



# Operating Manual

## *High-voltage testing adapter VAS 6558A/40*



High-voltage testing adapter VAS 6558A/40  
CAR-connect GmbH®

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Note/addition:	Application examples, in which a vehicle or a vehicle-specific module is displayed, are approved by the vehicle manufacturer.

## Imprint

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Validity:	This operating manual is only applicable to the described product. The latest release for documentation is shown in revision management in the chapter “document identification”.
Repository:	The operating manual is an essential part of the product and is to be kept with the product in its transportation box or protective case. In addition to the paper forms, electronic delivery forms are also permitted.
Target group:	These operating instructions are intended for the trained electrician, who has received training in technical and supervisory responsibilities for working with high-voltage systems of motor vehicles.



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# 1 Concept

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The high-voltage testing adapter has been developed according to the latest regulations in measurement and control technology, for use on intrinsically safe high-voltage systems in road vehicles. The testing adapter corresponds with the state of the art and meets all relevant European standards as well as partially meets international standards.

Despite high standards for development, production and quality, only careful handling and proper use can ensure that there is no damage and resulting consequences. For this reason, this operating manual should be read and understood in full.

## 1.1 Read the operating manual

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Read this operating manual thoroughly before using the high-voltage testing adapter. In this operating manual, the intended use and hazards of handling the product are described.

In addition to this operating manual, other regulations may be binding for diagnosis or troubleshooting of intrinsically safe high-voltage systems in road vehicles. These include, among other things, the manuals of the vehicle manufacturer as well as the instructions of the employers' liability insurance association.

Please ensure that all information on the product and its scope of application is available to you before you use the high-voltage testing adapter. Please use the adapter cable only if you have fully understood all information pertaining to its use.







## 1.2 Structure of the document

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For a better understanding of the information contained in this operating manual, additional descriptive pictograms are used. These markings indicate particularly relevant information and the images indicate the significance within a description or an operation step.

Therefore, please follow the instructions and information in this operating manual, so that there is no bodily injury or property damage when used in the high-voltage section of the vehicle.

The following table contains all the pictograms, warning symbols and symbols that may appear in this manual.

	<p><b>INFORMATION:</b> Follow the operating manual.</p>		<p><b>DANGER!</b> Fatal hazard! High voltage.</p>
	<p><b>NOTE:</b> Follow general instructions.</p>		<p><b>WARNING!</b> Warning of dangerous electrical voltage. There is a risk of fatal hazard!</p>
	<p><b>PROHIBITED!</b> For people with a pacemaker or defibrillator. There is a risk of fatal hazard!</p>		<p><b>ATTENTION!</b> Please note the following:</p>



## 2 Safety instructions

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The basic safety instructions given below must be followed to avert bodily injury to people and property damage while using the high-voltage testing adapter.

### 2.1 General safety instructions

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Most incidences of damage to property and personal injury are primarily due to ignorance or negligence and can be avoided from the outset if the following general safety instructions are observed:

- Read the operating manual carefully before use.
- Only people who can provide valid proof of technical knowledge of working on high-voltage systems in motor vehicles may perform measurements on high-voltage systems.
- Follow the instructions in the guided troubleshooting, which is described in the PIWIS Tester.
- Use the high-voltage testing adapter **only** in closed and dry rooms.
- Follow the instructions of the trade association or government institutions for the repair of hybrid- and all-battery electric vehicles.
- Check the testing adapter regularly before use in accordance with the specifications of VDE 0701-0702:2010-08 (draft EN 62638).
- Use the testing adapter **solely** for the intended use, as specified by the vehicle manufacturer.
- Use the product **solely** for its intended purpose.
- **Immediately** replace a defective or damaged product.
- **Never** attempt to modify or manipulate the testing adapter.
- **Never** attempt to supply current or voltage to other devices through the testing adapter.
- **Never** use a test lamp or any other incompatible testing equipment to perform no-voltage checks on the testing adapter.
- **Never** attempt to repair a testing adapter.
- Do not use aggressive liquids to clean the product.
- Prevent the adapter cable from coming in contact with aggressive operating fluids such as brake fluid and coolant.
- Prevent the product from falling on the floor.





## 2.2 Intended use

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The high-voltage testing adapter VAS 6558A/40 is a passive, non-self-indicating measuring device used in conjunction with the high-voltage measuring module VAS 6558A for diagnosis of high-voltage systems of road vehicles. With this measuring equipment combination, the de-energised state of the high-voltage system can be determined in a qualified and safe manner. The testing adapter makes the high-voltage connector (TE-HVP800) touch-protected on both sides and thus enables potential resistance and insulation resistance measurement. In doing so, please follow the work instructions in the PIWIS Tester.

## 2.3 Improper use

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Any use of the product deviating from the intended use is considered improper use. Use of a manipulated or defective testing adapter will be considered in exactly the same way as disregarding or disobeying the instructions of the operating manual. This behaviour, in addition to limiting the guarantee and the loss of warranty claims, can also lead to bodily injury to people or damage to property under certain circumstances.

## 2.4 Obligations of the operator

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The operator must ensure that appropriate and capable staff is appointed by them to work on vehicle-specific high-voltage system. The proof of qualification required for this is based on successful participation in appropriate training. The operator must ensure that the measuring equipment and accessories are in a faultless condition and they do not have any defects.

Regular inspection periods for the measuring equipment, accessories and testing adapters are set out in an instruction manual. Also, it is the operator's responsibility to note the replacement of the high-voltage testing adapter on reaching the number of operation cycles. The operator must ensure that servicing staff regularly participate in refresher training courses for repairs of high-voltage systems and pass these successfully as well.

## 2.5 User's qualifications

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The user has proven expertise to carry out work on high-voltage systems of fully battery-operated, plug-in hybrid or e-traction road vehicles. In addition, the user should have experience in taking cascade measurements, whereby active and passive measurements are taken simultaneously.

## 3 Transport

The product comes in recyclable disposable packaging, which is **not suitable** for storing the product after use.

### 3.1 Unpacking and checking for completeness

Check the condition and completeness of the contents based on the shipping documents and the delivery note. In case of any damage or defective components, contact the manufacturer immediately.



Fig. 1: Scope of supply of VAS 6558A/40

### 3.2 Transport during normal working hours

The high-voltage testing adapter is used along with the measuring module VAS 6558A and should be transported after diagnosis in a suitable transport container. Please ensure that moisture and metal dust do not enter the container.

### 3.3 Safekeeping and storage

In order to avoid damage to the high-voltage testing adapter or to prevent the loss of accessories, always keep the measuring equipment in a transport case. This approach ensures a quick overview of a completed task, for example, if all the parts are once again placed in the case in the designated places.

## 4 High-voltage testing adapter

The high-voltage testing adapter VAS 6558A/40 is a passive, non-self-indicating measuring unit used to certifiably determine the absence of voltage in the high-voltage system of road vehicles manufactured by Volkswagen.

For this, the testing adapter is adapted to the high-voltage connector TE-HVP800 in a deenergised vehicle which has a lockable high-voltage cable connector installed. The installed high-voltage cable connector is designed in such a way that a two-way contact of the high-voltage connector is possible.



Fig. 2: Front and back with cable connector

A suitable mating connector for the high-voltage connector is present on the high-voltage testing adapter. The vehicle-mounted high-voltage cable is attached to it and this cable is fixed and connected by flipping the locking lever. The high-voltage testing adapter is designed in such a way that it is not possible to touch the active high-voltage and low-voltage contacts while taking measurements. For personal protection, 100 kOhm resistors are attached to the laboratory test sockets HV (-) and HV (+) inside the testing adapter.

To carry out the specified measurements on the high-voltage systems, additionally the high-voltage measuring module VAS 6558A is used. The measuring module is used as per the guided troubleshooting instructions in the PIWIS tester. The laboratory sockets located on the sides of the testing adapter can be used with the measuring module or with another measuring device approved by the vehicle manufacturer for carrying out potential- and insulation measurement and to check the absence of voltage, as well as contacting the pilot lines.



Fig. 3: Side views of TP1 and TP2

The high-voltage testing adapter VAS 6558A/40 consists of a two-part, screwed plastic housing. The two dimensionally stable and accurate housing halves are joined together almost seamlessly, which helps protect against splash water and dripping water.

The plastic material used makes the housing resistant to impacts typically encountered in everyday use, plays a repellent function against aggressive substances and prevents a static charge thanks to its composition. The smooth, non-porous and glossy surface minimises dust adhesion and thereby reduces the effort required in cleaning.

The high-voltage test cables, which are permanently installed in the housing, have kink protection on the housing side and the opposite ends of the cable merge in a splash-proof vehicle-specific plug-in housing.

With this connector housing, the high-voltage connector (TE-HVP800) can be contacted on both sides, since the connector has no side coding. Voltage reversal coding is integrated. For the potential- and insulation measurement, the test sockets are found on the sides of the test area TP1. The test sockets of the pilot lines are installed in test area TP2 on the opposite side of the housing.

## 4.1 Product labelling

Some product labels are attached to the testing adapter. The following tables describe each label and explain the signs shown.

The side label TP1 shows the plug-in connectors and their labels.

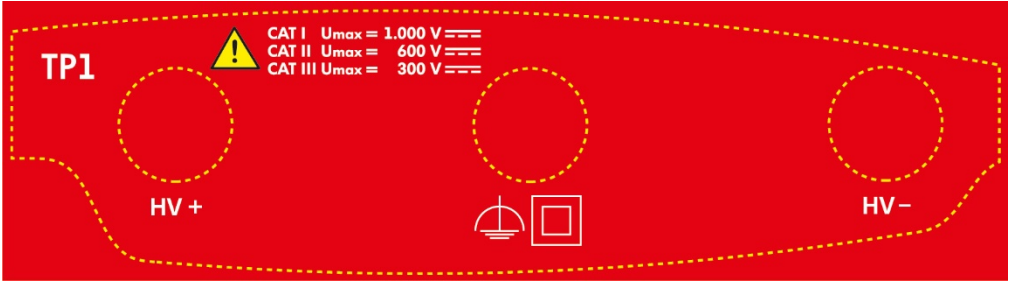



	
<p>CAT I <math>U_{max} = 1.000\text{ V}</math>                  CAT II <math>U_{max} = 600\text{ V}</math>                  CAT III <math>U_{max} = 300\text{ V}</math></p>	Area of application of the device
	General warning signs
	Protection category II
	Functional earthing connector (blue)
<p>(+)</p>	Plus connector (red)
<p>(-)</p>	Minus connector (black)

Fig. 4: TP1 marking



General warning regarding handling of the device is given on the back.

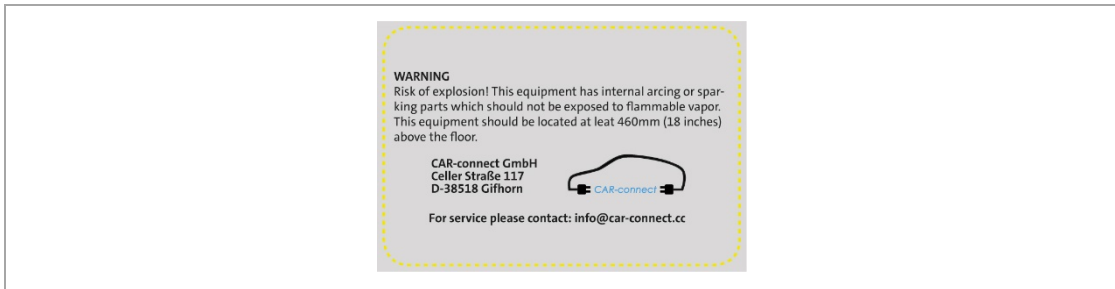


Fig. 5: Warning on the back of the device

The machine nameplate contains the following symbols and signs.

	Warning signs
CAT I $U_{max} = 1.000\text{ V}$ CAT II $U_{max} = 600\text{ V}$ CAT III $U_{max} = 300\text{ V}$	Area of application of the device
VW AG VAS 6558A/40	Product name
ASE 405 481 00 000	VW order number
	General warning signs
	Protection category II
	Disposal instructions
	Conformity mark
	Seal of approval of the organisation

Fig. 6. Machine plate

The circuit diagram on the testing adapter shows the connections from the high-voltage contacts to the plug-in connectors.

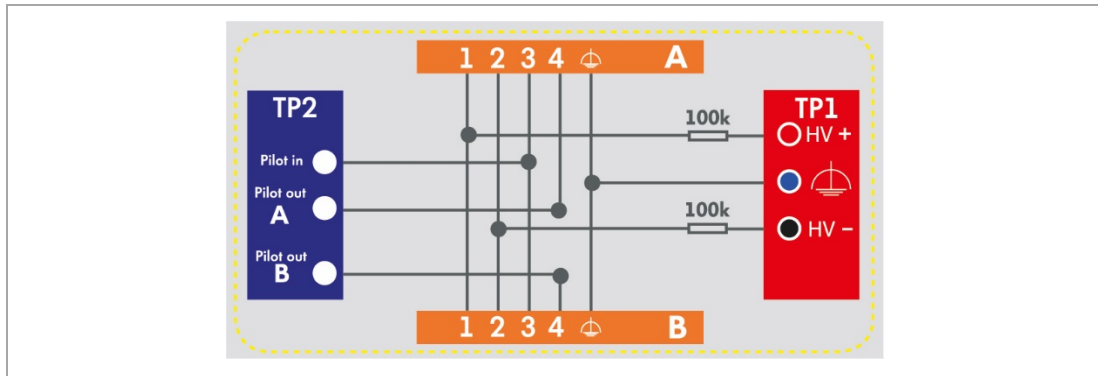
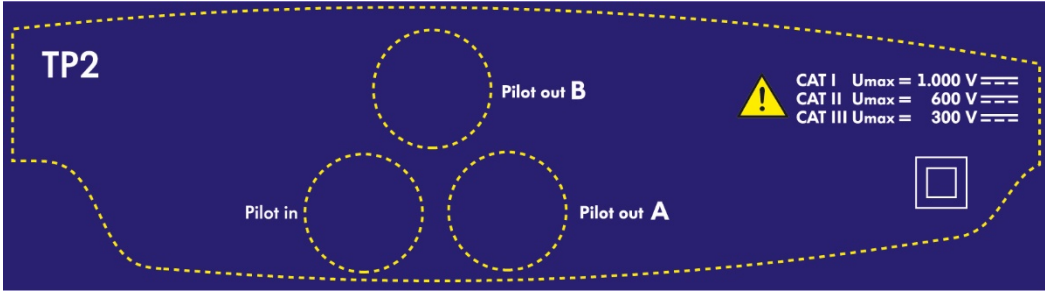


Fig. 7: Circuit diagram on the back of the device

The TP2 label contains the following symbols and signs.








<p>CAT I <math>U_{max} = 1.000\text{ V}</math> </p> <p>CAT II <math>U_{max} = 600\text{ V}</math> </p> <p>CAT III <math>U_{max} = 300\text{ V}</math> </p>	Area of application of the device
	General warning signs
	Protection category II
Pilot out A	Pilot line
Pilot out B	
Pilot out in	

Fig. 8: TP2 marking









## 4.2 Technical specifications

<b>Connection of measuring connectors:</b>	<p>CAT I = 1000V DC max.</p> <p>CAT II = 600V DC max.</p> <p>CAT III = 300V DC max.</p>
<b>Maximum rated current:</b>	1 mA
<b>Protection type:</b>	Protection category II
<b>Area of application:</b>	Use only in dry and closed rooms.
<b>Conditions of use:</b>	<p>The testing adapter can be used up to a temperature of 50°C.</p> <p>The testing adapter can be used up to a relative humidity of 85%.</p> <p>The testing adapter is designed for storage in the temperature range from -20°C to 60°C.</p>
<b>Cleaning:</b>	Clean the testing adapter only with a dry cloth.



## 5 Operation


Before you can start testing the high-voltage components, ensure that the vehicle is de-energised. Follow the instructions given in the guided diagnostics of the vehicle manufacturer. Additionally, observe the following safety rules.

	<p><b>PROHIBITED!</b></p> <p>Heart pacemakers and implanted defibrillators may be rendered inoperable by strong magnetic fields or high currents.</p> <p>People with these implanted devices should <b>not</b> carry out any work on high-voltage systems.</p>
	<p><b>DANGER!</b></p> <p>When working on high-voltage systems of the vehicle, high-voltage DC can lead to short-circuits and voltage flash-overs. <b>FATAL HAZARD!</b></p> <p>Carry out work on HV-systems <b>only</b> in the absence of voltage.</p>
	<p><b>WARNING!</b></p> <p>High voltages may be present on the charging device and the testing adapter from time to time. <b>Never</b> remove the test cable from the measuring connectors during measurement. There is a risk of <b>FATAL HAZARD!</b></p> <p>Carry out the measurements only with activated HV systems.</p>
	<p><b>ATTENTION!</b></p> <p>Before beginning work, check the testing adapter's operability. Carry out a self-test.</p>
	<p><b>INFORMATION:</b></p> <p>Before beginning work, read all maintenance and repair information from the vehicle's manufacturer.</p>
	<p><b>NOTE:</b></p> <p>While working on the high-voltage system, avoid static discharges, since these may damage the electronic components.</p>

## 5.1 Insert the high-voltage testing adapter


The high-voltage testing adapter is inserted and used as per the vehicle manufacturer's specifications. Follow the handling instructions in the guided software-aided vehicle diagnostics of the relevant brand of the company.

# 6 Maintenance/self-testing

	<p><b>INFORMATION:</b> In addition to this operating manual, also read the operating instruction on the topic of maintenance/self-testing from the vehicle's manufacturer and operator.</p>
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## 6.1 Maintenance of the device

No provisions are made by the device manufacturer for maintenance of the high-voltage testing adapter.

	<p><b>ATTENTION:</b> A separate measuring equipment test, in which safety-relevant components and functions are tested according to national or official specifications, can be commissioned by the operator or the vehicle manufacturer.</p>
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## 6.2 Recurring testing of the device.

To comply with the requirements for electrical safety of electrical equipment and work equipment in accordance with VDE 0701-0702: 2008 (draft EN 62638), the corresponding test instructions for an annual inspection are available on the manufacturer's homepage.


	<p><b>INFORMATION:</b> See <a href="http://www.car-connect.cc/downloads">www.car-connect.cc/downloads</a> for the required test instructions for your product.</p>
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### 6.3 Clean the device.


The high-voltage testing adapter should **only** be cleaned with a dust-absorbing cloth made of antistatic material. The testing adapter must **never** come into contact with liquid cleaners, aggressive cleaning agents or water in any form (splash water, dripping water, high-pressure cleaning water).

Immediately replace the testing adapter, if it comes in contact with liquids or chemicals.

## 7 Disposal

	<p><b>Note:</b></p> <p>The product must <b>not</b> go into domestic waste at the end of its working life. The operator of the high-voltage testing adapter is the owner responsible for disposal according to the applicable European law and bears the responsibility for appropriate disposal.</p> <p>If other laws governing the disposal or recycling of electrical appliances have priority regarding validity and application, these country-specific regulations are binding for the process.</p>
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### 7.1 Product life cycle

	<p><b>DANGER:</b></p> <p>The product life cycle of the high-voltage testing adapter is coupled with the operating cycles in which it is adapted to the high-voltage system. With more than 2000 cycles, the testing adapter must be replaced and must <b>not</b> be used any longer.</p>
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### 7.2 Environmentally responsible waste disposal

As soon as the testing adapter's life cycle come to an end, it must be sent for sorted disposal. The testing adapter's operator bears the responsibility for this as the owner responsible for disposal. The sale or gratuitous licensing for the purpose of disposal must be documented.



## 8 Customer service

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Should you have any questions about the product, or wish to know the procedure for replacement or exchange deliveries, or simply wish to place an order, then contact the Customer Services at:

CAR-connect GmbH  
Celler Str. 117  
D-38518 Gifhorn  
Telephone: +49 (0) 5373 – 92197- 0  
Fax: +49 (0) 5373 – 92197-88  
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[www.car-connect.cc](http://www.car-connect.cc)