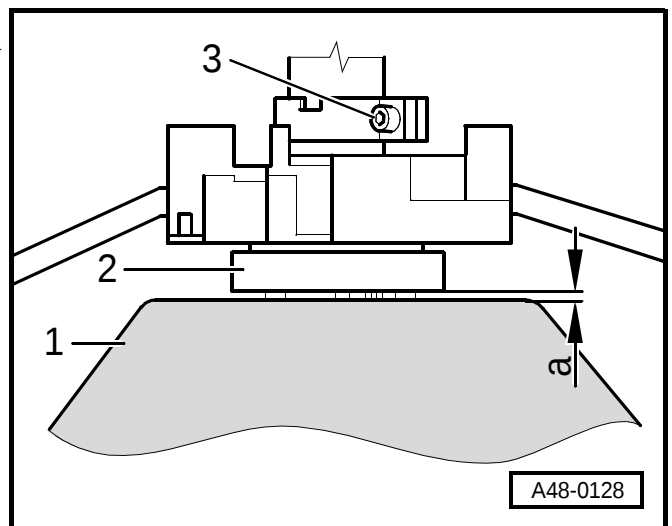
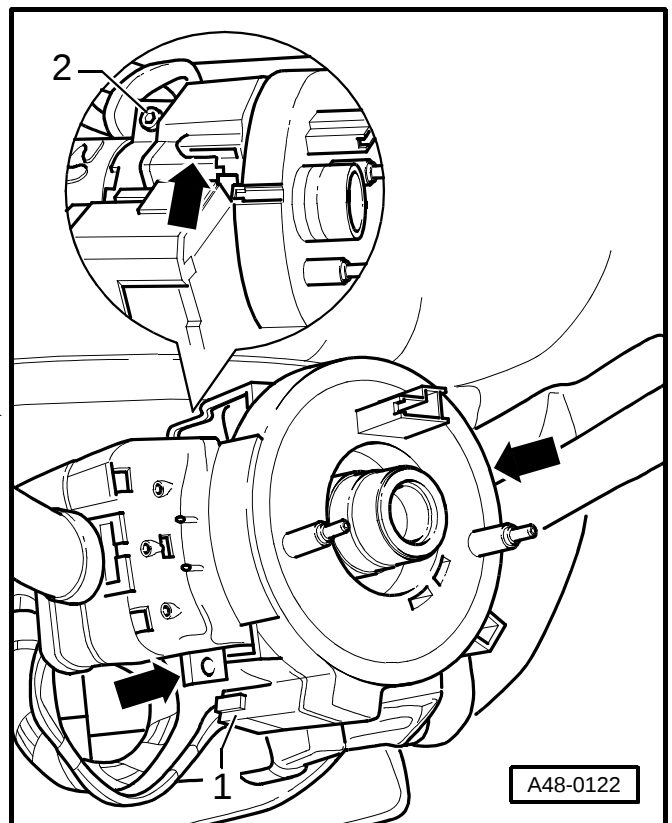
- 1 - Steering wheel
- 2 - Housing for coil spring
- 3 - Clamping screw for steering column switch
- a - approx. 2.5 mm

- Further installation occurs in reverse order. ►



Note

- ◆ When installing the ignition/starter switch and the lock cylinder must be in the same position, e.g. „Ignition ON“.
- ◆ After tightening the two screws at the steering lock housing, secure them again with locking varnish.



Removing and installing lock cylinder

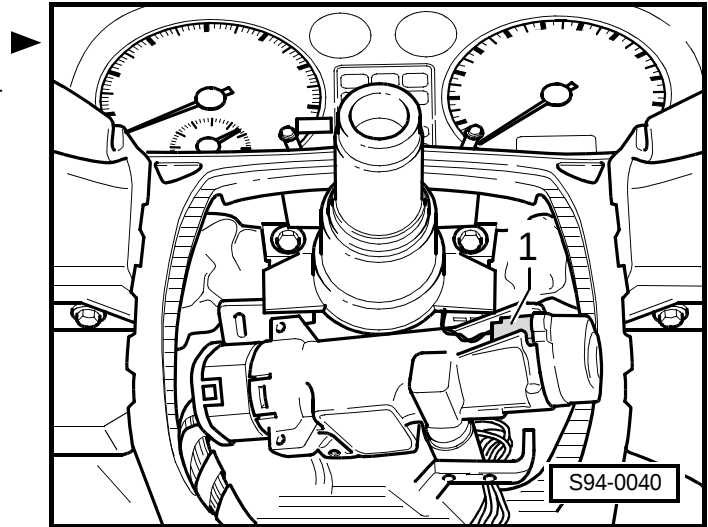
Removing:

- Move adjustable steering wheel fully down.
- Take off covers.
- Separate plug connection of reader coil -1-.
- Insert key into ignition lock and turn into position „Ignition ON“. This reveals the hole (opening) on the face end next to the ignition key insert.
- Push in steel wire or pin (about Ø 1.5 mm) as far as the stop and pull the lock cylinder and reader coil out of the steering lock housing.



Note

If it is necessary to replace the lock cylinder, pay attention to the instructions for replacing the immobiliser reader coil ⇒ Chap. 96-1.

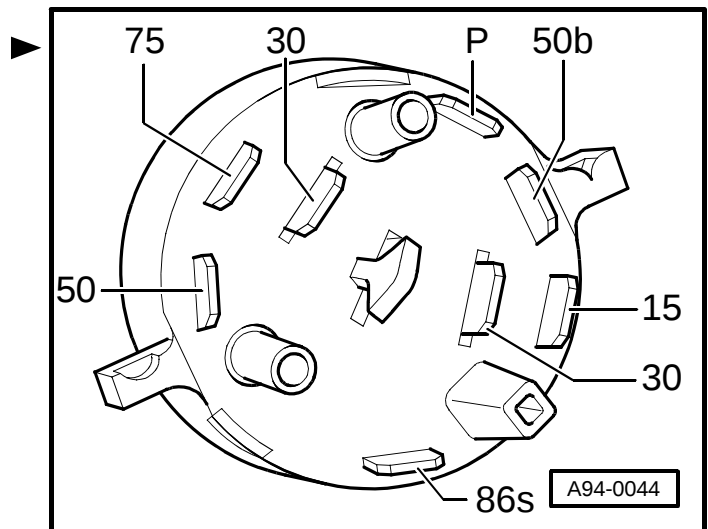


Installing:

- Insert key into ignition lock and turn into position „Ignition ON“.
- Push lock cylinder and ignition key fully into steering lock housing.
- Fit together the electrical plug connection at the immobiliser reader coil.
- Fit on covers.

Contact assignment at ignition/starter switch

- 15 - Terminal 15
- 30 - Terminal 30
- 50 - Terminal 50
- 50b- Terminal 50b
- 75 - Terminal 75
- 86s- Terminal 86s
- P - Park position



94-7 Alarm system



WARNING!

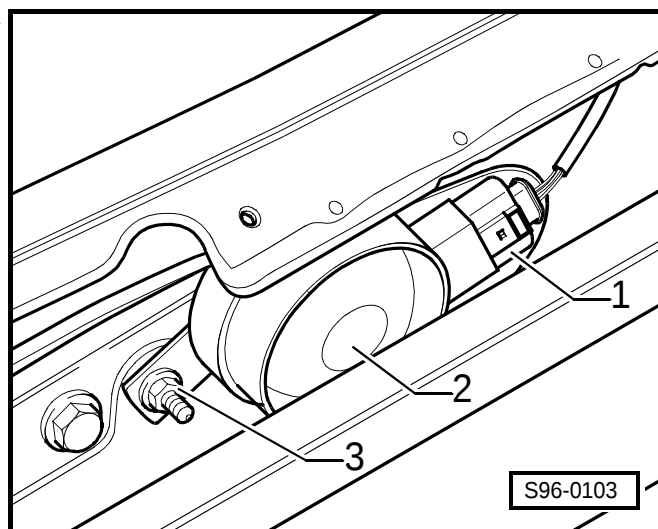
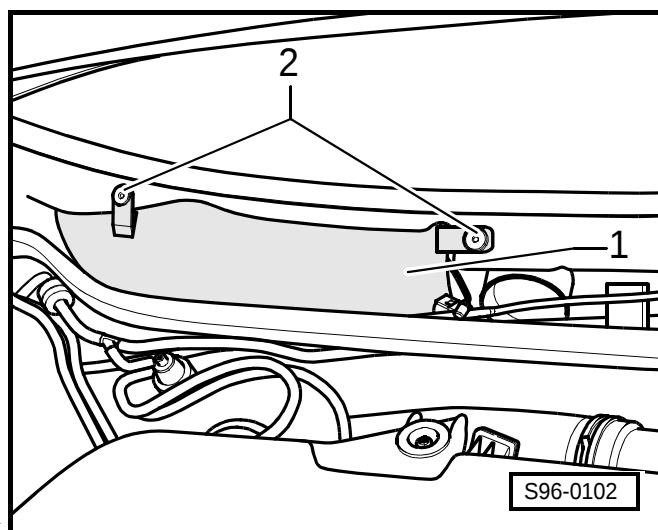
Disconnect earth strap from the battery before commencing work on the electrical system.

Perform additional work after disconnecting and connecting the battery ⇒ Chap. 27-1.

Removing and installing alarm system with own power supply H12

Removing ► 07.00

- Removing the cooling water tank cover ⇒ Body Fitting Work; Rep. Gr. 66.
- Remove screws -2- and plastic cover -1-.
- Separate plug connection -1- to spare siren of warning system -2-.
- Remove nut -3- and take out alarm system.



Removing 08.00 ►

Vehicles from 08.00 have the siren fitted on the left side of the vehicle at the exhaust manifold next to the fuel tank.

Installing

- Carry out the installation in the same way in reverse order.

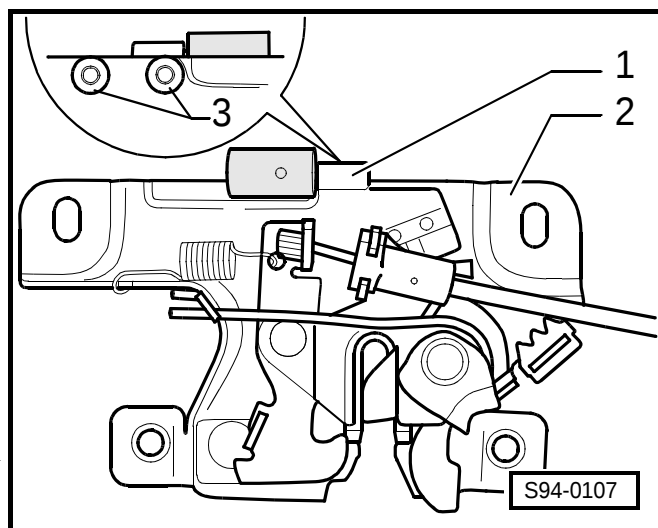
Replacing the own power supply of the alarm system

As the own power supply is an element of the alarm system it must be replaced together with the complete alarm system.

Removing and installing lid switch F120

Removing

- Removing the lid lock ⇒ Body Work; Rep. Gr. 55.
- Separate plug connection at the contact switch.
- Remove fuses -3- and take switch -1- out of the lock -2-.



Installing

- Carry out the installation in the same way in reverse order.

94-8 Parking aid

Overall view of parking aid

**WARNING!**

Disconnect earth strap from the battery before commencing work on the electrical system.

**Note**

- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ After connecting the battery perform: coding of coded radio set if applicable, set clock, initialise power windows on vehicle fitted with power windows
⇒ Inspection and Maintenance; Rep. Gr. 02

Parking aid includes:

Parking aid warning buzzer -H15-

Removing:

- Remove interior lighting ⇒ Chap. 96-2.
- Separate plug connection of warning buzzer and take off by pulling.

**Note**

Warning buzzer is attached to the roof of the car with Velcro fastener.

Installing:

- Installation is carried out in the reverse order.

Parking aid control unit -J446-

- ◆ in left of luggage compartment on wheel housing
- ◆ removing and installing ⇒ 94-8 page 1

Parking aid senders

- ◆ they are located in the protective strip of the rear bumper
- ◆ removing and installing ⇒ 94-8 page 2

Removing and installing parking aid control unit

Removing

- Remove left side trim panel in luggage compartment
⇒ Body Fitting Work; Rep. Gr. 70.

The parking aid control unit is located in the left of the luggage compartment on the wheel housing.

- Separate the electrical plug connections.
- Remove the two nuts and take out the parking aid control unit.

Installing

- Installation is carried out in the reverse order.

Removing and installing parking aid senders

Removing

- Remove rear bumper ⇒ Body Fitting Work; Rep. Gr. 63.
- Unplug connector -1- at sensor.
- Press the two catches -arrows- to the side.
- Take out ultrasound sensor.

Installing

- Installation is carried out in the reverse order.

Self-diagnosis of parking aid (parking system)

General instructions

The parking aid system measures the distance from the rear of the vehicle to an obstacle when reversing by means of four ultrasound sensors.

If a trailer is hitched up to the vehicle and the trailer socket is plugged in, the parking aid sensors are switched off.

Operation:

After the ignition is switched on, a selftest is carried out for about one second.

The parking aid control unit is now permanently in operation, but the distance measurement system is not activated until reverse gear is engaged.

As soon as the parking aid is ready, a short signal sounds. (Delay of one second in the case of vehicles fitted with automatic gearbox)

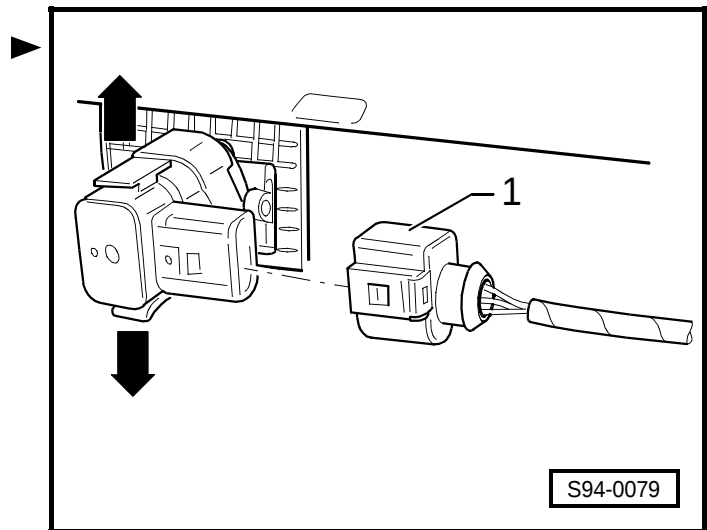
If the parking aid control unit detects a fault in the system, a continuous signal sounds for 3 seconds.



Note

If a fault exists in the park aid system, it is stored in the fault memory after a time delay of two minutes.

The distance warning begins when reversing once the distance to an obstacle is about 1.5 m. The warning consists of sound pulses with a duration of about 75 ms.



The intervals between the sound pulses become proportionally shorter as the distance to the obstacle decreases. The sound pulses change into a continuous signal at a distance of less than 25 m. (The volume can be set with function 10 „Adaptation“).

Connecting vehicle system tester V.A.G 1552

Special tools, test and measuring equipment and auxiliary items required

- ◆ Vehicle system tester -V.A.G 1552- with cable -VAG 1551/3, 3A, 3B, nebo 3C-

Test conditions

- All fuses must be OK in compliance with the current flow diagram.
- Battery voltage at least 11 V

The diagnostic connection is located on the left next to the storage area of the driver side.

- Unclip cover and remove downward.
- Connect vehicle system tester -V.A.G 1552- with appropriate cable. ►

Switch on ignition.

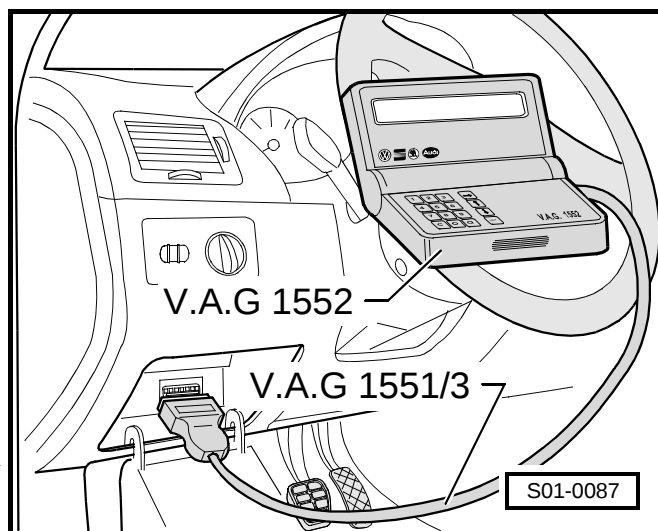
Readout on display:



Note

If there is no read-out on the display: ⇒ Operating instructions of the vehicle system tester.

- Enter address word 76 „Park aid“ and confirm entry with the key.



Vehicle system test
Enter address word XX

HELP

Interrogating control unit version

Readout on display:

- ◆ 6Y6919283: Control unit version number of navigation system in RNS housing
- ◆ Park aid: System denomination
- ◆ 0001: Software version number
- ◆ 00123: Coding control unit
- ◆ WSC 00000: Workshop code

Navigation system readout in display during self-diagnosis „Diag“.

If one of the following messages appears in the display, carry out fault finding as stated in the fault finding programme diagnostic cable ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. ►

6Y6919283 Park aid 0001->
Coding 00123 WSC 00000

Vehicle system test HELP
The control unit does not respond!

Vehicle system test HELP
Fault in communication build-up

Vehicle system test HELP
K wire does not connect to earth

- Move forward in the programme with the key ☐.

►

Vehicle system test	HELP
K wire does not connect to positive	

Self-diagnosis functions

The following functions are possible:

- 01 - Interrogating control unit version ⇒ 94-8 page 3
- 02 - Interrogating fault memory ⇒ 94-8 page 4
- 05 - Erasing fault memory ⇒ 94-8 page 4
- 06 - Ending output ⇒ 94-8 page 5
- 07 - Coding control unit
- 08 - Reading measured value block
- 10 - Adaptation

Interrogating fault memory



Note

The fault information displayed is not constantly updated, but only when self-diagnosis is initiated, or with the function 05 „Erase fault memory“.

Readout on display:

- Enter function ☐ ☐ „Interrogate fault memory“ and confirm entry with ☐.

The number of faults stored appears on the display.

The stored faults are displayed in sequence.

- Find the fault displayed in the fault table ⇒ 94-8 page 5 and rectify fault.

If „No fault detected“ is shown in the display and if the key ☐ is pressed, the programme returns to the initial position.

Readout on display:

If anything else appears on the display: ⇒ Operating instructions of the vehicle system tester.

- End output (function 06).

►

Vehicle system test	HELP
Select function XX	

►

X faults detected!

►

No fault detected!	->
--------------------	----

►

Vehicle system test	HELP
Select function XX	

Erasing fault memory



Note

The contents of the fault memory are output automatically after the fault memory is erased. If it is not possible to erase the fault memory, interrogate the fault memory once again and rectify any faults.

Requirements:

- Fault memory was interrogated.
- All faults rectified.

After interrogating the fault memory:

Readout on display:

- Select function **05** „Erase fault memory“ and confirm entry with **Q**.

Readout on display:

The fault memory is now erased.

- Press **Q**.

Readout on display:

►

Vehicle system test	HELP
Select function XX	

►

Vehicle system test	->
Fault memory erased!	

►

Vehicle system test	HELP
Select function XX	



Note

- ♦ If the following message is displayed the test sequence is incorrect:
- ♦ Carefully follow the test sequence step by step: first interrogate the fault memory, if necessary rectify faults and then erase the fault memory.

►

Vehicle system test	->
Fault memory was not interrogated	

Ending output

- Select function **06** „End output“ and confirm entry with **Q**.

Readout on display:

- Switch off ignition.

- Separate vehicle system tester -V.A.G 1552-.

►

Vehicle system test	HELP
Enter address word XX	

Fault table



Note

- ♦ All the possible faults which can be detected by the vehicle system tester -V.A.G 1552- are listed below according to the 5-digit fault code.
- ♦ Before replacing components found to be defective first check the wiring and plug connections to these components as well as the earth cables according to the current flow diagram.
- ♦ After repair once again interrogate the fault memory using vehicle system tester -V.A.G 1552- and then erase the memory.
- ♦ All static and sporadic faults are stored in the fault memory. A fault is detected as static if it exists for at least 2 seconds. If the fault is then no longer present, it is stored as a sporadic (temporary) fault. „/SP“ appears on the right of the display.
- ♦ After switching on the ignition, all the faults which exist are set to sporadic and are not stored as static faults unless they continue to exist after completing the check.
- ♦ If a sporadic fault no longer occurs during 50 driving cycles (ignition on for at least 5 minutes, road speed > 30 km/h), it is erased.

Readout on -V.A.G 1552-		Possible cause of fault	Possible effects	Rectifying fault
01543 Park aid warning buzzer -H15-	Short circuit to earth	♦ Short circuit between H15 and earth ♦ Warning buzzer defective	No warning given when reversing	– Fault finding according to current flow diagram. – Replace -H15-.
01545 Park aid sensor RL -G203	Short to earth or short to positive	♦ Short circuit between -G203 and park aid control unit and earth ♦ -G203 defective	No warning given when reversing	– Fault finding according to current flow diagram. – Replace -G203.
01546 Park aid sensor RLM -G204	Short to earth or short to positive	♦ Short circuit between -G204 and park aid control unit and earth ♦ -G204 defective	No warning given when reversing	– Fault finding according to current flow diagram. – Replace -G204.
01547 Park aid sensor RRM -G205	Short to earth or short to positive	♦ Short circuit between -G205 and park aid control unit and earth ♦ -G205 defective	No warning given when reversing	– Fault finding according to current flow diagram. – Replace -G205.
01548 Park aid sensor RR -G206	Short to earth or short to positive	♦ Short circuit between -G206 and park aid control unit and earth ♦ -G206 defective	No warning given when reversing	– Fault finding according to current flow diagram. – Replace -G206.
01549 Voltage supply for park aid sensor	Short circuit to earth	♦ Short circuit between sensor and park aid control unit	No warning given when reversing	– Fault finding according to current flow diagram.
65535 Control unit defective		♦ Park aid control unit -J446 defective	No warning given when reversing	– Replace control unit.

Coding park aid control unit

This function can be used to code the park aid control unit as follows:

- ♦ Gearbox type: manual or automatic gearbox
- ♦ Signal for reverse gear engaged: with or without acknowledgement of function
- ♦ Vehicle model: e.g.: FABIA

**Note**

The coding specifically sets the universal park aid control unit -J446 to the requirements of the particular model.

Conduct coding

- Connect vehicle system tester -V.A.G 1552- and select „Park aid“ (address word 76); ignition is switched on ⇒ 94-8 page 3.

Readout on display:



Vehicle system test
Select function XX HELP

- Function **0** **7** enter „Code control unit“ and confirm entry with **Q**.

Readout on display:



Coding control unit
Enter code number XXXXX (0-32000)

- Enter code number by referring to table of codes and confirm entry with **Q**.

x	x	x	x	x	Code number
0					without trailer coupling
1					with trailer coupling
	0				manual gearbox
	1				automatic gearbox
		0			without acknowledgement of reverse gear engaged
		1			with acknowledgement of reverse gear engaged
			1		FABIA
			2		FABIA Sedan, FABIA Combi
				3	ŠKODA

The control unit coding appears in the display, e.g. 00123



6Y6919283 Park aid 0001 Q
Coding 00123 WSC 00000

- Press **Q**.

Readout on display:



Vehicle system test
Select function XX HELP

- Select function **0** **6** „End output“ and confirm entry with **Q**.

Reading measured value block

For fault finding, display the status of the input signals in the measured value blocks.

Procedure

- Connect vehicle system tester ⇒ 94-8 page 3.

Readout on display:



Vehicle system test
Select function XX HELP

- Enter 08 for the function „Read measured value block“ and confirm entry with the **Q** key.

Readout on display:



Read measured value block Q
Enter display group number XXX

- Enter the desired three-digit display group number and confirm entry with the **Q** key.

Measured value block 001

Reading measured value block 1				→	Readout on display
50 cm	110 cm	90 cm	50 cm		
					Distance sensor, rear right
					◆ 0 through 200 cm
					Distance sensor, rear right, middle
					◆ 0 through 200 cm
					Distance sensor, rear left, middle
					◆ 0 through 200 cm
					Distance sensor, rear left
					◆ 0 through 200 cm

Measured value block 002

Reading measured value block 2				→	Readout on display
50 cm	20 km/h	Signal off.	Light OFF		
					Warning light
					◆ Light ON
					◆ Light OFF ¹⁾
					Warning buzzer
					◆ Signal on.
					◆ Signal off.
					Vehicle speed
					◆ 0 through 300 km/h
					Minimum distance
					◆ Minimum distance of the four distances measured

¹⁾ Also displayed if warning light not fitted

Measured value block 003

Reading measured value block 3				→	Readout on display
o.k.	Rev. yes	Tr. no	activated		
					Function button
					◆ activated ¹⁾
					◆ not activated
					Trailer display
					◆ Tr. yes
					◆ Tr. no
					Reverse gear display
					◆ Rev. yes
					◆ Rev. no
					Park system status
					◆ o.k.
					◆ n.o.k.

¹⁾ Also displayed if function button not fitted

Adaptation

The volume of the warning signal can be altered with the Adaptation function (channel 01).

- Enter function 10 „Adaptation“ and confirm entry with the  key.

Readout on display:

- Enter 01 and confirm entry with the  key.

Readout on display:

- Press  key.

Readout on display:

- Enter adaptation value (e.g. 00005).

The volume can be adjusted in stages from 1 through 10.

Readout on display:

- Confirm entry with the  key.

Readout on display:

- Confirm entry with the  key.

Readout on display:

- Confirm entry with the  key.

Readout on display:

- Press  key.

► **Adaptation**
Enter channel number XX

► Channel 01 Adaptation 6
 (- -)

► Channel 01 Adaptation 6
Enter adaptation value XXXXX

► Channel 01 Adaptation 6 Q
Enter adaptation value 00005

► Channel 01 Adaptation 5 Q
 (- -)

► Channel 01 Adaptation 5 Q
Store changed value?

► Channel 01 Adaptation 5
Changed value stored

Readout on display:

►

Vehicle system test	HELP
Select function XX	

94-9 Headlight - xenon light

**WARNING!**

Disconnect earth strap from the battery before commencing work on the electrical system.

**Note**

- ◆ *Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.*
- ◆ *Carry out additional operations if the battery earth strap is disconnected and connected ⇒ Chapter 27-1.*

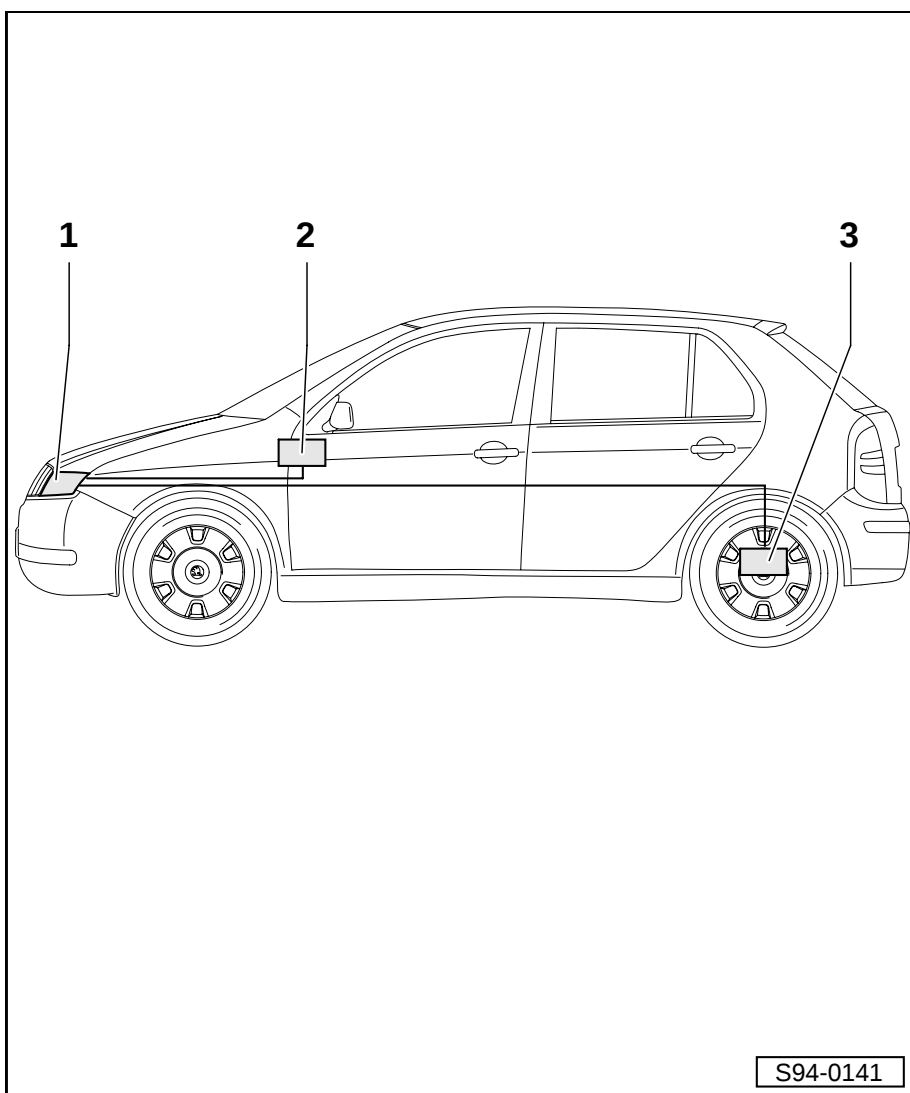
A general overview

1 - Headlight with step motor**2 - Dash panel insert**

- ☐ Speed information
- ☐ Fault indication of the discharge lamp.

3 - Transmitter with rear control unit

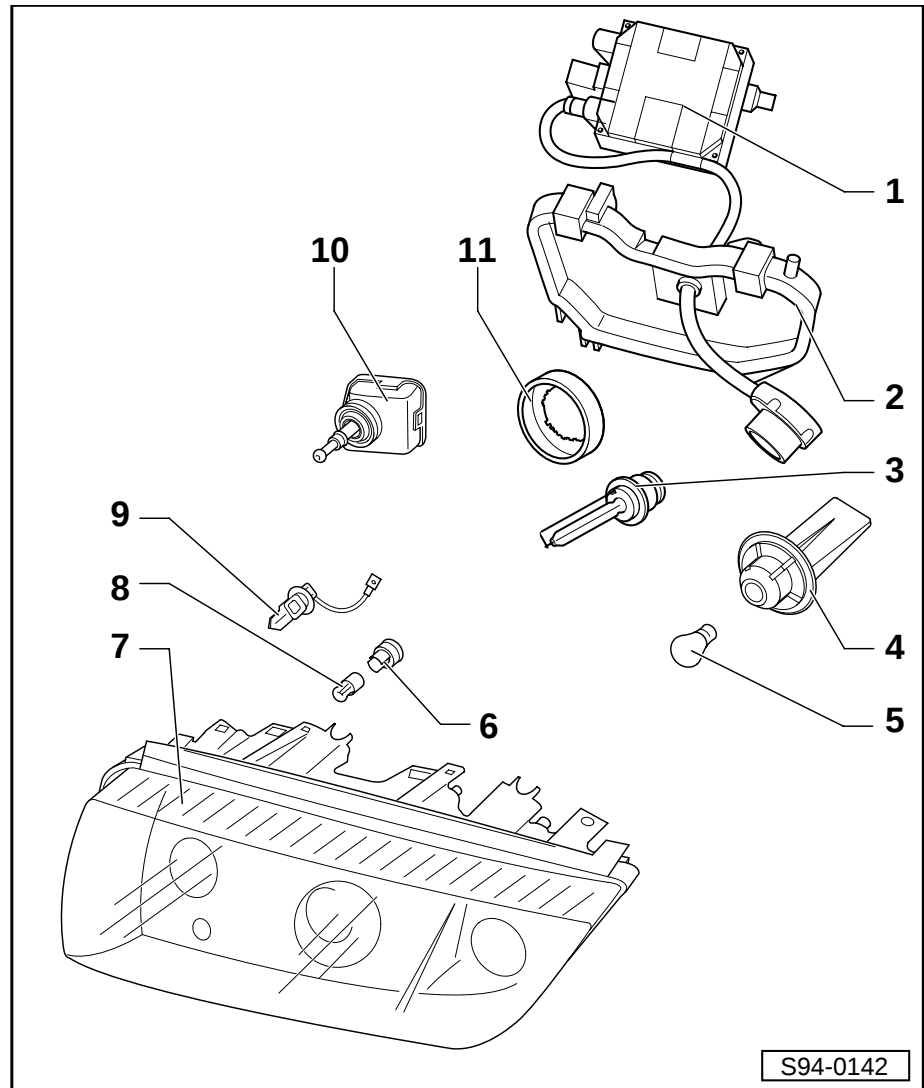
- ☐ removing and installing
⇒ 94-9 page 4
- ☐ adjust ⇒ 94-9 page 4



S94-0141

Summary of components

- 1 - Ignition-high voltage unit**
 - removing and installing
⇒ 94-9 page 3
- 2 - Plastic covering**
- 3 - Discharge lamp D2S**
 - replace ⇒ 94-9 page 3
- 4 - Lamp socket for turn signal light**
- 5 - Lamp for the turn signal light**
 - Bulb 12 V, 21 W
 - replacing ⇒ Chapter 94-1
- 6 - Bulb socket for side light**
- 7 - Headlight unit**
 - adjust ⇒ 94-9 page 2
 - removing and installing
⇒ 94-9 page 2
- 8 - Lamp for side light**
 - Bulb 12 V, 5 W
 - replace ⇒ 94-9 page 2
- 9 - Lamp for main beam**
 - Bulb H3, 12 V, 55 W
 - replace ⇒ 94-9 page 2
- 10 - Headlight range control motor**
 - removing and installing
⇒ 94-9 page 4
- 11 - Holder for discharge Lamp D2S**



Removing and installing headlight

Removing and installing ⇒ Chap. 94-1



Note

If the right headlight is to be removed, the relevant ignition unit must first be removed ⇒ 94-9 page 3.

Setting the headlight beam

Setting ⇒ Chap. 94-1

Replacing bulbs in headlights



Note

Do not touch the glass when installing the bulb. Your fingers will leave traces of grease on the glass which then evaporate when the bulb is switched on causing it to cloud.

Replacing the main headlight beam, the side lights and the turn signal lights

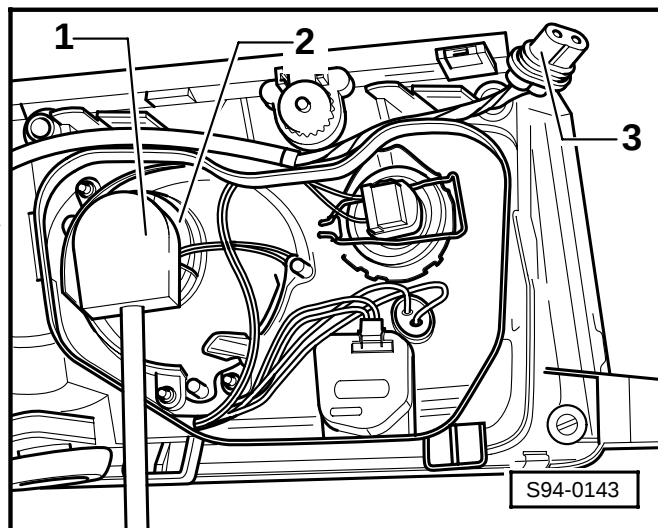
- Remove headlight ⇒ 94-9 page 2

Replacing ⇒ Chap. 94-1

Removing and installing the D2S discharge lamp

Removing

- Remove the front headlight ⇒ 94-9 page 2
- Disconnect the connector -3- of the ignition unit.
- Remove plastic cover.
- Detach the ignition unit -1- from discharge lamp.
- Remove holder of discharge lamp -2- and take out the bulb.



Installing

- Carry out the installation in the same way in reverse order.

Removing and installing ignition-high voltage unit



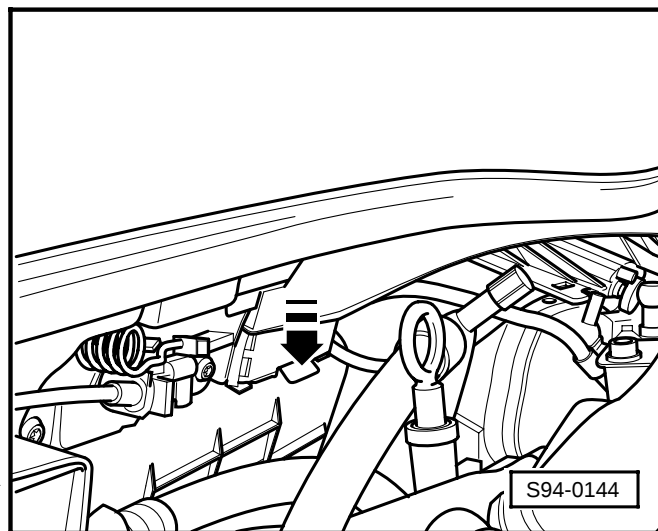
Note

- ♦ The ignition-high voltage unit of the right headlight is attached to the bottom of the lock carrier.
- ♦ The ignition-high voltage unit of the left headlight is attached to the plastic covering behind the headlight socket.

Removing

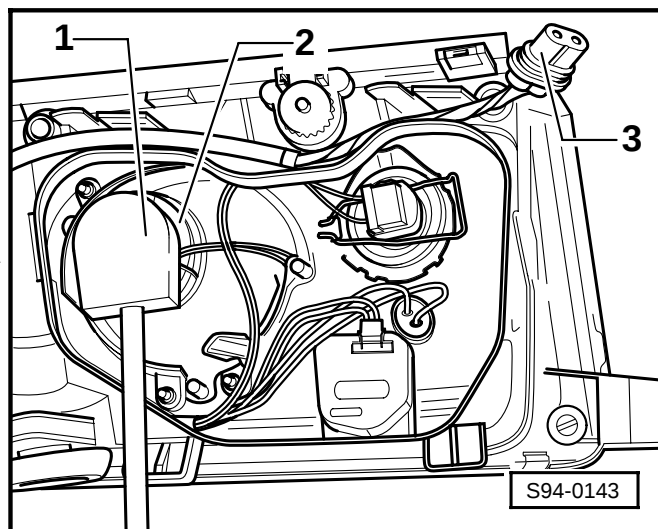
The headlight on the right:

- Press the spring in the -arrow direction-
- Push the assembly in the direction of engine compartment.



Both headlights:

- Remove headlight ⇒ 94-9 page 2
- Disconnect the connector -3- of the ignition unit.
- Remove plastic cover.
- Detach the ignition unit -1- from discharge lamp.



Installing

- Carry out the installation in the same way in reverse order.

Removing and installing the headlight range control motor

Removing and installing ⇒ Chap. 94-1

Removing and installing the transmitter with rear controller

Removing

- Raise vehicle.
- Disconnect controller.
- Unscrew the fastening screws of the transmitter -arrow A- (21 Nm) and the tension rod -arrow B- (16 Nm)

Installing

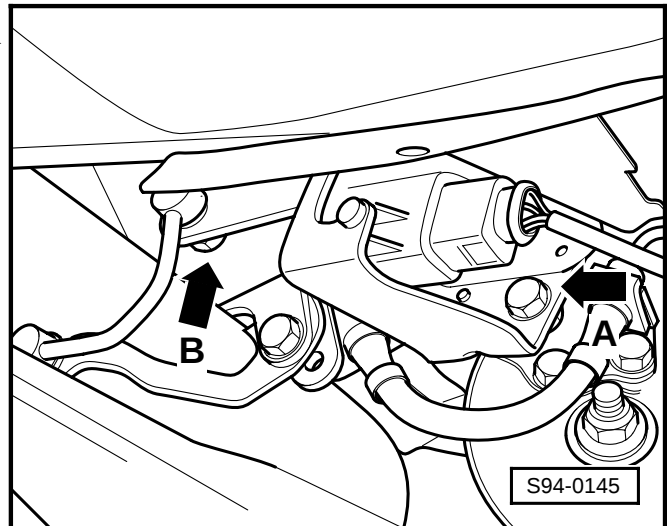
- Carry out the installation in the same way in reverse order.

Installing the rear transmitter



Note

The rear transmitter cannot be installed mechanically, it can only be installed initiating the basic setting ⇒ Chapt. 94-10.



Connection identification of the Xenon headlamps

Connection identification of the controller

- 1 - Terminal 31
- 2 - Terminal 15
- 3 - not assigned
- 4 - Vehicle speed signal
- 5 - K cable of diagnosis
- 6 - Terminal 56 - Starting signal for low beam lights
- 7 - Step Motor
- 8 - not assigned

Connection identification of the headlight

- 1 - Terminal 56b - low beam lights
- 2 - not assigned
- 3 - not assigned
- 4 - Terminal 31 step motor ground
- 5 - Terminal 56a - main light beam
- 6 - Signal of the transmitter at the rear axle.
- 7 - Terminal 58 - Side light
- 8 - Terminal 31 Main beam and side lights ground.
- 9 - Turn signal lamp
- 10 - Low beam light and turn signal lamp grounds

Switching over the headlight-inner aperture

The headlight inner aperture should be switched over when driving in countries which drive on the right or the left thereby preventing blinding of the drivers travelling in the opposite direction.

- Remove headlight ⇒ 94-9 page 2
- Remove plastic cover.

Left-hand drive vehicles in left-hand traffic

- Move the lever from the position -A- upwards to the position -B-

Right-hand drive vehicles in right-hand traffic

- Move the lever from the position -B- downwards to the position -A-

Right headlight is mirror image displaced.

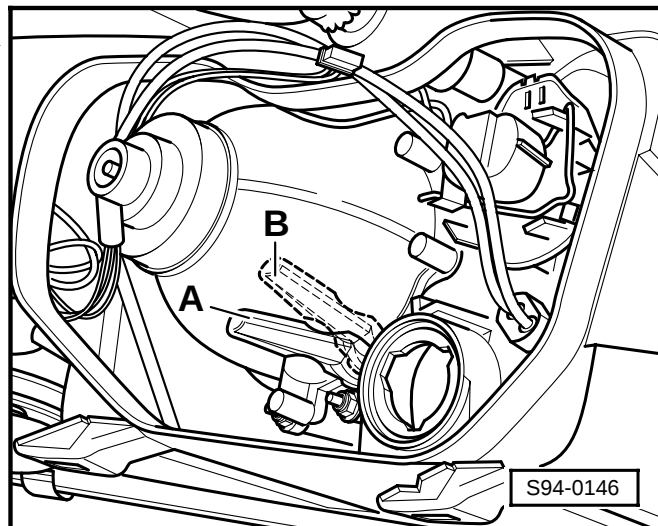
Replacing headlight fixing brackets

If the top and side headlight fixing brackets are broken off, new top supports and side clamps with the corresponding fixing screws can be ordered according to the spare parts catalogue.



Note

Side clamps can be ordered only for vehicles manufactured after 01.02. When ordering one must distinguish, if it is a side clamp for the left or the right headlight.



94-10 Self diagnosis for the xenon headlight

Self diagnosis for the xenon headlight with automatic regulation

General Instructions

The system contains a gas discharge D2S with automatic regulation of the headlight height depending on the angle of declination of the vehicle relative to the road surface.

The self-actuated regulation of the headlight height works on the basis of data from a control unit which is positioned in the sender on the rear axle.

The system in the dash panel insert is not fitted out with error signalisation and the message "Own discharge lamp not functional" only appears in the dash panel insert in the case of vehicles where there is a relay for monitoring torn threads.

Connecting vehicle system tester V.A.G 1552

Special tools, test and measuring equipment and auxiliary items required

- ◆ Vehicle system tester -V.A.G 1552-
- ◆ Diagnostic cable -V.A.G 1551/3, 3A, 3B oder 3C-

Test conditions

- All fuses must be OK in compliance with the current flow diagram.
- Battery voltage at least 11 V.

The diagnostic connection is located on the left next to the storage compartment on the driver's side.

- Unclip cover and remove downward.
- Connect vehicle system tester -V.A.G 1552- with appropriate cable. ►

Switch on ignition.

Readout on display:



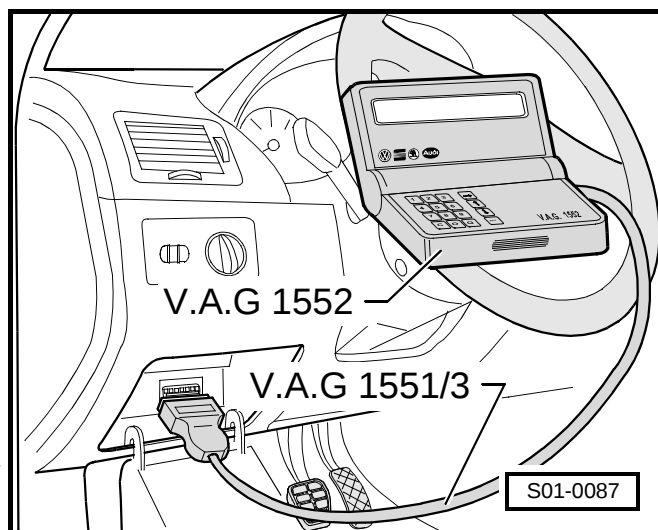
Note

If there is nothing on the display ⇒ Operating instructions for the vehicle system tester.

- Enter address word **5 5** „headlight beam range regulation“ and confirm the entry with **Q**.

Readout on display:

- ◆ 6N0907503: Version number of the control unit
- ◆ HEADLIGHT BEAM RANGE REGULATION System denomination
- ◆ 0004: Software version number



Vehicle system test
Enter address word XX

HELP

6N0907503 HEADLIGHT BEAM RANGE REGULATION 0004->

- ◆ 00010: Coding control unit
- ◆ WSC 00000: Workshop code

Self-diagnosis functions

The following functions are possible:

- 02 - Interrogating fault memory ⇒ 94-10 page 2
- 03 - Actuator diagnosis ⇒ 94-10 page 4
- 05 - Erasing fault memory ⇒ 94-10 page 5
- 06 - Ending output ⇒ 94-10 page 6
- 07 - Coding control unit ⇒ 94-10 page 6
- 08 - Reading measured value block ⇒ 94-10 page 6

Interrogating fault memory



Note

The fault information displayed is not constantly updated, but only when self-diagnosis is initiated, or with the function 05 „Erase fault memory“.

Readout on display:

- Enter function „Interrogate fault memory“ and confirm with .

The number of faults stored appears on the display.

The stored faults are displayed in sequence.

- Find the fault displayed in the fault table ⇒ 94-10 page 3 and rectify fault.

If „No fault detected“ is shown in the display and if the key is pressed, the programme returns to the initial position.

Readout on display:

If anything else appears in the display ⇒ Operating instructions for vehicle system tester.

- End output (function 06).

►

Vehicle system test Select function XX	HELP
---	------

►

X faults detected!

►

No fault detected!	->
--------------------	----

►

Vehicle system test Select function XX	HELP
---	------

Fault table



Note

- ◆ All the possible faults which can be detected by the dash panel insert and can be displayed by -V.A.G 1552- are listed below according to the 5-digit fault code.
- ◆ Do not take any notice of the SAE code to the right of the fault code or the fault index (e.g. 136).
- ◆ Before replacing components found to be defective first check the wiring and plug connections to these components as well as the earth cables according to the current flow diagram.
- ◆ After repair always interrogate the fault memory using vehicle system tester -V.A.G 1552- and erase the memory.
- ◆ All static and sporadic faults are stored in the fault memory. A fault is detected as static if it exists for at least 2 seconds. If the fault no longer occurs after this, it is stored as a sporadic fault. „/SP“ appears on the right of the display.
- ◆ After switching on the ignition, all the faults which exist are set to sporadic and are not stored as static faults unless they continue to exist after completing the check.
- ◆ If a sporadic fault no longer occurs during 50 driving cycles (ignition on for at least 5 minutes, road speed > 30 km/h), it is erased.

Readout on - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
65535	136 ¹⁾	no fault detected	If after repair „No fault detected“ is displayed, the self-diagnosis is completed.	
65535	001 ¹⁾	Control unit defective	◆ Internal failure of the control unit ◆ Internal failure of the SG when preparing to ignite the discharge lamp	Control unit not operational – Replacing control unit ⇒ Chapter 94-9.
00625 Vehicle speed signal	Implausible signal	◆ Loose contact ◆ Corrosion at plug connections	Headlight adjustment system not operational	– Check lines ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors.
00774 Sender for the vehicle level hl-G76	Implausible signal	◆ The sensor angle is outside the allowed range ◆ Loose contact ◆ Corrosion at plug connections	Headlight adjustment system not operational	– Check the mechanical sensor deflection. – Check lines ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations. – Check connectors.
	Switching off due to the temperature	◆ The control unit overheated		– Wait until the control unit has cooled down.
01042 Control unit not coded		◆ Control unit not coded ◆ Control unit defective	Headlight adjustment system not operational	– Code the control unit ⇒ 94-10 page 6. – Replacing control unit ⇒ Chapter 94-9.

Readout on - V.A.G 1552-		Possible causes of fault	Possible effects	Rectifying fault
01538 Control motors for the headlight beam range regulation - V48/49	Signal outside tolerance	♦ An electrical fault was recognised when actuating the stepper motor (e.g. the motor is not connected up)	Headlight adjustment system not operational	– Check the stepper motor line – Replace the stepper motor. – Replace control unit.
01539 The headlight was not adjusted		♦ Headlight adjustment - broken off, possibly not successful	Headlight adjustment system not operational	– Initiate basic setting ⇒ 94-10 page 4.

¹⁾ Index which shows the type of fault.

Final control diagnosis

Precondition

- Vehicle stationary
- Ignition on



Note

If the engine is running or the vehicle is moved, it is not possible to initiate final control diagnosis or the final control diagnosis is interrupted.

Perform self-diagnosis:

The parabolas on both headlights should be checked during this operation.

- Enter the function and confirm with .

Readout on display:

Both parabolas are set downwards to the deadstop.

- Press.

Readout on display:

The parabolas on both headlights are set upwards to the deadstop.

- Press.

Readout on display:

- Press.

Readout on display:



Final control diagnosis	->
The headlights will be lowered	



Final control diagnosis	->
The headlights will be lifted upwards	



Final control diagnosis	->
END	



Vehicle system test	HELP
Select function XX	

Initiating basic setting

Conditions

- The vehicle after mechanical installation of the components (after lowering it from the lift platform or straightening bench)
- Note the zero positions (vehicle without driver, unloaded)

- Ignition on
- The low beam is switched on

Readout on display:

- Enter the function **0 4** and confirm with **Q**.

Readout on display:

- **0 0** Enter **1** and confirm with **Q**.

The headlights move into the home position.

Readout on display:

- Adjust the headlight mechanically ⇒ Inspection and Maintenance.
- ☐ Press.

Readout on display:

- Enter the function **0 4** and confirm with **Q**.

Readout on display:

- **0 0** Enter **2** and confirm with **Q**.

Readout on display:

- ☐ Press.

Readout on display:

► Vehicle system test HELP
Select function XX

► Initiate basic setting Q
Enter display group number XXX

► System in basic setting 1 ->
Setting the headlight beam

► Vehicle system test HELP
Select function XX

► Initiate basic setting Q
Enter display group number XXX

► System in basic setting 2 ->
The regulated position has been learned

► Vehicle system test HELP
Select function XX

Erasing fault memory



Note

The contents of the fault memory are output automatically after the fault memory is erased. If it is not possible to erase the fault memory, interrogate the fault memory once again and rectify any faults.

Requirements:

- Fault memory was interrogated ⇒ 94-10 page 2.
- All faults were rectified.

After interrogating the fault memory:

Readout on display:

- Select function **0 5** „Erase fault memory“ and confirm with **Q**.

Readout on display:

The fault memory is now erased.

- ☐ Press.

Readout on display:

► Vehicle system test HELP
Select function XX

► Vehicle system test ->
Fault memory erased!

► Vehicle system test HELP
Select function XX

**Note**

- ♦ If the following message is displayed the test sequence is incorrect:
- ♦ Carefully follow the test sequence step by step: first interrogate the fault memory, if necessary rectify faults and then erase the fault memory.

Vehicle system test ->
Fault memory was not interrogated

Ending output

- Select function **0 6** „End output“ and confirm with **Q**.

Readout on display:

- Switch off ignition.
- Separate vehicle system tester.

Vehicle system test HELP
Enter address word XX

Coding control unit**Coding**

- Connect up vehicle system tester-V.A.G 1552- and select „headlight beam range regulation“ (Address word 55) ⇒ 94-10 page 1.

Readout on display:

- Enter the function **0 7** and confirm with **Q**.

Readout on display:

- Enter code number 00010 and confirm entry with the **Q**.

The control unit coding 00010 is shown in the display:

- **□** Press.

Readout on display:

- Ending output ⇒ 94-10 page 6.

Vehicle system test HELP
Select function XX

Code control unit Q
Enter code number XXXXX (0-32000)

6N0907503 HEADLIGHT RANGE REGULATION
0004->

Vehicle system test HELP
Select function XX

Reading measured value block

Readout on display:

- Enter function **0 8** „Read measured value block“ and confirm the entry with key **Q**.

Readout on display:

- Enter display group number ⇒ 94-10 page 7.

Vehicle system test HELP
Select function XX

Read measured value block HELP
Enter display group number XXX

List of display groups

Measured value block 001

Reading measured value block 1		→	Readout on display
12.3 V	1	2.12 V	
			Output voltage of the sender at the rear
		Condition of the low beam	
		◆ 1 - On	
		◆ 0 - Off	
		Voltage terminal 15	

Measured value block 002

Reading measured value block 2			→	Readout on display
15 °		98 %		
Nominal value at the step motor				
Angle of inclination at the sender at the rear				

96 – Interior Lights, Bulbs and Switches

96-1 Self-diagnosis of immobiliser

The electronic immobiliser consists of:

- ◆ a control unit, integrated in the dash panel insert
- ◆ an adapted engine control unit
- ◆ a reading coil on the ignition lock
- ◆ an adapted ignition key with electronic circuit
- ◆ an immobiliser warning lamp (K115) in the dash panel insert

Initiating self-diagnosis of immobilizer

Special tools, test and measuring equipment and auxiliary items required

- ◆ Vehicle system tester -V.A.G 1552-
- ◆ Diagnostic cable -V.A.G 1551/3, 3A, 3B oder 3C-

Test requirements

- Fuses according to current flow diagram O.K.
- Battery voltage at least 11 volts
- All electrical components switched off

Connecting vehicle system tester -V.A.G 1552-

The diagnostic connection is located on the left next to the storage compartment on the driver's side.

- Unclip cover and remove downward.
- Connect vehicle system tester -V.A.G 1552- with appropriate cable. ►
- Switch on ignition.

Readout on display:

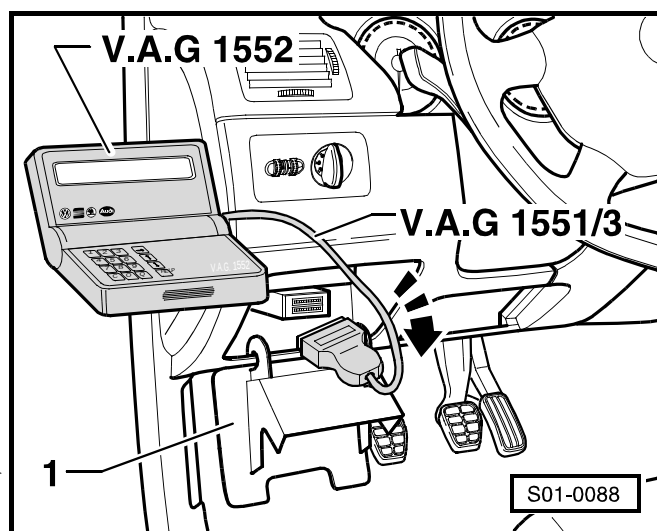


Note

- ◆ As the immobiliser control unit is integrated in the dash panel insert it is necessary to use the common address word for the dash panel insert.
- ◆ If there is no readout on the display: ⇒ Operating instructions of the vehicle system tester.
- Enter address word **1 7** „dash panel insert“ and confirm with **Q**.

Readout on display, e.g.:

- ◆ 6Y1919870B: Number of the dash panel insert
- ◆ COMBIINSTRUMENT: Designation of component
- ◆ VDO: Manufacturer's identification



Vehicle system test
Enter address word XX

HELP

6Y1919870B COMBIINSTRUMENT VDO X09 ->
Coding 20141 WSC xxxxxx

- ◆ X09: Software version of dash panel insert (other readouts are possible)
- ◆ Coding 20141: Coding of the dash panel insert
- ◆ WSC xxxxx: Workshop code

— Press ☐.

Readout on display:



TBMC46Y0Y7000001 SKZ7Z0W0204038 ->

- ◆ TBMC46Y0Y7000001: Vehicle number
- ◆ SKZ7Z0W0204038: immobiliser identification number

— Press ☐.

If the dash panel insert has already been used in another vehicle, after the ☐ is pressed, it also shows the identification number of the preceding vehicle.

If one of the following messages appears in the display, carry out fault finding as stated in the fault finding programme diagnostic cable ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

Readout on display:



Vehicle system test HELP
The control unit does not respond!

Readout on display:



Vehicle system test HELP
Fault in communication build-up

Readout on display:



Vehicle system test HELP
K cable does not connect to earth

Readout on display:



Vehicle system test HELP
K cable does not connect to pos. term.

— Press ☐.

Overview of selectable functions

- 02 - Interrogating fault memory ⇒ 96-1 page 2
- 05 - Erasing fault memory ⇒ 96-1 page 4
- 06 - Ending output ⇒ 96-1 page 4
- 08 - Reading measured value block ⇒ 96-1 page 5
- 10 - Adaptation ⇒ 96-1 page 8

Interrogating fault memory



Note

The displayed fault information is not constantly updated, this only occurs when the ignition is switched on or if function 05 „Erase fault memory“ is selected.

Readout on display:



Vehicle system test HELP
Select function XX

- Enter function „Interrogate fault memory“ and confirm with .

The number of faults stored appears on the display.



X faults detected!

The stored faults are displayed in sequence.

- Find the faults displayed in the fault table and rectify the faults ⇒ 96-1 page 3.

If „No fault detected“ the program returns to its initial position after key ☐ is pressed.

No fault detected! ->

Readout on display:

Vehicle system test
Select function XX HELP

If anything else appears in the display ⇒ Operating instructions for vehicle system tester

– Enter function 06 „End output“ ⇒ 96-1 page 4.

Fault table for immobiliser



Note

- ◆ All the possible faults which can be detected by the vehicle system tester -V.A.G 1552- are listed below according to the 5-digit fault code.
- ◆ If parts are output as faulty: First check the cables and connectors to these parts as well as the earth leads of the system by referring to the current diagram. Replace component only if these tests do not reveal any fault. This applies in particular for faults that are output as „sporadically occurred“ (SP) faults.
- ◆ After repair always interrogate the fault memory using vehicle system tester -V.A.G 1552- and erase the memory.
- ◆ All static and sporadic faults are stored in the fault memory. A fault is detected as static if it exists for at least 2 seconds. If the fault is then no longer present, it is stored as a sporadic (temporary) fault. „/SP“ appears on the right of the display.
- ◆ After switching on the ignition, all the faults which exist are set to sporadic and are not stored as static faults unless they continue to exist after completing the check.
- ◆ If a sporadic fault no longer occurs during 50 driving cycles (ignition on for at least 5 minutes, road speed > 30 km/h), it is erased.

Readout on - V.A.G 1552 -		Possible causes of fault	Possible effects	Rectifying fault
01128 Immobiliser reader coil		◆ Wiring from reading coil to dash panel insert defective ◆ Reading coil with cable defective	Engine does not start and warning light flashes	– Check reading coil with wiring (visual inspection), if necessary replace reading coil. – Erase fault memory ⇒ 96-1 page 4 and interrogate again ⇒ 96-1 page 2.
01176 Key	Signal too low	◆ Reader coil or cable defective (contact resistance or loose contact)	Engine does not start and warning light flashes	– Check reading coil with wiring (visual inspection), if necessary replace reading coil.
	not authorised	◆ Electronics in ignition key (Transponder) missing or not operating ◆ The mechanically correct ignition key not adjusted electronically	Engine does not start and warning light flashes Engine does not start and warning light flashes	– Replace ignition key and adapt all ignition keys ⇒ 96-1 page 8. – Re-adapt all ignition keys and check proper operation ⇒ 96-1 page 8.

Readout on display:

- Switch off ignition.
- Separate plug connection to vehicle system tester -V.A.G 1552-.

►

Vehicle system test	HELP
Enter address word XX	

Reading measured value block

Readout on display:

- Enter function **0 8** „Read measured value block“ and confirm the entry with key **Q**.

►

Vehicle system test	HELP
Select function XX	

Readout on display:

- **0 2 2** for the indicator group number 022 and confirm entry with **Q**.

►

Reading measured value block	->
Enter display group number XXX	

Readout on display, e.g.:

►

Reading measured value block	22	->	
1	1	1	2

Analysing measured value block 22

Start operation authorised	Engine control unit communicates	Key code detected	Number of adapted ignition keys
1 yes	1 yes	1 yes	2
0 no	0 no	0 no	

Fault analysis:

Start authorised „0“	◆ A non-authorised or incorrectly coded key was used ◆ Engine control unit not adjusted
Engine control unit communicates „0“	◆ The engine control unit is defective or there is a fault in the wiring – Interrogate fault memory of engine control unit.
Key code detected „0“	◆ A defective key or a key without transponder was used ◆ An ignition key with incorrect transponder type was used (permanent code transponder) ◆ There is a fault in the operation of the reader coil – Read out fault memory (function 02) ⇒ 96-1 page 2.
Number of adapted keys: 2	

If the displayed value in the first 3 display blocks is „1“:

- Press **Q**.

Readout on display, e.g.:

►

Reading measured value block	23	->	
1	1	1	2

If a different read-out appears in the display, it is necessary to perform the function „adapt ignition key“ ⇒ 96-1 page 8.

If the readout in display block 3 is „0“:

An ignition key with incorrect transponder type was used.

- Obtain an ignition key with the correct transponder type.

 Note

There are different ignition keys with different types of transponders. Pay attention to the Part No. when ordering!

- Press ☐.

Readout on display:

▶

Vehicle system test

Select function XX

HELP

Measured value block 022

Reading measured value block 22				→	Readout on display
1	1	1	2		
			Number of initialised keys		
			◆ 1 to 8 keys		
			Key code detected		
			◆ 0 = no		
			◆ 1 = yes		
			Engine control unit communicates		
			◆ 0 = no		
			◆ 1 = yes		
Start authorised					
◆ 0 = no					
◆ 1 = yes					

Measured value block 023

Reading measured value block 23 →				Readout on display
1	1	1	2	
				Status of immobiliser ◆ 1 = Basic factory setting ◆ 2 = Control unit ready for adaptation ◆ 3 = Engine control unit is adapted; keys are learned ◆ 4 = Basic setting of replacement control unit ◆ 5 = The codes are read into the control unit; if these agree with the code of the engine control unit, move on to status 6 ◆ 6 = Keys can be adapted ◆ 7 = Key adaptation
				programmed key code (key is learned) ◆ 0 = no ◆ 1 = yes
				non-authorized key (key locking) ◆ 0 = no ◆ 1 = yes
				authorised key (drive code of key) ◆ 0 = no ◆ 1 = yes

Measured value block 024

Reading measured value block 24 →				Readout on display
10	5	10	10	
				Blocking period for reading key code after 20x terminal 15 "on" with unauthorised key ◆ 0 to 10 minutes
				Blocking period of emergency release ◆ 0 to 255 minutes (FAIL lights up on the dash panel insert)
				Blocking period of adaptation ◆ 0 to 255 minutes (FAIL lights up on the dash panel insert)
				Blocking period of PIN entry ◆ 0 to 255 minutes (FAIL lights up on the dash panel insert)

Measured value block 025

Reading measured value block 25				→	Readout on display	
1						
				not assigned		
				not assigned		
		not assigned				
Generation of the vehicle immobiliser						
♦ 1 = 3. generation						

Adapt ignition key

Note

- ♦ If new or additional ignitions keys are required they must be adapted to the immobiliser control unit.
- ♦ Procedure when replacing the lock set, the reading coil and the immobilizer control unit section on procedure for changing lock set or immobilizer control unit.
- ♦ Always adapt all ignition keys, i.e. also the available ignition keys.
- ♦ If for various reasons it is not possible to adapt all keys, the customer should have this operation carried out subsequently by his ŠKODA dealer.
- ♦ The number of already adapted keys is displayed by selecting the function „Adaptation“.
- ♦ The adaptation can be interrupted with the  key of the vehicle system tester -V.A.G 1552-.

Requirements:

- All ignition keys present
- Secret number of immobiliser control unit is present.
- Insert the old (authorised) ignition key in the ignition lock.
- Connect vehicle system tester -V.A.G 1552- and enter address word 17 „Dash panel insert“ ⇒ 96-1 page 1.

After control unit identification is displayed:

- Press .
- Readout on display:
- Select function   „Login procedure“ and confirm entry with .

Readout on display:

- Enter secret number, place a 0 ahead of the 4-digit number (e.g. 01915).

►

Vehicle system test Select function XX	HELP
---	------

►

Login procedure Enter code number XXXXXX

The secret number is indicated in the key fob and is made visible by carefully "scratching off" the protective layer (e.g. with a coin).

If the secret number is not available obtain it from the Customer Service.

**Note**

If the PIN code indicated in the key fob is only a 2 or 3-digit number, the front entry must then be completed with zeros, e.g. 344 = 00344.

- Confirm the entry with **Q**.

Readout on display:

►

Vehicle system test Select function XX	HELP
---	------

**Note**

- ◆ If the following readout appears briefly in the display: ►
- ◆ PIN code is not accepted. Repeat entry.
- ◆ After the secret number has been incorrectly entered three times, the control unit is blocked. In the display of the trip counter in the dash panel insert appears „FAIL“.
- ◆ A further attempt is only permissible after waiting at least 10 minutes, if the ignition remains switched on constantly during this time and if you quit self-diagnosis with the function 06 „End output“ This time is doubled after each additional three unsuccessful attempts.

►

Function unknown or cannot be carried out at the moment	->
--	----

- Function **1** **0** select „Adjustment“ and confirm with **Q**.

Readout on display:

►

Adjustment Enter channel number XX

- **2** **1** Enter „channel 21“ and confirm with **Q**.

If the following readout appears in the display:

►

Function unknown or cannot be carried out at the moment	->
--	----

- Repeat adaptation by entering the PIN code.

Readout on display:

►

Channel 21	Adjustment	2	->
		(-	-)

The top line indicates that 2 ignition keys have been adapted to the system.

- Use key **Q** to reduce the number of the ignition keys or use key **Q** to increase the number of ignition keys e.g. to 3.

or:

- Press **Q**.

Readout on display:

►

Channel 21	Adaptation	2
Enter adjustment value XXXXX		

- Press **Q** four times and then the number of all ignition keys to be adapted, including the existing keys (e.g. 00003). Up to 8 keys are possible.

- Confirm the entry with **Q**.

Readout in display if 3 ignition keys are to be adapted: ►

►

Channel 21	adjustment	3	Q
		(-	-)

- Confirm the entry with .

Readout on display:



Channel 21	adjustment	3	Q
Store changed value?			

- Confirm the entry with .

Readout on display:



Channel 21	Adjustment	3	->
Changed value stored			

- Press .

- Enter function   „End output“ and confirm with .

The key in the ignition lock is now adapted.

- Switch off ignition and insert the next key in the ignition lock and switch on the ignition for at least 1 second.
- Repeat adaptation procedure until all keys have been adapted.



Note

Do not exceed a maximum period of 30 seconds between the adaptation of two keys.

- Select function 02 „Interrogate fault memory“.

If no fault is stored, the function „Key adaptation“ has been successfully completed.

After each successful login, immobiliser function is enabled for 5 min if ignition key is withdrawn or for 45 min if ignition is switched off, i.e. it is not good practice to carry out a system test or operational test during this time.

The following fault messages are a result of the adaptation procedure and can be ignored:

Readout on display (ignore).



Data transfer error

Readout on display (ignore).



Vehicle system test	HELP
Select function XX	

Readout on display (ignore):



Key not authorised

The fault „Key not authorised“ is displayed throughout the adaptation procedure as it is not permitted to start the engine during adaptation.

The ignition key adaptation is automatically terminated if:

- ♦ the number of adapted keys has been reached
- ♦ the ignition is once again switched on with an already adapted key and remains switched on for more than 1 second (fault is stored).
- ♦ the permissible adaptation time of 30 seconds from the moment the ignition is switched on with the 2nd key, is exceeded (fault is stored)

Adapt immobiliser after replacing the dash panel insert

The adaptation is required when replacing the dash panel insert.

Requirements

- Secret number of immobiliser control unit is present.

If the secret number is not available obtain it from the Customer Service.

- Insert the old (authorised) ignition key in the ignition lock.
- Switch on ignition
- Connect vehicle system tester -V.A.G 1552- and enter address word 17 „Dash panel insert“ ⇒ 96-1 page 1.

After control unit identification is displayed:

- Press ☐.

Readout on display:

►

Vehicle system test	HELP
Select function XX	

- Select function ☐ ☐ „Login procedure“ and confirm entry with ☐.

Readout on display:

►

Login procedure
Enter code number XXXXX

- Enter the secret number of the new immobilizer control unit and confirm with ☐.

Readout on display:

►

Vehicle system test	HELP
Select function XX	

- Function ☐ ☐ select „Adjustment“ and confirm with ☐.

Readout on display:

►

Adjustment
Enter channel number XX

- Enter ☐ ☐ for the „display group number 50“ and confirm entry with key ☐.

Readout on display:

►

Channel 50	Adjustment	32000	->
PIN?		(- -)	

- Press ☐.

Readout on display:

►

Channel 50	adjustment	32000	Q
Enter adaptation value	XXXXX		

- Enter the secret number of the old immobilizer control unit and confirm with ☐.

Readout on display:

►

Channel 50	Adjustment	32000	->
Wait		(- -)	

After approx. 4 to 5 seconds the vehicle number is displayed and the immobilizer warning lamp -K115- lights up.



Note

If the previous adaptation process has been incorrectly performed, the control unit is blocked for a certain time. It is necessary to wait for this blocking time to elapse before carrying out the next adaptation procedure.

Readout on display:

►

Channel 50	adjustment	32000	Q
TMBMC46Y0Y7000001		(- -)	

- Confirm the entry with ☐.

Readout on display:

►

Channel 50	adjustment	32000	Q
Store changed value?			

- Confirm the entry with ☐.

The immobilizer warning lamp -K115- goes out.

Readout on display:

– Press .

The tester now goes to address word 17 and after approx. 2 seconds displays the vehicle number and the identification number of the immobilizer.

Readout on display:

– Press .

Readout on display:

– Enter address word „End output“ and confirm with .

– Switch off ignition.

The immobiliser control unit has now been adapted.

Adapt existing ignition keys ⇒ 96-1 page 8.

Channel 50 Adjustment 32000 ->
Changed value stored

TBMC46Y0Y7000001 SKZ7Z0W0204038 ->

Vehicle system test HELP
Select function XX

Adapt immobiliser after replacing the engine control unit

Requirements

- Secret number of immobiliser control unit is present.

Note

With „Magneti Marelli“ control unit and with new control units (as of MY02) the „Login procedure“ is not performed.

Readout on display:

– Enter address word „Engine electronics“ and confirm entry with ⇒ Engine, Fuel Injection; Rep. Gr. 01.

Readout on display:

– Select function „Login procedure“ and confirm entry with .

Readout on display:

– Enter code number and confirm with .

Vehicle system test HELP
Enter address word XX

Vehicle system test HELP
Select function XX

Login procedure
Enter code number XXXXX

Table of code numbers:

Injection system	Code number
SIMOS 3	00000
Diesel engines	12233
Magneti Marelli	no Engine control unit is abled for about 10 seconds

Readout on display:

- Function **1** **0** select „Adjustment“ and confirm with **Q**.

Readout on display:

- Enter **5** **0** for „channel 50“ and confirm with **Q**.

Readout on display:

- Press **□**.

Readout on display:

- Enter the secret number of the immobilizer control unit (e.g. 04038) and confirm with **Q**.

Readout on display:

After approx. 4 to 5 seconds the vehicle number is displayed.

Readout on display:

- Confirm the entry with **Q**.

Readout on display:

- Confirm the entry with **Q**.

Readout on display:

- Press **□**.

Readout on display:

- Press **□**.

The immobilizer warning lamp -K115- goes out.

Readout on display:

- Enter function **0** **6** „End output“ and confirm with **Q**.
- Switch off ignition.

►

Vehicle system test	HELP
Select function XX	

►

Adjustment	
Enter channel number XX	

►

Channel 50	Adjustment	32000	->
PIN?	(-	-)	

►

Channel 50	adjustment	32000	Q
Enter adaptation value	XXXXX		

►

Channel 50	Adjustment	32000	->
Wait	(-	-)	

►

Channel 50	adjustment	32000	Q
TMBMC46Y0Y7000001	(-	-)	

►

Channel 50	adjustment	32000	Q
Store changed value?			

►

Channel 50	Adjustment	32000	->
Changed value stored			

►

TMBMC46Y0Y7000001	SKZ7Z0W0204038	->	
-------------------	----------------	----	--

►

Vehicle system test	HELP
Select function XX	

Adapt immobiliser after insertion of a used engine control unit

Requirements

- The secret number of the immobiliser control unit of the vehicle from which the engine control unit was removed is available.
- The secret number of the immobiliser control unit of the vehicle in which the engine control unit is fitted is available.

Readout on display:

- Enter address word **0** **1** „Engine control unit“ and confirm entry with **Q** ⇒ Engine, Fuel Injection; Rep. Gr. 01.

Readout on display:

►

Vehicle system test	HELP
Enter address word XX	

►

Vehicle system test	HELP
Select function XX	

- Select function **1 1** „Login procedure“ and confirm entry with **Q**.

Readout on display:

► Login procedure
Enter code number XXXXX

- Enter the secret number of the immobiliser control unit of the vehicle from which the engine control unit was removed and confirm with **Q**.

Readout on display:

► Vehicle system test HELP
Select function XX

- Function **1 0** select „Adjustment“ and confirm with **Q**.

Readout on display:

► Adjustment
Enter channel number XX

- Enter **5 0** for „channel 50“ and confirm with **Q**.

Readout on display:

► Channel 50 Adjustment 32000 ->
PIN? (- -)

- Press **Q**.

Readout on display:

► Channel 50 adjustment 32000 Q
Enter adaptation value XXXXX

- Enter the secret number of the immobiliser control unit (e.g. 04038) of the vehicle in which the used engine control unit is already installed, and confirm the entry with **Q**.

Readout on display:

► Channel 50 Adjustment 32000 ->
Wait (- -)

After approx. 4 to 5 seconds the vehicle number is displayed.

Readout on display:

► Channel 50 adjustment 32000 Q
TBMCM46Y0Y7000001 (- -)

- Confirm the entry with **Q**.

Readout on display:

► Channel 50 adjustment 32000 Q
Store changed value?

- Confirm the entry with **Q**.

Readout on display:

► Channel 50 Adjustment 32000 ->
Changed value stored

- Press **Q**.

Readout on display:

► TBMCM46Y0Y7000001 SKZ7Z0W0204038 ->

- Press **Q**.

The immobilizer warning lamp -K115- goes out.

Readout on display:

► Vehicle system test HELP
Select function XX

- Enter function **0 6** „End output“ and confirm with **Q**.
- Switch off ignition.

96-2 Interior Lights



WARNING!

Disconnect earth strap from the battery before commencing work on the electrical system.



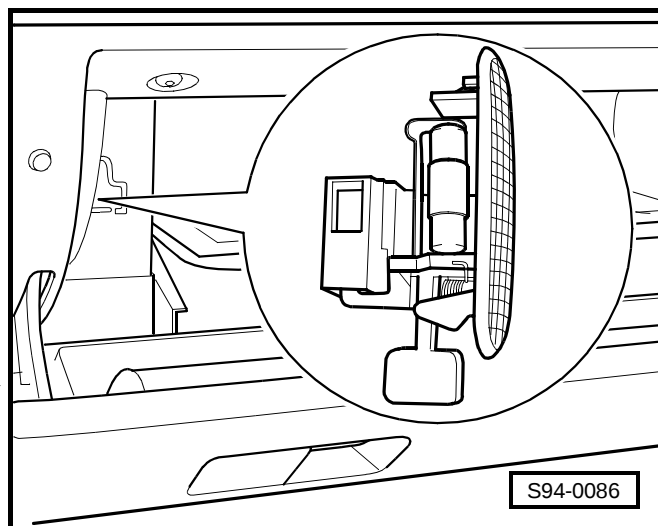
Note

- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ When the battery is reconnected perform the following operations depending on the vehicle equipment: Encode the radio, re-set the clock, initialise the power windows ⇒ Inspection and Maintenance.

Removing and installing glove box light

Removing

- Use a cross-head screwdriver to grasp behind the lens and carefully lever out lamp.
- Remove lamp completely.
- Replace bulb 12 V, 5 W.



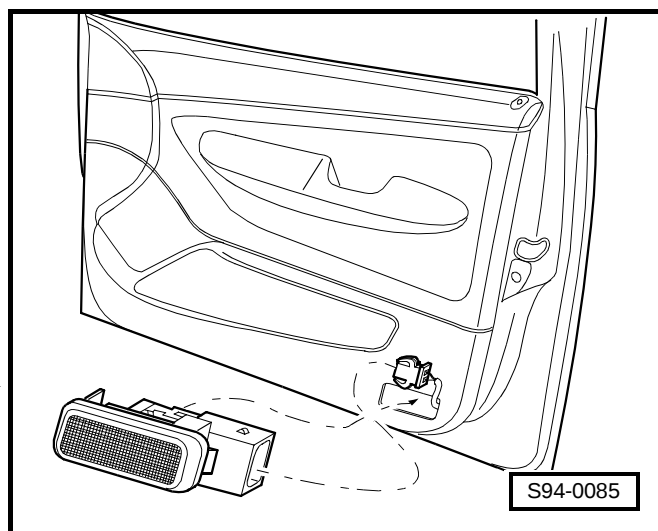
Installing

- Insert the lens with lamp socket in the glove box and lock into position.

Removing and installing door warning lamp

Removing

- Use a cross-head screwdriver to grasp behind the lens and carefully lever out lamp.
- Separate the plug connection.
- Replace bulb 12 V, 5 W.



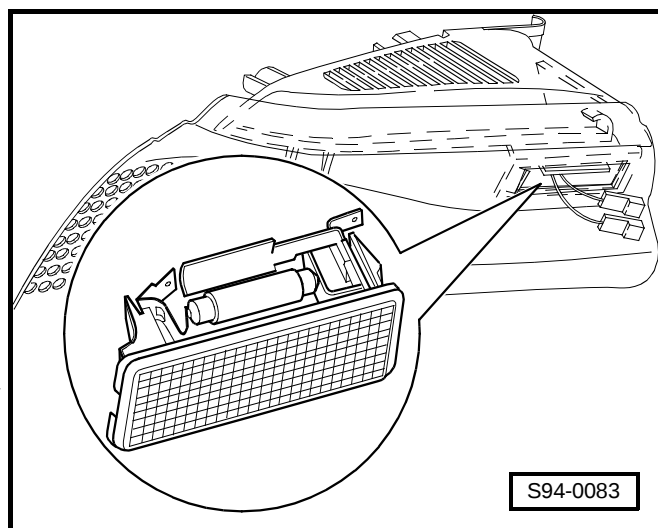
Installing

- Carry out the installation in the same way in reverse order.

Removing and installing luggage compartment light

Removing

- Use a cross-head screwdriver to grasp behind the lens and carefully lever out lamp.
- Separate the plug connection.
- Replace bulb 12 V, 5 W.



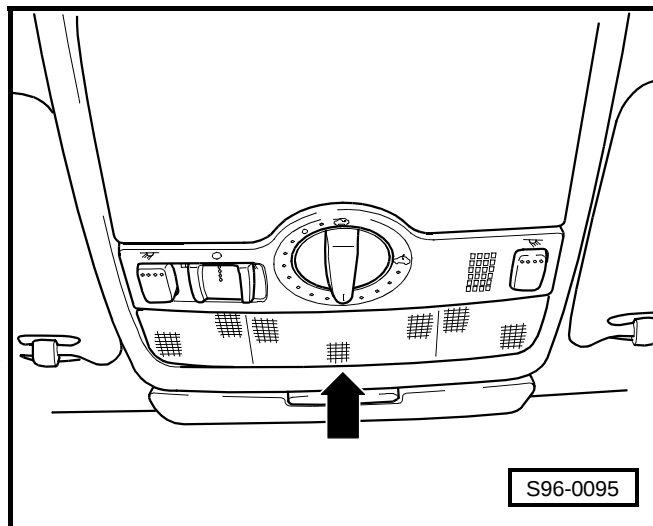
Installing

- Carry out the installation in the same way in reverse order.

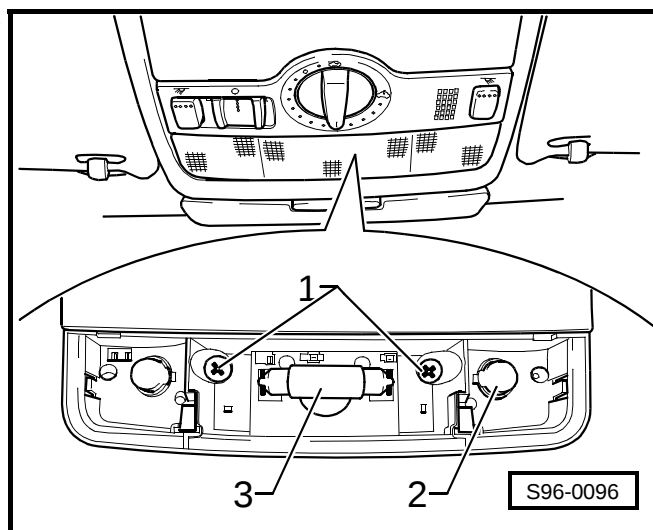
Removing and installing switch for sun roof and interior light

Removing

- Carefully pull the front part of the lens -arrow- downwards. ►



- Unscrew the two cross-head screws -1-.
- Remove the interior light downwards and disconnect the electrical connectors. ►



Note

It is not necessary to remove the interior light to replace the bulb.

- Bulbs -3- without base 12 V, 5 W
- Soffitte-2- 12 V, 10 W

Installing

- Insert the connectors.
- Insert the interior light with the sun roof switch in the roof lining and secure with the two cross-head screws (1.5 Nm).
- First position the lens with both lugs in the interior light slots and then press the lens upwards until it audibly clicks into position.

96-3 Switches in Dash Panel and in Doors



WARNING!

Disconnect earth cable of battery before working on the electrical system.



Note

- ◆ Before disconnecting the battery, determine the radio code of radio sets fitted with anti-theft coding.
- ◆ When the battery is re-connected, perform the following operations depending on the vehicle equipment: encode radio, re-set clock, initialise power windows
⇒ Inspection and Maintenance.

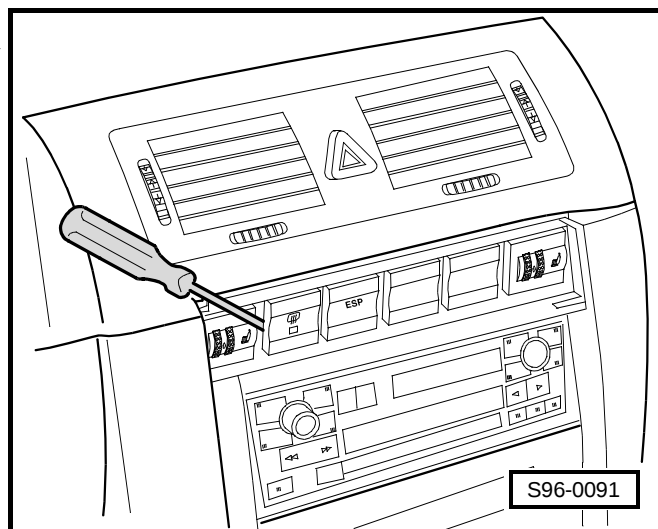
Removing and installing switches in centre console

Removing

- Use a small screwdriver inserted from the left to carefully lever out the relevant switch from the centre console.
- Then, pull the switch out fully and separate the plug connection.

Installing

- Fit together the plug connections.
- Press switch into mount in the centre console and lock in place.



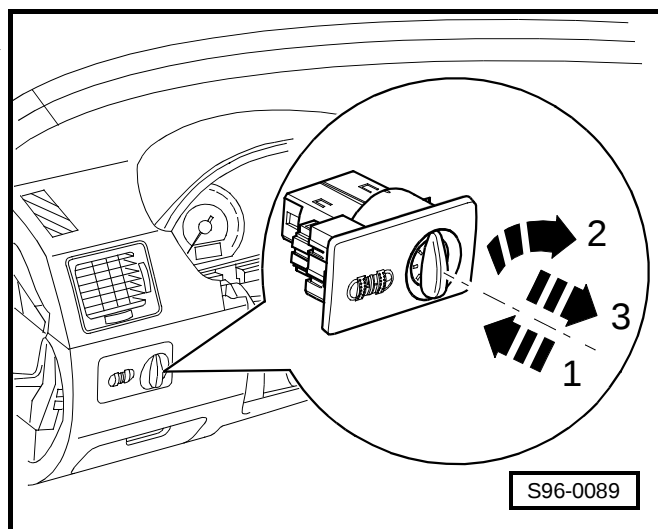
Removing and installing light switch

Removing

- Press the light switch -1- and at the same time turn it to the right -2-.
- Hold the switch in this position and pull the light switch housing out to the front -3-.
- Separate the electrical connection at the switch.

Installing

- Fit together the electrical connection.
- Carefully push light switch into the opening until the switch is heard to lock in place.



Removing and installing headlight range control adjuster

Removing

- Remove the light switch ⇒ 96-3 page 1.
- Use a suitable screwdriver to unclip the adjuster -2- at the catch -1- and press it back -arrow- out of the trim surround.

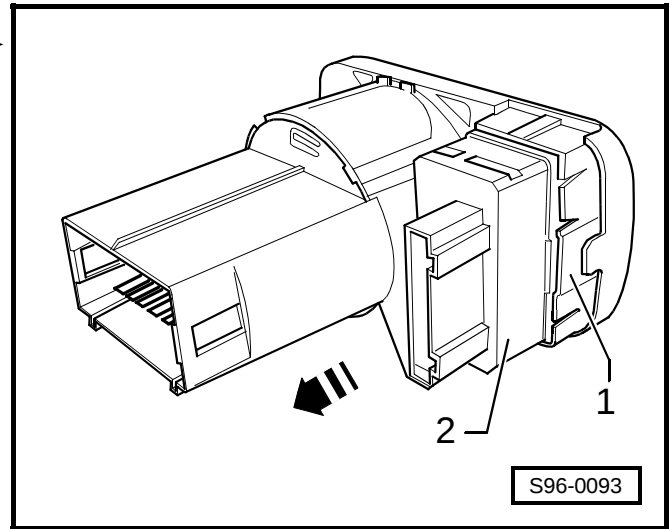


Note

Adjuster for headlamp range control and instrument lighting rheostat form a single unit.

Installing

- Installation of the battery is carried out in the reverse order.



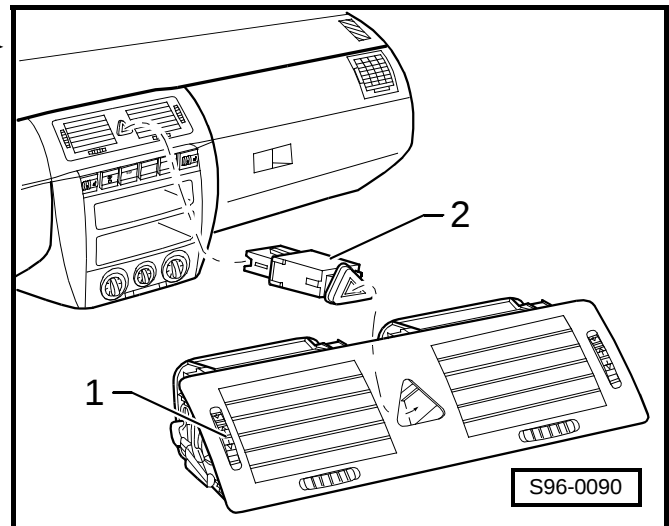
Removing and installing hazard warning light switch

Removing

- Unclip the dash panel vent in the middle -1-.
- Separate the plug connection at the switch.
- Unclip the hazard warning light switch -2- from the middle dash panel vent.

Installing

- Installation of the battery is carried out in the reverse order.



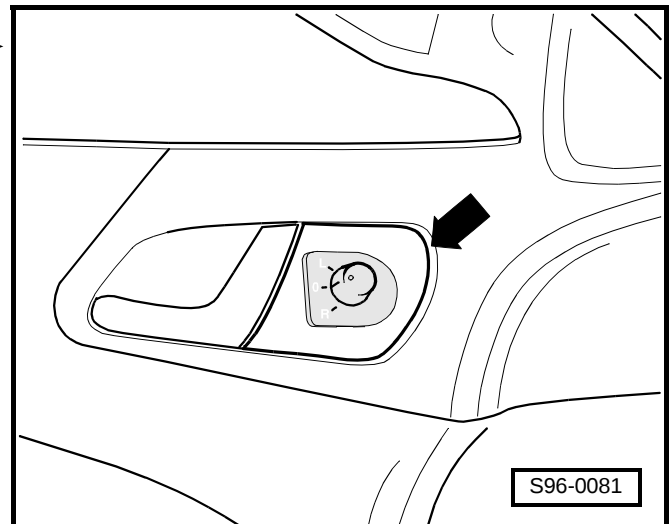
Removing and installing mirror adjustment switch

Removing

- Carefully unclip mirror adjustment switch together with trim surround -arrow-.
- Separate the plug connection at the mirror adjustment switch.
- Unclip the mirror adjustment switch from the trim surround.

Installing

- Installation of the battery is carried out in the reverse order.



Removing and installing power window switches

Removing

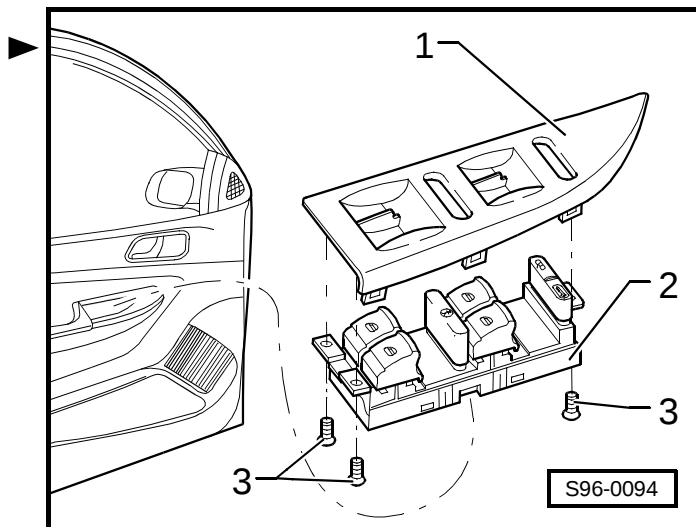
**Note**

The switch unit is screwed to the trim panel.

- Unclip the trim panel -1- from the door armrest.
- Separate the plug connection.
- Take out the screws -3- holding the unit and remove the operating unit -2-.

Installing

- Installation of the battery is carried out in the reverse order.



96-4 Horn

**WARNING!**

Disconnect earth cable of battery before working on the electrical system.

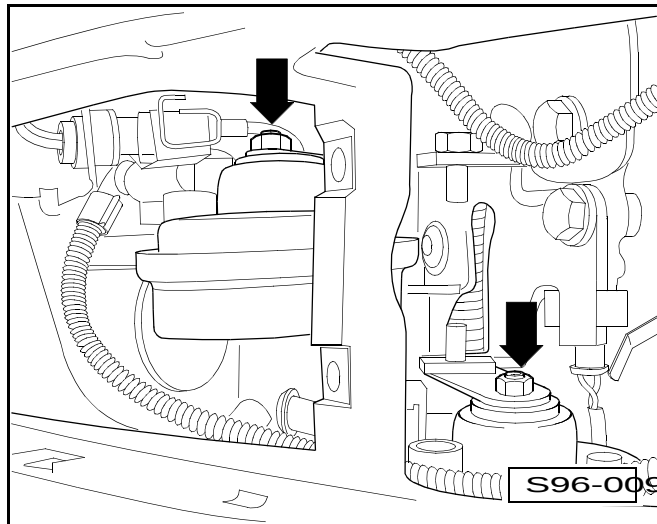
**Note**

- ◆ *Before disconnecting the battery, determine the radio code of radio sets fitted with anti-theft coding.*
- ◆ *When the battery is re-connected, perform the following operations depending on the vehicle equipment: encode radio, re-set clock, initialise power windows*
⇒ *Inspection and Maintenance.*

Removing and installing horn

Removing

- Unclip the two trim panels at the left of the front bumper.
- Unscrew the two nuts -arrows- attaching the horns ►
- Separate the electric plug connection.



Installing

- Installation of the battery is carried out in the reverse order.

96-5 Interior Monitoring Sensor G273

Removing and installing sensor



WARNING!

Disconnect earth strap from the battery before commencing work on the electrical system.

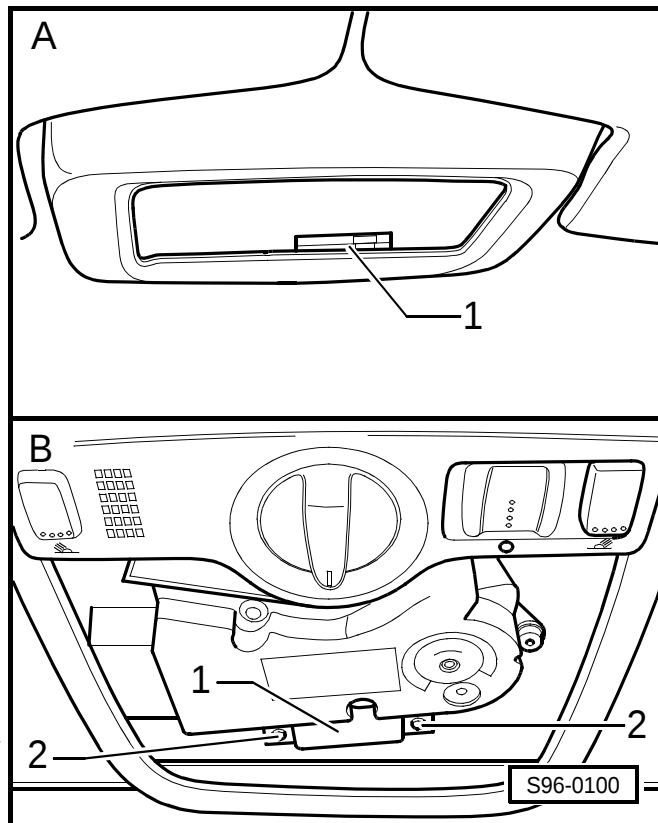


Note

- ◆ Before disconnecting the battery determine the code of radio set fitted with anti-theft coding.
- ◆ Battery handling instructions ⇒ Chap. 27-1.

Removing

- Removing interior lighting ⇒ Chap. 96-2 (version A), if necessary drive cover for sliding roof (version B).
- Disconnect plug connection from interior monitoring sensor -1-.
- Cover sensor -1- (version A) with adhesive tape, if necessary release screws -2- (version B) and remove.



Installing

- Installation is carried out in the reverse order.



Note

Pay attention to correct installation position of the sensor. Plug connection must always point forwards in direction of travel.

Check for proper operation

- Interior monitoring sensor is activated.
- Open the driver's door window slightly, so that you can reach in.
- Lock the vehicle with the key or remote control.
- Wait approx. 2 minutes for the alarm system to be fully effective.
- Repeated motion of the hand in the vehicle interior must immediately set off the alarm.
- Deactivate the alarm by unlocking the vehicle with the remote control.

Regulate sensitivity

The interior monitoring sensor is fitted with a regulator to control the response sensitivity.

The factory setting is on medium sensitivity. The Service station will adapt the response sensitivity to the customer's requirements.

- Removing interior lighting ⇒ Chap. 96-2, if necessary drive cover for sliding roof.
- Set the response sensitivity by turning the switch to + mark (high sensitivity), 0 (medium sensitivity) or - mark (low sensitivity).
- Perform a functional test ⇒ 96-5 page 1.

97 – Wiring

97-1 Fuse Holder and Relay Carrier



WARNING!

Disconnect earth strap from the battery before commencing work on the electrical system.



Note

- ◆ Before disconnecting the battery determine the code of radio sets fitted with anti-theft coding.
- ◆ When the battery is reconnected perform the following operations depending on the vehicle equipment: Encode the radio, re-set the clock, initialise the power windows ⇒ Inspection and Maintenance.

Removing and installing fuse holder

Removing

- Carefully lever up the side cover of the dash panel insert.
- Remove the storage compartment on the driver's side ⇒ Body work; Rep. Gr. 68.
- Take out the two fixing screws (2 Nm) -arrows- and take out the fuse holder -A- towards the inside. ►

Installing

- Installation is carried out in the reverse order.

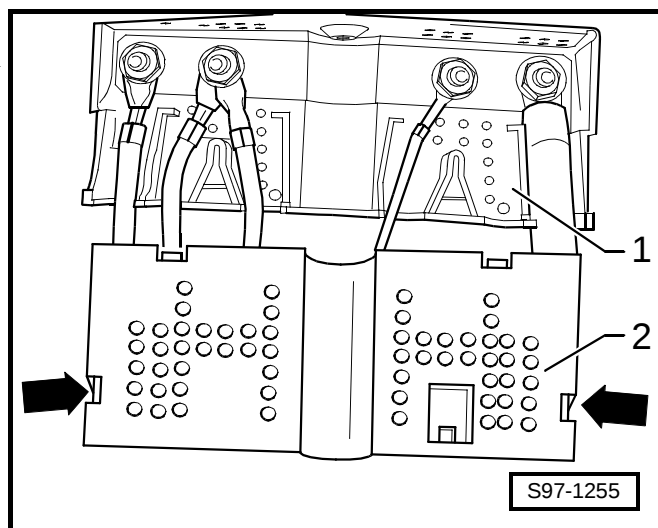
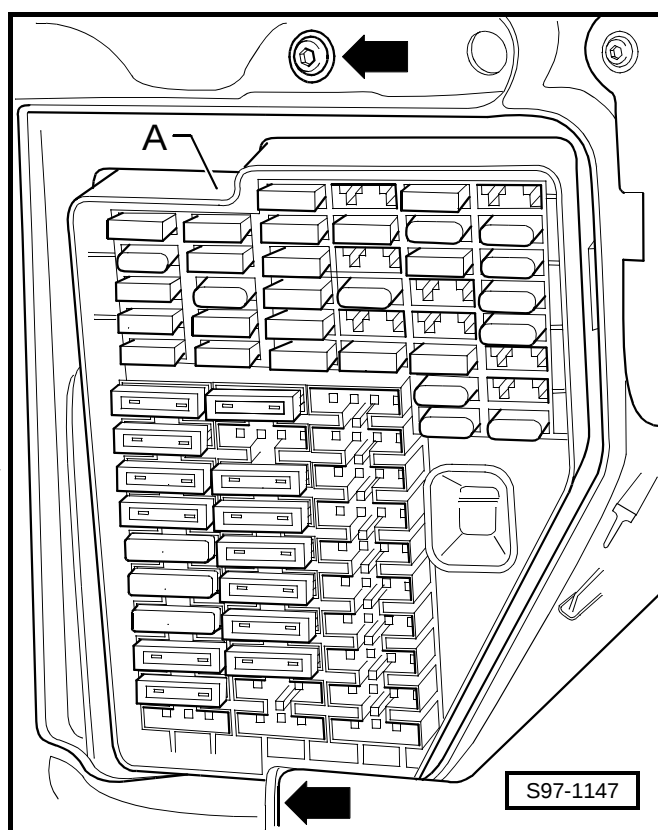
Voltage distributor

The voltage distributor is located above the relay carrier.

The storage compartment on the driver's side must first be removed to open or remove the voltage distributor.

- Take off the cover -2- from the housing -1- by releasing the two catches -arrows-. ►

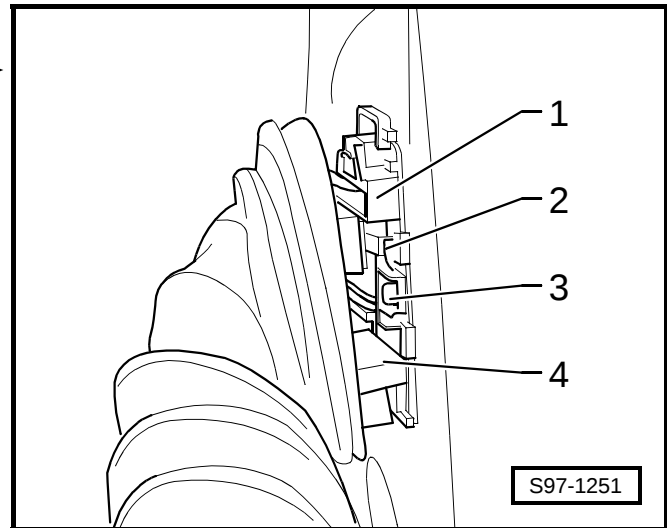
The voltage distributor »distributes« terminal 30 from the main fuse carrier in the battery ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.



Connector station A pillar

The connector station is located close to the top door hinge on the A pillar. ►

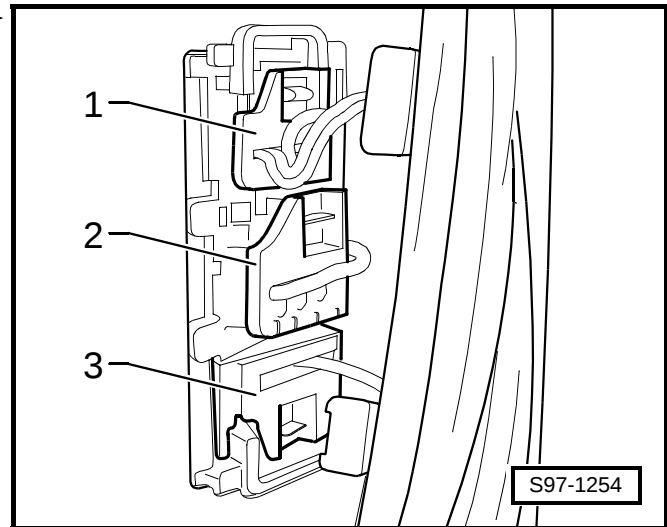
- 1 - Voltage supply, loudspeakers
- 2 - Mirror, CAN-BUS
- 3 - Door contact, warning lamps
- 4 - Central locking system



Connector station B pillar

The connector station is located close to the top door hinge of the rear doors on the B pillar. ►

- 1 - Voltage supply, loudspeakers
- 2 - Door contact
- 3 - Central locking system



Main fuse box

The main fuse box is located above the battery. ►

Contact assignment ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations

Removing

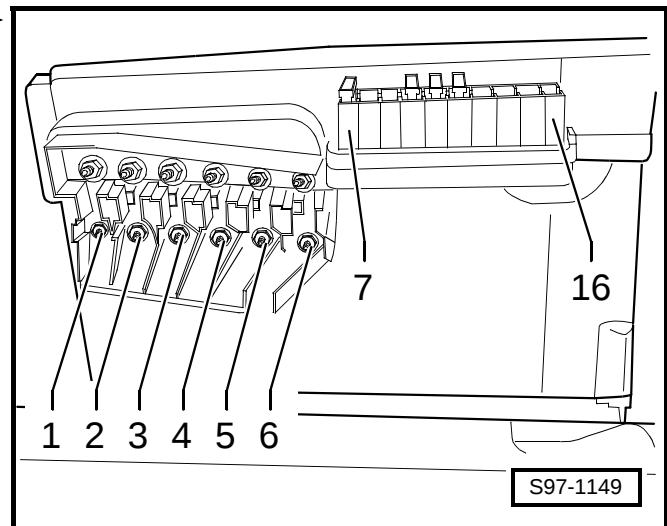
- Open the cover above the battery and disconnect the battery earth strap.
- Unbolt the battery positive terminal.
- Separate the cables at the fuses and take out the fuses.
- Loosen the clamps and remove the wiring.

Installing

- Installation is carried out in the reverse order.

Torque

Nuts for melt-off fuses -6 Nm



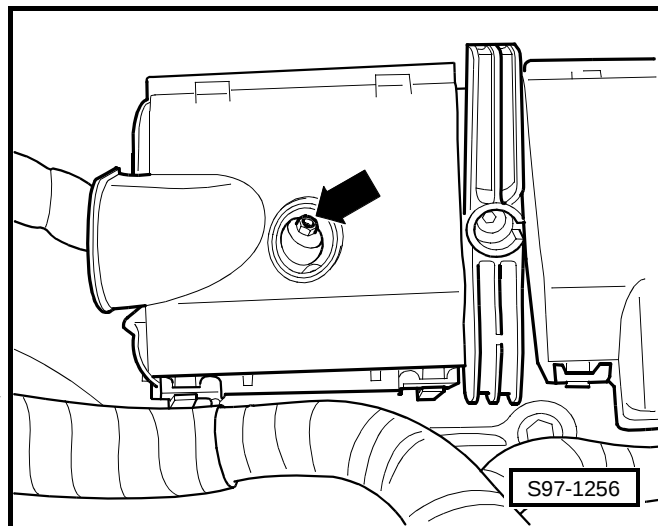
Multi-plug connector on partition panel

Both multi-plug connectors are located at the rear of the left dash panel. Seen from the engine behind the wind-screen wiper motor.

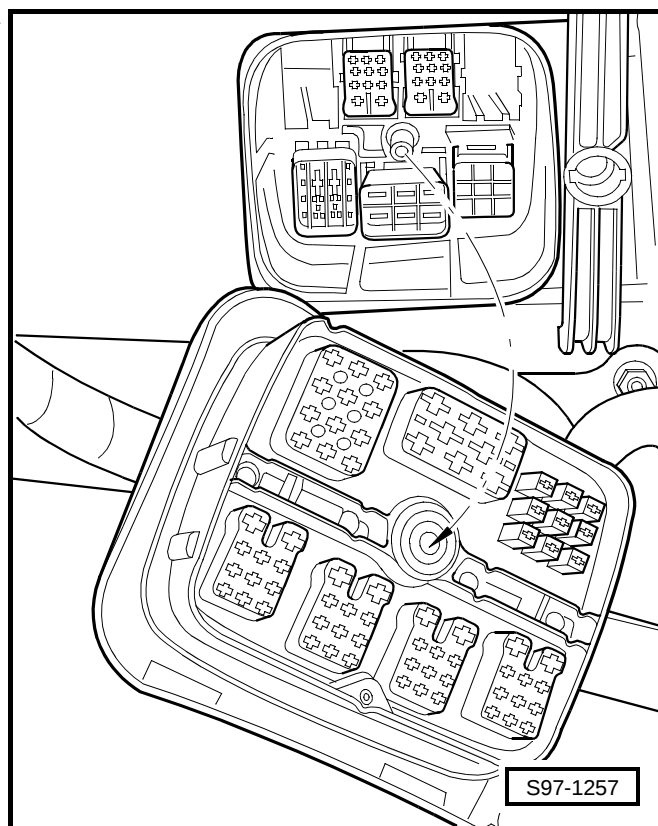
Contact assignment ⇒ Current Flow Diagrams, Electrical Fault Finding and Fitting Locations.

Removing from the engine side

- Removing wiper motor with linkage ⇒ Chap. 92-2.
- Release Allen screw -arrow-.



- It is now possible to remove the multi-pin connector.

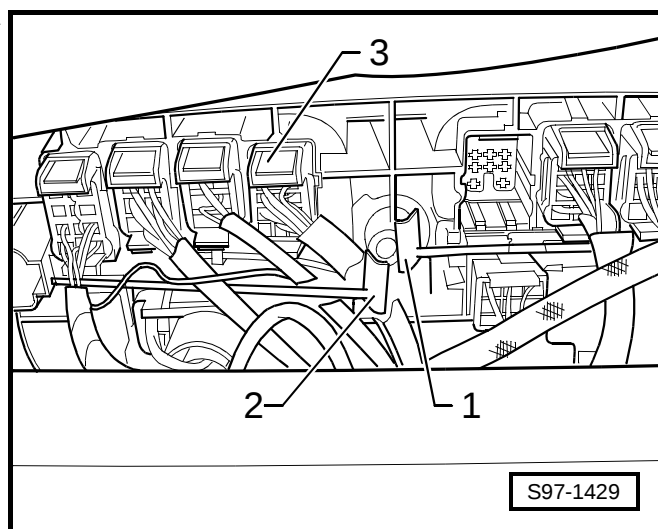


Removing from the dash panel

- Removing the dash panel ⇒ Body Work; Rep. Gr. 70.
- Draw the relevant central locking -1- for the right and -2- for the left towards the left or right.
- The relevant connectors can be released and removed by pressing the top catch -3-.

Installing

- Installation is carried out in the reverse order.



97-2 Vehicle Voltage Control Unit



WARNING!

Disconnect earth cable of battery before working on the electrical system.



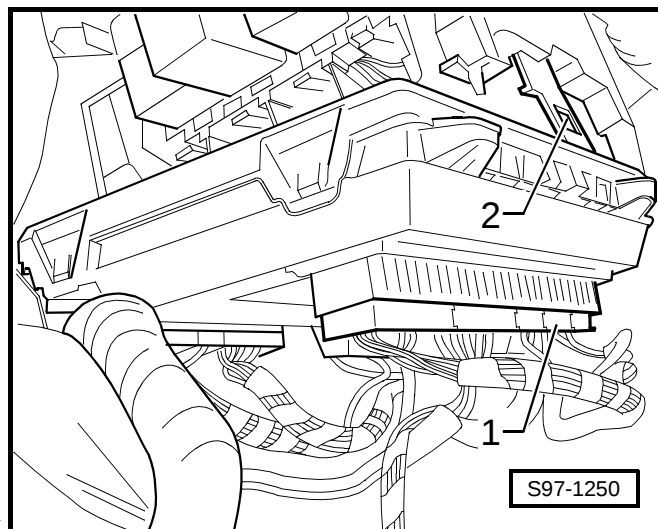
Note

- ◆ Before disconnecting the battery, determine the radio code of radio sets fitted with anti-theft coding.
- ◆ When the battery is re-connected, perform the following operations depending on the vehicle equipment: encode radio, re-set clock, initialise power windows
⇒ Inspection and Maintenance.

Removing and installing vehicle voltage control unit

Removing

- Remove the storage compartment on driver side
⇒ Body Fitting Work; Rep. Gr. 68.
- First of all, unplug the connector -1-.
- Push the catch -2- slightly up and remove the vehicle voltage control unit downward.



Installing

- Installation of the battery is carried out in the reverse order.

