
Decommissioning

LOW CAB



Translation of the document

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	NOTICE
	Read document Read this document carefully and follow the information contained in it. Failure to follow this instruction may result in death, injury, damage to the product and the environment. Always use the latest document version.

Validity

This manual only applies to the units listed in the following table:

Model	Code 1	Code 2
E-LKW	Low Cab	6X2R

Table of content

1	Foreword	5
1.1	General information	5
1.2	List of abbreviations	5
2	Safety Notices and Warnings	6
2.1	Symbols and their meaning	6
2.1.1	Prohibition signs	6
2.1.2	Fire protection signs	6
2.1.3	Warning signs	6
2.1.4	Commandment signs	7
2.2	Safety notices and risk levels	8
2.3	General safety information	9
3	Preparation	10
3.1	Tools and auxiliary materials	10
3.1.1	Testers	10
3.1.2	Barrier materials and warnings	10
3.1.3	Fire extinguisher	11
3.2	Personal protective equipment	11
3.2.1	Gloves	12
3.2.2	Face shield	12
3.2.3	Protective clothing (at least protection class 2)	13
3.2.4	Safety shoes	13
4	Steps for decommissioning	14
4.1	Switching off the truck	14
4.2	Disconnecting battery connections	17
4.3	Checking the tester	19
4.4	Voltage measurements at the HV-batteries	19
4.4.1	Measurement on measuring sockets or directly on busbars	20
4.4.2	Completing the test	20
4.5	Disconnecting the vehicle	21
5	Brief overview of decommissioning	22

1 Foreword

The LOW CAB is an immensely powerful and versatile product. Since it is a high-performance electronics product with dangerous voltages and currents, specific technical skills are required for the use and handling of the unit.

Please read this manual carefully – particularly the chapter Safety Notices and Warnings – before using or working on the vehicle.

1.1 General information

This document includes instructions for the safe decommissioning of the Low Cab by trained professionals. Additional information on the vehicle can be found in the Manual.

1.2 List of abbreviations

Abbreviation	Meaning
AC	Alternating Current
DC	Direct Current
HV	High Voltage (>80V)
LV	Low Voltage
HVDU	High Voltage Distribution Unit

2 Safety Notices and Warnings

This chapter contains safety notices for this unit. These pertain to initial use and ongoing use in the vehicle. Please read and always observe these notices for safety reasons and to prevent loss of life and unit damage.

2.1 Symbols and their meaning

Various symbols are used throughout this document. An overview and their meaning can be found in the following tables:

2.1.1 Prohibition signs

Symbol	Designation	Symbol	Designation
	Switching prohibited		Touching prohibited

2.1.2 Fire protection signs

Symbol	Designation
	Fire extinguisher

2.1.3 Warning signs

Symbol	Designation	Symbol	Designation
	General warning of a danger zone		Warning of electrical voltage
	Warning of laser beams		Warning of electrical arc

2.1.4 Commandment signs

Symbol	Designation	Symbol	Designation
	Important information to avoid potential property damage		Read the manual
	Wear protective goggles!		Wear protective clothing
	Wear protective gloves!		Wear face shield!
	Wear protective shoes!		Use antistatic footwear

2.2 Safety notices and risk levels

	DANGER Danger To indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	WARNING Warning To indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	CAUTION Caution To indicate a potentially hazardous situation which, if not avoided, could result in a minor or moderate injury.
	NOTICE Notice To indicate important information to avoid possible damage to property.
	INFORMATION Information To indicate important information for the reader.

2.3 General safety information

	DANGER Danger caused by electrical discharge The incorrect handling of the high voltage system can cause electrical shocks and electric arcs, which may result in severe burns or death. • The process may only be conducted by authorized professionals. • Carefully read the safety instructions • Wear Personal Protective Equipment according to the instructions.
	NOTICE Required qualification for decommissioning The work described in this document may only be carried out in instructed workshops and by trained personnel.
	INFORMATION Marking of high-voltage components All high-voltage cables are orange in colour.
	INFORMATION The figures may slightly deviate from the vehicle being serviced. However, the key components listed in this informational document are illustrated as accurately as possible.

3 Preparation

3.1 Tools and auxiliary materials

	NOTICE
	Calibration and certification Have your measuring devices calibrated and certified regularly.

3.1.1 Testers

Designwerk recommends using the “**DusPol**” tester.

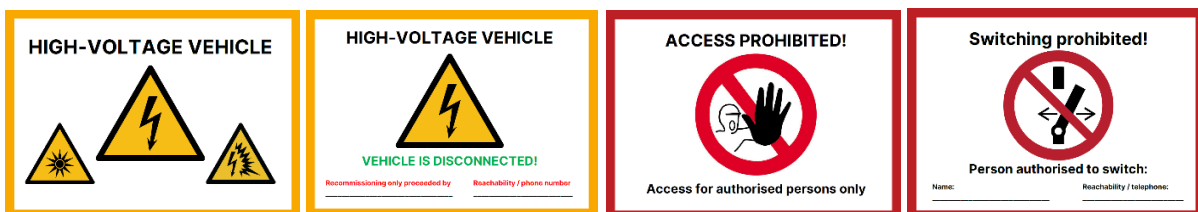
The tester must meet the following specifications:

- EN 61243-1, EN 61243-2, EN 61243-3 or EN 61243-5
- AC " TRUE RMS " 1-1000 V
- DC " TRUE RMS " 1-1200 V
- CAT IV 600V, CAT III 1000V
- IP 65



3.1.2 Barrier materials and warnings

To secure the vehicle against unauthorised access and vehicle identification.



3.1.3 Fire extinguisher

	NOTICE
	Using different fire extinguishers according to fire type - Vehicle fires: - Category A or ABC multi-purpose powder, extinguishing with anti-catalytic effect. - Li-ion battery fires: - Special li-ion fire extinguisher (gel or vermiculite)



3.2 Personal protective equipment

	WARNING
	Serious injuries, including death, can occur if PPE is not worn Wearing class 2 personal protective equipment is mandatory while working directly on high-voltage components. In addition, long-sleeved professional clothing made of natural fibres (e.g. cotton) must be worn while working directly on high-voltage systems. Polyester or polyamide clothing is not permitted.

	CAUTION
	Consult a specialist when selecting suitable protective equipment Working with electricity carries particular risks. A specialist must be consulted. The company's internal safety guidelines must also be observed. Personalised basic training for working on HV vehicles is required.

	INFORMATION
	The following list of personal protective equipment is to be understood as a possible selection.

3.2.1 Gloves

	NOTICE
	Insulated gloves • Approved for working with up to 1000 volts • According to European Standard EN 60903 • Arc flash protection (class 0) in line with European Standard EN 61482-1-2 • Check expiry date • Test for tears (air test), replace regularly It is recommended to wear Kevlar gloves underneath (to protect against burns)



3.2.2 Face shield

	NOTICE
	• Complete protection of the entire face and unrestricted field of vision • Shatterproof • Acid- and alkali-resistant • Arc flash protection (class 2) in line with European Standard EN 61482-1-2 • EN 166 8-1B • EN 170 2-1.2 • Class 0 (1500 VDC / 1000 VAC) • GS-ET-29 – Class 1 (4kA)



3.2.3 Protective clothing (at least protection class 2)

	NOTICE
	Reliable protection against sparks, electric arcs and flames Long-sleeved jacket or shirt made of flame-retardant protective fabric according to European Standard EN 61482-1-2. Decommissioning is not considered live work (SN EN 50110-1). The equipment specified only applies to situations where the risk of an electric arc is high and constant over time. Wearing long-sleeved cotton work clothes, electricians' gloves and suitable face shield to protect against electric shocks and electric arcs is sufficient for disconnection and reconnection.

3.2.4 Safety shoes

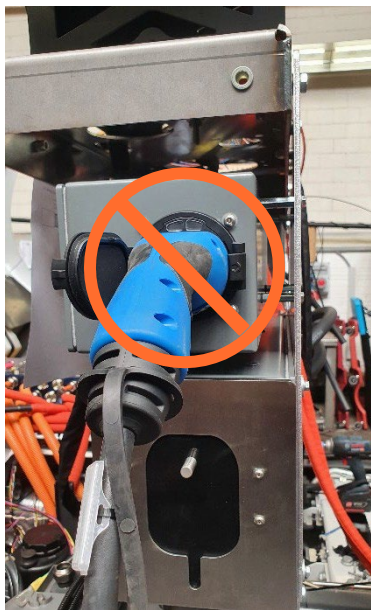
	HINWEIS
 	• Protective cap • Antistatic insole and oil- and petrol-resistant outsole with non-slip tread pattern • Safety class S3, as per European Standard EN ISO 20345

4 Steps for decommissioning

	HINWEIS
	Requirements for decommissioning For shutdown, the vehicle must be in a dry, dust-free and level location. The vehicle must be in drive mode. The spring mechanism must be activated, and the vehicle must be secured against rolling.

4.1 Switching off the truck

- 1
 - Make sure that the vehicle is disconnected from all charging cables (AC and DC).
 - Apply the safety notice to all charging ports, according to the lower right figure.

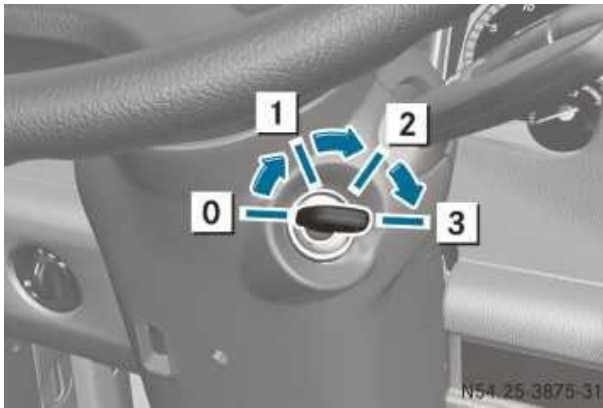


- 2 Switch off the ignition as follows:

- Turn off the ignition (step 0).
- Wait for one second.
- Turn the ignition to step 2.

After the display has started up:

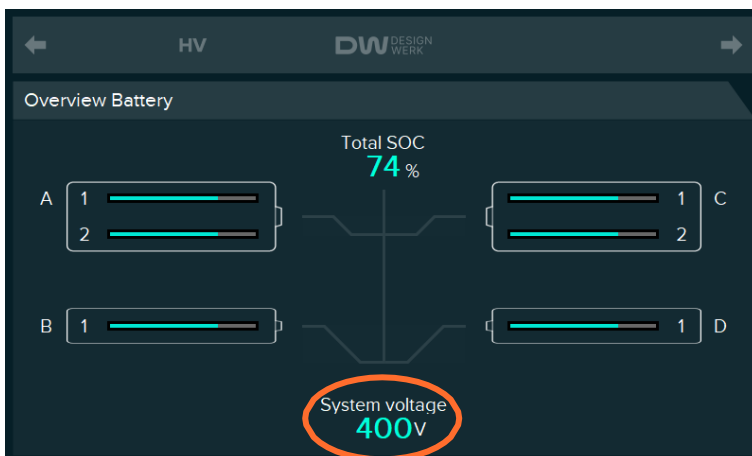
- Turn the ignition to step 3. The HV battery is now switched on.



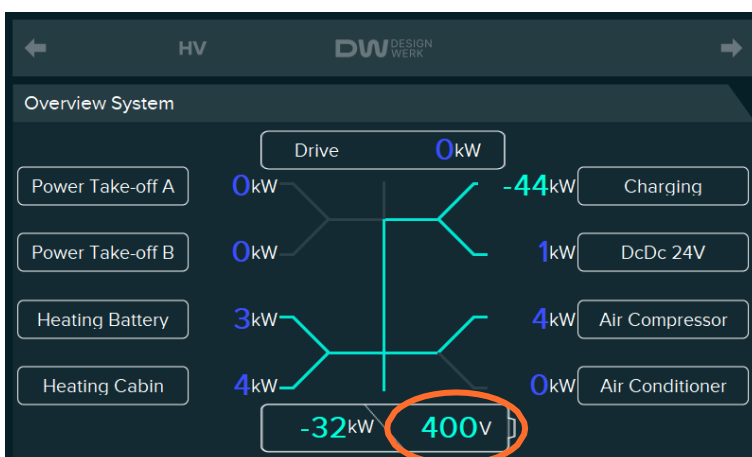
NOTICE

The following work may only be carried out with appropriate training and protective equipment.

- 3** Monitor the «system voltage» on the display.
Via the main screen navigate to the overview:
«Main screen > App Overview > Battery/System»
- 4** If no value is displayed, contact the technical support.



System voltage
Timeout, value not up to date,
please restart system



--- kW false value

- 5 Switch the ignition to step 0.
Wait until the system voltage has dropped below 50 V.
- 6 Remove the key from the ignition lock.
- 7 Activate the «High Voltage Off»-switch.
It is located at the bottom left of the windscreen.



- 8 Turn the battery disconnecter counterclockwise to turn it off.



NOTICE

Make the ignition key and the battery disconnecter inaccessible

Lock the ignition key or make it inaccessible to third parties.

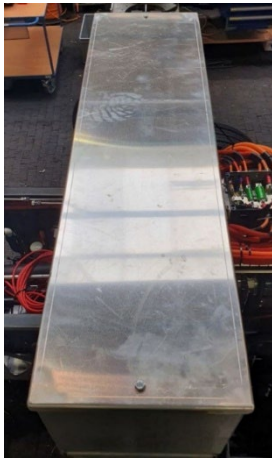
Make sure that the battery switch of the LV battery cannot be turned while work is in progress.



4.2 Disconnecting battery connections

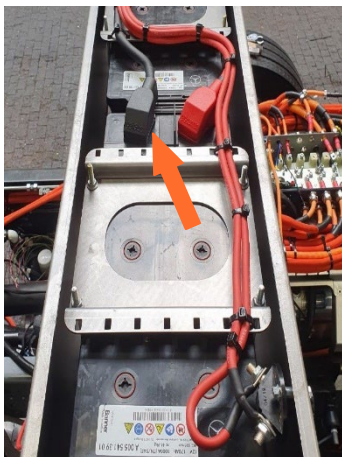
The LV-battery is located on the yoke of the vehicle.

- 1 Remove the cover of the LV-battery.



	WARNING
	Possibility of short circuits, sparking and light flashes Wear protective goggles when carrying out the following work on the LV battery.

- 2 Disconnect the battery cable from the minus pole.



- 3 Insulate the minus pole of the battery from the cable so that no accidental contact can occur.



- 4 Attach safety labels as shown in the figure below.



- 5 Remove low voltage plugs from all HV-batteries.
The status LED of all batteries is thus switched off.



4.3 Checking the tester

1 DusPos :

Test the 2-pole voltage tester on a safe voltage source.

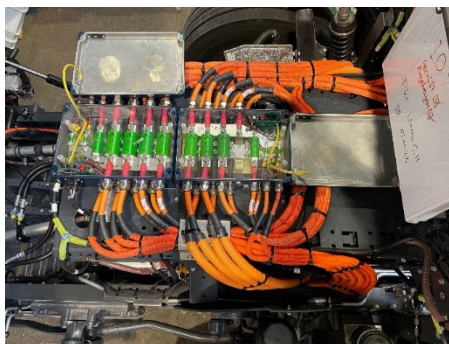
The voltage source must be of the same type (AC or DC) as the voltage source in the measurement to be made.



4.4 Voltage measurements at the HV-batteries

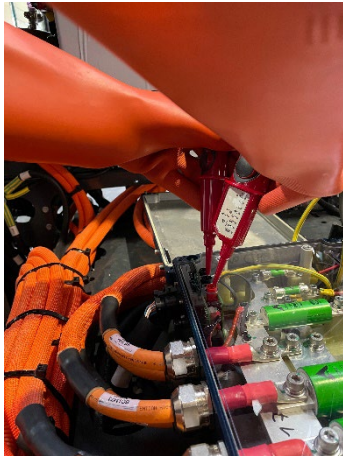
 	WARNING Risk of injury from electric shock If the condition of the HV components is unclear, we recommend wearing. Personal Protective Equipment while handling HV plugs. Check chapter 3.2 • Long-sleeved cotton clothing • Electricians' gloves with inner gloves • Face shield
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- 1 Open the side flaps on the left and right.
To do this, loosen and remove the two fastening screws on each side.
- 2 Tilt the cab.
Follow the instructions in the Mercedes-Benz Econic 956 Owner's Manual.
- 3
 - Remove the adhesive seals from the covers of the HVDU A and HVDU B.
 - Loosen and remove the covers of the HVDUs.

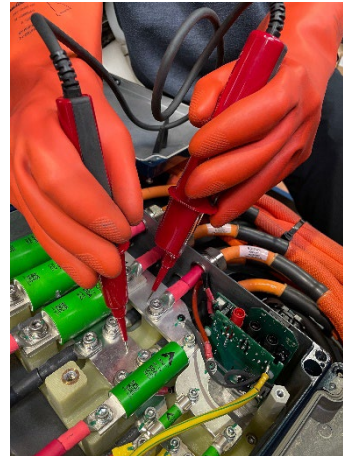


4.4.1 Measurement on measuring sockets or directly on busbars

- 4 Measure the voltage for 1 minute test time between test contacts (HV+ / HV-) on the measuring adapter.
 - If there is a residual voltage of (> 50 VDC) after 1 minute test time, wait 10 minutes and repeat the process
 - If a residual voltage of (> 50 VDC) remains in the repeated measurement, contact the technical support. Do not proceed with the activities.



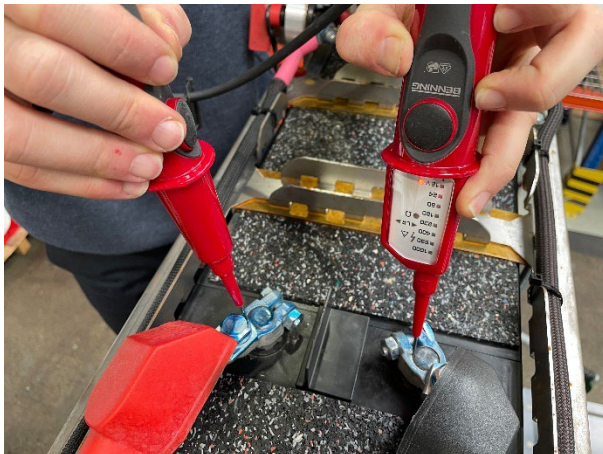
Measuring on measuring sockets



Measuring on busbars

4.4.2 Completing the test

- 5 Re-test the function of the tester on a safe voltage source. The voltage source must be identical to the one to be tested (AC or DC voltage).

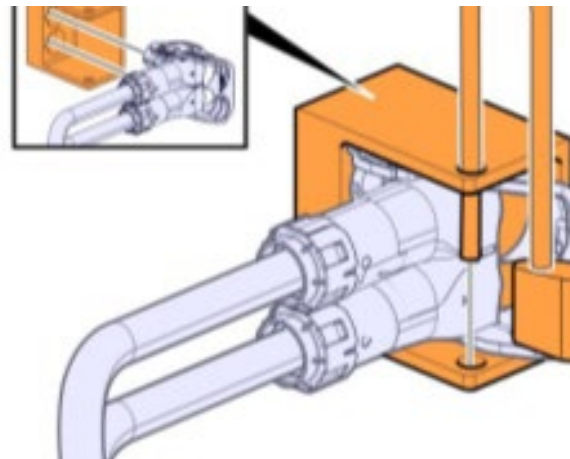


4.5 Disconnecting the vehicle

- 1 Disconnect the HV-plugs from all batteries.



- 2 Attach dust protection equipment to all HV outlets (battery socket and HV plug).

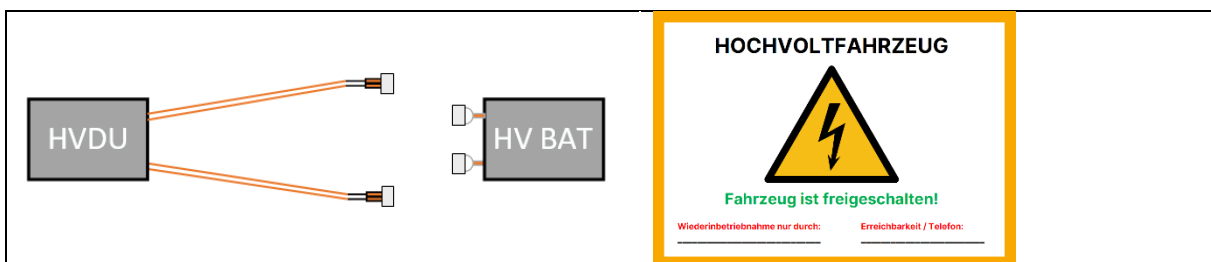


Covers at HV-plugs

Covers at HV-batteries

Alternative covers at HV-plugs

- 3 The vehicle is disconnected now.
Visibly attach the „Vehicle is disconnected » marking.



- 4 The decommissioning is now completed.

5 Brief overview of decommissioning

Nr.	To Do / Designation	Check
1.	Remove charging cable, attach safety notes.	☐
2.	Switch ignition off and back on (without HV).	☐
3.	Monitor «System Voltage» in the display until it is under 50 V.	☐
4.	Pull the key from the ignition lock.	☐
5.	Activate the «High Voltage Off»-switch.	☐
6.	Switch off and remove (if possible) the battery disconnecter.	☐
7.	Lock away ignition key.	☐
8.	Disconnect 24 V battery cable from the minus pole, attach safety notes.	☐
9.	Remove low voltage plug from all HV batteries.	☐
10.	Test measuring equipment.	☐
11.	Tilt the cab.	☐
12.	The absence of voltage was ensured and checked on all HVDUs.	☐
13.	Retest measuring equipment.	☐
14.	Attach dust protection equipment to the HV outlets.	☐