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## Operations Manual Europe. General

### 1. Introduction

# 1. Introduction

Customers of Daimler Truck AG have high expectations of the products they have bought. When they buy a vehicle, they expect the highest possible quality. Maintaining this quality when the vehicle is on its way to the customer is the aim of quality management in Daimler transport logistics.

Daimler Truck also expects this high standard of quality from its service providers. This includes safe and non-damaging loading and transport of all Daimler Truck vehicles.

These regulations form the basis for a trouble-free handling process. All parties involved in transport are required to familiarize themselves with these instructions and to use them as the working basis for handling vehicles. Other applicable national regulations are to be observed.

If any questions or a need for clarification should arise from these Mercedes-Benz provisions, please contact:

Daimler Truck AG - Wörth

If you have any questions, please contact: [operations-manual@daimlertruck.com](mailto:operations-manual@daimlertruck.com)

A member of staff will process your case as quickly as possible.

## Range of Validity

The validity of this document is specified in legal, organizational and geographical terms:

### Legal:

This provision is valid for Daimler AG and all affiliated companies listed on the Genesis database/list (scope of consolidation): <https://prod.genesisbtbweb.app.tbintra.net/dtag/HTML/de/index.html>

### Organizational:

It applies to all functions of the companies listed above, which deal with transport, handling and storage of finished vehicles, annual vehicles, returns, etc., If the vehicles are property of one of the companies listed above.

It applies to external companies (service providers) of the.

Gen. Company, if this provision is other applicable document in the contractual relationship (purchasing contract).

### Geographically:

The (registration) regulations of individual countries and regions differ in some cases.

Adjustments to the rules applicable there are therefore necessary. If the national (approval) regulations differ from the standard below, the market manager must create and apply national regulations for the non-applicable part as a substitute (National OM).

## Operations Manual Europe. General.

### 2. Work Clothes



## 2. Work Clothes

Driver personnel must wear clean and appropriate work clothes (with safety vest EN 471, §35 Sect.6, IV German Road Traffic Regulations) that ensure that vehicles are not soiled or damaged, and which meet the respective country-specific specifications of the Trade Association and do so irrespective of the prevalent season and temperature.

Buttons, exposed zippers, as well as belt buckles and the carrying of any pointed objects in the outside pockets (e.g. ballpoint pens, tools, keys, etc.) are not permitted during the loading procedure and for deliveries on own axle.

The wearing of rings (except wedding rings) and jewelry is not permitted because of the damage risk involved.

Working gloves must be worn when working on trucks. These must, however, be removed when entering the vehicle.



### The following applies, in particular, for clothing:

#### **Jacket:**

A working jacket with long sleeves is to be worn when loading Mercedes Benz vehicles.

During the warm weather season, T-shirts may be worn during the loading procedure and for deliveries on own axle, but sleeveless shirts are not permitted.

#### **Pants:**

Long-length working pants are to be worn. During the warm weather season, a  $\frac{3}{4}$  pair of pants (below knee level at least) may be worn the loading procedure and for deliveries on own axle.

**Note:** The fabrics for working pants and working jackets must meet, in particular, the specifications in the following DIN standards:

- DIN EN ISO 105-E01
- DIN EN ISO 105-Z07
- DIN EN ISO 105-Z09

Generally denim fabrics, do not comply with these requirements and are therefore not permitted!

#### **Shoes:**

Safety shoes must comply with "DIN EN ISO 20345 - Personal Protective Equipment – Safety Shoes" standard and be Category 1 at least (open fasteners for shoe laces are not permitted).

#### **Exception:**

When transferring vehicles (transports on vehicle's own axles) firm and appropriate footwear is acceptable. Wearing open shoes are not permitted.

**Note:** In the event of violations, Daimler Truck AG reserves the right not to hand over any freight documents.

## Operations Manual Europe. General

### 3. General handling of Daimler Truck vehicles

### 3. General handling of Daimler Truck AG vehicles

Qualified and specially trained personnel may only handle Daimler Truck commercial vehicles.

To ensure that the high quality standards of our products when they leave the plant are maintained when they reach the customer, observe the following instructions:

**Note:** Any exceptions must be agreed and coordinated with TE/ONO-S.

**Attention:** For all vehicles, always start the engine before the vehicle is moved.

For all vehicles which are not ready to drive, contact the loading personnel before the loading process commences.

#### Not permitted are:

- revving the engine when cold or hot.
- driving with flat tyres or tyres with insufficient pressure.
- spinning the tyres.
- driving with misted up, snow-covered and icy windows.
- driving vehicles on their own axles to harbour, berth or parking area.
- driving the vehicles at excessive speeds. National road traffic regulations pertain to the respective location.
- using a vehicle as a tow vehicle.
- overtaking other vehicles. (**Exception:** transport on own axles)
- driving with main-beam headlamps. (**Exception:** transport on own axles)
- operating the windscreen wipers for icy or heavily snow-covered windows.
- operating the electrical equipment. (radio, TV, DVD and CD player, sliding sunroof, phone, etc.)
- folding out mirrors which have been folded in. (**Exception:** driving reverse + transport on own axles)
- folding in mirrors which have been folded out.
- manually operating electric mirrors.
- lowering the tyre pressure.
- dismantling of air ducts of the cab suspension.
- attaching warning signs on and in the vehicle with magnets.
- attaching labels to painted surfaces and windows.
- attaching stickers to painted surfaces. (exception: sealing + labels allowed on transportation protection foil)
- Use of non-approved product protection films (product protection films must be approved by the Engineering department).
- remaining in the vehicles.
- smoking, eating and drinking in the vehicles.
- wearing headphones while the vehicle is being moved.
- transportation of persons and material. (tools, tyres etc.)
- leaning on the vehicle and laying objects against the vehicle.
- laying objects on the dashboard and seats.
- using mobile phones in the new vehicles area on Daimler Truck grounds.
- Use of WC, kitchen, refrigerator, sleeping facilities and other accessories.
- the rev counter in the dashboard may not go outside the green area during vehicle operation.
- driving vehicles on their own wheels. (Excluding journeys for the purpose of preparing, loading and unloading, as well as carrying out maintenance together with conviction orders of trucks and buses on their own wheels )
- driving without a driving licence.
- removing the charging cable from the vehicle or its use

**When parking the vehicles, always ensure that:**

- windows, doors, sliding sunroof/roof hatch, bonnet and boot lid are closed.
- all electrical consumers are switched off.
- vehicles with manual transmission are secured by engaging “neutral -position” gear and the parking brake is engaged.
- the key is removed from the ignition lock and positioned as mentioned in Chapter “5. Key management”
- vehicles with automatic transmission are secured by engaging the "P" position and engaging the parking brake. [see model series detail sheets in the folders "trucks", "bus"].
- vehicles with "alternative drives" are secured with the parking brake.
- the switch for the windscreen washer system is in position "0".
- the vehicles are not parked on flammable material such as dry grass, leaves and flammable liquids because the exhaust system and engine (which has recently been switched off) radiate a high degree of heat.
- vehicles are not parked with open windows, doors, fully opened bonnet and open boot lid.
- only fenced-in, secure company grounds are used at night, on weekends and public holidays.
- vehicles are not parked beneath overhead power lines or in the immediate vicinity of railway lines, trees or bushes.
- vehicles are parked with a minimum distance of 30 cm between bumpers and with a distance to the side so that entering and exiting the vehicles is possible without causing damage to the vehicles and that contact to adjacent vehicles is not possible.
- for certain handling centres, Daimler Truck reserves the right to give instructions on locking the vehicles.
- No charging cable is inserted.

**It is to be ensure that:**

- the transmission shift lever is in the neutral position.
- all blocks in the vehicle are in neutral position.
- the rear-view mirrors are not folded in.
- the master safety switch has been switched off when the vehicle remains stopped for more than one day during transfer. **(specifically buses)**

**Information for icy/snowy conditions:**

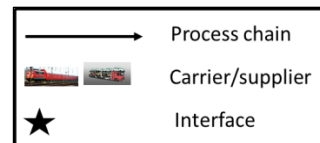
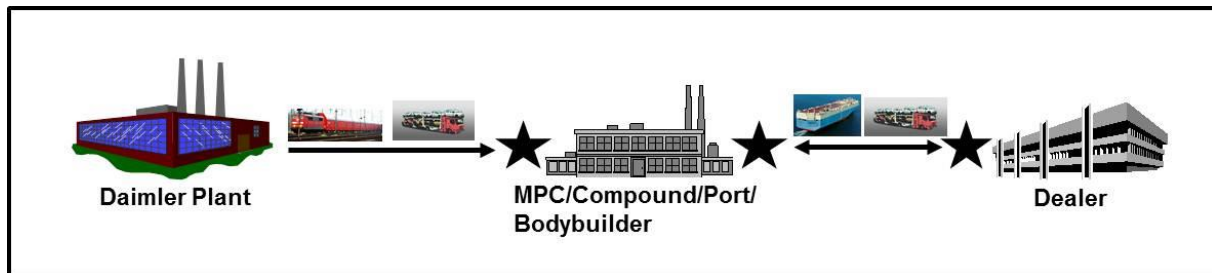
If the windscreen is icy or covered in snow, use the window defrosting agent (Mercedes Benz, Item Number A000 989 18 25 09) or a plastic ice scraper (without steel edges or teeth). Make sure the ice is scraped away starting from the outside working inwards and the ice scraper is not drawn back over the windscreen. A soft, clean brush must be used to remove snow. Do not use force or the wiper motor to free up frozen windscreen wipers; use only defroster. Furthermore, ensure that no snow or ice is brought into the vehicle when boarding.

## Operations Manual Europe. General.

### 4. Vehicle hand-over check

## 4. Vehicle hand-over check

Vehicle hand-over checks are carried out at all interfaces or points of risk transfer in the process chain from the plant to the dealer.



### Vehicle process chain from plant to dealer

These interfaces or points of risk transfer are plants, subsidiaries, vehicle logistic centers (VLC), shipping ports, body manufacturers and dealers. At these points, the vehicles must be checked by the receiving party. Damage and the party responsible can then be established and determined more easily.

Daimler Truck AG, Insurance and MPC can at anytime request the service providers to provide an overview of determined damages for any extra fees.

The vehicle hand-over check is divided up into:

- Test prerequisites
- Hand-over check when vehicle leaves (plant, VLC, ports)
- Hand-over check when vehicle arrives (VLC, ports, dealer)
- Visual check
- Completeness check

### 4.1 Test prerequisites

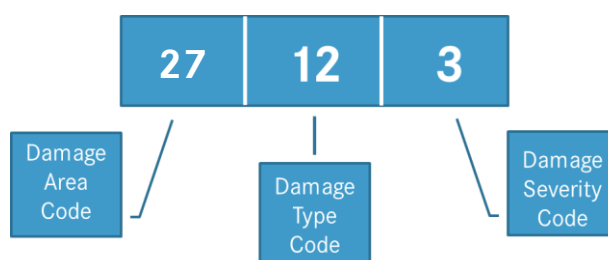
Vehicles are to be checked when unloaded and by appropriately trained personnel only.

Vehicles are checked only in the state they are in when they are unloaded. Vehicles may not be washed or given follow-up treatment before the hand-over check. The body and paint surface are to be checked in daylight or with "sufficient artificial lighting". "Sufficient artificial lighting" is defined as light sources that allow the vehicle to be checked in daylight conditions.

Appropriate test equipment is to be provided for checking (e.g. mirrors to check the spoilers of AMG vehicles, ladders to check the cab roof).

Damage that is discovered is to be noted on the shipping documents in accordance with the global vehicle damage codes standard (5 digit Code).

The 5digit code is composed of five digits which are divided into three categories. The first two digits indicate the damage area, i.e. they classify the specific part of the vehicle that is affected. The third and fourth digits denote the damage type, i.e. they describe which alteration to the part has occurred (e.g. damaged or missing). The last digit is dedicated to the severity of the damage, and categorises the length and diameter of the damage. Subsequent to the identification of the three components the digits are consolidated to a single 5digit code. The example at hand results in the code "27123", i.e. a 8cm to 15cm long scratch on the hood.



### Codes for damage area

Code	Beschreibung	Code	Description
01	<a href="#">Antenne/ Antennensockel</a>	01	<a href="#">Antenna/ Antenna Base</a>
02	<a href="#">Batterie/ Gehäuse</a>	02	<a href="#">Battery/ Box</a>
03	<a href="#">Stoßfänger, vorne</a>	03	<a href="#">Bumper/ Cover/ Ext-Front</a>
04	<a href="#">Stoßfänger, hinten</a>	04	<a href="#">Bumper/Cover/Ext-Rear</a>
05	<a href="#">Spoilerlippe, vorn</a>	05	<a href="#">Bumper Guard/ Strip-Front</a>
06	<a href="#">Spoilerlippe, hinten</a>	06	<a href="#">Bumper Guard/ Strip-Rear</a>
07	<a href="#">Schiebetüre, rechts hinten</a>	07	<a href="#">Sliding door/ Cargo, right</a>
08	<a href="#">Schiebetüre, links hinten</a>	08	<a href="#">Sliding door/ Cargo, left</a>
09	<a href="#">Laderaumtür</a>	09	<a href="#">Door Cargo</a>
10	<a href="#">Tür, links vorne</a>	10	<a href="#">Door-Left Front</a>
11	<a href="#">Tür, links hinten</a>	11	<a href="#">Door, Left Rear</a>
12	<a href="#">Tür, rechts vorne</a>	12	<a href="#">Door, Right Front</a>
13	<a href="#">Tür, rechts hinten</a>	13	<a href="#">Door, Right Rear</a>
14	<a href="#">Kotflügel, links vorne</a>	14	<a href="#">Fender, Left Front</a>
15	<a href="#">Seitenwand, links</a>	15	<a href="#">Quarter Panel/ Pick-Up Box, left</a>
16	<a href="#">Kotflügel, rechts vorne</a>	16	<a href="#">Fender, Right Front</a>
17	<a href="#">Seitenwand, rechts</a>	17	<a href="#">Quarter panel/ Pick-up box, right</a>
18	<a href="#">Fußraum, vorne</a>	18	<a href="#">Footwell, front</a>
19	<a href="#">Fußraum, hinten</a>	19	<a href="#">Footwell, rear</a>
20	<a href="#">Windschutzscheibe</a>	20	<a href="#">Glass windshield</a>
21	<a href="#">Heckscheibe</a>	21	<a href="#">Glass, rear</a>
22	<a href="#">Kühlergrill</a>	22	<a href="#">Grille</a>
23	<a href="#">Zubehör Tüte/Beipack</a>	23	<a href="#">Accessory bag/box</a>
24	<a href="#">Scheinwerfer/ Blinker</a>	24	<a href="#">Headlight/ cover/ turn signal</a>
25	<a href="#">Scheinwerfer (Nebel, Fahr, Fern)</a>	25	<a href="#">Lamps (Fog, driving, spot light)</a>
26	<a href="#">Dachhimmel</a>	26	<a href="#">Headliner</a>
27	<a href="#">Motorhaube</a>	27	<a href="#">Hood</a>
28	<a href="#">Schlüssel</a>	28	<a href="#">Keys</a>
29	<a href="#">Fernbedienung (Schlüssel)</a>	29	<a href="#">Remote (key)</a>
30	<a href="#">Außenspiegel, links</a>	30	<a href="#">Mirror, outside left</a>
31	<a href="#">Außenspiegel, rechts</a>	31	<a href="#">Mirror, outside right</a>
32		32	
33	<a href="#">Audio/Videogerät</a>	33	<a href="#">Audio/ video player</a>
34	<a href="#">TV/ DVD Bildschirm</a>	34	<a href="#">TV/ DVD screen</a>
35	<a href="#">Einstieg/ Schweller, links</a>	35	<a href="#">Rocker panel/ outer sill, left</a>
36	<a href="#">Einstieg/ Schweller, rechts</a>	36	<a href="#">Rocker panel/ outer sill, right</a>
37	<a href="#">Dach</a>	37	<a href="#">Roof</a>
38	<a href="#">Trittbrett, links</a>	38	<a href="#">Running board/step, left</a>
39	<a href="#">Trittbrett, rechts</a>	39	<a href="#">Running board/step, right</a>
40	<a href="#">Ersatzrad/ Ersatzreifen</a>	40	<a href="#">Spare tire/ wheel</a>
41	<a href="#">B-Säule links</a>	41	<a href="#">B-post left</a>
42	<a href="#">Spritzschutz/ Spoiler, vorne</a>	42	<a href="#">Splash panel/spoiler, front</a>
43	<a href="#">B-Säule rechts</a>	43	<a href="#">B-post right</a>
44	<a href="#">Treibstofftank</a>	44	<a href="#">Gas tank</a>

45	<a href="#">Rückleuchte</a>	45	<a href="#">Tail light/ hardware</a>
46	<a href="#">C-Säule links</a>	46	<a href="#">C-post left</a>
47	<a href="#">C-Säule rechts</a>	47	<a href="#">C-post right</a>
48	<a href="#">Türinnenverkleidung, vorne links</a>	48	<a href="#">Trim panel, front left</a>
49	<a href="#">CD-Spieler, separat</a>	49	<a href="#">CD changer separate unit</a>
50	<a href="#">Türinnenverkleidung, vorne rechts</a>	50	<a href="#">Trim panel, front right</a>
51		51	
52	<a href="#">Kofferraumdeckel/ Heckklappe</a>	52	<a href="#">Deck lid/tailgate/hatchback</a>
53	<a href="#">Schiebedach</a>	53	<a href="#">Sunroof/t-top</a>
54	<a href="#">Fahrgestell/ Fahrwerk</a>	54	<a href="#">Undercarriage, other</a>
55	<a href="#">Ladefläche</a>	55	<a href="#">Cargo area, other</a>
56	<a href="#">Vinylverdeck/ Verdeck/ Plane</a>	56	<a href="#">Vinyl/convertible top/tonneau cover</a>
57	<a href="#">Radzierblenden</a>	57	<a href="#">Wheel covers</a>
58	<a href="#">Radio Lautsprecher</a>	58	<a href="#">Radio speakers</a>
59	<a href="#">Scheibenwischer</a>	59	<a href="#">Wipers, all</a>
60		60	
61	<a href="#">Box interior/pickup</a>	61	<a href="#">Box interior/pickup</a>
62		62	
63	<a href="#">Geländer, Reling</a>	63	<a href="#">Rails, truckbed/lightbar</a>
64	<a href="#">Spoiler, hinten</a>	64	<a href="#">Spoiler/deflector, rear</a>
65	<a href="#">Kofferraumabdeckung</a>	65	<a href="#">Luggage cover</a>
66	<a href="#">Instrumententafel</a>	66	<a href="#">Dash/instrument panel</a>
67	<a href="#">Zigarettenanzünder/Aschenbecher</a>	67	<a href="#">Cigarette lighter/ashtray</a>
68	<a href="#">Fußmatte, vorne</a>	68	<a href="#">Floor mats, front</a>
69	<a href="#">A-Säule, rechts</a>	69	<a href="#">A-post, right</a>
70	<a href="#">A-Säule, links</a>	70	<a href="#">A-post, left</a>
71		71	
72	<a href="#">Reifen, vorne links</a>	72	<a href="#">Tire, left front</a>
73	<a href="#">Felge, vorne links</a>	73	<a href="#">Rim, left front</a>
74	<a href="#">Reifen, hinten links</a>	74	<a href="#">Tire, left rear</a>
75	<a href="#">Felge, hinten links</a>	75	<a href="#">Rim, left rear</a>
76	<a href="#">Reifen, hinten rechts</a>	76	<a href="#">Tire, right rear</a>
77	<a href="#">Felge, hinten rechts</a>	77	<a href="#">Rim, right rear</a>
78	<a href="#">Reifen, vorne rechts</a>	78	<a href="#">Tire, right front</a>
79	<a href="#">Felge, rechts vorne</a>	79	<a href="#">Rim, right front</a>
80		80	
81	<a href="#">Tankdeckel</a>	81	<a href="#">Gas/cap cover</a>
82	<a href="#">Kotflügel, hinten links</a>	82	<a href="#">Fender, left rear</a>
83	<a href="#">Kotflügel, hinten rechts</a>	83	<a href="#">Fender, right rear</a>
84	<a href="#">Werkzeug, Wagenheber, Equipment</a>	84	<a href="#">Tools/jacks/mount + lock, equipment</a>
85	<a href="#">Navigationssystem</a>	85	<a href="#">Communication/GPS unit</a>
86		86	
87	<a href="#">D-Säule links</a>	87	<a href="#">D-post left</a>
88	<a href="#">D-Säule rechts</a>	88	<a href="#">D-post right</a>
89	<a href="#">Anhängerkupplung, Kabelanschluss, Abschlepphaken</a>	89	<a href="#">Trailer, hitch, wiring harness, tow hooks</a>
90	<a href="#">Chassis</a>	90	<a href="#">Frame</a>
91	<a href="#">Abgasanlage</a>	91	<a href="#">Exhaust system</a>
92	<a href="#">Kennzeichenfläche</a>	92	<a href="#">License-bracket</a>
93	<a href="#">Lenkrad</a>	93	<a href="#">Steering wheel/airbag</a>
94	<a href="#">Sitz, vorne links</a>	94	<a href="#">Seat, front left</a>
95	<a href="#">Sitz, vorne rechts</a>	95	<a href="#">Seat, front right</a>
96	<a href="#">Sitz, hinten</a>	96	<a href="#">Seat, rear</a>
97	<a href="#">Fußmatten, hinten</a>	97	<a href="#">Floor mats, rear</a>
98	<a href="#">Innenraum, sonstiges</a>	98	<a href="#">Interior, other</a>



99 [Motorraum, sonstiges](#)99 [Engine compartment, other](#)Codes for damage types

Code	Beschreibung	Code	Description
01	<a href="#">Durchgebogen</a>	01	<a href="#">Bent</a>
02	<a href="#">Gebrochen</a>	02	<a href="#">broken</a>
03	<a href="#">abgeschnitten</a>	03	<a href="#">cut</a>
04	<a href="#">Delle mit Lackbeschädigung</a>	04	<a href="#">Dented, paint damaged</a>
05	<a href="#">Abgeschlagen</a>	05	<a href="#">Chipped</a>
06	<a href="#">gesprungen</a>	06	<a href="#">Cracked</a>
08	<a href="#">Fehlt</a>	08	<a href="#">missing</a>
09	<a href="#">abgewetzt</a>	09	<a href="#">Scuffed</a>
10	<a href="#">beschmutzt</a>	10	<a href="#">Stained or soiled</a>
11	<a href="#">durchstochen</a>	11	<a href="#">Punctured</a>
12	<a href="#">zerkratzt</a>	12	<a href="#">Scratched</a>
13	<a href="#">zerrissen</a>	13	<a href="#">Torn</a>
14	<a href="#">Delle ohne Lackbeschädigung</a>	14	<a href="#">Dented, paint not damaged</a>
18	<a href="#">Zierteil/Logo beschädigt</a>	18	<a href="#">Moulding/emblem, weatherstrip damaged</a>
19	<a href="#">Zierteil/Logo lose</a>	19	<a href="#">Moulding/emblem, weatherstrip loose</a>
20	<a href="#">Glas gesprungen</a>	20	<a href="#">Glass cracked</a>
21	<a href="#">Glas gebrochen</a>	21	<a href="#">Glass broken</a>
22	<a href="#">Glas angeschlagen</a>	22	<a href="#">Glass chipped</a>
23	<a href="#">Glas zerkratzt</a>	23	<a href="#">Glass scratched</a>
25	<a href="#">Beklebung beschädigt</a>	25	<a href="#">Decal/paint stripe damaged</a>
30	<a href="#">Bespritzt, außen</a>	30	<a href="#">Fluid spillage, exterior</a>
34	<a href="#">Kanten abgestoßen</a>	34	<a href="#">Chipped panel edge</a>
36		36	
39	<a href="#">Ventilkappen fehlt</a>	39	<a href="#">Valve caps missing</a>
40	<a href="#">Raddeckel fehlt</a>	40	<a href="#">Rim center caps missing</a>
41	<a href="#">Einparkhilfesensoren fehlt</a>	41	<a href="#">Parking sensor system missing</a>
42	<a href="#">Ventilkappen beschädigt</a>	42	<a href="#">Valve caps damaged</a>
43	<a href="#">Raddeckel beschädigt</a>	43	<a href="#">Rim center caps damaged</a>
44	<a href="#">Einparkhilfesensoren beschädigt</a>	44	<a href="#">Parking sensor system damaged</a>

Codes for damage severity

Code	Beschreibung	Code	Description
1	<a href="#">Bis zu 3 cm Länge/Durchmesser</a>	1	<a href="#">Damage up to and including 3 cm in length/diameter</a>
2	<a href="#">3 cm bis zu 8 cm Länge/Durchmesser</a>	2	<a href="#">Damage from 3 cm up to 8 cm in length/diameter</a>
3	<a href="#">8 cm bis zu 15 cm Länge/Durchmesser</a>	3	<a href="#">Damage from 8 cm up to 15 cm in length/diameter</a>
4	<a href="#">15 cm bis zu 30 cm Länge/Durchmesser</a>	4	<a href="#">Damage from 15 cm up to 30 cm in length/diameter</a>
5	<a href="#">Mehr als 30 cm Länge/Durchmesser</a>	5	<a href="#">Damage over 30 cm in length/diameter</a>
6	<a href="#">Fehlt (nur bei Beschädigungsart 08!)</a>	6	<a href="#">Missing (only damage type 08!)</a>

The driving speed is to be adapted to the handover locations and routes, but a speed of 40 km/h is not to be exceeded.

## 4.2 Hand-over check when vehicle leaves (plant, VLC, port, body manufacturer)

The service provider is required to carry out a visual check for vehicle damage and to make a completeness check for accessory parts during hand-over. If damage or a missing part is discovered, the service provider must report to the supervisory personnel. The supervisory personnel is required to use best judgment to distinguish between storage and handling damage, production deficiencies or signs of wear (used vehicles only).

If the collecting driver wishes to ensure that he/she is not held responsible for production deficiencies or signs of wear, these must be documented. The operator of the point of hand-over is required to countersign the complaint.

Once the driver has moved a vehicle in his/her delivery, the responsibility for the entire delivery or of the vehicle that he/she is to transport passes to him/her. Damage sustained during loading is treated as transport damage.

Following loading, the driver in the case of a less than full load must ensure that those vehicles that remain standing in rows are moved up to the first position in the row in question.

### Special requirements

Snowed-up and iced-up windows are to be cleaned with plastic ice scrapers with a rubber lip or with de-icing spray to ensure that clear visibility is guaranteed. In the case of frozen windshield wipers, these may not be removed with force from the windshield, nor should they be moved using the windshield wiper motor.

Remove snow and ice from vehicles

## 4.3 Acceptance inspection upon vehicle delivery (dealer, FLC, port, body manufacturer)

The recipient shall check the vehicle for damage and missing parts immediately upon delivery. Any damage/missing parts noted shall be recorded on the waybill or other delivery document and shall be counter-signed by the driver/employee of the transport services provider delivering the vehicle as they are obligated to do. Damage shall be categorized as transport damage, production errors or signs of general use (used vehicles only) to the best of one's knowledge. Transport damage detected after delivery shall be documented immediately and the transport services provider shall be held liable.

Night deliveries are recorded on the waybill. The vehicle shall be inspected, and if necessary, damage claims shall be issued the following working day. Damage which has occurred during shipping, shall be reported within 72 hours.

In the event of night deliveries, a copy of the CMR waybill shall be given to the recipient.

If the condition of the vehicle exterior does not permit immediate inspection (i.e. due to heavy soiling, iced up etc), as much of the vehicle shall be inspected as is possible, particularly for evidence of major damage or missing parts. The condition upon delivery is recorded by the recipient on the waybill. Transport damage detected shall be documented immediately and the transport services provider shall be held liable.

The notice periods mentioned do not have precedence over the regulations stated in §438, paragraph 2 of the German Commercial Code (HGB).

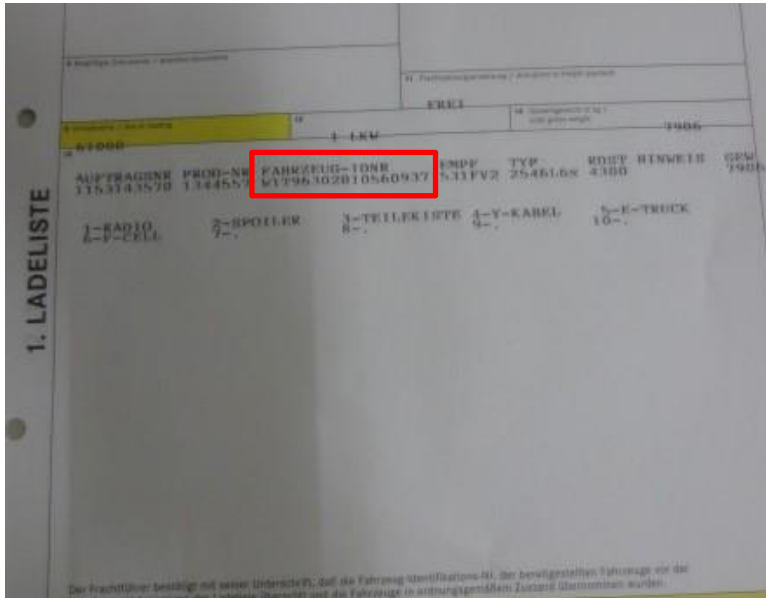
### Special requirements

Snowed-up and iced-up windows are to be cleaned with plastic ice scrapers with a rubber lip or with de-icing spray to ensure that clear visibility is guaranteed. In the case of frozen windshield wipers, these may not be removed with force from the windshield, nor should they be moved using the windshield wiper motor.

Remove snow and ice from vehicles

## 4.4 Visual check

The complete chassis or order number of the transport document must agree with the with the vehicle identification number embossed on the vehicle frame.



CMR



VIN on frame

The visual check is to be carried out at a distance of approx. 1 m and at an angle of 45 degrees to the vehicle. During the visual check, the vehicle is to be checked for body or paint surface damage. This includes:

- checking the tires and rims for mechanical damage and deformation;
- checking whether wheel arches are damaged;
- checking the vehicle surface (particularly bumpers, driver's door, exterior mirrors, underrun protection ) for scratches and dents as well as for dirt (e.g. hydraulic fluid, greasy residue, environmental influences such as bird excrement);
- checking all windows, headlamps and/or rear lights for damage by stones or other mechanical damage;
- checking the front and rear areas (front spoilers, rear apron, side skirts, exhaust trim) for signs that the vehicle has bottomed out. This can be done using a mirror;
- Checking for dirt or damage in the vehicle interior, especially in the area of the driver's door and on the driver's side.

If missing parts, deficiencies or damage are discovered, the procedure in the chapter "Procedure if damage has occurred" must be followed. Damage is to be reported immediately before the vehicle is moved by the accepting party. Subsequent reports will not be considered.

**Note: Special requirements for buses**

In the appendix you will find an example of a dispatch note and a vehicle data sheet; these are handed over at loading (see pages 12-13).

At least 30 minutes should be scheduled for a complete check of the bus. During the visual check, the vehicle is to be checked for body or paint surface damage. This includes:

- Checking the paint surfaces for visible scratches and deformation.
- Checking the add-on parts for mechanical damage (particularly bumpers, exterior mirrors).
- Checking for dirt or damage in the vehicle interior, especially in the area of the driver's door and on-board console. The on-board toilet, if there is one, must also be checked for dirt. Footprints in the entrance area and driver's footwell do not count as dirt.
- Checking of documents for completeness (depending on the EvoBus definition), e.g.: transfer log, accessories list, Owner's Manuals and customs documents.

If missing parts, deficiencies or damage are discovered, the transfer center is to be informed. Damage is to be reported immediately before the vehicle is moved by the accepting party. Subsequent reports will not be considered.

If the bus has a protective film cover, this must be checked for damage. If the film is undamaged, the surface below is to be considered free of damage and no claim may later be made for transport damage to it.

An underfloor check and check of the roof are not required for buses.

## 4.5 Completeness check

The completeness check is only carried out when there are missing or damaged seals. Checks are made for the following components:

- vehicle jack,
- vehicle tool kit,
- spare wheel or Tirefit with compressor,
- wheel trims in the case of steel rims,
- special equipment as per waybill (e.g. navigation CD),
- first-aid kit (except USA),
- warning triangle (except USA),
- Owner's Manual (Europe only).

## Appendix for visual bus check:

Fahrzeugdatenblatt			
Fahrzeug	BB4102400002		
VIN:	WKK41024013113735		
FIN:			
Kunden-Nr.:	130996	Datum:	04.10.2012
EvoBus GmbH		Seite:	1
Setra Omnibusse			
578-Vertrieb S 516 GT-HD/3			
Pos.	Material-Nr.: Hersteller-Namen Typ/Abmessung	Bezeichnung Hersteller-Nr.: Seriennummer	Menge
09030	A.471.010.42.02 DAIMLER AG	LU D-MOT / 471 6-3 350/2300 SG ZMS 471902C0029470	1,000
09070	A.656.260.84.03	ZB SCHALTGETRIEBE GO250-8 71419001197822	1,000
09080	A.410.330.26.00 ZF FRIEDRICHSHAFEN AG	LU VORDERACHSE / RL75 E 73089202515952	1,000
09081	A.410.350.02.00 Daimler AG /KV150/62	LU HA / RO440/ I=3,583/SN7/JURID 539 7462180M514913	1,000
09082	A.629.390.72.00 ZF FRIEDRICHSHAFEN AG	LU NACHLAUFACHSE VST / RL 75/EC JURI 74998502515058	1,000
09090		Retarder 009608	1,000
09150		Vorwärmgerät 12110625	1,000



EvoBus GmbH - Setra Omnibusse - Postfach 9042 - 89007 Neu-Ulm  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]

Neu-Ulm, 27.02.2013, Seite 1 von 1

Ihre Ansprechpartner:

Herr Goy	Tel.: 0731/181-2745
Herr Schiele	Tel.: 0731/181-2645
Herr Schrade	Tel.: 0731/181-2545
Herr Zelfang	Tel.: 0731/181-2695
Herr Ludwig	Tel.: 0731/181-2463
	Fax: 0731/181-2012

**LIEFERSCHEIN 1095040606**

Liefertermin 27.02.2013

Wir liefern Ihnen gemäß unseren "Allgemeinen Geschäftsbedingungen":

1 Setra-Vorführ-Omnibus  
 Typ S 416 GT-HD  
 Erstzulassung: 15.06.2012  
 mit ca. 40.500 km Laufleistung

Fahrzeug-Nr.                      BB-Identnummer:  
 WKK63213413113604        BB6321341133

Hiermit bestätige ich den Empfang des Fahrzeuges.

.....  
 Datum

.....  
 Unterschrift

## Operations Manual Europe. General

### 5. Key Management

## 5. Handling the key during transport and storage

### 5.1 Loading on special car transporters and special commercial vehicle transporters

If not otherwise stipulated by TE/ONO-S, the vehicles are to be locked when transported. The lorry driver is responsible for handling the keys. During transport, the keys of the vehicle being transported are to be kept in a safe place in the cab of the lorry. In order to ensure the keys are not exposed to oil or dirt during loading and unloading, and to ensure that they are stored together in the cab, we specify the use of a key box, or similar.



### 5.2 Storing and loading on ship and rail transport

- **Actros, Arocs, Atego, Zetros**

Remove the key from the ignition lock and place it in the cup holder in the dashboard.





- **Econic**

Remove the key from the ignition lock and place it on the stowage space in the dashboard.



- **Unimog (U20, U300-500, U3000-5000)**

Remove the key from the ignition lock and place it in the stowage space next to the driver's seat on the right.



**Note:** In case of a lost key, consult the responsible contacts.

## Operations Manual Europe. General.

### 6.1.1 Loading for road transport

### 6.1.1.1 General

To avoid any risk of damage when vehicles are being transported open, the following driving instructions are to be adhered to:

#### **Dispatching:**

The route selection to the desired destination is to be selected, taking the vehicle headroom into account (i.e. the maximum extent of height and width) to ensure that construction sites, bridges, tree-lined avenues, roadside structures or foliage cannot impair or damage the load.

**Note:** Loaded transport vehicles must be parked on fenced-in, secured company sites belonging to the service provider or on manned car parks/rest stops during the night, at weekends and on public holidays, but also during the day during longer rest periods.

#### **Consideration for special weather conditions:**

In special weather conditions (e.g. snow, hail, extreme wind, falling trees and branches or ice), the route or driving operation is to be adjusted accordingly and every risk to the cargo is to be avoided.

#### **Driving-related effects:**

The driving style must be adapted and must contain an element of foresight to ensure that driving-related effects (such as flying stones) do not pose a risk to the cargo.

**Note:** All transporters are required to be fitted with a stone-guard above the wheels. Otherwise, they are not suitable for transporting Daimler Trucks vehicles due to the risk of damage.

#### **Dangerous goods:**

Regulation and instructions regarding dangerous goods see chapter 8. Dangerous Goods Regulations

#### **Transshipments:**

Transferring loads between vehicles is forbidden. Exceptions are laid out in writing in the haulage contract. Reload brought vehicles within the plants it is also not allowed. Transporters can only take additional load, when brought load will not be changed.

### 6.1.1.2 Basic rules for driving and loading personnel at Daimler Truck locations

The driving and loading personnel must be familiar with the instructions as laid down in the "General" chapter.

**Caution:** During the entire loading and unloading procedure the engine of the car transporter must be switched off; this does not apply to operations using the hydraulics.

Transporting materials of any kind in the vehicles being transported and on the loading surface is expressly forbidden or, in exceptional cases, is to be agreed with TE/ONO-S

### 6.1.1.3 Condition of the transport vehicles

The equipment and condition of the transport vehicles must be of such a design that there is no risk of damage to the vehicles to be transported.

- The vehicle configurations shall be designed for the acceleration forces occurring when loaded in accordance with DIN EN 12195-1 (DIN EN = German Institute for Standardisation/European Standard). This must be approved by the respective trailer manufacturer and approved in accordance with VDI 2700 sheet 8.0 (VDI = Association of German Engineers)
- The road safety of the tires must be guaranteed. Any damage that arises is to be fixed immediately.
- Country-specific regulations for transport regarding winter tyres must be fulfilled. (e.g. in Arctic/Scandinavian countries: winter tyres in the front axle and rear axle of tractor unit)
- No hydraulic systems may show signs of leaking and the mechanical load equipment must be fully functional.
- Transport vehicles must always have suitable approach rails to avoid damaging the bumpers or the vehicle underbodies.
- It must be ensured that the special commercial vehicle transporter is suitable for the goods entrusted to the service provider (overall weight/dimensions & requirements for load securing according to VDI 2700 8.2).
- The profile of the loading surfaces and the approach rails must provide a good grip but may not have sharp edges [see fig.].
- All loading and unloading equipment as well as load securing equipment shall be stowed and secured properly and safe for road traffic.



Prepared loading surface

**Caution:** Rusted vehicle and add-on parts as well as rusted loading surfaces on transport vehicles may cause paint damage and must therefore be avoided. Any damage that results is the responsibility of the service provider.

**Particularity for Fuso Canter:**

Transport vehicles must be equipped with a lanyard rail on both sides of the upper loading level from a loading height of 2 meters. The lanyard rail is to be equipped with four cables. The distance between the cables is approx. 25 cm. Carrying requirement laid for the lanyard rail.



The roof bars of the transport vehicles as well as the cable eyelets and posts of the lanyard rails must be cushioned to ensure that the driver's door can be opened without damage.



If vehicles are stacked, the car transporter must be equipped with bracket retainers to ensure safe transport.



## 6.1.1.4 Load-securing equipment

### Wheel chocks:

For the loading of commercial vehicles up to a vehicle weight of  $\leq 3.000$  kg, at least **3 wheel chocks** must be used. From a vehicle weight of  $\geq 3.000$  kg to  $\leq 4.500$  kg, at least **6 wheel chocks** must be used.

For the loading of trucks and buses up to a vehicle weight of  $\leq 8.000$  kg, at least **4 wheel chocks** or **6 wheel chocks** with a weight of up to  $\leq 11.000$  kg. From a weight of  $\geq 11.000$  kg to  $20.000$  kg, at least **6 wheel chocks** must be attached.

All wheel chocks to be used must have at least  $1/6$  of the wheel diameter (in accordance with VDI 2700 guideline sheet 8.1 and sheet 8.2). In addition, the wheel chocks must be approved by the respective manufacturer and checked in accordance with VDI 2700 sheet 8.0. They serve exclusively as wheel chocks (see negative example in Figure 2).

The following parameters must be met by a wheel chock when loading a truck or bus:

- Blocking force BC: min. 500 daN when loading commercial vehicles with a gross weight of up to 4500 kg.
- Blocking force BC: min. 1,500 daN when loading commercial vehicles, trucks and buses > 4,500 kg gross weight.
- $\geq 1/6$  of the tyre diameter, alternative wheel chock heights must be checked separately in accordance with VDI 2700 sheet 8.0 and approved by the body manufacturer.
- The manufacturer's approvals always refer to the combination of wheel chock type/with tested road surface element.
- Wheel chocks with sharp edges, cracks, kinks and damage that impairs function must be disposed of.
- The wheel chock must be approved for the road element by means of a test certificate.



negativ example

### Lashing straps:

In addition to the wheel chocks listed above, when loading commercial vehicles with a vehicle weight of  $\leq 3,000$  kg, at least 2 three-point lashing straps with controllers to be used. For commercial vehicles with a vehicle weight of  $\leq 4500$  kg, at least 3 three-point lashing straps with controllers to be used. When loading commercial vehicles, trucks and buses with a vehicle weight of  $\leq 8,000$  kg, at least 2 three-point lashing straps with controllers to be used. From a vehicle weight of  $> 8,000$  kg, at least 4 lashing straps with controllers to be used and for a vehicle weight of  $> 11,000$  kg to  $< 20,000$  kg, at least 6 lashing straps with controllers to be used.

The lashing straps must be designed in accordance with DIN EN 12195-2 as described in VDI guideline 2700 sheet 8.1 and sheet 8.2.

The lashing straps must be suitable for lashing in conjunction with a road element. Due to the installation situation of a car transporter lashing strap in combination with a road element on vehicle transporters, it is possible that the hook used are loaded both at the hook tip and at the hook flank and not at the hook base. The lashing strap used must be suitable for this situation with its transfer elements.

The lashing straps must be equipped with strap controllers that prevent the strap from slipping off the tyre. The strap controllers must be designed in such a way that the belt tension is distributed as evenly as possible to both sides evenly during lashing. The strap controller must have a transfer value (ETA value) of at least 0.5. The transfer value shall be determined in accordance with VDI 2700 sheet 8.0.

A lashing strap with controller must meet the following parameters when loading commercial vehicles, trucks or buses:

- Applicable standard: DIN EN 12195-2
- Length: at least 2.80 m
- Elongation:  $\leq 4\%$
- LC: 1.500 daN when loading commercial vehicles up to 4.500 kg gross weight
- LC: 2.500 daN when loading commercial vehicles, trucks and buses  $> 4.500$  kg gross weight
- STF: 330 daN when loading commercial vehicles up to 4.500 kg gross weight
- STF: 500 daN when loading commercial vehicles, trucks and buses  $> 4.500$  kg gross weight
- SHF: 50 daN
- Belt width. min. 35 mm when loading commercial vehicles with a gross weight of up to 4.500 kg.
- Belt width: min. 50 mm when loading commercial vehicles, trucks and buses  $> 4.500$  kg total weight

The basic requirements resulting from the DIN EN 12195-2 standard must be observed.

Controller length:

- The length of the controller must be selected so that the controller can be attached as intended. At least half the wheel circumference is to be used as a guideline value. (The lashing strap must only touch the tyre via the controller). It is possible to use detachable controllers (adapters) to adapt the controller to different tyre sizes.

Combination strap / strap-controller:

- Strap only in combination with tested controller/adaptor.
- Due to the special dynamic properties during vehicle transport, the hand lever (ratchet handle) of tensioning elements must be selected in such a way that it has protection against unintentional opening (double-secured ratchet).



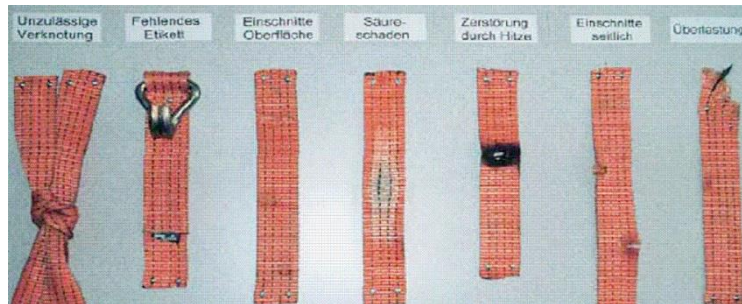
double-secured ratchet



### Disposal criteria for lashing systems:

#### Strap:

- Cuts >10% at the web edge and excessive wear.
- Damage to seams.
- Thermal deformation.
- Contact with aggressive substances, e.g. Acids.
- Invalid nodes.
- Damage due to overloading.



Disposal criteria

#### Fastening element:

- Deformation of the fastening element
- Wear on the gear rims.
- Clamping lever is broken.
- Severe corrosion.

#### Connection element:

- Hook expansions >5%.
- Cracks, fractures, significant corrosion, permanent deformation

#### Label

- If the label (see Figure 3) with the DIN standard 12195-2 can no longer be identified due to weather conditions or signs of wear, this belt must no longer be used to secure vehicles.
- Missing label.

#### Strap-Controller:

- The controller does not stick to the tyre
- The lashing strap no longer slides through the controller.
- The suture has opened, the rubber fabric has hardened or become brittle.

### The following points (some other points than those required in DIN EN 12195-2) must be listed on the lashing strap label for suitable vehicle load securing:

- Lashing force: LC in daN
- Elongation: in %
- Standard hand force: SHF in daN
- Standard clamping force: STF in daN
- Belt material
- Length: LG, LGF, or LGL (as applicable)
- Name of the manufacturer or supplier, registered trademark or other unique identifier
- Manufacturer's traceability code
- Year of build
- Standard number: EN 12195-2
- "Not be used for lifting"
- ETA value of the lashing strap/controller combination



The following information must be listed on the controller/adaptor (with label or printed on the controller/adaptor):

- Controller brand name/type designation
- Manufacturer's name
- ETA value of the lashing strap/controller combination

The lashing straps must be suitable for lashing down in combination with car-/commercial vehicle transporter road elements.



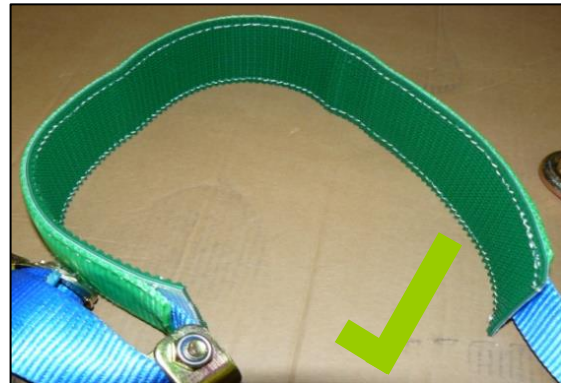
Strap- Controller of Dolezych GmbH & Co. KG



Strap- Controller of Dolezych GmbH & Co. KG



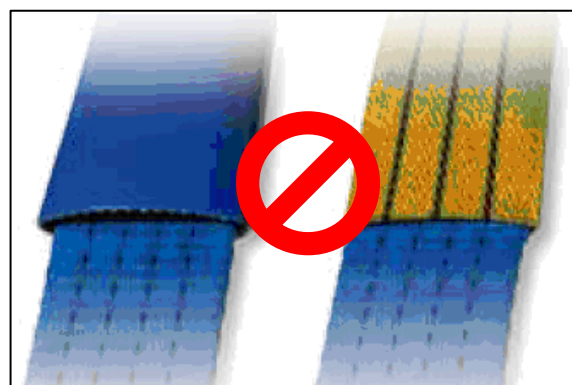
strap with continuous, studded strap controller



strap with continuous, studded strap controller



strap with rubber blocks



Tie-down strap with tube-shaped controller

### 6.1.1.5 Load preparation

The angle of the approach rails must be designed to avoid damage to spoilers, underbodies and exhaust systems, but may not exceed a maximum angle of 10°. For this reason, air-sprung trailers must be in the lowest position for loading and unloading and the tractor vehicles must be in the highest position to produce as small an approach angle as possible.



Abbildung 2 Approach rails of a truck



Abbildung 1 Approach rails of a truck

In the case of vehicle approach ramps on the recesses are always to be covered with recess rails [see fig.]



Abbildung 3 covering recesses with insertion rails.

The loading surfaces must be free of unattached and blocking parts (e.g. chocks, three-point tie-down straps with strap controller, tools, bracket retainers, spare wheels etc..) see fig.].



Free loading surface of a commercial vehicle transporter



Negativ Free loading surface

Hanging three-point tie-down straps with strap controllers on hydraulic supports, with consequent swinging, is forbidden.

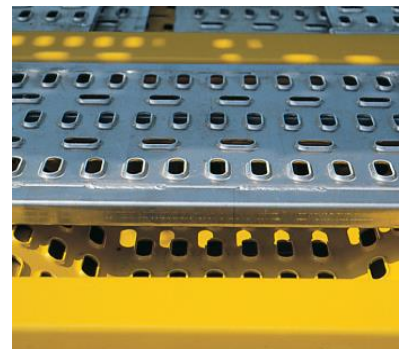
**Note:** Warning plates must be attached in accordance with the applicable EC directives on the identification of overlong loads and must never be positioned in the driver's cab of the transported vehicle.

### Particularity for Fuso Canter:

When loading the upper loading level, there must be as flat a transitional areas as possible between the tractor vehicle and the trailer [see fig. included] to avoid damage to the underbody and the spoiler.



In the case of vehicle approach ramps on the lower loading level, recesses are always to be covered with recess rails.



The loading surfaces must be free of unattached and blocking parts (e.g. chocks, three-point tie-down straps with strap controller, tools, bracket retainers, etc..) [see fig.].



The permissible chocks and the three-point tie-down straps with strap controller must be secured outside of the loading surface. Otherwise, the three-point tie-down straps with strap controller and chock are to be removed from the loading level. It is forbidden to hang the three-point straps with strap controller on the lanyard rail.



### 6.1.1.6 Vehicle hand-over

Vehicle hand-over is in accordance with the chapter "**General**" "**The vehicle hand-over check**".

Vehicle documents are to be checked for correctness. The embossed chassis number must match the transport document completely.

If vehicle parts need to be dismantled, the agreement of the loading supervisory personnel (factory dispatch) must be obtained in all cases. The following parts may be dismantled with the agreement of the loading supervisory personnel:

- exhaust pipes
- spare wheels (not permissible for HV vehicles)
- fenders

The dismantling is to be carried out professionally with suitable tools; the loading supervisory personnel should provide support if required. To avoid damage, the parts dismantled should be packed correctly and secured and stored in the driver's cab. Any violations will be sanctioned with an immediate ban on loading.

After the vehicle has been delivered to its destination, the dismantled parts must be refitted professionally with suitable tools.

**Note:** It is forbidden to remove electrical parts such as rear lights or rotating beacons. It is forbidden to dismantle the air ducts of the cab suspension.

### 6.1.1.7 Loading the vehicle

To ensure safe transport, it must be ensured during loading that the load is distributed evenly in accordance with manufacturers' guidelines and taking the payload and axle loads of the transporters into account.

Removing the drawbar is not permitted.

**Exception:** Permission of the body manufacturer issued depending on the vehicle.

During the entire vehicle loading procedure, employees or authorized personnel from Daimler Truck AG are authorized to check the transport vehicles and to point out if they are being loaded or secured in a manner that deviates from this guideline to ensure that no errors are made. **Major violations of these regulations will result in Daimler Truck AG issuing an immediate ban on loading applicable for all Daimler Truck locations.**

### During the loading and unloading procedures for commercial vehicles, trucks and busses the following is to be noted:

- Vehicles with roof spoilers may only be loaded in the direction of travel.
- Drive onto the transport vehicle at an appropriate speed and with extreme care. Furthermore, the conditions in chapter "General handling of MB vehicles" apply.
- Supports and stabiliser bars must be used
- The vehicles must not be moved, pushed or tilted with the hydraulic platform of the body.
- The following minimum clearances around the vehicles to be loaded must be adhered to (vehicle-specific clearances must also be taken into account, however):
  - Longitudinal clearance 0.10m
  - Ground clearance 0.05m
  - Roof clearance 0.10m
  - Vehicle clearance between tractor vehicle and trailer 0.30m
  - Stacking clearance between the vehicles 0.10m
  - Side clearance to attachment part and body 0.05m



**Important note:** The engine is to be switched off immediately in the event of noticeable loss of engine power or other operational faults.

**Important:** Specialist assistance is provided by the responsible vehicle logistics center or the nearest Mercedes-Benz workshop.

The following activities must be avoided in all circumstances:

- frequent consecutive attempts to start the engine.
- extremely long operation of the starter motor.
- switching off the ignition during the journey.

When leaving the vehicles, it should be checked that all electrical consumers are switched off, the windshield wipers are in position zero and that doors, windows, roof hatches and front-end flaps are closed correctly and the exterior mirrors are folded in.

In the case of truck transports, the trucks must be transported locked. On certain routes, Daimler Truck AG reserves the right to issue an instruction that vehicles should be transported unlocked.

### 6.1.1.8 Securing the trucks on special commercial vehicle transporters

If there are any additional questions on the following guidelines or regarding load-securing or loading methods, Daimler Truck personnel on site is of course happy to assist. Each vehicle is to be secured after parking by applying the parking brake and turning the gearbox shift lever to "0". Furthermore, the tie-down strap and the chock are to be fixed in position as follows:

The three-point tie-down straps with strap controller are to be put on as follows:

1. Hook the first hook vertically into the perforated plate,
2. Lay the strap with strap controller **radially** over the tire,
3. Hook the second hook vertically into the perforated plate and
4. Then tighten the third hook directed away from the wheel and fix the strap using the ratchet.
5. The length of the controller must be selected so that the controller can be attached as intended. At least half the wheel circumference is to be used as a guideline value.



Straps/hooks may only be attached to fixed body components, according to the specification. The lashing straps may only be attached over the tyres and must not be hooked into the rim holes or other parts of the vehicle to be transported. Securing of a load on loose sheet metal is not permitted. Stacking rails and insert sheets may only be used as intended.



## 6.1.1.9 Summary of load securing of commercial vehicles, trucks or buses on vehicle transporters:

### Wheel cocks, troughs and chamfers:

Height	1/6 of the tyre diameter, (other heights of wheel cocks, troughs or chamfers must be considered and checked separately))
Minimum load capacity in horizontal direction	≥ 500 daN when loading commercial vehicles up to 4.500 kg gross weight ≥ 1.500 daN when loading commercial vehicles, trucks and buses > 4.500 kg gross weight
Combination	Wheel chocks only in combination with tested/certified road element
Particularity	No sharp edges, cracks, kinks or damage
Approval of load capacity	Approved by the respective manufacturer and tested in accordance with VDI 2700 sheet 8.0.

Table 1

### Lashing:

Applicable Standards	DIN EN 12195-2
Elongation	≤ 4%
ETA value (controller efficiency)	≥ 0,5
LC	1.500 daN when loading commercial vehicles up to 4.500 kg gross weight 2.500 daN when loading commercial vehicles, trucks and buses > 4.500 kg gross weight
STF	330 daN when loading commercial vehicles up to 4.500 kg gross weight 500 daN when loading commercial vehicles, trucks and buses > 4.500 kg gross weight
Strap width	min. 35 mm when loading commercial vehicles up to 4.500 kg gross weight min. 50 mm daN when loading commercial vehicles, trucks and buses > 4500 kg gross weight
Length controller	Half of the tyre circumference or the strap may only touch the wheel via the controller.
Combination	strap only in combination with tested/certified controller/adapter
Parameter release:	Approved by the respective manufacturer and certified in accordance with VDI 2700 sheet 8.0.

Table 2

### Friction coefficient of the ramp elements:

Coefficient of friction	Minimum $\mu = 0.4$ Longitudinal and transverse to the alignment of the road element / Surface condition wet and dry
Combination	Road element/commercial vehicle tyres or truck tyres
Parameter release:	Approved by the respective manufacturer and certified in accordance with VDI 2700 sheet 8.0.

Table 3

### Lashing points on the road element when loading commercial vehicles up to 4.500 kg gross weight:

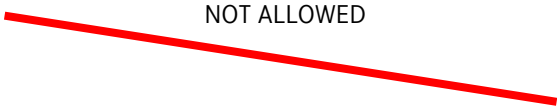
Minimum lashing point forces (+25% safety) in relation to vehicle weights of the vehicle to be transported Commercial Vehicles	
1.500 – 3.000 kg Loading commercial vehicles Max. +25° - Max.-25°	<ul style="list-style-type: none"> <li>• 0° min. 700 daN</li> <li>• 45° min. 700 daN</li> <li>• 90° min. 600 daN</li> </ul>
3.000 – 4.500 kg Loading commercial vehicles from 0° to 10°	<ul style="list-style-type: none"> <li>• 0° min. 700 daN</li> <li>• 45° min. 700 daN</li> <li>• 90° min. 600 daN</li> </ul>
3.000 – 4.500 kg Approach angle of commercial vehicle on vehicle transporter Max. +25° - Max. -25°	 <p>NOT ALLOWED</p>
Parameter release:	Approved by the respective manufacturer and certified in accordance with VDI 2700 sheet 8.0.

Table 4

### Lashing points on road element when loading trucks and buses >4,500 kg total weight:

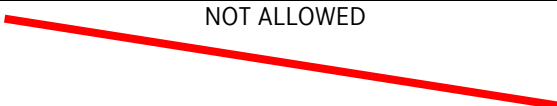
Minimum lashing point forces (+25% safety) in relation to the vehicle weights of the truck or bus to be transported	
0 – 8.000 kg Loading truck or bus from 0° bis 10°	<ul style="list-style-type: none"> <li>• 0° min. 1.000 daN</li> <li>• 45° min. 1.000 daN</li> <li>• 90° min. 1.000 daN</li> </ul>
0 – 11.000 kg Loading truck or bus from 0° bis 25° When positioning the stacked vehicle axle in a troughs or chamfers	<ul style="list-style-type: none"> <li>• 0° min. 1.000 daN</li> <li>• 45° min. 1.000 daN</li> <li>• 90° min. 1.000 daN</li> </ul>
>8.000 – 11.000 kg Loading truck or bus from >10° bis 25°	<ul style="list-style-type: none"> <li>• 0° min. 1.500 daN</li> <li>• 45° min. 1.500 daN</li> <li>• 90° min. 1.400 daN</li> </ul>
>11.000 – 20.000 kg Loading truck or bus from 0° bis 10°	<ul style="list-style-type: none"> <li>• 0° min. 1.000 daN</li> <li>• 45° min. 1.000 daN</li> <li>• 90° min. 1.000 daN</li> </ul>
>11.000 – 20.000 kg Approach angle for truck or bus on vehicle transporter Max. +25° - Max. -25°	 <p>NOT ALLOWED</p>
Parameter release:	Approved by the respective manufacturer and certified in accordance with VDI 2700 sheet 8.0.
The minimum lashing point forces shown above are directly related to the securing methods listed below, in relation to the angle of incidence of the loaded truck or bus and its vehicle weight.	

Table 5

**Vehicle configuration:**

The vehicle configurations shall be designed for the acceleration forces occurring in accordance with DIN EN 12195-1 (when loaded). This must be approved by the respective manufacturer and approved in accordance with VDI 2700 sheet 8.0. The matrix is structured on the basis of the cross weight of vehicles, in relation to an angle of approach of the loaded truck or bus.

The loading diagrams listed below contain the following specifications:

- Engage the parking brake,
- on vehicles with manual transmission, adjust freewheel,
- on vehicles with automatic transmission, engage the N position and
- The securing of the accessories must be checked. If necessary, the parts must be secured.
- The wind deflectors etc. must also be secured separately.
- The vehicle mirrors must be folded in.
- The tyre pressure of the respective wheels must be high enough to ensure stable securing of the tie-downs.
- Only suitable and approved elevation pieces or ramps may be used between the road elements and the tyres. These elevation sections or ramps must have a positive and frictional connection to the roadway elements or other fixed attachments. Under no circumstances may wooden beams, square timbers, wheel chocks, etc. be used as elevation pieces or spacers.

**Important notes:**

When stacking, the stacking angle of the vehicles during transport may not exceed 25°. In addition, the platform to be stacked is to be secured with additional supports; in the case of a self-supporting platform, additional equipment is not required.



Stacking of vehicles

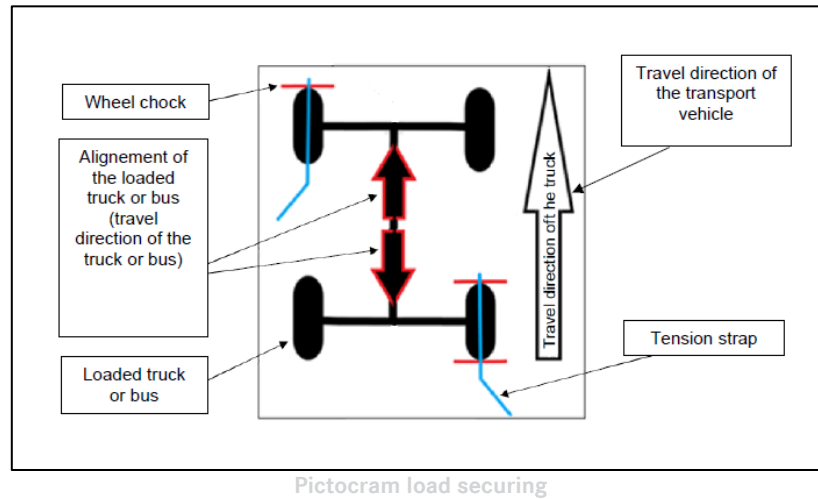
**Caution:** During transport, check the load and the correct fit of the load securing equipment at regular intervals to see that it remains in place. The loading platform may not rest on new vehicles below.

Loaded transport vehicles must be parked at night and on weekends and public holidays on fenced and secured premises of the service providers or in monitored parking lots/car parks (**see chapter “Guidelines for storage at shipping and storage locations”**)



A distinction has been made between 0°-10° and 10°-25° loading to enable loading on vehicle transporters with lower lashing point load capacities. The load securing provided for this does not differ, but the required strength of the lashing points varies.

To minimize the number of pictograms and to simplify the possible load securing measures, the vehicles can be positioned in the direction of travel or against the direction of travel with the same load securing. This is indicated by the two arrows in the pictograms.



Number of load securing components for medium and heavy commercial vehicles:

Axels	Weight in kg	Lashing straps	Wheel chocks
≥2	Up to 3.000	min. 2	min. 3
≥2	Up to 4.500	min. 3	min. 6
≥2	Up to 8.000	min. 2	min. 4
≥2	Up to 11.000	min. 4	min. 6
≥3	Up to 20.000	min. 6	min. 9

Tabelle 6

Number of load securing components for

Axels	Weight in kg	Lashing straps	Wheel chocks
2	≤13.905	4	8
3	≤20.229	6	12

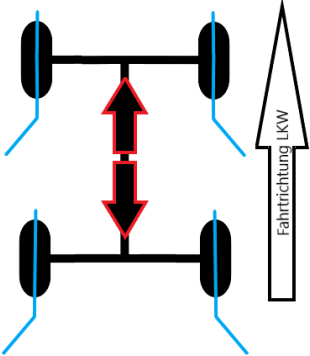
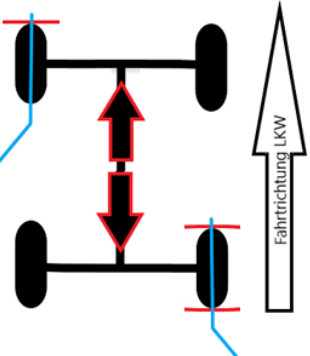
Tabelle 7

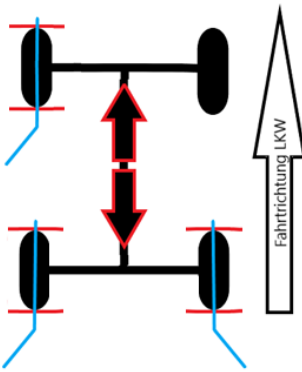
For flat trains with hydraulic equipment, the angle may be max. 25° during hydraulic stacking.

#### Troughs and chamfers:

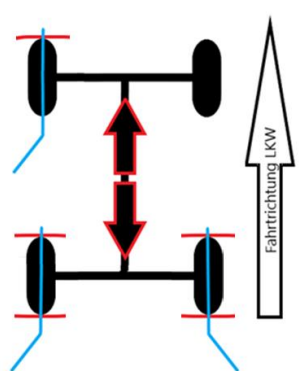
The vehicles must be standing with both wheels of one axle or both axles in the recess or goggles. This load replaces the corresponding wheel chocks.

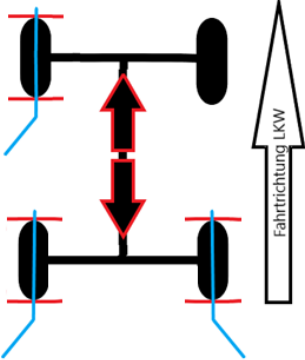
### Commercial vehicle loading matrix 1.500 kg – 2.000 kg:

	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +10°</li> <li>• Maximum -10°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <p>4 lashing straps with variable strap controllers,  Minimum LC = 1.500 daN,  Minimum 35 mm strap width,  Minimum STF = 350 daN,  strap elongation maximum ≤ 4%,  Applicable standard: DIN EN 12195-2,  ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</p> <ul style="list-style-type: none"> <li>• Capacity of lashing point: 0° min. 700 daN  45° min. 1.000 daN  90° min. 1.000 daN</li> </ul>
	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +25°</li> <li>• Maximum -25°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 2 wheel chocks in direction of travel (red)</li> <li>• 1 wheel chock against direction of travel (red)</li> <li>• 2 lashing straps with variable strap controllers,  Minimum LC = 1.500 daN,  Minimum 35 mm strap width,  Minimum STF = 350 daN,  strap elongation maximum ≤ 4%,  Applicable standard: DIN EN 12195-2,  ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: 0° min. 700 daN  45° min. 1.000 daN  90° min. 1.000 daN</li> </ul>

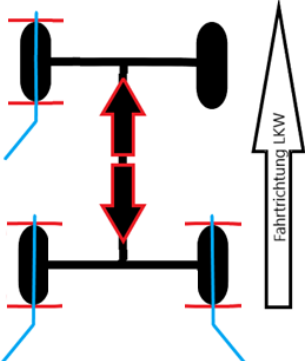
	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +25°</li> <li>• Maximum -25°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 3 wheel chocks in direction of travel (red)</li> <li>• 3 wheel chocks against direction of travel (red)</li> <li>• 3 lashing straps with variable strap controllers, Minimum LC = 1.500 daN, Minimum 35 mm strap width, Minimum STF = 350 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: 0° min. 700 daN 45° min. 1.000 daN 90° min. 1.000 daN</li> </ul> <p><b>Note:</b> The pictogram applies to the last vehicle loaded behind the last axle of the trailer, as well as the last vehicle whose centre of mass is behind the last axle of the trailer or, in the case of solo vehicles, the last vehicle loaded behind the rear axle of the solo vehicle, as well as the last vehicle whose centre of mass is behind the last axle of the solo vehicle. This loading applies to all load levels.</p>
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#### Commercial vehicle loading matrix 2.000 kg – 3.000 kg:

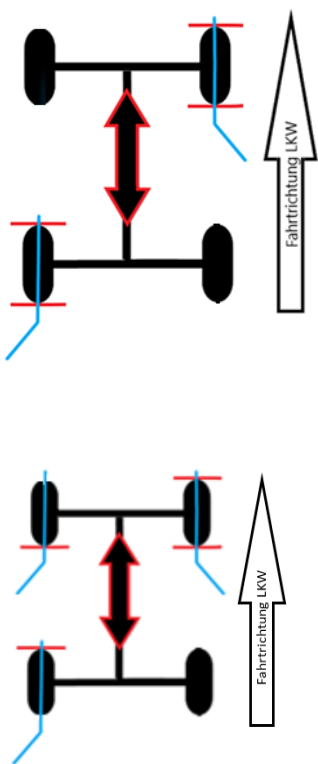
	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +25°</li> <li>• Maximum -25°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 3 wheel chocks in direction of travel (red)</li> <li>• 2 wheel chocks against direction of travel (red)</li> <li>• 3 lashing straps with variable strap controllers, Minimum LC = 1.500 daN, Minimum 35 mm strap width, Minimum STF = 350 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: 0° min. 700 daN 45° min. 1.000 daN 90° min. 1.000 daN</li> </ul>
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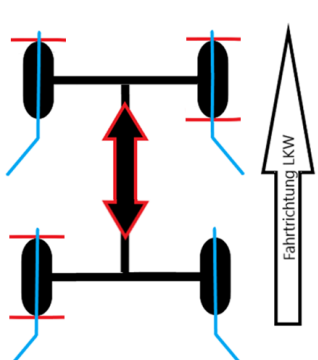
	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +25°</li> <li>• Maximum -25°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 3 wheel chocks in direction of travel (red)</li> <li>• 3 wheel chocks against direction of travel (red)</li> <li>• 3 lashing straps with variable strap controllers, Minimum LC = 1.500 daN, Minimum 35 mm strap width, Minimum STF = 350 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: 0° min. 700 daN 45° min. 1.000 daN 90° min. 1.000 daN</li> </ul> <p><b>Note:</b> The pictogram applies to the last vehicle loaded behind the last axle of the trailer, as well as the last vehicle whose centre of mass is behind the last axle of the trailer or, in the case of solo vehicles, the last vehicle loaded behind the rear axle of the solo vehicle, as well as the last vehicle whose centre of mass is behind the last axle of the solo vehicle. This loading applies to all load levels.</p>
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#### Commercial vehicle loading matrix 3.000 kg – 4.500 kg:

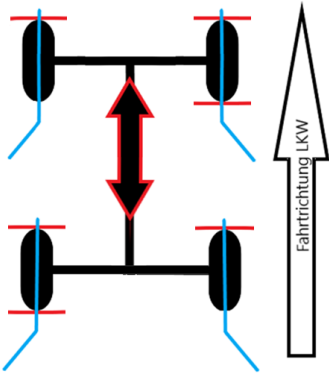
	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +10°</li> <li>• Maximum -10°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 3 wheel chocks in direction of travel (red)</li> <li>• 3 wheel chocks against direction of travel (red)</li> <li>• 3 lashing straps with variable strap controllers, Minimum LC = 1.500 daN, Minimum 35 mm strap width, Minimum STF = 350 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: 0° min. 700 daN 45° min. 1.000 daN 90° min. 1.000 daN</li> </ul>
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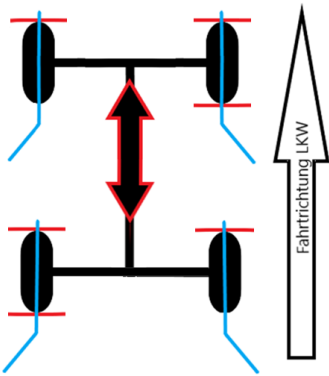
### Commercial vehicle loading matrix 4.500 kg - 8.000 kg:

 <p><i>Alternative pictogram</i></p>	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +10°</li> <li>• Maximum -10°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 2 wheel chocks in direction of travel (red)</li> <li>• 2 wheel chocks against direction of travel (red)</li> <li>• 2 lashing straps with variable strap controllers, Minimum LC = 2.500 daN, Minimum 50 mm strap width, Minimum STF = 500 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: 0° min. 1.000 daN 45° min. 1.000 daN 90° min. 1.000 daN</li> </ul> <p>Alternativ-Verladebild zu dem oberen Verladebild mit zusätzlichem Gurt.</p>
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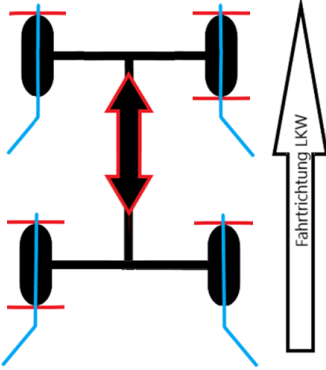
	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +25°</li> <li>• Maximum -25°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 3 wheel chocks in direction of travel (red)</li> <li>• 2 wheel chocks against direction of travel (red)</li> <li>• 4 lashing straps with variable strap controllers, Minimum LC = 2.500 daN, Minimum 50 mm strap width, Minimum STF = 500 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: 0° min. 1.000 daN 45° min. 1.000 daN 90° min. 1.000 daN</li> </ul>
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## Commercial vehicle loading matrix 8.000 kg - 11.000 kg

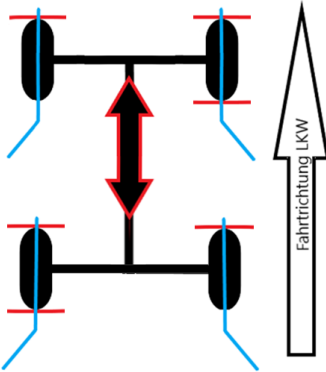
	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +10°</li> <li>• Maximum -10°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 4 wheel chocks in direction of travel (red)</li> <li>• 2 wheel chocks against direction of travel (red)</li> <li>• 4 lashing straps with variable strap controllers, Minimum LC = 2.500 daN, Minimum 50 mm strap width, Minimum STF = 500 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: <ul style="list-style-type: none"> <li>0° min. 1.000 daN</li> <li>45° min. 1.000 daN</li> <li>90° min. 1.000 daN</li> </ul> </li> </ul>
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	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +25°</li> <li>• Maximum -25°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 4 wheel chocks in direction of travel (red)</li> <li>• 2 wheel chocks against direction of travel (red)</li> <li>• 4 lashing straps with variable strap controllers, Minimum LC = 2.500 daN, Minimum 50 mm strap width, Minimum STF = 500 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: <ul style="list-style-type: none"> <li>0° min. 1.500 daN</li> <li>45° min. 1.500 daN</li> <li>90° min. 1.400 daN</li> </ul> </li> </ul>
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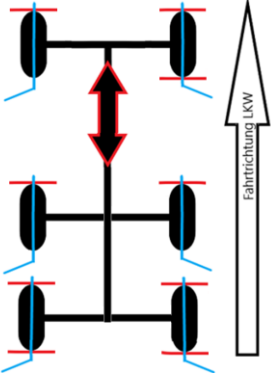
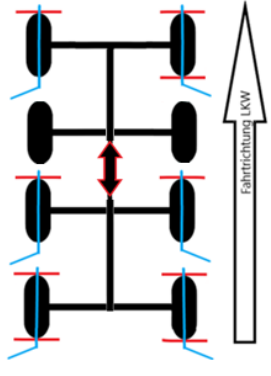
### Commercial vehicle loading matrix 11.000 kg - 13.500 kg

	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +15°</li> <li>• Maximum -15°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 4 wheel chocks in direction of travel (red)</li> <li>• 2 wheel chocks against direction of travel (red)</li> <li>• 4 lashing straps with variable strap controllers, Minimum LC = 2.500 daN, Minimum 50 mm strap width, Minimum STF = 500 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: 0° min. 1.500 daN 45° min. 1.500 daN 90° min. 1.400 daN</li> </ul> <p>If the last axle is a trailing axle which can be lifted it needs not to stand on the road elements. In this case the prescribed lashings have to be fixed at the axle direct in front.</p>
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### Commercial vehicle loading matrix 13.500 kg - 14.000

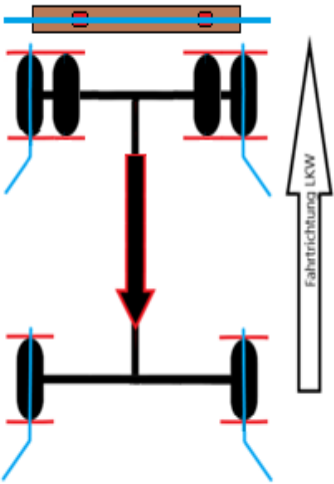
	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +12,5°</li> <li>• Maximum 12,5°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 4 wheel chocks in direction of travel (red)</li> <li>• 2 wheel chocks against direction of travel (red)</li> <li>• 4 lashing straps with variable strap controllers, Minimum LC = 2.500 daN, Minimum 50 mm strap width, Minimum STF = 500 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: 0° min. 1.500 daN 45° min. 1.500 daN 90° min. 1.400 daN</li> </ul> <p>If the last axle is a trailing axle which can be lifted it needs not to stand on the road elements. In this case the prescribed lashings have to be fixed at the axle direct in front.</p>
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### Commercial vehicle loading matrix >11.000 kg - 20.000 kg:

 <p><i>Pictogram with 3 Axles</i></p>  <p><i>Pictogram with 4 Axles</i></p>	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum +10°</li> <li>• Maximum -10°</li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 6 wheel chocks in direction of travel (red)</li> <li>• 3 wheel chocks against direction of travel (red)</li> <li>• 6 lashing straps with variable strap controllers, Minimum LC = 2.500 daN, Minimum 50 mm strap width, Minimum STF = 500 daN, strap elongation maximum ≤ 4%, Applicable standard: DIN EN 12195-2, ETA value &gt;0.5 of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: <ul style="list-style-type: none"> <li>0° min. 1.000 daN</li> <li>45° min. 1.000 daN</li> <li>90° min. 1.000 daN</li> </ul> </li> </ul>
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### Bus loading matrix $\leq 13.905\text{kg}$

	<p><b>Vehicle inclination angle on the transport vehicle</b></p> <ul style="list-style-type: none"> <li>• Maximum <math>+10^\circ</math></li> <li>• Maximum <math>-10^\circ</math></li> </ul> <p><b>Minimum equipment for this transport operation</b></p> <ul style="list-style-type: none"> <li>• 4 wheel chocks in direction of travel (red)</li> <li>• 4 wheel chocks against direction of travel (red)</li> <li>• 4 lashing straps with variable strap controllers, Minimum LC = 2.500 daN, Minimum STF = 500 daN, strap elongation maximum <math>\leq 4\%</math>, Applicable standard: DIN EN 12195-2, ETA value <math>&gt;0.5</math> of the lashing strap/controller combination on the label (blue)</li> <li>• Capacity of lashing point: <ul style="list-style-type: none"> <li><math>0^\circ</math> min. 1.500 daN</li> <li><math>45^\circ</math> min. 1.500 daN</li> <li><math>90^\circ</math> min. 1.400 daN</li> </ul> </li> </ul> <p><b>Note:</b></p> <p>To secure buses, axles 1 and 2 are lowered with the level control system. Rubber buffers are permanently installed under the bus, behind axle 2. A square timber secured by a three-point strap must be placed between these rubber buffers and the loading surface of the transport vehicle. It must be noted that the squared timber must be used in such a way that it cannot tip over. Anti-slip mats must also be positioned between the squared timber and the loading surface. The anti-slip mats must have a friction coefficient of at least <math>\mu \geq 0.6</math> and a thickness of at least 5 mm and be adapted to the load. When the axle 2 is lowered, the rubber buffer of the bus is resting on the squared timber over its entire surface. The minimum distance between the bus body (bottom edge of the bus) and the transport loading surface is 100 mm.</p>
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### Bus loading matrix $\leq 20.229\text{kg}$

**Vehicle inclination angle on the transport vehicle**

- Maximum  $+10^\circ$
- Maximum  $-10^\circ$

**Minimum equipment for this transport operation**

- 6 wheel chocks in direction of travel (red)
- 6 wheel chocks against direction of travel (red)
- 6 lashing straps with variable strap controllers, Minimum LC = 2.500 daN, Minimum 50 mm strap width, Minimum STF = 500 daN, strap elongation maximum  $\leq 4\%$ , Applicable standard: DIN EN 12195-2, ETA value  $>0.5$  of the lashing strap/controller combination on the label (blue)
- Capacity of lashing point:
  - 0° min. 1.500 daN
  - 45° min. 1.500 daN
  - 90° min. 1.400 daN

**Note:**

To secure buses/coaches, axles 1 and 2 are raised with the level control system. Rubber buffers are permanently installed under the bus, behind axle 3. A square timber secured by a three-point belt must be placed between these rubber buffers and the loading surface of the transport vehicle. It must be noted that the squared timber must be used in such a way that it cannot tip over. Anti-slip mats must also be positioned between the squared timber and the loading surface. The anti-slip mats must have a friction coefficient of at least  $\mu \geq 0.6$  and a thickness of at least 5 mm and be adapted to the load. The rear axle is completely lowered by unhooking the linkage of the level control so that the rubber buffers of the bus are resting on the squared timber over their entire surface. The minimum distance between the bus body (lower edge of the bus) and the transport loading surface is 155 mm.

## When loading HV commercial vehicles, in addition to note:



- Maximum stacking angle must not be exceeded
- Due to lower vibrations during operation and lower noise, it must be checked before leaving the vehicle on the basis of the display in the cockpit display whether the electric motor is switched off and the parking brake is locked
- The driver loading the vehicle must have completed an HV 1 sensitisation and be able to present it to the auditor if requested.
- In case of abnormalities/malfunctions, the staff in the hand over center must be informed immediately.
- **Hands off the orange cable**

**Note:** In addition to the above-called requirements, Chapter 7 "**Alternative drives and training instructions**" must also be observed.

### 6.1.1.9 Loading heavy MB trucks onto special commercial vehicle transporters (e.g. special low loaders)

#### General

Heavy-duty transport is the transport of vehicles that cannot be loaded onto conventional trucks due to their dimensions (length/width/height/weight) and which cannot be transported on their own axle.

Loading on special commercial vehicle transporters must be assessed separately and requires special approval, e.g. by expert appraisal

## Operations Manual Europe. General.

### 6.1.2 Vehicle transfer on own axles

## 6.1.2 Vehicle transfer on own axles

The Chapters from the General section should be observed. The following contains information on transferring vehicles on their own axles.

### Logistics

The route to the desired destination should be selected taking the cab profile into consideration (i.e. the respective maximum span of the height and width) so that the load cannot be impaired or damaged by construction areas, bridges, tree-line roads, protruding objects or vegetation, for example.

### Driving licence inspection

Daimler Truck AG reserves the right to inspect the valid driving licence of each transfer driver before the shipping documents are issued.

### Attaching the licence plate

The licence plate must be fitted, including a corresponding support plate, where the vehicle is parked (before driving). When doing so, damage to the vehicle is to be avoided. Once fitting is completed, the vehicle must leave the plant immediately.

### Taking special weather conditions into account

In certain weather conditions (e.g. snow, hail, extreme weather conditions, fallen trees, broken branches or falling ice etc.), the route or driving mode must be selected accordingly in order to avoid all risks to the load.

### Drive-specific influences

Driving style must be adapted and anticipatory (avoid convoys, etc.), so that influences related to driving (e.g. stone impact) pose no danger of damaging the vehicle. The vehicle must be delivered with approximately the same amount of fuel as when it left the plant. For this, a filling station receipt is required upon request.

### Observing running-in guidelines

Each new vehicle must be run-in according to the following guidelines.

The first 2,000 km:

- drive with sufficient care at varying vehicle and engine speeds.
- do not drive at more than  $\frac{3}{4}$  of the maximum speed for each gear.
- change gear in good time. Do not downshift to brake the vehicle.
- observe the information display in the instrument panel.
- carry out a technical inspection after every stop (always after the first 500 km) (e.g. check that the spare wheel is secure etc.)
- for analogue trip odometers, tachograph discs are not inserted for vehicle transfer.  
A digital tachograph is only activated after vehicle registration. However, the data stored in the digital tachograph can be read out using a so-called "workshop card" (driving time, speeds driven etc.).

## HV commercial vehicles

### When transfer HV commercial vehicles must also be observed

- Due to lower vibrations during operation and lower noise, it must be checked before leaving the vehicle on the basis of the display in the cockpit display whether the electric motor is switched off and the parking brake is locked
- The driver have completed an HV 1 sensitisation and be able to present it to the auditor if requested.
- In case of abnormalities/malfunctions, the staff in the hand over center must be informed immediately.
- **Hands off the orange cable**



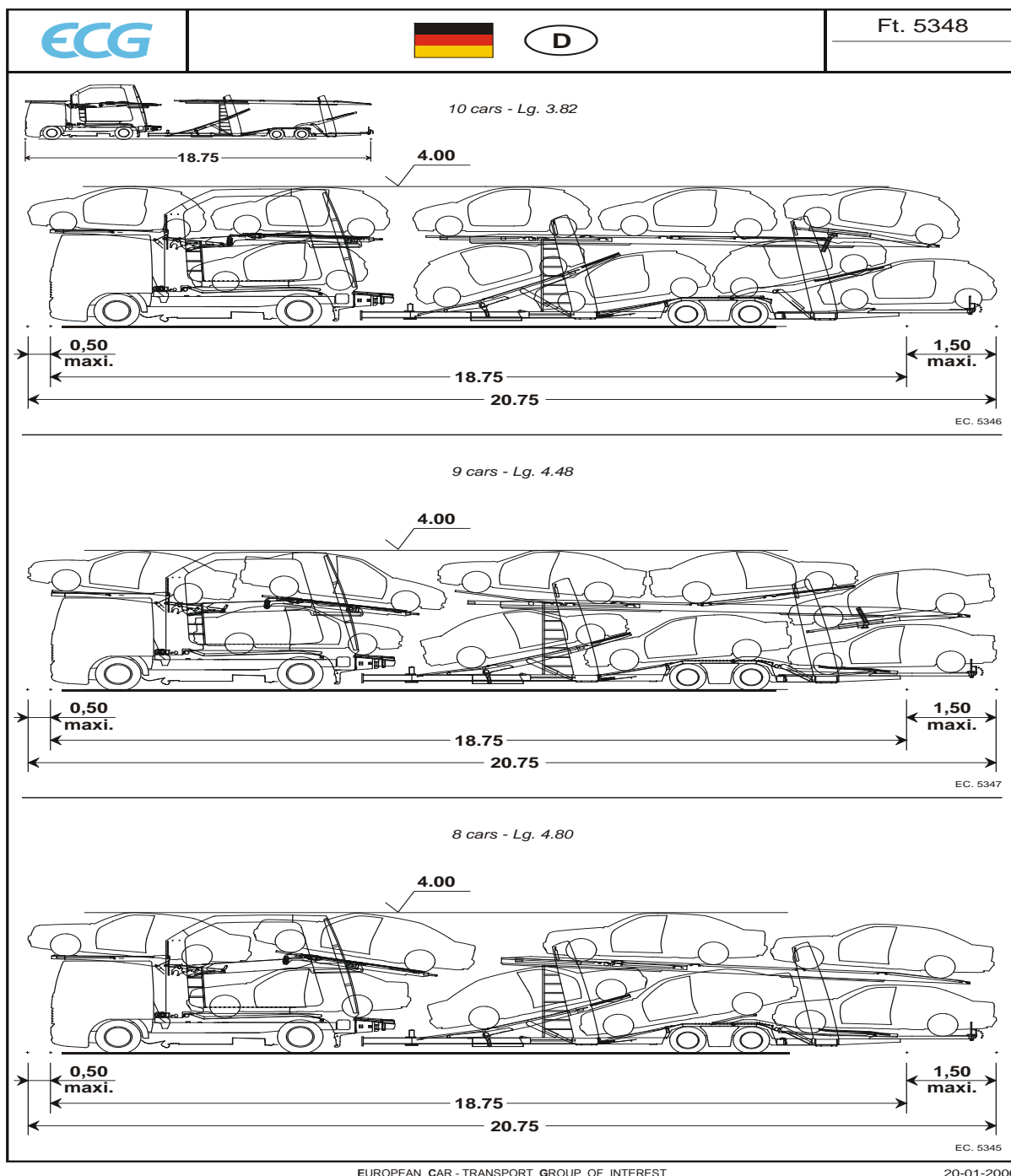
**Note:** In addition to the above-called requirements, Chapter 7 "**Alternative drives and training instructions**" must also be observed.

## Operations Manual Europe. General.

### 6.1.3 Height, length and weight restrictions

## 6.1.3 Height, length and weight restrictions in European transit countries

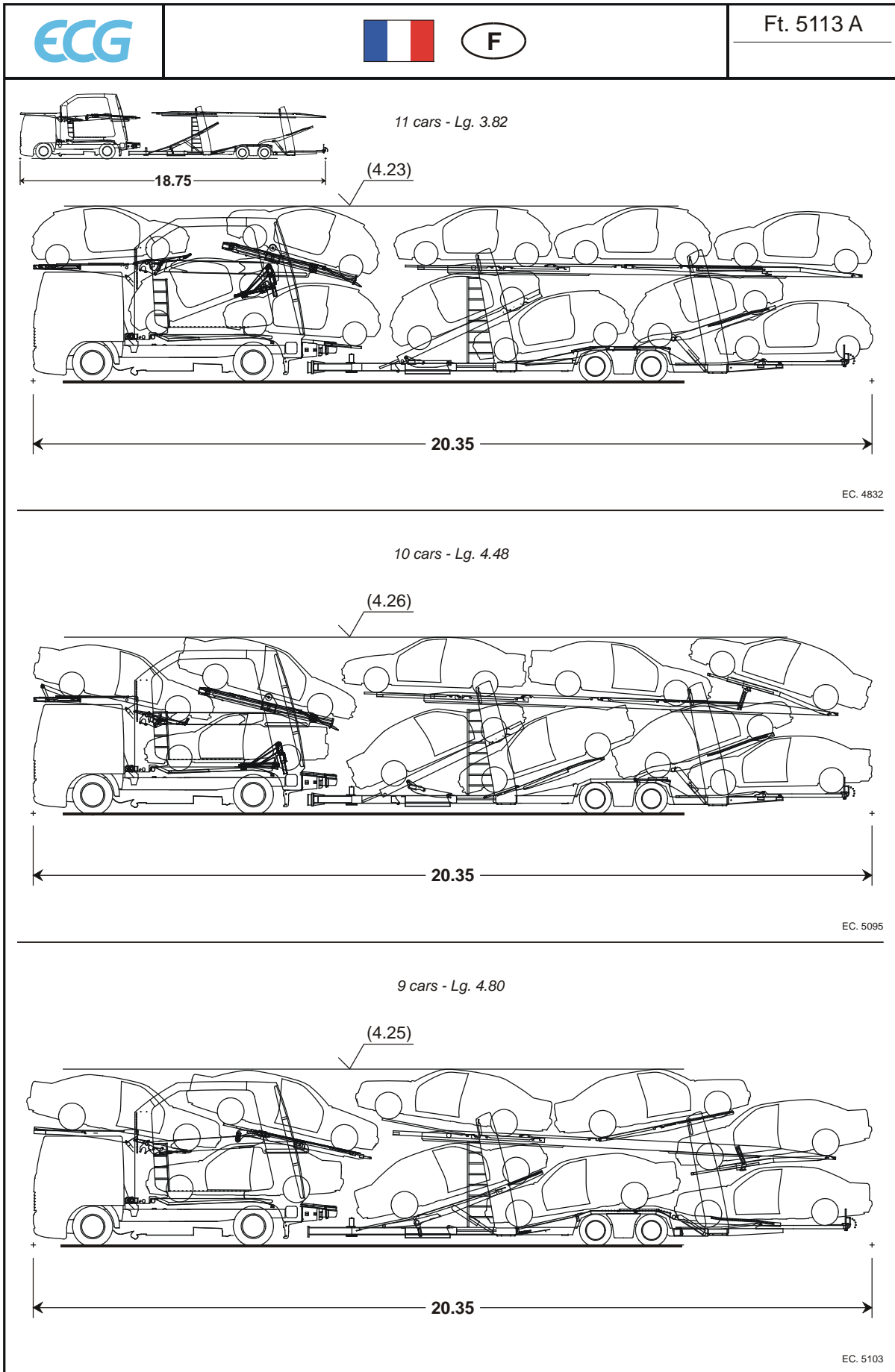
For an overview of the height and weight restrictions, the European Car Transport Group of Interest (ECG) has prepared the most important dimensions. We would like to point out again that the legal requirements of transit countries must be observed in all circumstances. For non-European countries, the requirements of each country in question apply. A few countries are listed below as examples.



EUROPEAN CAR - TRANSPORT GROUP OF INTEREST

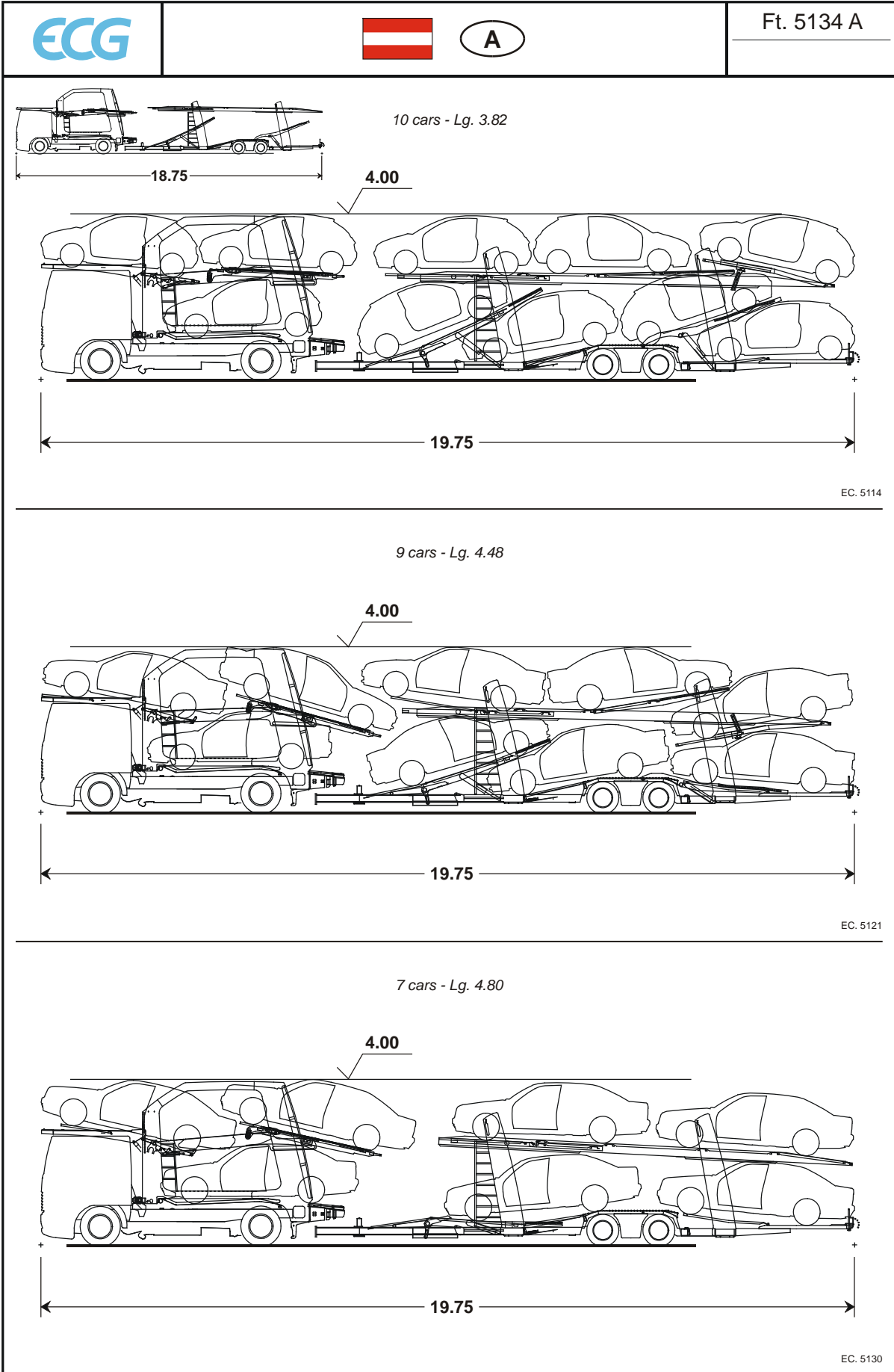
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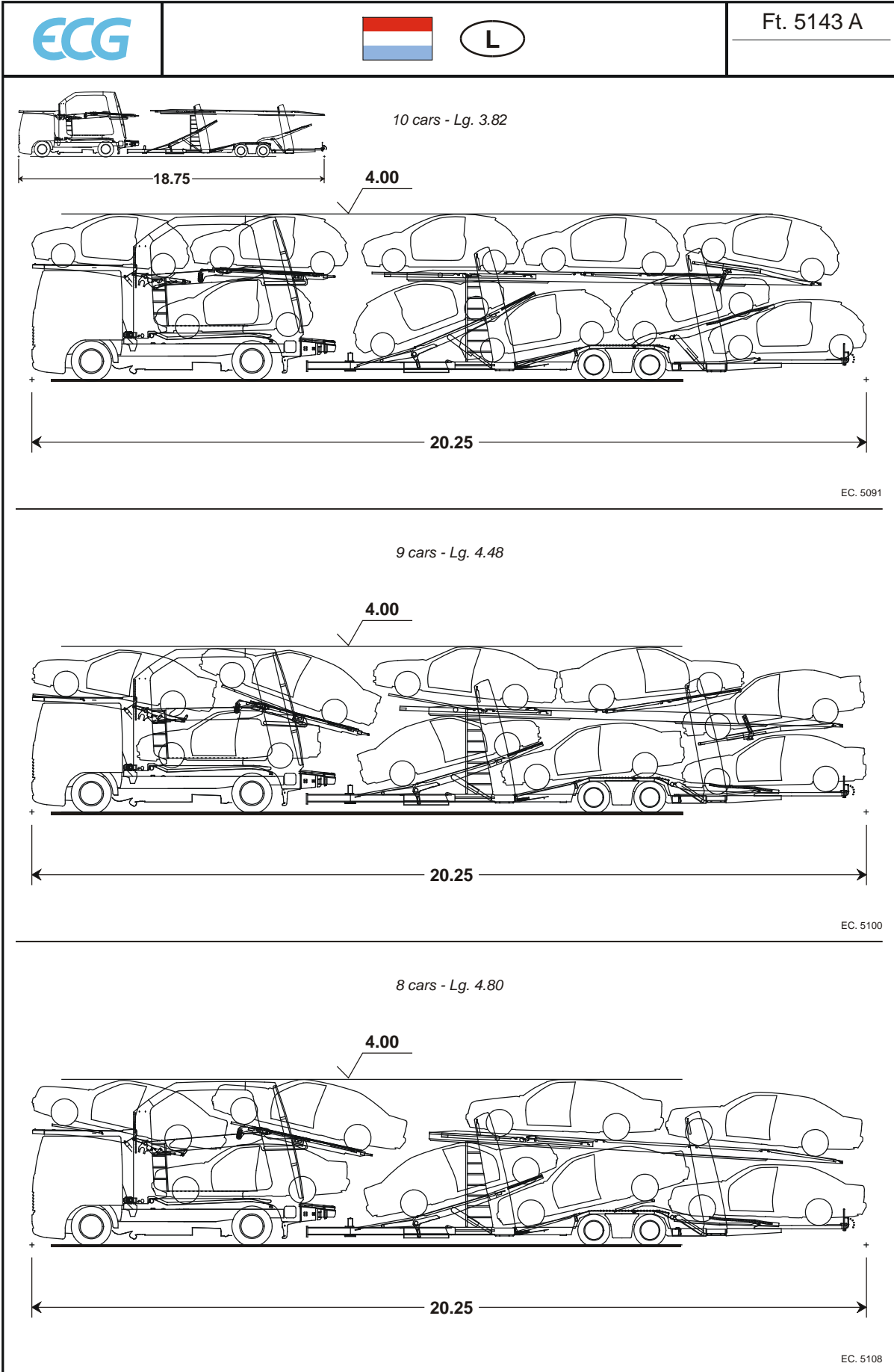
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EUROPEAN CAR - TRANSPORT GROUP OF INTEREST

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



EUROPEAN CAR - TRANSPORT GROUP OF INTEREST

16-11-1999

PERMISSIBLE MAXIMUM WEIGHTS IN EUROPE (in tonnes)							
Country	Weight per bearing axle	Weight per drive axle	Lorry 2 axles	Lorry 3 axles	Road Train 4 axles	Road Train 5 axles and +	Articulated Vehicle 5 axles and +
Albania	10		18	25	40	44	38
Austria	10	11.5	18	26	38 (2)	38 (2)	38 (2)
Azerbaijan	10				37	37	37
Belarus	10		18	25 (1)	36	38	38
Belgium	10	12	19	26	39	44	44
Bosnia-Herzegovina	10		20	26	40	40	40
Bulgaria	10	11.5	18	26 (1)	36	40	40
Croatia	10	11.5	18	26 (1)	36	40	40
Czech Republic	10	11.5	18	26 (1)	36	44 (1)	42 / 48
Denmark	10	11.5	18	26 (1)	38	42 / 48	42 / 48
Estonia	10	11.5	18	26 (1)	36	40	40
Finland (3)	10	11.5	18	26 (1)	36	44	42 / 48
France	13	13	19	26	38	40	40
FYR Macedonia	10		16	22	36	40	40
Georgia	10				44	44	44
Germany	10	11.5	18	26 (1)	36	40	40
Greece	10	11.5	18	26 (1)	36	40	40
Hungary	10	11	20	24	36	40	40
Ireland	10	10.5	17	26 (1)	35	40	40
Iceland	10	11.5	18	26	37	40	44
Italy (4)	12	12	18	26 (1)	40	44	44
Latvia	10	11.5	18	26 (1)	40	40	40
Liechtenstein	10	11.5	18	26	36	40	40
Lithuania	10	11.5	18	26 (1)	36	40	40
Luxembourg	10	12	19	26	44	44	44
Malta	10.8	11.5	18	25	36	40	40
Moldova	10		18	24	36	40	40
Netherlands	10	11.5	21.5	33	40	50	50
Norway	10	11.5	19	26	39	46	44
Poland	10	11.5	18	26 (1)	36	40	40
Portugal (4)	10	12	19	26	37	40	40
Romania	10	11.5	18	26 (1)	36	40	40
Russia	10		18	25	36	38	38
Serbia	10		18	24	36	40	40
Slovakia	10	11.5	18	26 (1)	40	40	40
Slovenia	10	11.5	18	25		40	40
Spain (4)	10	11.5	18	26 (1)	36	40	40
Sweden	10	11.5	18	26 (1)	60	60	60
Switzerland	10	11.5	18	26 (1)	40	40	40
Turkey	10	11.5	18	25	36	40	40
Ukraine	10				38	38	38
United Kingdom	10	11.5	18	26 (1)	36	40	40 / 44

1. With air suspension or similar
2. These values are increased by 5% for vehicles registered in an EU member country
3. For vehicles registered in an EEA member country
4. Increased values are applicable for certain types of transport (i.e. containers, motorcars, etc.)

Maximum Authorized Dimensions Of Loaded Car															
COUNTRY	Special recognition for car transporters	DIM	Max Unloaded Length	DIM	Max Loaded Length	DIM	Max Loaded Height	DIM	Max Front Overhang	DIM	Max Rear Overhang	Average Nbr. Of Loaded Car			
												m	m	m	m
	 AUSTRIA	<b>A</b>	Yes	A	18.75	B	19.75	H	4.00	D					
	 BELGIUM	<b>B</b>	Yes	A	18.75	C	20.75	H	4.00	D					
	 BULGARIA	<b>BG</b>		A	18.75		18.75	H	4.00						
	 CYPRUS	<b>CY</b>		A	18.75			H							
	 CZECH REP.	<b>CZ</b>	No	A	18.75		20.75	H	4.20		No	(1)	10	9	8
	 DENMARK	<b>DK</b>	No	A	18.75	C	20.75	H	4.00						
	 ESTONIA	<b>EE</b>		A	18.75		20.75	H	4.00	D	0.50	E	1.50		
	 FINLAND	<b>SF</b>	Yes	A	25.25*	A	25.25	H	4.40						
	 FRANCE	<b>F</b>	Yes	A	18.75	B	20.35	H	No Legal Limit						
	 GERMANY	<b>D</b>	Yes	A	18.75	C	20.75	H	4.00	D					
	 GREECE	<b>NL</b>	No	A	18.75	A	18.75	H	4.00						
	 HUNGARY	<b>GR</b>		A	18.75		18.75	H	4.00						
	 IRELAND	<b>IR</b>	No	A	18.75	B	21.75	H	No Legal Limit						
	 ITALY	<b>I</b>	Yes	A	18.75	C	21.00	H	4.20						
	 LATVIA	<b>LV</b>		A	18.75		18.75	H	4.00						
	 LITHUANIA	<b>LT</b>	Yes	A	18.75	A	20.75	H	4.00						
	 LUXEMBOURG	<b>L</b>	No	A	18.75	C	(2)	H	4.00						
	 MALTA	<b>MT</b>		A	18.75		18.75	H	4.00						
	 NETHERLANDS	<b>NL</b>	Yes	A	18.75	C	20.75	H	4.00						
	 NORWAY	<b>N</b>	Yes	A	18.75	C	20.00	H	No Legal Limit						
	 POLAND	<b>PL</b>	Yes	A	18.75	B	20.75	H	4.00						
	 PORTUGAL	<b>P</b>	Yes	A	18.75	B	20.00	H	4.50						
	 ROMANIA	<b>RO</b>		A	18.75		18.75	H	4.00						
	 RUSSIA	<b>RUS</b>	No		20.00		20.00	H	4.00		No	No	9	8	7
	 SLOVAK REP.	<b>SK</b>		A	18.75		18.75	H	4.00						
	 SLOVENIA	<b>SI</b>		A	18.75	B	22.00	H	4.20		No	E	2,25		
	 SPAIN	<b>E</b>	Yes	A	18.75	B	20.55	H	4.00 4.50						
	 SWEDEN	<b>S</b>	No	A	25.25*	A	25.25*	H	No Legal Limit						
	 SWITZERLAND	<b>CH</b>	Yes	A	18.75	C	20.35	H	4.00						
	 UNITED KINGDOM	<b>GB</b>	Yes	A	18.75	C	22.75	H	No Legal Limit						
	 UKRAINE	<b>UA</b>	N/A		22.00		22.00	H	4.40		N/A	N/A	9	9	7

(1) Must not exceed 1/3 of total length, max. length of overhang must not exceed 2.50  
(2) Authorizations on a case-by-case basis

## Operations Manual Europe. General.

### 6.1.4 Information on VAST (Vehicle Audit Safety Tool)



### 6.1.4.1 Loading Audit / Qdome

With Vehicle Audit Safety Tool (VAST), the loading process and the vehicle itself of all service providers are subjected to random checks by Daimler Truck AG auditors or in behalf of Daimler Truck AG for condition and compliance with internal and external regulations.

Loading Audit serves as official proof of compliance with statutory obligations for the loader.

Loading Audit is controlled and monitored by TE/ONO-S. It is a decisive parameter for the calculation of the Key Performance Indicators (KPI).

All the auditors are empowered by Daimler Truck AG to order measures or loading prohibitions.

In case of repeated loading prohibitions Daimler Truck AG reserves the right to claim a foto documentation for the training and keep loading prohibitions valid until certification.

Trainings must be carried out by a qualified driving instructor. He has be announced to TE/ONO-S Department in writing and should have completed the training course "Load securing on car transporters @Mercedes":

[Mercedes-Benz TruckTraining: Trainings für Experten - Mercedes-Benz Trucks - Trucks you can trust \(mercedes-benz-trucks.com\)](https://www.mercedes-benz-trucks.com)

**Upon request by Headquarters or the auditor, vehicle documents, permits or other identification documents are to be produced.**

**The service providers will be evaluated according to the following aspects (among others):**

- Driver
- State of Equipment
- Vehicle handling

**Among others, the following guidelines are applied:**

- VDI 2700 Sheet 8.2
- Accident prevention regulation for vehicles (BGV D 29)
- DIN EN 12195-2
- Operations Manual for vehicle transport, Daimler Truck AG
- Accident Prevention and Insurance Association, transport: Guidelines for drivers, removal of lashing straps from sevice
- The country-specific guidelines and laws in force at each place of loading.

### 6.1.4.2 Check-list for trucks

#### Driver

1.1 Does the driver wear working clothes?
1.2 Does the driver wear clean clothes?
1.3 Does the driver wear correct foot wear?
1.4 Does the driver wear gloves while operating the truck?
1.5 Does the driver work without a watch, jewelry and rings?

## Vehicle Condition

2.1 Is the tractor free of rust, hydraulic oil / dirt and damages?
2.2 Is the tractor-trailor free of rust, hydraulik oil / dirt and sharp edges?
2.3 Is the trailor free of rust, hydraulik oil / dirt and sharp edges?
2.4 Is loading safety equipment stowed properly?
2.5 Are sheet metals used according to Operations Manual?
2.6 Are all wheels covered and undamaged?
2.7 Are the wheel chocks according to OM?
2.8 Are the lashing straps according to OM?

## Handling driver

3.1 Is the loading platform is lowered sufficiently?
3.2 Is the loading area clean and prepared for loading according to OM?
3.3 Are the vehicles loaded according to OM?
3.4 Are the vehicle distances correct?
3.5 Are the wheel chocks properly fixed?
3.6 Are the lashing straps properly fixed?
3.7 Are the vehicles locked and are the keys stored in the drivers cab?
3.8 Is the engine turned off during loading process?

## Miscellaneous

Description
4.1 Without obvious irregularities to existing regulations and check for licence for road haulage
4.2 Non EU-Driver: EU-Driver Certificate / Certificate on permanent residence available?
4.3 Is the driver notified about the issues to be corrected?
4.4 Does the driver correct the issues?



### 6.1.4.3 Conduct when delivering a warning or a loading prohibition:

#### Warning due to Truck condition ("yellow card")

Vehicle Review & Decision	
Vehicle Warning:	⚠ Yes
Vehicle Loading Ban:	✅ No

**Cause:** Faults/Defects that do not necessarily have to be rectified until the next loading, but which lead to a loading ban if they occur again

**Procedure:** With a vehicle warning, it is not necessary to upload a verification in VAST in order to cancel the warning.. Depending on the result of the next audits, the warning will be lifted, or a loading ban is issued.

**Note:** It is allowed, to drive into a Daimler Truck plant with a warning due to Truck condition.

#### Warning due to handling ("yellow card")

Driver Review & Decision	
Driver Warning:	⚠ Yes
Driver Loading Ban:	✅ No

**Cause:** Incorrect behaviour/handling by the driver which requires immediate rectification, but in this particular case warrants no loading prohibition.

**Procedure:** For the Handling category, it is not necessary to upload a training certificate signed by the driver to VAST. Depending on the result of the next audit, the warning is cancelled or a loading ban issued.

**Note:** It is allowed, to drive into a Daimler plant with a warning due to Handling condition.

#### Loading prohibition due to Truck condition

Vehicle Review & Decision	
Vehicle Warning:	✅ No
Vehicle Loading Ban:	❌ Yes

**Cause:** Leak, technical deficiencies, safety-relevant aspects, etc.

**Measure:** Truck may leave the factory without a load

**Procedure:** Prompt repair before the next loading. Once this has been done, proof of the repair measures must be uploaded to VAST and, if requested by Daimler Truck AG, a Re-Audit must be booked.

**Re-Audit:** Furthermore, it is possible to have a Re-audit carried out by the respective auditors in the plants by **3:00 p.m.** at the latest after **24 hours** in advance notification. The Re-audit must be booked via VAST and is only valid after confirmation from Daimler Truck AG. If the auditor finds the condition of the truck to be OK, the existing loading ban in the VAST is lifted. This does not apply to loading bans during handling.

#### Loading prohibition due to handling

Driver Review & Decision	
Driver Warning:	✅ No
Driver Loading Ban:	❌ Yes

**Cause:** Incorrect behavior/handling by the driver, safety-relevant aspects, etc.

**Measure:** Truck abandons factory without load if no correction has been made by the driver.

**Procedure:** If charging is prohibited, a training certificate signed by the driver must be uploaded to VAST.

On-site training of service provider by loading trainers may be carried out by agreement.

In individual cases, Daimler Truck AG reserves the right to keep the loading prohibition in place despite proof of training. When changing a driver or vehicle due to a loading prohibition (handling), this shall be reported to [operations-manual@daimlertruck.com](mailto:operations-manual@daimlertruck.com) Daimler Truck AG.

#### 6.1.4.4 Information about an audit that has been performed

After the conclusion and recording of an audit the forwarding agent shall be immediately notified by email that an audit has been carried out.

The audit is immediately available in the VAST database and can be accessed by the service provider at once.

Any further measures are to be coordinated **exclusively** with TE/ONO-S according to OM provisions.

**Questions and instructions on how to set up access to the VAST platform can be found in the training documents or sent to the following e-mail address:**

Daimler Truck AG - Wörth

If you have any questions, please contact: [operations-manual@daimlertruck.com](mailto:operations-manual@daimlertruck.com)

A member of staff will process your case as quickly as possible.

## Operations Manual Europe. General.

### 6.2 Loading for rail transport

## The chapter is currently under construction.

If you have any questions or need clarification, please contact:

Daimler Truck AG - Wörth

If you have any questions, please contact: [operations-manual@daimlertruck.com](mailto:operations-manual@daimlertruck.com)

A member of staff will process your case as quickly as possible.

## Operations Manual Europe. General.

### 6.3 Loading for transport by ship

### 6.3.1 Loading vehicles onto sea-going and feeder ships, ferries and barges

Vehicles should only ever be loaded onto car transporters (car carriers, con-ro, feeder ships and ferries). Conventional loading of vehicles is not permitted. The ships must be classified in accordance with Lloyd's Register, Class 100 A1 or GL-100 A5 or other equivalent regulations.

With effect from 01.01.2012, motor vehicles are subject to national and international regulations for transporting hazardous goods by sea. For sea transport, the provisions of the German Ordinance on Transporting Dangerous Goods by Sea (GGVSee) and the International Maritime Dangerous Goods code (IMDG code) apply.

#### **Dangerous goods:**

Regulation and instructions regarding dangerous goods see chapter 8. Dangerous Goods Regulations

### 6.3.2 Basic rules for driving and loading personnel at Daimler locations

The driving and loading personnel must be familiar with the instructions as laid down in the "General instructions" chapter.

### 6.3.3 Condition of the ship

The equipment and condition of the ships must be of such a design that there is no risk of damage to the vehicles to be transported. This includes:

- The load spaces must be sufficiently ventilated, clean and odor-free.
- Sufficient illumination and markings on routes and columns.
- The profile of the loading surface and approach rails must provide a good grip but may not have sharp edges.
- All ramps must allow the ship to be loaded without causing damage.
- Rusted loading surfaces may cause paint damage and must therefore be avoided. Any damage that results is the responsibility of the shipowner.
- Driving routes (ramps, bends) are to be equipped with anti-slip tape.
- Footholds and components are to be color-coded.
- The entire transport area (transport decks) is to be secured using lanyard rails (cushioned) (minimum height 0.9m and 2 cables).
- All ramps have to make sure that loading follows without damages. When there is a gap between ramp and quay wall of more than 2cm (picture below) the operator has to make sure that a rubber mat is used.



### 6.3.4 Load preparation

The ramp angles must not permit damage to spoilers, underbodies or exhaust systems (max. 8°). The routes within the ship are to be determined before loading/unloading and are to be indicated with suitable means (cones, tape). [see fig.].

Transverse stowage is forbidden.



### 6.3.5 Load-securing equipment

Only roll lashing may be used to fix trucks. 6 roll lashing straps are to be provided for every vehicle to be loaded. Each roll lashing strap may have only one polysling.

#### **Barges specific**

No load-securing material is necessary. If vehicles are parked in the ramp area, 2 chocks (2 wooden blocks as an interim solution) are to be provided [see fig.].



Wooden block to secure trucks in the ramp area on inland-waterway ships

### 6.3.6 Vehicle hand-over

Vehicle hand-over is in accordance with the chapter "General", "The vehicle hand-over check".

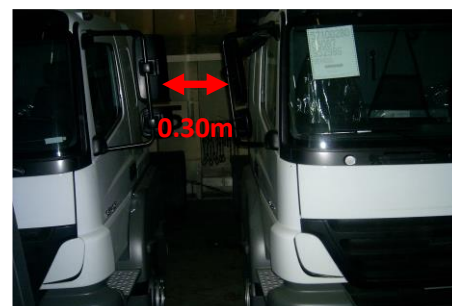
## 6.3.7 Vehicle loading

During the loading and unloading procedure, observe the following:

- During the entire vehicle loading procedure, employees of Daimler Truck AG and persons authorised by Daimler Truck AG are permitted to check the ships during and after loading and to point out where loading or securing of a load differs from that stated in this guideline so that errors may be corrected.
- Generally it is not permitted to load on deck or reposition when loaded.
- All vehicles must be loaded so that sufficient roof clearance is guaranteed.
- In the case of ro-ro loading, generally a "flow stow loading" method is used and the vehicles are to be parked "in blocks", meaning that they are divided up by model type. The stowing of left-hand drive vehicles should be done in an "anti-clockwise" direction and right-hand drive vehicles in a "clockwise" direction.
- At the exit, the edges of the ramps must be covered with edge protection. **(barge specific)**
- The vehicles are only to be loaded onto the ship in co-operation with a trained, expert marshal.
- The personnel must wear gloves during the entire loading process.
- The vehicles may only be driven on board at a speed that excludes any risk of damage. Loading and unloading shall occur no faster than walking pace. Walking pace means a max. speed of 10 km/h. Corresponding driving rules and measures have to be put in place to ensure that the risk of damage is minimized. Furthermore, the conditions in the "General handling of Daimler Truck vehicles" section apply.
- The staff that the shipping company authorises, have to be trained marshals who are permitted to instruct the drivers and must be informed about the Daimler Truck AG loading regulations.
- If vehicles are equipped with a battery isolator switch, it should be operated as soon as the vehicle is parked up on the ship. To find out which vehicle models are equipped with a battery isolator switch, look in the according section for the respective model.
- It is imperative to note that the battery is only isolated from the electrical system when the engine has stopped turning.
  - Expert assistance is offered by the FLC responsible or the next Mercedes-Benz workshop.
  - Should the engine power output drop considerably or there are any other malfunctions, switch off the engine immediately.
- Do not stand/walk on any vehicle surfaces, including the bumper
- Starting the engine by towing, pushing or rolling off the transporter or ramps is forbidden.
- Operating the starter motor for extremely long periods and frequent consecutive starting attempts is not permitted
- Switching off the ignition while the vehicle is in motion is not permitted.
- Shipping vehicles parked in a crosswise position is generally not permitted for trucks and buses.

The following minimum clearances around the vehicles to be loaded must be adhered to (vehicle-specific clearances must also be taken into account, however):

- |  |              |
|--|--------------|
| • between the sides of the vehicle (mirrors folded in) | <b>0.30m</b> |
| • between the vehicle bumpers                          | <b>0.40m</b> |
| • from the hatches and footholds                       | <b>0.10m</b> |
| • walkways and work passageways                        | <b>0.50m</b> |
| • roof clearance                                       | <b>0.10m</b> |





### Barge specific

- Clearance on the exit side **0.60 m**
- between the vehicle bumpers **0.15 m**
- walkways and work passageways at least **0.50 m**
- The side clearances are the same as those when loading on the deck. **0.30 m**
- The clearances in the longitudinal direction ramp are at least **0.60 m**



## 6.3.8 Securing

When loading vehicles onto sea/feeder barges and ferries, the responsibility for vehicle lashing rests with the ship's officers. The lashing and de-lashing procedure must be performed immediately after parking, or before the driving the vehicles off.

During sea transport, the load and correct seating of lashings should be checked

### Securing trucks on the ship

Trucks are secured with roll lashings and these should be applied as follows:

1. Hook the longer end of the lashing into the pin coupling of the vehicle using a sling.
2. The other end of the lashing should be fixed to the deck of the ship and
3. The fastener must be attached through the reversing device

These vehicles are secured on the ship using at least 6 lashings per vehicle. 2 lashings are secured to the pin coupling on the cab. The other 4 lashings attach the chassis to the deck of the ship. 2 lashings are used for the left side and 2 lashings for the right. The angle between the 2 lashings **should be 30-60°**. The length of a lashing from the point of attachment, to the ship's deck **may not exceed 1 m** [cpl. illustration].



Securing an HGV by the pin coupling (sea transportation), securing an HGV by its chassis (sea transportation)

**Barge specific:**

Generally, no load securing materials are necessary.

If vehicles are parked up on ramps, the HGVs should be secured using an additional chock, respectively, on each of the rear wheels (temporarily with a wood block) per side [cp. illustration].



## Operations Manual Europe. General.

### 7. Alternative drives and instructions

## 7. Alternative drives and instructions

### Qualification training for shipping and driving personnel

In addition to vehicles with conventional drives (diesel, gasoline engines), other vehicle models with alternative drives are being developed and marketed. To ensure that these vehicles are also handled safely during transport, we have included information below about the qualification of driving personnel and specialist plant personnel. The focus is initially on training for electric and fuel-cell vehicles.

### Qualification of driving personnel

The driving personnel require only high-voltage (HV) and hydrogen (H) sensitization, as it is known.

### Qualification of specialist workshop staff

For a selected group of specialist workshop staff (with occasional or regular contact with this kind of vehicle), high-voltage (HV) and or hydrogen qualification and a specific product qualification are required.

### IMPORTANT!

Persons with electronic implants (e.g. heart pacemakers) may not carry out any work on high-voltage systems. For this reason, these persons may also not participate in HV training sessions.

### Qualification measures

All training sessions (HV sensitization, HV qualification, hydrogen and product-specific training sessions) we ask you to organize and carry out the training yourself. A certificate must be presented upon request.

Training is relevant to all vehicles with alternative drives:

- **Electric drive**, solely electrically driven vehicles, e.g. eActros, eEconic

## Operations Manual Europe. General.

### 8. Dangerous Goods Regulations

## 8.1 General Information

The following document is intended to provide information on how to handle dangerous goods. Should you have questions related to dangerous goods or specific shipment-related queries, please contact the person in your company in charge of dangerous goods, or otherwise responsible for such issues.

Due to its extensive contents, this document cannot go into specific details regarding the relevant shipment process, and consequently only provides general statements about options for vehicle declaration/vehicle exemption, in the context of standard shipment of new vehicles. All applicable national and international dangerous goods regulations shall be taken into consideration during shipment.

## 8.2 Qualifications / Certificates

Freight staff and persons involved in the shipment shall possess all skills, qualifications, and certificates required for the commissioned shipment. Where necessary, required certificates/identification papers and other required items (fire extinguishers, etc.) shall be carried along.

In the case of shipments exempt from dangerous goods legislation (see "4. Overview of Shipment Options"), no additional requirements related to dangerous goods legislation need to be complied with beyond the points described in the other sections of the Operations Manual.

## 8.3 Overview of Exemption Options

### 8.3.1 Vehicles Without Damage

The matrix below outlines the general options for the exemption of our vehicles. The diagram only refers to vehicles without damage, and is only applicable in conjunction with the relevant, valid dangerous goods regulations – in accordance with the applicable special provisions.

Means of transport	Applicable international regulations	UN 3166				UN 3171
		Combustion engine for liquid fuels	Combustion engine for flammable gases	Vehicles with range extender	Fuel-cell engine (with hydrogen)	Electric motor
Road	ADR	Exempt				
Rail	RID	Exempt				
Inland waterway vessel	RoRo ADN	Exempt				
Inland waterway vessel	Container ADN	Diesel-powered vehicles are exempt Only gasoline-powered, gas-powered or hydrogen-powered vehicles with an empty fuel tank are exempt				
Sea	RoRo IMDG Code	Exempt				
Sea	Container IMDG Code	Diesel-powered vehicles are exempt Only gasoline-powered, gas-powered or hydrogen-powered vehicles with an empty fuel tank are exempt				
Air	IATA-DGR	No exemption options Shipment shall be made as dangerous goods/lithium batteries shall conform to a tested type or a permit shall be available				

### 8.3.2 Vehicles with Damage

In the case of new vehicles exhibiting damage which impacts the safety of the shipment, further steps shall be checked individually on the basis of the valid legal provisions/dangerous goods regulations.

### 8.3.3 Definition of "Damage"

Damage in the legal sense pertaining to dangerous goods is defined as damage which diminishes the safety of the shipment and is thereby no longer absolutely compliant with the valid dangerous goods regulations:

Examples:

- "Engine symbol" or "Battery symbol" lights up in the vehicle's instrument cluster.
- Damage to fuel lines, fuel tank, battery, electrical system, electronics, or similar.
- Vehicle leaks (oil leakage, or similar).

If such damage occurs during transportation, please contact the Mercedes-Benz Service 24h Hotline: +49 6995307389

## 8.4 Overview of Vehicle Scheduling

The overview is intended to facilitate the classification/scheduling of vehicles in relation to dangerous goods regulations.

You will find a detailed list of vehicle types in the appendix "List of Vehicle Types."

The diagrams reflect the state of legislation at the time of creation of this document.

### Transport of vehicles by road according to ADR

UN-Nr.	Versandbezeichnung	Klasse	Sondervorschriften	Tunnelbeschränkungscode
UN 3166	Fahrzeug mit Antrieb durch entzündbares Gas	9	SV 388 SV 666 SV 667 SV 669 (§4 GGVSEB)	(-)
	Fahrzeug mit Antrieb durch entzündbare Flüssigkeit			
	Brennstoffzellen-Fahrzeug mit Antrieb durch entzündbares Gas			
	Brennstoffzellen-Fahrzeug mit Antrieb durch entzündbare Flüssigkeit			
UN 3171	Batteriebetriebenes Fahrzeug			

### Transport of vehicles by sea according to the IMDG code

UN-Nr.	Versandbezeichnung	Klasse	EmS	Sondervorschriften
UN 3166	VEHICLE, FLAMMABLE GAS POWERED	9	F-D, S-U	SV356, SV388, SV961, SV962
	VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED			
	VEHICLE, FLAMMABLE LIQUID POWERED		F-E, S-E	
	VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED			
UN 3171	BATTERY-POWERED VEHICLE		F-A, S-I	SV388, SV961, SV962

## Transport of vehicles by air according to IATA-DGR

UN-Nr.	Versandbezeichnung	Klasse	VA	Passagierflugzeug	Frachtflugzeug	Sonderbestimmungen	ERG-Code
UN 3166	Vehicle, flammable liquid powered	9	950	erlaubt		A70 A87 A118 A120 A214  A176 nur fuel cell	9L
	Vehicle, flammable gas powered		951	verboten	erlaubt		
	Vehicle, fuel cell, flammable liquid powered		950	erlaubt			
	Vehicle, fuel cell, flammable gas powered		951	verboten	erlaubt		
UN 3171	Battery-powered Vehicle		952	erlaubt		A67 A87 A94 A164 A214	

Ausstattungsmerkmale	Tank für flüssige Kraftstoffe			
	Tank für entzündbares Gas (ggf. zusätzlich für bivalenten Antrieb)			
	Lithium-Batterie eingebaut (Hybrid- oder Antriebsbatterie)			
Beschreibung der Fahrzeugart/Antriebsart			UN-Nr.	Versandbezeichnung
<b>Verbrennungsmotor für flüssige Kraftstoffe</b> (z.B. konventionelle Fahrzeuge sowie Mild-Hybrid-, Plug In- oder Full-hybrid-Fahrzeuge)	✓		UN 3166	VEHICLE, FLAMMABLE LIQUID POWERED
	✓	✓	UN 3166	VEHICLE, FLAMMABLE LIQUID POWERED
	✓	✓	UN 3166	VEHICLE, FLAMMABLE GAS POWERED
	✓	✓	UN 3166	VEHICLE, FLAMMABLE GAS POWERED
<b>Verbrennungsmotor für entzündbare Gase</b> (CNG, NGT, LPG, H2 etc.)		✓	UN 3166	VEHICLE, FLAMMABLE GAS POWERED
		✓	UN 3166	VEHICLE, FLAMMABLE GAS POWERED
<b>Fahrzeuge mit Range-Extender</b> (Elektromotor als Hauptantrieb & Konventioneller Antrieb zur Stromerzeugung)	✓	✓	UN 3166	VEHICLE, FLAMMABLE LIQUID POWERED
		✓	UN 3166	VEHICLE, FLAMMABLE GAS POWERED
<b>Brennstoffzellen-Motor (F-CELL-Fahrzeug)</b> (z.B. B-Klasse F-CELL)		✓	UN 3166	VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED
	✓	✓	UN 3166	VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED
<b>Elektromotor</b> (im Fahrzeug ist kein Verbrennungsmotor verbaut)		✓	UN 3171	BATTERY-POWERED VEHICLE



## Operations Manual Europe. General.

### 9.1 Facilities

## 9.1.1 Scope

This guidelines applies to all Daimler Truck

- distribution centers,
- ports,
- plant and storage locations and
- back-up locations.

All new locations must correspond to these standards. Deviations from this basis must be agreed with Daimler Truck AG or with authorized specialist personnel of Daimler Truck AG.

The following standards for dispatch and storage locations were developed to provide a uniform basis and guideline for all service providers. They serve to maintain the quality of Daimler vehicles.

Additional information: Regular internal QM audits must be executed and submitted to a Daimler Truck audit.

## 9.1.2 General location facilities

### 9.1.2.1 General criteria on the location

The dispatch and storage locations should not be in areas where industrial or environmental factors may have a negative effect on the quality of the vehicles. FLCs, storage and back-up locations may not be in areas with strong industrial pollution, open coal tips or sand heaps.

Plants (bushes and trees) are to be kept away from the parking areas (minimum distance to parked vehicles 1.5 m). Plants and trees are not desirable near the fences as they may provide an opportunity to climb over the fence from the outside and make it more difficult to monitor the fence (detecting damage or preparations to break in) from the inside. There must be a proper connection to the road network (no gravel paths) and this must be free of trees. The traffic rules on the site in question [see fig below] must be clear and straightforward (signs, markings, etc.). Roads shall be at least 7.00 m wide. (per lane/direction 3.5 m)



All comings and goings are to be documented. It must also be checked that everyone on the site is there with permission.

There must sanitary facilities in the immediate vicinity of the loading place, or these must be installed.

On the site, there must be the possibility for the auditors to carry out audits with VAST. (Wifi)

### 9.1.2.2 Parking location surface

The vehicles must stand on firm ground. Preferably on tar, asphalt, concrete or perforated brick [cf. *fig below*]. Paving stones are also acceptable for clean storage areas with fixed road surface on the driving areas (asphalt or concrete).



Gravel, grass and rubble on the surface of the driving and parking areas are not allowed. For this reason, the area must be cleaned regularly.

The distribution area may not have any large puddles or potholes and must be completely fitted with drainage.

### 9.1.3 Space markings

#### 9.1.3.1 Parking bays

The parking bays are to be arranged in a fishbone or single-access arrangement and are marked and numbered on the surface [cf. *fig*]. A parking bay should be at least 3.75m wide. The length depends on the vehicle to choose, damage must be excluded (deviations are possible after agreement with TE/ONO-S). An appropriate area is to be set aside for larger models. Parking bays are to be avoided at lamp posts to avoid bird excrement and other dirt.

In mass turn-around areas such as ports, block parking is allowed (*cf. fig*). These are areas where vehicles are placed temporarily after being unloaded from ships/railroad cars/trucks (according to the principle of "first in, first out") before they are sent to their final parking position. A parking row should be at least 3,50 m wide. The length must be adapted to the corresponding vehicle, but at least 30 cm distance to the next vehicle. Deviations from this are possible following consultation with TE/ONO-S. An appropriate space must be provided for larger models. According to the different size of the vehicles double marks for parking rows are allowed as well.

Parking rows at lighting masts should be avoided due to the risk of bird droppings and other contamination.





### 9.1.3.2 Parking rows

The parking rows are to be defined clearly, e.g. by lines and an alphanumeric system indicated on the parking surface, on the fence or on movable posts [cf. fig].

### 9.1.3.3 Truck loading zone

Loading zones are areas where vehicles are prepared by parking personnel to be loaded. Preparation areas for vehicle loads are to be indicated by means of lines on the parking surface [cf. fig].

The truck loading and unloading zones are to be marked clearly on the road surface.

### 9.1.3.4 Employee parking spaces

Employee vehicles should be parked outside the parking site. If they are parked on the site, a separate area is to be provided for them. Additionally, when the vehicles are driven out, a vehicle check is to be carried out by the gate personnel.

## 9.1.4 Service facilities and equipment

The dispatch and storage area must be equipped with the service and safety installations described below.

### 9.1.4.1 Illumination

The entire area, particularly the vehicle checking area, must be sufficiently illuminated [cf. fig]. Floodlights along the fence are also recommended. The checking areas must be illuminated at 500 lux. In the case of a railroad connection, all railroad car levels must be illuminated sufficiently. Lamp posts between vehicles are to be avoided.



### 9.1.4.2 Obstacles

Obstacles such as lamp posts, railings, hydrants etc. are to be highlighted with safety colors and are to be padded. (According to safety instructions) Curb stones and fenced enclosures are to be avoided or must observe a minimum clearance of 30 cm.

### 9.1.4.3 Railroad ramp

Dispatch and storage locations with a railroad connection must be equipped with a fixed or moving ramp. The approach angle of the ramp may not be more than 8°. The specified minimum clearance of 5 cm between the ramp and the vehicle floor must be observed in all cases. Deviations require the approval of TE/ONO-S.

### 9.1.4.4 Charging system for vehicles with charging sockets

(e.g. for electric drive)



- A sufficient number of Mode 4 direct current (DC) charging systems (charging station) incl. suitable charging cable are to be made available. Depending on the vehicle market, up to 3 different charging systems and vehicle charging sockets are in use: Type 1, Type 2, Type 2 China (see fig.). With Mercedes-Benz eActros & eEconic, only the Type 2 / Mode 4 combination is used.

**Please observe that the use of charging cables not approved for the vehicle are a potential risk.**

**Please observe that repair costs arising from the use of charging cables not approved for the vehicle will not be borne by the manufacturer/service outlet. In this case, all costs from the repair facility will be the responsibility of the freight forwarder.**

- Ensure sufficient electrical power input of the charging systems being used and of the shipping or storage area. Charging systems and safety sockets for charging must be installed professionally and must undergo regular safety and functional checks.
- Please observe that only that only qualified personnel handle vehicles with high-voltage (HV) system.

### 9.1.5 Security equipment

Due to the high concentration of goods that are often targeted by thieves, special security measures are to be taken when setting up and operating these vehicle turnover areas.

To achieve effective protection, the planning and set-up of these surfaces have three important components:

- mechanical securing (fencing etc.)
- monitoring (electronic or with personnel)
- organizational measures (checks, alarm pursuit...)



To be taken into account in a security concept and coordinated with one another.

### 9.1.5.1 Fencing

The main surfaces on which vehicles are parked, stored and turned around are to be provided with a boundary (fence or wall). The boundary must provide sufficient resistance against being climbed over, crawled under or penetrated. An assumption should be made that criminals will attempt a break-in without tools or with simple tools. Making a fence opening large enough to allow a person to pass through or a vehicle to be driven through must be made considerably more difficult or slow.

The entire site must be secured by a wall, a wire-mesh fence or a lattice fence at least 2 m high. Barbed wire (at least two rows) should be attached to the top. Every type of fence must be fixed to the ground [*cf. fig below*].

#### Basic requirements of fence routing lines:

When determining fence routing lines, the following points are to be taken into account:

- The fence fronts should be as straight as possible and therefore follow a clear line
- The fence routing line must be sufficiently illuminated overall
- The route of the plant fence (inside and outside) is to be kept free of anything that could enable someone to climb over (such as trees).
- The site layout and any plants must be designed in such a way that they do not provide potential intruders with any cover.



When selecting the fence system, the desired level of protection is to be taken into account. Wire-mesh fences can be very easily and quickly opened and overcome. They are only suitable for sites with a low protection level.

Existing wire-mesh fences must have the following properties:

- height  $\geq$  2m (without anti-climb guard)
- barbed wire (at least 2 rows) to prevent anyone climbing over on straight arms or arms pointing outwards
- consistent anti-penetration protection (see 2.5.2)

Due to the low level of protection they offer, wire-mesh fences are to be checked daily for damage (openings, broken or cut wires, etc.).

When new sites are set up or when existing areas are renovated or expanded, fences offering a high resistance time are to be used.

Fence systems with suitable resistance times are:

#### Bar grate fence

- Height 2.40 m
- Lattices may not be any wider than 50 mm and no taller than 200 mm,
- Vertical round rods must have a minimum diameter of 5 mm,

- The vertical round rods must be arranged on the outside of the fence to ensure that the horizontal ones cannot be used to help climb the fence,
- The posts are to be fixed in concrete foundations.
- Fence mats to prevent the fence being crawled under. The mats are buried to a depth of 30 cm, or else use is made of a strip foundation or buried curbstones.
- Anti-creep protection is not required if the surfaces are fixed on both sides. Please note that the distance between the wire panels and the floor is to be kept as small as possible.
- Protection against the fence being climbed over by means of arms pointing outwards with sufficiently long protrusions or barbed wire
- If required, a device that allows the fence to be equipped with electronic monitoring systems, e.g. a U section to hide line sensors (sensor cables).
- Wire panels and other wire elements may not be unscrewable from the outside.

#### **Front guard fence**

- Height 2.40 m
- Inner cross profiles (no climbing aids on the outside)
- The posts are to be fixed in concrete foundations.
- Protection against crawling under the fence by means of a strip foundation or buried curbstones
- Anti-creep protection is not required if the surfaces are fixed on both sides. Please note that the distance between the wire panels and the floor is to be kept as small as possible.
- Top edges of lattice elements and posts splayed (to prevent against the fence being climbed over)
- Alternatively: barbed wire to prevent the fence being climbed over
- Wire panels and other wire elements may not be unscrewable from the outside.

#### **Expanded metal fence**

- Height 2.40 m
- Fence mats to prevent the fence being crawled under. The mats are buried to a depth of 30 cm, or else use is made of a strip foundation or buried curbstones.
- Anti-creep protection is not required if the surfaces are fixed on both sides. Please note that the distance between the wire panels and the ground is to be kept as small as possible.
- Fence mats that protrude from the posts by 40 cm or are splayed outwards to prevent the fence being climbed over.
- The posts are to be fixed in concrete or strip foundations.
- Wire panels and other wire elements may not be unscrewable from the outside.

### **9.1.5.2 Penetration protection**

To increase the resistance time of the peripheral boundary and to delay an attempted break-in effectively, the boundary must be reinforced with steel/concrete barriers or additionally secured with a ditch and bank (anti-penetration protection by means of barrier, T carrier, no possibility of a vehicle being driven out). Every type of anti-penetration protection must be fixed to the ground as well the fixing nuts have to be welded.

Alternatively to a mechanical anti-penetration protection, electronic monitoring of the periphery can be used. Prerequisites as an alternative to anti-penetration protection:

1. Early and reliable detection of attacks
2. The ability to react quickly
3. A low intervention time

1. For early detection of attacks, electronic monitoring systems are required (see 2.5.4 Electronic monitoring systems).
2. A fast reaction is only possible when the monitoring is connected to a continuously manned center (e.g. security and emergency call center or front desk) and fast and targeted intervention can be arranged from there.
3. A fast intervention time is only possible when the intervention personnel have short distances to travel and carry out targeted measures.

### 9.1.5.3 Entrances and exits

The entry and exit must be secured with a barrier and/or gate and must be monitored 24 hours a day. The design of fence gates and doors must correspond to the level of protection offered by the boundary. It must be ensured that access across rail lines via underpasses and tunnels is to be avoided.

### 9.1.5.4 Electronic monitoring systems

The following are particularly suitable for detecting attacks against the periphery of the vehicle logistic surfaces:

- fence detection systems
- fiber-optic sensor cables
- microphone cables
- infra-red photoelectric barriers

The additional use of a video surveillance system allows alarms to be verified and a targeted and reasonable reaction to alarms on the periphery to occur. In the case of false alarms, which can often occur outdoors due to environmental factors, deployment and connected costs can be avoided.

When video surveillance systems are used, the local data protection regulations are to be taken into account and observed.

Securing the vehicle areas with a system comprising detection systems and alarm verification via video surveillance offers a consistently high level of security on the periphery and removes the need for personnel to go on patrol.

The respective safety concept must be presented to and accepted by the specialist departments at Daimler Truck AG.

### 9.1.5.5 Organizational safety measures

The entire site must be monitored day and night by automatic cameras or be secured by an electric warning system combined with a camera system on the fence. Additionally, guarding by trained personnel must be guaranteed 24 hours a day and 7 days a week (documented in a guard book). Furthermore, the site must comply with country-specific fire protection regulations and have a sufficient number of fire extinguishers. Other security measures are to be agreed where needed with TE/ONO-S, Daimler Insurance and Daimler Corporate Security.

### 9.1.5.6 Signs regarding speed limit

The speed limit must be clearly signposted. Repeating speed limits on the road are recommended [*cf. fig below*]. The speed limit signposting must correspond to local requirements. The adapted speed is to be observed at handover locations and routes, but a speed of 40 km/h is not to be exceeded.





## 9.1.6 Space organization

### 9.1.6.1 Opening hours

For all Daimler Truck locations, opening hours are – depending on the content of the contract – 24/7 (including vehicle check). Deviating opening hours must be agreed bilaterally with TE/ONO-S and put in writing. Visitors still must be recorded in writing.

**Important:** Unauthorized personnel may not gain access to the parking area or the vehicles.

### 9.1.6.2 IT Systems

#### 9.1.6.2.1 DISY

All locations must be connected to the Daimler Distribution System (DISY) by means of an EDI interface and must use the system to report the arrival and departure times of vehicles.

#### 9.1.6.2.2 Parking management

Every Daimler Truck location must maintain and certify ordered and clear parking space management. This means that it must be clear at all times where each vehicle is on the site.

#### 9.1.6.2.3 Training and certificates

Commercial staff members are to be trained regularly in Daimler Truck regulations. New employees must also be made familiar with the Daimler Truck guidelines before they start work. All training sessions carried out must be documented. The documentation is to be kept in the office of the compound.

Additionally, work instructions describing the procedure for carrying out tasks are to be determined.

To guarantee a continuously low damage rate, the service provider should be certified in accordance with the latest ISO and QS standards.

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### 9.2 Storage

## 9.2.1. Vehicle transshipment

When a vehicle is received, a receiving inspection is to be carried out in accordance with the appropriate chapter. In addition, a truck unloading check is to be carried out.

If the vehicle is sent on the order of Daimler Truck AG, track audits are to be carried out in accordance with TE/ONO-S specifications and within the legally stipulated framework; these are to be certified to TE/ONO-S upon request.

### 9.2.1.1 Vehicle parking and transshipment

The vehicles are to be parked neatly in rows and parking bays [cf. *figure*]. Vehicles must be parked with the left-hand tire on the left-hand line (standard for Europe) or, alternatively, in accordance with a different uniform system.



After a vehicle has been parked, the following must be observed:

- The vehicle must be parked in neutral gear or in the "P" position with the handbrake applied.
- All electrical consumers must be deactivated.
- No labels may be present on the dashboard.
- The windshields and other glass surfaces must not be marked, and, in particular, not be written on with crayons.
- Windshield wipers are to be left in the basic position.
- Bird excrement is to be removed from vehicles immediately.
- With regard to key management, the chapter "General, 5. Key management)" is to be followed.

Furthermore, the guidelines from the "General" chapter apply.

## 9.2.2 Transfer and loading zones

### 9.2.2.1 Storage, direct dispatch, transfer and loading zones

The best method for parking and transfer of vehicles is the "head-to-head or 90° method" (bumper to bumper). The distance between the bumpers must be at least 30 cm [cf. figure below], and the vehicles are to be parked with enough space on the sides to allow personnel to get in and out without causing damage and without touching the next vehicle. The same distances are to be observed when vehicles are parked along a fence, building or other obstacle.



### 9.2.2.2 Block stowage and block dispatch zones

For block dispatch, the lateral clearance to allow doors to be opened without causing damage (without exterior mirrors)

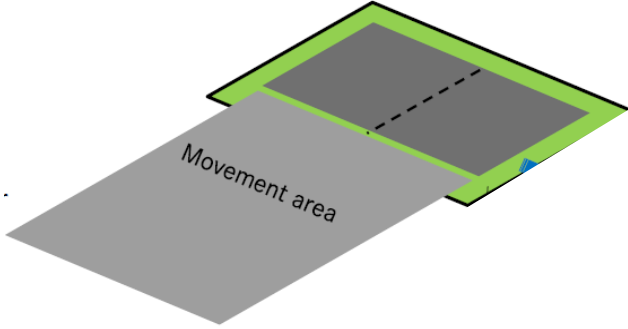
### 9.2.3 Fire observation point.

<i>Electromobility emergency matrix</i>		<b><i>In an emergency There is an acute danger (R: fire brigade)</i></b>	
<b>Description</b>		If a critical condition of the lithium-ion battery in the vehicle is noticed, the following steps should be followed: ❖ <b>Handling only by fire brigade!</b> <ul style="list-style-type: none"> <li>• Acute danger</li> <li>• Fire brigade should be alarmed</li> <li>• Emergency call or emergency push button</li> </ul>	
<b>Detection of abnormalities on the vehicle / lithium-ion battery</b>	Formation of:	<ul style="list-style-type: none"> <li>• Smoke</li> <li>• Fire</li> <li>• Heat or odour development</li> <li>• Significant damage (foreign matter, penetration)</li> <li>• Flying sparks</li> <li>• Discoloration</li> </ul>	
<b>Assessment of the situation</b>		<ul style="list-style-type: none"> <li>• Fire brigade</li> <li>• Contact a battery specialist if necessary</li> </ul>	
<b>Removal from the building</b>	When?	<ul style="list-style-type: none"> <li>• The vehicle should be brought immediately to the Fire Observation point.</li> <li>• During fire, remove immediately</li> </ul>	
<b>Lithium-ion battery vehicle</b>	How?	<ul style="list-style-type: none"> <li>➤ <u>Via roads or traffic routes:</u></li> <li>• Trafficless routes</li> <li>• Fire brigade resources (e.g. fork lift, battery transport container, AB recess)</li> </ul>	
<b>Next steps to be followed in danger situation</b>	By whom?	<ul style="list-style-type: none"> <li>➤ fire brigade</li> </ul>	

### Fire Observation-Point for electric vehicles:

- A fire observation point for high voltage vehicles must be available at the shipping area/property.
- This fire observation point is to be realized according to the local regulations (length, breadth)

example:



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### 9.3 Charging HV vehicles

### 9.3.1 General Handling of High-Voltage battery (HV-Battery)

Electric vehicles are marked at the factory with the following information label. This is attached visibly in the wind-screen:



	<p><b>High-voltage on-board electrical system – risk of death!</b></p> <p>All activities must be carried out without exception in accordance with the specifications from the operator’s manuals/bodybuilder portal!</p> <p>There are voltage values of &gt;120 V in the entire high-voltage on-board electrical system. Touching components of the high-voltage on-board electrical system can cause burns, fibrillation of the heart, or cardiac arrest through electric shock. It can take a few minutes before the consequences of an electric shock appear; therefore, a physician shall be consulted in all cases.</p>
	<p><b>In the event of a fire</b></p> <p>In the event of a vehicle fire, you immediately leave the danger zone and secure the area. The leaking gas from the HV-battery is highly flammable and pose a serious risk of injury.</p>

#### Safety instructions/precautions

Persons with electronic implants, e.g. cardiac pacemakers, shall not work on high-voltage on-board electrical systems. Under no circumstances may exposed lines and components of the high-voltage on-board electrical system be touched. This applies in particular to accident vehicles before the high-voltage on-board electrical system is shut down. Work on components of the high-voltage on-board electrical system may be performed only by persons who

- Can prove that they have taken part in special quality measures
- Have completed special electronic training
- Are authorized

The following vehicles are equipped with high voltage batteries:



- Electro vehicle (also visible by the nomenclature “e”) eActros. eEconic

#### Important information on charging high-voltage batteries

- It is prohibited to use the charging equipment provided in the vehicle.
- The vehicle must not be moved during a charging operation or when the charging cable is connected.
- Vehicles with high-voltage batteries should always be stored in a place where temperatures below 0°C and above +40°C are not reached.
- A suitable charger must be used to charge the high-voltage battery. (Mode 4 direct current (DC) Type 2)
- The charging cable may only be connected to a power socket or “wall box”/charger, which has been professionally installed, tested and approved by a qualified electrician.
- No extension cables, cable drums, multiple sockets and damaged charging cables may be used

The self-discharge rate is about 2 - 4 % SoC per month with a medium state of charge. As the SoC increases, the self-discharge rate increases significantly. For this reason, electric vehicles in long-term storage should ideally have a SoC of at least 20% to a maximum of 50%. This avoids an excessive self-discharge rate.



	<p>The all-electric vehicles that are charged with 220 V in the interim shall not be included in the battery trickle charge, since the 12 V battery is charged automatically during the charging process. The charging cable shall be disconnected immediately after the charging process is complete.</p>
	<p>Electric vehicles that display an HV SOC &lt; 20% upon arrival at the port or as part of port handling must be recharged to a minimum of 35% to a maximum of 50% SOC before shipment.</p>

## 9.3.2 Charging HV vehicles

### Notes on charging the high-voltage battery

Information on the nominal voltage range and charging times can be found in the Operator´s Manual – **chapter 13 Attachments**

### Damage to the high-voltage battery due to long downtimes

Lithium-ion batteries will self-discharge on their own accord. Downtimes lasting for several months may therefore cause deep discharge. This may damage the high-voltage battery.

- To prevent potential damage, please observe the following recommendations when handling the high-voltage battery.

### Recommendations when handling the high-voltage battery:

- When leaving the vehicle idle for long periods, park up the vehicle with the high-voltage battery at a state of charge between 30% and 50%.
- If leaving the vehicle idle for lengthy periods of time avoid, if possible, high and low outside temperatures.
- Check the high-voltage battery's state of charge every four weeks
- If the state of charge is below 20%, recharge the high-voltage battery.
- Do not disconnect the 24°V on-board electrical system battery, even for extended downtimes. Otherwise, the condition of the vehicle's high-voltage battery cannot be monitored.


### The high-voltage battery can be charged as follows:


- Stationary DC charging at a fast charging station (mode 4) if one of the two following conditions is met:
  - the charging cable to the vehicle is not longer than 30 m in total.
  - the vehicle is charged completely alone on the charging station connector without a sub-distribution.

### Note

AC charging using a mains socket (mode°2), wallbox, or charging station (mode°3) is not possible.

### Setting the charging process:



1. Multimedia system: 
2. Charging limit: Set 50% as charging limit

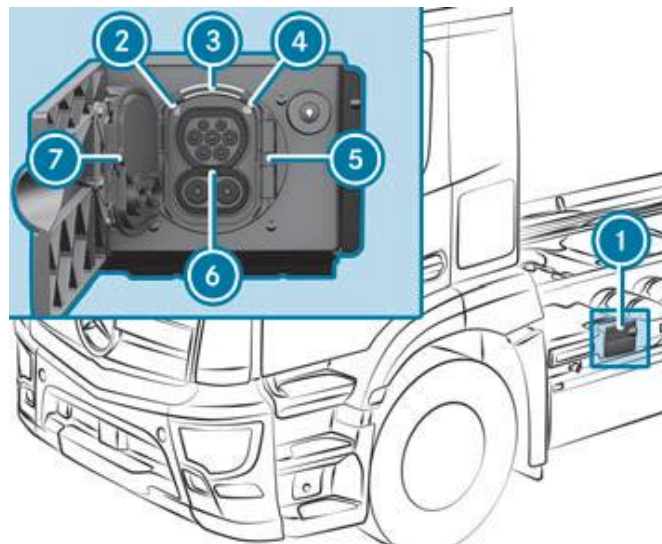
	<p><b>Risk of death when charging at a damaged socket</b></p> <p>The charging process uses high voltage. If the charging cable, the vehicle socket, or the mains socket are damaged, you could receive an electric shock.</p> <ul style="list-style-type: none"> <li>▶ Only use an undamaged charging cable.</li> <li>▶ Avoid mechanical damage, such as crushing, abrading, or driving over the cable.</li> <li>▶ Have a damaged vehicle socket replaced at a qualified specialist workshop as soon as possible.</li> <li>▶ Never insert the charging cable into a damaged vehicle socket.</li> </ul>
---	--

### Requirements

- The electronic parking brake is applied.
- The charging cable is not under tension.

Start the charging process on the charging station before you plug the charging cable connector into the vehicle socket. Depending on the charging station, it may be necessary to plug the charging cable connector into the vehicle socket first. Observe the on-site operator's instructions for the charging station.



- ▶ Fold out socket flap ① to the left.
- ▶ Press both catches ⑤ to the right.
  - ◁ Socket covers ⑦ are open.
- ▶ Remove foreign bodies from the vehicle socket.
- ▶ Insert the charging cable connector into vehicle socket ⑥ to the stop.
  - ◁ The charging cable connector is locked automatically and the indicator lamp  ② goes out.
  - ◁ Communication is established between the charging station and the vehicle. The indicator lamp  ④ and lower socket lamp ③ pulse orange and green once the high-voltage battery is charged.
- ▶ Check that the charging process is still active two minutes after the last vehicle operation, e.g. after opening a door or locking and unlocking the vehicle.
- ▶ Restart the charging process if necessary.

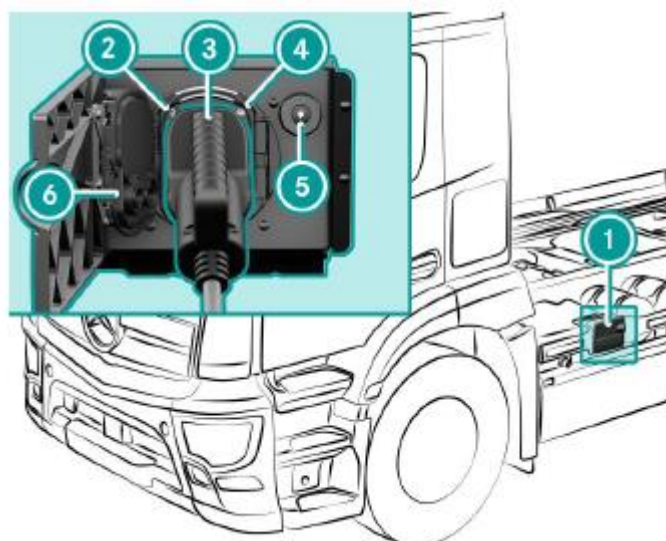


When the charging cable is connected to the vehicle, the vehicle cannot be started or moved.

### Ending the charging process:

You can stop the charging process at the charging station or by pressing charging interruption button ⑤. After the charging process has ended automatically, you can release the charging cable connector from the locked vehicle by pressing charging interruption button ⑤. If the vehicle remains locked during the charging process, charging interruption button ⑤ is inoperative.

- ▶ With the vehicle unlocked, press charging interruption button ⑤ and, if applicable, observe the supplementary information on the charging station.
  - ◁ The charging process is ended after a short time. The indicator lamp  ④ comes on.
  - ◁ The indicator lamp  ② and upper socket lamp ③ light up white.
- ▶ Remove the charging cable connector ③ from the vehicle socket.
- ▶ Close socket cover ⑥ and socket flap ①.



## Operations Manual Europa. General Notes.

### 10. Transport damage processing

## Processing damage and shipping damage claims

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## 10 General Aspects

### 10.1 Process Partners

In the context of this instruction, various process partners are involved in the claims process. A distinction is made between:

#### Delivering process partner:

This includes cases where:

- A manufacturing plant hands over vehicles to a carrier
- A carrier transfers vehicles to a transshipment company or a dealer
- A transshipment company transfers vehicles to a carrier

#### Receiving process partner:

This includes cases where:

- A carrier at the manufacturing plant or at the handling plant takes over vehicles
- A transshipment company takes over vehicles from a carrier
- A dealer or branch takes over vehicles from a transporter

DEKRA Claims Services GmbH:

DEKRA Claims Services GmbH is a commissioned external service provider as a part of the Group's insurance program. DEKRA Claims Services GmbH handles transport and compound damage claims submitted by HDI or Daimler Truck AG on their behalf. If necessary, HDI or Daimler Truck AG are also involved.

### 10.2 Acceptance Inspection

All vehicles must be visually inspected by the receiving process partner in the presence of the delivering process partner as part of an acceptance inspection. Exceptions to this, only apply to deliveries outside business hours. See chapter 4: 1.2 and 1.3.

### 10.3 Notice of Damage

#### 10.3.1 Damage to Frame and Load-bearing Parts

Vehicles with damage to the vehicle frame and/or load-bearing vehicle parts are to be transported to the Truckstore in Koengen or the responsible branches in unrepaired condition after prior coordination. The coordination and control of the process is carried out by DEKRA Claims Services GmbH. When transporting these vehicles, it must be ensured that they are transported in a special transporter to the plant or the designated branch. If you have any questions about suitable special transports, please contact:

[transportschaeden@daimlertruck.com](mailto:transportschaeden@daimlertruck.com)

## 10.4 Notice of Damage or Repair

The claim notification is made by e-mail via our claims management service provider DEKRA Claims Services GmbH: [gcp@dekra.com](mailto:gcp@dekra.com)

The delivering process partner must be notified immediately of the damage in writing by the receiving process partner and held liable for the costs. A form for this purpose can be found in the Appendix A.

In the case of rail transports, the receiving process partner must immediately request a statement of facts describing how the damage has occurred. The damage report and the associated documents are to be kept by the process partners in accordance with legal deadlines. All documents relating to the damage must be sent by e-mail to DEKRA at the respective e-mail address in the contact list.

### Documents required in case of transport damage:

- The copy of the original freight document intended for the recipient of the vehicle; in this case externally visible damage must be confirmed on the freight document by the driver of the carrier
- Photos of the damage from close-up and far away in high resolution
- Survey in the case of any damage that (presumably) exceeds a damage amount of EUR 2,500
- The copy of the police report or indication of the police file number (mandatory!) in case of theft or vandalism
- Damage invoice

### Documents required for compound damage:

- Photos of the damage from close and far in high resolution and in case of theft of parts, photos of the place of the theft
- Survey in the case of damage that (presumably) exceed a damage amount of EUR 2,500
- Damage invoice
- The copy of the police report or indication of the police file number (mandatory!) in case of theft or vandalism

Any damages that have occurred will not be repaired on the spot, but only in the country of destination or at the final destination. Exceptions to this (e.g. restoring the vehicle to running order or avoiding consequential damage) must be agreed with order processing. To avoid customs declaration, vehicles must not be taken out of 'in bond' traffic. A replacement delivery for missing parts will be initiated by the recipient or by order processing.

## 10.5 Surveyors or Average Adjusters

In case of an expected damage amount of more than 2,500 €, an expert or average adjuster is to be called in. A list of accepted experts or average adjusters is attached in Appendix B.

## 10.6 Letter of Credit

In the case of Letter-of-Credit (L/C) shipments, possible repair procedures must be directly agreed on with Daimler Truck AG order processing.

## 10.7 Contacts

If you have any queries regarding claims settlement, please contact DEKRA at the e-mail addresses listed below:

Country	Mail
Argentina	<a href="mailto:gcp.argentina.claims@dekra.com">gcp.argentina.claims@dekra.com</a>
Australia	<a href="mailto:gcp.australia.claims@dekra.com">gcp.australia.claims@dekra.com</a>
Belgium	<a href="mailto:gcp.belgium.claims@dekra.com">gcp.belgium.claims@dekra.com</a>
Brazil	<a href="mailto:gcp.brazil.claims@dekra.com">gcp.brazil.claims@dekra.com</a>
China	<a href="mailto:gcp.china.claims@dekra.com">gcp.china.claims@dekra.com</a>
Denmark	<a href="mailto:gcp.denmark.claims@dekra.com">gcp.denmark.claims@dekra.com</a>
Germany	<a href="mailto:gcp@dekra.com">gcp@dekra.com</a>
Greece	<a href="mailto:gcp.greece.claims@dekra.com">gcp.greece.claims@dekra.com</a>
Hongkong	<a href="mailto:gcp.hongkong.claims@dekra.com">gcp.hongkong.claims@dekra.com</a>
India	<a href="mailto:gcp.india.claims@dekra.com">gcp.india.claims@dekra.com</a>
Indonesia	<a href="mailto:gcp.indonesia.claims@dekra.com">gcp.indonesia.claims@dekra.com</a>
Japan	<a href="mailto:gcp.japan.claims@dekra.com">gcp.japan.claims@dekra.com</a>
Canada	<a href="mailto:gcp.canada.claims@dekra.com">gcp.canada.claims@dekra.com</a>
Colombia	<a href="mailto:gcp.colombia.claims@dekra.com">gcp.colombia.claims@dekra.com</a>
Luxembourg	<a href="mailto:gcp.luxembourg.claims@dekra.com">gcp.luxembourg.claims@dekra.com</a>
Malaysia	<a href="mailto:gcp.malaysia.claims@dekra.com">gcp.malaysia.claims@dekra.com</a>
Mexico	<a href="mailto:gcp.mexico.claims@dekra.com">gcp.mexico.claims@dekra.com</a>
New Zealand	<a href="mailto:gcp.newzealand.claims@dekra.com">gcp.newzealand.claims@dekra.com</a>
Netherlands	<a href="mailto:gcp.netherlands.claims@dekra.com">gcp.netherlands.claims@dekra.com</a>
Austria	<a href="mailto:gcp.austria.claims@dekra.com">gcp.austria.claims@dekra.com</a>
Poland	<a href="mailto:gcp.poland.claims@dekra.com">gcp.poland.claims@dekra.com</a>
Portugal	<a href="mailto:gcp.portugal.claims@dekra.com">gcp.portugal.claims@dekra.com</a>
Romania	<a href="mailto:gcp.romania.claims@dekra.com">gcp.romania.claims@dekra.com</a>
Russia	<a href="mailto:gcp.russia.claims@dekra.com">gcp.russia.claims@dekra.com</a>
Sweden	<a href="mailto:gcp.sweden.claims@dekra.com">gcp.sweden.claims@dekra.com</a>
Serbia	<a href="mailto:gcp.serbia.claims@dekra.com">gcp.serbia.claims@dekra.com</a>
Singapore	<a href="mailto:gcp.singapore.claims@dekra.com">gcp.singapore.claims@dekra.com</a>
Slovakia	<a href="mailto:gcp.slovakia.claims@dekra.com">gcp.slovakia.claims@dekra.com</a>
South Africa	<a href="mailto:gcp.southafrica.claims@dekra.com">gcp.southafrica.claims@dekra.com</a>
South Korea	<a href="mailto:gcp.southkorea.claims@dekra.com">gcp.southkorea.claims@dekra.com</a>
Taiwan	<a href="mailto:gcp.taiwan.claims@dekra.com">gcp.taiwan.claims@dekra.com</a>
Thailand	<a href="mailto:gcp.thailand.claims@dekra.com">gcp.thailand.claims@dekra.com</a>
Czech Republic	<a href="mailto:gcp.czechrepublic.claims@dekra.com">gcp.czechrepublic.claims@dekra.com</a>
Turkey	<a href="mailto:gcp.turkey.claims@dekra.com">gcp.turkey.claims@dekra.com</a>
Hungary	<a href="mailto:gcp.hungary.claims@dekra.com">gcp.hungary.claims@dekra.com</a>
Venezuela	<a href="mailto:gcp.venezuela.claims@dekra.com">gcp.venezuela.claims@dekra.com</a>
United Kingdom	<a href="mailto:gcp.uk.claims@dekra.com">gcp.uk.claims@dekra.com</a>
United States	<a href="mailto:gcp.us.claims@dekra.com">gcp.us.claims@dekra.com</a>
Vietnam	<a href="mailto:gcp.vietnam.claims@dekra.com">gcp.vietnam.claims@dekra.com</a>
Miscellaneous	<a href="mailto:gcp@dekra.com">gcp@dekra.com</a>



## 10.8 Appendix A: Notice of damage

Please fill out the form completely

Company	Sender:  Company-owned sales and service outlet/ representation of Daimler Truck AG
---------	--

Carrier:

Claimant:

Our reference:

Telephone:

Date:

Ref.: Transport damage message (vehicle transfer from location ( \_\_\_\_\_ )

Delivery of vehicles	Incoming date	Time	Consignment consisting of	Waybill number
During business hours			Vehicles	
Outside of business hours			Inspected for damage on	Delivery note number

We have detected the following damages and/or losses for which we hold you liable.

**1. Damaged vehicle**

<b>Model:</b>	<b>Vehicle ID number</b>	<b>Engine number</b>	<b>Order no.</b>
---------------	--------------------------	----------------------	------------------

---

**2. Type of damage:****3. Damage cause: (precise description):****4. Missing accessories:****5. Required repairs:****6. Estimated costs:**

---

Signature of the sender

## 10.9 Appendix B: List of Surveyors or Average Adjusters

### List of surveyors or average adjusters:

#### Germany

##### Kiel:

Sartori & Berger  
 P.O. Box 3807  
 24037 Kiel  
 Wall 47 -51  
 24103 Kiel  
 Tel. +49 4 31-98 10  
 Fax: +49 4 31-9 61 08  
 E-Mail: mail@sartori-berger.de

##### Bremerhaven, Hamburg (Hafen), Lübeck und Travemünde:

Mund & Bruns  
 Lloydsstr. 4-6  
 28217 Bremen  
 Tel. +49 4 21-38 65 75  
 Fax: +49 4 21-3 86 57 77  
 E-Mail: Info@mund-bruns.de

#### Branch Office

##### Hamburg:

Herr Dieter Jenke  
 Kfz. Sachverständiger  
 Zurich Gruppe Deutschland  
 Tel. +49 40-5 31 53 14  
 Fax: +49 40-5 31 96 01  
 Handy: +49 172-8 40 29 98

#### Plant Bremen:

Winkler & Partner  
 Insterburger Str. 5  
 28207 Bremen  
 Tel. +49 4 21-24 40 60-0  
 Fax: +49 4 21-24 40 60-20  
 E-Mail: info@winkler-partner.org

#### Netherlands

##### Rotterdam:

Wambersie & Gompertz B.V.  
 Postbus 438  
 3000 AK Rotterdam  
 Boompjes 55  
 3011 XB Rotterdam  
 Tel. +31 (0) 10 2443900  
 Fax: 4258755  
 E-Mail: info@interlloydclaims.nl

#### France

##### Le Havre:

##### Marseille:

C. Boutigny  
 55 Rue du Pont VI  
 76600 Le Havre  
 Tel. +33 (2) 35 433477  
 Fax: 213303  
 E-Mail: cboutigny@boutigny.fr

R. de Campou & Fils  
 66 Rue Grignan  
 13001 Marseille  
 P.O. Box 82053 Marseille-Rome  
 13201 Marseille  
 Tel. +33 (4) 88663001  
 Fax: 88663009  
 E-Mail: mvilloria@gamassur.com  
 fdecampou@gamassur.com

## Spain

### Barcelona:

Saretec Survey Iberica S.A.  
 Diagonal Business Center  
 C/Sabino de Arana 32 bajos  
 08028 Barcelona  
 Tel. +34 (0) 93 2012299 & 2013291  
 Fax: 2020008  
 E-Mail: Barcelona@saretec.es

## Italy

### Genoa:

Cristoforo David S.r.l.  
 Viale Padre Santo 5/1 A  
 16122 Genova GE  
 Tel. +39 (0) 10 8311348 & 8310482  
 Fax: 877068  
 E-Mail: e.tommaselli@cristoforodavid.it  
 d.tommaselli@cristoforodavid.it

### Livorno:

De Micheli & Wassmuth S.a.s.  
 Via della Cinta Esterna 6  
 57122 Livorno  
 Tel. +39 (0) 586 896101 & 211856  
 Fax: 881475  
 E-Mail: info@demw.it  
 Website: www.demw.it

### Venice:

Agostini & C.S.a.s.  
 Via Don Minzoni 21  
 30034 Mira - Venice  
 Tel. +39 (0) 41 4266613  
 5625188  
 E-Mail: info@spagostini.com  
 Website: www.spagostini.com

### Trieste:

Cristoforo David S.r.l.  
 C/o G. Tarabochia C.S.r.l  
 Via Economo 1  
 34123 Triest  
 Tel. +39 (0) 40 305199  
 Fax: 305828  
 E-Mail: shipping@tarabochia.com  
 Contab@tarabochia.com

### Ancona:

Studio Tecnico Navale Pattacini  
 Corso Stamira 24  
 60122 Ancona  
 Tel. +39 (0) 71 202335  
 Fax: 202336  
 E-Mail: info@stnpattacini.com

## USA

**New York:**

EIMC

111 Town Square Place, Suite 1412

Jersey City, NJ 07310-1755

Tel. +1 (0) 201 9633355

Fax: +1 (0) 201 9634015

E-Mail: office@eimc.com

**Savannah:**

EIMC

645 Indian Street

Savannah, GA 31401

P.O. Box 1492 101-1001

Savannah, GA 31402

Tel. +1 (0) 912 2342340

Fax: 2310060

E-Mail: office@eimc.com

**Los Angeles / Long Beach:**

Jaeckel Mund + Bruns L.L.C.

Marine and Cargo Surveyor

327 Lecouvreur Ave.

Los Angeles, CA 90744

Phone: +1 (310) 518 1719

Fax: +1 (310) 549 1122

Email: info@jmb-survey.com Website:

www.jmb-survey.com

**Houston:**

Jaeckel, Mund &amp; Bruns L.L.C.

Marine and Cargo Surveyor

8320 Millet St.

Houston, TX 77012

Phone: +1 (832) 582 7483

Fax: +1 (832) 582 7588

Email: info@jmb-survey.com Website:

www.jmb-survey.com

For all other locations where an expert is needed, a freelance surveyor expert can be hired.

## 10.10 Appendix C: Codes for Damages

Codes for Damage Area:

<b>Beschreibung</b>	<b>Description</b>
01 - Antenne/Antennensockel	01 - antenna/antenna base
02 - Batterie/Gehäuse	02 - battery/ battery box
03 - Stoßfänger, vorne (ohne Kühlergrill)	03 - bumper-front (without grille)
04 - Stoßfänger, hinten (ohne Heckdeckel)	04 - bumper-rear (without rear cover)
05 - Spoilerlippe, vorn	05 - bumperguard/strip-front
06 - Spoilerlippe, hinten	06 - bumperguard/strip-rear
07 - Schiebetür, rechts hinten	07 - door-backcargo-right
08 - Schiebetür, links hinten	08 - door-backcargo-left
09 - Laderaumtür (nur VAN)	09 - cargo door (van only)
10 - Tür, links vorne (inkl. Scheibe)	10 - door-leftfront (incl. glass)
11 - Tür, links hinten (inkl. Scheibe)	11 - door-leftrear (incl. glass)
12 - Tür, rechts vorne (inkl. Scheibe)	12 - door-rightfront (incl. glass)
13 - Tür, rechts hinten (inkl. Scheibe)	13 - door-rightrear (incl. glass)
14 - Kotflügel, links vorne	14 - fender-leftfront
15 - Seitenwand, links	15 - qtr panel-left
16 - Kotflügel, rechts vorne	16 - fender-rightfront
17 - Seitenwand, rechts	17 - qtr panel-right
18 - Fußmatte, vorne	18 - floor mats-front
19 - Fußmatte, hinten	19 - floor mats-rear
20 - Windschutzscheibe	20 - windshield
21 - Heckscheibe	21 - rear window
22 - Kühlergrill	22 - grille
23 - Beipack/Zubehörtüte	23 - accessory bag/box
24 - Haupt-Scheinwerfer/Blinker	24 - headlight/turn-signal
25 - Neben-Scheinwerfer (im Stoßfänger)	25 - lamps - fog/driving/spotlight
26 - Dachhimmel (Interior)	26 - headliner (interior)
27 - Motorhaube	27 - hood
28 - Schlüssel	28 - keys
29 - Fernbedienung (Schlüssel)	29 - remote control (keyless)
30 - Außenspiegel, links	30 - mirror-outsideleft
31 - Außenspiegel, rechts	31 - mirror-outsideright
32 - offen	32 - open
33 - Audio-/Videogerät	33 - audio/video-player
34 - TV-/DVD-Bildschirm	34 - tv/dvd-screen
35 - Einstiegsschweller, links	35 - rocker panel/outer sill-left
36 - Einstiegsschweller, rechts	36 - rocker panel/outer sill-right
37 - Dach (Exterior)	37 - roof (exterior)
38 - Trittbrett, links	38 - running board/step-left
39 - Trittbrett, rechts	39 - running board/step-right
40 - Ersatzrad/Ersatzreifen	40 - spare wheel/tire
41 - 8-fach Bereifung	41 - 8x tire system
42 - Spoiler/Spritzschutz, vorne	42 - spoiler/splashpanel-front
43 - Offen	43 - open
44 - Treibstofftank	44 - gas tank

45 - Rückleuchte	45 - tail light
46 - Offen	46 - open
47 - Offen	47 - open
48 - Türverkleidung innen, vorne links	48 - trim panel-frontleft
49 - CD-Spieler, separat	49 - cd changer-separateunit
50 - Türverkleidung innen, vorne rechts	50 - trim panel-frontright
51 - Offen	51 - open
52 - Kofferraumdeckel / Heckklappe	52 - decklid/tailgate/hatchback
53 - Schiebedach	53 - sunroof/t-top
54 - Fahrgestell/Fahrwerk	54 - undercarriage-other
55 - Ladefläche (Interior)	55 - cargo area (interior)
56 - Cabrio-Dach/Vinyl-Verdeck/Plane	56 - convertible top/vinyl-tonneau cover
57 - Radblende/Ventilkappe	57 - wheelcovers/caps/rings
58 - Radio Lautsprecher	58 - radio speakers
59 - Scheibenwischer (vorne/hinten)	59 - wipers - (front/rear)
60 - Gesamtfahrzeug	60 - complete vehicle
61 - Pickup Ladefläche (mit Abdeckung)	61 - pickup box-interior
62 - offen	62 - open
63 - Pickup Ladefläche (ohne Abdeckung)	63 - rails, truck bed/lightbar
64 - Spoiler, hinten	64 - spoiler/deflector-rear
65 - Dachgepäckträger / Regenrinne	65 - luggage rack(strips)/drip rail
66 - Armaturenbrett/Instrumententafel	66 - dash board/instrument panel
67 - Zigarettenanzünder/Aschenbecher	67 - cigarette lighter/ashtray
68 - Bodenteppich, vorne	68 - floor carpet-front
69 - Mittelsäule, rechts	69 - centerpost-right
70 - Mittelsäule, links	70 - centerpost-left
71 - Ecksäulen (vorne/hinten)	71 - cornerpost-front/rear
72 - Reifen, vorne links	72 - tire-leftfront
73 - Felge/Rad, vorne links	73 - rim/wheel-leftfront
74 - Reifen, hinten links	74 - tire-leftrear
75 - Felge/Rad, hinten links	75 - rim/wheel-leftrear
76 - Reifen, hinten rechts	76 - tire-rightrear
77 - Felge/Rad, hinten rechts	77 - rim/wheel-rightrear
78 - Reifen, vorne rechts	78 - tire-rightfront
79 - Felge/Rad, vorne rechts	79 - rim/wheel-rightfront
80 - Wasserablaufblech-Frontscheibe	80 - cowl
81 - Tankdeckel	81 - gas cap/cover
82 - Kotflügel, hinten links	82 - fender-rearleft
83 - Kotflügel, hinten rechts	83 - fender-rearright
84 - Werkzeug, Wagenheber, Ersatzradbefestigung	84 - tools/jack/spare tire mount&lock
85 - Navigationssystem	85 - communication/gps unit
86 - Einparksonden	86 - parking sonar system
87 - offen	87 - open
88 - offen	88 - open
89 - Abschleppöse/Anhängerkupplung/ Kabelanschluss	89 - tow hooks cover/trailer hitch/ wiring harness
90 - Fahrzeugrahmen	90 - frame
91 - Abgasanlage	91 - exhaust system
92 - Kennzeichen-Halterung	92 - license plate bracket
93 - Lenkrad/Airbag	93 - steering wheel/airbag

94 - Sitz, vorne links	94 - seat-frontleft
95 - Sitz, vorne rechts	95 - seat-frontright
96 - Sitz, hinten	96 - seat-rear
97 - Bodenteppich, hinten	97 - floor carpet-rear
98 - Innenraum, sonstiges	98 - interior-other
99 - Motorraum, sonstiges	99 - engine compartment-other

## Codes for Damage Types

<b>Beschreibung</b>	<b>Description</b>
01 - ver-/durchgebogen	01 - bent
02 - defekt/beschädigt	02 - defect/broken
03 - zerschnitten	03 - cut
04 - Delle mit Lackbeschädigung	04 - dented - paint broken
05 - abgeschlagen - ausgenommen Glas und Kanten	05 - chipped - except: glass & panel edge
06 - gesprungen - ausgenommen Glas	06 - cracked - except glass
07 - ausgebeult	07 - gouged
08 - fehlt - ausgenommen Zierteile/Logo	08 - missing - except molding/emblem
09 - abgewetzt	09 - scuffed
10 - beschmutzt - interior	10 - interior stained/soiled
11 - punktiert	11 - punctured
12 - zerkratzt - ausgenommen Glas	12 - scratched - except glass
13 - gerissen	13 - torn
14 - Delle ohne Lackbeschädigung	14 - dented - paint/chrome not damaged
18 - Zierteil/Dichtung/Logo beschädigt	18 - molding/weather strip/ emblem damaged
19 - Zierteil/Dichtung/Logo fehlt	19 - molding/weather strip/emblem missing
20 - Glas - gesprungen	20 - glass - cracked
21 - Glas - gebrochen	21 - glass - broken
22 - Glas - abgeschlagen	22 - glass - chipped
23 - Glas - zerkratzt	23 - glass - scratched
24 - Blinker defekt/beschädigt	24 - marker light / turn light damage
25 - Beklebung beschädigt	25 - decal/paint stripe damaged
29 - Verschmutzung, außen	29 - contamination - exterior
30 - Flüssigkeiten/Sekrete mit Färbung/Ätzung ausgelaufen	30 - fluid spillage - exterior
34 - Kanten angeschlagen	34 - panel edge chipped
36 - Teil/Option fehlt ggü. Rechnung	36 - part/option not as invoiced
37 - Anbauteile außen - beschädigt	37 - hardware exterior - damaged
38 - Anbauteile außen - lose/fehlt	38 - hardware exterior - loose / missing
39 - Transportschutz (u.a. Folien, Unterlegkeile, Lashing) fehlt bzw. beschädigt	39 - transport protection (incl. foils, jumped chocks, lashing) damaged/missing

## Codes for Damage Severity:



Code	Beschreibung (Deutsch)	Code	Description (English)
1	<u>0 – 3 cm (0 – 1 inch)</u>	1	<u>0 – 3 cm (0 – 1 inch)</u>
2	<u>3 – 8 cm (1 – 3 inches)</u>	2	<u>3 – 8 cm (1 – 3 inches)</u>
3	<u>8 – 15 cm (3 – 6 inches)</u>	3	<u>8 – 15 cm (3 – 6 inches)</u>
4	<u>15 – 30 cm (6 – 12 inches)</u>	4	<u>15 – 30 cm (6 – 12 inches)</u>
5	<u>&gt; 30 cm (&gt;12 inches)</u>	5	<u>&gt; 30 cm (&gt;12 inches)</u>
6	<u>Fehlt</u>	6	<u>Missing</u>

## Operations Manual Europe. General

11. Instructions for handling vehicles to avoid bio-contamination for example for the target markets Australia-New Zealand.

## 11.1 Vehicle takeover

Every vehicle is to be checked for damage or bio-contamination by trained personnel at the interfaces (transfer of risk) and handovers in plants, subsidiaries, vehicle logistics centres, ports of shipment and dealers on entry and exit in accordance with point 4 Vehicle Acceptance Check in the Operations Manual. Any damage detected must be reported immediately to the responsible persons (supervisory staff) and documented. This forms the basis for the further service to be rendered and is to be carried out to the best of our knowledge and belief.

All other damage that cannot be categorized with a code in the Global Vehicle Damage Codes Standard must be additionally documented and immediately reported to TE/ONO-S by e-mail.

These damages include:

- dirt that could damage the vehicle
- Visible salt deposits due to road salt
- Infestation of animals, pollen and seeds, especially snails, bugs, beetles, lawn seeds, pollen or similar. Vehicles for intercontinental shipping (critical markets are e.g. Australia, New Zealand and USA) must be treated separately to prevent the possible import of pests. (Further procedure in point 1.2 below)

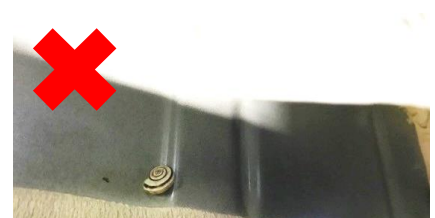
### Negative examples:



1 Pollen inside and outside



2 Worms on the floor



3 animal infestation: snails on the vehi-



4 Storage on green fields



5 Heavy dirt and pollen



6 Dirt and weather-related salt deposits due to salt scattering in winter



7 Seed infestation inside



8 Aktionierte Fahrzeuge



9 Interior of a clean vehicle

**The important key figures of the documenting vehicles are:**

- the complete FIN, chassis and order number
- the date
- next target
- Description of the damage / type of damage
- Components
- Possible place of pollution
- Images of the damage/bio-contamination

These notifications can be send to TE/ONO-S:

## **11.2 Treatment of vehicles in intercontinental shipping according to destination country specifications (e.g. Australia and New Zealand)**

For vehicles to the target markets such as Australia and New Zealand (vehicle identification also by transport label), explicit attention must be paid to the cleanliness and storage of the vehicles in order to prevent the import of possible pests. Should vehicles nevertheless be stored on unpaved areas that do not conform to the Operations Manual, such as green areas, or bio-contamination be detected, this must be reported immediately to the above addresses.

These vehicles must be treated in a special process at the port of departure at the latest in accordance with the respective country specifications:

**1)** Biosecurity treatment - heat treatment as specified by the recipient country (Heat Treatment) or BMSB treatment (tree bug - Brown Marmorated Stink Bugs). The process must be carried out and documented in the port of departure according to the process specified in the recipient country.

**2)** Treated and untreated vehicles must therefore be strictly separated in the port. The service is also to be taken from the Daimler AG specifications in accordance with the requirements. The service provider must regularly train and supervise the employees deployed in accordance with the Daimler regulations and guidelines.

**3)** The documentation must be complete and detailed. It must be stored at least according to the legal requirements of the federal state and checked for effectiveness. Any defects found, e.g. dead pests, must be reported in this documentation.

## Operations Manual Europa. General.

12. Provision of services only with a valid order

## 12. Provision of services only with valid contract and nominated process partners

- 1) The place operator/port operator/plant dispatch undertakes to carry out scheduling activities and room bookings only with nominated forwarders and shipping agents. The lists of nominated transport service providers are provided by the Daimler Truck AG departments and are binding in their current form, including the specified validity periods. The change management of printed documents is the responsibility of the contractor. In case of missing re-listings we ask for proactive information with the subject "**Transport WITHOUT order**" to:
  - For Truck: [CBU-Europa-Versand-Woerth@daimlertruck.com](mailto:CBU-Europa-Versand-Woerth@daimlertruck.com)  
[CBU-Uebersee-Versand-Woerth@daimlertruck.com](mailto:CBU-Uebersee-Versand-Woerth@daimlertruck.com)
- 2) Ship owners and forwarding agents undertake to carry out transports only if a written order has been issued by Daimler Truck AG (transport purchase). Deviating from this, transports may only be carried out within the framework of an explicit special order, which will be issued in writing by Daimler Truck AG without exception. In case of a booking or disposition for routes without order, we ask for proactive information by the respective transport service provider with the subject "**Transport WITHOUT order**" to:
  - For Trucks: [CBU-Europa-Versand-Woerth@daimlertruck.com](mailto:CBU-Europa-Versand-Woerth@daimlertruck.com)  
[CBU-Uebersee-Versand-Woerth@daimlertruck.com](mailto:CBU-Uebersee-Versand-Woerth@daimlertruck.com)

**Transports without assignment are not remunerated.**

## Operations Manual Europa. General.

### 13.1 Operating Instructions / Handlings informations

## 13.1 Operating Instructions / Handlings informations

### Daimler Trucks & Special Trucks

You can access the operating instructions for Daimler Trucks & Special Trucks under below mention link:

<https://digital-manuals.tsac.daimlertruck.com/truckownermanuals/home>

You can view the technical data of **Daimler Trucks & Special Trucks** in the body builder portal.

<https://bb-portal.mercedes-benz.com/en/GLOBAL>

Please register as „miscellaneous“.

Once you have completed all compulsory fields, employees from Daimler Truck AG will process your registration. You will then be informed of the activation by e-mail.

**Caution:** The basic dimensions of the vehicle are given in the bodybuilder portal.

Additional equipment that has an influence on the vehicle dimensions is not taken into consideration. The vehicle height may differ from the information given.

**Caution:** If the raised vehicle level is set, the vehicle height will differ from the information.

### Daimler Buses

You can access the operating instructions for **Daimler Buses** in the Bus Guides portal under the following link:

<https://www.busguides.mercedes-benz.com/AnwenderInfo/>

### FUSO

Technical data for FUSO can be found in the body builder portal under the following link:

<https://bb-portal.fuso-trucks.com/de/GLOBAL>



## Operations Manual Europe. Truck specific.

### 13.2 Starting with battery booster cable

## 13.2 Starting with battery booster cable

If a vehicle can no longer be moved due to battery weakness or discharge, it can be made ready to be driven again with a battery booster cable. If the vehicle is still on the plant site, the loading personnel / plant protection must be informed immediately. Only the loading personnel / plant protection may jump-start on the plant site.

The following steps must be performed. To begin with, there are some **safety notes** that must be observed:

- Only the starter battery may be used for jump-starting. Semitrailer tractor vehicles with batteries integrated into the rear of the vehicle have a jump-start socket on the left-hand driver's side. In the case of vehicles with batteries located on the side of the chassis frame, the battery cover must first be removed.
- Touching live parts may pose a danger to life.
- No jump-starting may be performed between the new vehicles that are to be transported.

### Prerequisite:

- The engine may not be switched on if the battery has frozen. The battery must be thawed out first.
- The battery booster cable shall comply with DIN standard 72 553 or ISO standard 6722.
- The cross-section of the cable must be at least 70 mm<sup>2</sup> for all commercial vehicles.
- Two 12 V batteries connected in sequence
- Flexibility: A cable wound out of thick copper wire is invariably more rigid than a finer design. You must take into account the fact that the insulating material hardens more in cold conditions.
- It must be ensured that the terminal clamps are insulated. These must be completely made of plastic to avoid short circuiting caused by inadvertent touching of metal parts of the vehicle. Only the contact parts at the tip of the clamp are made of metal.
- The booster battery must be 24 volts.

### Procedure:

The following sequence must be observed as, if it is not, persons may be injured, the battery may be destroyed or there may be damage to the electrical systems of the vehicles.

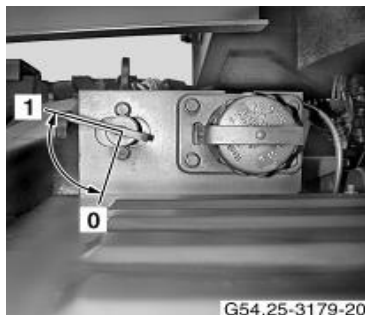
1. The key in the steering-column lock is to be turned to position "0".
2. All electrical consumers are to be switched off.
3. The covers on the positive and negative terminals are to be removed.
4. Connect the first battery booster cable (**red**) to the positive terminal of the booster battery, and then to the positive terminal of the discharged battery.
5. Connect the second battery booster cable (**black**) to the negative terminal of the booster battery and the other end to the frame of the vehicle you wish to start.
6. Start.
7. When removing the battery booster cables, remove first the **black** cable from the negative terminals and then the **red** cable from the positive terminals.

The procedure for jump-starting with vehicles that have a battery placed on the side of the chassis frame is similar.

### Procedure for jump-starting Unimogs with jump-start socket

The following sequence must be observed as, if it is not, persons may be injured, the battery may be destroyed or there may be damage to the electrical systems of both vehicles.

1. The battery circuit breaker must be switched off. This is located to the right of the battery box [see fig.].



2. The protective cap of the socket is to be removed.
3. Connect the first battery booster cable (**red**) to the positive terminal of the booster battery, and then to the positive terminal of the discharged battery.
4. Connect the second battery booster cable (**black**) to the negative terminal of the booster battery and the other end to the frame of the vehicle you wish to start.
5. Switch the battery circuit breaker back on and start the engine.

## Operations Manual Europa. Truck specific.

### 13.3 Handling MirrorCam

### 13.3 MirrorCam system

**Caution:** Risk of accident due to malfunction or system failure of the MirrorCam system.

The system must be repaired before continuing the journey in the following situations:

- Complete failure of a display.
- Stationary images despite objects moving in front of the camera.
- Delayed display of the traffic conditions.

Park the vehicle safely as soon as possible. Contact the loading coordinator responsible. Have the MirrorCam system checked and repaired immediately at a qualified specialist workshop.

If only one of the two images in the display fails, the journey can be continued cautiously to the next workshop. Have the system repaired there.


If a display shows an unusual or faulty image, the system must be checked as soon as possible at a qualified specialist workshop and, if necessary, be repaired.

This includes the following display situations, for example:

- distorted images
- clearly noticeable pixel errors, column or row failures
- no visible information e.g. arrows when a field of vision is moved when cornering
- contrast or colour changes

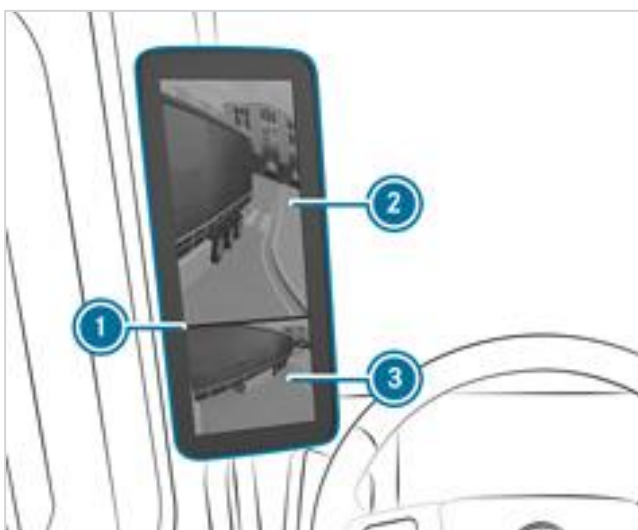
If a monitor shows a blurred, unclear or fuzzy image, check if the camera lens is dirty and clean it if necessary.

Stubborn stains on camera lenses can generally be removed using a cloth moistened with a commercially available glass cleaner. Accumulated snow and ice are removed by the camera heating when the MirrorCam system is activated. Regularly clean the camera of the MirrorCam system to prevent malfunctions.

The vehicle is equipped with one camera and one display on each side. When the camera arm is folded forwards or backwards by more than 4°, the  symbol appears in the display. A fitted spring enables the camera arm to automatically return to the correct operating position in the event of minor deviations. In the event of larger deviations, it may be necessary to manually return the camera arm to the correct position.

The system is activated automatically:

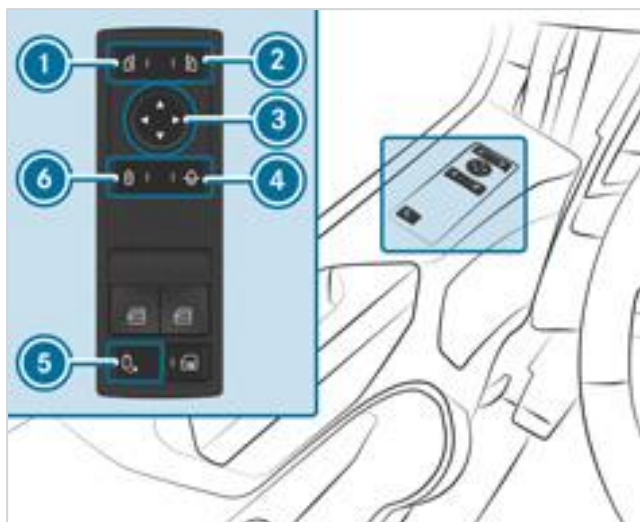
- when the vehicle is unlocked.
- when a door is opened.
- when the ignition is switched on.



The MirrorCam system display is divided into two by status display **1** (blue line).

The field of vision shown in the upper section of screen **2** corresponds to the main mirror, the field of vision shown in lower section **3** corresponds to the wide-angle mirror.

If status display **1** is not shown in the display, there is a system error.



### Door operating unit, driver's side

1. Selects display, left
2. Selects display, right
3. Sets field of vision
4. Activates/deactivates automatic field of vision adjustment/manoeuvring view
5. Manually activates system
6. Activates/deactivates camera heating

### Resetting the field of vision to the basic setting:

Press the button for the left-hand display or press the button for the right-hand display.

The indicator LED in the relevant button lights up.

Press and hold the button for approximately two seconds.

The field of vision is reset to the basic setting.

When the legally prescribed field of vision is shown in the display again, the symbol (green) flashes in the display for five seconds and then goes out.

### Explanation of the symbols in the display

- (yellow) Sideguard Assist warning (in addition to the display in the instrument cluster)
- (red) Sideguard Assist warning (in addition to the display in the instrument cluster)
- Automatic semitrailer tracking for forward travel active
- Manual setting during active automatic semitrailer tracking (flashes when storing the new setting)
- Display ten seconds before the system changes to standby mode
- Display after system start or after changing the trailer/semitrailer  
Adjustment for the end of the trailer/semitrailer possible
- (red) Display does not show the legally prescribed field of vision
- (green) Display again shows the legally prescribed field of vision (basic setting)
- (green right/left arrows) Manual field of vision adjustment during active semitrailer tracking possible
- System incorrectly calibrated (consult workshop)
- Camera not in the operating position
- Manoeuvring view active (example: left side)

Several symbols may be shown in the display simultaneously.

In addition to the symbols in the MirrorCam display, the driver may be shown messages in the instrument cluster.

## Operations Manual Europe. Truck specific.

### 13.4 Jumpstart eActros / eEconic

## 13.4 Jumpstart eActros / eEconic

If a vehicle can no longer be moved due to battery weakness or discharge, it can be made ready to be driven again with a battery booster cable. If the vehicle is still on the plant site, the loading personnel / plant protection must be informed immediately. Only the loading personnel / plant protection may jump-start on the plant site.

The following steps must be performed. To begin with, there are some **safety notes** that must be observed:

- Only the starter battery may be used for jump-starting.
- Touching live parts may pose a danger to life.
- No jump-starting may be performed between the new vehicles that are to be transported.
- Observe the safety notes and protective measures when handling the on-board electrical system battery. These can be found in the operating instructions for the respective vehicle type.

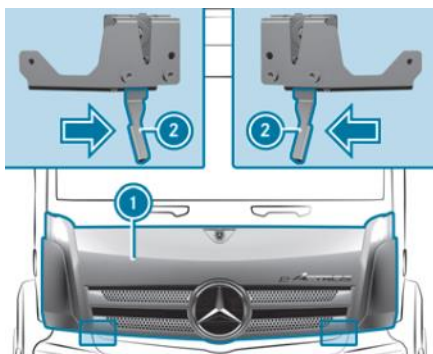
### Requirements:

- Make sure that the vehicles are not touching.
- The parking brake is applied.
- All electrical consumers are switched off.
- The vehicle is switched off.
- Only charge the on-board electrical system battery with a voltage of 24V via the external charger connection point.
- When using a portable charger (batteries with a mains adapter), remove the mains plug before starting.
- Do not give other vehicles starting assistance.
- Use external charging cables protected from reverse polarity (jumpleads) with a cable cross section of 35–50 mm<sup>2</sup> and isolated pole terminals.
- If the outside temperature has fallen below -10 °C, a discharged onboard electrical system battery may freeze. In this case, do not charge the vehicle. First, thaw out the battery.
- Do not connect the negative terminal clamp of the external charging cable (jump lead) to the chassis. Vehicle parts may otherwise be damaged.
- The battery booster cable shall comply with DIN standard 72 553 or ISO standard 6722.
- Flexibility: A cable wound out of thick copper wire is invariably more rigid than a finer design. You must take into account the fact that the insulating material hardens more in cold conditions.
- It must be ensured that the terminal clamps are insulated. These must be completely made of plastic to avoid short circuiting caused by inadvertent touching of metal parts of the vehicle. Only the contact parts at the tip of the clamp are made of metal.



## Jumpstart eActros

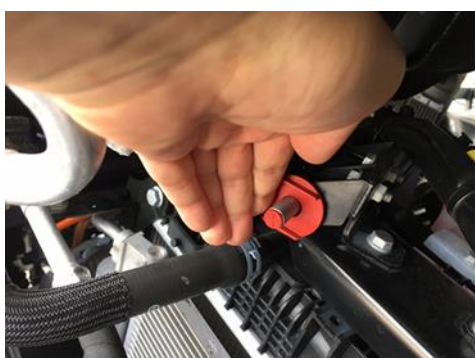
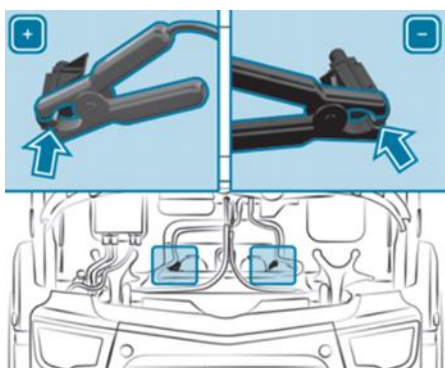
### Opening / closing the maintenance flap



1. To release: Press release levers **(2)** on the left and right one after the other in the direction of the arrow.
2. To open Swing maintenance flap **(1)** upwards.
3. To close: Swing maintenance flap **(1)** down until it engages audibly.



### Connecting the external charging cable



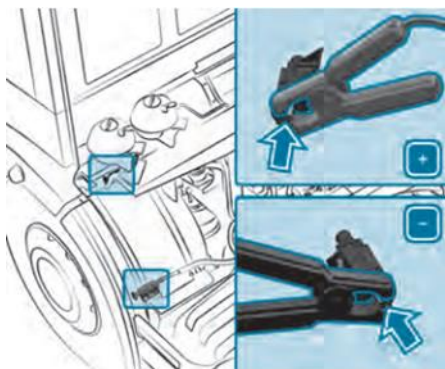
### Connecting the external charging cable

- First, connect the positive terminal clamp of the external charging cable to the positive terminal of the other vehicle's battery.
- Gently turn the red protective cap of the external charging connection point clockwise with the other positive terminal clamp of the external charging cable, slide it back and connect the positive terminal clamp to the + positive terminal.
- First, connect the negative terminal clamp of the external charging cable to the negative terminal of the other vehicle's battery.
- Gently turn the black protective cap of the external charging connection point clockwise with the other negative terminal clamp of the external charging cable, slide it back and connect the negative terminal clamp to the - negative terminal.
- Keep the external charging cable connected until the on-board electrical system batteries are partly charged.
- Start the vehicle.

### Disconnecting the external charging cable

- First, disconnect the negative terminal clamp of the external charging cable from the negative terminals. The black cover cap of the external charger connection point springs back into its original position.
- Disconnect the positive terminal clamp of the external charging cable from the positive terminals. The red cover cap of the external charger connection point springs back into its original position.

## Jumpstart eEconic



External charging connection point on the front left wheel arch

### Connecting the external charging cable

- First, connect the positive terminal clamp of the external charging cable to the positive terminal of the other vehicle's battery.
- Gently turn the red protective cap of the external charging connection point clockwise with the other positive terminal clamp of the external charging cable, slide it back and connect the positive terminal clamp to the + positive terminal.
- First, connect the negative terminal clamp of the external charging cable to the negative terminal of the other vehicle's battery.
- Gently turn the black protective cap of the external charging connection point clockwise with the other negative terminal clamp of the external charging cable, slide it back and connect the negative terminal clamp to the - negative terminal.
- Keep the external charging cable connected until the on-board electrical system batteries are partly charged.
- Start the vehicle.

### Disconnecting the external charging cable

- First, disconnect the negative terminal clamp of the external charging cable from the negative terminals. The black cover cap of the external charger connection point springs back into its original position.
- First, disconnect the negative terminal clamp of the external charging cable from the negative terminals. The black cover cap of the external charger connection point springs back into its original position.

## Operations Manual Europa.General.

### 13.5 Contact

## 13.5 Contact

If any questions or a need for clarification should arise from these Mercedes-Benz provisions, please contact:

### Truck

#### **Daimler Truck AG – Wörth**

If you have any questions, please contact: [operations-manual@daimlertruck.com](mailto:operations-manual@daimlertruck.com)

A member of staff will process your case as soon as possible.

#### **Daimler Truck AG Werk Wörth**

Department: TE/ONO-S,

Mr. Henrik Krenz

E-Mail: [henrik.krenz@daimlertruck.com](mailto:henrik.krenz@daimlertruck.com)

### Bus

#### **EvoBus GmbH Mannheim**

Department: Bus/MPA

E-Mail: [mbox\\_028\\_oal@daimler.com](mailto:mbox_028_oal@daimler.com)

#### **EvoBus GmbH Neu-Ulm**

Department: BUS/OSL-4

E-Mail: [mbox\\_010\\_OAL\\_S@daimler.com](mailto:mbox_010_OAL_S@daimler.com)

#### **Mercedes-Benz Türkei**

Department: BUS/MPA

E-Mail: [mbt\\_auslieferung@daimler.com](mailto:mbt_auslieferung@daimler.com)

### Fuso

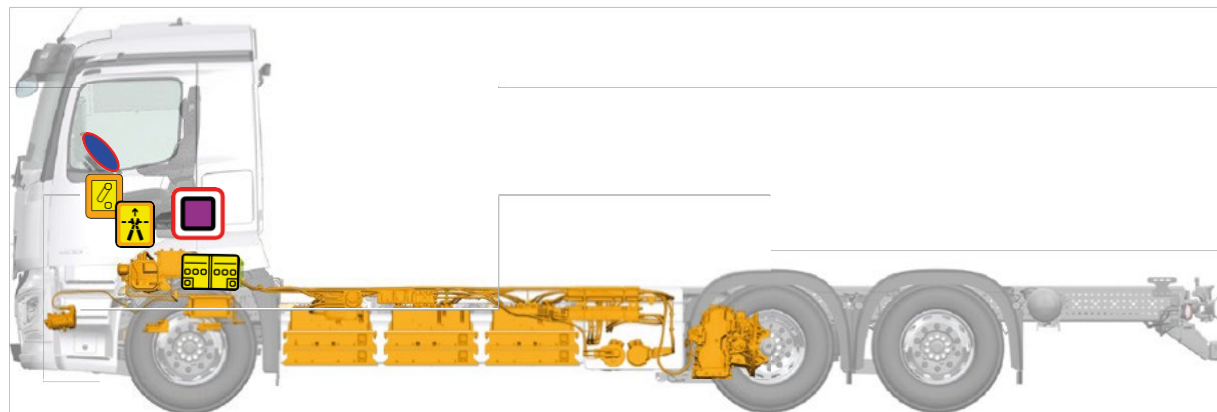
#### **Mitsubishi Fuso Truck Europe**

Department: TA/OEO

Ms. Ana Isabel Baptista

E-mail: [ana.isabel@daimlertruck.com](mailto:ana.isabel@daimlertruck.com)

In addition, the reader's attention is drawn to the legal provisions contained in Paragraph 22 of the German Road Traffic Act (StVO), Paragraph 31 of the German Road Traffic Licensing Act (StVZO) and Paragraph 412 of the German Commercial Code (HGB) in conjunction with VDI guideline 2700ff, from which the legal responsibility of the vehicle owner derives.



Airbag



24 V battery



High-voltage  
disconnect device  
(HV main switch)



Rescue separation  
point



Seat belt  
tensioner



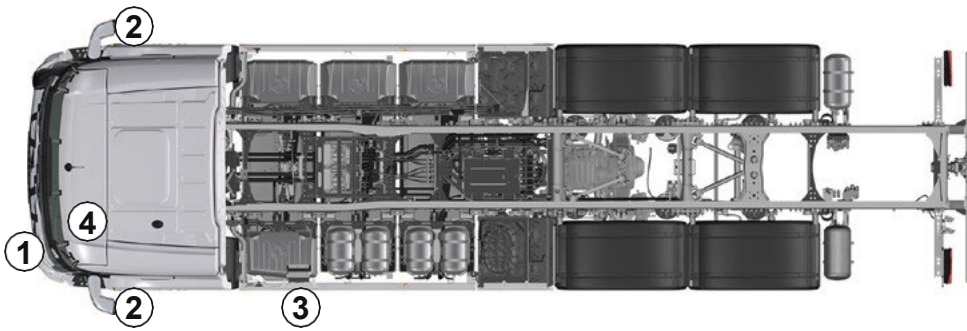
High-voltage  
battery



High-voltage  
line/component

- 1 24 V battery
- 2 High-voltage battery
- 3 Electric motor
- 4 Charging socket

## 1. Vehicle identification and labeling



## 2. Decommissioning/stabilization/lifting

### Transmission in neutral:

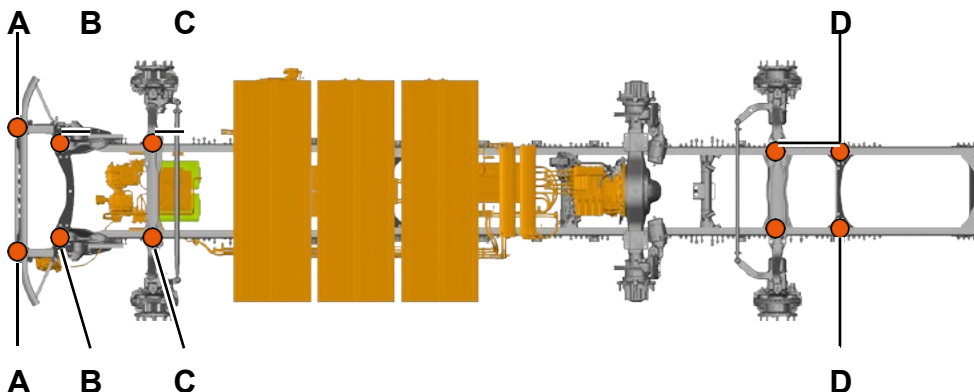


- Turn transmission selector switch (1) to **N** position. The transmission is shifted to neutral.

### Electric parking brake:



- Pull parking brake lever (1) upward. The electric parking brake is engaged.



### Lifting points

- A At towing eyes
- B At front end of vehicle frame
- C At front axle
- D At leading or trailing axle (with plate only)

High-voltage components



Avoid any additional deformation of the frame during rescue (e.g. bracing with hydraulic equipment).

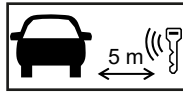


### 3. Prevention of direct hazards, safety regulations



#### Switch off ignition:

- Press START/STOP (1) button without operating the service brake.  
Store the electronic vehicle key at a distance of at least 5 m.



An absence of motor noises does not mean that the vehicle is switched off.  
Restarting is possible until the vehicle is decommissioned.  
Wear suitable protective equipment.

#### Deactivation of high-voltage on-board electrical system



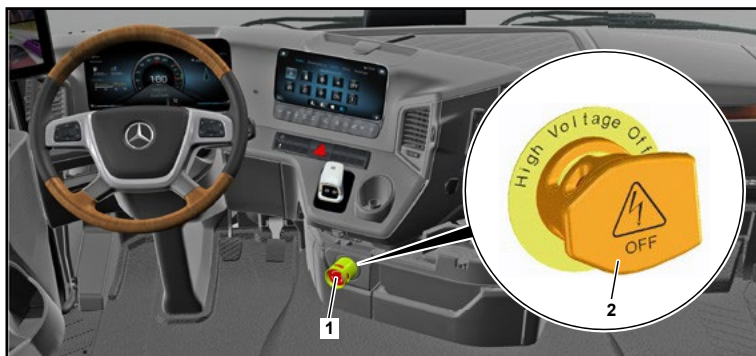
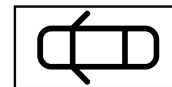
The high-voltage on-board electrical system is automatically disconnected in an accident upon the triggering of a restraint system.



In every other case, the high-voltage on-board electrical system must be deactivated as follows:



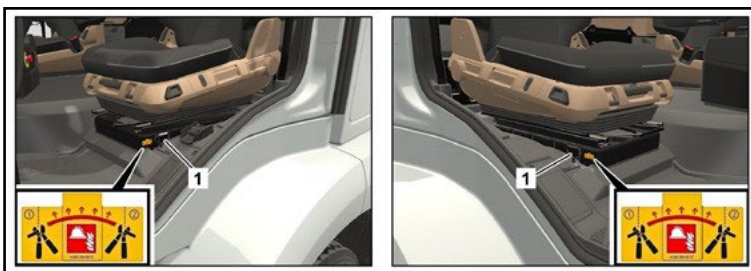
**Option 1** - High-voltage disconnect device (HV main switch):  
The HV main switch (1) is located on the instrument panel.



- Lift cover (2) of HV main switch (1).
- Press HV main switch (1).
- Secure the HV main switch (1) by attaching a standard pad lock with a diameter of 5 mm and a height of min. 38 mm.



**Option 2** - Alternative high-voltage disconnect device:  
The alternative high-voltage disconnect devices are located under the seat box on the driver and front passenger side and labeled accordingly.



- Pull out the cable (1) slightly.
- Cut the cable (1) at the marked points.

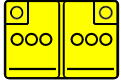


To ensure that there is no residual voltage in the high-voltage network, wait approximately 20 seconds after having switched it off.



Passive safety systems such as airbags and seat belt tensioners will continue to be supplied with voltage by the 24 V on-board electrical system.

### Disconnecting the 24 V battery



- Remove the cover of the 24 V batteries behind the cab.
- Disconnect 24 V battery negative cable at the threaded connection and secure against unintended contact.



The passive safety systems (airbags and seat belt tensioners) are deactivated.

## 4. Access to vehicle occupants

When freeing vehicle occupants, consider areas of the body made from high-strength steel and restraint system components (pyrotechnic elements in particular) as per the information on page 1.



### Steering column adjustment

- Press button (1) with your foot and hold
- Steering column adjustment



### Seat adjustment

- 1 Longitudinal adjustment
- 2 Rapid lowering
- 3 Height adjustment



### Type of glass



LSG Laminated safety glass  
SSG Single-pane safety glass

## 5. Stored energy/fluids/gases/solids

Li-Ion



All high-voltage lines are provided with orange insulation.



## 6. Vehicle fire

Use large amounts of water (H<sub>2</sub>O) to extinguish a vehicle fire.  
Use larger amounts of water (H<sub>2</sub>O) to cool the lithium-ion battery.



**Warning: Battery may reignite.**



If coolant escapes from the coolant circuit or high-voltage battery, the high-voltage battery may become unstable due to thermal overload. Check the battery temperature with an IR thermal imaging camera or a thermometer.



## 7. Vehicle in water

There is no danger that voltage is present on the vehicle body.

After recovering the vehicle:

1. Let water drain from the vehicle interior.
2. Begin deactivating the high-voltage on-board electrical system (see chapter 3).

## 8. Towing/transporting/storing

When recovering a vehicle from the danger zone, the vehicle with electric drive may only be moved at walking pace. More information can be found in the guide entitled "eActros – Towing and recovery – model series 983" and the towing guide for conventional diesel-powered trucks (see section 9).

**Park the heavily damaged vehicle in a safe place and at a safe distance from other vehicles.**



**Warning: Battery may reignite.**



## 9. Important additional information

More information is available in the guide entitled "Towing and recovery – Actros, Antos (963), Arocs (964)".

## 10. Explanation of pictograms used



Electric vehicle



Flammable



General indications of danger



Hazardous to health



Warning of hazardous voltage



Corrosive (caustic)



Distance of Digital Vehicle Key



Toxic



Open vehicle doors.



IR thermal imaging camera

Li-Ion

High-voltage battery (lithium-ion)

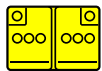
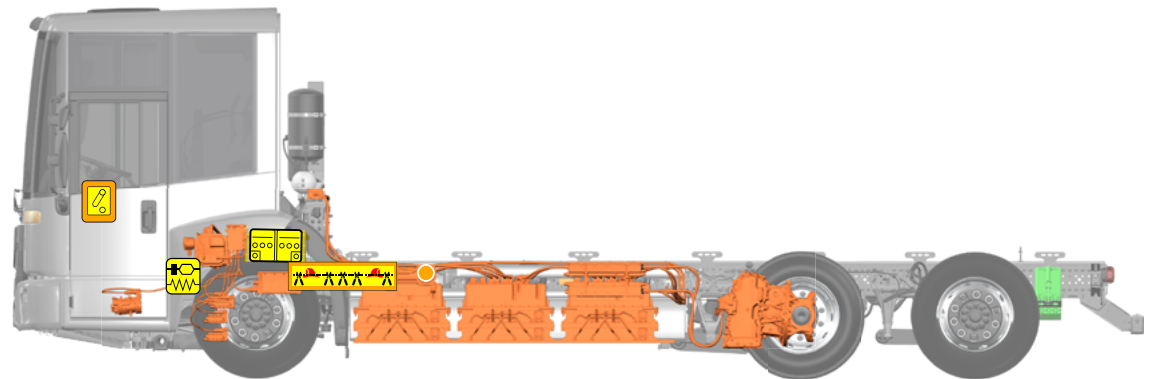
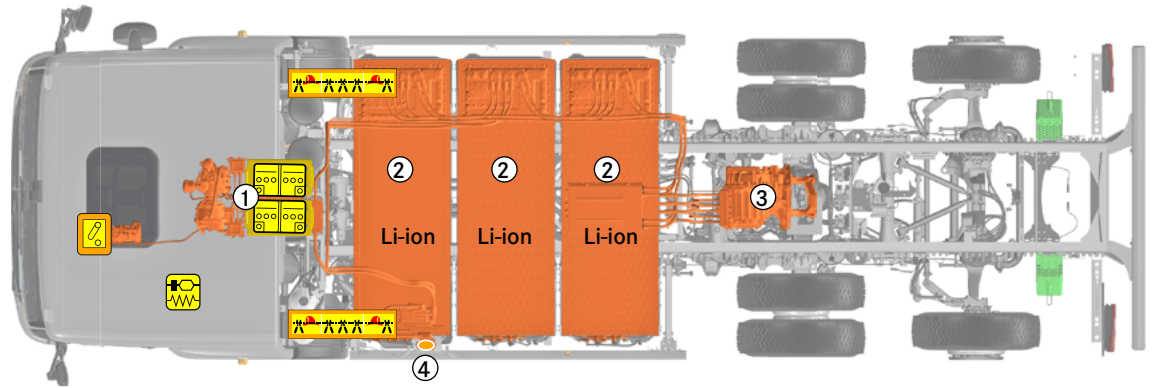


Extinguish with water.



Mercedes-Benz

# eEconic Type 956.5



Vehicle electrical system battery 12 V



High voltage battery Li-ion



High voltage cable / -components



SRS control unit



High voltage disconnection device (HV-main switch)



Rescue disconnection point

- 1 2 x 12-V vehicle electrical system battery
- 2 High-voltage battery
- 3 Electric machine
- 4 Charging socket

The rescue disconnection point must only be actuated if the HV main switch on the instrument panel is not accessible. Switch off the ignition before operating the HV main switch and the rescue disconnection point.

ID No.

956.5

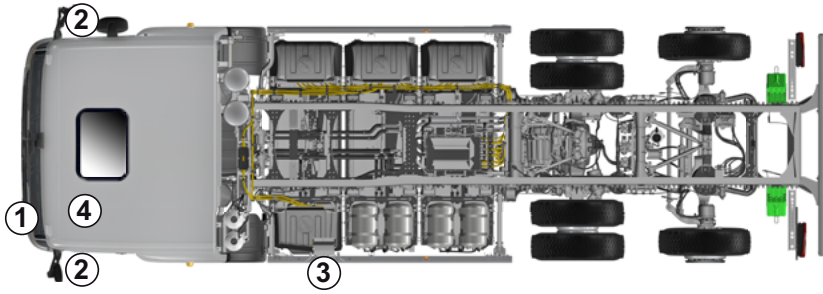
Version No.

01

Page no.

1

## 1. Vehicle identification and marking



## 2. Decommissioning / stabilisation/lifting

Transmission in neutral:

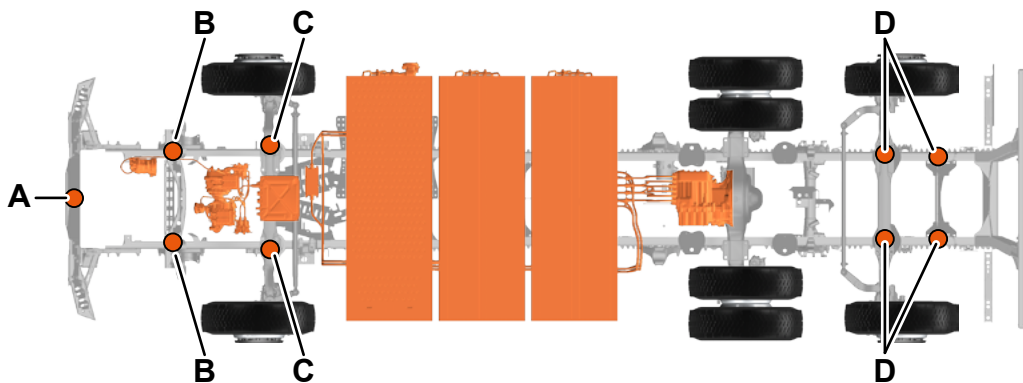


- Turn the transmission selector switch (1) to position N. The gearbox is shifted to neutral.

Electric parking brake:



- Press button (P) (1). When the LED is lit, the electric parking brake is activated.



Lifting points (view from below)

- A At the tow bar hitch
- B At the front end of the vehicle frame
- C At the front axle
- D In the area of the leading or trailing axle (only with plate)

 High-voltage components



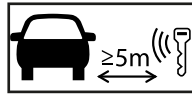
Additional deformation of the frame during rescue (e.g. support with hydraulic equipment) must be avoided.

### 3. Disable direct hazards / safety regulations



Turn off the engine switch:

- Press the START-STOP button (1) without applying the service brake.



Keep the electronic vehicle key at a distance of at least 5 m.



The absence of engine noise does not mean that the vehicle is switched off. Use appropriate personal protective equipment.

#### Deactivation of the high-voltage system



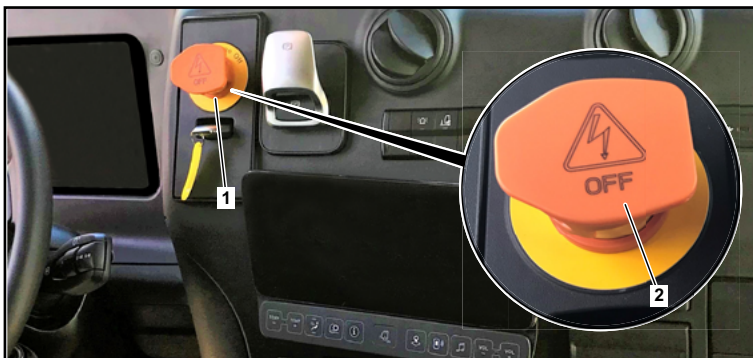
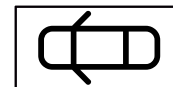
The vehicle can detect collisions within the system limits and, if necessary, automatically switch off the high-voltage vehicle electrical system



The high-voltage system must be deactivated as follows:



**Option 1** - High-voltage disconnection device (HV main switch):  
The HV main switch (1) is located on the instrument panel.



- Cover (2) of the HV main switch (1) lift up.
- Press the HV main switch (1).
- Position of the HV main switch (1) by suitable measure to prevent reactivation secure (e.g. standard shackle lock with a shackle diameter of 5 mm and a shackle height of min. 38 mm).



**Option 2** - Alternative high-voltage disconnection device:

The alternative high-voltage cut-off devices are located behind the cab on the driver's and co-driver's sides and are identified by a corresponding sign.



- Pull out the cable (A) slightly.
- Cut the cable (A) at both marked points ① and ②.



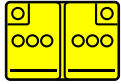


To ensure that there is no residual voltage in the high-voltage grid, wait approx. 20 seconds after switching off.



The passive safety systems such as airbags and belt tensioners continue to be supplied with voltage by the 24 volt vehicle electrical system.

### Disconnecting the 12 volt vehicle electrical system batteries

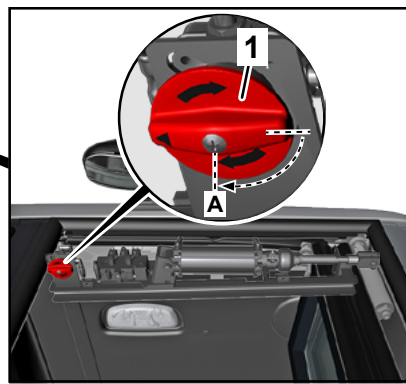


- Remove the cover of the 12volt batteries behind the cab.
- Disconnect the negative cable of the 12 volt batteries at the screw connection and secure against unintentional contact.



The passive safety systems (airbags and belt tensioners) are deactivated.

## 4. Access to the occupants

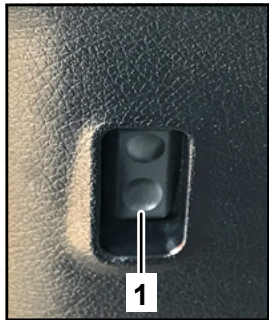


### Emergency opening of folding door

#### Vehicles with locking cylinders:

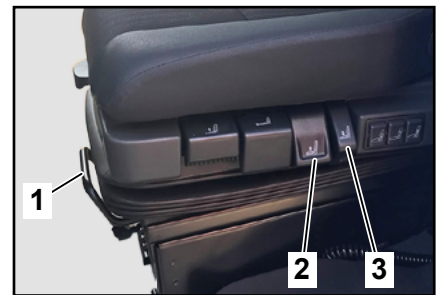
- Unlock the door lock on the folding door.
- Turn rotary switch (1) to position „Emergency opening“ A.
- Open the folding door by hand.

### Steering column adjustment



- Press the button (1) at the bottom. The steering column is unlocked.
- Adjust the height and angle of the steering column.
- Press the top of the button (1). The steering column is locked.

### Seat adjustment



- 1 Longitudinal adjustment
- 2 Height adjustment
- 3 Quick lowering

### Type of glass

- Laminated safety glass
- Toughened safety glass



## 5. Stored energy / liquids / gases / solids

Li-Ion



All high-voltage cables are fitted with orange insulation.

## 6. In case of fire

Use large quantities of water (H<sub>2</sub>O) to extinguish a vehicle fire.  
Use large amounts of water (H<sub>2</sub>O) to cool the Li-ion battery.



Warning: Re-ignition of the battery



If coolant escapes from the coolant circuit or the high-voltage battery, the high-voltage battery may become unstable due to thermal overload. Check the battery temperature with an IR thermal imaging camera or thermometer.



## 7. In case of submersion

There is no risk of voltage being applied to the vehicle body.

After recovering the vehicle:

1. Drain the water from the interior.
2. Initiate deactivation of the high-voltage system (see Chapter 3).

## 8. Towing /transportation / storage

When recovering a vehicle from the danger zone, the vehicle with electric drive may only be moved at walking pace.

Further information can be found in the guide „eActros and eEconic – Towing and recovery – BR 983 and 956.5”, as well as for its the How to guide „Actros, Antos and .. Arocs – Towing and recovery – BR 963, 964“ (<https://www.mercedes-benz-trucks.com>).

Park severely damaged vehicles in a safe place and at a safe distance from other vehicles.









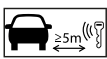





Warning: Re-ignition of the battery



## 9. Important additional information

Further information can be found in the „Guidelines for rescue services, trucks“ (<https://www.mercedes-benz-trucks.com>).

## 10. Explanation of pictograms used

	Electric vehicle		Flammable
	General warning sign		Hazardous to the human health
	Warning, Electricity		Corrosives
	Electronic vehicle key distance		Acute toxicity
	Fahrzeigtüren öffnen		Use thermal infrared camera
	High-voltage battery (Lithium-Ionen)		Use water to extinguish the fire



# eActros and eEconic towing and recovery

BR 983, 956.5



Mercedes-Benz





# **eActros and eEconic towing and recovery**

### Product portfolio

You can also find comprehensive information on our complete product portfolio in our Internet portal:

Link: <https://www.mercedes-benz-trucks.com>

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**Dear Reader,**

The aim of this guide is to provide roadside assistance and towing personnel with instructions necessary for their occupation so that they can remove the vehicle from the scene of the accident or breakdown within 30 minutes where possible.

Different procedures are possible depending on the vehicle equipment installed. The representations in these instructions may deviate from the vehicle on which you are working.



This guide covers special procedures for electrically driven trucks.

All other valid procedures can be found in the towing guide for conventional diesel-powered trucks.

This guide contains information on the positions and descriptions of high-voltage components in electrically driven trucks.

This guide is exclusively geared toward trained and certified towing and rescue companies. It is assumed that the reader has comprehensive knowledge about the operating principle of safety systems and that they are appropriately prepared to resolve emergency situations safely.

**Type of representation**

Notes and instructions are specifically highlighted in this guide.

**Warning notes:**

**Note**

Warning  
Reason

**Note**

This guide contains procedures for deactivating the high-voltage on-board electrical system.

Failure to observe the recommended procedures can lead to severe or fatal injuries.



The instructions must be followed in accordance with the general Guidelines for Rescue Services.

The instructions in this guide, particularly those pertaining to vehicle recovery, are intended exclusively for experienced rescue specialists trained in high voltage and are left to the discretion of the user.

A reference is made to country-specific training measures.

In Germany, the German Social Accident Insurance (DGUV) and others provide information on the qualification of individuals performing work on vehicles with a high-voltage on-board electrical system.

**General information:**



General notes

**Instructions:**

- Procedural instruction

All of the data listed in this guide corresponds to the technical status as of copy deadline May 2022 and may therefore differ from the current series production configuration.

**Daimler Truck AG**

Wörth factory, TE/SCT



Information about the vehicles and about operating the vehicle functions can also be found in the interactive operator's manual on the Internet at: <https://www.mercedes-benz-trucks.com>

## General information on electric trucks



Electric mobility brings dangers with it that were not previously present in Mercedes-Benz trucks in this form.

Fatal hazards originate from the high voltages used. These high voltages are obviously monitored by any safety functions and secured by various measures. They therefore will not come into contact with people under normal circumstances.

Accidents usually occur as a result of a series of unforeseeable circumstances or an incorrect assessment of the dangers. This is why the dangers and the necessary protection measures must be emphasized when working on vehicles.

This is sometimes regulated by law – in Germany, for example, through the Occupational Safety Act (Arbeitsschutzgesetz).

A corresponding qualification is therefore required for various activities on a vehicle.

The eActros is an electrically driven truck for distribution haulage. The eActros is driven by two electric motors that are installed in the axle drive module on the first rear axle.

The energy necessary for the drive and the supply for all ancillary equipment is provided by 3 or 4 high-voltage batteries depending on the equipment installed.

Components in vehicles that are supplied with an alternating voltage of more than 30 V or a direct voltage

of more than 60 V are referred to as high-voltage components or as part of the high-voltage on-board electrical system.

The voltage supply network required for operation of the high-voltage on-board electrical system is designed as follows:

- Direct voltage: > 60 V and < 1500 V
- Alternating voltage: > 30 V and < 1000 V

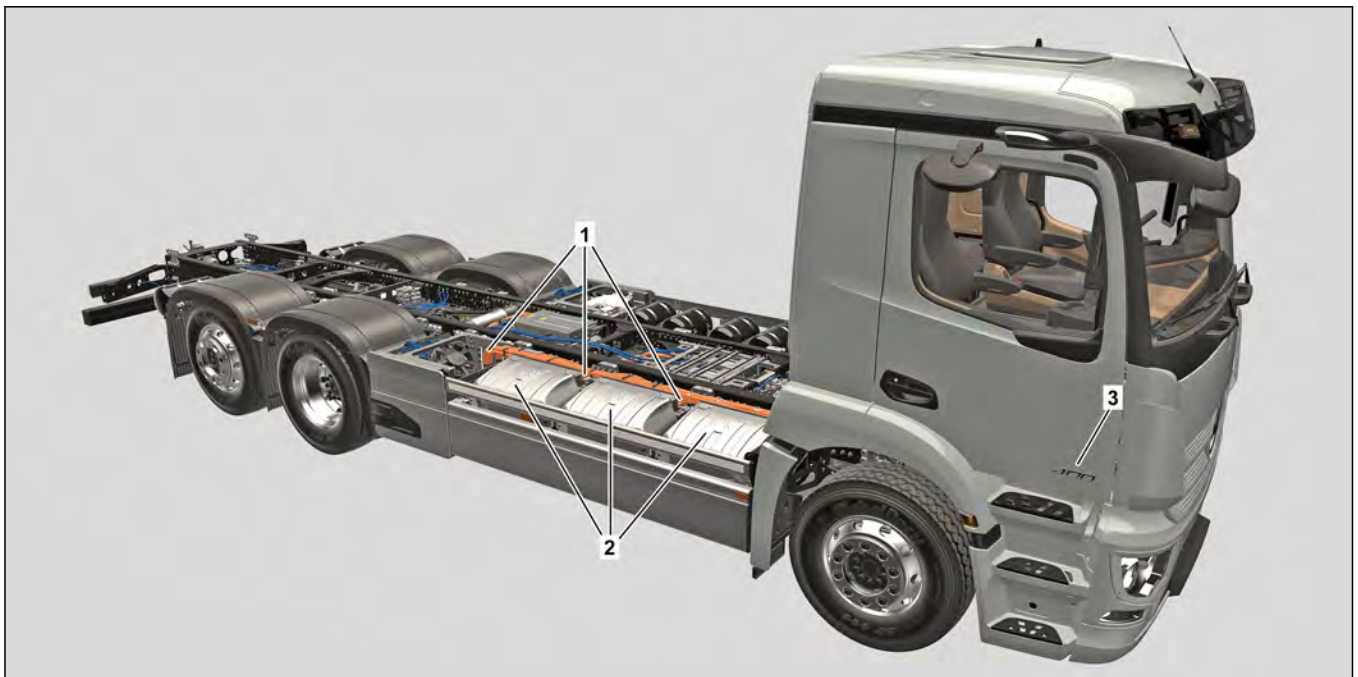
This means that it is mandatory to use the ECE-R100 Standard with its safety-related requirements for the electric drive of class M and N road vehicles in Europe. Lithium-ion batteries are used here as energy storage units.

The DC/AC converters convert the direct voltage provided by the high-voltage batteries into alternating voltage and regulate the engine torque.

24 V components are supplied from the installed lead-acid batteries in the same way as they are in conventional vehicles. The batteries are recharged from the high-voltage on-board electrical system via the DC/DC converter if needed.

The front axle power steering takes place by means of two electrohydraulic power-steering pumps. The steered trailing axle (second rear axle) is also supplied by an electrohydraulic power-steering pump.

The power-steering pumps are supplied from the 24 V on-board electrical system.

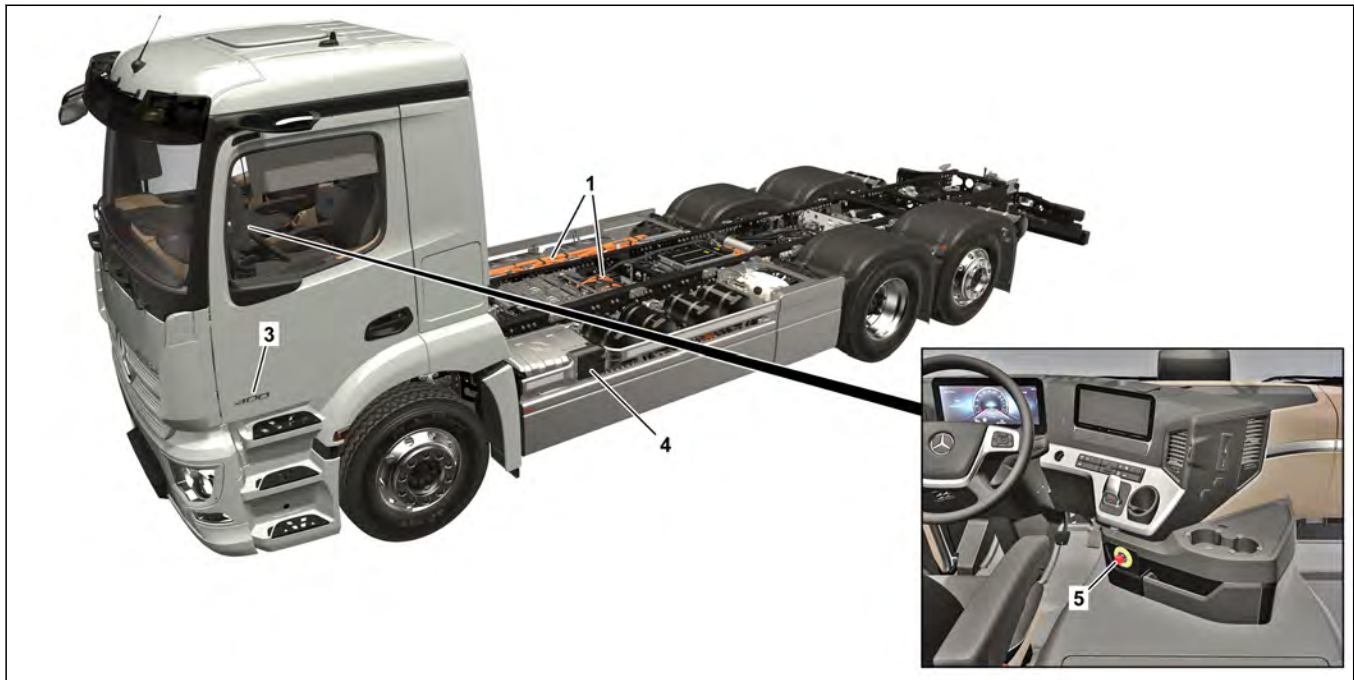


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1 High-voltage lines

2 High-voltage batteries

3 Lettering/model designation



W00.00-A122-79

- |   |                             |   |                |
|---|-----------------------------|---|----------------|
| 1 | High-voltage lines          | 4 | Vehicle socket |
| 3 | Lettering/model designation | 5 | HV main switch |

**Identifying features**

The conspicuous, orange-colored high-voltage lines (1) are particularly helpful in identifying electric vehicles. Several high-voltage components are connected to the high-voltage batteries using these lines, from the original engine compartment to the rear axle.

The high-voltage batteries are located between the front and rear axle.

The model designation at the maintenance flap with the additional designation "e" before the model designation also indicates an electric vehicle.

The eActros can also be recognized by the vehicle socket (4) on the left side.

Another identifying feature is the HV main switch (5). It is located in the instrument panel in the vehicle interior and can be used to deactivate the high-voltage on-board electrical system.

All components of the high-voltage on-board electrical system are marked by warning labels.

Another clearly recognizable feature is that the complete exhaust gas unit – which can be found behind the cab in conventional vehicles – is missing.



# General information on electric trucks

## FIN/VIN coding

Example:

W1T983020L0495915

- 983: Model series, eActros
- 983.020: Vehicle model designation, 3-axle vehicle

- 1 Identification plate
- 2 FIN/VIN on right longitudinal frame member



W00.00-A123-76

## Operations on component parts of the high-voltage on-board electrical system

### Note

Deactivate high-voltage on-board electrical system.  
Do not loosen any electrical connectors of high-voltage on-board electrical system.  
Do not cut through any high-voltage lines.  
Otherwise, there is a danger of arcs and electric shocks.



Individuals with electronic implants (for example cardiac pacemakers) must not perform any work on components of the high-voltage on-board electrical system.



The necessary safety precautions for working on component parts of the high-voltage on-board electrical system must be followed in accordance with country-specific directives and legislation.



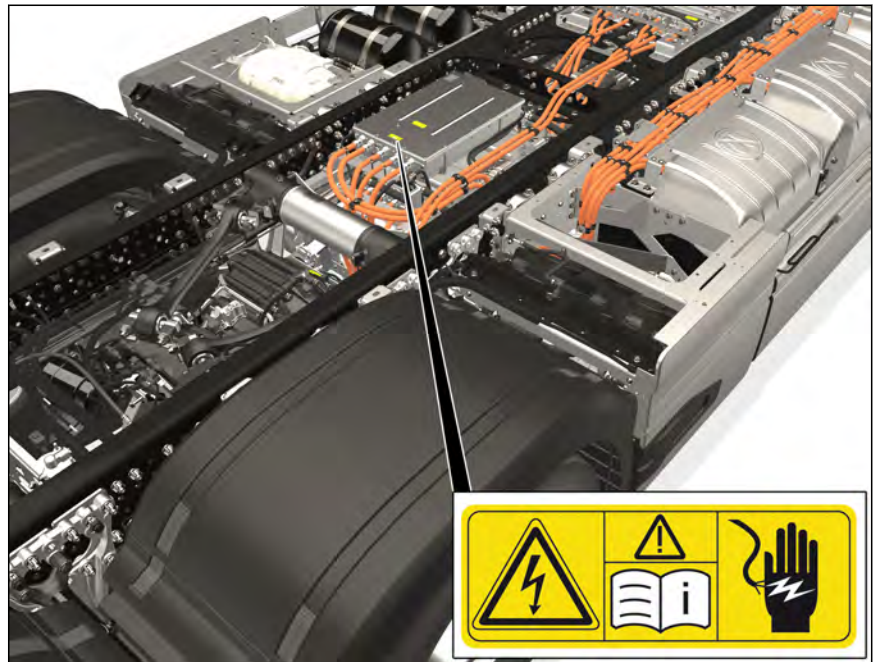
Personal protective equipment must be worn when working on the vehicle, particularly if high-voltage components are damaged, see page 26.



Only appropriately approved, tested tools may be used when working on component parts of the high-voltage on-board electrical system.

## Warning notice regarding high-voltage on-board electrical system

Live component parts have special adhesive labels.

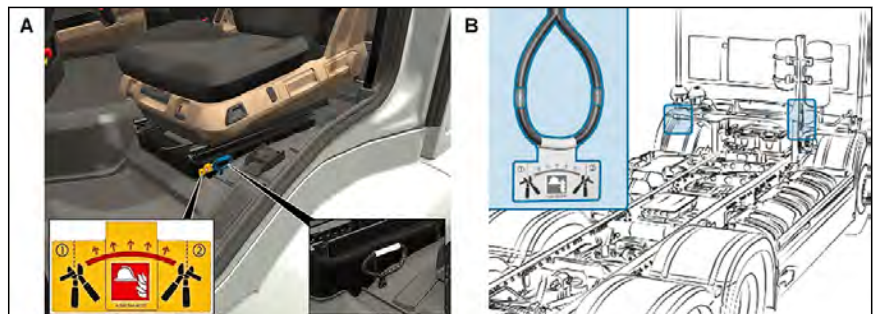


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## High-voltage rescue separation point information label

A special adhesive label indicates the line bundles for terminal 30c or the interlock separation point for rescue personnel.

- A Driver's side eActros rescue separation point
- B eEconic rescue separation point behind cab



W08.00-A063-74

## Fire in the vehicle

The fire alarm system ("Fire Detection System") that is installed as standard is used to detect a thermal runaway of the high-voltage batteries and warn the driver in the cab accordingly. Corresponding sensors are mounted to the high-voltage batteries for this purpose.

In the event of a fire, the vehicle can be extinguished using the available extinguishing agents. The high-voltage batteries should be permanently cooled from the outside by water when possible. Escaping electrolyte can be absorbed using conventional binding agents.



Follow the instructions and notes from the Guidelines for Rescue Services.

## Note after an accident

The high-voltage batteries may be damaged in the event of an accident.

All contact with escaping battery acid should be avoided as this can be an irritant or a corrosive depending on the battery type.



Small quantities of electrolyte escaping from the high-voltage batteries can be absorbed using conventional binding agents.

Inhaling electrolyte vapors is to be avoided at all costs.



Collect coolant escaping from damaged coolant lines.

## Vehicle operation

### Vehicle operating concept

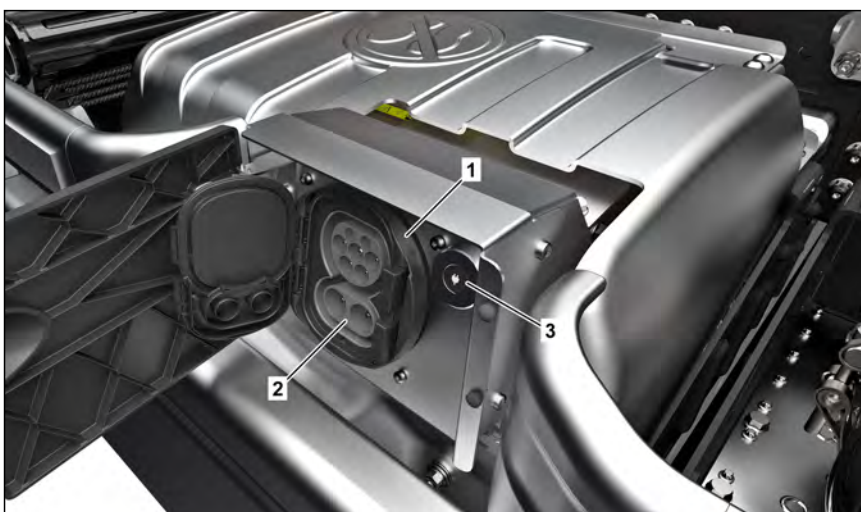
- The key must be in the vehicle to ensure the vehicle's operational readiness. The start/stop button must then be pressed briefly twice.
  - To enable driving readiness: The start/stop button must be pressed for approx. one second and the brake must be operated or the parking brake must be engaged whilst doing so. As soon as the vehicle is ready to drive, the "READY" display appears in the display.
  - Operating the direction of travel ("D", "N", "R") is done in the same way as for the conventional Actros:
- By using the right multifunction lever (5) next to the steering wheel. The individual positions are selected using the rotary switch on the multifunction lever (5).
- The drive programs (manual/automatic, economy, power, range) are switched between using the A/M touch button on the side of the multifunction lever (5).
  - The eActros has 2 gear ranges that can be switched between by pulling up (upshifting) and pressing down (downshifting) on the multifunction lever (5).
  - When the vehicle is at a standstill, the ignition (terminal 15) is switched off by pressing the start/stop button or removing the key from the vehicle.

#### 5 Multifunction control lever



W00.00-A101-76

- 1 Vehicle socket
- 2 Direct current connections
- 3 Charging interruption button



W00.00-A086-75



## Operating concept for charging high-voltage batteries

The vehicle is equipped with a charging cable socket for direct current quick charging with up to 160 kW.

- The charging cable with direct current connections (2) is connected for DC charging.
- The charging process is initiated by plugging the charging cable connector into the vehicle socket (1). The charging cable connector is mechanically locked in the vehicle socket (1) during the charging process.
- The parking brake must be operated to start the charging process. It is not possible to start the drive and drive away during the charging process.
- A message in the instrument cluster provides information about the charging cable that is plugged in. For example, fans for cooling and coolant pumps can be turned on and off automatically during the

charging process in order to cool the high-voltage on-board electrical system.

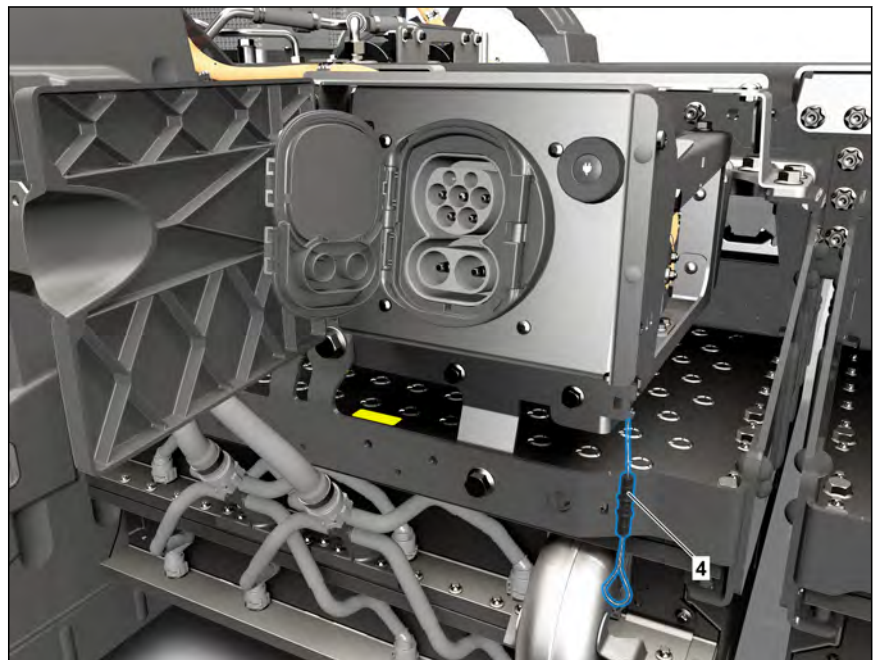


It can be the case that further parts of the high-voltage on-board electrical system are activated during the charging process even though the ignition is switched off.

- Press the charging interruption button (3) next to the charging cable socket to end the charging process. After pressing the charging interruption button on the vehicle or at the charging station, the vehicle unlocking function at the key must still be pressed in order to remove the charging cable connector.

## Emergency unlocking

- If the electrical release does not work, the charging cable connector can be mechanically unlocked using the emergency release cable (4).

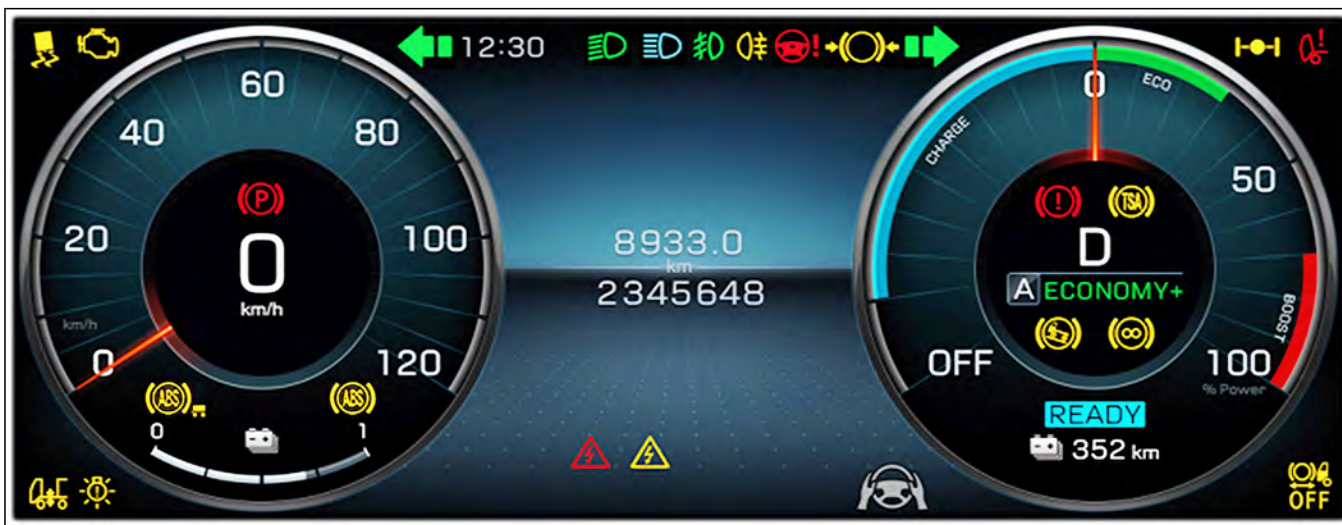


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# Indicator lamps

## Instrument cluster

All important indicator and warning lamps are displayed in the instrument cluster.



W54.30-A085-78

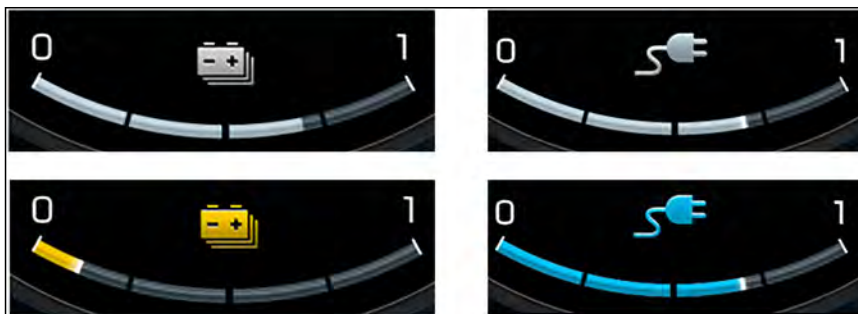
## Remaining range

The available remaining range in kilometers or miles:

- Normal: Gray battery symbol
- Remaining range critical: Yellow battery symbol



W54.30-A086-71



W54.30-A088-74

## High-voltage battery charge level

The state of charge and the remaining charge of the high-voltage battery are shown as a percentage value in a bar graph. A distinction is made between the following situations:

- Normal: Gray battery symbol and charge level display

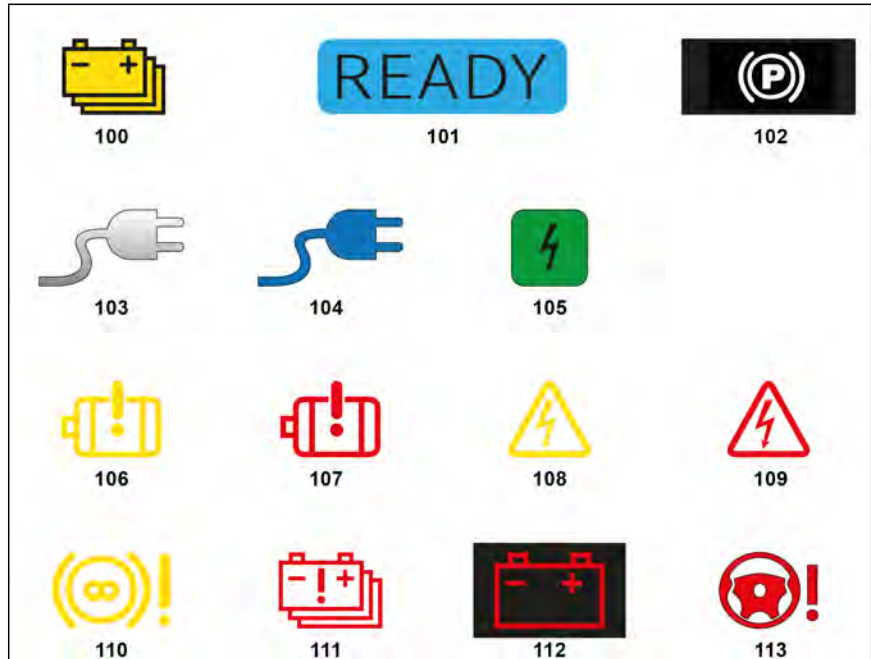
- High-voltage battery reserve: Yellow battery symbol and charge level display
- Charging cable connector plugged in, charging not active: Gray plug symbol and gray charge level display

- Charging cable connector plugged in, charging active: Blue plug symbol and blue charge level display



Messages in the instrument cluster also indicate faults in the high-voltage on-board electrical system. This information must be taken into account when towing and rescuing. The fire department or a specialist workshop should be used if the situation is unclear.

## Symbols in the instrument cluster



W54.30-A098-76

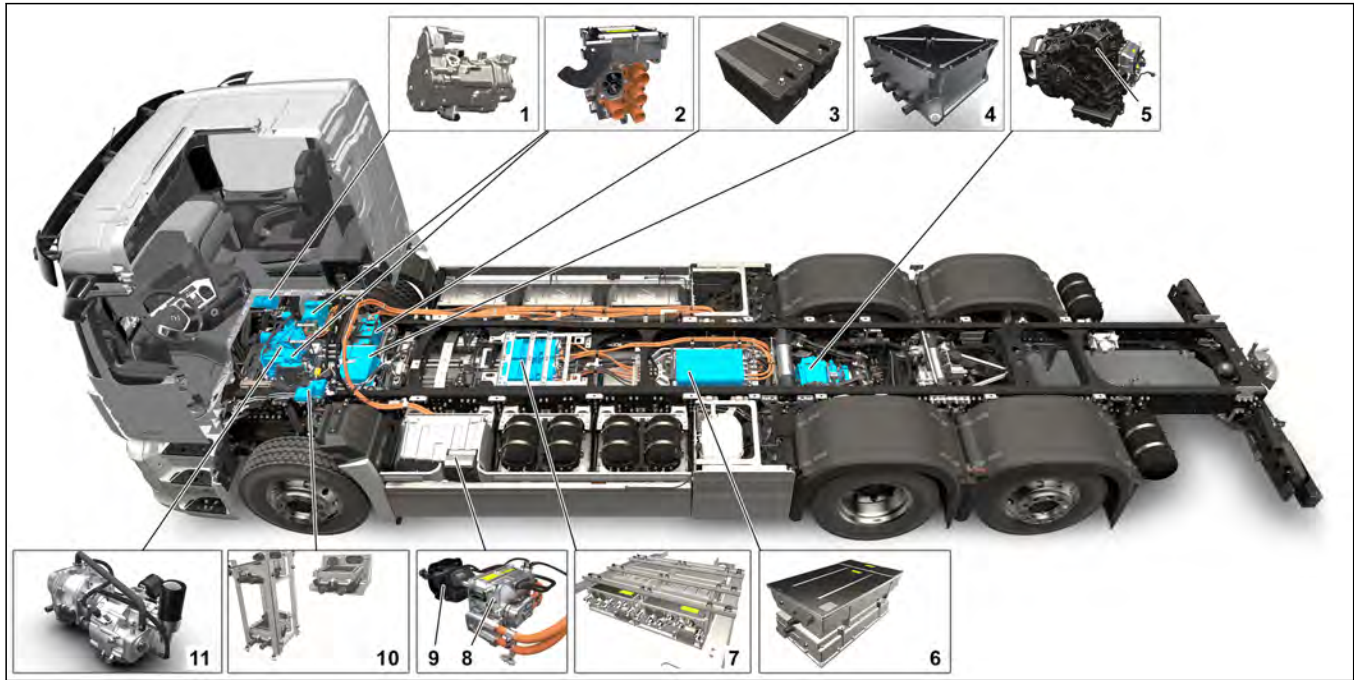
## Indicator lamps

Symbol	Status	Pop-up message	Request
100	State of charge low	High-voltage battery state of charge low	-
	State of charge very low	High-voltage battery state of charge too low Operating energy input significantly reduced	-
	Remaining range low	Remaining range low	Charge high-voltage battery.
	Remaining range very low	Remaining range very low	Charge high-voltage battery.
101	Electric drive ready	-	-
102	Warning with electric drive ready	Door open	Engage parking brake.
103	Charging cable connected	-	-
	Start-off protection	Charging cable plugged in, Start-off protection active	-
104	Charging active	-	-
105	Vehicle DEENERGIZED	-	-
106	Electric drive malfunction	Electrical drive faulty	Service Required.
107	Electric drive malfunction	Electrical drive faulty	Stop vehicle. Inform service.
108	Insulation resistance or Interlock fault	High-voltage on-board electrical system faulty	Service Required.
109	Insulation resistance or Interlock fault	High-voltage on-board electrical system faulty	Stop vehicle. Inform service.
110	Continuous brake restricted	Continuous brake: Performance reduced	-
	Permanent brake malfunction	Continuous brake inoperative	-
111	Heat distribution	High-voltage on-board electrical system faulty! Stop vehicle immediately.	Stop, everyone exit the vehicle! Where possible, stop outdoors.
112	DC/DC converter malfunction	Starter battery is not charged.	-
	Failure of low-voltage battery	Starter battery has failed.	-
113	Power-steering pump fault	-	-

The table shows messages specific to the eActros in the form of indicator lamps, pop-ups or warning tones.

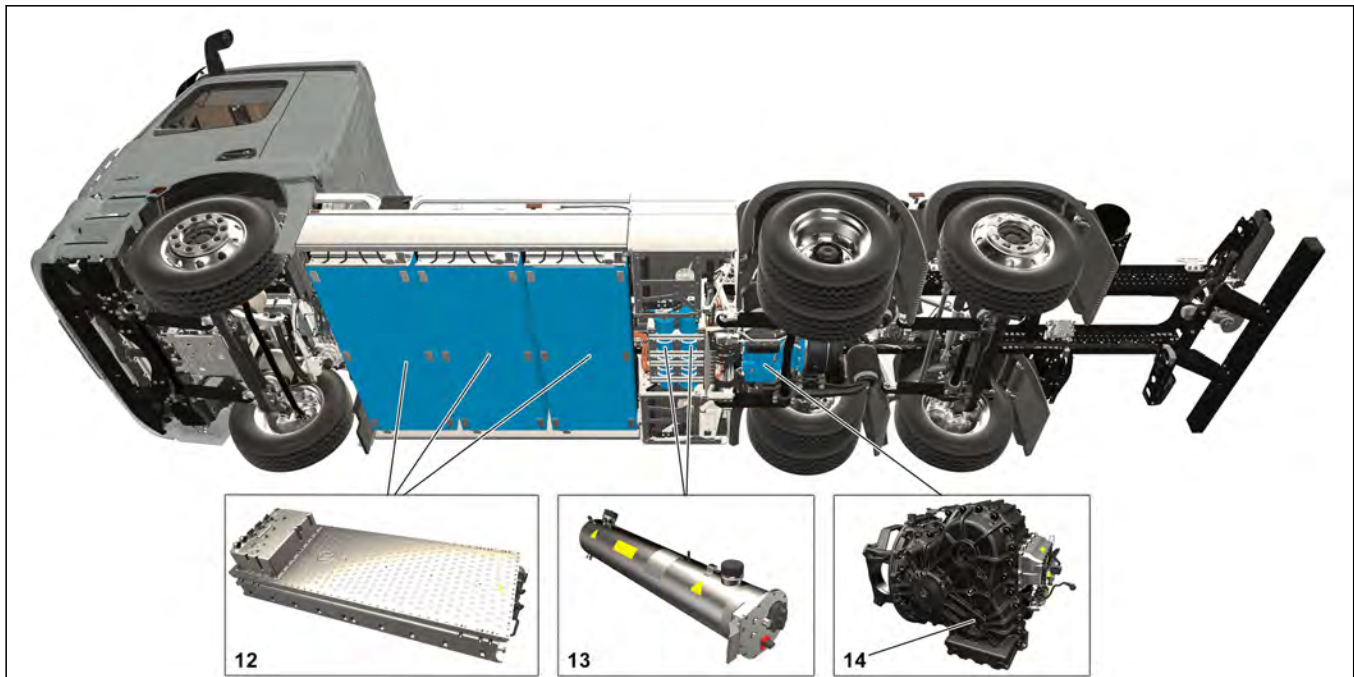


# Overall vehicle, arrangement of high voltage components



W08.00-A054-79

- |   |                                 |    |                                       |
|---|---------------------------------|----|---------------------------------------|
| 1 | Electric refrigerant compressor | 7  | Braking resistor control units        |
| 2 | High-voltage power distributor  | 8  | Direct current charge connection unit |
| 3 | 24 V batteries                  | 9  | Vehicle socket                        |
| 4 | High-voltage DC/DC converter    | 10 | PTC heater booster                    |
| 5 | Electric machine 1              | 11 | Electric air compressor               |
| 6 | DC/AC converter                 |    |                                       |



W08.00-A055-79

- |    |                        |    |                    |
|----|------------------------|----|--------------------|
| 12 | High-voltage batteries | 14 | Electric machine 2 |
| 13 | Braking resistors      |    |                    |



# High voltage components, visual check for damage

## High voltage components

### Note

Damaged high voltage lines must under no circumstances be touched.

The risk of an electric shock exists.

- First disconnect the high-voltage on-board electrical system via the HV main switch, see Chapter "De-energize high-voltage on-board electrical system", page 23.

In contrast to conventional vehicles, coolant lines are installed over almost the entire vehicle length in vehicles with a high-voltage on-board electrical system. When an accident vehicle is being recovered, coolant can flow out of the rear axle drive module toward the front.

- In the case of damage to coolant lines, collect coolant.

### Note

Caution! The coolant can still be hot.

There is a risk of burn injuries.



Battery fluids are generally flammable, caustic and corrosive. For this reason, skin contact and the inhalation of vapors in the case of damaged high-voltage batteries must at all costs be avoided.

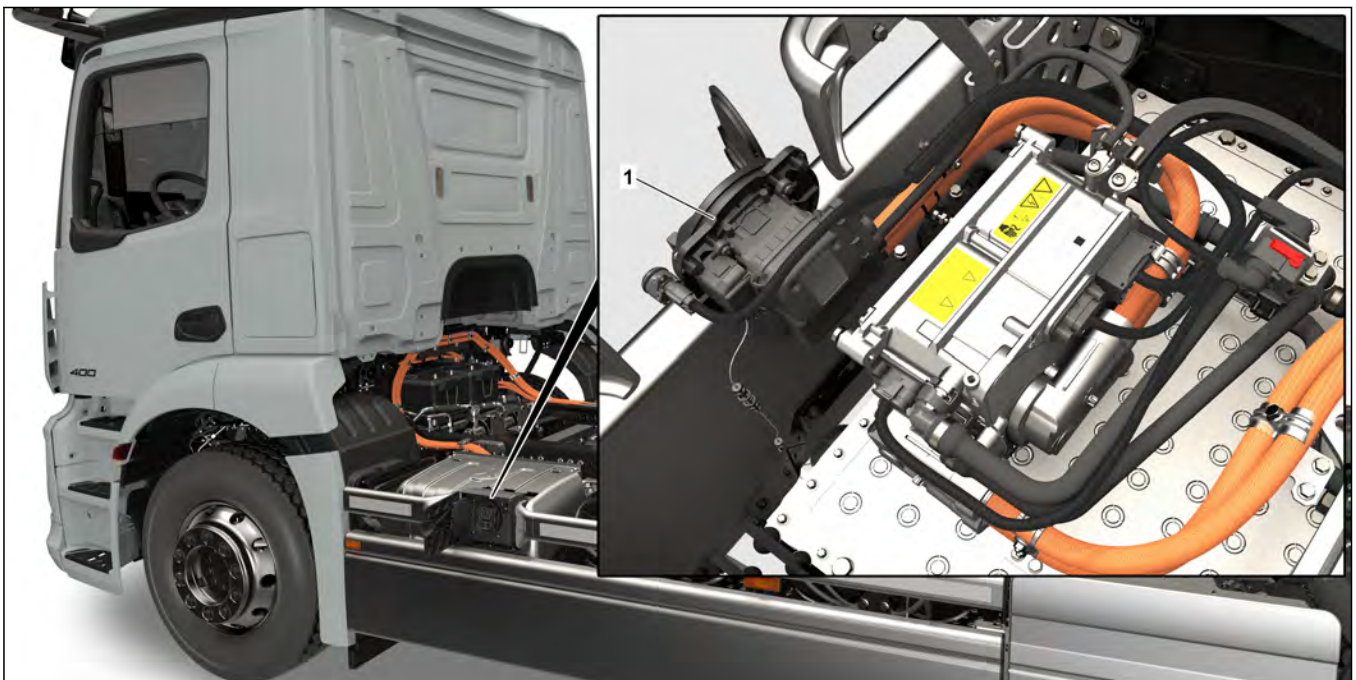
If an "outgassing" of a high-voltage battery is suspected, the recovery process must be immediately stopped and the further procedure discussed with the fire department.

Vehicles with damaged high-voltage batteries should be transported to the nearest specialist workshop and/or to a safe storage location.



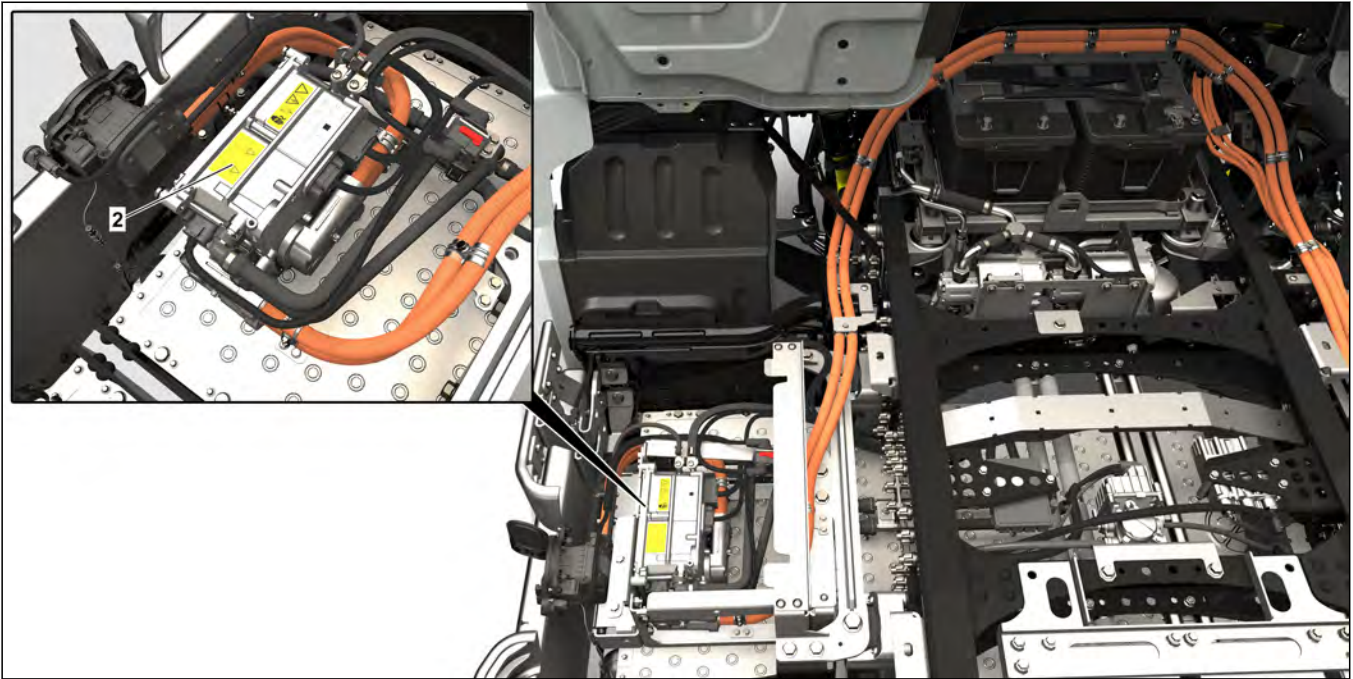
In the case of damage to high-voltage components, high-voltage batteries and high voltage lines, the instructions on the personal protective equipment must be observed, see page 26.

Check the following high-voltage components and high voltage lines for damage.



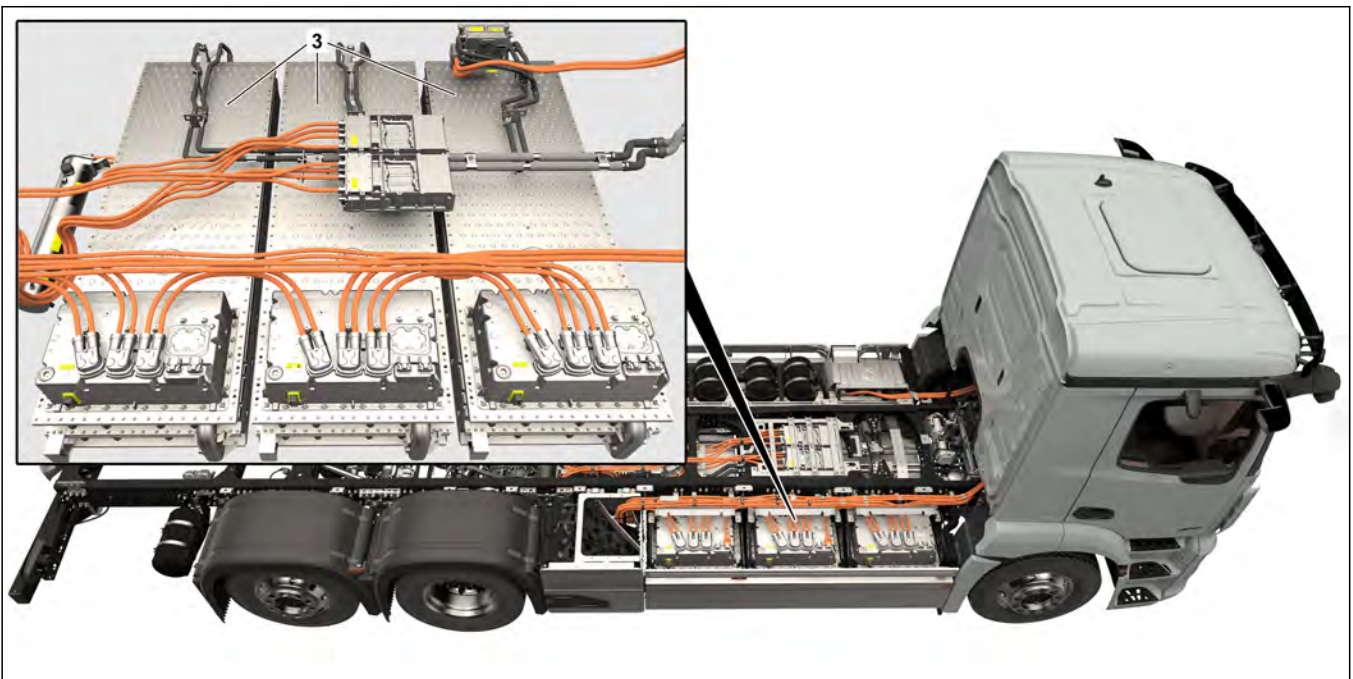
1 Vehicle socket

W08.00-A056-79



W08.00-A024-79

2 Direct current charge connection unit

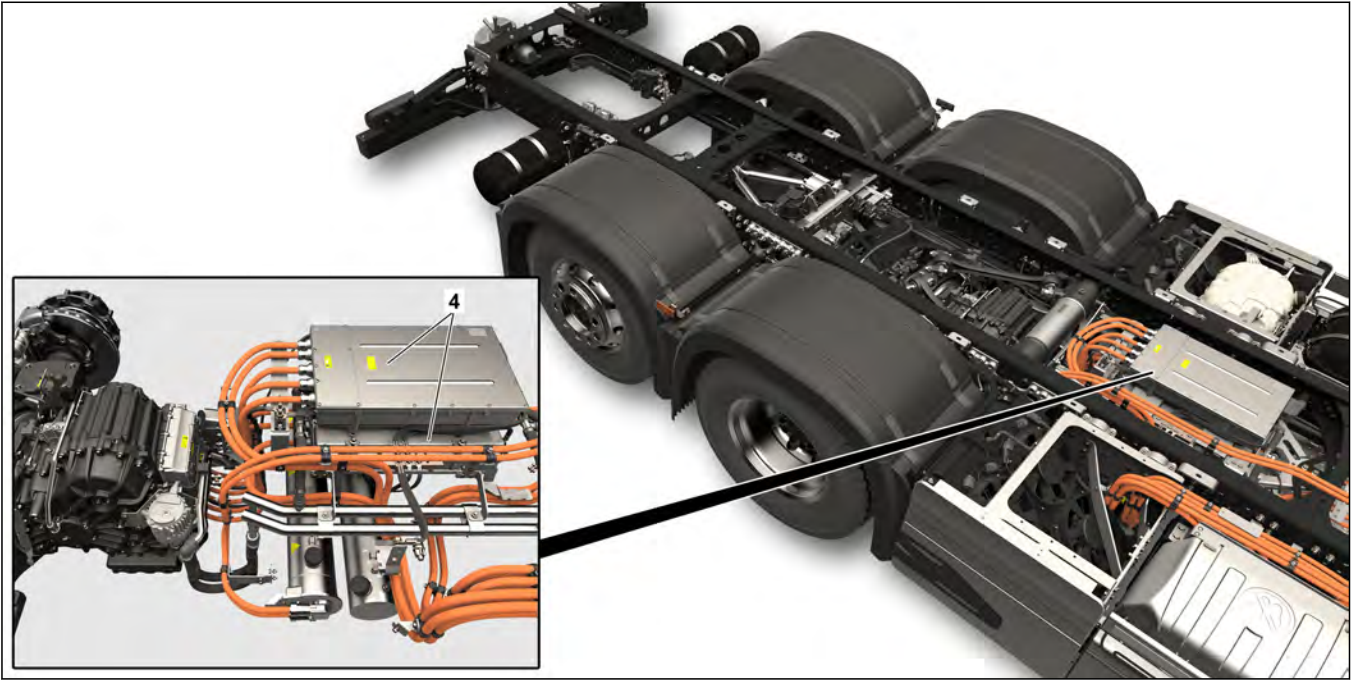


W08.00-A057-79

3 High-voltage batteries

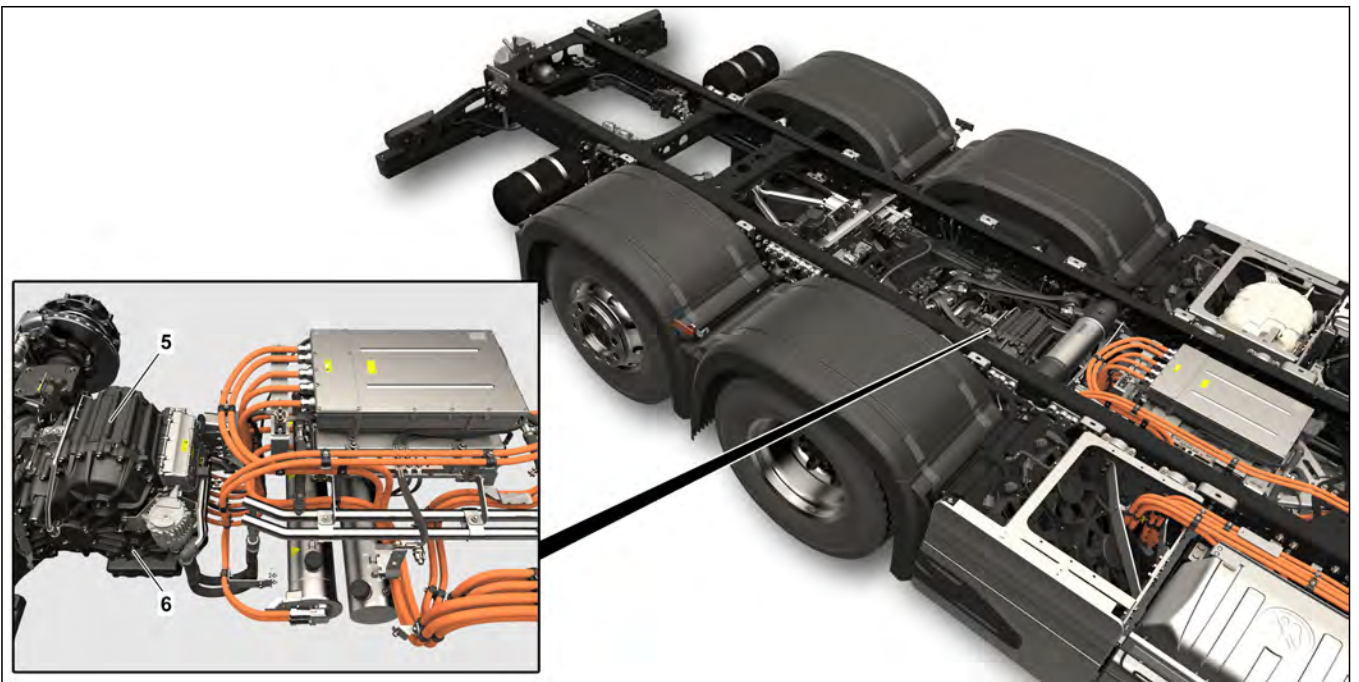


# High voltage components, visual check for damage



W08.00-A026-79

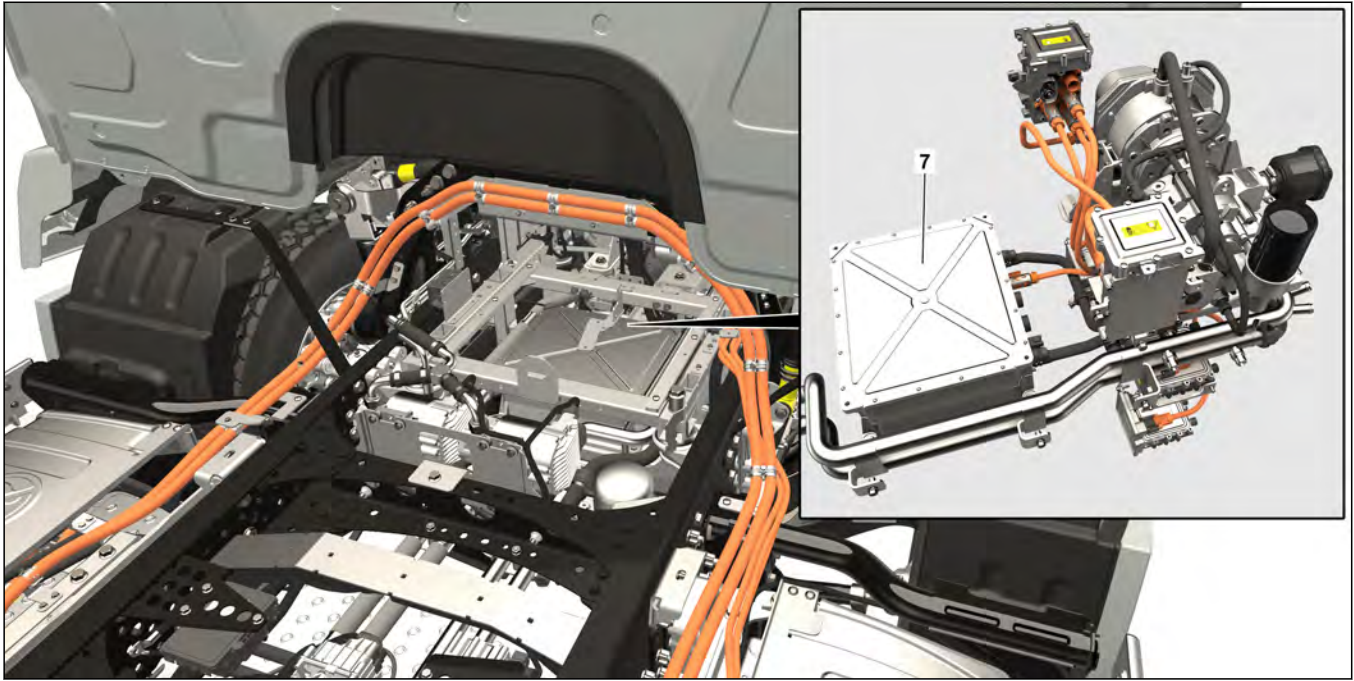
4 DC/AC converter



W08.00-A027-79

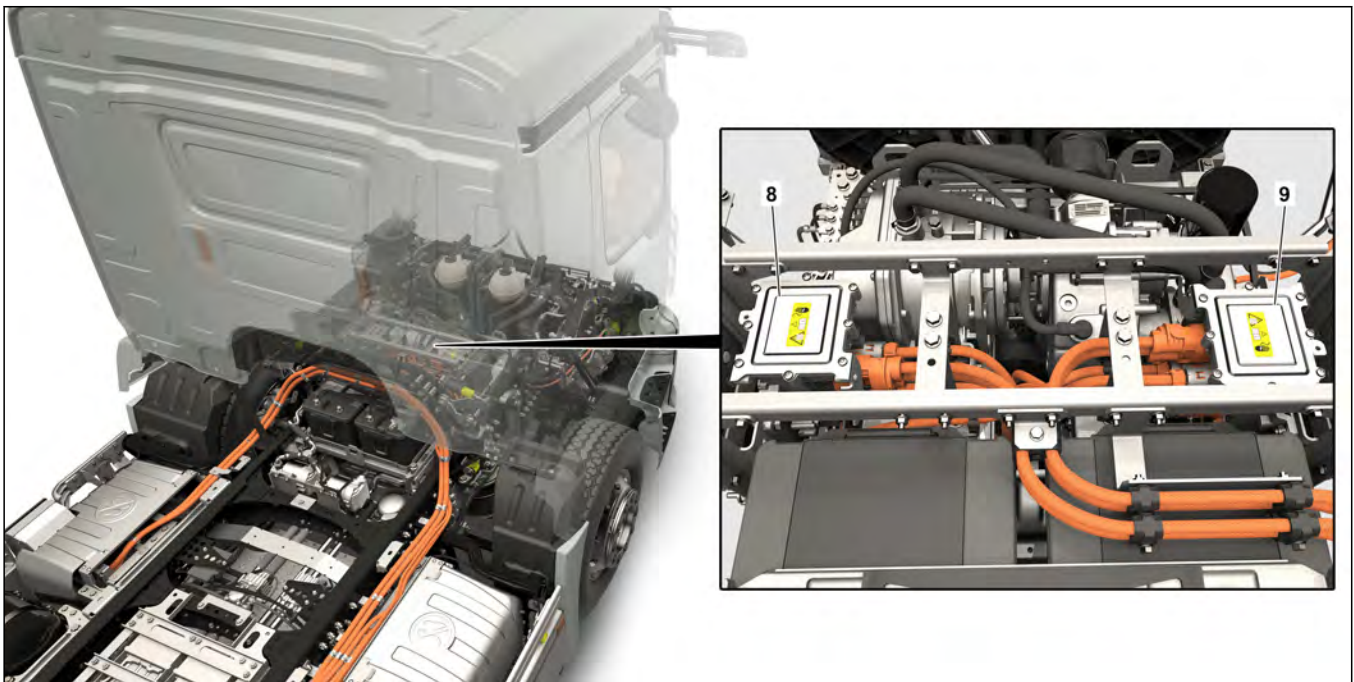
5 Electrical machine 1

6 Electrical machine 2



W08.00-A028-79

7 DC/DC converter



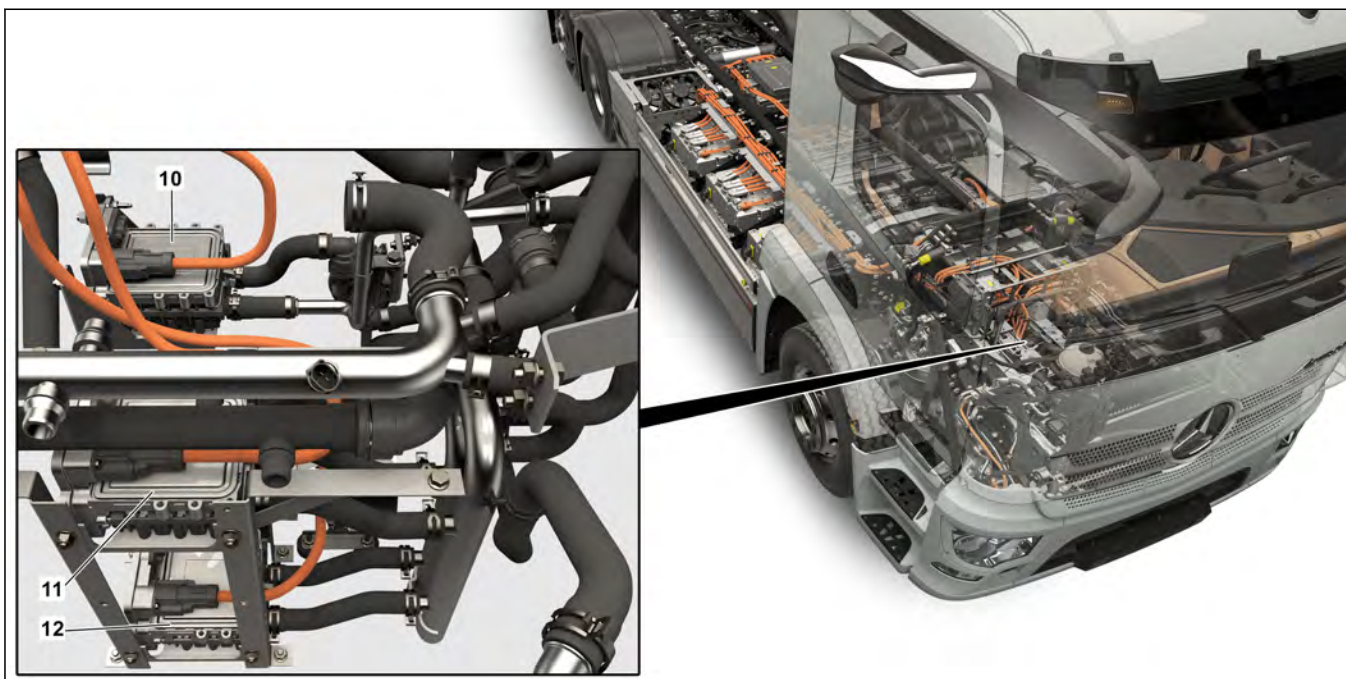
W08.00-A029-79

8 High-voltage power distributor 1

9 High-voltage power distributor 2



# High voltage components, visual check for damage



W08.00-A030-79

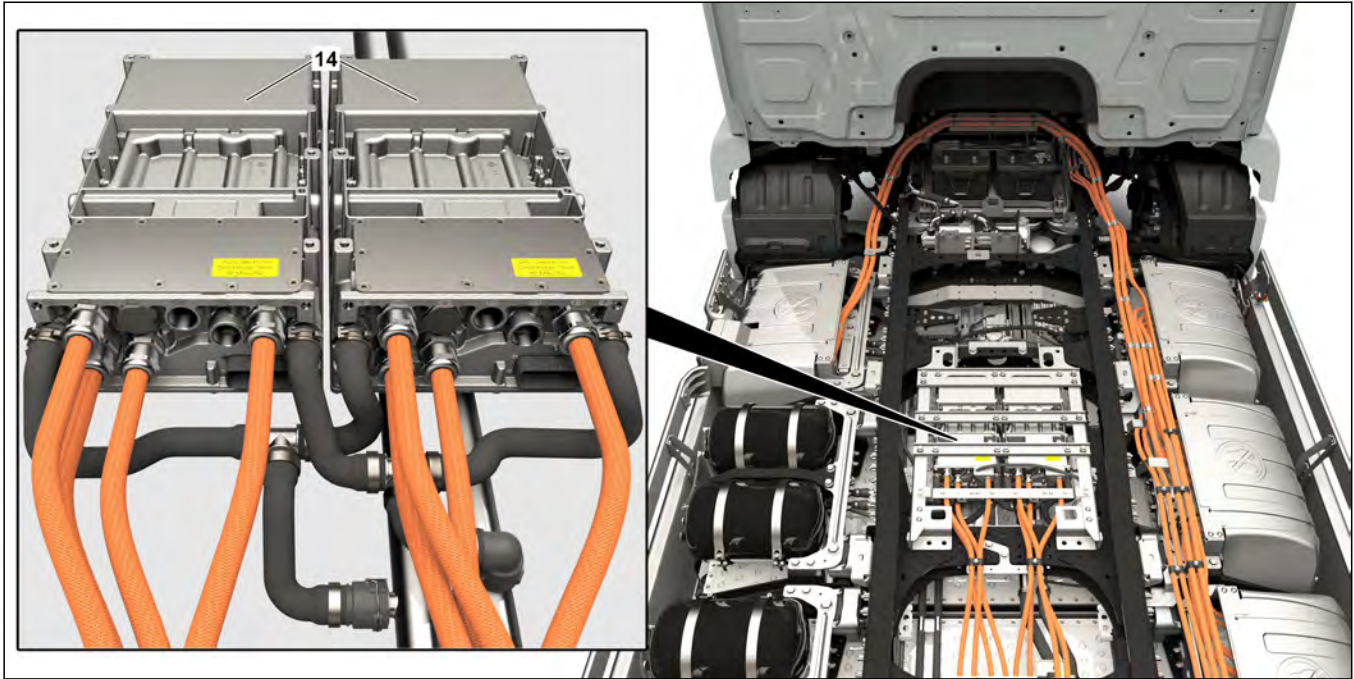
- 10 Driver's cab PTC heater booster
- 11 High-voltage battery 2 PTC heater booster

- 12 High-voltage battery 1 PTC heater booster



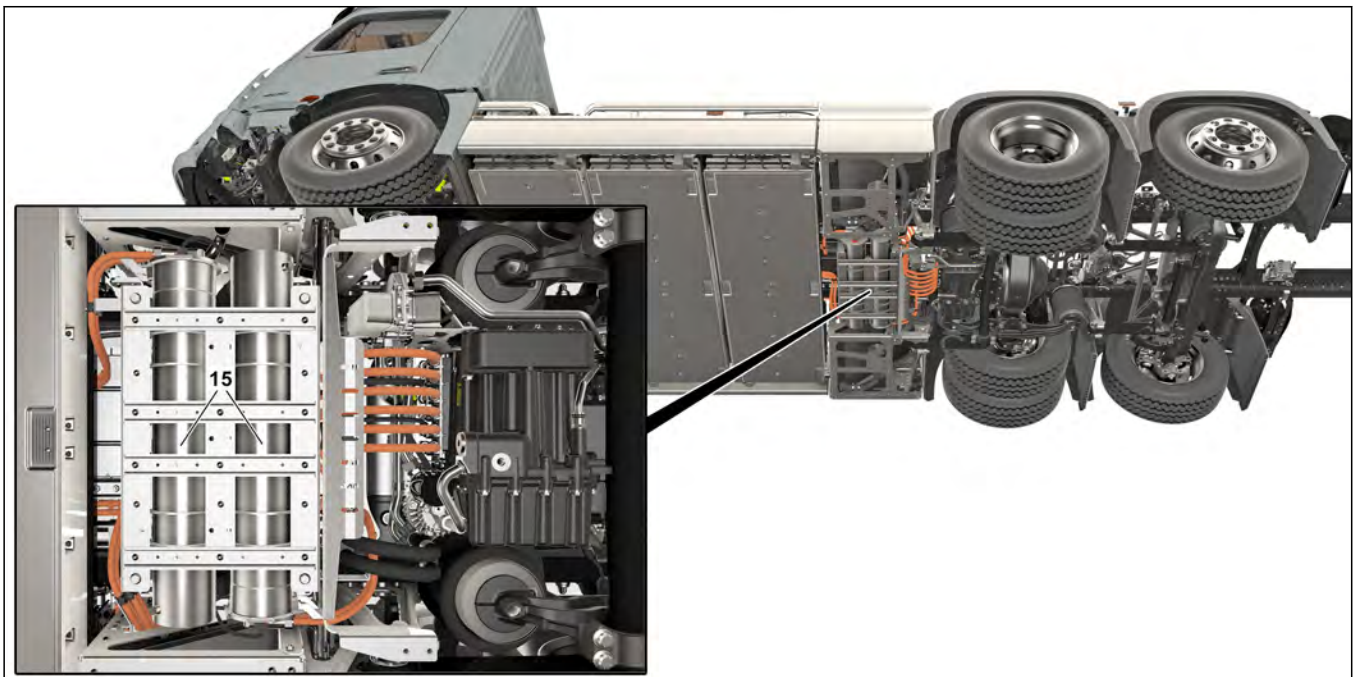
W08.00-A058-79

- 13 Refrigerant compressor



W08.00-A032-79

14 Braking resistor control units



W08.00-A059-79

15 Braking resistors



# Remove voltage from high-voltage on-board electrical system

## Automatic disconnection of high-voltage on-board electrical system

The high-voltage on-board electrical system is automatically disconnected in an accident upon the triggering of a restraint system.



The high-voltage batteries remain electrically charged after the disconnection of the high-voltage on-board electrical system.

## Manual high-voltage disconnect

### Note

Regardless of the used deactivation process, **ALWAYS ASSUME THAT ALL HIGH-VOLTAGE COMPONENTS ARE ENERGIZED!**

Cutting through, pressing and contact with high-voltage components can lead to serious or even fatal injuries.



The corresponding qualification must be available for working on the high-voltage on-board electrical system, and the compliance with the accident prevention regulations is mandatory.

A manual deactivation of the high-voltage on-board electrical system means that the high-voltage batteries are externally de-energized. The following steps are required for this purpose:

- Switch off ignition via start/stop button.
- Store key at a distance of at least 2 m outside the cab.
- Fold up cover at HV main switch (1).
- Press HV main switch (1).
- Secure position of HV main switch (1) by attaching a padlock.



The pressed HV main switch must be secured against reactivation.

For the manual deactivation of the high-voltage on-board electrical system, the vehicle is equipped with a HV main switch in the center of the instrument panel.

1 HV main switch



W08.00-A022-76

By actuating the HV main switch, the power supply of the high-voltage components via terminal 30c is disconnected, the active discharge is thus activated and the voltage drops in approx. 5 seconds to below 60 V.

After the disconnection of terminal 30c, the power supply for actuating the contactors of the high-voltage batteries is also deactivated.

# Remove voltage from high-voltage on-board electrical system

Good accessibility is thus ensured for the driver and for the rescue forces in the case of an accident.

The HV main switch consists of a manual switching contact with position fixation as well as a flap as actuation protection against unintentional actuation.

The high-voltage on-board electrical system can be reactivated after recovery by resetting the HV main switch to its original position so that it engages audibly.

## Rescue separation point

For the disconnection of the high-voltage on-board electrical system after a serious accident, e.g. if the HV main switch is not accessible, there are 2 rescue separation points installed in the cab. Once on the driver's side and once on the front passenger side.

The rescue separation points consist of the terminal 30c line bundle and the interlock line, identified by a corresponding marking.

The rescue separation points are located, in each case, under the corresponding front seat at its outer side.

### 11 Driver's side rescue separation point



W08.00-A018-76



## Remove voltage from high-voltage on-board electrical system

- 12 Front-passenger side rescue separation point



W08.00-A019-76

In the case of a rescue or recovery from the vehicle, the lines for the power disable of the high-voltage on-board electrical system must be cut through.

If the line bundle is cut through, the high-voltage circuit is permanently disconnected. Reactivation is only possible by a specialist workshop.



If necessary, cut through the electric lines on the driver's side or front passenger side at the marked points (1, 2) in order to prevent the electric lines from inadvertently reconnecting.

## Personal protective equipment

Because the high-voltage on-board electrical systems are energy carriers that cannot be fully disconnected, special protective measures are required.

In the case of direct work on high-voltage components and when checking the power disable of the high-voltage on-board electrical system, the wearing of suitable personal protective equipment is mandatory.

For direct work on high-voltage on-board electrical systems, long-sleeved work clothes made from natural fibers (e.g. cotton) must always be worn. Clothing made from polyester or polyamides are not suitable.

In the following, you will find a list for suitable protective equipment.

## Protective gloves

- Checked for work up to 1,000 volt

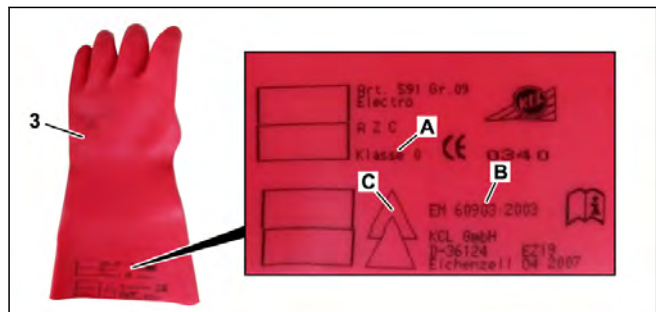
### Identification of high-voltage protective gloves

- 3 Protective glove, in accordance with the standard EN 60903, red color
- A Protection class
- B DIN standard
- C Symbol: Suitable for working under applied voltage

- Made from natural rubber
- Oil- and acid-resistant electrician gloves, as per the standard EN 60903  
Marking A (acids), A+H (acid and oil) or R (acid, oil, ozone)
- Arcing fault protected, as per the standard EN 61482-1
- Length approx. 400 mm



Observe the expiry date!



P54.10-4194-80

## Face protection shield

- Full protection of entire face area and unrestricted visibility
- Splinter-proof, acid- and lye-resistant
- Arcing fault protected, as per the standard EN 61482-1

## Protective clothing

- Reliable protection against sparks, arcs and flames
- Jacket or shirt, long-sleeved, made from flame-retardant protective fabric, arcing fault protected, as per the standard EN 61482-1-2

- Protective gloves in accordance with EN 407 to protect against mechanical damage of electrician gloves and to protect against arcing fault

## Safety shoes

- With toe-protection cap
- Anti-static insole as well as oil- and gasoline-proof outer sole with anti-slip profile, as per the standard EN 345-1

## Shutoff devices in interlock circuit

### Interlock circuit

The battery management system (BMS) monitors, by means of the interlock circuit, the correct connection of electrical connectors in the high-voltage electric circuit with the objective of preventing an electrical hazard due

to inadvertent, improper or other disconnection of a high-voltage connector.

Once an electrical connector is unplugged or a fused cap is opened, the high-voltage on-board electrical system is disconnected.

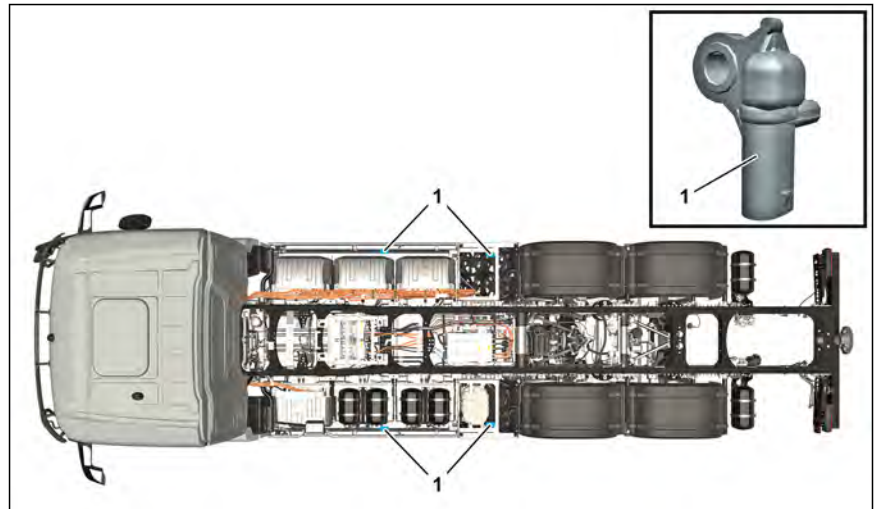
### High voltage disconnection in the case of a crash

A multi-stage protective concept has been developed for automatic HV shutoff in the event of a crash. The high-voltage on-board electrical system is automatically disconnected in an accident upon the triggering of a restraint system. The disconnection is realized both in the event of a crash from the front or the side.

Special sensors are attached at the side to protect, in particular, the high-voltage batteries and the high-voltage components. The high-voltage on-board electrical system is also disconnected in the case of a vehicle rollover.

### Shown on 6x2 vehicle

- 1 Side impact protection sensors



W08.20-A004-75

The interlock circuit and the associated disconnection of the high-voltage on-board electrical system is realized with up to 6 side impact protection sensors (1) on the right and left on the vehicle frame.

The side impact protection sensors reach their switching thresholds at defined acceleration values due to a side impact.

There is also a sensor in the Supplemental Restraint System control unit (SRS) for the detection of a frontal impact.

The on-board electronics then triggers the pyrofuse. As a result, terminal 30c is disconnected, the contactors at the high-voltage batteries are opened and the high-voltage on-board electrical system is disconnected.

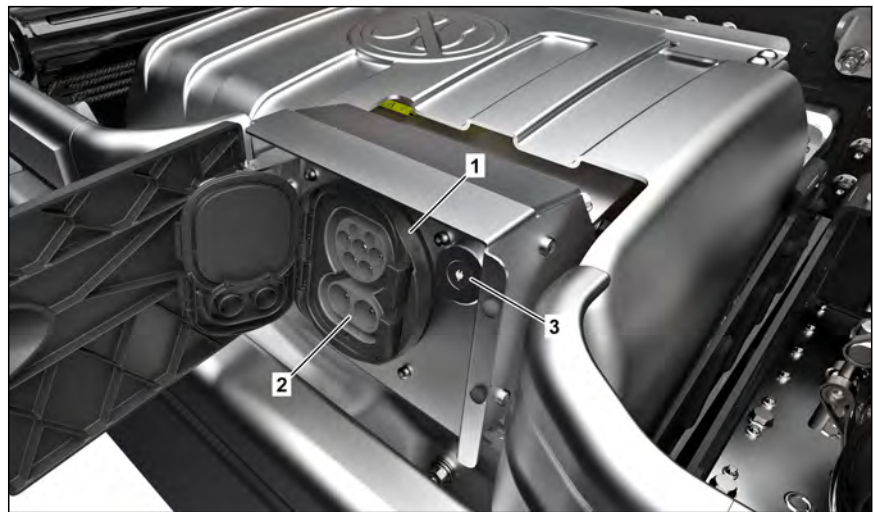
Reactivation is only possible by a specialist workshop.

The high-voltage on-board electrical system may also be active when stationary, particularly in the following situations:

- For parked vehicles and activated air conditioning system
- If the vehicle is being charged at a charging station.

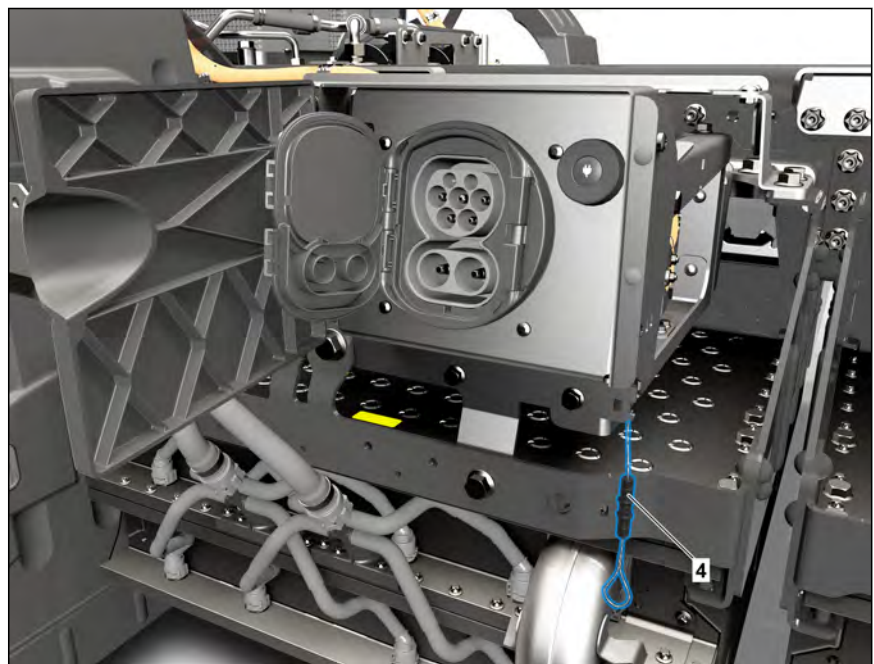
### Vehicle socket

- 1 Vehicle socket
- 2 Direct current connections
- 3 Charging interruption button



W00.00-A086-75

- 4 Emergency release cable



W00.00-A124-76

The following procedure is recommended for towing and rescuing parked vehicles:

- Visually check whether charging cable is plugged in or damaged.
- Unlock vehicle.
- Cancel charging process:
  - Using charging interruption button (3) with a functional 24 V on-board electrical system
  - By pulling the emergency release cable (4) (mechanical release) with a **non-functional** 24 V on-board electrical system
- Remove charging cable.
- Before towing, deactivate high-voltage on-board electrical system using HV main switch and secure against being switched on again. See "Disconnect high-voltage on-board electrical system" chapter on page 23.



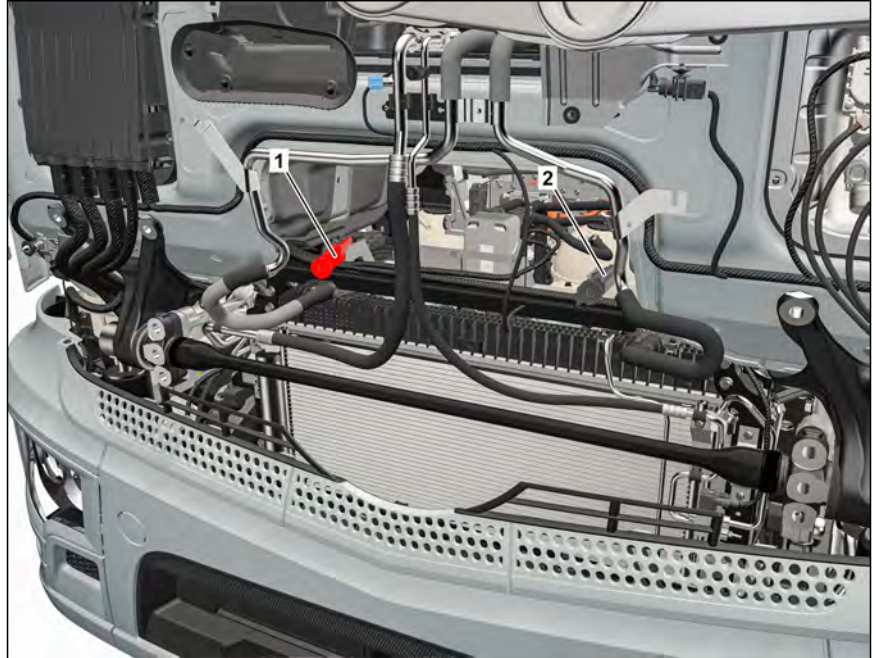
## Securing a vehicle after an accident

Deactivate high-voltage on-board electrical system using HV main switch, see "Disconnect high-voltage on-board electrical system" chapter on page 23.



The pressed HV main switch must be secured so that it cannot be switched on again.

- 1 Positive terminal external charging point
- 2 Negative terminal external charging point

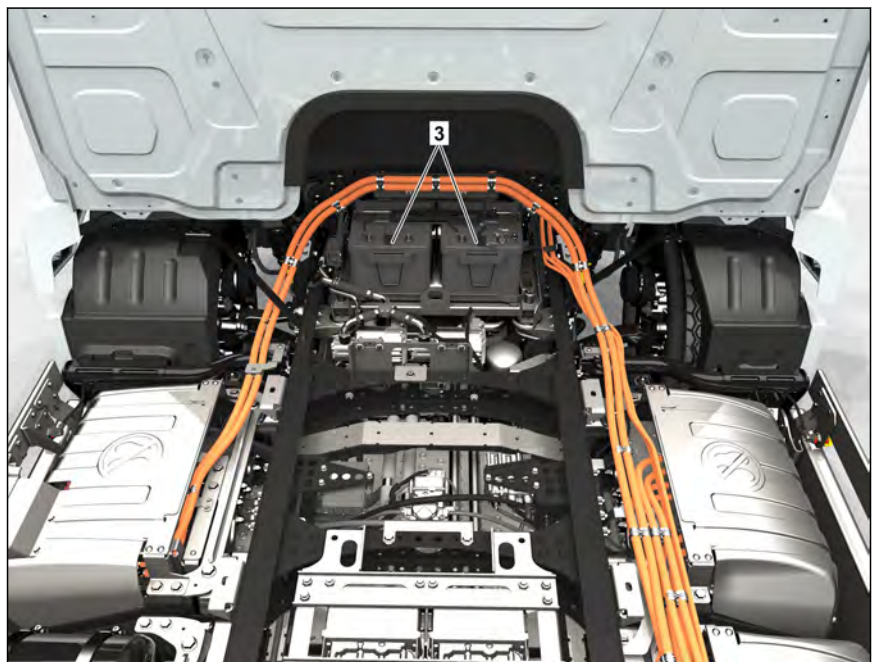


W00.00-A088-76

Connect external charging source via external charging points as described in operator's manual.

Leave external charging cable connected until 24 V on-board electrical system batteries (3) are partially charged. Then switch on high-voltage on-board electrical system.

If the 24 V on-board electrical system batteries (3) are discharged, the contactors in the high-voltage batteries that are supplied via the 24 V on-board electrical system cannot switch.



W00.00-A103-76

## Parking and storing an electric truck

Various measures must be performed to ensure that an electrically driven vehicle is safe to switch off after an accident.



Unauthorized access to high-voltage components must be prevented. Suitable safety measures and shutoff measures must be taken for this.

If the vehicle is brought to a workshop, the responsible specialist personnel must be informed about the measures that have already been carried out. For example, if the high-voltage disconnect device has been operated.

### Storage

Electric vehicles that have been in an accident may also catch fire later. This is why electric vehicles must be parked in a parking space in a cordoned-off area outside

for fire protection reasons. Ensure sufficient distance to other vehicles, buildings, combustible objects and combustible substrates in doing so.



Observe notes from German Social Accident Insurance (DGUV).

It is never recommended that an electric vehicle with a damaged high-voltage on-board electrical system be parked in a closed building. Alternatively, electric vehicles that have been in an accident can be parked in fire protection systems intended for this purpose.

Parked electric vehicles that have been in an accident and whose high-voltage components are directly exposed to the weather must be covered with a waterproof tarp. The vehicle must be marked accordingly.

## Compressed-air system external filling

### Emergency filling of the compressed air system

The compressed-air system can be filled either via the connections on the brake value sensor under the maintenance flap or via the connection (28).



If the compressed-air system is filled via the connections on the brake value sensor or the connection (28), the compressed air is not routed via the compressed-air drier.



Fill compressed-air system with a pressure between 11 and 12.5 bar.

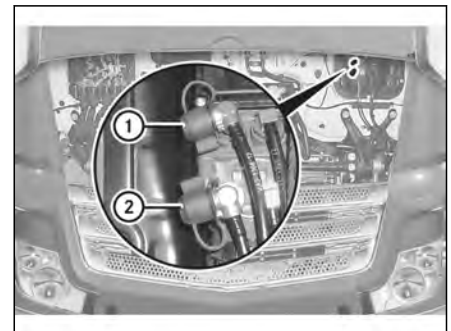


Components of the compressed-air system can be damaged by supply pressure that is too high or air that is dirty or damp from the external compressed-air source.

### Fill compressed-air system via connections on brake value sensor

If vehicle is not started, fill compressed-air system via front filler connections (1, 2) at brake value sensor. The pressure circuit for the air suspension is not filled at the same time.

The procedure is performed in the same way as for conventional diesel-powered trucks.



W43.00-A010-71

### Fill compressed-air system via the connection (28)



W42.60-A091-76

The connection (28) is connected to the electronic air processing unit and is located under the cover on the driver's side.

Swivel cover upward to open it.

If compressed-air system is filled via the connection (28), the pressure circuit for the air suspension is also filled.



## General



General instructions for rescuing vehicles can be found in the towing guide for conventional diesel-powered trucks.

There may not be any high-voltage components in the vicinity of the attachment and application points if a winch has to be used to rescue the vehicle. The same applies when lifting the vehicle with a jack or crane.

A vehicle with electric drive may only be moved at **walking pace** when the vehicle is being rescued from the danger zone. Where possible, the ignition should be switched on and the neutral gear should be engaged.

Once the vehicle has exited the danger zone, the drive shafts must be removed if the vehicle will then be towed away.

After rescuing, secure vehicle to prevent it from rolling away. To do so, put vehicle in park position if possible. Otherwise use chocks.

### Recovery from water

Deactivate high-voltage on-board electrical system and airbags as soon as possible when rescuing a vehicle with electric drive that is completely or partially under water. The 12 V batteries must also be disconnected.

### Safety components

When rescuing the vehicle, the high-voltage components must be checked for damage, see corresponding chapter, page 17.

## Tow-away protection/towing eye

### Towing at towing eye

The drive shafts must be removed from the driven rear axle for towing at the towing eye. When doing so, ensure that sliding sleeve is fixed in place at differential.

If the drive shafts are not removed, the vehicle being **rescued** may only be towed out of the danger zone for a short distance and at walking pace. Where possible, the ignition should be switched on and the neutral gear should be engaged. Once the vehicle has exited the danger zone, the drive shafts must be removed.

Set electric parking brake to workshop mode. To do so, press the electronic parking brake button, hold it down and switch off the vehicle. Workshop mode of the electronic parking brake is activated.

### Note

The drive shafts must always be removed before towing.

Otherwise, the driven electric motors may cause induction currents and thus pose an electrical hazard. The electric motors may also be damaged.

### i

The drive shafts are removed the same way that they are removed in conventional diesel-powered trucks.

- 1 Cap
- 2 Towing eye



W00.60-A016-76

### Towing eye

The towing eye (2) is part of the vehicle tool kit and is screwed into the front end of the frame behind the cover cap (1). Ensure that towing eye (2) is fully screwed in.

If thread is dirty, clean it before screwing in towing eye (2). If necessary, recut thread using a M45x3 tap.

- Remove cover cap (1) from front crossmember.
- Completely screw towing eye (2) into front crossmember and move to vertical position.
- Pull out safety pin and remove bolt upward.
- Connect tow bar to towing eye (2) and towing vehicle.
- Insert bolt and secure with safety pin.



General instructions for towing can be found in the towing guide for conventional diesel-powered trucks.

### Important safety information

#### Note

Observe angle of approach/departure and use suitable loading equipment. Otherwise the batteries may be damaged.



Deactivate high-voltage on-board electrical system before loading vehicle.



When loading onto a low loader, it should be noted that the angle of approach/departure in the eActros is approximately 1 to 2° smaller than in diesel-powered vehicles.



When working with a crane or winch, ensure that no high-voltage components are damaged. When lifting the vehicle, ensure that the high-voltage batteries on the underbody are not damaged.

### Towing in raised position

The following measures must be performed:

- Deactivate high-voltage on-board electrical system using HV main switch, see "Disconnect high-voltage on-board electrical system" chapter on page 23.
- Towing a vehicle on its own axle: Do not exceed a speed of **60 km/h** when doing so.

The vehicle can be towed away raised as follows:

- Raised at rear:
  - Secure steering wheel to do so.
- Raised at front:
  - Remove drive shafts from driven rear axle to do so.
  - When doing so, ensure that sliding sleeve is fixed in place at differential.
  - Set electric parking brake to workshop mode.

The vehicle can be raised at the **front** as follows:

- At towing eyes
  - When raising by the towing eyes, it may be necessary to tie up the front axle.
  - When cornering, the angle of the telescopic arm must be taken into account due to the roll angle of the lifting yoke.
  - Laden vehicles that are raised at the towing eyes may only be towed at walking pace and without dynamic shock loads.
- By the wheels
  - Depending on, for example, the overall height of the telescopic arm.
- At front axle

## Abbreviations

- **ABA**  
Active Brake Assist (ABA)
- **ABS**  
Antilock brake system
- **AC**  
Alternating current (AC)
- **ASR**  
Acceleration slip regulation
- **BMS**  
Battery management system
- **CAN**  
Controller Area Network
- **DAB**  
Digital radio (DAB)
- **DC**  
Direct current (DC)
- **DGUV**  
German Statutory Accident Insurance Association
- **EAPU**  
Electronic Air-Processing Unit
- **ECE**  
Economic Commission for Europe (ECE)
- **ESP®**  
Electronic Stability Program
- **GGVSEB**  
German regulation concerning the transport of dangerous goods by road, rail and inland waterways
- **GPS**  
Global Positioning System (GPS)
- **HV**  
High voltage
- **LED**  
Light-emitting diode
- **LIN**  
Local Interconnect Network
- **LV**  
Low voltage
- **MOST**  
Media Oriented System Transport
- **NFC**  
Near-Field Communication (NFC)
- **LT**  
Low-temperature circuit
- **PDU**  
Power Distribution Unit (power distributor)
- **PTC**  
Positive temperature coefficient
- **SA**  
Special equipment
- **SOC**  
State of charge (SOC)
- **WIS**  
Workshop Information System

**⚠ Danger**

Risk of death from voltage when towing vehicles with electric drive

Do not tow the vehicle via the drive axle. Tow the vehicle with a suitable vehicle.

**Potential risks**

In vehicles with electric drive, a voltage can be generated in the high-voltage on-board electrical system if the vehicle is towed via the drive axle.

**The flow of electric current through the body** can lead to involuntary muscle contractions, heart rhythm disturbances, fibrillation of the heart, cardiac arrest, respiratory arrest, burns, or other cellular damage.

The severity of the injury depends on the current strength, current type, the frequency of the current, the exposure time, and the route through the human body.

**Risk of death**

Risk of death due to an alternating voltage (AC) of  $U \geq 30 \text{ V}$  and/or a direct voltage (DC) of  $U \geq 60 \text{ V}$ .

**Risk of injury/burn injuries due to electric arcs**

Detaching battery clamps or connector couplings under load or a short circuit can cause electric arcs. Electrical arcing can result in first-degree to fourth-degree burns, flash burns to the eyes caused by strong UV light (similar to that caused by welding), blast trauma and injuries from moving parts.

**Safety precautions/instructions**

- The removal of the vehicle from the immediate danger zone **at walking pace** is always permitted as a matter of principle.
- Tow the vehicle with a recovery vehicle (cars) or a low loader (trucks).
- Take into account cars with all-wheel drive.
- Before towing, the high-voltage on-board electrical system must be deactivated (e.g. switch off ignition, use available high-voltage disconnect device if available, disconnect 12 V and/or 24 V batteries).
- During the handover to the authorities/recovery company, information on the vehicle drive type and

the fire-fighting measures carried out (e.g. disconnection of the high-voltage on-board electrical system) must be provided. In particular, a possible risk due to damaged high-voltage components or high-voltage components that have come into contact with water (e.g. electric shock or fire risk, including after a delay, due to the high voltage energy storage unit) must be pointed out.



Additional information on towing can be found in the vehicle operator's manual.

# Risk of electric shock in the event of a vehicle fire

## Danger

Risk of electric shock in the event of a vehicle fire

Comply with safe distances during fire fighting. Carry out fire fighting with personal protective equipment and self-contained respiratory protection. Avoid contact with damaged areas. Cover damaged parts with a suitable cover.

The following protection measures generally mean that there is no danger to personnel from an electric shock:

- The high-voltage on-board electrical system is designed such that it is protected against contact.
- The high-voltage on-board electrical system has complete protective insulation and does not have a

conductive connection to the body (galvanic separation).

- In the event of an accident where at least one of the restraint systems is deployed, the high-voltage on-board electrical system is disconnected.

### Potential risks

In the event of a vehicle fire, high-voltage components and high-voltage lines can be severely damaged. Due to the wide range of possible damage scenarios, a direct display of the absence of voltage after an accident is not possible. The safety technology of the vehicle only intervenes if the hazardous incident is detected by the on-board electronics and it can still be technically controlled after an accident. It is not possible for the rescue services to evaluate the severity of the damage to the high-voltage on-board electrical system and thus any associated restricted effectiveness of the safety systems.

**The flow of electric current through the body** can lead to involuntary muscle contractions, heart rhythm disturbances, fibrillation of the heart, cardiac arrest, respiratory arrest, burns, or other cellular damage.

The severity of the injury depends on the current strength, current type, the frequency of the current, the exposure time, and the route through the human body.

### Risk of death

Risk of death due to an alternating voltage (AC) of  $U \geq 30 \text{ V}$  and/or a direct voltage (DC) of  $U \geq 60 \text{ V}$ .

### Risk of injury/burn injuries due to electric arcs

Detaching battery clamps or connector couplings under load or a short circuit can cause electric arcs. Electrical

arcing can result in first-degree to fourth-degree burns, flash burns to the eyes caused by strong UV light (similar to that caused by welding), blast trauma and injuries from moving parts.

### Safety precautions/instructions

- Due to the presence of electrical energy, safe distances in accordance with DIN VDE 0132 (in Germany) must be complied with during fire fighting.
- Carry out fire fighting with personal protective equipment and self-contained respiratory protection.
- Avoid contact with damaged areas (e.g. damaged or open component parts, damaged or detached lines). Exercise care and caution when using rescue equipment.
- In the event of unavoidable rescue measures in areas with damaged high-voltage components, high-voltage lines, and high-voltage batteries, cover these with an electrically insulating, flexible cover suitable for this purpose (as per IEC 61112).
- Where possible, manually deactivate the high-voltage on-board electrical system of the vehicle.

**⚠ Danger**

Risk of death when working on component parts and systems with  $U \geq 30$  V alternating voltage (AC) or  $U \geq 60$  V direct voltage (DC)

Do not touch damaged or defective live component parts and lines or non-insulated electrical connections and lines.

**Voltage**

Alternating voltages (AC) of  $U \geq 30$  V and/or direct voltages (DC) of  $U \geq 60$  V occur on the following systems and component parts in vehicles and bodies:

- On the high-voltage on-board electrical system and high-voltage component parts of HYBRID vehicles, electric vehicles, and fuel cell vehicles
- On the lithium-ion battery of HYBRID vehicles, electric vehicles, and fuel cell vehicles
- On fuel cells
- On solenoid and piezo injectors and their control units and supply lines of gasoline and diesel engines
- On spark plugs, ignition coils, their control units, and supply lines of the ignition system on gasoline and natural gas engines
- On electrical ballasts, xenon bulbs, and their supply lines of xenon headlamps
- On the MAGIC SKY CONTROL, DC/AC converters, and their supply lines
- On voltage converters from 12 or 24 V to 230 or 110 V
- On spark generators and electrodes, and their supply lines of stationary heaters
- On systems that are supplied with alternating voltages (AC) of  $U \geq 30$  V and/or direct voltages (DC) of  $U \geq 60$  V via engine-driven alternators or via external connections.

- On DC generators with a defective rectifier diode.
- On illuminated door sill moldings, DC/AC converters, and their supply lines

**Potential risks caused by alternating voltages (AC) of  $U \geq 30$  V and/or direct voltages (DC) of  $U \geq 60$  V**

**The flow of electric current through the body** can lead to involuntary muscle contractions, heart rhythm disturbances, fibrillation of the heart, cardiac arrest, respiratory arrest, burns, or other cellular damage. The severity of the injury depends on the current strength, current type, the frequency of the current, the exposure time, and the route through the human body.

**Electric arcing** can lead first-degree to fourth-degree burns, flash burns to the eyes because of the strong UV light (similar to that caused by welding), blast trauma and injury from moving parts.

**Secondary accidents** occur as a result of startle responses that are caused by contact with voltages or electric arcs. Secondary accidents include, for example, falling from a raised workstation or a person's head making contact with an engine hood.

**Each of these harmful effects can cause serious human injury or death.**

Effects can occur up to 24 hours after the time of the accident. Therefore, it is essential to have a medical examination immediately after an accident involving alternating voltages (AC) of  $U \geq 30$  V and/or direct voltages (DC) of  $U \geq 60$  V.

**Safety precautions/instructions**

- People who have electronic implants (e.g. cardiac pacemakers) must not perform work on component parts and systems with alternating voltages (AC) of  $U \geq 30$  V and/or direct voltages (DC) of  $U \geq 60$  V.
- For work on component parts and systems with alternating voltages (AC) of  $U \geq 30$  and/or direct voltages (DC) of  $U \geq 60$  V, the necessary safety precautions according to the country-specific directives and legislation must be taken with the corresponding qualification measures/briefings in accordance with the respective documentation concerning the topic in the WIS, Xentry TIPS, EVA, and, if applicable, country-specific sources before starting work and during work.

Information as to which safety precautions for work on component parts and systems with alternating

voltages (AC) of  $U \geq 30$  and/or direct voltages (DC) of  $U \geq 60$  V or which personal protective equipment (PPE) is required can be found in the respective documentation concerning the topic in the WIS, Xentry TIPS, EVA and, if applicable, country-specific sources before starting work.

- Only tools that have been tested and have the corresponding approval may be used for work on component parts and systems with alternating voltages (AC) of  $U \geq 30$  V and/or direct voltages (DC) of  $U \geq 60$  V.
- No damaged or defective live component parts and lines and no non-insulated electrical connections and lines may be installed on component parts and systems with alternating voltages (AC) of  $U \geq 30$  V and/or direct voltages (DC) of  $U \geq 60$  V.



## Fire hazard due to short circuit in a vehicle partially or c...

### Warning

Fire hazard due to short circuit in a vehicle partially or completely submerged in water

Ensure that the ignition is off. If possible, disconnect all batteries.

#### Potential risks

After a certain time, components corrode due to an electrochemical reaction with water, e.g. electric lines and printed circuit boards. Under certain circumstances, a short circuit can cause a vehicle fire.

#### Risk of burn injuries

The risk of burn injuries exists in the event of a vehicle fire due to a short circuit.

#### Safety precautions/instructions

- Ensure that the ignition is off.
- Avoid switching on the ignition as long as the vehicle is partially or fully immersed in water.
- If possible, disconnect all batteries.

**⚠ Danger**

Risk of injury from sharp-edged cutting areas when cutting open or through vehicle parts

Cover sharp-edged areas with protective covers or pillar padding. Use personal protective equipment.

**Potential risks**

cause **serious** or **life-threatening** injuries to vehicle occupants or the rescue services.

**Risk of injury**

Sharp-edged areas can occur when vehicle parts are cut open or cut through with rescue equipment. These can

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**Safety precautions/instructions**

- Cover sharp-edged areas with suitable protective covers or pillar padding.

- Use personal protective equipment.

Area for notes

