

VAS 6558A/33

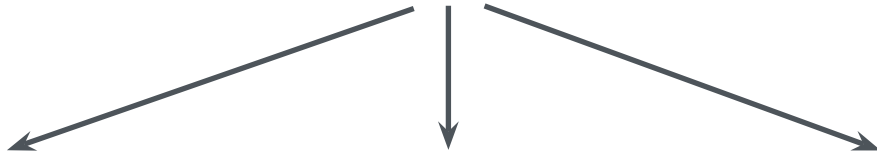


High-voltage Test Adapter

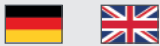
Owner's Manual



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Owner's Manual



USB flash drive



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1.1 General instructions

State-of-the-art

This tool represents state-of-the-art technology. To ensure the functionality of the equipment, it must be operated in a proper and safe manner.

Technical modifications

In the interests of quality assurance, we reserve the unrestricted right to apply technical modifications arising out of further developments in technology and product improvements without prior notice.



Read the owner's manual

Before using the tool, read the owner's manual and ensure that you have understood the instructions. This manual must always be available where the product is being used.

Handling

All handling necessary to ensure correct operation is described in the owner's manual. No methods of working other than those approved by the manufacturer may be practiced.

Faults

If a problem should arise, the operator may only perform actions to eliminate the problem if the relevant measure is described in the manual.

Warranty

The manufacturer accepts no liability for damage or injury caused by improper repair or the use of foreign replacement parts. The warranty will not cover any damage caused to the tool due to its misuse.

Environment

Make sure that the tool set is set up in a work area that is free from sources of heat (max. 50°C / 122°F), corrosive liquids, greases and oils.

Allow the tool to acclimate before start-up. Avoid the formation of condensation.

For the most accurate measurement results, avoid large temperature fluctuations during measurement.

➔ 5.4 Declaration of Conformity

The tool has been tested and manufactured in accordance with European guidelines. The Declaration of Conformity has been included with this owner's manual.



Risk of damage to the tool

The tool must only be used as described in the owner's manual. Misusing the tool or using it for any purpose for which it has not been designed is expressly prohibited. Make sure that you and your employees handle the tool properly.



Risk of injury

In addition to the owner's manual, the binding provisions of the accident prevention regulations applicable at the place of use and the general (accepted) rules for safety compliance and professional working must be observed.

Qualified personnel

Trained and instructed personnel have specialized training that enables them to repair/maintain the respective vehicles and vehicle components.

Work on high-voltage systems may only be performed by high-voltage technicians/high-voltage experts or by professionals with equivalent or higher qualification.

In addition, these workers must have documented proof that they have taken part in further training that qualifies them specifically for the tasks to be performed with the tool.



1.2 Explanation of symbols

In this owner's manual, some sections use internationally known warning symbols, warning notes and general instruction symbols.

The individual symbols are explained below. Follow all instructions and safety rules.



Follow manual



Protective insulation



Please note the...



Observe the general information



Direct current (DC)



Arrow to clarify compression



Warning!
General source of danger



cTUVus certification



For more information, see section...



High voltage!
Danger to life!



CE marking



Arrow showing direction



Caution!
Risk of explosion



GS mark (Tested Safety)



Product certificate
<https://www.tkrgroup.com/vas-6558A-cert.htm>

1.3 Markings

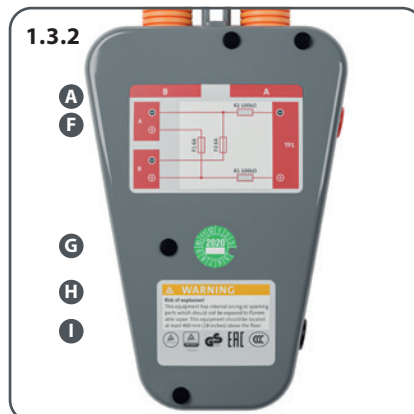
1.3.1



1.3.1 Markings on top of the high-voltage test adapter

- A Adapter connection marking
- B Warnings (High voltage!, Warning!, Follow manual)
- C Manufacturer's address, contact details
- D Part number, serial number, year of manufacture
- E Disposal, voltage, protection class

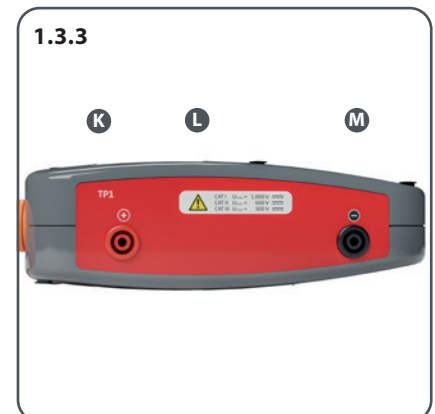
1.3.2



1.3.2 Markings on the underside of the high-voltage test adapter

- A Adapter connection marking
- F Circuit diagram
- G Inspection sticker
- H Warning (Risk of explosion)
- I Test certificates

1.3.3



1.3.3 Markings on the side of the high-voltage test adapter

- K TP1 measuring socket
- L Measurement category
- M TP1 measuring socket

1.4 Scope of supply

1.4.1



- O High-voltage test adapter
- P Case
- R USB flash drive with owner's manual in 38 language versions and insert sheet

1.5 Safety instructions



The high-voltage test adapter is approved solely for the intended use designated by the manufacturer.

The tool may only be used for the activities described in this owner's manual. Never misuse the tool. If the tool is improperly used, its safety can no longer be guaranteed.



CAUTION
Risk of property damage and personal injury due to improper accessories

Failure to use genuine tools or genuine accessories leads to a high safety risk. Only genuine accessories may be used.

The manufacturer assumes no liability for conversions or modifications to the high-voltage test adapter.



CAUTION
Risk of property damage and personal injury

Before performing any repair, read the safety instructions and ensure that you have understood them. Failure to read the instructions may result in serious bodily injury.



CAUTION
Risk of property damage and personal injury

Use of the tool by personnel who have not undergone the requisite training and instruction is prohibited. The tool must not be lent to untrained personnel.

Ensure that the tool is only operated by trained personnel instructed in its use.



Ensure that the owner's manual is made available to operating personnel.

This owner's manual must be carefully read and understood by each operator before they begin using it for the first time. It must always be available where the product is being used.



Observe the applicable occupational health and safety regulations of the respective country.

In addition to the owner's manual, the binding provisions of the accident prevention regulations applicable at the place of use and the general accepted rules for safety compliance and professional working must be observed.



**CAUTION
Risk of tripping**

Carelessly laid supply lines/cables can lead to accidents caused by tripping, twisting (e.g. one's ankle) or tumbling or could lead to damage to the lines/cables.

Route all supply lines/cables in a way that prevents them from being damaged or tripped over.



**CAUTION
Risk of explosion!**

This tool has internal arcing or sparking parts that must not come into contact with flammable vapors. This tool should be kept at least 460 mm (18 in) above the ground.

The high-voltage test adapter must never be used in potentially explosive areas.



**CAUTION
Risk of damage to the vehicle due to a defective tool**

A defective tool could damage the vehicle electronics. Visually inspect the tool prior to each use. Stop using the high-voltage test adapter immediately if it is defective.

Please contact Service (➡ 5.2).



**CAUTION
Risk of damage to the vehicle due to improper use**

Improper use can cause damage to the vehicle electronics or measurement errors. Follow the repair guide for the vehicle model in question to ensure that use of the tool does not cause damage.



**CAUTION
Risk of damage to the tool**

Improper handling of the high-voltage test adapter could damage the tool. Never throw the tool or allow it to fall.



An administrator account may be required to install the drivers.



The high-voltage test adapter may only be used at ambient temperatures of minimum 0°C / 32°F up to maximum 50°C / 122°F.

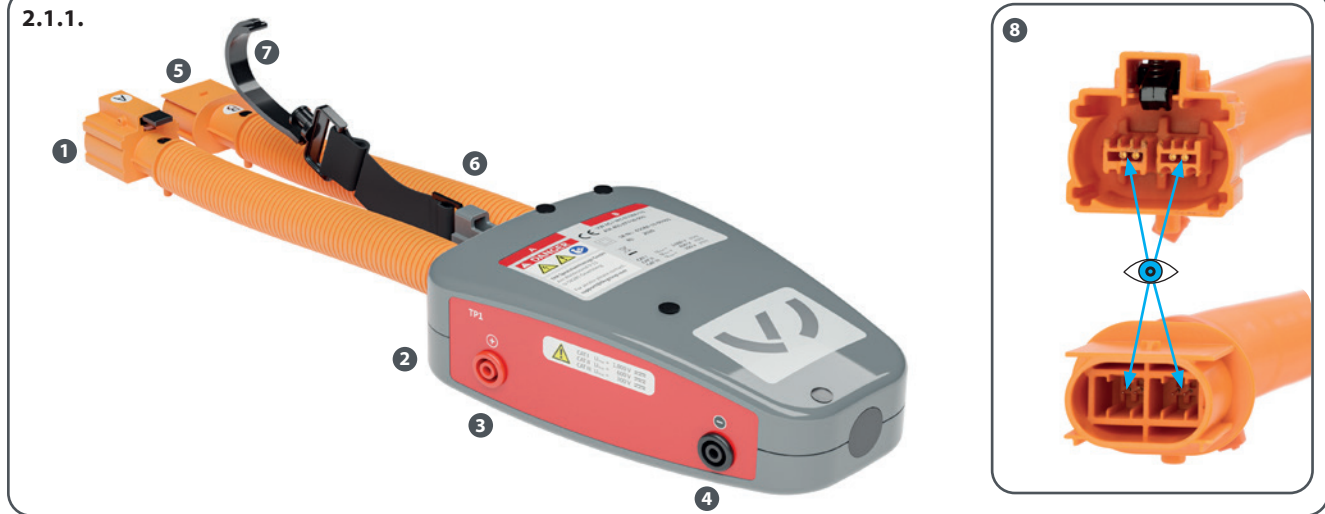


The high-voltage test adapter must not be used if any abnormalities are discovered.

Please contact Service (➡ 5.2).

2.1 Device components

2.1.1.



2.1.1 High-voltage test adapter

- | | | | |
|---|------------------------|---|-----------------|
| 1 | Socket adapter A | 5 | Pin adapter B |
| 2 | Plastic housing | 6 | Adapter cable |
| 3 | TP1 measuring socket + | 7 | Hanger |
| 4 | TP1 measuring socket - | 8 | Spring contacts |

2.2 Operating conditions

Power supply

No additional power supply required.

Climate conditions

➔ 2.3 Technical data

Electromagnetic compatibility (EMC)

In accordance with GS 95002/GS 95024-2 (IEC61000)
DIN EN 61000-6-2 (2005)
DIN EN 61000-6-3 (2007)

2.3 Technical data



VAS 6558A/33

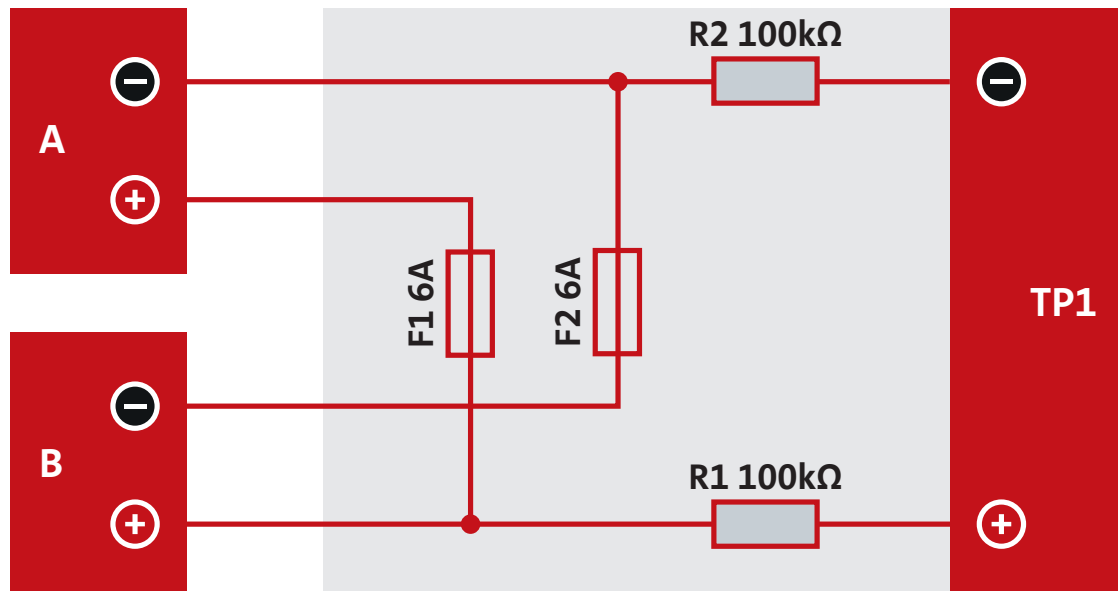
Device type	Measuring
Fittings	Held in the hand
Supply connection	None (passive)
Ambient temperature (operation)	0°C to +50°C / +32°F to +122°F
Ambient temperature (storage)	-20°C to +60°C / -4°F to +140°F
Ambient humidity	Up to 85% (non-condensing)
Protection:	IP20
Measurement category	CAT I*, CAT II**, CAT III***
Maximum measurement voltage	1000 V DC for CAT I, 600 V DC for CAT II, 300 V DC for CAT III
Maximum current	6 A
fuse	2x 6 A 1000 V super fast
Pollution degree	2
Safety	IEC 61010-031
Impedance	100 kΩ HV+, 100 kΩ HV
cable length, adapter cable	800 mm per side

* Measurements on circuits that have no direct connection to the network (e.g. battery operation, vehicle electrical system)

** Measurements on circuits that have a direct connection to the low-voltage network via a connector (e.g. portable electrical devices)

*** Measurements within the building installation (e.g. stationary consumers with non-pluggable connection, distribution connection, sub-distribution)

2.3.1 Circuit diagram VAS 6558A/33



3.1 Intended use

High-voltage test adapter VAS 6558A/33 is used for safe and contact-free determination of whether the HV system has been deenergized. It can be connected to high-voltage test adapter VAS 6558A/36 for a function test.

Use is described in the corresponding repair guide. Observe the work instructions for guided troubleshooting of the brands.

With the high-voltage test adapter, a check to ensure that the system has been deenergized can be performed directly at the auxiliary unit connection of the HV battery and the connected wiring harness without exposing additional high-voltage components.

HV test adapter VAS 6558A/33 is needed to test the HV lines between the HV battery and the pulse inverter.

As a rule, work must not be performed on live parts of electrical systems and equipment. Before starting work, ensure that the

system or equipment is in a voltage-free state (deenergized) and check that it remains in this state for the duration of the work.



CAUTION

Risk of injury

The high-voltage test adapter may only be used with measuring devices approved by the brand (high-voltage measuring module VAS 6558A) up to including 1 kV.

3.2 Principles for handling the high-voltage test adapter

Risk of injury



Please ensure that the high-voltage test adapter is handled properly.



Misusing the high-voltage test adapter or using it for any purpose for which it has not been designed is expressly prohibited.



The high-voltage test adapter must only be used as described in the owner's manual.

Warranty



The manufacturer accepts no liability for damage or injury caused by improper repair or the use of foreign replacement parts.



The warranty will not cover any damage caused to the high-voltage test adapter due to its misuse.

Environment



Make sure that the high-voltage test adapter is set up in a work area that is free from sources of heat (max. 50°C / 122°F), corrosive liquids, greases and oils.



Allow the tool to acclimate before start-up. Avoid the formation of condensation.



5.3 Declaration of Conformity

The high-voltage test adapter has been tested and manufactured in accordance with European guidelines. The Declaration of Conformity has been included with this owner's manual.



3.3 Pre-use check (function test)



Check the high-voltage adapter for damage before each use or measurement.



Visually inspect the spring contacts before each use or measurement.



To ensure that the tool is working properly, perform a function test before each use or measurement.



The function test must be performed before and immediately after use.



**CAUTION
Risk of injury**

No measurements may be performed if both connectors are connected to both sockets of the adapter. Only connect the socket and pin adapter on one side. Observe the specifications for the function test in Figures 3.3.1 to 3.3.5.

During the function test, the corresponding pin and socket adapter (VAS 6558A/33 with VAS 6558A/36) are connected to each other.

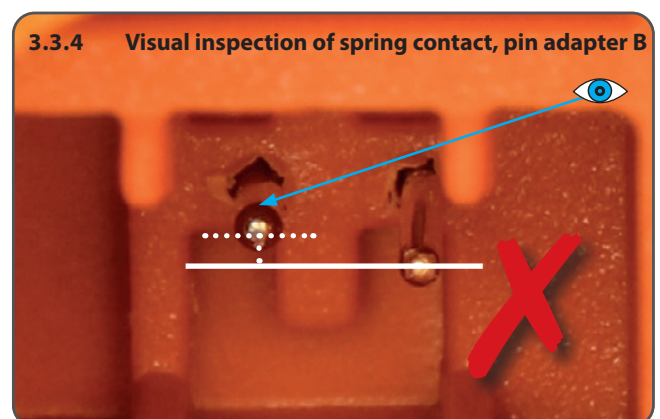
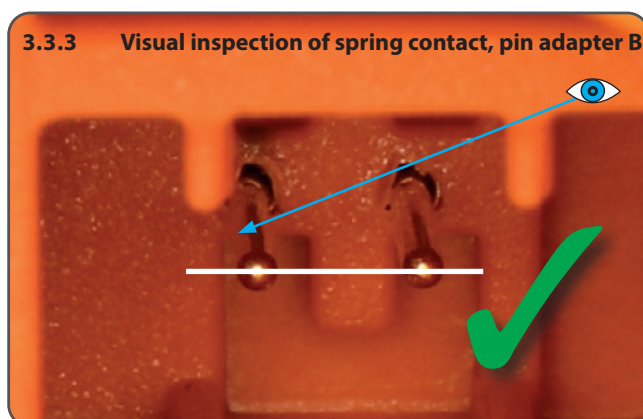
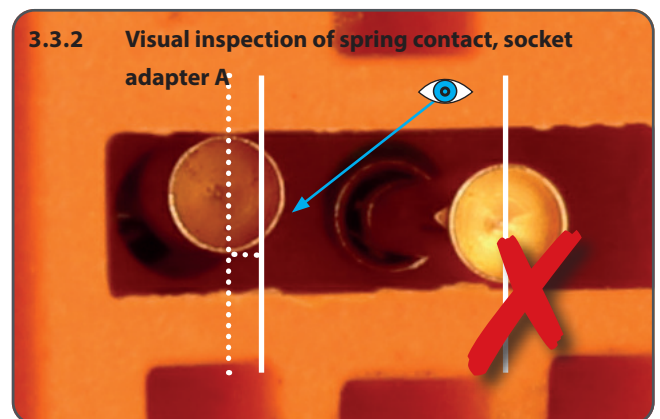
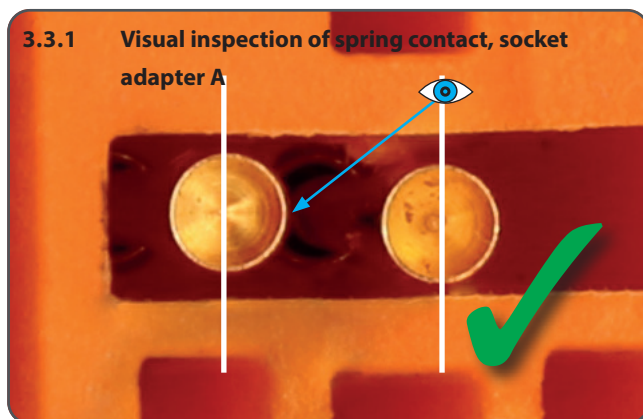
Then perform resistance measurements with a suitable measuring device/measuring cable and compare the results with the specified reference values.



**CAUTION
Risk of injury**

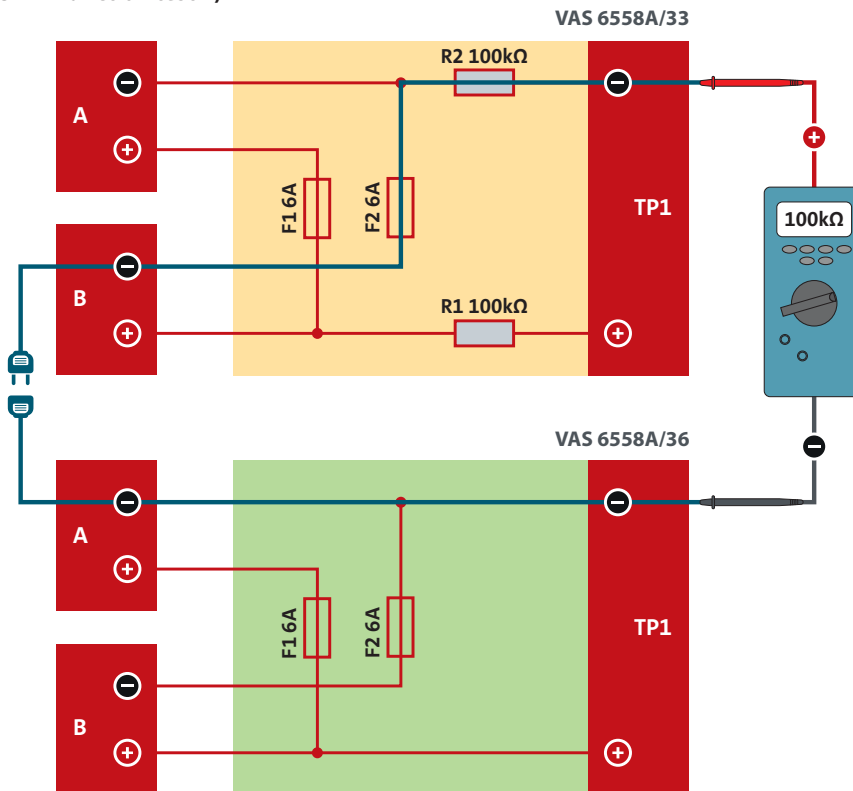
If the specified reference values are not obtained during the function test, the high-voltage test adapter must not be used!

Visual inspection of the spring contacts



3.3 Pre-use check (function test)

3.3.5 Function test 1)



1. Connect the pin adapter to the socket adapter:

Pin adapter: VAS 6558A/33
Connector: B

Socket adapter: VAS 6558A/36
Socket: A

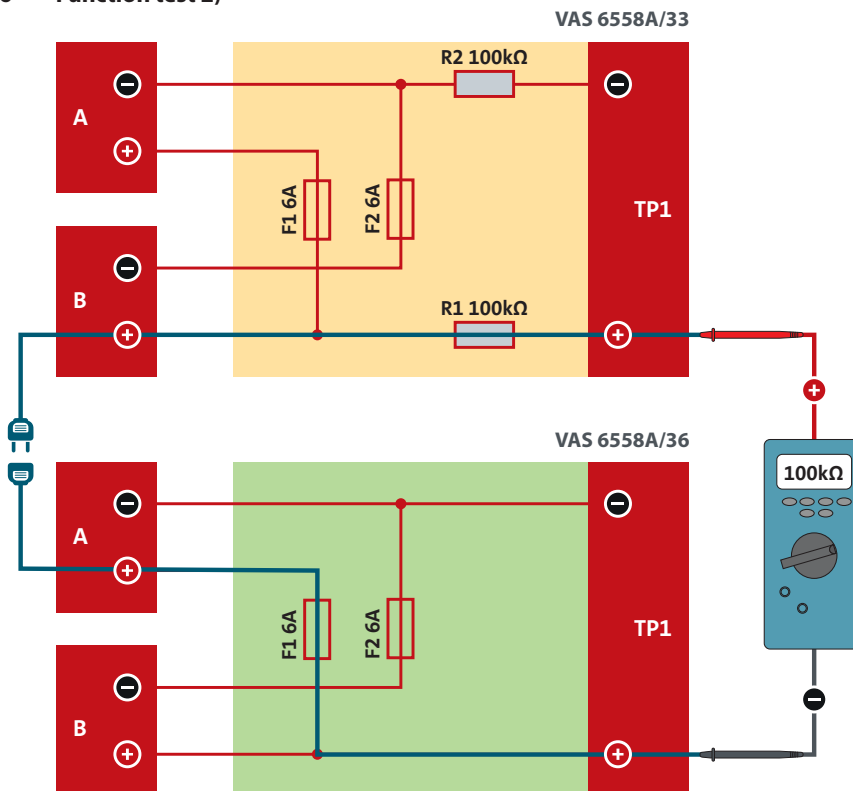
2. Connect the measuring device:

Measuring probe +
for VAS 6558A/33 TP1 -

Measuring probe -
for VAS 6558A/36 TP1 -

Reference value:
98–102 kΩ

3.3.6 Function test 2)



1. Connect the pin adapter to the socket adapter:

Pin adapter: VAS 6558A/33
Connector: B

Socket adapter: VAS 6558A/36
Socket: A

2. Connect the measuring device:

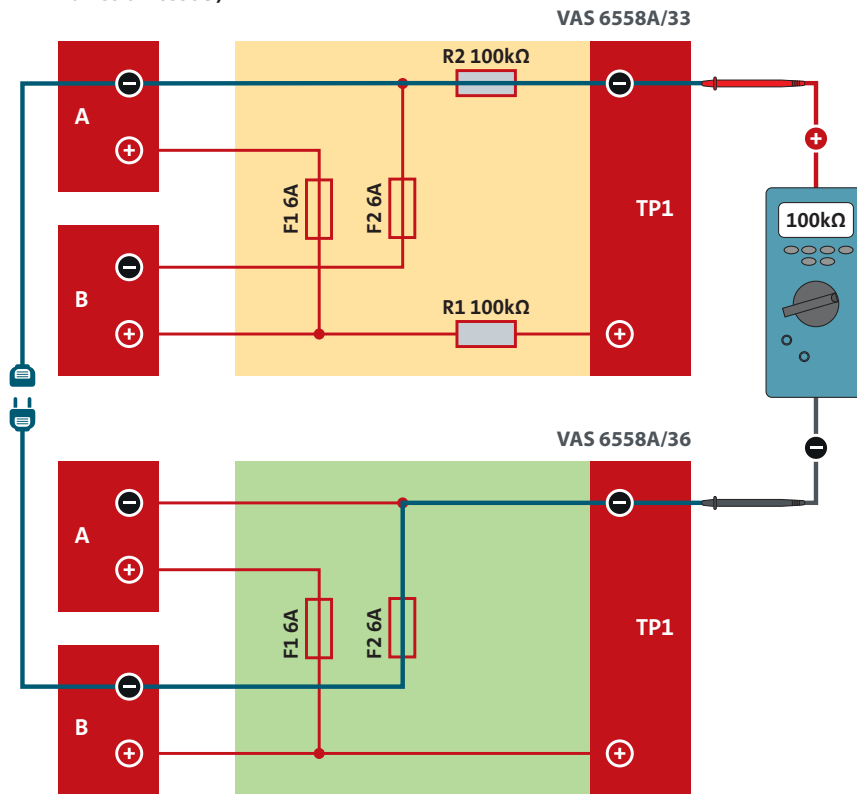
Measuring probe +
for VAS 6558A/33 TP1 +

Measuring probe -
for VAS 6558A/36 TP1 +

Reference value:
98–102 kΩ



3.3.7 Function test 3)



1. Connect the pin adapter to the socket adapter:

Socket adapter: VAS 6558A/33

Socket: A

Pin adapter: VAS 6558A/36

Connector: B

2. Connect the measuring device:

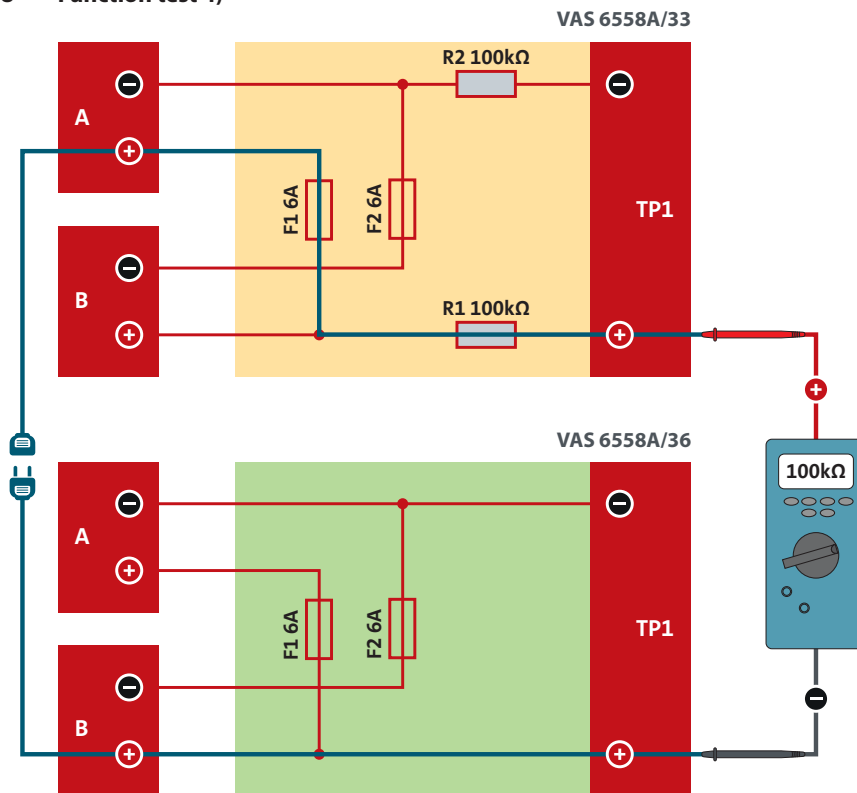
Measuring probe +
for VAS 6558A/33 TP1 -

Measuring probe -
for VAS 6558A/36 TP1 -

Reference value:

98–102 kΩ

3.3.8 Function test 4)



1. Connect the pin adapter to the socket adapter:

Socket adapter: VAS 6558A/33

Socket: A

Pin adapter: VAS 6558A/36

Connector: B

2. Connect the measuring device:

Measuring probe +
for VAS 6558A/33 TP1 +

Measuring probe -
for VAS 6558A/36 TP1 +

Reference value:

98–102 kΩ

3.4 Connecting HV components





Follow the repair guide for the vehicle model in question to ensure proper use.

Connect the corresponding pin/socket adapter of the high-voltage test adapter to the HV component.



DANGER

Danger to life from electric shock

Never connect measuring sockets TP1  and TP1  to each other.

If there is bridging or short-circuiting, the high-voltage test adapters must be replaced immediately.

3.5 Determining that the system has been deenergized



The measuring lines used must be protected against contact and approved and suitable for the voltage being tested.



Only measuring devices approved by the brand (high-voltage measuring module VAS 6558A) up to and including 1 kV may be used when using the high-voltage test adapter to determine whether the system has been deenergized.



Before the test, check the test/measuring device for damage and proper function.

Set the test/measuring device to a suitable DC voltage measuring range. Switch off the automatic measuring range switchover. Check the functionality of the test/measuring device on a known voltage source.



The test/measuring device must be set to DC direct voltage and automatic measuring range switchover must be switched off.



DANGER

Danger to life from electric shock

If the voltage is above 60 V DC, the entire HV system must be regarded as DANGEROUSLY ACTIVE. Pay particular attention to:

➡ **3.6 Sources of error**



DANGER

Danger to life from electric shock

No further work may be performed on live HV components!



After determining that the system has been deenergized, perform the function test again to be able to identify whether any malfunction occurs during measurement.

➡ **3.3 Function test**



DANGER

Danger to life from electric shock

If the new function test indicates deviation from the specified reference values, the HV battery is not deenergized. The high-voltage test adapter may no longer be used.



3.6 Sources of error

The plastic housing of the high-voltage test adapter contains a 100 kOhm (100,000 Ohm) resistor in the **HV+** and in the **HV-** line upstream of the measuring sockets (see Fig. 3.6.1).

During the voltage test, these resistors cause a voltage drop with a size that depends on the internal resistance of the test/measuring device used. The voltage drop will cause the voltage displayed on the test/measuring device to be lower than the voltage actually present. The internal resistance of the measuring device used (R_i) has a significant influence on the entire measurement and its result!



When using a test/measuring device with a low internal resistance, note that there is a clear deviation between the reference value and the actual value.

Formula F1 can be used to determine the actual voltage U_{target} using the measured voltage U_{actual} and the internal resistance of the measuring device R_i .

$$F1: U_{\text{target}} = \frac{U_{\text{actual}} * (R_i + R1 + R2)}{R_i}$$

Example: For a test/measuring device with an internal resistance $R_i = 200,000 \Omega$ and measured voltage $U_{\text{actual}} = 60 \text{ V}$, the actual voltage present in the high-voltage source $U_{\text{target}} = 120 \text{ V}$.

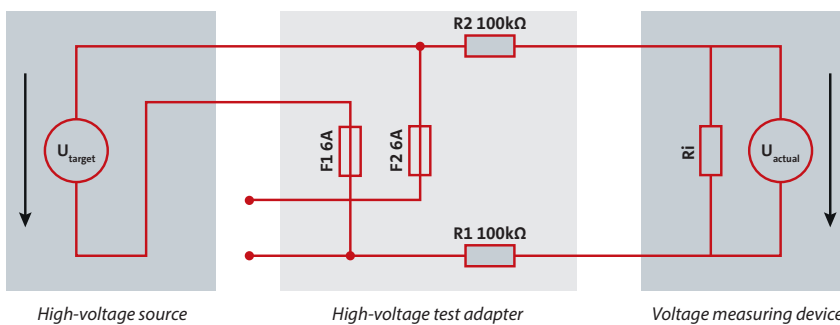
The absolute measurement deviation is thereby

$U_{\text{actual}} - U_{\text{target}} = 60 \text{ V} - 120 \text{ V} = -60 \text{ V}$, which corresponds to an absolute deviation of -100%.

The relative measurement deviation is calculated using formula F2 and is -50% in this example.

$$F2: \text{rel. measurement} = \frac{(U_{\text{actual}} - U_{\text{target}}) * 100\%}{U_{\text{target}}}$$

3.6.1 Voltage measurement with the high-voltage test adapter



Internal resistance of measuring device	Absolute measurement deviation	Relative measurement deviation
10 MΩ	- 2%	- 1.96%
1 MΩ	- 20%	- 16.7%
200 kΩ	- 100%	- 50%

4.1 Troubleshooting

Malfunction	Problem	Remedy	Section
The specified measurement values are not measured during the function test.	There is a fault in the adapter cable (e.g. due to misuse).	Replace the high-voltage test adapter	3.3 – 3.6 5.2
No measurement values are measured.	<ol style="list-style-type: none"> 1. The fuse (in the plastic housing) is defective. 2. The spring contact pins (see visual inspection) are defective. 	Replace the high-voltage test adapter	3.3 – 3.6 5.2

4.2 Maintenance

Cleaning

The high-voltage test adapter is maintenance-free except for occasional cleaning with a dry, lint-free cloth.

Inspection equipment check

Use the test sticker on the high-voltage test adapter and Table 4.2.1 to check whether the measuring tool is within the prescribed test cycle.

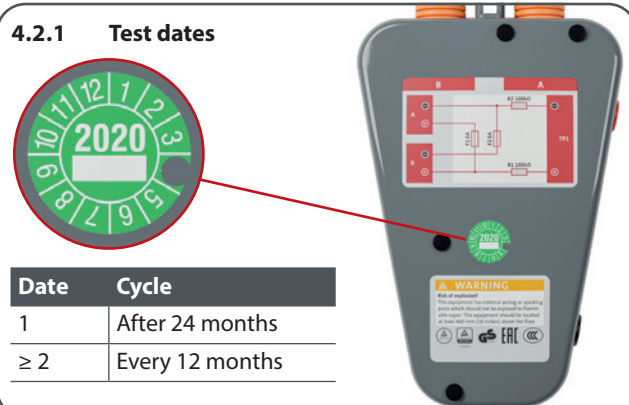


Only use measuring tools that are within the prescribed test cycle.

4.2.1

The first test date can be found on the test sticker of the high-voltage test adapter. The following tests/calibrations are due based on the table below and are performed automatically through test equipment monitoring.

4.2.1 Test dates



Date	Cycle
1	After 24 months
≥ 2	Every 12 months



The information regarding the test cycles corresponds to the current "actual" state.



The notes on the test equipment overview refer exclusively to Audi, VWN and VW.

Applies only to the German market:

The test cycle of the high-voltage test adapter VAS 6558A/33 can be found in the current test equipment overview.



Audi Partner Portal (APP)

The current test equipment overview can be found in the document "Test equipment overview" (navigation path: "Service > Workshop Equipment > General about workshop equipment > Measuring instrument calibration > Test equipment overview").



Volkswagen InfoNet / Volkswagen Commercial Vehicles InfoNet

The current test equipment overview is found in the document "All about auditing" (Navigation path: "Overall operation > Quality & LSP > Certification & quality management") in the section "Templates and tools".

Applies to all other markets:



Please contact your importer if you have any questions.



5.1 Disposal



Machinery, equipment and their components must be disposed of as prescribed by the laws, regulations and other provisions of the country in which they are located.

We recommend using licensed specialist companies for disposal.



The modules and units have been developed to be environmentally compatible and suitable for recycling. According to EU Directive 2000/53/EC, these parts must be taken to an authorized collection point.

The manufacturer does not promise to take back electrical equipment modules and units, complete electrical devices, or batteries free of charge.

5.2 Warranty & Service

High-voltage test adapters from TKR Spezialwerkzeuge GmbH come with a 36-month warranty for dealers against material and manufacturing defects. Otherwise, the statutory conditions governing warranty periods and our General Terms and Conditions of Sale and Supply are in force.

High-voltage components are excluded.

The warranty period begins on the date of delivery to the Volkswagen Group. The date is stated on the delivery note.

The warranty shall be voided if the high-voltage test adapter is used for purposes other than those for which it was designed.

In addition, the warranty becomes invalid if the high-voltage test adapter is not used as described in the owner's manual.

In the event of defect or fault, TKR Spezialwerkzeuge GmbH will only repair or replace faulty parts at its own discretion.

Service address **TKR Spezialwerkzeuge GmbH**
Service
Am Waldesrand 9–11
D-58285 Gevelsberg (Germany)

Online Service **www.tkrgroup.com/service**

Service e-mail **support@tkrgroup.com**

EU Declaration of Conformity

For the purposes of the Low Voltage Directive 2014/35/EU
and the Electromagnetic Compatibility (EMC) Directive 2014/30/EU

Tool type: High-voltage test adapter
Model: VAS 6558A/32, VAS 6558A/33, VAS 6558A/35,
VAS 6558A/36, VAS 6558A/37

Serial number range: Each 00001–10000

Has been developed and designed in accordance with
the standards and guidelines specified below by

Manufacturer: **TKR Spezialwerkzeuge GmbH**
Am Waldesrand 9–11
DE-58285 Gevelsberg


**Person authorized to compile
the technical documents:** Thorsten Weyland

**We hereby declare in our responsibility as the manufacturer that the indicated
product complies with the following directives of the European Parliament and the
European Council insofar as they apply to the product:**

Directives: Low Voltage Directive 2014/35/EU
Electromagnetic Compatibility
(EMC) Directive 2014/30/EU

Harmonized standards: German Product Safety Act (ProdSG)
Safety requirements for electrical equipment:
EN 61010-031:2015
Electromagnetic compatibility (EMC):
EN 61000-6-2 (2005)
EN 61000-6-3 (2007)

Place and date: Gevelsberg, February 15, 2020

Signature: 

Thorsten Weyland
Technical Director





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