Important Information for Extending (AGM) Battery Life and Battery Performance (60/12)

Vehicle type and situation

Vehicle Type: **Cayenne (92A) / Cayenne S (92A) / Cayenne GTS (92A) / Cayenne Turbo (92A) / Cayenne Hybrid (92A) / Cayenne Diesel (92A)**

Model Year: **As of 2011**

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

Information: **Customer complaints concerning battery-related topics**

Recurring customer complaints concerning topics relating to battery capacity and quality.

Information

This "Technical Information" is intended as a **summary guide to assist you** with the following battery-related topics:

- Basic information on the battery,
- **documentation required**,
- recommended **chargers and tools**,
- possible **checks**,
- **procedure** if the battery **has to be changed** and
- available **reference material**.

The critical points:

- Quality assurance for **battery life and battery performance** and
- **Trickle charging** in the **workshop and by customers themselves**

should also be generally improved as a result.

Basic information on the battery

Character-istics: The **AGM "starter battery"**:

- is absolutely essential for the **"Auto Start Stop" function and recuperation**,
- is totally **maintenance-free** ⇒ **no need** to add water or check the electrolyte,
- **is leak-proof and dry**,
- **is not sensitive to vibrations and shaking** and
- has a **high cold-start performance**.

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.

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.

Special Features:

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**.

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'***

The battery is based on **AGM** (**A**bsorbed **G**lass **M**at) technology:

- Special micro-glass-fiber mats lie between the lead plates of the battery and contain all the battery acid.
- The sealed system is equipped with a pressure relief valve for the safe discharge of any gases.

Chemical processes:

The gas produced during charging is transferred through the pores in the glass-fiber mat to the negative electrode, where it is converted back to water.

⇒ Water loss is impossible during normal operation.

Documentation is essential in the event of a complaint

Documentation:

Information

If a customer complaint is received concerning topics relating to battery capacity and quality, the following **written documentation** must be created **before carrying out any other work**:

- **Create a VAL** (Vehicle Analysis Log) and attach it to the job ⇒ a charger is required in order to trickle-charge the battery and
- **Complete the Battery Checklist** (see “Standard forms” in the PIWIS information system) and also attach this to the job.

In order to better evaluate the possible causes, the Checklist should contain the following points:

- Precise description of the **fault types** and
- the **vehicle history**,
- the **work that was carried out** and
- details of any **charger that was used**.

⇒ These battery maintenance documents will be **reviewed as required** as part of the PSA (Porsche Service Analysis).

⇒ Furthermore, we reserve the right to **reject warranty claims** if the instructions and information on **care, maintenance and documentation are not observed**.

Recommended chargers and tools

Recommended and suitable battery chargers and battery testers

⇒ An **up-to-date list** of recommended and suitable battery testers and chargers can be found in the PIWIS information system, under **Workshop Equipment and Special Tools Manual** (WEST), chapter ⇒ *Workshop Equipment 'WE1393 1 - Battery testers/chargers'*

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Chargers:

- **WE1260 - Bosch battery rapid-start charger BSL 2470**
- **WE1391 - Deutronic battery charging computer DBL1600-14**
- **WE1393 - Deutronic battery charging computer DBL800-14**
- **NEW: VAS 5900A - Battery charger, 35 A**
- **NEW: VAS 5903 - Battery charger, 70 A**
- **NEW: VAS 5908 - Battery charger, 90 A**
- **NEW: VAS 5906 - Battery charger**

Specifically for customers (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)

Battery test:

⇒ **For measuring**

- Battery charge state
- Closed-circuit current, open-circuit voltage and battery voltage:

- **WE1253 - Battery tester BAT121**
- **WE1327 - Battery tester Midtronics inSPECT45**

Information

Some of the **functions of a battery tester** can **also be carried out** using the

- **9900 - PIWIS Tester III** or
- **charger** (see operating instructions for the relevant charger)

if necessary.

Part Nos.: 999. ⇒ Battery (capacity: **70 Ah**)
999. ⇒ Battery (capacity: **80 Ah**)
999. ⇒ Battery (capacity: **95 Ah**)

References: ⇒ *Workshop Manual '270689 Battery trickle charge '*

Checking the battery

CAUTION

Ignition of the AGM battery during charging.

- **Danger of injury and risk of damage to materials coming into contact with battery acid when charging the AGM battery.**

⇒ **Never enter rooms in which batteries are being charged while holding a naked flame or smoking. Gases produced by the charging process in the batteries are highly flammable.**

Information

Work through the **Battery Checklist** while carrying out the **following steps** and document the results carefully in the Checklist.

The battery temperature must be at least 10 °C (50 °F) when carrying out the checks.

Checks: **The following checks are carried out on the battery for diagnostic and error analysis purposes:**

1 **General data** relating to the vehicle, battery (see below) and vehicle mileage per year.

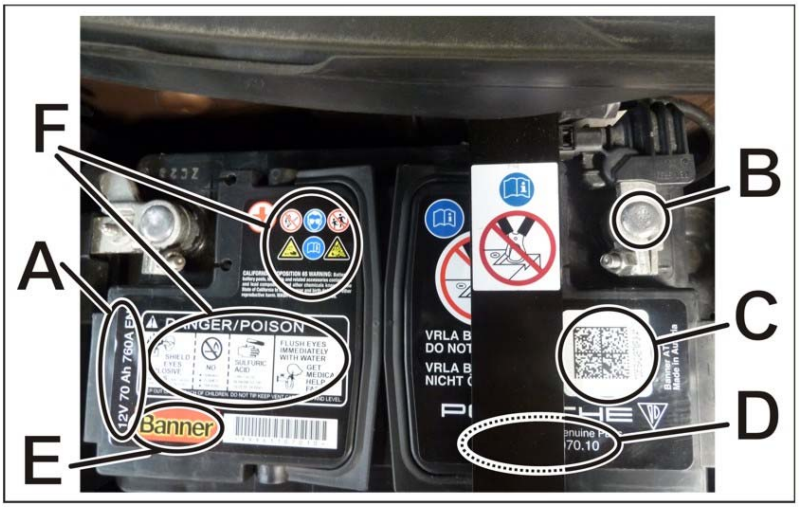

Figure 1

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

⇒ **Illustration (⇒*Figure 1*) serves only as an example**.

- Battery type: rating in Ah (⇒*Figure 1* **-item A-**),
- Date of manufacture of the battery (stamped on negative terminal): ⇒*Figure 1* **-item B-**),
- Battery I-no. (for 2D code: ⇒*Figure 1* **-item C-**),
- Item number (⇒*Figure 1* **-item D-**) and
- Battery manufacturer (⇒*Figure 1* **-item E-**),

- Safety instructions and warnings for handling the battery (⇒*Figure 1* **-item F-**).

2 **Visual inspection** of the battery:

2.1 for damage to the housing,

2.2 corroded and/or loose terminals and

3 Check the battery using a **battery tester** (see ⇒ *Technical Information '270600 Recommended chargers and tools'*):

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

4 **Charge the battery** using a suitable **charger** (see ⇒ *Technical Information '270600 Recommended chargers and tools'*, but with a current rating of at least 40 Ah ⇒ Observe minimum charging time and operating instructions for the charger).

If the **previous diagnostics**

- **indicate clearly that the battery is faulty** and

- there are **no discrepancies** between the problem found and the customer statement,

⇒ **Replace the battery** (see ⇒*Workshop Manual '27061900 Removing and installing battery'*).

End of action required.

Information

In the event of technical **problems**, e.g.

- measurement and test results and/or diagnosis indicate that the battery is defective despite having handled the battery carefully and
- having trickle-charged the battery,

⇒ the following **fault finding / diagnostic** steps
must be performed in the entire vehicle electrical system **in addition to replacing the battery**:

5 Measure the battery voltage using a voltmeter or voltage tester ⇒*Workshop Manual '270601 Checking battery with battery tester'*:

- Battery open-circuit voltage

- Battery voltage with engine running at idle speed and

- Measurement at an engine speed of approx. 3,000 - 4,000 rpm **with active loads** (light, heating, air conditioning).

⇒ The PIWIS Tester can also be used for these measurements.

6 **Measure the closed-circuit current**, see ⇒*Workshop Manual '9700IN00 Measurement of closed-circuit current'*
(if the measured value is over 30 mA ⇒ determine the cause).

7 Generator test - Measure the **generator voltage** and **charging current**:

- Generator voltage with engine running at idle speed and

- Generator voltage at an engine speed of approx. 3,000 - 4,000 rpm **with active loads** (light, heating, air conditioning).

- Charging current on the generator with engine running at idle speed (measurement using commercially available clamp-on ammeter) and

- Charging current on the generator at an engine speed of approx. 3,000 - 4,000 rpm (measurement using commercially available clamp-on ammeter).

Other test methods:

7.1 Using PIWIS Tester III ⇒ Go to **GFF** (“Guided Fault Finding”) ⇒ **Generator test**: Document **'2722'** (power supply - control system - supply voltage - charging system) or

7.2 Using PIWIS Tester III ⇒ Select **DME control unit** in the **'Control unit overview'**.
The **generator voltage** is displayed in the **'Nominal values'** overview, or

7.3 Alternatively, the voltage can even be measured directly at terminal 30 on the generator in some cases, depending on the vehicle model.

8 **Voltage drop measurement** (max. 0.6 V per line):

- Measured on positive side ⇒ between battery positive terminal and generator positive and

- Measured on negative side ⇒ between battery negative terminal and generator housing.

9 The following **values** (see table) can be **read out using PIWIS Tester III** :

9.1 PIWIS Tester must be connected to the vehicle.

9.2 Switch on ignition.

9.3 Select the relevant vehicle in the “Diagnostics” menu.

9.4 Select the **'Gateway'** control unit in the “Control unit overview” menu and switch to the **“Actual values / input signals”** menu.

9.5 Answer • YES “ in response to the VAL (Vehicle Analysis Log) prompt.

9.6 Read the campaign information instructions and confirm by pressing • F12 “ .

9.7 In the 'Actual values / input signals' overview, select **“Battery” and “Battery charge state history”** and press • F12 “ to confirm.

9.8 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 %

9.9 Press • F12 “ to confirm your selection.

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

9.11 Press • F11 “ to exit the display.

9.12 Press • F11 “ to go back.

End of action required.

Additional references, summary

References: **Further technical information about the installed battery type can be found in the relevant Owner's Manual.**

Forms:

- Battery document and
- Battery Checklist

⇒ can be found under **“Standard forms”** in the PIWIS information system.

Battery trickle charging:

⇒ *Technical Information '0X0000 Recommendations and measures for vehicle storage (26/09)'*

Testing and checking the battery:

⇒ *Workshop Manual '2706IN General information on the AGM vehicle battery'*
⇒ *Workshop Manual '9X00IN01 Measurement of closed-circuit current'*

Disconnecting and reconnecting the battery / removal and installation and replacing the battery:

⇒ *Workshop Manual '9X00IN Work instructions after disconnecting the battery'*
⇒ *Workshop Manual '27061900 Removing and installing battery'*

Working time

Working time:	27060100: Checking the battery	Labor time: **20 TU**
	27068950: Charging the battery	Labor time: **20 TU**
	27061900: Removing and installing battery	Labor time: **15 TU**

27065500: Replacing the battery

Labor time: **50 TU**

Dealership	Service Manager	_____	Shop Foreman	_____	Service Technician	_____	_____	_____	_____
Distribution									
Routing	Asst. Manager	_____	Warranty Admin.	_____	Service Technician	_____	_____	_____	_____