

AGM Battery Care and Maintenance: From Vehicle Delivery Until Sale (customer handover) (67/12)

Vehicle Type: **Panamera/Panamera S/Panamera GTS/Panamera Turbo**

Model Year: **As of 2010**

Concerns: **AGM starter battery (referred to below simply as 'battery')**

Situation: **Support for the care and maintenance of the AGM starter battery** (at the dealership):
From the time the vehicle is delivered to the Porsche Centre **until it is handed over to the customer**, the battery must be maintained and **charged** regularly, depending on use.



Information

The battery has a limited service life.

The service life of the battery is affected by:

- the driving conditions for the vehicle and
- thus, by the care and maintenance of the battery (trickle charging, etc.).

⇒ If a charger is not connected in order to trickle-charge the battery when the vehicle is idle for extended periods,

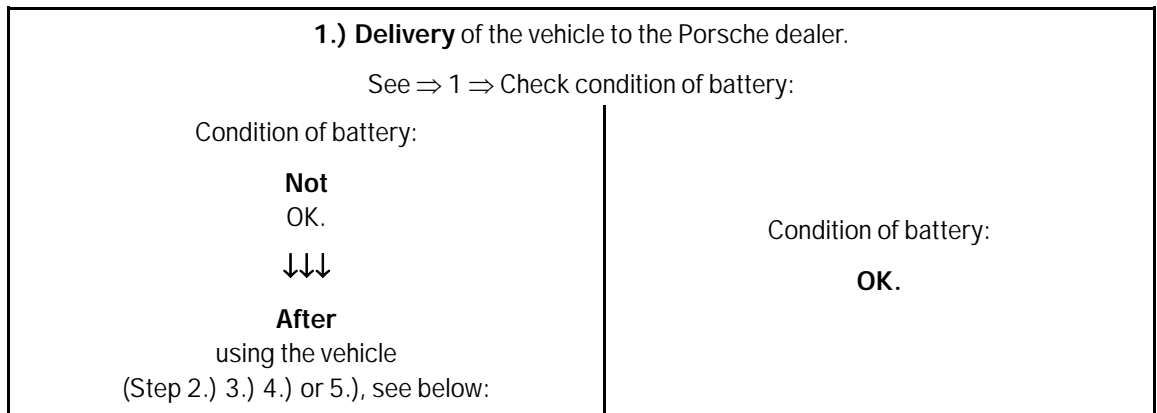
the battery life will be reduced considerably, thereby resulting in **natural wear**.

Please pass this information on to your customers.

Tools: **9818 - PIWIS Tester II**

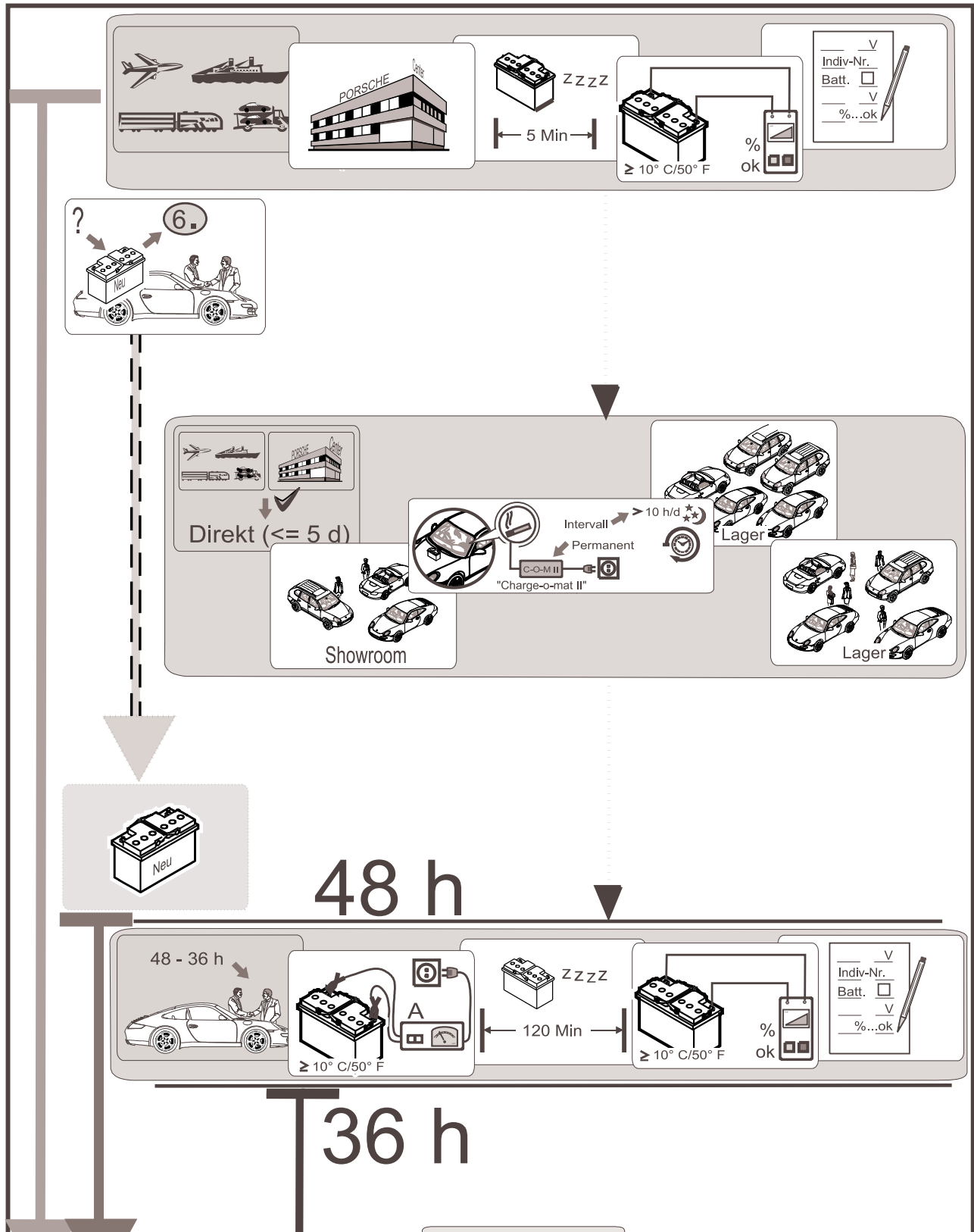
Recommended **measuring devices**, see ⇒ 10; **chargers**, see ⇒ ; **trickle charging**, see ⇒

Overview: **Brief overview** (instructions and overview of contents, ⇒ *Figure 1*):



Step 6.) before customer handover.			
<p>2.) Direct vehicle: Vehicle is handed over to customer within five days: see ⇒ 2</p>	<p>3.) Showroom vehicle: Vehicle remains in the showroom: see ⇒ 3</p>	<p>4.) Stock vehicle: Vehicle is parked at a storage location: see ⇒ 4</p>	<p>5.) Stock Demo vehicle: Vehicle is used as a demonstration vehicle in the warehouse: see ⇒ 5</p>
<p>⇒ at the earliest 48 hours before vehicle handover ⇒ at the latest 36 hours before vehicle handover to the customer (customer handover): ↓↓↓ 6.) Only if result of check is "Not OK": ⇒ Replace battery, see ⇒ 6 7.) Charge and check the battery, see ⇒ 7.</p>			
<p>Recommendations for: ⇒ Measuring equipment/measuring devices, see ⇒ 10 ⇒ Chargers, see ⇒ ⇒ Trickle charging (permanent), see ⇒ .</p>			
<p>Procedure for: ⇒ Measurement and documentation (in Checklist), see ⇒ 20. Additional step:</p>			

⇒ Read out values from PIWIS Tester II, see ⇒ .



- Upon delivery: 1 Vehicle is delivered to the Porsche Centre (⇒ *Figure 2*).
 ⇒ Voltage measurement to determine the quality of the battery:

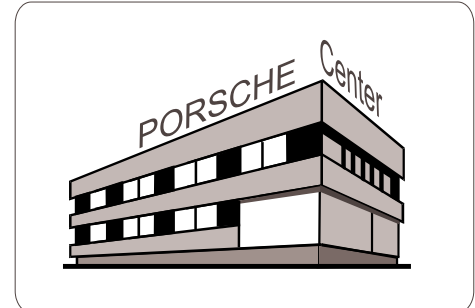


Figure 2

Figure 3

- 1.1 For correct voltage measurement (incl. inactive period of 5 min.), engine/vehicle may only run for max. 3 min. for operational procedures, e.g. unloading from transporter, collecting from storage location ().

Figure 4

- 1.2 Observe battery inactive period (5 min.,) before measuring voltage.

Figure 5

- 1.3 Measure voltage using a suitable voltmeter (). Observe recommended devices, see Step ⇒ 10 and battery temperature ($\geq 10^\circ\text{C}/50^\circ\text{F}$).

- 1.4 Evaluate measured voltage ():

- If $\geq 12.0\text{ V}$:

No further action required.

- If $\leq 11.99\text{ V}$:

Figure 6

Before customer handover, Step ⇒ 6 - : **Documentation and replace battery** - must be carried out.

Figure 7

- 1.5 Document values, see ⇒ 20 ().

- Direct: 2 Vehicle is delivered to the Porsche Centre.

Figure 8

⇒ Further use as "**direct**" vehicle (vehicle is handed over to customer within five days,):

- 2.1 Before sales check or pre-owned vehicle check ⇒ Connect recommended charger, see Step ⇒ , (⇒ *Figure 9*).

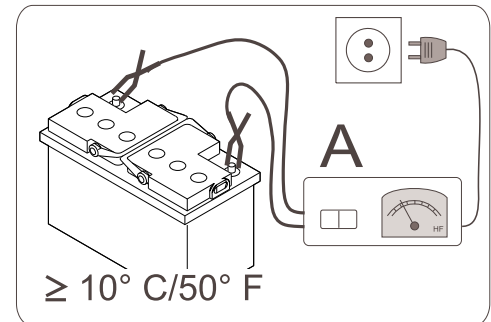


Figure 9

Figure 10

- 2.2 Perform sales check with charger connected ().

Figure 11

- 2.3 Park the vehicle in the warehouse ().

- 2.4 Within 48 - 36 hours **before customer handover**, continue with Step ⇒ 6.

Showroom: 3 Vehicle is delivered to the Porsche Centre.

Figure 12

⇒ Further use as "**showroom**" vehicle ():

- 3.1 Before sales check or pre-owned vehicle check ⇒ Connect recommended charger, see Step ⇒ , (⇒ *Figure 13*).

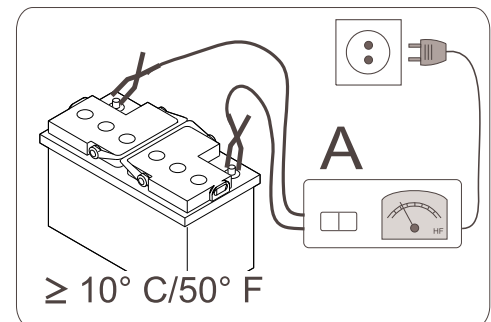


Figure 13

Figure 14

- 3.2 Perform sales check with charger connected ().

Figure 15

- 3.3 Vehicle comes into the showroom ().

- 3.4 Charging the battery in the **showroom** ():

⇒ **Permanent:** Use the **cigarette lighter** and a suitable charger (Charge-o-mat II, see ⇒) to **permanently** charge the battery.

Figure 16

⇒ **Interval:** Charge the battery **every day** (>= 10 hours) using a suitable charger, see Step ⇒.

3.5 Within 48 - 36 hours **before customer handover**, continue with Step ⇒ 6.

Stock: 4 Vehicle is delivered to the Porsche Centre.

Figure 17

⇒ Further use as “**stock**” vehicle ():

4.1 Before sales check or pre-owned vehicle check ⇒ Connect recommended charger, see Step ⇒ , (⇒ Figure 18).

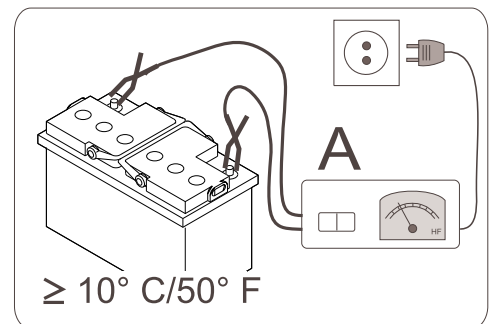


Figure 18

Figure 19

4.2 Perform sales check with charger connected ().

4.3 Before the vehicle comes into the warehouse:

Charge the battery using a recommended charger, see Step ⇒ , ().

Figure 20

Observe the **specifications** with regard to **battery temperature** (>= 10° C) and charging time of **at least 10 hours**.

Figure 21

4.4 Vehicle comes into the warehouse ().

4.5 Charging the battery in the **warehouse** ():

⇒ **Permanent:** Use the **cigarette lighter** and a suitable charger (Charge-o-mat II, see ⇒) to **permanently** charge the battery.

Figure 22

⇒ **Interval:** Charge the battery **once a month** (>= 10 hours) using a suitable charger, see ⇒.

4.6 Within 48 - 36 hours **before customer handover**, continue with Step ⇒ 6.

Stock and demonstration vehicle is delivered to the Porsche Centre.

Figure 23

⇒ Further use as "**stock demo**" vehicle (also used as demo/exhibition vehicle,):

- 5.1 Before sales check or pre-owned vehicle check ⇒ Connect recommended charger, see ⇒ , (⇒ Figure 24).

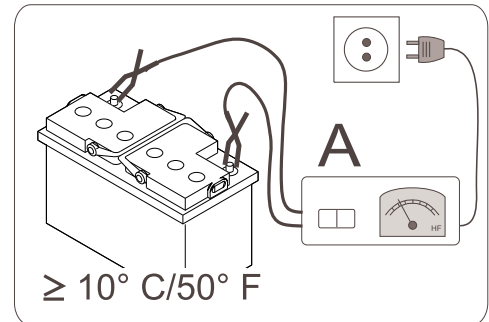


Figure 24

Figure 25

- 5.2 Perform sales check with charger connected ().
- 5.3 Before the vehicle comes into the warehouse:
Charge the battery using a recommended charger, see ⇒ , ().

Figure 26

Observe the **specifications** with regard to **battery temperature** ($\geq 10^\circ \text{C}$) and charging time of **at least 10 hours**.

Figure 27

- 5.4 Vehicle comes into the warehouse and is used as a demo/exhibition vehicle there ().
- 5.5 Charging the battery in the **warehouse** and when used as a demo/exhibition vehicle ():
⇒ **Permanent**: Use the **cigarette lighter** and a suitable charger (Charge-o-mat II, see ⇒) to **permanently** charge the battery.

Figure 28

⇒ **Interval**: Charge the battery **once a week** (≥ 10 hours) using a suitable charger, see Step ⇒ .

Before customer handover:

Complete the next steps:
 ⇒ **at the earliest 48 hours before** vehicle handover,
 ⇒ but **at the latest 36 hours before** vehicle handover to the customer (⇒ *Figure 29*):

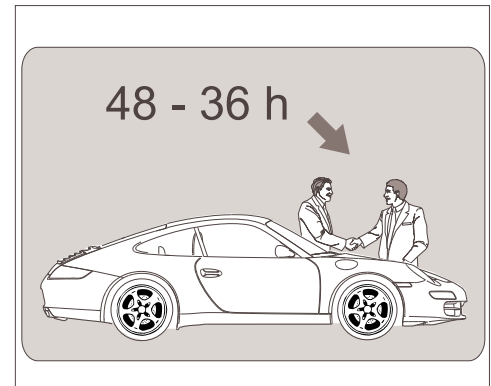


Figure 29

Replacing battery:



Information

The **AGM battery**:

- is installed as standard equipment in the vehicle and **must not be replaced by a conventional “starter battery”** and
- **must not be opened.**

If **the battery needs to be replaced**, the following data must be entered in the **gateway control unit** using PIWIS Tester III (under Maintenance/repairs - Change battery):

- Serial number,
- part number,
- manufacturer and
- battery size.

The **battery sensor**:

- is connected between the battery negative terminal and ground cable,
- is an important **part of the energy management system** and
- is used to **measure battery variables** (battery current, battery voltage and negative terminal temperature) for **vehicle electrical system diagnosis**.

6 Was a **problem** with the battery discovered **following delivery** of the vehicle?

6.1 **NO**

⇒ Continue with Step ⇒ 7, section "**Charging the battery**".

6.2 YES

⇒ Within 48 - 36 hours before customer handover:

6.2.1 Complete the necessary **documentation** (see section 'Measurements', Step ⇒ 20),

6.2.2 Create a **vehicle analysis log (VAL)** and attach it to the job,

6.2.3 **Replace the battery** (), see ⇒ *Workshop Manual '270655 Replacing the battery'* and

Figure 30

6.2.4 ⇒ Continue with Step ⇒ 8, section "**New battery**".

Charging the battery: Within 48 - 36 hours **before customer handover** (⇒ *Figure 31*, but only following vehicle preparation), **charge the battery**:

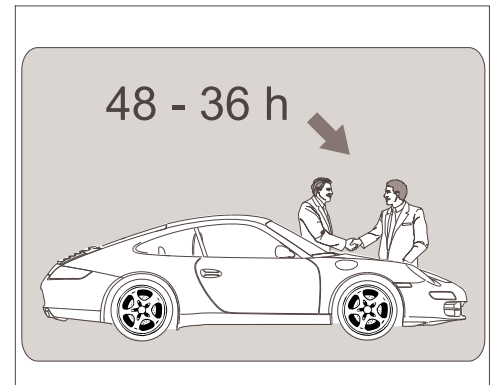


Figure 31

NOTICE

A battery charger for providing an external power supply or for jump-lead starting is connected directly to the battery in the vehicle.

- Risk of damage to the battery sensor.
- Battery sensor sends incorrect battery values to the vehicle electrical system.

⇒ Always connect a battery charger for providing an external power supply or for jump-lead starting to the defined connections in the engine compartment. ⇒ *Workshop Manual '2X00IN Battery trickle charging'*

7.1 Charge the battery using a recommended charger, see ⇒ , ().

Figure 32

Observe the **specifications** with regard to **battery temperature** ($\geq 10^\circ \text{C}$) and charging time of **at least 10 hours**.

Figure 33

- 7.2 Leave the battery "inactive" for 120 minutes ():
The vehicle must not be moved and no loads must be switched on during this time.

Figure 34

- 7.3 Measure voltage using a suitable voltmeter (). Observe recommended devices, see ⇒ 10 and battery temperature ($\geq 10^{\circ}\text{C}/50^{\circ}\text{F}$).

- 7.4 Evaluate measured voltage ():

- If measured voltage: $\geq 12.8\text{ V}$:

Continue with ⇒ 7.5.

- If measured voltage: $\leq 12.79\text{ V}$:

Figure 35

Before customer handover, Step ⇒ 6.2 - section "**Replacing the battery**" - must be carried out.

Figure 36

- 7.5 Check, evaluate and document functional state of the battery (, ,):
⇒ See section "**Measurements**", ⇒ 20.

Figure 37

Figure 38

End of remedial action.

- New battery 8 Procedure for "charging" the **new battery** ():

Figure 39

Within 48 - 36 hours **before customer handover** (but only following vehicle preparation), **charge the battery**:

- 8.1 Charge the battery using a recommended charger, see ⇒ , ().

Figure 40

Observe the **specifications** with regard to **battery temperature** ($\geq 10^{\circ}\text{C}$) and charging time of **at least 10 hours**.

Figure 41

- 8.2 Leave the battery "inactive" for 120 minutes ():
The vehicle must not be moved and no loads must be switched on during this time.

Figure 42

- 8.3 Check, evaluate and document functional state of the battery (, ,):
⇒ See section "**Measurements**", ⇒ 20.

Figure 43

Figure 44

End of remedial action.

Recommended devices Recommended **measuring devices** (battery testers, see also "Workshop Equipment Manual" - PIWIS information system):

- **WE1019 - Digital Multimeter Bosch MMD 302**
- **WE1253 - Battery Tester BAT121** or
- **WE1327 - Battery Tester Midtronics inSPECT45.**

11 Recommended **chargers** (see also "Workshop Equipment Manual" - PIWIS information system):

- **WE1017 - Battery Charging Computer DPBL 425B-14**
- **WE1183 - Battery Charger HESO Ladematic Combi III**
- **WE1259 - Bosch Battery Charger BML 2410/2415**
- **WE1260 - Bosch Battery Rapid-Start Charger BSL 2470**
- **WE1315 - Battery Charger ACCTIVA Professional 30A**
- **WE1316 - Battery Charger ACCTIVA Professional Flash 70A**
- **WE1318 - Battery Charger MultiCharger 750**
- **WE1319 - Battery Charging Computer DBL800-14**
- **WE1353 - Battery Charger HFL 65**
- **WE1391 - Deutronic Battery Charging Computer DBL1600-14**
- **WE1392 - Deutronic Battery Charging Computer DBL1200-14**
- **WE1393 - Deutronic Battery Charging Computer DBL800-14**
- **WE1412 - HFL 40 IUoU High-Frequency Battery Charger 6 + 12 + 24 volts**

12 **Permanent trickle charging** (see Porsche Tequipment - Accessories and Maintenance):

- 955.044.900.56 ⇒ Charge-o-mat II
- 955.044.900.55 ⇒ Charge-o-mat II (GB version)
- 955.044.900.54 ⇒ Charge-o-mat II (USA version, 110 V)
- **Adapter** (required for vehicles without cigarette lighter): 000.043.202.55 ⇒ Adapter (for Charge-o-matt II and vehicles without cigarette lighter)

Measurements: For taking **measurements** on the battery and for **documentation** purposes, use the existing Checklist (PIWIS information system, "Standard forms" menu: **AGM** Battery Checklist and measurement sheet...).



Information

When working on the vehicle:

- using the PIWIS Tester or
 - for work that takes longer than 15 minutes,
- a charger must be connected in order to trickle-charge the battery.

20 The **Checklist and relevant procedure are described** below
(Please **disregard** steps relating to a customer complaint):

20.1 Step 1. (Checklist) - **General data** relating to the vehicle and battery (⇒ *Figure 45*):



Figure 45

⇒ The specifications on the battery (in the vehicle) may differ from the specifications shown in Figure 1

⇒ **Illustration (⇒ Figure 45) serves only as an example.**

- Battery type: rating in Ah (⇒ *Figure 45 -item A-*),
- Date of manufacture of the battery (stamped on negative terminal): ⇒ *Figure 45 -item B-*,
- Battery I-no. (for 2D code: ⇒ *Figure 45 -item C-*),
- Item number (⇒ *Figure 45 -item D-*) and
- Battery manufacturer (⇒ *Figure 45 -item E-*),
- Safety instructions and warnings for handling the battery (⇒ *Figure 45 -item F-*).

20.2 Step 2. (Checklist) - **Visual inspection** of the battery:

Check for damage to the housing and
corroded and/or loose terminals.

20.3 Step 3. (Checklist) - Check the battery using a **battery tester**, see section 'Measuring devices' ⇒ 10:

⇒ Battery **charge state before and after charging**.

- 20.4 Step 4. (Checklist) - **Charge** the **battery** using a suitable charger (see section ⇒ , but with a current rating of at least 40 Ah ⇒ Observe minimum charging time (≥ 10 hours) and read operating instructions for the charger.
- 20.5 Step 5. (Checklist) - Measure the battery **open-circuit voltage** using a voltmeter or voltage tester.
- Steps 6. to 8. (in Checklist) are not relevant.**
- 21 As an **additional step**, Step 9. (Checklist) - **Read out values from PIWIS Tester II** - can be carried out:
- 21.1 Connect the PIWIS Tester to the vehicle.
- 21.2 Switch on ignition.
- 21.3 Select the relevant vehicle in the "Diagnostics" menu.
- 21.4 Select the '**Gateway**' control unit in the "Control unit overview" menu and switch to the "**Actual values/input signals**" menu.
- 21.5 Answer •YES" in response to the VAL (Vehicle Analysis Log) prompt.
- 21.6 Read the campaign information instructions and confirm by pressing •F12" .
- 21.7 In the 'Actual values/input signals' overview, select "**Battery**" and "**Battery charge state history**" and press •F12" to confirm.
- 21.8 In the 'Actual values' overview, **select the following actual values:**

Battery ageing	charge-related ... %
	performance-related ... %
Battery internal resistance	Actual ... mOhm
Battery charge state	... %
Open-circuit voltage	... V
Battery temperature	(Acid) ...
	(Terminal) ...
Closed-circuit current	Below limit value (Duration) ... min.
	Limit value exceeded (Duration) ... min.
Battery charge state history	Battery charge state 0 ... 25 %
	Battery charge state 26 ... 50 %
	Battery charge state 51 ... 75 %
	Battery charge state 76 ... 100 %

- 21.9 Press •F12" to confirm your selection.

21.10 **Read off actual values and enter them in the Checklist.**

21.11 Press •F11“ to exit the display.

21.12 Press •F11“ to go back.

22 **If, after completing the documentation, the battery (Step ⇒ 6.2) must be replaced, go back to Step ⇒ 6.2.2.**

End of remedial action.

References: ⇒ *Technical Information '2706IN Important information for extending (AGM) battery life and battery performance (60/12)'*

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