

Information - Handling 12-Volt Lithium-Ion Batteries (Vehicle Electrical System Battery) (31/20)

Revision: This bulletin replaces bulletin Group 2 31/20, dated June 29, 2020.

Model Year: **As of 2018**

Vehicle Type: **Cayenne (9YA/9YB)**
911 Carrera (992)
Taycan (Y1A)

Equipment: Lightweight battery 60 Ah (I-no. J2A)

Subject: **12-volt lithium-ion battery (vehicle electrical system battery)**

Information: **On vehicles in which a lithium-ion vehicle electrical system battery is installed, the battery is sometimes replaced even though it is not defective.**

This Technical Information is intended to help you to diagnose the battery in order to identify whether a battery is actually defective or whether only a temporary component protection function, which can be reset using appropriate measures, i.e. is reversible, was activated.

- Contents:
- Technical background ⇒ *Technical Information 'Technical background'*.
 - Battery diagnosis ⇒ *Technical Information 'Battery diagnosis'*.
 - Charging vehicle electrical system battery ⇒ *Technical Information 'Charging the battery'*.
 - Questions and Answers ⇒ *Technical Information 'Questions & Answers'*.

Technical background

Information: The battery control unit, the battery sensor and a disconnect element (contactor) are integrated in the lithium-ion battery. This control unit monitors charging and discharging of the battery and opens the disconnect element in the event of overcharging, exhaustive discharge or overheating, for example, by interrupting the power supply to the battery. As a result, there is no voltage present at the battery terminals. As a result, no voltage can be measured at the battery terminals (the value is between 0 V - 2 V).

When the disconnect element is opened, the vehicle is de-energized. This may be perceived as a battery fault, for example.

Opening conditions for the disconnect element:

- The disconnect element opens if the state of charge (SoC) drops below 15% or the battery voltage drops below 10 V.
- The disconnect element opens when the battery voltage exceeds 16 V.

- The disconnect element opens permanently if the voltage drops below 6.5 V or exceeds 18 V. This state is irreversible. The battery must be replaced.
- The disconnect element opens in the event of overheating or a short circuit. A classification document for the 12 V lithium-ion battery is stored in the PCSS, see ⇒ *Workshop Manual '2X00IN Classification of lithium-ion battery'*.

Battery diagnosis



Information

If you are in any doubt about the condition of the lithium-ion battery, you should classify the lithium-ion battery before carrying out battery diagnosis. For procedure see ⇒ *Workshop Manual '2X00IN Classification of lithium-ion battery'*



Information

There is no approved battery tester for the lithium-ion battery. The existing battery testers do not work for lithium-ion batteries because the algorithms for the acid/gel/AGM batteries are different.

By evaluating the actual values/measured values in the PIWIS Tester, it is possible that the status of the battery can be checked by evaluating the values that are actually present. The battery must already be installed in the vehicle at this time.

Current values can be read out under **Actual values** ⇒ **12 V system** in the **gateway control unit** using the PIWIS Tester.

To find out whether the battery is discharged or overcharged, connect the vehicle to a power supply and check the following actual values in the gateway control unit:

- **Battery sensor temperature**
- **Usable battery charge**

Charging vehicle electrical system battery

- Use a suitable battery charger
- Set the correct charge voltage and charging current
- Procedure for a discharged battery
- Procedure for an overcharged battery
- Procedure for a totally discharged battery

NOTICE

Important!

- **Only use Deutronic charger VAS 5908.**
- ⇒ **Battery chargers that are not suitable for lithium-ion batteries cannot be used.**

To prevent damage to the battery and vehicle electrical system, a charger that is suitable for lithium-ion batteries must be used - **Battery charger 90A**. The charger must also be set correctly. To do this, change the charging values as shown below.



Information

If the battery charging current is lower than the power consumption of the vehicle, the contactor will open if the system voltage drops.

When the contactor opens, non-certified chargers can cause voltage peaks above 28 V at present. This can damage the battery.



Information

In most cases, the charging values must be changed.

Detailed information can be found under Special tools in the PPN or in the Workshop Manual/operating instructions for the charger.

Set charging values as follows:

Charge voltage - Cayenne :	14.4 V
Charge voltage - Taycan/992 :	14.4 V
Maximum charging current:	80 A
Trickle charge voltage:	13.5 V DC
Cut-in voltage:	5.0 V DC
Trickle current:	5.0 A
Capacitive charging current:	5.0 A

Procedure for a discharged battery



Information

If the battery is **discharged**, charge the battery as described and set the charging values specified above.

Procedure for an overcharged battery**Information**

If the battery is overcharged, do not attempt to charge it again.

Leave the battery for at least 24 hours. Then, try to charge the battery using the voltage specified in the table mentioned above.

- When the contactor closes, the battery can be used.
- If the contactor does not close after a rest period of at least 24 hours and the 12-volt battery cannot be charged, it must be replaced.

Procedure if the battery is discharged (disconnect element open due to undervoltage protection)

To charge a discharged battery in undervoltage protection mode (disconnect element open), set the battery charger to power supply mode and connect it to the jump-start terminals (if the battery is installed in the vehicle) or to the battery terminals (if the battery is not installed in the vehicle).

The disconnecting element will close after 5 minutes at the latest and you will hear a clicking noise. Leave the charger connected until the battery is fully charged.

**Information**

Do not disconnect or switch off the battery charger, as to do so risks permanently discharging the battery.

, If the disconnect element does not close after approx. 5 minutes when connecting the power supply, i.e. if no charging current can be observed on the charger, the battery is irreversibly damaged and must be replaced.

Questions & Answers**Is it possible to jump-start a vehicle with a lithium-ion battery?**

See relevant section in the Driver's Manual.

What happens if a standard AGM battery is installed in the vehicle instead of the specified lithium-ion battery?

The installation of a standard AGM battery in Cayenne (9YA/9YB)/Taycan (Y1A)/911 Carrera (992) vehicles equipped with a lithium-ion battery is not permitted.

If a standard AGM battery is installed in the vehicle, a warning message will be displayed because there is no LIN communication. The power supply network switches to emergency operation.

Can customers charge the battery at home?

The 12-volt lithium-ion battery can be charged using the Porsche Charge-o-mat Pro.

For further information, refer to the operating instructions for the charger or contact Porsche Tequipment.



Information

Not relevant for the Taycan

Taycan vehicles cannot be charged using the Charge-o-mat Pro charger.

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