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ABOUT THIS MANUAL

This operating manual applies for the VSSP 2.0 diagnostic device for vehicle batteries. The device is referred to as **VSSP 2.0** in this manual.

The operating manual is intended for workshop personnel who work with the VSSP 2.0. It contains important information for safely and properly commissioning, operating, caring for the VSSP 2.0, and correcting simple faults yourself.

▶ Read this operating manual all the way through, particularly the chapter **Safety** on page 5 before working with the VSSP 2.0.

Uniform safety instructions and symbols are used so that with the aid of this operating manual you can work quickly and safely with the VSSP 2.0. For better understanding there are explained in the following section.

Presentation of safety instructions In this operating manual safety instructions precede a procedural sequence for which danger exists for personnel or material assets. The measures described to avert danger must be complied with. Safety instructions are structured as follows:

SIGNAL WORD!

Type and source of the danger

Consequences if the safety instruction is not complied with

▶ Measure to avert the danger

The signal word indicates the severity of the danger. The following table shows the meaning of the signal word.

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Warning, signal word	Meaning
⚠ **DANGER!**	indicates a dangerous situation in which death or serious injuries will occur if it is not avoided
⚠ **WARNING!**	indicates a dangerous situation in which death or serious injuries can occur if it is not avoided
⚠ **CAUTION!**	indicates a dangerous situation in which minor to moderate injuries can occur if it is not avoided
NOTICE!	indicates a situation in which material damage is possible; the product or its environment can be damaged

Identification Information that is not safety-relevant, but that increases the understandability of the operating manual is identified as follows:

Identification	Meaning
NOTE	This information enables optimal use or operation of the product.
▶	The procedural instruction indicates the procedure that must be executed.

SAFETY

The VSSP 2.0 has been manufactured in accordance with generally accepted engineering practice. Nevertheless danger of personal injury and material damage exists if you do not comply with the instructions in this chapter and in this operating manual.

▶ Read this operating manual thoroughly all the way through, before working with the VSSP 2.0.

▶ Keep the operating manual on hand so that it is accessible for all users at anytime.

▶ Always ensure that the operating manual is provided with the VSSP 2.0, when the device is provided to third parties.

INTENDED USE

The VSSP 2.0 is a diagnostics device for vehicle batteries that must only be used for the following purposes:

■ Checking of state of charge and state of health of start-stop batteries and conventional batteries installed in vehicles

■ Checking of state of charge and state of health of brand new start-stop batteries and conventional batteries that are not installed in vehicles

■ Checking of state of charge and state of health of used start-stop batteries and conventional batteries that are not installed in vehicles

■ Testing of relevant control devices for start-stop systems

■ Testing of the starter and the alternator of vehicles with start-stop systems

■ Reading out and deleting error codes in the relevant control devices of start-stop systems

■ Menu-based user guidance through the removal and installation process of start-stop batteries

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■ Display and transfer of the check and test results in the form a report

Intended use also includes that you have completely read and understood this operating manual, and particularly the chapter **Safety** on page 5.

▶ Only use the VSSP 2.0 in commercial application.

▶ Always comply with the performance limits cited in chapter **Technical data** on page 52.

▶ Only use the VSSP 2.0 indoors.

Any use other than the intended use described above is non-intended use and consequently is prohibited.

The manufacturer assumes no liability for damages due to non-intended use. The risks and liability associated with non-intended use are the sole responsibility of the user.

PERSONNEL QUALIFICATION

The activities described in this operating manual require fundamental knowledge of electrical systems, particularly of vehicle electrical systems, as well as knowledge the associated specialized terminology. Consequently to ensure safe use these activities may only be executed by a qualified specialist or an instructed person working under the supervision of a specialist.

A specialist is a person who, due to his specialized training, knowledge, and experience, as well as knowledge of the applicable regulations and guidelines, can evaluate the tasks assigned to him, recognize possible dangers, and implement suitable safety measures. A specialist must comply with the applicable industry-specific rules.

GENERAL SAFETY INSTRUCTIONS

▶ Comply with the valid regulations for accident prevention and environmental protection.

▶ Comply with the safety guidelines and regulations of the country in which the VSSP 2.0 is used.

▶ Only operate the VSSP 2.0 if it is in faultless technical condition.

▶ Persons who work with the VSSP 2.0 must not be under the influence of alcohol, other drugs or medication that influences the capability to react.

▶ Use only accessories and spare parts authorized by the manufacturer.

▶ Comply with the technical data and ambient conditions specified in the operating manual.

▶ Dispose of the VSSP 2.0, particularly old rechargeable batteries in accordance with the statutory regulations of the of the country in which the VSSP 2.0 is used.

PRODUCT-DEPENDENT AND TECHNOLOGY-DEPENDENT SAFETY INSTRUCTIONS

Use environment ▶ Only use the VSSP 2.0 at an ambient temperature between -5 °C and 45 °C.

▶ Do not expose the VSSP 2.0 to direct, intensive sunlight for a longer period of time.

▶ Do not expose the VSSP 2.0 to higher levels of moisture. Do not work with the device outdoors in rain or heavy fog. Do not place the device on a wet or moist surface.

▶ Prevent direct contact of the VSSP 2.0 with fluids, particularly with water acid, solvents or cleaning agents.

▶ Keep the VSSP 2.0 and its cables away from heat sources and hot surfaces.

Handling ▶ Never make unauthorized changes to the VSSP 2.0.

▶ Never continue to use a damaged VSSP 2.0. Send the damaged device back to the manufacturer.

▶ Do not install any software on the VSSP 2.0 other than that delivered with the device.

▶ Only use the provided charger to charge the rechargeable batteries in the VSSP 2.0 outside of the vehicle. Ensure that the charge voltage is always between 8 V and 16 V. A higher or lower charge voltage can damage the VSSP 2.0.

▶ Do not let the VSSP 2.0 to fall.

▶ Do not install any connecting lines other than those delivered with VSSP 2.0.

▶ Do not lay out connecting lines over sharp edges, e. g. shelves, tables, or work benches.

▶ Never disconnect the charger from the power outlet by pulling on the power cord. Always unplug the power supply unit directly from the power outlet.

▶ Never place the VSSP 2.0 on a vehicle part in which an airbag is located, e. g. on the dashboard. The VSSP 2.0 can inadvertently trigger release of the airbag.

▶ Only operate the display of the VSSP 2.0 with the stylus provided for this purpose. Do not use any other objects or tools. Do not operate the device with your fingers.

▶ If the glass of the display is damaged, glass splinters can cause injuries and liquid crystal can escape. Strictly avoid inhaling, contact, and ingestion of this fluid through the mouth.

Care ▶ Only clean the VSSP 2.0 with a soft cloth, if necessary use a special cleaning agent for computer screens. Never clean the device with a solvent.

▶ Only store the VSSP 2.0 in the supplied case.

▶ Only replace rechargeable batteries that have reached the end of their service life with rechargeable batteries of the same type as specified in chapter **Technical data** on page 52.

▶ When connecting the VSSP 2.0 via the alligator clamps or the diagnostics plug, the rechargeable batteries of the device will be charged via the power measurement cable or the diagnostics cable of the vehicle battery. Consequently never use non-rechargeable batteries in place of the rechargeable batteries specified in chapter **Technical data** on page 52. Otherwise the danger exists that acid will escape from the batteries and damage the device.

PERSONAL PROTECTIVE EQUIPMENT

▶ Wear the suitable protective clothing in accordance with the applicable occupational health and safety regulations.

OBLIGATIONS OF THE OPERATOR

As the operator of the VSSP 2.0 you are responsible for,

■ seeing that intended use is ensured,

■ ensuring that operating personnel are instructed on a regular basis,

■ ensuring that the implementation conditions meet the requirements imposed on safe use of the product,

■ ensuring that unauthorized repairs are not carried out if a defect occurs.

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SCOPE OF DELIVERY

■ Case

■ VSSP 2.0 diagnostic device with stylus

■ Charger with cable

■ Measurement cable with alligator clamps

■ Measurement cable with current clamp

■ OBD cable with OBD interface

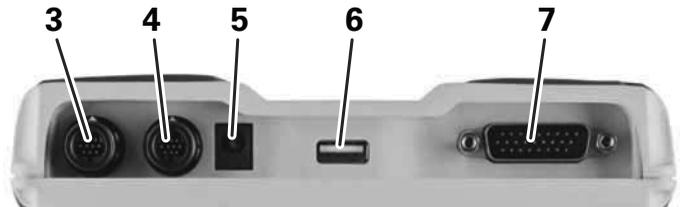■ 1 set (4 pc.) rechargeable batteries, type AAA, 800 mAh

■ Operating manual

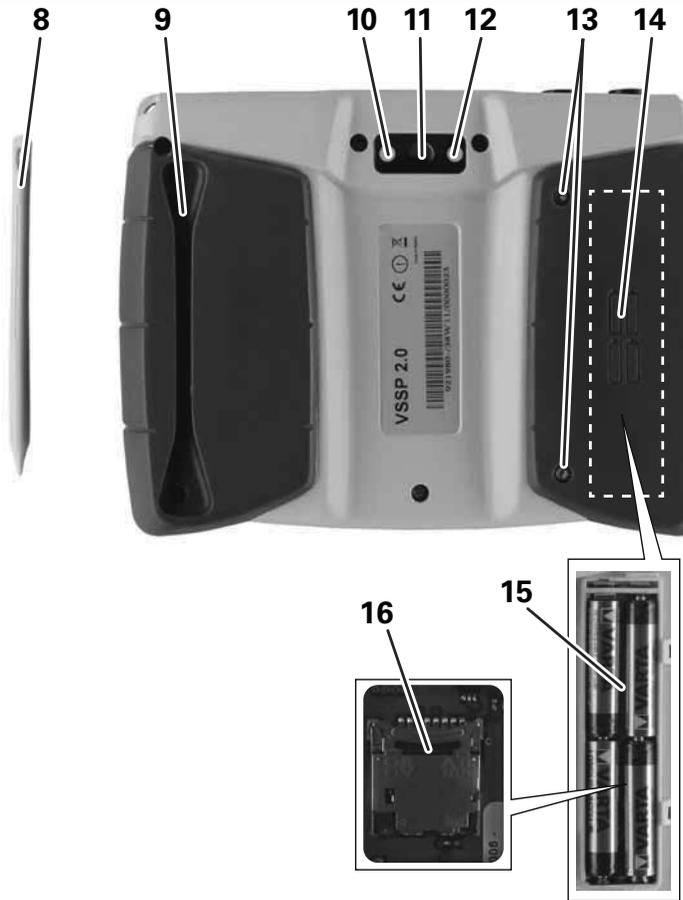*NOTE* Check the shipment immediately upon receipt for completeness and correctness.

DEVICE DESCRIPTION

1 Display
2 ON/OFF button

3 Connection for the measurement cable with alligator clamps

4 Connection for the measurement cable with current clamp

5 Connection for charger

6 Service interface (USB)

7 Connection for OBD cable

8 Stylus for operating the display

9 Receptacle for the stylus

10 Light

11 2D data matrix scanner

12 Light

13 Torx screws

14 Cover of the rechargeable battery compartment

15 Rechargeable batteries, 4 x type AAA

16 Slot for optional SD card

The VSSP 2.0 is a diagnostics device for start-stop batteries and conventional batteries. With the VSSP 2.0, for batteries installed in vehicles you can

■ check the state of charge and the state of health,

■ test the starter and the alternator,

■ check the control units (ECUs) that are relevant for the start-stop system, read out and delete the appropriate error codes.

To do this connect the VSSP 2.0 via connection (**7**) to the OBD interface of the vehicle and to the vehicle battery via the connection (**4**) with the current clamp or the connection (**3**) with alligator clamps. Both the connectors of the measurement cable as well as the two power measurement connections (**3**, **4**) are marked with white arrows that facilitate correct connection.

The device can communicate with VARTA VSSP server via a WiFi connection. The prerequisites are a local computer with Internet access and a WLAN router. In addition registration must have been executed with the password and user ID that was sent together with the license package.

The test results will be shown directly on the VSSP 2.0 and transmitted to the Start-Stop website in the form of a report (www.varta-startstop.com) and can be printed.

If the vehicle battery must be replaced, the VSSP 2.0 displays the recommended VARTA battery and guides you step-by-step through the replacement procedure via the menu.

After you have replaced the battery, use the integrated 2D data matrix scanner (**11**) to read in the VARTA code. Two lights (**10, 12**) integrated on the rear of the device facilitate readout of the code.

With the VSSP 2.0 you also check the state of charge of stored new and used batteries. To do this, connect the VSSP 2.0 to the battery via the alligator clamps.

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You can operate the VSSP 2.0 via the display (**1**) that is equipped with a touch screen.

Make the desired entries by tapping with the stylus (**8**) on the displayed menu items or buttons. On the rear of the device there is a receptacle (**9**) in which you can store the stylus.

If you connect the VSSP 2.0 via the OBD plug to the diagnostics interface of vehicle, or to a vehicle battery via the alligator clamps, the device will be fed via the vehicle battery. Via the four integrated rechargeable batteries (**15**) the VSSP 2.0 can also be operated independently.

The rechargeable batteries can be recharged via the charger that you connect on the connection (**5**). During the charging process the ON/OFF button (**2**) on the VSSP 2.0 is illuminated red. If the device is supplied via the rechargeable batteries the ON/OFF button will be illuminated green.

You can replace the rechargeable batteries at the end of their service life. To do this unscrew the Torx screws (**13**), with which the cover (**14**) of the battery compartment is fastened.

Under the rechargeable batteries there is a slot (**16**) for an optional SD card that is not included in the scope of delivery. If needed you can extend the memory capacity of the VSSP 2.0 with this SD card.

Use of the service interface (**6**) is reserved for the manufacturer's service organization.

COMMISSIONING

In order to commission the VSSP 2.0 you must execute the following steps:

▶ Insert the rechargeable batteries

▶ Configure the device

INSERTING THE RECHARGEABLE BATTERIES

NOTICE!

The VSSP 2.0 can be damaged through the use of unsuitable rechargeable batteries or non-rechargeable batteries

If you use the wrong type of rechargeable batteries or non rechargeable batteries, acid can escape and damage the VSSP 2.0 when charging.

▶ Only use the provided rechargeable batteries or rechargeable batteries as specified in chapter **Technical data** on page 52.

The provided rechargeable batteries are have already been charged and thus can be used immediately.

Proceed as follows:

▶ Remove the protective foil of the rechargeable batteries.

▶ Open the cover of the battery compartment on the underside of the VSSP 2.0. To do this use a size 8 Torx screwdriver.

NOTICE!

Damage due to reverse polarity

If the rechargeable batteries are inserted incorrectly the VSSP 2.0 can be damaged or destroyed.

▶ Ensure the correct polarity when inserting the rechargeable batteries.

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▶ Insert the four rechargeable batteries.

▶ Close the cover of the rechargeable battery compartment and tighten it securely.

NOTE The current state of charge of the rechargeable batteries will be displayed in the footer of the display (see **Shown on the display** on page 24).

CONFIGURING THE VSSP 2.0

Prerequisites The following prerequisites must be ensured so that you can configure the VSSP 2.0:

■ An Internet connection with WLAN router must be available and a WiFi connection must be established to VSSP server.

■ The provided user ID and the password are on hand.

When switching on for the first time, several fundamental settings must be made:

■ Select the language and country of use

■ Set the country-specific keyboard layout

■ Enter the current date and time

■ Set up the network and WiFi configuration

The program guides you through the configuration step-by-step.

NOTE You can also change the configuration later. To do this, in the module overview, select **Configuration** (see **Module overview** on page 23).

▶ Switch on the VSSP 2.0.

The VSSP 2.0 starts and establishes the WiFi connection to the VSSP server. This can take a few seconds.

Setting the The **Local parameters** screen is displayed.
language, country,
date and time

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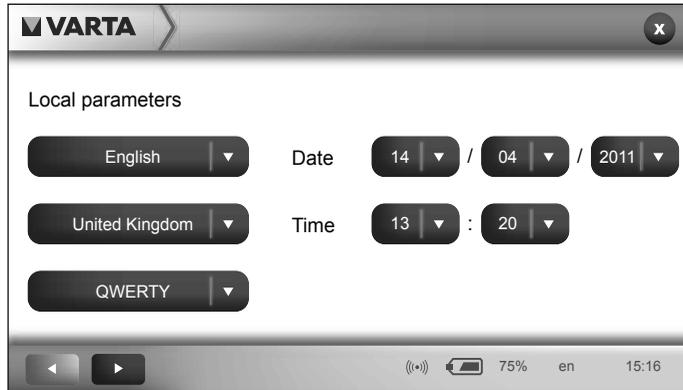
In the lists you can make the country-specific settings and set the date and time.

▶ Tap on the list of languages.

   The list will open.

NOTE You can scroll through the open list. To do this, tap on the white scroll arrows in the opened list or move stylus upward or downward over the list entries.

▶ Tap on the desired language, e.g. **English**.

   The selected list entry will be highlighted in gray.

▶ Tap a second time on the gray-highlighted list entry to confirm.

   The list will close and the selected language will be displayed.

▶ Also select the country of use and the desired keyboard layout from the lists.

▶ Set the current date and time.

▶ Tap on the Next button.

Configuring the network The **Network configuration** screen is displayed.

☑ VARTA 〉	✕
Network configuration	☐ DHCP
IP	172.24.236.131
Mask	255.255.0.0
IP gateway	0.0.0.0
◀ ▶	(((•))) ▭ 75% de 15:16

▶ Activate the **DHCP** checkbox.

   The VSSP 2.0 will attempt to log into the network automatically.

If automatic login fails you can also configure the network manually. To do this proceed as follows:

▶ Tap on the entry field **IP**.

   A keyboard will be displayed.

▶ Enter the IP address for the VSSP 2.0 in your network.

▶ Tap on the Enter button.

   The entered IP address is displayed in the **IP** entry field.

▶ Likewise enter the desired settings in the entry fields **Mask** and **IP gateway**.

▶ Tap on the Next button.

Configuring the WiFi connection The screen **WiFi connexion** will appear.
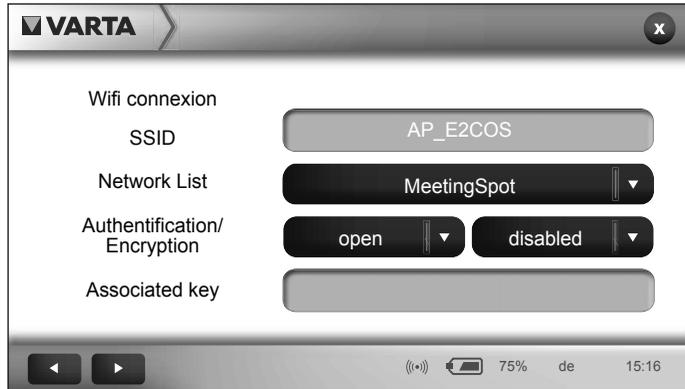
▶ From the **Network List** select the desired WLAN network.

The ID of the WLAN network will be displayed automatically in the **SSID** field.

▶ For the lists, **Authentification / Encryption** select the settings of your WLAN network.

▶ Tap on the entry field of the **Associated key**.

A keyboard will be displayed.

.?123 To switch the keyboard to digits, in the lower left tap on the **?123** button.

ABC To switch the keyboard to back to letters, in the lower left tap on the **ABC** button.

▶ Enter the key of your WLAN network.

▶ Tap on the Enter button.

The entered key will be displayed in the entry area.

▶ Tap on the Next button.

The **Saving data...** will be displayed.

▶ Tap on the OK button.

The VSSP 2.0 logs into the network with the entered parameters. The **Log-in** screen appears on the display (see **Switching on and logging in** on page 22). The VSSP 2.0 is ready for operation.

OPERATION

SWITCHING ON AND LOGGING IN

▶ Switch on the VSSP 2.0.

The VSSP 2.0 starts and establishes the WiFi connection to the VSSP server. This can take a few seconds.

The **Log-in** screen appears on the display.
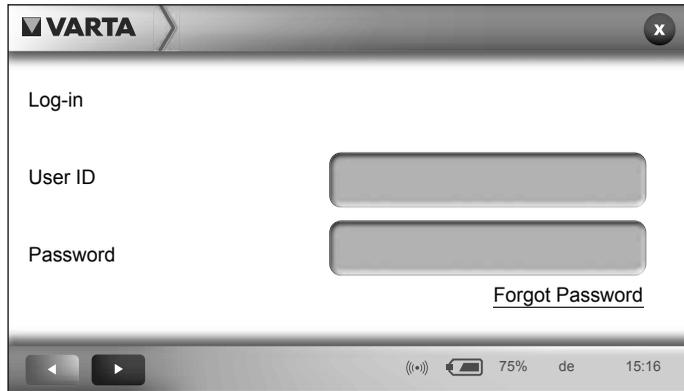
▶ Tap on the entry field **User ID**.

A keyboard will be displayed.

To switch the keyboard to digits, in the lower left tap on the **?123** button.

To switch the keyboard to back to letters, in the lower left tap on the **ABC** button.

▶ Enter your user ID.

▶ Tap on the Enter button.

▶ In the **Log-in** screen tap on the entry field **Password** and enter your personal password.

NOTE If you have forgotten your password or entered it incorrectly you can request a new personal password per email via the link **Forgot Password**.

▶ Tap on the Next button.

The system checks and confirms your login.

▶ Tap on the Next button.

The module overview appears on the display.

MODULE OVERVIEW

In the VSSP 2.0 there are three different modules available for battery diagnostics:

■ **Check Start-Stop System**: With this module you can check the battery installed in the vehicle and the relevant control units of the vehicle and replace the battery if required. In addition to start-stop batteries, you can also test conventional batteries in the vehicle.

■ **Check New Battery**: Use this module to check new batteries that are not installed in a vehicle. You can check new conventional batteries, as well as new start-stop batteries.

■ **Check Used Battery**: Use this module to check used batteries that are not installed in a vehicle. You can check used conventional batteries, as well as used start-stop batteries.

NOTE In the **Configuration** if necessary you can change
the basic settings for the VSSP 2.0, e.g. setting
the language and date. In addition, you can specify
the settings for the network and the WiFi connection
(see **Configuring the VSSP 2.0** on page 17).

SHOWN ON THE DISPLAY

While you are working in the modules, an icon
in the header indicates the operating step that
is currently in process, e.g. **Vehicle identification**.

You will find different status displays in the footer
of the screen:

WiFi connection: This icon indicates that a WiFi
connection is established.

Battery state of charge: This icon with the adjacent
percentage shows the actual state of charge of the
rechargeable battery.
If the icon is red, you must connect the VSSP 2.0 to
the power network for charging.

A red charging icon will be displayed while the battery
is charging.

en   The abbreviation shows the set language, e.g. **en** for
English.

15:16   The current time is shown to the far right.

CHECKING THE INSTALLED BATTERY IN THE VEHICLE

With the module **Check Start-Stop System** you can check the battery installed in the vehicle and the relevant control units of the vehicle and replace the battery if required.
The program guides you through the diagnosis, as well as removal and installation of the battery, step-by-step.

NOTE With this module, in addition to start-stop batteries, you can also test conventional batteries in the vehicle.

▶ Switch on the VSSP 2.0 and log in as user (see **Switching on and logging in** on page 22).

The module overview is displayed.
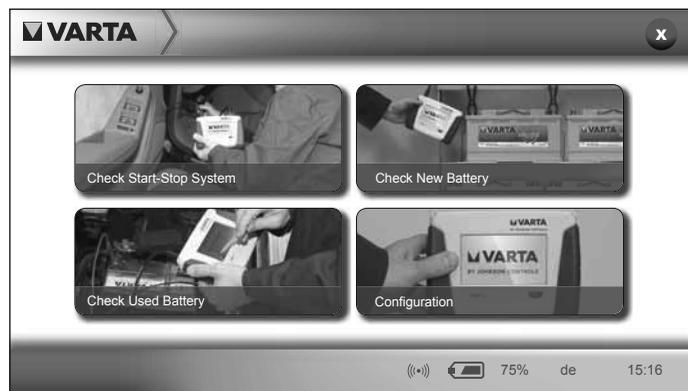
▶ In the module overview, tap on the module **Check Start-Stop System**.

Identifying a vehicle

The **Vehicle Identification** screen is displayed.
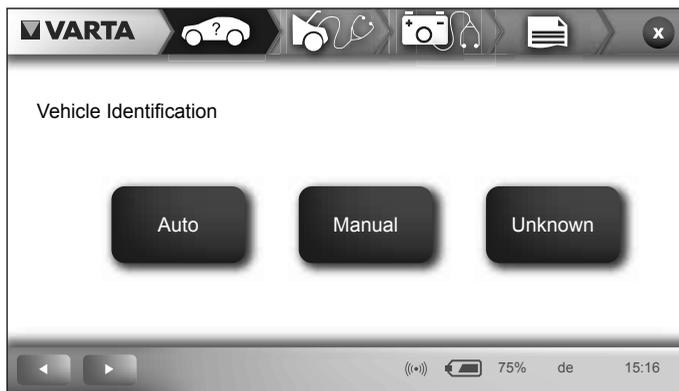
Here you have three possibilities for identifying the vehicle:

- **Auto**: The VSSP 2.0 identifies the vehicle automatically via the OBD interface.

- **Manual**: You enter the vehicle identification number (VIN) manually.

- **Unknown**: You select the vehicle date from lists.

Auto option: Identifying a vehicle automatically

The VSSP 2.0 identifies the vehicle automatically when you select the **Auto** option. The vehicle data is called up directly from the electronic control units of the vehicle.

▶ In the **Vehicle Identification** screen tap on the **Auto** button.

  The message **Please connect the OBD plug** is displayed.

▶ Connect the VSSP 2.0 to the vehicle via the OBD cable.

▶ Tap on the Next button.

  The message, **Key on...** is displayed.

▶ Switch on the vehicle's ignition.

▶ Tap on the Next button.

The vehicle will be identified and displayed in the screen.
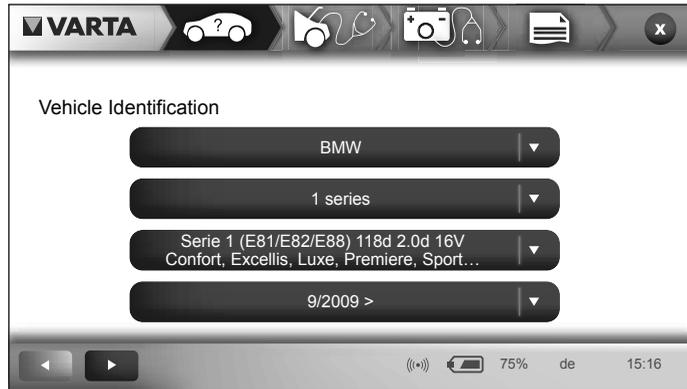
NOTE If identification fails or could not be completely executed, the VSSP 2.0 changes to the option **Unknown** (see **Unknown option: Select a vehicle from lists** on page 30).

▶ Tap on the Next button.

Read more in section **Executing vehicle diagnosis** on page 31.

Manual option: Enter the VIN manually

If you select the option **Manual** you can enter the 17-place vehicle identification number (VIN) manually.

▶ In the **Vehicle Identification** screen tap on the **Manual** button.

An entry field is displayed.
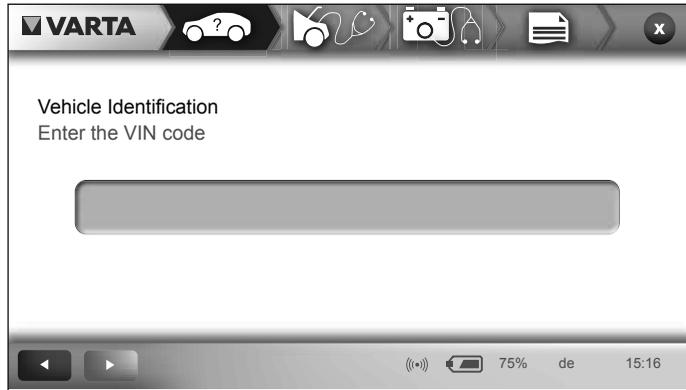
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▶ Tap on the entry field.

A keyboard will be displayed.

.?123 To switch the keyboard to digits, in the lower left tap on the **?123** button.

ABC To switch the keyboard to back to letters, in the lower left tap on the **ABC** button.

▶ Enter the 17-place VIN.

◄┘ ▶ Tap on the Enter button.

The entered VIN will be displayed in the entry field.

▶ ▶ Tap on the Next button.

The vehicle will be identified and displayed in the screen.

NOTE If identification fails or could not be completely executed, the VSSP 2.0 changes to the option **Unknown** (see **Unknown option: Select a vehicle from lists** on page 30).

▶ Tap on the Next button.

The message **Please connect the OBD plug** is displayed.

NOTE If you would like to view more precise information for the connection on the vehicle, tap on the Info icon, top right.

▶ Connect the VSSP 2.0 to the vehicle via the OBD cable.

▶ Tap on the Next button.

The message, **Key on…** is displayed.

▶ Switch on the vehicle's ignition.

▶ Tap on the Next button.

Read more in section **Executing vehicle diagnosis** on page 31.

Unknown option:
Select a vehicle
from lists

If you do not know the vehicle number (VIN) select the option **Unknown**. Then you can select manufacturer, model series, model type, and year of manufacture from lists.

▶ In the **Vehicle Identification** screen tap on the **Unknown** button.

A screen with four lists is displayed.

▶ Tap on the highest list **Choose Manufacturer**.

The list will open.
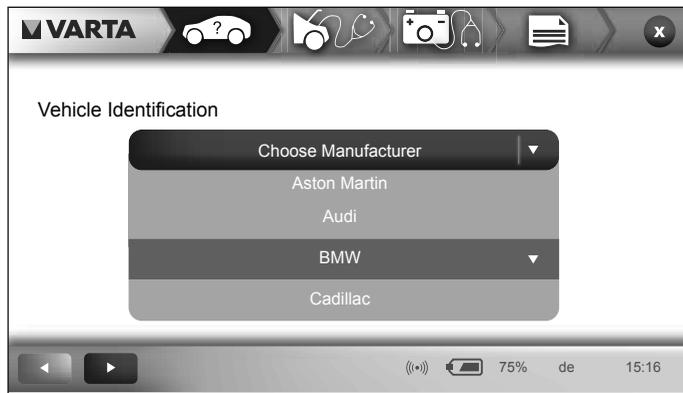
NOTE You can scroll through the open list. To do this, tap on the white scroll arrows in the opened list or move stylus upward or downward over the list entries.

▶ Highlight the manufacturer of the vehicle.

▶ Tap a second time on the gray-highlighted manufacturer to confirm.

The list will close and the selected manufacturer will be displayed.

▶ In the same manner select the model series, the model type, and the year of manufacture of the vehicle from the lists.

▶ Tap on the Next button.

The message **Please connect the OBD plug** is displayed.

NOTE If you would like to view more precise information for the connection on the vehicle, tap on the Info icon, top right.

▶ Connect the VSSP 2.0 to the vehicle via the OBD cable.

▶ Tap on the Next button.

The message **Key on...** is displayed.

▶ Switch on the vehicle's ignition.

▶ Tap on the Next button.

Executing vehicle diagnosis

In the screen **ECU Diagnostics** the message **Key on...** is displayed.

▶ Switch on the vehicle's ignition.

▶ Tap on the Next button.

The message **Please connect the OBD plug** is displayed.

NOTE If you would like to view more precise information for the connection on the vehicle, tap on the Info icon, top right.

▶ Connect the VSSP 2.0 to the vehicle via the OBD cable.

▶ Tap on the Next button.

The VSSP 2.0 calls up the fault messages from the control units of the vehicle. The message **Fault codes and parameters have been read** is displayed.

▶ Tap on the Next button.

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Executing a battery diagnosis

In the screen **Current clamp** the message **Please connect the current clamp is displayed**.

NOTE If you would like to view more precise information for the connection on the vehicle, tap on the Info icon, top right.

▶ Connect the current clamp.

▶ Tap on the Next button.

In the screen **Battery Diagnostics** the message **Turn on engine...** is displayed.

▶ Start the vehicle's engine.

▶ Tap on the Next button.

  The VSSP 2.0 executes the battery diagnosis and checks the alternator and the starter.

The message, **Key off...** is displayed.

▶ Switch off the vehicle's ignition.

▶ Tap on the Next button.

NOTE To ensure reliability of the measurement results, if necessary this process is repeated up to two times.

Viewing the report of the diagnostics results

A report with the diagnostics results is shown on the display.

NOTE The report will be saved as a PDF file in your partner area on the Start-Stop website (www.varta-startstop.com). You can call it up and print it out from this location at anytime.

VIN	WBAUR220123456789
Manufacturer	BMW
Model line	1 series
Model type	Serie 1 (E81/E82/E88…
Battery check	Replace ▼

Report

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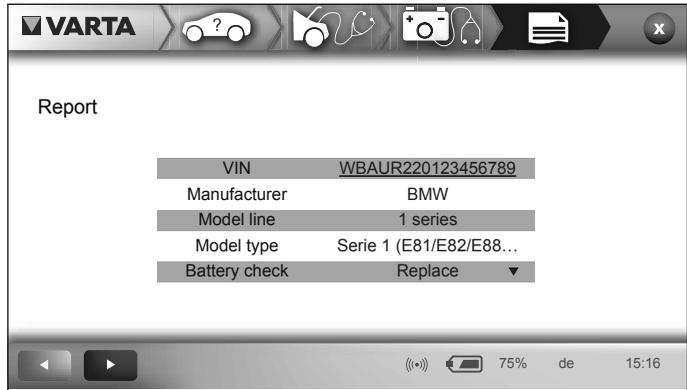
▶ To scroll down in the table, tap the scroll arrow in the lower table row.

The result of the battery test is displayed in the **Battery check** row:

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■ **OK**: The battery is in order.

■ **Recharge**: The battery must be recharged.

■ **Replace**: The battery is used up and must be replaced.

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▶ Tap on the Next button.

In the **Battery Catalogue** screen, the specification of the recommended VARTA start-stop battery for this vehicle is displayed.

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▶ Tap on the Next button.

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Deleting error messages and replacing the battery

The message **Do you wish to change the battery?** appears.

▶ If you would like to cancel process at this point tap on the Tap on the **No** button. All data will be lost in this case.

▶ If you would now like to replace the used up battery tap on the **Yes** button.

A table of fault messages from the control units of the vehicle is displayed.

Fault Code	Description
B1605	Fault in the re-initialisation…
B1606	Battery charge status unit …
B1607	Fault in the memory of the…
B1627	Battery current sensor fault…
B1628	Battery voltage sensor fault ▼.

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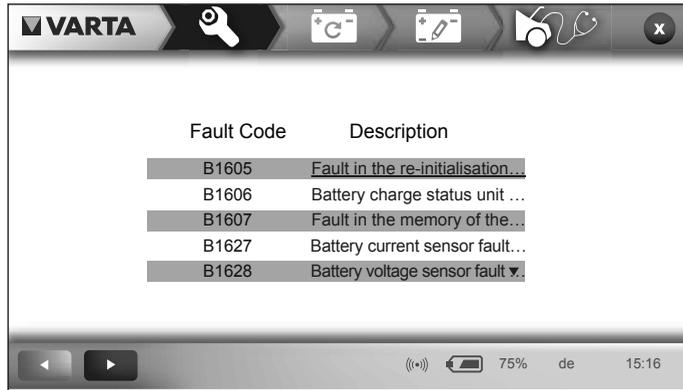
NOTE   If you would like to view fault correction information, tap on the appropriate error message.

Erasing fault codes   Before you can replace the used up battery with a new battery, you must erase the fault codes in the control units of the vehicle. To do this proceed as follows:

▶ Tap on the Next button.

The message, **Please connect the OBD plug** is displayed.

▶ Connect the VSSP 2.0 to the vehicle via the OBD cable.

▶ Tap on the Next button.

In the screen **Corrective actions** the message **Turn on engine...** is displayed.

▶ Start the vehicle's engine.

The message **Turn off engine...** is displayed.

▶ Switch off the vehicle's engine again.

The message **Key on...** is displayed.

▶ Switch on the vehicle's ignition.

▶ Tap on the Next button.

The fault messages in the control units of the vehicle will be deleted. The message **Fault codes erased** will be displayed.

▶ Tap on the Next button.

Replacing batteries

Now you can remove the used up battery and install a new battery.

In the **Battery Catalogue** screen, the specification of the recommended VARTA start-stop battery for this vehicle is displayed.

▶ Have the appropriate battery ready.

▶ Tap on the Next button.

The message **Please enter the code of the new battery** is displayed in the screen.

VARTA Code

A11D59109009

You have two possibilities for entering the code:

■ You can scan in the 2D code that is imprinted on the battery.

■ You can enter the VARTA code manually. The VARTA code is a 12-place character sequence that is imprinted on the battery under the 2D code.

Option - scan 2D code

Proceed as follows to scan the 2D code of the battery:

▶ If light conditions are unfavorable activate the **LED ON** checkbox. This switches on the two LEDs next to the camera on the rear of the VSSP 2.0.

▶ Tap on the 2D code icon under the entry row.

The VSSP 2.0 switches the camera on and shows the viewed image in the display.

▶ Hold the camera on the rear of the VSSP 2.0 above the battery in such a manner that the 2D code is completely visible in the display.

The VSSP 2.0 scans the 2D code and checks whether the battery corresponds to the recommended specification.

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NOTE If the 2D code could not be detected after 90 seconds, the scan process will be canceled. You can start a second attempt. If the second attempt fails also, enter the VARTA code manually.

If the 2nd code has been detected and the battery is correct, the message **2D code has been verified** is displayed.

Option - enter the VARTA code manually In order to enter the VARTA code manually:

▶ Tap on the entry field.

A keyboard will be displayed.

.?123 To switch the keyboard to digits, in the lower left tap on the **?123** button.

ABC To switch the keyboard to back to letters, in the lower left tap on the **ABC** button.

▶ Enter the 12-place VARTA code that is imprinted on the battery under the 2D code.

← ▶ Tap on the Enter button.

The entered VARTA code will be displayed in the entry field.

▶ ▶ Tap on the Next button.

The VSSP 2.0 checks whether the battery corresponds to the recommended specification. If the battery is correct, the message **2D code has been verified** is displayed.

▶ ▶ Tap on the Next button.

In the **Battery Location** screen the installation position of the battery in the vehicle is shown.
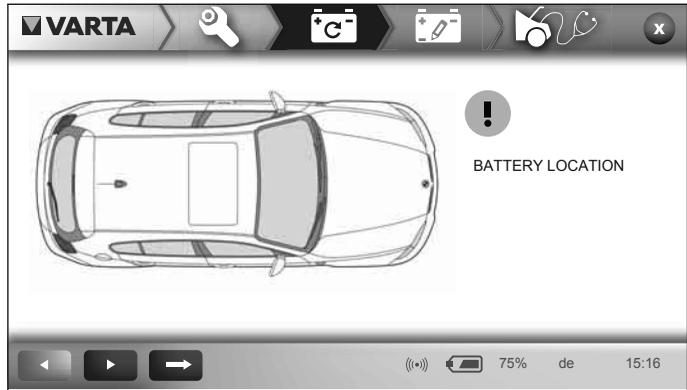
In addition, for each vehicle model graphic instructions for removal and installation are available.

▶ We recommend that you view the graphic instructions and follow them step-by-step. To do this, tap on the Next button.

▶ If you do not want to view the graphic instructions (not recommended) tap on the Skip button. In this case you are responsible for ensuring that the removal and installation of the battery is executed properly.

▶ Remove the used up battery from the vehicle and dispose of it properly.

NOTE Comply with the national and local regulations and environmental protection regulations for disposal of the battery.

▶ Install the new battery in the vehicle.

If you have skipped the graphic instructions for removal and installation of the battery, you must confirm replacement of the battery. The message **Did you replace the battery?** appears.

▶ If you have not replaced the battery, tap on the **No** button. All data will be lost in this case and the procedure will be canceled.

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▶ If you have replaced the battery, tap on the **Yes** button.

In the screen, **New Battery Parameters** the message **Key on...** is displayed.

▶ Switch on the vehicle's ignition.

▶ Tap on the Next button.

The parameters of the new battery are registered in the vehicle.

In the screen **New Battery Parameters** the message **New parameters have been registered** is displayed.

▶ Tap on the Next button.

Executing the final vehicle and battery diagnostics

In the screen **ECU Diagnostics** the message **Key on...** is displayed.

▶ Switch on the vehicle's ignition.

▶ Tap on the Next button.

The message **Please connect the OBD plug** is displayed.

▶ Connect the VSSP 2.0 to the vehicle via the OBD cable.

▶ Tap on the Next button.

The message **End of fault codes and parameters reading** is displayed in the **ECU Diagnostics** screen.

▶ Tap on the Next button.

The message **Please connect the current clamp** is displayed is displayed.

▶ Connect the current clamp.

▶ Tap on the Next button.

In the screen **Battery Diagnostics** the message **Turn on engine...** is displayed.

▶ Start the vehicle's engine.

▶ Tap on the Next button.

The message, **Key off...** is displayed.

▶ Switch off the vehicle's engine again.

▶ Tap on the Next button.

Viewing the concluding report

A report with the concluding diagnostics report is shown on the display. It contains all the results before and after replacing the battery.

NOTE The report will be saved as a PDF file in your partner area on the Start-Stop website (www.varta-startstop.com). You can call it up and print it out from this location at anytime.

Report	
Model line	1 SERIES
Model type	Serie 1 (E81/E82/E88…
Battery check	OK
Starter check	OK
Alternator check	Ok

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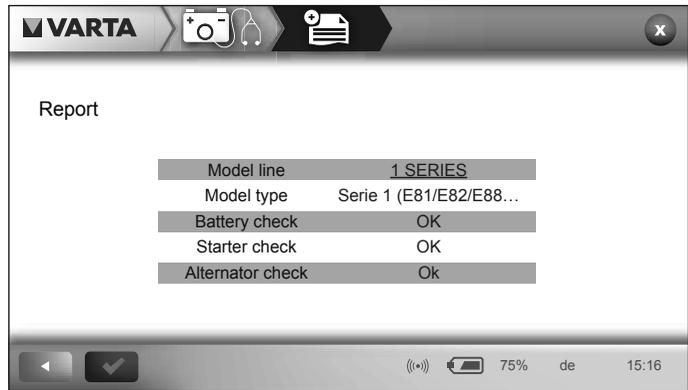
▶ Tap on the OK button.

The VSSP 2.0 concludes the procedure and changes to the module overview.

CHECKING A NEW BATTERY

In the module overview of the VSSP 2.0 you can select the **Check New Battery** module. Use this module to check new batteries that are not installed in a vehicle.

NOTE You can check new conventional batteries, as well as new start-stop batteries.
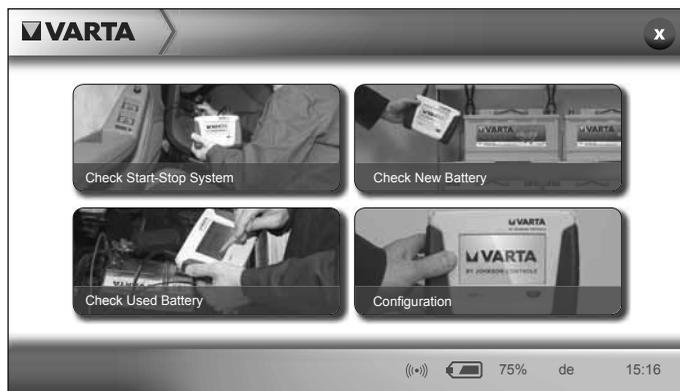
▶ In the module overview, tap on the module **Check New Battery**.

The screen **Selection of battery type** is displayed.
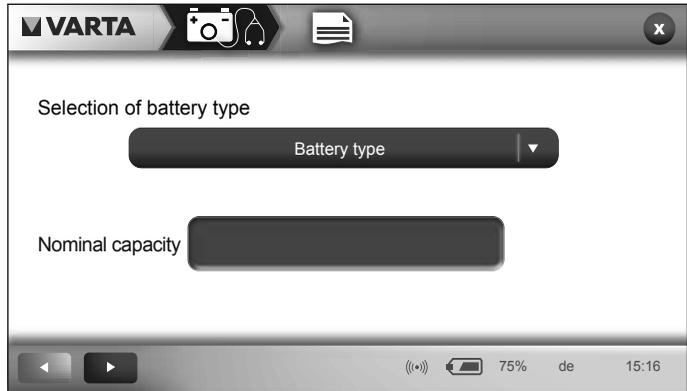
Here you can select your battery technology.

▶ Tap on the **Selection of battery type** list.

The list will open.

Here you have the following selection possibilities:

Unavailable	Battery technology unavailable
AGM_VRLA	Valve-Regulated Lead-Acid battery with specified electrolyte
Standard	Conventional lead-acid battery
EFB	Enhanced Flooded Battery

VSSP 2.0   41

▶ Tap on the desired battery technology.

The selected list entry will be highlighted in gray.

▶ Tap a second time on the gray-highlighted list entry to confirm.

The list will close and the selected battery technology will be displayed.

▶ Tap on the entry field **Nominal capacity**.

A keyboard will be displayed.

.?123   To switch the keyboard to digits, in the lower left tap on the **?123** button.

ABC   To switch the keyboard to back to letters, in the lower left tap on the **ABC** button.

▶ Enter the nominal capacity of the battery.

NOTE   The nominal capacity is on the type plate of the battery.

↵   ▶ Tap on the Enter button.

The entered nominal capacity will be displayed in the entry field.

▶   ▶ Tap on the Next button.

In the screen **Battery Diagnostics** the message **Please connect alligator clamps**... is displayed.

NOTICE!

Damage due to reverse polarity

If the electrical poles of the battery are connected with the wrong polarity the VSSP 2.0 can be damaged or destroyed.

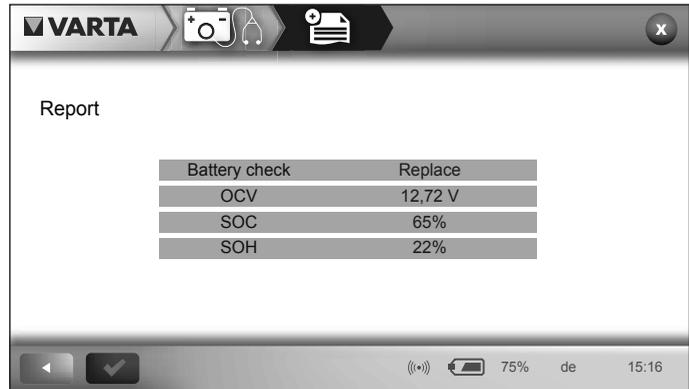▶ Ensure that the alligator clamps are correctly attached (red = plus, black = minus).

▶ Connect the VSSP 2.0 to the battery via the alligator clamp cable (see **Device description** on page 11).

▶   ▶ Tap on the Next button.

The diagnosis will be executed. This can take a few seconds.

The results of the diagnosis will be displayed in the **Report** screen.

The result of the battery test is displayed in the **Battery check** row:

■ **OK**: The battery is in order.

■ **Recharge**: The battery must be recharged.

In addition the following information is displayed:

■ OCV (Open Circuit Voltage): This value shows open circuit voltage of the battery.

■ SOC (State of Charge): This value shows the charge state of the battery in percent.

▶ Tap on the OK button.

   The check of the battery is concluded and the module overview of the VSSP 2.0 is displayed.

▶ Disconnect the alligator clamp from the battery.

CHECKING A USED BATTERY

In the module overview of the VSSP 2.0 you can select the **Check Used Battery** module. Use this module to check used batteries that are not installed in a vehicle.

NOTE You can check used conventional batteries, as well as used start-stop batteries.
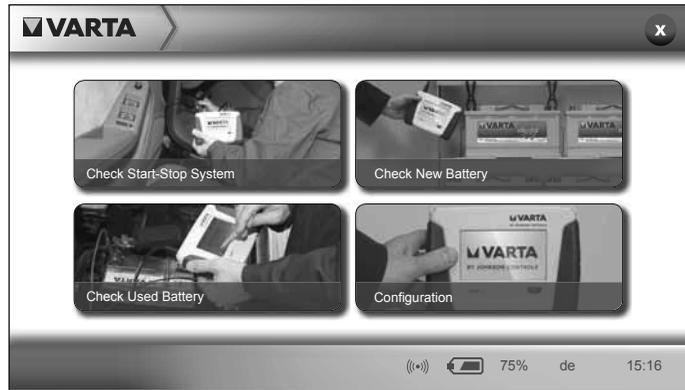
▶ In the module overview, tap on the module **Check Used Battery**.

The screen **Selection of battery type** is displayed.

Here you can select your battery technology.

▶ Tap on the **Selection of battery type** list.

The list will open.

Here you have the following selection possibilities:

Unavailable	Battery technology unavailable
AGM_VRLA	Valve-Regulated Lead-Acid battery with specified electrolyte
Standard	Conventional lead-acid battery
EFB	Enhanced Flooded Battery

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▶ Tap on the desired battery technology.

The selected list entry will be highlighted in gray.

▶ Tap a second time on the gray-highlighted list entry to confirm.

The list will close and the selected battery technology will be displayed.

▶ Tap on the entry field **Nominal capacity**.

A keyboard will be displayed.

.?123 To switch the keyboard to digits, in the lower left tap on the **?123** button.

ABC To switch the keyboard to back to letters, in the lower left tap on the **ABC** button.

▶ Enter the nominal capacity of the battery.

NOTE The nominal capacity is on the type plate of the battery.

↵ ▶ Tap on the Enter button.

The entered nominal capacity will be displayed in the entry field.

▶ ▶ Tap on the Next button.

In the screen **Battery Diagnostics** the message **Please connect alligator clamps...** is displayed.

NOTICE!

Damage due to reverse polarity

If the electrical poles of the battery are connected with the wrong polarity the VSSP 2.0 can be damaged or destroyed.

▶ Ensure that the alligator clamps are correctly attached (red = plus, black = minus).

▶ Connect the VSSP 2.0 to the battery via the alligator clamp cable (see **Device description** on page 11).

▶ ▶ Tap on the Next button.

The diagnosis will be executed. This can take a few seconds.

The results of the diagnosis will be displayed in the **Report** screen.

The result of the battery test is displayed in the **Battery check** row:

■ **OK**: The battery is in order.

■ **Recharge**: The battery must be recharged.

■ **Replace**: The battery is used up and must be replaced.

In addition the following information is displayed:

■ OCV (Open Circuit Voltage): This value shows open circuit voltage of the battery.

■ SOC (State of Charge): This value shows the charge state of the battery in percent.

■ SOH (State of Health): This value shows the state of health of the battery in percent.

▶ Tap on the OK button.

   The check of the battery is concluded and the module overview of the VSSP 2.0 is displayed.

▶ Disconnect the alligator clamp from the battery.

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LIMIT VALUES FOR STATE OF CHARGE AND STATE OF HEALTH OF THE BATTERY

The limit values cited here for battery replacement are recommendations that you should follow to ensure reliable function of the start-stop system.

SOC	State of charge (SOC)	< 60%	> 60%
		Not OK	OK
SOH	State of health (SOH)	< 66%	> 66%
		Not OK	OK

- If the current state of charge (SOC) of the battery is less than 60%, the battery should be recharged. To improve the test results below, we recommend charging the battery at a state of charge below 75%.

- At state of charge (SOC) under 25% the battery must always be recharged, before the state of health (SOH) can be determined.

- If for the state of health (SOH) capacity under 66% is measured the service life of the battery has expired. Depending on the application the battery could still have sufficient power to be used a while longer. However for reliable operation we recommend replacing the battery.

FAULTS

Message	Cause and remedy
Aborted	The session has been stopped. ▶ Start the procedure again.
Plugin Error	An error occurred with the WiFi connection. ▶ Check the WiFi connection.
Error while getting data	An error occurred when receiving data. ▶ Check the Internet connection or WiFi connection.
Error while sending data	An error occurred when transmitting data. ▶ Check the Internet connection or WiFi connection.
Error with database	An error occurred in the database. ▶ Start the procedure again.
VIN Error	The vehicle identification number (VIN) could not be detected. ▶ Start the procedure again.
Error while getting VIN. Manual selection.	The vehicle identification number could not be detected. ▶ Select the option Unknown (see page 30) and manually select the vehicle.
Error while communicating with ECU	An error occurred during the communication with the control units of the vehicle. ▶ Check the cable connection to the vehicle.

Measurement error	An error occurred when executing the diagnosis. ▶ Check the cable connection to the vehicle.
Incorrect 2D-code. Please rescan.	An error occurred when scanning in the 2D code. ▶ Repeat the scan procedure.
Incorrect 2D-code. Session must be stopped.	An error occurred when scanning in the 2D code. The procedure has been stopped. ▶ Enter the VARTA code of the battery manually (see page 36).

NOTE If you need help with errors, contact the **Help Center** via the Start-Stop website at **www.varta-startstop.com**.

CARE

With regular cleaning and care you can contribute to ensuring that the VSSP 2.0 functions faultlessly over its entire product service life.

▶ After use wipe off the VSSP 2.0 with a clean, soft cloth.

▶ Never remove contaminants with water. Use a special cleaning agent for computer screens for this.

▶ Never use aggressive solvents or cleaning agents to clean the device. These substances can corrode the surface and damage the VSSP 2.0.

▶ Check the provided cables and the connection of the VSSP 2.0 regularly for damage. If cables or connections are damaged, do not use the VSSP 2.0 and contact your dealer or the service organization.

▶ If the charge capacity of the rechargeable batteries is strongly diminished, remove the used up rechargeable batteries and insert the new rechargeable batteries (see **Inserting the rechargeable batteries** on page 15). Dispose of the used rechargeable batteries in an environmentally-responsible manner in accordance with the national and local regulations.

▶ Always keep the VSSP 2.0 in the provided case when it is not in use, to protect it from mechanical damage.

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DISPOSAL

▶ At the end of their service life, dispose of the rechargeable batteries via official collection points to ensure environmental protection.

▶ Dispose of the VSSP 2.0 at the end of its service life via your local municipal collection point or in the Recycling Center.

TECHNICAL DATA

Dimensions	130 mm x 175.5 mm x 40 mm (Height x width x depth)
Weight (without rechargeable batteries)	< 1.2 kg
Ambient temperature	-5 °C to 45 °C
Rechargeable batteries	4 x Ni-MH rechargeable batteries Type AAA 800 mAh
Charger	AC adapter, 100-240 V AC, 0.4 A 50-60 Hz
Connections	2 connections for current measurement cable series HR30, 10-pin
	Connection for OBD diagnostics cable, HD26, Sub-D
Cables	Current measurement cable 2 m; with 2 alligator clamps for four-wire Kelvin measurements
	Current measurement cable, 2.5 m, with current clamp for clamping on lines to 32 mm diameter
	OBD diagnostics cable with HD26 connector and J1962 connector
Scanner	2D data matrix scanner
WLAN	IEEE 802.11b/g integrated antenna
CPU	ARM Cortex-A8
Mass storage	256 MB, Flash-Disk compatible

RAM	64 MB DDR Slot for 32 GB microSD card (customer-provided)
Operating system	MS Windows CE
Display	4.3" TFT color screen Type WQ VGA Resolution 480 x 272 pixels Resistive touch screen Operation via stylus
Measured values	Battery voltage Battery current Temperature Internal resistance of the battery

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DECLARATION OF CONFORMITY

CE Johnson Controls Hybrid & Recycling GmbH declares, at its sole responsibility, that the product

VARTA VSSP 2.0

for automotive battery diagnostics complies with the following directives, standards and normative documents :

2004/108/EC
2006/95/EC

EN 61326/A1/A2/A3 (Ed. 97/98/01/01)
EN 301489-17
ETSI EN 300 328

EN 60950-1 (Ed. 2001) + A11

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