

# 00 – Technical data

# 1 Safety instructions

(ERL003292; Edition 03.2017)

⇒ "1.1 Safety precautions for work on vehicles with start/stop system", page 1

⇒ "1.2 Safety precautions when using testers and measuring instruments during a road test", page 1

# 1.1 Safety precautions for work on vehicles with start/stop system

Note the following when working on vehicles with start/stop system:



### **WARNING**

Risk of injury due to automatic engine starting in vehicles with a start-stop system.

- ♦ If the Start/Stop system of a vehicle is activated, the engine can start automatically, if required. A message will appear in the dash panel insert.
- When working on the vehicle, make sure that the Start/ Stop system is deactivated (switch off the ignition; then switch the ignition on again, if necessary).

# 1.2 Safety precautions when using testers and measuring instruments during a road test

Observe following if test and measuring instruments are required during a test drive:



### **WARNING**

Accidents can be caused if the driver is distracted by test equipment or if test equipment is not secured.

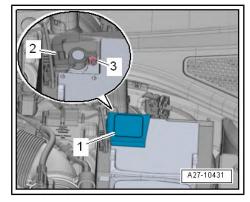
Risk of injury if front passenger's airbag is triggered in an accident.

- The use of testers and measuring instruments whilst driving causes a distraction.
- The risk of injuries increases significantly when test and measuring equipment is not secured.
- Always secure test and measuring equipment on the rear seat using a belt and allow a second person on the rear seat to use it.



- Open cover -1- over negative battery terminal.
- Slacken off nut -3- several turns and disconnect battery clamp -2- of earth cable from battery terminal.

### Vehicles with start / stop system



- Disconnect the connector -1- on the control unit for monitoring the battery - J367- -2-.
- Slacken the fixing nut -4- and disconnect the control unit for monitoring the battery - J367- -2- from the negative terminal

### Connecting

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

- Activate the automatic open / close function of electric window lifters ⇒ Vehicle instructions manual.
- Connecting vehicle diagnosis tester.
- Call up and delete the event memory ⇒ Vehicle diagnostic tester.



### Note

After re-connecting the power supply, the ESP warning lamp may not go out until the vehicle has been driven a few metres.

### **Specified torques**

♦ "1.1 Assembly overview - battery", page 4

#### 1.4 Removing and installing battery tray

⇒ "1.4.1 Removing and installing the battery support, Version 1", page 10

⇒ "1.4.2 Removing and installing the battery support, Version 2", <u>page 11</u>

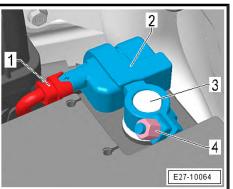
### 1.4.1 Removing and installing the battery support, Version 1

### Removing

Remove battery <u>⇒ page 5</u>.

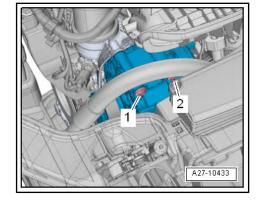
Remove air filter housing Engine.

- Engine 2.0 I TDI CR
- Engine 1.6 I TDI CR
- Remove air filter housing ⇒ Rep. gr. 23; Air filter; Removing and installing air filter housing.
- Engine 1.8 I TSI





- Unscrew the attachment bolts -1- and -2- of the generator (alternator).
- Remove the lower engine noise insulation ⇒ General body repairs, exterior; Rep. gr. 66; Noise insulation; removing and installing the noise insulation.

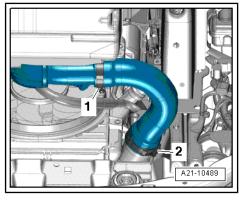


- Loosen hose clip -1-.



### Note

Item -2- can be disregarded.



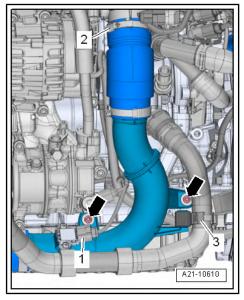
- Move clear coolant hose -3-.
- Release hose clip -2-.
- Unscrew bolts -arrows-.
- Pull out the plug -1-.
- Remove the air pipe.
- Seal open lines and connections with suitable plugs from engine bung set - VAS 6122- .
- Remove the tensioning element for the Poly-V belt ⇒ Rep. gr. 13; Cylinder block, Pulley end; Poly-V belt: Removing and installing.



### Caution

Risk of damage to air conditioner compressor, refrigerant lines and refrigerant hoses:

- ♦ Do not stretch, kink or bend refrigerant pipes and hoses.
- Remove air conditioner compressor at bracket ⇒ Heating, air conditioning; Rep. gr. 87; Air conditioner compressor; Detaching and attaching air conditioner compressor at bracket.
- Secure air conditioner compressor to lock carrier so that refrigerant lines are not under tension.





- Uncover the electrical wiring line -Arrow-.
- Unscrew screws -5- and -6- and more alternator C- -4- for-
- Pull out the plug -3-.
- Remove the cap -2-, by levering.
- Unscrew nut and remove terminal 30/B+ -1-.



### Caution

Risk of damage to air conditioner compressor, refrigerant lines and refrigerant hoses:

- Do not stretch, kink or bend refrigerant pipes and hoses.
- Remove alternator C- -4- downwards to the right.



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

- Install the poly V-belt as depicted in the illustration:
- 1 -Vibration damper
- 2 -Tensioner for poly V-belt
- 3 -Alternator
- Air conditioning compressor
- Connect battery A- ⇒ page 4.
- Always start engine and check belt running after completing work.

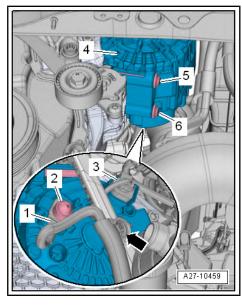
### **Specified torques**

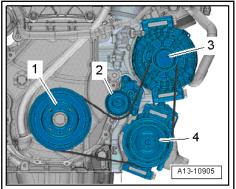
⇒ "2.1.1 Assembly overview: Alternator without sliding bushes", page 14

### 2.2.5 Removing and installing alternator, vehicles with 1.6 I and 2.0 I TDI engines

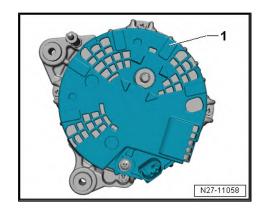
### Removing

- With the ignition switched off, disconnect battery earth cable <u>⇒ page 9</u> .
- Remove the tensioning element for the Poly-V belt ⇒ Rep. gr. 13; Cylinder block, Pulley end; Tensioning element for the Poly-V belt: Removing and installing.
- Remove the lower engine noise insulation ⇒ General body repairs, exterior; Rep. gr. 66; Noise insulation; removing and installing the noise insulation.
- Remove air conditioner compressor at bracket ⇒ Heating, air conditioning; Rep. gr. 87; Air conditioner compressor; Detaching and attaching air conditioner compressor at bracket.
- Secure air conditioner compressor to lock carrier so that refrigerant lines are not under tension.





Carefully lever off protective cap -1- from alternator - C- .



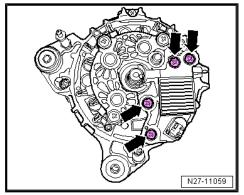
- Unscrew securing bolts -arrows- for voltage regulator C1-.
- Remove voltage regulator C1- from alternator C- .

### Installing

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

### **Specified torques**

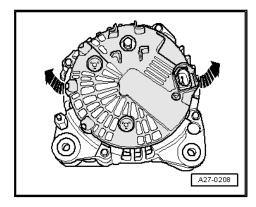
♦ ⇒ "2.4.1 Assembly overview - Valeo alternator", page 24



### 2.6.2 Voltage regulator: removing and installing, manufacturer: Valeo .

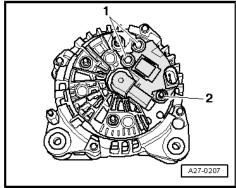
### Removing

- Remove alternator <u>⇒ page 15</u>.
- Disengage cover of rear part of alternator from studs -arrows-.



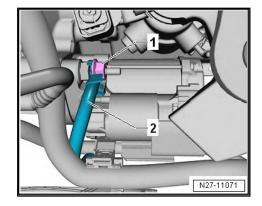
- Unscrew bolt -1- and double bolt -2-.
- Remove voltage regulator.

### Installing

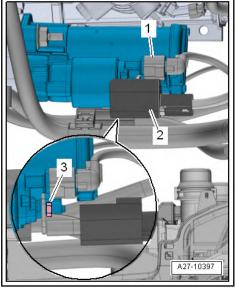




- Remove nut -1- from upper securing bolt of starter. B- .
- Unbolt earth wire -2-.



- Pull out the plug -1-.
- Press off cap -2-.
- Unscrew nut -3- and remove terminal 30/B+.
- Remove the lower engine noise insulation ⇒ General body repairs, exterior; Rep. gr. 66; Noise insulation; removing and installing the noise insulation.



Remove nut -4- and push bracket -1- of the wiring harness.



### Note

Leave electrical wiring connected.

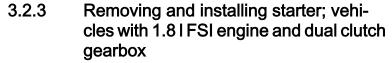
- Unscrew the screws -2- and -5- of the starter B- -3-.
- Remove the starter B- -3-.

### Installing

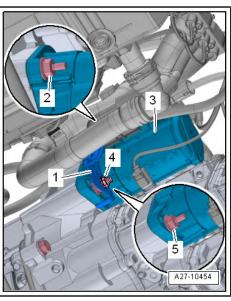
Installation is carried out in the reverse sequence; note the following:

### **Specified torques**

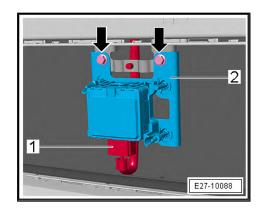
♦ "3.1.1 Exploded view - starter, vehicles with manual gearbox", page 34



Special tools and workshop equipment required



- Pull out the plug -1-.
- Unscrew bolts -arrows-.
- Lay the adaptive cruise control unit assembly J428- -2- on a workbench.



E27-10089

- Release the fasteners -1- in the -direction of the arrow-.
- Remove the fasteners -1- from the studs -2-.
- Remove the radar holder -3- from the assembly -4- adapter/ adaptive cruise control unit - J428- .

### Installing

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



### Note

- Replace the fasteners -1-.
- The studs -1- on the adapter are pre-set. If necessary, adjust the setting <del>⇒ page 45</del>.

### **Specified torques**

⇒ "5.2.6 Assembly overview - adaptive cruise control unit J428 page 48

### 5.2.3 Removing and installing trim for radar sensor

### Special tools and workshop equipment required

◆ Lever for the front-end - 3370-



### Removing

- Switch off ignition and all electrical consumers.

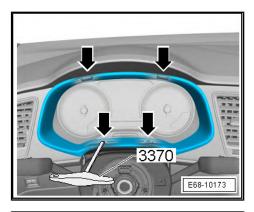
### Vehicles without access and start authorisation system

Remove ignition key, if fitted.

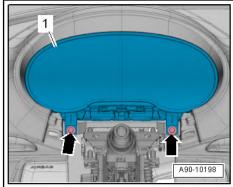




Remove the trim of the dash panel insert using the lever for the front end - 3370- at the points shown -arrow-.



- Unscrew bolts -arrows-.
- Pull out dash panel insert -1- until it makes contact with steering wheel.
- Disconnect connector.



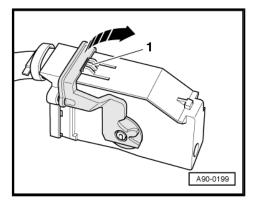
- Unplug electrical connector by releasing catch -1- and moving retaining clip in direction of -arrow-.
- Take out dash panel insert towards front passenger side between steering wheel and dash panel.

### Installing

Installation takes place in reverse order.

### Specified torques

◆ Tightening torque of the dash panel insert screws: 2.5 Nm



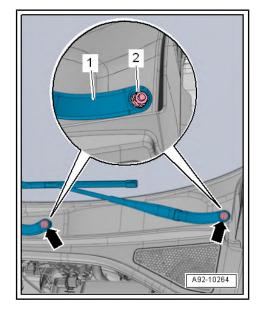




### Note

If the wiper motor needs to be run during repair work, the bonnet must be closed (voltage supply to wiper motor is cut off when bonnet is open).

- Move windscreen wipers to service position <u>⇒ page 57</u>.
- Pry cover caps -arrows- off wiper arms -1- with a screwdriver.
- Slacken nuts -2- a few turns.



- Apply puller T10369/1- at wiper arm -1- as shown in illustra-
- Apply thrust piece -2- at wiper shaft.
- Turn bolt -3- clockwise until wiper arm is clear of wiper shaft.
- Remove nuts and detach wiper arms.

### Installing



### Caution

Risk of damage to body.

The wiper arms for driver's and front passenger's side have different lengths.

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

Adjust windscreen wiper arms ⇒ page 59.

#### 1.5 Adjusting windscreen wiper arms

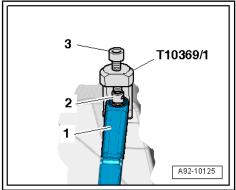
### Operation process



### Note

If the wiper motor needs to be run during repair work, the bonnet must be closed (voltage supply to wiper motor is cut off when bonnet is open).

Remove wiper arms ⇒ page 58.



# 1.8.4 Repairing rain and light sensor - G397-, Valeo

- Remove rain and light sensor G397- ⇒ page 62.
- Carefully remove sensor foil -2- or any sensor foil residues from rain and light sensor - G397- -1-.

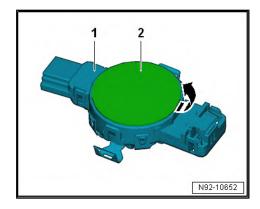


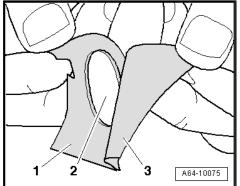
### Caution

The surfaces of the sensor must be completely free of remnants of foil.

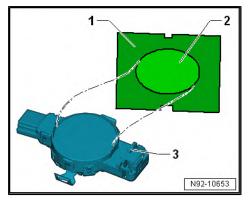
- Clean sensor surfaces with cleaning solution D 009 401 04.
- Pull silicone paper -3- off sensor foil -2-.

The transparent protective foil -1- remains initially on sensor foil as an assembly aid.

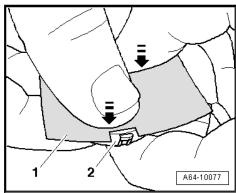




Place sensor foil on rain and light sensor -2- with aid of transparent protective film -1-.



 Press sensor foil through protective film -1- onto rain and light sensor -2- making sure there are no air bubbles.





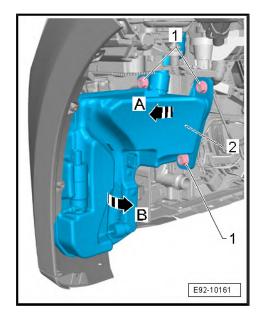
- Unscrew the fixing nuts -1- of the chamber on the bodywork.
- Undo the washing water tank -2- from the threaded pins at the front and bottom -arrow A-.
- Swivel washer fluid reservoir to rear -arrow B- and remove.

### Installing

Installation takes place in reverse order.

### **Specified torques**

⇒ "2.1.1 Assembly overview - windscreen wiper system, vehicles without additional left cooler", page 70



### 2.2.3 Installing and removing the filler pipes of the washer fluid reservoir, vehicles with additional left cooler

### Removing

- Place the vehicle on a lifting platform.
- Switch off ignition and all electrical consumers.

### Vehicles without access and start authorisation system

Remove ignition key, if fitted.

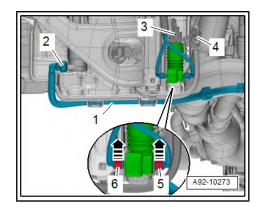
### Vehicles with access and start authorisation system

Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.

### Continued for all vehicles

### If there is washer fluid in the filler hose, drain it off.

- Remove the right front wheel ⇒ Rep. gr. 44; Rims and Tyres.
- Remove the spoiler on the front left wheel well ⇒ Chassis external assembly work; Rep. gr. 66; Wheel well liner.
- Put the drip pan T20173- under the windscreen and front headlight washing unit.
- Unlock lid catches -5 and 6- Arrows- and remove the fluid lines from the windscreen washer pump.
- Press release tab and pull washer fluid hose -2- off headlight washer system pump.

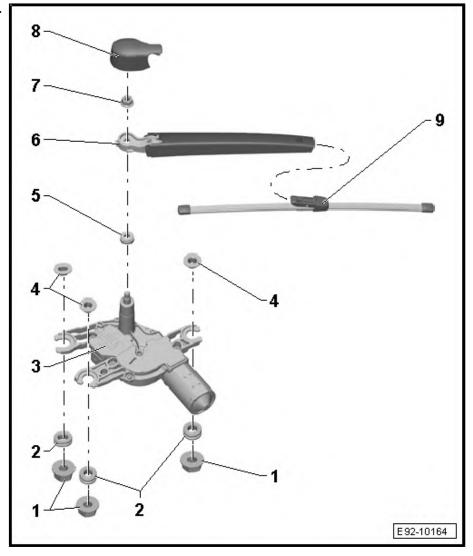


#### 3 Rear window wiper system

- ⇒ "3.1 Assembly overview rear window wiper system",
- ⇒ "3.2 Removing and installing wiper blade", page 88
- ⇒ "3.3 Removing and installing windscreen wiper arm", <u>page 88</u>
- ⇒ "3.4 Adjusting windscreen wiper arm", page 89
- ⇒ "3.5 Installing and removing the V12 back window wiper motor", page 90

#### 3.1 Assembly overview - rear window wiper system

- 1 M6 securing nut with wash-
  - □ 3 units.
  - □ 8 Nm
- 2 Washer
  - □ 3 units.
- 3 Rear windscreen washer motor - V12-
  - □ Removal and installation ⇒ page 90
- 4 Separation element
  - □ 3 units.
- 5 Rubber seal
  - □ Renew if damaged.
  - □ Removal and installation ⇒ page 90
- 6 Windscreen wiper arm
  - ☐ Removal and installation ⇒ page 88
  - Adjusting ⇒ page 89
- 7 Nut
  - ☐ 12 Nm
- 8 Cap for rear window wiper
- 9 Wiper blades
  - □ Replace ⇒ page 88



Volkswagen Technical Site: http://vwts.ru http://vwts.info

(front) ⇒ General body repairs, exterior; Rep. gr. 63; Front bumper; Removing and installing bumper cover (front) .

# 5.1.2 Assembly overview - headlight wiper system, vehicles with additional left cooler

### 1 - Flexible hose

# 2 - Headlamp washer pump - V11-

- □ Removal and installation ⇒ page 98
- 3 Washer fluid level sender G33-
  - □ Removal and installation ⇒ page 80

# 4 - Windscreen and headlamp washer reservoir

□ Removal and installation ⇒ page 77

# 5 - Filler neck for the window and headlight washer system reservoir

□ Removal and installation ⇒ page 76

### 6 - Cap

□ Removal and installation ⇒ page 98

### 7 - Spray jet

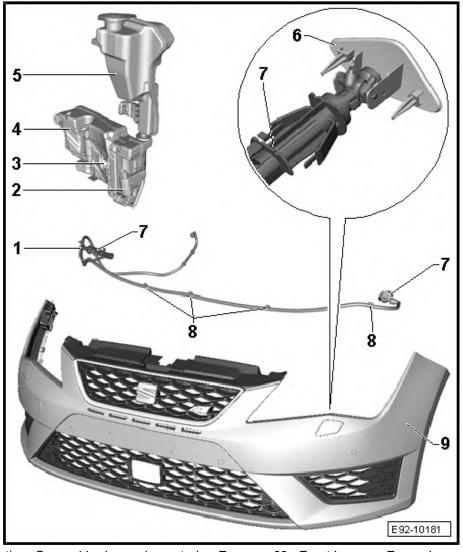
- Removal and installation ⇒ page 98
- Adjusting ⇒ page 100
- □ Breather ⇒ page 100

### 8 - Clips

- for fixing the hose
- □ Repair of hoses⇒ page 101

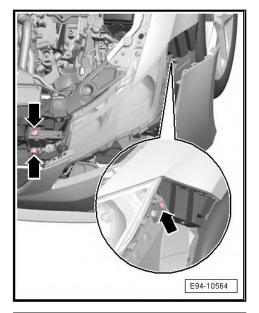
### 9 - Front bumper cover

☐ Install bumper cover (front) ⇒ General body repairs, exterior; Rep. gr. 63; Front bumper; Removing and installing bumper cover (front).





- Remove the bumper trim, first hang this out at the corner and then push forwards.
- Remove the fixing screws -arrows- between the headlight lamps and the body.



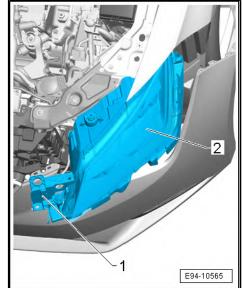
- Disconnect the unit from the headlight track -1- and headlight
- Disconnect the headlight plug connection.
- Remove the unit comprising headlight lamp -1- and headlight -2-.

### Installing

Install in reverse order for the removal. During this step, observe the following:

### **Specified torques**

- ♦ ± "1.1 Assembly overview headlight", page 102
- ⇒ "1.4 Correcting installation position of headlight", page 117
- ⇒ "1.3 Adjust headlights", page 111



### 1.2.2 Headlights: removing and installing, right headlight



Note

The removal and installation procedure is the same on both sides.

### Removing

⇒ page 106

### 1.2.3 Headlights: removing and installing, both headlights

Special tools and workshop equipment required



#### 2 Fog lights

- ⇒ "2.1 Removing and installing fog light", page 131
- ⇒ "2.2 Removing and installing fog light bulb L22 / L23", page 135
- ⇒ "2.3 Adjusting fog lights", page 137

#### 2.1 Removing and installing fog light

- ⇒ "2.1.1 Fog lights, removing and installing, until week 45/16", page 131
- ⇒ "2.1.2 Fog lights, removing and installing, FR, left side, until week 45/16", page 132
- ⇒ "2.1.3 Fog lights, removing and installing, FR, right side, until week 45/16", page 133
- ⇒ "2.1.4 Fog lights, removing and installing, from week 45/16", page 133

### 2.1.1 Fog lights, removing and installing, until week 45/16

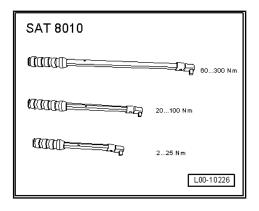


### Note

Removal and installation are described for the left side. Removal and installation on the right side are carried out laterally reversed in the same way.

### Special tools and workshop equipment required

◆ Torque spanner set - SAT 8010-



◆ Lever - U 30800-

### Removing

Switch off ignition and all electrical consumers.

### Vehicles without access and start authorisation system

Remove ignition key, if fitted.

### Vehicles with access and start authorisation system

Store the ignition key outside the vehicle to prevent the ignition from being switched on unintentionally.

## Continued for all vehicles

Remove the front grille of the bumper cover ⇒ page 133 ⇒ General body repairs, exterior; Rep. gr. 63; Front bumper; Assembly overview - bumper cover