



VAS 6565A

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Bedienungsanleitung

Hochvolt-Diagnose-Batteriestützgerät

GB

Operating instructions

High voltage-Diagnostics-Battery-Support-Device



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Operating instructions

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Safety rules

General remarks

The charger is manufactured in line with the latest state of the art and according to recognised safety standards. If used incorrectly or misused, however, it can cause

- injury or death to the user or a third party,
- damage to the charger and other material assets belonging to the operator,
- inefficient operation of the charger.

All persons involved in commissioning, operating, maintaining and servicing the charger must

- be suitably qualified,
- have knowledge of and experience in dealing with chargers and batteries and
- read and follow these operating instructions carefully.



The operating instructions must always be at hand wherever the charger is being used. In addition to the operating instructions, attention must also be paid to any generally applicable and local regulations regarding accident prevention and environmental protection.

All safety and danger notices on the charger

- must be kept in a legible state
- must not be damaged/marked
- must not be removed
- must not be covered, pasted or painted over.

For the location of the safety and danger notices on the charger, refer to „General remarks“ in the charger operating instructions.

Before switching on the charger, remove any faults that could compromise safety.

Your personal safety is at stake!

Utilisation in accordance with „intended purpose“



The charger is to be used exclusively for its intended purpose. Utilisation for any other purpose, or in any other manner, shall be deemed to be „not in accordance with the intended purpose“. The manufacturer is not liable for any damage, inadequate or incorrect results arising out of such misuse.

Utilisation in accordance with the “intended purpose” also comprises

- carefully reading and obeying all operating instructions and safety and danger notices
- performing all stipulated inspection and servicing work.
- following all instructions from the battery and vehicle manufacturers

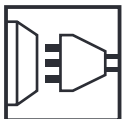
Environmental conditions



Operation and/or storage of the charger outside the stipulated area will be deemed as „not in accordance with the intended purpose.“ The manufacturer shall not be liable for any damage resulting from such improper use.

For exact information on permitted environmental conditions, please refer to the „Technical data“ in the operating instructions.

Mains connection



High-performance devices can affect the quality of the mains power due to their current-input.

This may affect a number of types of device in terms of:

- connection restrictions
- criteria with regard to maximum permissible mains impedance *)
- criteria with regard to minimum short-circuit power requirement *)

*) at the interface with the public mains network

see Technical Data

In this case, the plant operator or the person using the device should check whether or not the device is allowed to be connected, where appropriate through discussion with the power supply company.

Risks from mains current and charging current



Anyone working with chargers exposes themselves to numerous risks e.g.:

- risk of electrocution from mains current and charging current
- hazardous electromagnetic fields, which can risk the lives of those using cardiac pacemakers



An electric shock can be fatal. Every electric shock is potentially life threatening. To avoid electric shocks while using the charger:

- do not touch any live parts inside or on the outside of the charger.
- under no circumstances touch the battery poles
- do not short-circuit the charger lead or charging terminals

All cables and leads must be complete, undamaged, insulated and adequately dimensioned. Loose connections, scorched, damaged or inadequately dimensioned cables and leads must be immediately repaired by authorised personnel.

Risks from acid, gases and vapours



Batteries contain acid which is harmful to the eyes and skin. During charging, gases and vapours are released that can harm health and are highly explosive in certain circumstances.

- Only use the chargers in well ventilated areas to prevent the accumulation of explosive gases. Battery compartments are not deemed to be hazardous areas provided that a concentration of hydrogen of less than 4% can be guaranteed by the use of natural or forced ventilation.
- Maintain a distance of at least 0.5 m between battery and charger during the charging procedure. Possible sources of ignition, such as fire and naked lights, must be kept away from the battery
- The battery connection (e.g. charging terminals) must not be disconnected for any reason during charging



- On no account inhale any of the gases and vapours released
- Make sure the area is well ventilated.
- To prevent short circuits, do not place any tools or conductive metals on the battery



- Battery acid must not get into the eyes, onto the skin or clothes. Wear protective goggles and suitable protective clothing. Rinse any acid splashes thoroughly with clean water, seek medical advice if necessary.



General information regarding the handling of batteries



- Protect batteries from dirt and mechanical damage.
- Store charged batteries in a cool place. Self-discharge is kept to a minimum at approx. +2° C (35.6° F).
- Every week, perform a visual check to ensure that the acid (electrolyte) level in the battery is at the Max. mark.
- If any of the following occurs, do not start the machine (or stop immediately if already in use) and have the battery checked by an authorised workshop:
 - uneven acid levels and/or high water consumption in individual cells caused by a possible fault.
 - overheating of the battery (over 55° C/131° F).

Protecting yourself and others



- While the charger is in operation, keep all persons, especially children, out of the working area. If, however, there are people in the vicinity,
- warn them about all the dangers (hazardous acids and gases, danger from mains and charging current, etc),
 - provide suitable protective equipment.

Before leaving the work area, ensure that no-one or nothing can come to any harm in your absence.

Safety measures in normal mode



- Chargers with PE conductors must only be operated on a mains supply with a PE conductor and a socket with an earth contact. If the charger is operated on a mains without a PE conductor or in a socket without an earth contact, this will be deemed to be gross negligence. The manufacturer shall not be liable for any damage resulting from such improper use.
- Only operate the charger in accordance with the degree of protection shown on the rating plate.
- Under no circumstances operate the charger if there is any evidence of damage.

Safety measures in normal mode

- Ensure that the cooling air can enter and exit unhindered through the air ducts on the charger.
- Have the mains and charger supply checked regularly by a qualified electrician to ensure the PE conductors are functioning properly.
- Any safety devices and components that are not functioning properly or are in an imperfect condition must be repaired by an qualified technician before switching on the charger.
- Never bypass or disable protection devices.
- After installation, a freely accessible mains plug will be required.

EMC device classifications



Devices with emission class A:

- are only designed for use in an industrial setting
- can cause conducted and emitted interference in other areas.

Devices with emission class B:

- satisfy the emissions criteria for residential and industrial areas. This also applies to residential areas in which power is supplied from the public low-voltage grid.

EMC device classification as per the rating plate or technical specifications

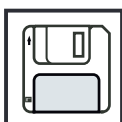
EMC measures



In certain cases, even though a device complies with the standard limit values for emissions, it may affect the application area for which it was designed (e.g. when there is sensitive equipment at the same location, or if the site where the device is installed is close to either radio or television receivers).

If this is the case, then the operator is obliged to take appropriate action to rectify the situation.

Data protection



The user is responsible for the safekeeping of any changes made to the factory settings. The manufacturer accepts no liability for any deleted personal settings.

Maintenance and repair



Under normal operating conditions the charger requires only a minimum of care and maintenance. However, it is vital to observe some important points to ensure it remains in a usable condition for many years.

- Before switching on, always check the mains plug and cable, and charger leads/charging terminals for any signs of damage.
- If the surface of the charger housing is dirty, clean with a soft cloth and solvent-free cleaning agent only

Maintenance and repair work must only be carried out by authorised personnel. Use only original replacement and wearing parts (also applies to standard parts). It is impossible to guarantee that bought-in parts are designed and manufactured to meet the demands made on them, or that they satisfy safety requirements.

Do not carry out any modifications, alterations, etc. without the manufacturer's consent.

Dispose of in accordance with the applicable national and local regulations.

Guarantee and liability



The warranty period for the charger is 2 years from the date of invoice. However, the manufacturer will not accept any liability if the damage was caused by one or more of the following:

- Use of the charger „not in accordance with the intended purpose“
- Improper installation and operation
- Operating the charger with faulty protection devices
- Non-compliance with the operating instructions
- Unauthorised modifications to the charger
- Catastrophes caused by the activities of third parties and force majeure

Safety inspection



The operator is obliged to arrange a safety inspection of the device at least once every 12 months.

The manufacturer recommends that the power source is calibrated during the same 12 month period.

A safety inspection must be carried out by a qualified electrician

- after any changes are made
- after any additional parts are installed and after any conversions
- after repair, care and maintenance
- at least every twelve months.

For safety inspections, follow the appropriate national and international standards and directives.

Further information on safety inspections and calibration is available from your service centre, who will be happy to provide you with the required documentation.

Disposal



Do not dispose of this device with normal domestic waste!

To comply with the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment and its implementation as national law, electrical equipment that has reached the end of its life must be collected separately and returned to an approved recycling facility. Any device that you no longer require must be returned to our agent, or find out about the approved collection and recycling facilities in your area.

Ignoring this European Directive may have potentially adverse effects on the environment and your health!

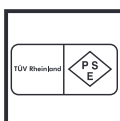
Safety



Chargers with the EC marking satisfy the fundamental requirements of the low-voltage and electromagnetic compatibility directive.

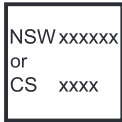


Devices with the TÜV test mark satisfy the requirements of the relevant standards in Canada and USA.



Devices with the TÜV test mark satisfy the requirements of the relevant standards in Japan.

Safety
(continued)



Devices displaying this TÜV test mark and the mark on the rating plate satisfy the requirements of the relevant standards in Australia.

Copyright



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VAS 6565A Operating instructions

High voltage-Diagnostics-Battery-Support-Device

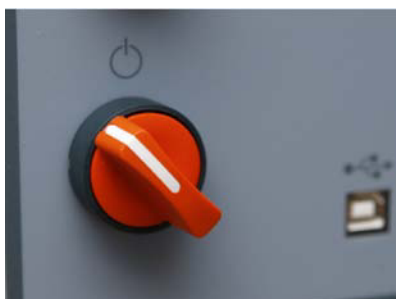
1 Introduction

The VAS 6565A High voltage-Diagnostics-Battery-Support-Device is designed for voltage stabilization and charging of high voltage traction batteries in VW-Group vehicles with hybrid and electric powertrain systems for maintenance, diagnosis and overhaul.

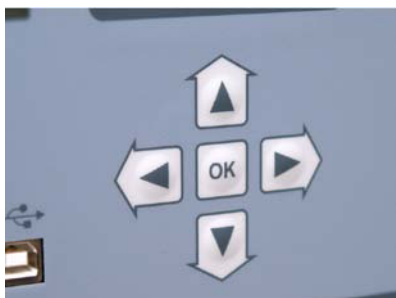
2 Operation

All of the operating controls are located on the front panel.

Main switch:

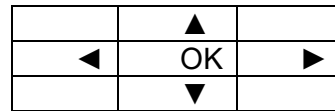


Keyboard:





Display: 4-place alphanumeric



Signal lamp:



Color of Signal: green = charging operation
 Color of Signal: red = malfunction

Cable Connection:



High voltage power outlet



Locating clamp opened

A Wieland high voltage power outlet is placed on the front panel to connect the vehicle specific charging cables to the device. It is protected by a dust cap which is fixed by a locating clamp.



To connect the charging cables, the dust cap has to be removed. Push down the locating clamp so the dust cap can be folded up. Now the Wieland plug of the charging cable can be connected to the high voltage power outlet and be secured by pulling up the locating clamp. The plug has to be plugged in completely to seal it with the clamp.



It only fits in one position correctly so an incorrect connection is impossible. Regularly the cables which come out of the plug point to the right away from the device.

2.1 Initiation message after power up

A status message with information about device type and software status appears on the display for 5s after power up.

HV BATT CHARGER
VAS 6565
FW: V1.01
TAB: V!..!

After that, the display shows the characteristic curve selection level:

SELECT TYPE:
1. TYPE XXX



2.2 Start charging program

Select the desired characteristic charging line with the ▲ ▼ keys and then confirmed with OK.

SELECT TYPE:
2. TYPE YYY

The "CONNECT BATTERY" prompt appears.

2. TYPE YYY
CONNECT BATTERY
NO '←' YES OK

Two conditions need to be fulfilled to start the selected charging program:

1. The pilot line must be connected to the Battery-Support-Device.
2. The HV battery's output voltage must appear on the device's charging sockets.

OK confirms start clearance after all three cables have been connected.

2. TYPE YYY
FOR START
PRESS OK

A second confirmation prompt must be reconfirmed with OK.

2. TYPE YYY
ARE YOU SURE?
NO ◀ YES
OK

The charging process begins with the selected characteristic curve.



The following error messages can be displayed:

- “PILOT LINE ERROR” The controller does not detect the pilot line.

 - Cause The pilot line cable is not connected properly or is carrying no control voltage.

- “NO HV BATTERY” The HV battery's output voltage is not detected in the controller.

 - Cause The charging cable is not connected properly. The HV battery's switches have isolated the battery. The HV battery's total voltage is too low.

2.3 Manual charge start

The selected charging program can also be started manually. That can be necessary if the HV battery is so completely discharged that the minimum back emf, V_{min} , is undershot. To initiate a manual start, the regular charging program start must have failed with the "NO HV BATTERY" error message. Then the START key must be held down for at least 10 seconds. The charging program starts.

If the battery's voltage remains below V_{min} for longer than 2 minutes after the manual start, the charging procedure is interrupted again. The "LOW VOLTAGE" error message appears on the display. A defective battery or a faulty connection to the battery can be the cause of a charge interruption.

2.4 Messages during the charging process

Current values of the total battery voltage, charging current, charged ampere-hours, and already expired charging time are displayed permanently on the screen during the charging procedure. In addition, the selected charging program and a notice about charging termination can be seen.

2. TYPE YYY
226V 3.00A
1.25Ah 0:30h
TO STOP PRESS OK



2.5 Malfunctions

Each malfunction persisting for longer than 10 seconds is analyzed.

The "pilot line error" message is the only exception. If the pilot line is interrupted, the device terminates the charging process within a few milliseconds. The red lamp reports the malfunction until an acknowledgment occurs by pressing the OK key.

2.6 Normal charging program termination

2. TYPE YYY
320V 3.0A
1.25Ah 0:30h
INTERRUPT BY BMS

The charging program is terminated normally when the BMS detects the desired charge condition on the HV battery and charging is terminated by opening the battery switches. The device immediately powers down, because no more battery output voltage is detected.

The display on the screen shows the "INTERRUPT BY BMS" message and the values of voltage, charging current, charged ampere-hours, and the total charging time at the time of power down. The display representation is retained until confirmation via the OK key occurs.

2.7 Manual charging program termination

The charging program can be immediately terminated any time by pressing the OK key. The "STOPPED BY USER" message and the values of voltage, charging current, charged ampere-hours, and the total charging time at the time of power down then appear on the screen. The display representation is retained until confirmation via the OK key occurs.

3. TYPE YYY
278V 3.0A
1.25Ah 0:30h
STOPPED BY USER



2.8 Charging termination by recognized errors

The charging process is terminated by the following recognized malfunctions:

Iload =0 A	no measurable charging current error message: NO CURRENT
V < Vmin	charging voltage lower than required minimum voltage Vmin error message: LOW VOLTAGE
V HV batt > V2	charging voltage higher than permissible maximum voltage error message: HIGH VOLTAGE
charging time > tmax	maximum charging time exceeded error message: CHARGING TIME OUT
charge > Cmax	maximum permissible charge exceeded error message: MAXIMUM CAPACITY
no pilot line	pilot line not measurable error message: PILOT LINE ERROR

2.9 Service program

A service program is selected when the ◀▶ keys are pressed simultaneously for about 3 seconds. A following menu is displayed

*Return
Settings
Download

The desired area is selected with the ▲▼ keys and then activated with the OK key.



2.9.1 Return

You return to the main menu from any setting level with RETURN.

2.9.2 Download

Charge history downloading and characteristic curve parameter uploading are possible only in this status. Set this status at the VAS 6565 and connect the USB-Port at the front panel with the PC by suitable USB-cable. Follow the guide lines for the appropriate Windows-tool.

2.9.3 Settings

Characteristic charging curves, device calibration, and passwords can be programmed in the SETTINGS area.

A 4-place password protects this area. Its access authorization is approved via Volkswagen Workshop Equipment.

ENTER CODE
XXXX

The required password must be entered via the◀▼▲▶ keys and then confirmed with the OK key.

A menu is displayed after confirmation:

*Return
Set curve 0
Change code
Calibration

2.9.4 Set curve 0

The V1, I1, V2, I2, Vmin, Tmax, and Cmax parameters can be set in this programmers' area from the 0 characteristic curve.



The following IUIUa characteristic curve settings are possible:

U1	maximum value of the 1 st constant voltage phase
I1	maximum value of the 1 st constant current phase
U2	maximum value of the 2 nd constant voltage phase (U2 >= U1)
I2	maximum value of the 2 nd constant current phase
Umin	minimum permissible open-circuit battery voltage as battery output voltage detection
Tmax	maximum permissible charging time as safety threshold
Cmax	maximum capacity to be charged for charge limitation

2.9.5 Change code

The factory set password can be queried via Volkswagen Workshop Equipment. It can be changed via this function.

2.9.6 Calibration

The CALIBRATION is exclusively reserved for instructed personnel with proper equipment. Improper handling can damage the device.

2.10 Upgrade of firmware

The up-to-date firmware version can be queried via Volkswagen Workshop Equipment. Set following status at the VAS 6565: switch-off the equipment, press at the same time ► and OK keys and switch-on the equipment. All three lights must light. Connect the USB-Port at the front panel with the PC by suitable USB-cable. Follow the guidelines for the appropriate Windows-tool AXVAS (can be queried via Volkswagen Workshop Equipment).



3 Specification

3.1 Nominal input voltage **200 – 220 – 230 – 240VAC**

Single-phase system: either L, N, PE (1 x 230 V) or L1, L2, PE (2 x 110 V).
The included power cable's country-specific construction is to be heeded.

Input voltage tolerance	±10% (180 – 265V)
Input frequency	47 – 63Hz
Input power	1950W
Maximum input current	8.5A
Power factor	> 0.98
Inrush current	< 12A at 0.1s, soft start
Recommended input fuse	16A, char. D

The voltage supply of the High voltage-Diagnostics-Battery-Support-Device occurs via an external transformer in countries where only 100V to 120V is available.

3.2 Output voltage **100 - 600V (±1%)**

Rated current	0 - 3A (±2%)
Ripple	<1 Vp-p (pulse frequency 120kHz)
Line/load regulation	± 0.5%
Dynamic load regulation	+6%; -15% (10% to 90%)
Output power	max 1800W
Efficiency	> 90%
Short-circuit behaviour	short-circuit proof
Load dump protection	Unplugging the plug under full load may not cause damage to the charger.



Over-temperature protection	self-actuating shutdown
Overvoltage protection on output	activates at approx. 660V

3.3 Characteristic IUIUa charging curve according to DIN 41 774

The High voltage-Diagnostics-Battery-Support-Device can operate for an arbitrarily long time within the current/voltage limits.

Switching between current and voltage regulation occurs without switch interruption and does not negatively impact the characteristic curve's course.

Up to 20 different characteristic charging curves are settable. Of these, one characteristic line (line 0) is freely programmable with password protected access authorization. Programming occurs via a separate Windows tool. It is transmitted as a characteristic curve set to the HV charger by means of firmware update per USB.

3.4 Pilot line

Resistance	82 Ω
Current	8 – 12mA

3.5 Standards

EMC emissions	according to EN 61000-6-4
EMC immunity	according to EN 61000-6-2
Harmonic current emissions	according to EN 61000-3-2
Safety	according to EN 60950
Degree of protection	IP 20 D

3.6 Operating conditions

Ambient temperature	10°C +45°C
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Adequate ventilation is to be provided. Free space of at least 10cm on both sides and behind the device is to be provided.

Humidity	max. 80%, no condensation
Storage conditions	-25°C +80°C, dry space



3.7 Interfaces/connections

Input plug	low-heat device plug on the side wall
USB interface	(versions 2.0 and 1.1)
Output plug	Wieland High voltage-Industry output plug

Standard-Charging-Cable for Volkswagen Touareg Hybrid, Porsche Cayenne Hybrid and Porsche Panamera Hybrid

Device contact plug	Wieland High voltage-Industry plug
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Designation: T+	(red 1331M301FESM562 ECTA plug with 180° outlet)
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Designation: T-	(brown 1331M301FESM563 ECTA plug with 180° outlet)
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The High voltage-Diagnostics-Battery-Support-Device is equipped with a contact-monitored potential equalization line. The potential equalization line is integrated into the pilot line cable and is connected over it to the vehicle's ground. The potential equalization line's contact is connected application-safely with the pilot line's monitoring.

3.8 Dimensions

Width	380 mm
Height	300 mm
Depth	180 mm
Mass	8,5 kg
Charging cable:	3000 mm
Power cable:	2000 mm
Potential equalization lines:	3000 mm

When there is a device defect or application question, please send e-mail to

vas-service@akkuteam.de

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