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Section on Prevention in Transportation

BG Verkehr
Verkehrswirtschaft
Post-Logistik
Telekommunikation

Purchasing guide for company vehicles

Motor vehicles and trailers for the transport of goods in the vehicle categories N2, N3, O

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Preface

For you as well as for us at the German Social Accident Insurance Institution for Commercial Transport, Postal Logistics and Telecommunication (BG Verkehr), the occupational health and safety of your employees is the main focus – also in regard to safety in and with motor vehicles. For without drivers, logistics come to a standstill. Costs of downtime, driver replacement, disruptions in logistics chains, organisation etc. as a result of accidents at work or health-related absences are easily offset against the additional cost of a safe commercial vehicle.

It is not easy for you, as the person responsible for purchasing vehicles – whether you manage a company or a vehicle fleet or are responsible for the Purchasing Division – to select the ideal vehicle from the enormous range on offer. In addition to the economic aspects, the general fiscal conditions and environmental requirements which need to be considered, we would particularly like to draw your attention to the issues of occupational safety and health protection with the help of this guide – including valuable tips and assistance in making decisions.

From the point of view of the BG Verkehr, the following accident hotspots exist on and with vehicles:

- traffic accidents,
- falling from vehicles while climbing in or out,
- falling from platforms or falling during load securing tasks,
- body parts being crushed by mobile vehicle bodies,
- injuries caused by unsecured cargo.

Everyone has surely experienced or witnessed one of these incidents. And what if this happens several hundred kilometres away from the company? So many commercial vehicles have proven to be a bad investment because they were solely ordered based on supposed economical aspects. This is why it is often recommended to include the drivers in the planning because these practitioners are in the best position to determine what is important. To avoid your employees having to constantly readjust if vehicles are frequently switched among employees, your vehicle fleet should also have uniform features.

Some of the vehicle features mentioned in this brochure are eligible. Get information on this at "De-minimis" – aid programme of the Federal Office for Goods Transport at www.bag.bund.de.

Use the **attached procurement checklist** starting on page 54 as a reminder for the discussion with the supplier or when compiling the specifications. All procurement aspects relevant to occupational health and safety included in the checklist are explained in more detail in this brochure.

If you have any further questions, your labour inspector at the BG Verkehr will be happy to help you.

Contents

1 Legal basis for the operational safety of vehicles

Operational safety consists of road and occupational safety. Requirements pertaining to traffic laws as well as occupational safety and health protection must be taken into account in the procurement and operation of vehicles.

1.1 Risk assessment for commercial vehicles

Vehicles are work equipment for which you, as the employer, must compile a risk assessment. This process already starts **prior** to purchasing. In particular, the suitability of the vehicles for the planned use, operations and work plan are key aspects. Only qualified individuals are permitted to conduct a risk assessment. If you do not have the relevant qualification, get advice from a specialist, e.g. your occupational safety and health professional.

The risk assessment provides you with an overview of the measures required to eliminate the risks to the life and health of your employees and yourself as far as possible or to keep further risk potential as low as possible. The primary objective is to ensure the safe operation of the vehicles.

Operational safety is the sum of road and occupational safety. Just like the requirements defined by traffic laws are, among other things, described in the Road Traffic Licensing Regulations, occupational safety and health protection requirements are summarized in the accident prevention regulations as well as the national occupational health and safety policy. In addition to the aforementioned provisions, please pay particular attention to the accident prevention regulation “Vehicles” when procuring vehicles.

Workplace road

1.2 Traffic laws and regulations

Vehicles being used on public roads are subject to traffic laws and regulations – irrespective of whether they are being used for private, business or commercial purposes. The objective is to operate these vehicles safely on public roads. Among other things, the following is regulated:

- the technical requirements and registration,
- the equipment required for safe operation,
- the type and extent of inspections.

If you, as the vehicle owner, make vehicles available to your employees, you must observe and comply with the obligations resulting from traffic laws and regulations, even if you are not the one driving.

It is recommended, especially in the case of purchasing used vehicles, to record compliance with traffic laws and regulations in the sales agreement, cf. **Chapter 5 Order Placement.**

1.3 Occupational safety and health protection regulations

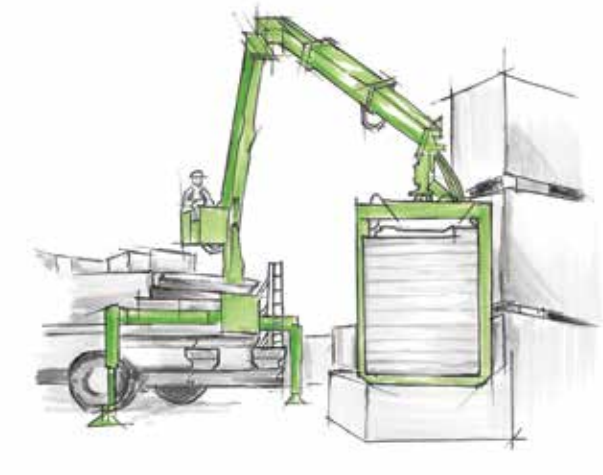
We do not only use the help of vehicles to transport paywork from A to B. Many other jobs are often conducted on or with them. Even if your drivers spend most of their working hours inside the vehicle, it is still the case, that many accidents happen while conducting vehicle-related tasks, e.g.:

- tripping, slipping, falling as well as falling from work stations and platforms while loading or unloading,
- slipping and falling while climbing into and out of the cab,
- being hit by falling vehicle parts, e.g. support slats or unsecured load.

Consequently, it is important to observe the necessary occupational safety in and on vehicles as well.

The area of occupational safety of vehicles is not subject to official authorisation processes. It is the manufacturers' responsibility to ensure the constructional requirements resulting from occupational health and safety. Therefore, inform your supplier in advance of the aspects of occupational safety important to you and find out whether the vehicle is suitable for your intended use.

When purchasing used vehicles, make sure that these comply with the current safety standards and pay particular attention to additional expansions and alterations or changes to the vehicle made by the previous owner.



Vehicle body loader crane

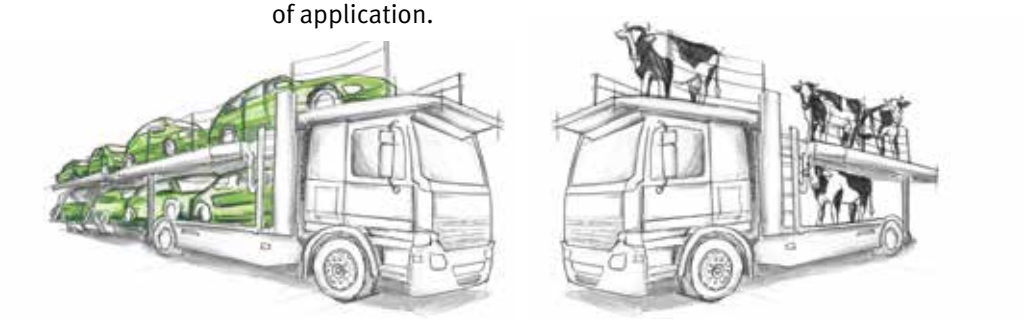
Mechanically powered vehicle bodies, such as tipping bodies, platform lifts, loader cranes, are subject to the Machine Ordinance (9. ProdSV - Product Safety Act) and must comply with Appendix I of the Machinery Directive 2006/42/EC. This means that the manufacturer must provide these bodies with a CE mark and must also supply an EC Declaration of Conformity. Please make sure that your supplier provides you with all documents required, e.g. EC Declaration of Conformity and instruction manual. Particularly the instruction manual is a significant source of information for you in compiling the risk assessment, cf. **Chapter 1.1 Risk Assessment for Commercial Vehicles.**

Vehicles which are only built for in-house use, are also fully subject to the Machine Ordinance (9. ProdSV - Product Safety Act).

In the sales agreements, include that the vehicles and vehicle bodies to be delivered must comply with the occupational safety and heath protection regulations. You can find a standard wording in Chapter 5 Order Placement.

1.4 Intended use

The manufacturer specifies the intended purpose for their vehicles. Everyone knows that gravel cannot be transported using a tank vehicle or that a vehicle transporter would not suffice for transporting livestock. Occupational safety and health protection requirements can also vary depending on the area of application.



Select a suitable vehicle!

Aspects relevant to vehicle suitability:

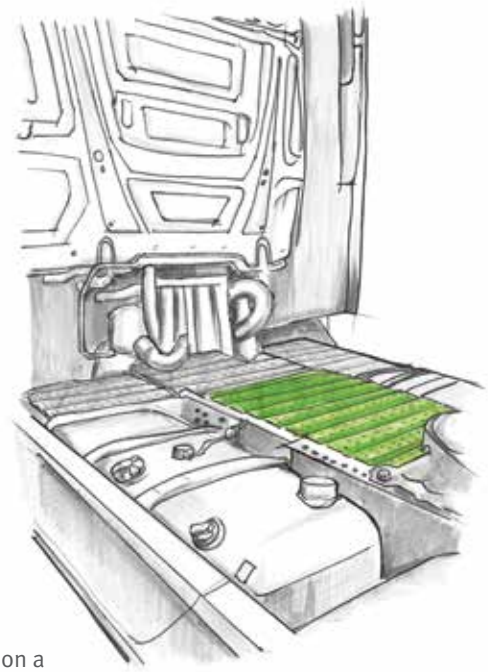
- type, characteristics, weight, position of centre of gravity and dimensions of the load to be transported,
- sufficient options of securing the load,
- type and weight of the vehicle, which is combined or coupled,
- intended loading and unloading method, e.g.
  - driving forklifts on/in the vehicles,
  - control of load status for dump trucks,
  - individuals needing to spend time on the vehicle body,
- number of individuals travelling in the vehicle,
- staying in the vehicle during breaks,
- areas driven to, e.g. construction sites,
- environmental conditions, e.g. hot and/or cold regions.

1.5 Combination with other vehicles

To ensure **a road safe** combination of lorry and trailer or semi-trailer towing tractor and semi-trailer, please take the following criteria into consideration:

- required imposed load on the tow ball, vertical mass, king pin load, vertical height of the fifth wheel coupling,
- maximum permissible length and height of the pull,
- appropriate size of trailer coupling and drawbar eye,
- position of the drawbar and installation height of the coupling (in a coupled state, the drawbar eye must be horizontal on a level surface, i.e. it cannot have a height deviation of more than ± 3°.)

From an **occupational health and safety** point of view, you should make sure, above all, that no additional sources of danger are created by combining the towing vehicle and trailer. You can prevent the risk of tripping which results from stepping over connection lines, by installing steps on the same side. You can eliminate points at which there is a risk of something falling down by means of additional platforms, to safely cross over the danger zone, e.g. for loading work.



Additional platforms on a semi-trailer towing tractor

2 Road safety

Traffic on public roads is getting denser every day and requires a high degree of concentration and foresight. The basic risk of a traffic accident is significantly reduced by providing technical aids.

2.1 Driver assistance systems

Modern driver assistance systems support your drivers in executing their driving tasks. They are a considerable contribution to preventing accidents and reducing the outcome of accidents. You must decide which driver assistance systems are suitable and necessary for your vehicles according to the respectively intended use.

The **Electronic Stability Control** has already been mandatory for all newly registered vehicles since November 2014.

Turning Assistant

The **Emergency Brake Assist** and the **Lane Keeping Assist System** have been required by law since November 2015 in newly registered commercial vehicles in the vehicle categories N2 and N3. This does not apply to semi-trailer towing tractors in category N2 with a maximum weight of more than 3.5 t to a maximum of 8 t. When purchasing used vehicles, you should make sure that these systems are already installed or can be retrofitted. When purchasing new vehicles, take the latest state of technology and the current legal requirements into consideration and get detailed information pertaining to these issues. Depending on the manufacturer, there can be additional assistance systems available, which you have the option of considering:

Active Roll Stabilisation

The **Active Roll Stabilisation System** provides for shorter braking distances and a more spontaneous reaction of the steering mechanism. The vehicle is easy to handle – even in dangerous situations. The Active Roll Stabilisation System is a plus in terms of vehicle stability and cornering abilities for lorries with changing loads and centres of gravity.

Adaptive Cruise Control

The **Adaptive Cruise Control** monitors the distance to the traffic ahead. If the distance falls below a critical minimum value, the system warns and automatically adjusts speed and distance by controlling the engine and braking.

Attention Assist

The **Attention Assist** recognizes the driver's signs of fatigue early on and gives a warning of possible drowsiness or increasing inattentiveness. Among other things, it evaluates steering wheel movement, activation of the indicators and pedals as well as specific operational actions.

Camera Monitor System

The **Camera Monitor System (CMS)** supports your drivers when reversing as well as helping them to see poorly visible areas of the vehicle. In connection with a reversing assistant system, it improves detecting people and objects using live images. You can find out which quality features a good CMS should have in **Chapter 3.1 Suitability of the Cab**.

Light Assist

The **Light Assist** continuously adapts the light range of the headlights between low beam and high beam to the surroundings, so that your employees always have good visibility without blinding other traffic participants. **Adaptive Headlights** additionally provide optimum illumination when cornering by turning the low beams depending on the radius of the curve.

Reversing Assistant

Reversing Assistant Systems (RAS) give a visual and acoustic indication of people and objects when reversing. Various systems can initiate automatic braking.

Turning Assistant

The **Turning Assistant** uses sensors to scan poorly visible areas (“blind spots”) when making right turns. A warning signal sounds if there is any danger of colliding with other traffic participants

Tyre Pressure

The **Tyre Pressure Monitoring System** continuously monitors tyre pressure and gives a warning in the event of a decrease in pressure. Ideal tyre pressure saves fuel and reduces tyre wear. In contrast, air pressure which is too low is the cause of more than two thirds of all tyre blowouts/flat tyres. This system is optionally available or can be retrofitted in the area of commercial vehicles.

Some manufacturers offer side airbags as a passive safety system.

2.2 Wheels and chocks

The contact surface between the road and wheel is approximately the size of a postcard. Therefore, tyre quality has correspondingly significant importance to **road safety**. You should pay attention to the condition of the wheels, particularly when purchasing used vehicles, e.g. to tread depth, damages, age, etc. There are other aspects you should observe regarding the **operational safety**:

Tyre selection

Discounters try to lure customers with appealing prices. However, tests have shown that vehicles with low-grade tyres usually require a considerably longer braking distance than brand tyres. As a result, the advantages of an Emergency Brake Assistant, for instance, can be rapidly negated. Therefore, please get information about test results of independent organisations when purchasing tyres.

Winter tyres

Thanks to their special rubber compound and profile, winter tyres are designed for driving on cold and damp, snow-covered as well as icy roads. Ideal power transmission between vehicle and road ensures directional stability and shorter braking distances. In accordance with the weather, change your vehicles' tyres accordingly to tyres with an alpine symbol, which is a certified seal of quality for good winter performance. Furthermore, pay attention to additional specifications from the vehicle or tyre manufacturer, e.g. regarding the use of snow chains.

Alpine symbol

When purchasing used vehicles, pay particular attention that winter tyres have a tread depth of more than 4 mm for optimum road grip.

Safe storage of spare wheels

If they are on board the vehicle, spare wheels must be able to be easily and safely removed, mounted and fastened. Therefore, drivers should not be underneath the raised wheel during removal or mounting.

Spare wheels must be stored with sufficient clearances, so that there is no danger of fingers getting cut or squashed during removal. A lifting device for spare wheels assists your drivers during the removal.

Number and accessibility of wheel chocks

In accordance with § 41 of the Road Traffic Licensing Regulations, vehicles must be equipped with wheel chocks depending on the weight and number of axles. The chocks must be mounted in the area of the rear axle, where they are easily and safely accessible.

Equip four-wheel trailers – preferably all vehicles – with two wheel chocks. This ensures that your drivers can secure the vehicle in both directions in the case of uncertain downhill conditions.

2.3 Information and communication systems

Adjusting the navigation systems and making phone calls while driving distracts drivers and consequently, should be avoided at all times. We therefore recommend that you always review the necessity of information and communication systems when purchasing vehicles.

From our point of view, factory-made solutions are an advantage in terms of safety.

General safety requirements

Screen and tablet solutions must be installed in the vehicle securely as well as ergonomically. There must be a voice recognition and read-aloud function if data needs to be entered while driving. Pay attention to rounded edges on the devices and their mounts (edge radii of at least 2.5 mm).

A simple, intuitive operability facilitates easy use. Sufficiently large keys or control panels which provide visual or acoustic feedback have proven to be effective. Steering wheel controls for telephone activation must be clearly visible and ergonomically designed.

Pay attention to monitors being positioned without glare, as well as having a low-reflection screen, a sufficiently sized screen and character size (preferably variable), sufficient brightness and a high-contrast display.

Information and communication systems must not disrupt onboard electronics.

Mobile devices

There must be hands-free equipment or a Bluetooth connection when using mobile phones.

Mobile devices must be securely attached and protected against unintentional loosening. The holders should be positioned so that the equipment is clearly visible and ergonomically accessible. However, under no circumstances is the field of vision to be impaired. As far as possible, please use products tested according to standards.

Installing mobile devices in head impact areas is not permitted. It must be ensured that other control devices in the

vehicle, e.g. switch for hazard warning lights, are not covered. Passive safety devices, such as airbags, are not to be impaired in their effectiveness by the installation of such systems.

The instruction manual from the manufacturer of the device or vehicle provides you with further information regarding the appropriate use of communication and information systems.

2.4 Automatic parking brake

The consequences of accidents caused by a vehicle rolling away is not merely limited to property damage. If a vehicle rolls away, often due to operational mistakes, this can lead to severe or fatal accidents. The BG Verkehr therefore recommends automatic parking brakes. There are various solutions available on the market, which warn your drivers visually as well as acoustically, if the driver's door is opened and the parking brake is not engaged. A mere warning function does not suffice.

It must be ensured that the parking brake is activated automatically, when your drivers are no longer performing any operational tasks and leave the driver's seat, without having engaged the parking brake themselves.

It must only be possible to release the parking brake when your employees are ready for operation and signal their desire to drive by taking appropriate action.

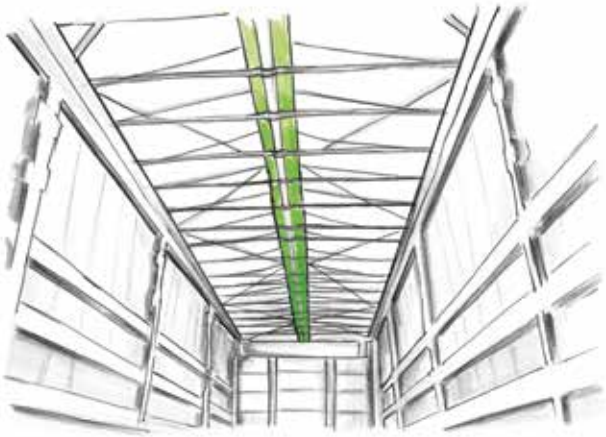
Special functions for being towed or operation in car washes must be possible.

Best Practice

Prevent accumulation of water, snow and ice on the roof

If there is snow or ice on the vehicle's roof, the drivers have the duty of removing it before driving the vehicle. This is to rule out any danger to the traffic behind the vehicle, e.g. obstruction to visibility. This work is not only time-consuming but involves a high risk of accidents occurring, e.g. by falling off the ladder.

There are proven technical systems on the market to prevent water or snow from accumulating on the roof tarp. For instance, an air hose is installed in a longitudinal direction to the vehicle under the roof tarp for an airbag solution. The hose being blown up in the event of rain or snowfall and the resulting pitch of the roof therefore prevents water, which could freeze, from accumulating.

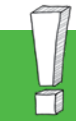


Air hose under the roof tarp

3 Occupational safety regarding all aspects of the vehicle

Purchasing a vehicle is often defined by aspects such as price, performance, dimensions, loading capacity or suitability for special applications. However, you should also consider safety in and around the cab as well as ergonomic benefits, to promote your drivers' health and motivation

3.1 Suitability of the cab



Occupational safety factors in the cab:

- *Cabin and front steps*
- *Cabin size*
- *Seats and sleeper berths*
- *Mirrors and operational controls*
- *Visibility (CMS)*
- *Air conditioning and heating*
- *Information and communication systems (Chapter 2.3)*
- *Protection against being assaulted/robbed, e.g. additional locking systems*

The cab is the place, where your employees spend most of their time during their daily working hours. Deficits here become noticeable quickly. Do not only get information on basic models but also on additional features which make your drivers' work easier.

Safely and ergonomically designed, illuminated cab entry points

Due to the high number of accidents which occur when climbing in and out of the cab, you should attribute particular importance to cab entry points. You can find detailed information in **Chapter 3.2 Ascent onto and spending time on vehicles** starting on page 28.

Safe front steps to clean the windscreen

A clean windscreen is essential for safe driving. In order to be able to remove stubborn debris such as insects or ice and snow, your drivers need to get close to the front window. If the distance from the ground to the top edge of the windscreen exceeds 2 m, steps in the bumper and front area are required, to reach the windscreen safely.

Please observe the following requirements:
- at least a sufficiently large and deep tread opening,
- handles which can also be reached by smaller individuals,
- treads with non-slip surface.

The same safety requirements apply to front steps on tread opening, handles and treads such as for cab entry points. You can find detailed information in **Chapter 3.2 Ascent onto and spending time on vehicles** starting on page 28.

Cab sizes adjusted to vehicle application

The application of the vehicle is decisive for the selection of the cab size; especially in the case of multiple-person crews.

Ergonomic seats

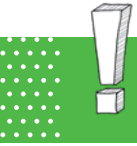
An ergonomically designed and individually adjustable seat can reduce physical strain; also it contributes to preventing premature fatigue. A good seat must have an adjustment range, which enables all drivers a comfortable, ergonomic sitting position. Partitions, rear panels or sleeper berths which are positioned too close behind the seat are regarded as obstacles here.

Seats should have the following properties:
- ergonomically optimally placed and intuitively operated adjustment elements with different shapes and haptics,
- adjustability of the sitting position in a longitudinal direction as well as in height according to the anatomy of the driver,
- adjustable angle of the seat, backrest and if applicable, armrests,
- lateral support by means of adjustable side bolsters for the backrest and the seat cushion,
- lumbar support,

- adjustability of seat depth and head restraint,
- height adjustment for the seat belt,
- adjustable vertical cushioning, air suspension,
- seat climate control or seat heating.

Climate controlled seats reduce heat accumulation in the summer or sweating on the contact surfaces and provide additional warmth in the winter. This can eliminate the necessity of wearing a warm jacket in the cab during cold seasons as wearing thick items of clothing sometimes limits the effect of the seat belt.

Fold-down passenger seats do not usually fulfil the ergonomic characteristics mentioned, even if they are approved for use in road traffic. According to the manufacturers, these seats only serve the purpose of seating individuals, who are occasionally taken along. In this case, 'occasionally' means: rarely and sporadically. In our experience, such a "cost cut" does not pay off. It would be better to do without the jump seat and choose the ergonomic version.



When purchasing used vehicles, make sure the General Operating Licence for the seat incl. console is included if the original seat has been replaced.

Mirror

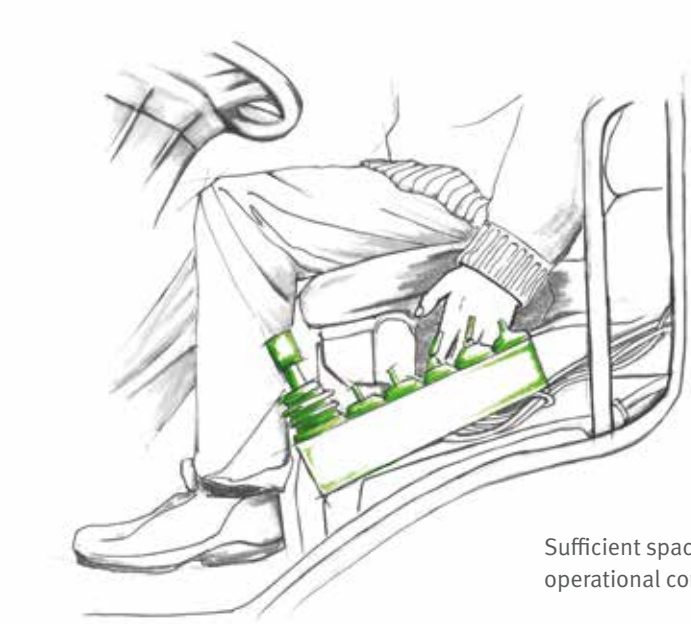
Your drivers need to check their vision in the mirrors every time before departure. The advantage of electrically adjustable mirrors is that they can be used quickly and without any complications; especially for alternating drivers. Furthermore, heated exterior mirrors stay dry when it is raining and are quickly freed of ice if necessary.

Operational controls for vehicle bodies and additional equipment in an ideal ergonomic position

Operational controls e.g. levers or buttons for attachments or tipping bodies, must be designed and set up as follows:

- easy, safe reachability,
- protected against unintentional activation,
- no danger due to insufficient clearances, e.g. squashed fingers.

Operational controls in the cab should also be easy to reach, when seat belts are being worn.



Sufficient space between operational controls and seat

Pay attention to potential risks of pinching or squashing body parts, particularly in the case of subsequently installed operational controls.

Clear view of the vehicle's surroundings (Camera Monitor System)

We recommend equipping lorries and trailers with Camera Monitor Systems (CMS). These support your drivers when reversing and manoeuvring.

The camera must	The monitor must
• at least have IP code IPX9K (X should be 5 or more) for protection, e.g. for high-pressure cleaning, • reduce glare and overexposure in the image, • have a lens system which is protected against stone impact.	• have a matt display to reduce reflections, • have a manual brightness control or best case scenario, adjust automatically, • be easy to make individual adjustments as well as have a default setting, • give notice if the image is frozen.
The camera CANNOT	**The monitor CANNOT**
• react sensitively to environmental influences such as temperature fluctuations, dew, rain or frost.	• be installed in the range, where an airbag would be released, • impair the field of vision, particularly not the outward view, • become a hazard in the event of an accident, e.g. by hitting the head or body.
The camera should	**The monitor should**
• have been subjected to impact and vibration testing according to ISO 16750-3, • be heated, so it can also be used in winter weather conditions, • be equipped with a spray nozzle or an automatic cover for instance, to keep the lens clean, • accessible from the outside, to safely clean it without any special aids, e.g. from ascending steps or platforms.	• reproduce the image in colour, • be selected in size depending on the distance to the driver (take age-related farsightedness into consideration!), • react to the direction indicators and the reverse gear being engaged, • have a resolution which at the least corresponds with that of the camera, • have a visor as a sun shade, to keep sunlight away from the display, • not have any sharp edges or corners.

CMS are not a 100% replacement for reversing assistants when reversing! Please make this clear to your drivers as well. For more information, please refer to the study "Kamera-Monitor-Systeme (KMS) zur Vermeidung von Abbiegeunfällen" (Camera Monitor Systems (CMS) for the Prevention of Turning Accidents) at www.bg-verkehr.de.

Air conditioning, stationary air conditioning and auxiliary heating system

If downtimes take place frequently for longer periods of time, work is conducted in a stationary vehicle or even if the night is spent in the vehicle, sufficient heating of and even better, climate control in the cab is required. Furthermore, the ventilation system alone cannot create any tolerable temperatures inside the cab on days with high outdoor temperatures and intensive sunlight.

Given that the vehicle's engine is not permitted to run idle for environmental reasons, a pleasant temperature can only be achieved by means of auxiliary heating or stationary air conditioning systems.

Moreover, noise exposure of the drivers is reduced because the windows can remain closed during breaks/rest periods.

So please do not forego this vehicle feature as comfortable temperatures equal more efficient drivers and fewer accidents.

Stationary air conditioning on the vehicle

Safe, ergonomic sleeper berth for rest periods in the vehicle

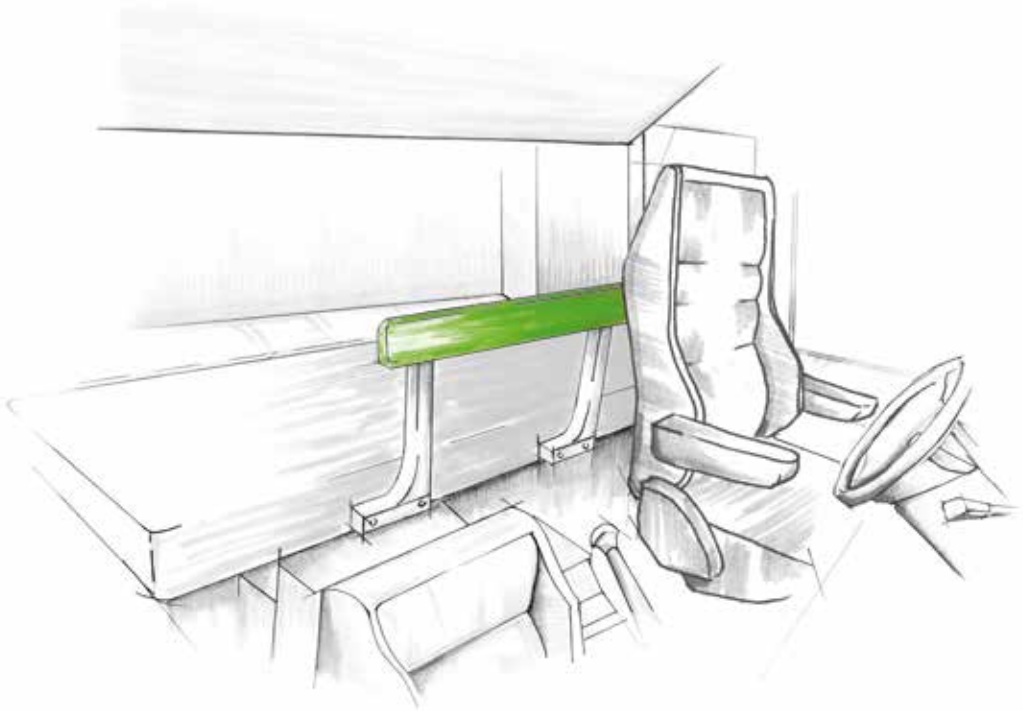
As a basic principle, create basic conditions for your drivers which enable relaxing breaks and rest time. Of course, it is more relaxing for them in a bed than in the vehicle. However, if spending the night in the cab is necessary, the sleeper berth should be designed as ergonomically as possible. That is the only way to ensure the optimum effect of relaxation during rest periods.

Among others, the following requirements apply to vehicles equipped with a sleeper berth:

- sufficiently large berth with respective dimensions:

Sleeper berth	minimum	recommended
width	≥ 600 mm	≥ 700 mm
length	≥ 1,900 mm	≥ 2,000 mm
headroom above the bed surface	≥ 550 mm	≥ 650 mm

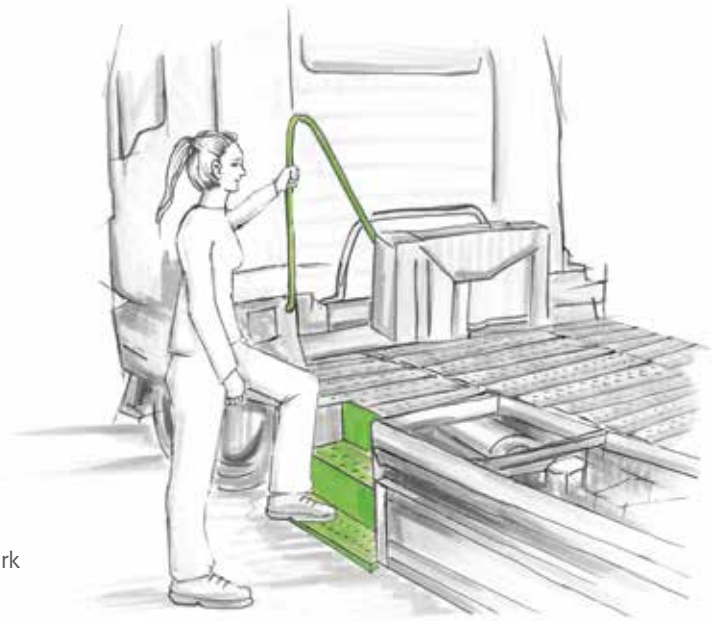
- climate control provided by an engine-independent heating or air conditioning system, e.g. auxiliary heating system,
- adaptable, breathable, washable and exchangeable mat or mattress,
- recommended minimum headroom between the seats 1.90 m, recommended minimum width between the interior sides of the cab 2.10 m, if the night has to be spent in the vehicle,
- suitable steps and handholds leading to the berth,
- simple, manageable protection against individuals falling out,
- lighting device for the sleeper berth,
- privacy screens for glass areas,



Sleeper berth with protection against falling out

- insulation to reduce noise and outdoor temperatures,
- flame resistant materials including cushioning and insulating material.

Other requirements apply to rooftop sleeper berths. You can find comprehensive information on sleeper berths in the "Richtlinien für Liegeplätze in Führerhäusern und Ruheräumen von Fahrzeugen sowie Dachschlafkabinen" (DGUV Regel 114-006) (DGUV Regulation "Guidelines for sleeper berths in cabs and resting places in vehicles as well as rooftop sleeper cabs").



Safe ascent to work stations

3.2 Ascent onto and spending time on vehicles

Do not underestimate the risk of falling when climbing into, leaving or spending time on vehicles. To reduce these risks, there must be steps with sufficiently wide and deep treads with slip resistant surfaces as well as handles attached in convenient positions, or comparable support fixtures which can also be reached by smaller individuals. This also applies if your drivers have to reach work stations on the vehicle bodies from the cab or other parts of the vehicle.

Safe access

Work stations on vehicle bodies, platforms, tipping bodies and connected cables on semi-trailer towing tractors must be able to be accessed and left safely. Therefore, **ascending steps and handles** should be designed as follows:

Ascending steps	
Distance between the bottom step and the ground for all-terrain vehicles	max. of 500 mm max. of 650 mm
Distance between the steps (same distance) or to the floor of the cab or work station	max. of 400 mm
Tread depth	80 mm
Tread width	300 mm
Footwell depth	150 mm
Handholds	
Handhold length	min. of 150 mm
Distance between handholds and components (risk of body parts getting pinched/jammed!)	min. of 50 mm
Handhold diameter	16 – 38 mm recommended 25 mm
Distance between the bottom of the handhold and the floor	max. of 1,650 mm
Distance between the top of the handhold to the top step/to the floor of the cab	min. of 900 mm

Treads must be equipped with non-slip surfaces or, especially if located outside the vehicle, with profiled grating. They should be illuminated if there is poor visibility and or if it is dark.

You can also have vehicles equipped with on-board **ladder ascents**. The tread depth of the rungs must be at least 20 mm. Round rungs are not permitted.

For steps consisting of more than two steps, there must be handrails or handles installed in a manner which enables your employees to maintain three points of contact simultaneously.

Using tyres, wheel hubes and rims as steps is prohibited!

Safe stay on the vehicle

To be able to work safely on vehicles, the **platforms** must be designed in a non-slip manner and catwalks as well as platforms outside the vehicle must be made of profiled grating. Platforms should be as large as possible. Minimum dimensions: 400 x 500 mm.

The width of the **catwalks** must be at least 400 mm. Spacing between catwalk elements or to the components on the vehicle should be avoided or at least kept as small as possible. There can be no tripping hazards caused by height offsets or mounting elements.

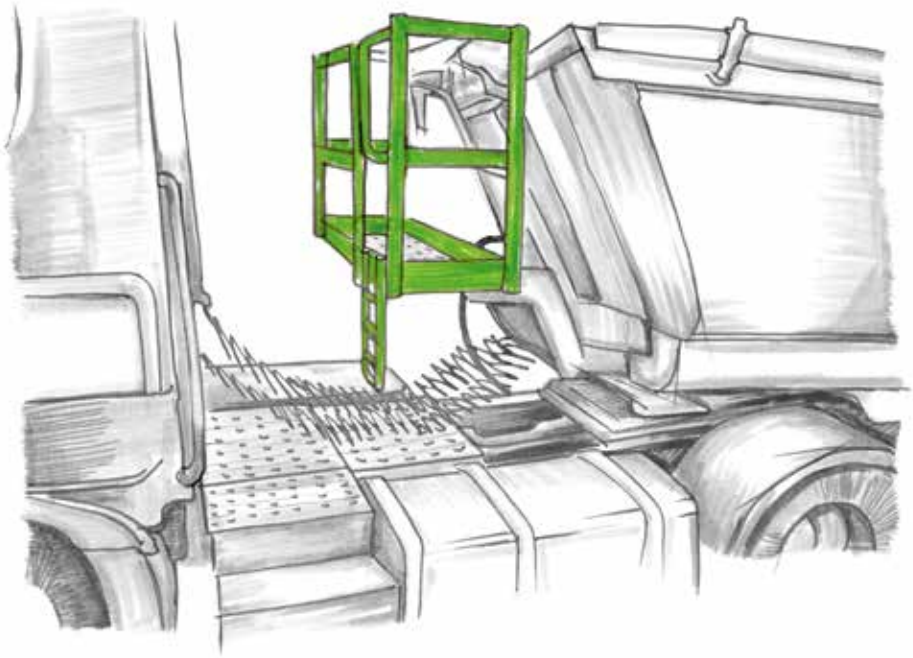
If the **ambient light** is not sufficient for the tasks to be conducted, the vehicle must be equipped with work lights.

A work station for connecting the cables is required on **semi-trailer towing tractors**. If other work stations need to be reached from here, e.g. the work platform of a dump semi-trailer, there must be an additional sufficiently large catwalk.

For **tank vehicles**, there must be catwalks on both sides of the dome respectively with a width of at least 400 mm, provided the operations require this. This is the case if work stations on the vehicle are walked on from the right as well as the left side on filling stations from a stationary platform. Furthermore, the outer edges of the platforms on these vehicles must project 500 mm beyond the equipment to be operated, e.g. dome cover.

For work stations, e.g. work platforms which are **2 m or higher** above ground, there must be an at least 1 m high railing with knee and foot rails. It must be possible to set up folding railings from the ground.

For **vehicle transporters**, instead of a railing, fall protection can also be ensured using at least four retensionable ropes.



Safe stay on vehicle bodies

Best Practice

Covering load compartments

It is safest for your drivers if equipment, e.g. to cover load compartments, can be operated from the ground. This does not require an ascent, saves valuable time and eliminates the risk of falling.

Equipment for covering load compartment

3.3 Vehicle coupling devices

The following systems and information makes working safely with vehicle coupling devices easier for your employees.

Coupling systems

Sensor fifth-wheel couplings provide a visual display of the correct locking status and the correct fifth-wheel height. Fully automatic (fifth-wheel) coupling systems as well as Camera Monitor Systems additionally support the coupling procedure and in doing so, take the pressure off your staff.

Pneumatic quick-release couplings, in which the pneumatic brake lines are combined into one unit, prevent mistakes while connecting or disconnecting the lines. These systems can also be retrofitted.

Parked trailers

Systems which automatically activate the parking brake on the trailer after the pneumatic brake lines have been disconnected prevent the trailer from rolling away or running aground. Fifth-wheel stabilizers with adjustable feet ensure secure positioning during the connection and separation procedures.

Parking sockets for plugs and pneumatic brake coupling heads protect against damages and soiling. Brake air connections should be automatically covered after disconnection to avoid contamination.

We recommend trailers always have two wheel chocks. This enables securing the vehicle in both directions in the case of uncertain downhill conditions. Wheel chocks must be stored where they are used: in the vicinity of the rear axle or the central axle assembly.

Additional safety instructions

The trailer's **drawbar** must be suited for the height of the drawbar coupling of the towing vehicle (height deviation cannot exceed more than ± 3°).

Operating elements must be clearly marked and able to be allocated. Operating devices for the brake system and air suspension should be installed on the side of the vehicle.

Pneumatic brake connectors and sockets are not permitted to be in the direct proximity of the drawbar coupling as they can be damaged in the event of failed attempts to couple.

For **fifth-wheel couplings**, the handle should be large enough, to be able to be held using the entire hand; even when wearing work gloves. It must be clearly recognizable, without any restrictions, that the coupling is connected properly. Furthermore, please pay attention to sufficiently large, easy to reach platforms, so your drivers are securely positioned when connecting or disconnecting the cables/lines for fifth-wheel couplings.

Sufficient **lighting** of the work station is required on the vehicle, e.g. work lights, to prevent operating errors.

Many severe and fatal accidents were caused by trailers having rear-end collisions. The frequency of such accidents is rapidly declining since manufacturers have installed the trailer's brake valve on the outside of the vehicle. Therefore, please observe the accurate positioning of the trailer's brake valve.

3.4 Vehicle bodies

Vehicle bodies are only subject to regulations defined by traffic laws in regard to a few issues, which are inspected regularly by a technician. For instance, this does not apply to the design of the vehicle bodies in compliance with occupational safety and health protection. The manufacturer and **you as the employer** are responsible for that.

In addition to the safe transport of the cargo under alternating operating conditions, all preparations and follow-up work such as loading and unloading, attaching and removing the tarp must be possible safely. Prerequisite for this are vehicle bodies which rule out risks for your employees due to the characteristics of their construction. In many cases, it is the details which prevent accidents.

Dropsides and doors

Removable vehicle bodies, e.g. dropsides or stanchions, can be secured using self-aligning latches or catches on the hinges, clamp screws or the like, to prevent unintentional loosening.

Doors can be protected against shutting using locking devices. Self-aligning locks or at least two pneumatic springs prevent hatches from accidentally lowering or closing.

There must be locks with paywork pressure recognition for a dropside or ramp which closes the load compartment and the upper edge of which is higher than 1.60 m above the road.

If the cargo, e.g. bulk materials, bales or scrap metals, presses against the doors of the load compartment, the operating devices for the release mechanism must be installed outside the swivel range of the doors.

Best Practice 1

Boost pressure on tailgates

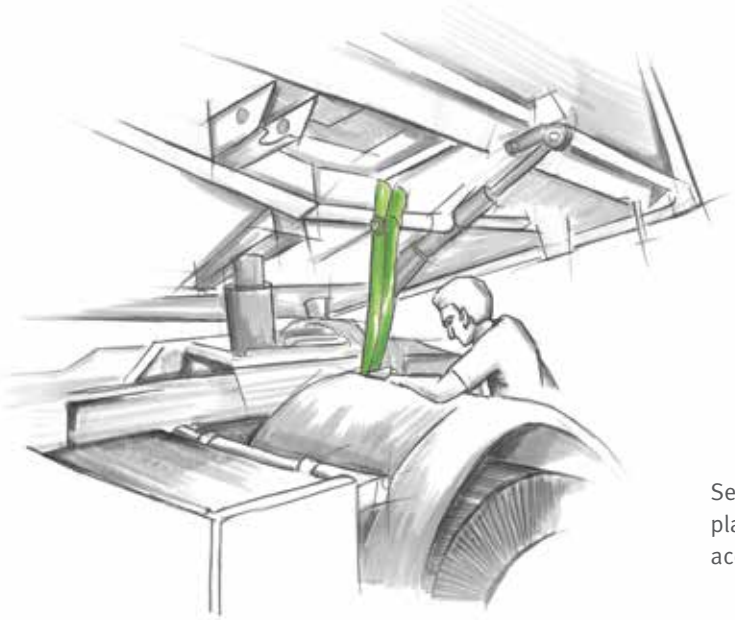
When transporting paywork which puts pressure on the doors of the load compartment, e.g. bulk material, make sure there are door monitoring switches which do not allow dumping or pushing movements until the tailgates are open.

When using a walking floor, a door monitoring switch should generally be provided or a proximity switch, which prevents the walking floor from moving when the doors are closed.

Best Practice 2

Additional parking brake valve in the trailer

If there is an additional actuator for the parking brake within the load compartment at the rear of the trailer, your drivers no longer need to go into the load compartment at all. The warehouse employees can activate the parking brake themselves, as long they are busy with work. Consequently, accidents caused by falling are proactively prevented.



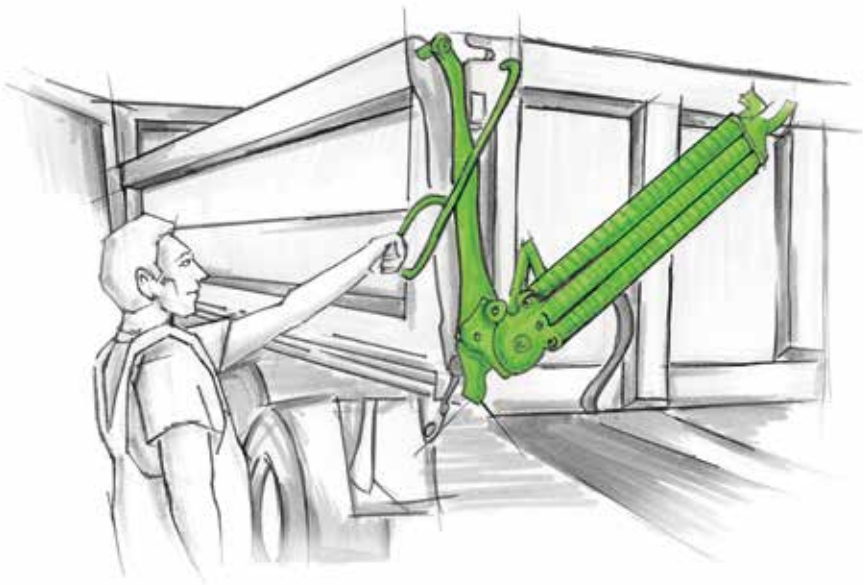
Securing a tipper platform against accidental lowering

Mobile vehicle bodies

All operating devices – particularly for mobile vehicle bodies – require sufficient handling space and cannot put the operator in danger due to sharp edges or the risk of getting cut or body parts being squashed. Movable vehicle body parts must not recoil accidentally.

Liftable or tiltable vehicle bodies, e.g. tipping platforms, must be capable of being secured against unintentional lowering in at least one position. This is implemented e.g. by supporting, locking or shut-off devices directly on hydraulic cylinder outlets.

If persons have to stay on or under liftable or tiltable vehicle bodies, automatically operated safety devices are mandatory. For instance, this applies to vehicle transporters or height adjustable intermediate floors on animal transporters.



Lever system with spring relief on a dropside

Heavy vehicle bodies which have to be moved up or down by hand need to be equipped with support systems, e.g. relief springs. This particularly applies to dropsides or ramps.

Centre-axle trailer or semi-trailers, which could tip over in a longitudinal direction during loading and unloading, must also be equipped with height adjustable supports at the rear end.

Hot surfaces and exhaust fumes

Exhaust pipes should be located out of the reach of individuals or have protection against contact. Exhaust outlets cannot be aimed at work stations on the vehicle. For vehicles, in the proximity of which individuals normally work while the drive engine is running, exhaust fumes must be effectively diverted by elevated exhaust systems.

3.5 Machinery assembled for loading and unloading

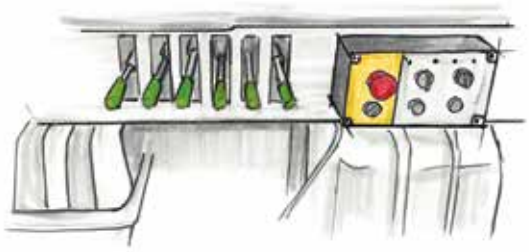
Assembled machinery, e.g. loader cranes or platform lifts, support your qualified personnel in loading and unloading the vehicle and in doing so, save time and manpower.

Vehicle and vehicle body manufacturers must comply with statutory requirements regarding the construction and assembly of this machinery on the vehicle. When placing your order, make sure that the combination of vehicle and machinery corresponds with the safety requirements for the planned application.

Marking of operational controls

Incorrect operation can be reduced by clearly marking and safely configuring the control equipment and operating elements. That includes:

- clear and permanent marking of allocation and switching mode,
- protection against unintentional activation,
- placement outside danger zones,
- in the case of multiple activation options, only one is permitted to be active during operation, e.g. choice between fixed control panel and radio remote control system via enabling device or selector switch,
- clearly visible and directly accessible installations for safe shutdown of all machinery, e.g. emergency stop button.



Control equipment with EMERGENCY STOP

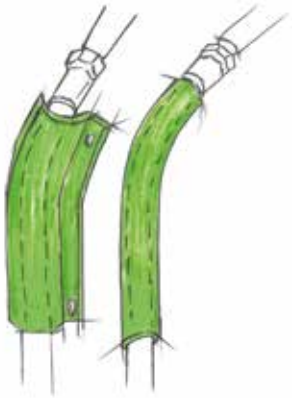
Safety equipment

There must be permanent and clearly visible specifications regarding maximum permissible load, load distribution and other warnings on assembled machinery.

In loader crane operation, the risk of a vehicle tipping over is reduced by a load moment limiter. In the process, the stability of the vehicle is monitored.

Suitable steps are required in order to reach the work station on the machinery safely. Which criteria these, among others, need to meet can be found in **Chapter 3.2 Ascent onto and spending time on vehicles** starting on page 28.

The risk of being cut or squashed must already have been ruled out during the construction process or its occurrence must be prevented by means of safety equipment, e.g. two-hand or two-foot control for platform lifts.



Hose line protection
left: protective covering
right: protective sleeve

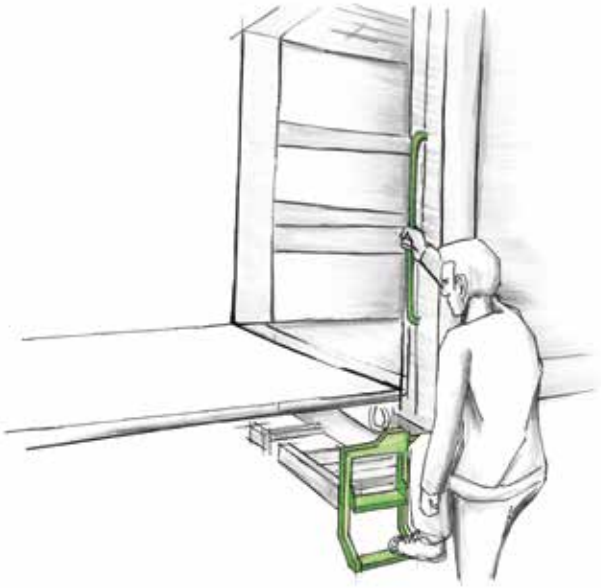
Hose assemblies in the proximity of control stations must be laid so that they are protected or must be equipped with protective sleeves.

Hot surfaces which are located in employees' field of activity, e.g. exhaust pipes, must be shielded in a manner which protects your drivers from getting burned. Exhaust outlets are not permitted to be aimed at work stations or machinery.

Best Practice

Safe ascent to platform lifts

Folding steps on platform lifts provide for a higher degree of safety when climbing onto and off of them. Given that the steps are arranged in a manner similar to stairs, your drivers climb up to and down from the platform lift in an upright position.



Rotatable steps on a platform lift

Controlling machinery remotely

When using remote control systems, make sure that this is approved by the manufacturer of your machinery and complies with the relevant requirements of the Machinery Directive. This primarily includes:

- clear allocation of the remote control system to the machinery,
- precise marking such as type plate and vehicle body allocation,
- clear and logical marking of all operational controls,
- operational controls must be designed in a manner which makes an accidental activation of movements, e.g. by putting them down or placing them in a pocket, impossible,
- there must be an emergency stop button at every control section, i.e. on the remote control system and directly on the machinery,
- control of dangerous movements only in dead-man-operation, i.e. the control system is immediately interrupted, when the operational controls are let go and an additional switching operation is required to restart,
- independent stopping of all functions upon leaving the reception range or disrupted connection,
- the machinery can only restart after repeated activation of the operational controls.
- The employees must have access to the instruction manual.

Requirements to ensure safe remote control systems are usually NOT met when using a smartphone, tablet or the like.

Best Practice

Tipping bodies

Some tipping body manufacturers offer the option of displaying information on the tipping process in an app. Tilt angle, articulation angle and inclination angle are monitored on the vehicle side and displayed via the app. In critical situations the tipping process is interrupted or not initiated at all. Also, driving with a raised body is prevented.

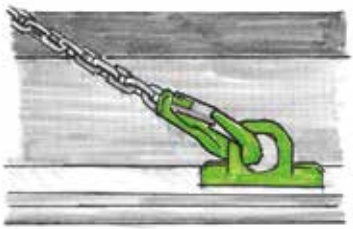
4 Securing of loads

Vehicle bodies must be designed in a manner which ensures that the cargo is or can be protected against slipping, rolling away, falling over, falling down, when the vehicle is being used as intended.

4.1 Load securing assemblies

Vehicle manufacturers offer specific solutions for an effective and quick securing of various types of paywork. An optimized vehicle body regarding the securing of loads ensures:

- the prevention or reduction of risks of accidents and injuries for your employees, e.g. by not having to manually lay down slip-resistant mats,
- saving time for loading and unloading processes as well as load securing measures,
- less to no damages to the cargo or on the vehicle,
- legal conformity when being stopped by the police or inspected by the BAG (Federal Office for Goods and Transport).



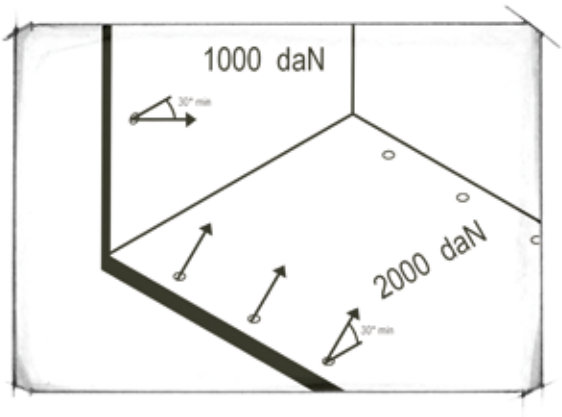
Lashing point

Vehicles with platform bodies, tipping bodies with a maximum permissible mass of up to 7.5 t or flat bed trailers must be equipped with anchoring fixtures for lashing material for the securing of loads. E.g. these can be lashing points, perforated or anchor rails or corresponding exterior frame profiles.

The properties of the vehicle body should enable it to take on as many task as possible to secure loads. This reduces the work for your drivers and avoids hazards when attaching auxiliary material to secure loads.

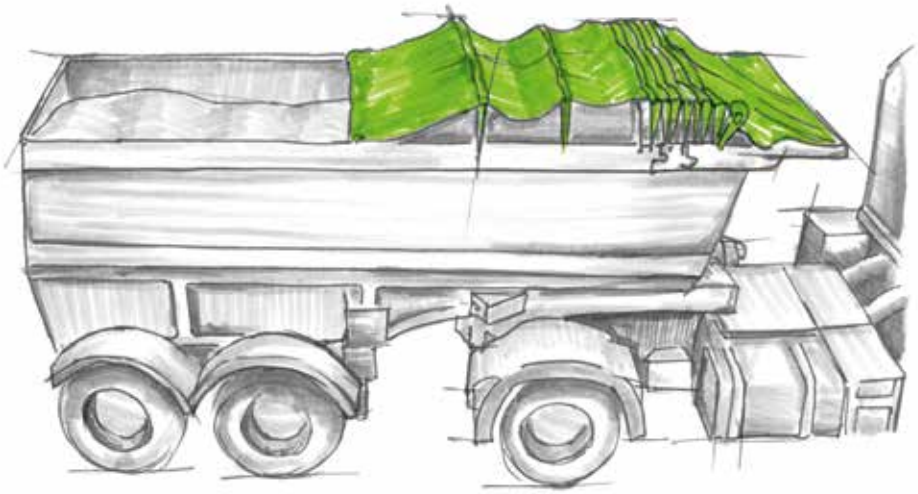
These include features such as:

- reinforced bulkheads and lateral load compartment limits, e.g. with higher structural rigidity in accordance with DIN EN 12 642 code XL,
- sufficient amount of sufficiently sized lashing points or perforated strips depending on the intended use of the vehicle (please get information on the load capacity of lashing points from the marking pursuant to EIN EN 12 640).



Marking of the load capacity of the lashing points according to DIN EN 12 640, e.g. on the vehicle body

In practice, it can make sense to equip the vehicles with a greater number of lashing points or with lashing points which have a higher permissible traction than is standard. This enables you to react more flexibly to different load securing requirements. Get information about possible solutions from the vehicle manufacturers.



Electrically operated top for transportation of bulk materials

- fittings such as stanchion holding fixtures, anchor rails for load bars, partitions, non-slip cargo flooring and platforms,
- tipper or sumps in the loading surface, to be able to effectively secure freight capable of rolling away, e.g. steel coils,
- lashing winches with pneumatic drive, where high preload forces are required for the lashing down process, e.g. when transporting long logs,
- for transporting bulk materials – covering devices, which are integral vehicle features, such as sliding roofs or roll tarps, which can be operated electrically from the ground,
- portable or folding partitions, to be able to create a form-fit by dividing up the cargo area.
- special vehicle bodies, e.g. inloaders, to secure large-area paywork such as flat glass.

4.2 Tools and lashing material to secure loads

Tools and lashing material to secure loads are not a direct component of the vehicle body however in most cases, they are required to carry out tasks involved with the transport. If securing the paywork is not solely ensured by the vehicle body, you must provide your drivers with a sufficient amount and selection of additional auxiliary materials.

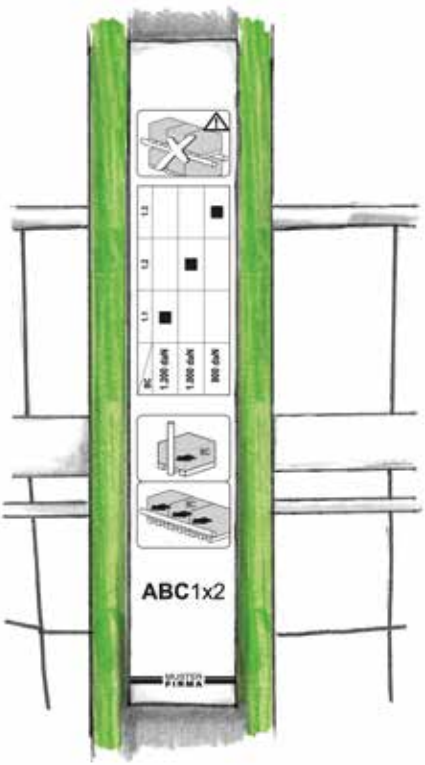
Lashing material such as lashing straps, chains or steel cables

All lashing material must be equipped with identifying labels or tags, which, among other things, indicate the:

- manufacturer,
- year of manufacture,
- permissible pulling force (LC),
- information “cannot be used for lifting”.

Example of a proper label on a lashing strap

If the product has a GS (tested safety) label, this is a helpful indication of purchasing good-quality lashing straps.



Load bars with indication of the blocking capacity (BC)

Edge protectors

Edge protectors serve to protect the cargo and the lashing material, e.g. on sharp edges as well as providing for a more even transmission of the preload force for the lashing down process.

Space filling auxiliary materials such as inflatable restraints, rigid foam cushions and wooden pallets

They eliminate gaps between the paywork and in doing so, create a tight fit. Furthermore, they protect sensitive freight from clashing.

Non-slip materials such as slip-resistant mats

These auxiliary materials increase the friction between cargo and load compartment or between the paywork. Different influencing factors such as temperatures, climatic conditions, type and weight of the paywork, can have a negative effect on the properties of slip-resistant mats. Please observe the manufacturer's specifications.

Load bars

They serve the form-fit holding of preferably solid and compact loading units. Please determine the required blocking capacity (BC) for these immobilizing auxiliary materials according to the paywork to be transported beforehand.

Cargo nets

Cargo nets can be used in versatile ways for a friction-locked and form-fit securing of paywork which cannot be sufficiently secured using lashing straps such as cardboard boxes or big bags for example. At the same time, they are also suitable for forming loading units.

Tarps and nets

They prevent bulk materials or lightweight transport items from being blown away by the airstream, when load compartments are open on top. However, please observe that this kind of covering using tarps and nets usually does not suffice in securing the load.

Please do not forget about safe storage options for objects brought into the cab; e.g. lockable storage compartments, cup holders or cradles and mounts for communication technology.

Best Practice

Strap lift systems

A strap lift system facilitates and speeds up the process of securing loads. Lashing straps are positioned close underneath the roof of the vehicle and therefore, are ready to use at all times. Consequently, it is no longer necessary for your drivers to remain in the danger zone on the platform during loading and unloading processes.

5 Order placement

The most important criteria for the suitability of a vehicle must be outlined in the specifications, which the order is based on. At the same time, the intended use of the vehicle, which the manufacturer defines, plays a decisive role. Does it comply with the intended application?

Use the **attached procurement checklist** starting on page 54 as a reference when compiling the specifications or as a list of questions for the discussion with the supplier. In the process, do not disregard the criteria, which increase occupational health and safety beyond the minimum and therefore significantly reduce the risk of an accident. This speeds up work processes, e.g. when loading and unloading or when securing loads and at the same time, you save time and money.

When you place an order for the delivery of a vehicle, you must inform the supplier in writing, that the applicable requirments pertaining to occupational health and safety must be observed. Among others, these requirements are included in:

- Machine Ordinance – 9. ProdSV - Product Safety Act,
- Unfallverhütungsvorschrift „Fahrzeuge" (DGUV Vorschrift 70) (Accident Prevention Regulation "Vehicles"),
- DGUV Regel 114-006 „Liegeplätze in Führerhäusern und Ruheräumen von Fahrzeugen sowie Dachschlafkabinen" (DGUV Regulation "Guidelines for sleeper berths in cabs and resting places in vehicles as well as rooftop sleeper cabs").

At the least, include the following text in the agreement:

"The supplier declares that the aforementioned order will be carried out in compliance with the accident prevention and occupational health and safety regulations as well as the recognized regulations pertaining to safety-related and workplace healthcare".

You should explain the intended application in as much detail as possible to the manufacturer or supplier, so that the features for the vehicle which are most ideal for these purposes can be selected. The more precise these requirements are described, the better you guard yourself against possible problems arising from the newly purchased vehicle.

It is also recommended, in the case of purchasing used vehicles, to record observing the relevant regulations and specifications, as a reinsurance in the event of defects which do not become apparent until after the purchase.

An instruction in the vehicle by the supplier can and should also be part of the contract.

In order to avoid bad investments, make sure you are aware of the upcoming transport tasks and the corresponding suitability of the vehicle and be well prepared before discussing the purchase of a vehicle with the salesperson.

6 Vehicle acceptance

Everyone – particularly your drivers – are already eagerly awaiting the arrival of the new vehicle. How does it feel to drive it? Does it bring about the expected savings?

Pick up the vehicle together with your drivers, who will drive it on a daily basis. This way, the manufacturer or the supplier can instruct your drivers on location on how to handle it correctly – as contractually stipulated.

When accepting the vehicle, you should precisely check whether or not it has all the ordered features and the complete documentation, e.g. owner's manual. Check all functions and equipment. It is best to do this using the procurement checklist. This inspection is also a good opportunity to prepare for the safety briefing, as you will also have to familiarise yourself with the vehicle and the operating instructions for that. In doing so, you show your employees that their safety is important to you.

A look at the operating instructions is also essential for the preparation of a risk assessment and operating instructions.

If you have doubts in assessing the delivered vehicle, consult a specialist for vehicle inspection or your occupational safety and health specialist. You can find information on handling the vehicle and other suggestions in the DGUV Branchenregel "Gütertransporte im Straßenverkehr" (DGUV Industry Regulation "Carriage of goods by road").

To you and your drivers, drive carefully and be safe!

Attachment

Procurement Checklist

This checklist is intended to support you by reminding you of all relevant safety aspects, when negotiating with the supplier or inspecting a vehicle. You can find more detailed information in the specified chapters.

No.	Requirement	OK
General information (Chapter 1.4, starting on page 10)		
1.1	It was written down what the vehicle is to be used for (intended use).	☐
1.2	The intended use stated in the vehicle's operating manual complies with your own requirements (sales negotiations).	☐
Driver assistance systems (Chapter 2.1, starting on page 12)		
2.1	The vehicle has an Emergency Brake Assist, Lane Keeping Assist System and an Electronic Stability Program.	☐
2.2	The vehicle is equipped with a Turning Assistant.	☐
2.3	The vehicle has a Camera Monitor System (CMS).	☐
2.4	The vehicle has a Reversing Assistant System.	☐
2.5	Adaptive Cruise Control is integrated.	☐
2.6	The vehicle has Light Assist.	☐
2.7	The vehicle has Attention Assist	☐
2.8	The vehicle is equipped with a tyre pressure monitoring system.	☐
2.9	The vehicle has an automatic parking brake.	☐

No.	Requirement	OK
Wheels and chocks (Chapter 2.2, page 15)		
3.1	The vehicle has the required number of chocks.	☐
3.2	Chocks are installed in a manner which enables reaching them easily and safely.	☐
3.3	Appropriate snow tyres are included in delivery.	☐
3.4	The vehicle has safely stored spare wheels.	☐
Information and communication systems (Chapter 2.3, starting on page 16)		
4.1	Monitor and tablet solutions are installed ergonomically and can only be used when the vehicle is at a standstill.	☐
4.2	The devices and their mounts have rounded edges.	☐
4.3	Steering wheel controls for telephone activation are clearly visible and ergonomically designed.	☐
4.4	There is hands-free equipment or a Bluetooth connection for the use of mobile phones.	☐
4.5	Monitors are installed where there is no glare and have a low-reflection screen, a sufficiently sized screen, a preferably variable brightness and character size as well as a high-contrast display.	☐
4.6	Mobile devices are securely attached and protected against accidental loosening.	☐
4.7	The installed devices do not impair the field of vision.	☐
4.8	It is not permitted to install mobile devices in head impact areas.	☐
4.9	Passive safety devices are not impaired in their effectiveness by the installation of information and communication systems.	☐
4.10	Mounts are installed in a manner which ensures the devices are clearly visible and ergonomically reachable.	☐

No.	Requirement	OK
Suitability of the cab (Chapter 3.1, starting on page 20)		
5.1	Cab entry points are designed in a safe and ergonomic manner as well as illuminated.	☐
5.2	The vehicle has safe front steps, to clean the windscreen.	☐
5.3	The size of the cabin suffices for multiple-person crews.	☐
5.4	Operational controls, vehicle bodies and additional equipment can be operated safely and ergonomically.	☐
5.5	The vehicle has a stationary air conditioning, auxiliary heating system and/or air conditioning.	☐
5.6	Safe, ergonomic sleeper berth for rest periods in the vehicle.	☐
5.7	The vehicle has protection against robbery, e.g. night lock.	☐
Ergonomic seats (Chapter 3.1, starting on page 20)		
6.1	Adjustment elements are intuitively operable due to, for example, the different shapes and haptics of the switches and handles, and are ergonomically optimally positioned.	☐
6.2	The seat has air suspension and it is climate controlled and heated.	☐
6.3	The seat can be individually adapted to the anatomy of the driver. There are adjustment options in a longitudinal direction as well as in height.	☐
6.4	The inclination of the seat, backrest and armrest as well as the vertical cushioning can be adjusted.	☐
6.5	Adjustable side bolsters for the backrest and the seat cushion are integrated.	☐
6.6	The seat depth can be adjusted.	☐
6.7	The seat has lumbar support.	☐
6.8	Height adjustment for the seat belt is provided.	☐
6.9	The headrest can be adjusted individually.	☐

No.	Requirement	OK
Operational controls, vehicle bodies and additional equipment (Chapter 3.1, starting on page 20)		
7.1	Operational controls, vehicle bodies and additional equipment can be operated safely and ergonomically.	☐
7.2	Mirrors can be automatically adjusted and are heated.	☐
7.3	A clear view of the vehicle's surroundings is made possible by a Camera Monitor System.	☐
Ascent onto and spending time on vehicles (Chapter 3.2, starting on page 28)		
8.2	There are enough wide and deep treads, to ensure safe access.	☐
8.3	The steps are equipped with non-slip surfaces.	☐
8.4	Easy to reach handholds are installed by steps.	☐
Vehicle coupling devices (Chapter 3.3, starting on page 33)		
9.1	The operating device for the brake is installed on the outside of the trailer.	☐
9.2	There are parking sockets for plugs and pneumatic brake coupling heads.	☐
9.3	Operating devices are clearly allocated and marked.	☐
Securing of loads (Chapter 4, starting on page 44)		
10.1	Load securing assemblies are a component of the vehicle body.	☐
10.2	Tools and lashing material to secure loads.	☐
Individual requirements		

Sources

- Betriebssicherheitsverordnung (BetrSichV) (Industrial Safety Ordinance)
- TRBS 2111 Teil I, (April 2015) (Technical Rules for Industrial Safety „Mechanical hazards – Measures for protection against hazards when using mobile work equipment“)
- § 2 Abs. 3a Straßenverkehrsordnung (StVO) (German Highway Code)
- Straßenverkehrs-Zulassungs-Ordnung (StVZO) (German Road Traffic Licensing Regulations)
- Arbeitsschutzgesetz (ArbSchG) (Act on the Implementation of Measures of Occupational Safety and Health to Encourage Improvements in the Safety and Health Protection of Workers at Work)
- Maschinenverordnung (9. ProdSV) (9th Ordinance to the Product Safety Act: Machinery Ordinance)
- Maschinenrichtlinie (MaschRL) (Machinery Directive)
- „Bekanntmachung zur Arbeitssicherheit – Beschaffung von Arbeitsmitteln“ (“Bulletin on Occupational Safety - Procurement of Work Equipment”) (Federal Institute for Occupational Safety and Health - BekBS 1113)
- Unfallverhütungsvorschrift „Grundsätze der Prävention“ (DGUV Vorschrift 1) (Accident Prevention Regulation “Principles of Prevention”)
- Unfallverhütungsvorschrift „Krane“ (DGUV Vorschrift 52 und 53) (Accident Prevention Regulation “Cranes”)
- Unfallverhütungsvorschrift „Fahrzeuge“ (DGUV Vorschrift 70 und 71) (Accident Prevention Regulation “Vehicles”)
- DGUV Grundsatz 314-002 „Kontrolle von Fahrzeugen durch Fahrpersonal“ (DGUV Principle “Vehicle checks by drivers”)
- DGUV Grundsatz 314-003 „Prüfung von Fahrzeugen durch zur Prüfung befähigte Personen/Sachkundige“ (DGUV Principle “Vehicle checks by qualified individuals/specialists”)
- DGUV Regel 114-006 „Richtlinien für Liegeplätze in Führerhäusern und Ruheräumen von Fahrzeugen sowie Dachschlafkabinen“ (DGUV Regulation “Guidelines for sleeper berths in cabs and resting places in vehicles as well as rooftop sleeper cabs”)
- DGUV Information 211-031 „Einsatz von bordeigenen Kommunikations- und Informationssystemen mit Bildschirmen an Fahrerarbeitsplätzen“ (DGUV Information “Use of onboard communication and information systems with monitors in driver work stations”)
- DGUV Information 214-016 „Sicherer Einsatz von Absetzkippern“ (DGUV Information “Safe use of skip-carrying lorries”)
- DGUV Information 215-530 „Klima im Fahrzeug“ (DGUV Information “Vehicle climate”)
- DIN 76 051-1 “Wheel chocks for motor vehicles and trailers” (1992-11)
- DIN EN ISO 20471 “High visibility clothing – Test methods and requirements” (2017-03)

- „Richtlinien für die Unterbringung von Unterlegkeilen an Kraftfahrzeugen und deren Anhängern, ausgenommen Personenkraftwagen und Krafträder“ zu §§ 30 und 41 StVZO (“Guidelines for storing wheel chocks on motor vehicles and their trailers, excluding passenger cars and motorcycles” in accordance with §§ 30 and 41 of the German Road Traffic Licensing Regulations)
- DIN EN 12640 „Intermodal loadings units and commercial vehicles - Lashing points for cargo securing - Minimum requirements and testing“
- DIN EN 12642 „Securing of cargo on road vehicles - Body structure of commercial vehicles - Minimum requirements”
- Handbücher „Laden und Sichern“ (BGL und BG Verkehr) (Manuals “Loading and Securing” BGL German Federal Association of Road Haulage, Logistics and Disposal and BG Verkehr)
- „Kleine Ergonomische Datensammlung“ (Bundesanstalt für Arbeitsschutz und Arbeitsmedizin) (“Small ergonomic data collection” German Federal Institute for Occupational Safety and Health)
- Broschüre „Drahtlos im Trend“ (BG Verkehr) (Brochure “The wireless trend”)
- „Kamera-Monitor-Systeme (KMS) zur Vermeidung von Abbiegeunfällen – Kriterien für die Eignung von Kamera-Monitor-Systemen in Lkw zur Vermeidung von Rechtsabbiegeunfällen“ (BG Verkehr) (“Camera Monitor Systems (CMS) for the prevention of turning accidents – criteria for the suitability of camera monitor systems in lorries, to prevent accidents caused by right turn collisions”)

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