

Operating Instructions

Flatbed Trailers HTD / HTS

en



This operating manual is intended to be read carefully and understood and all its instructions followed by all persons with responsibility for the Humbaur GmbH vehicle and its modules.

Humbaur GmbH accepts no liability for any damage or malfunctions resulting from failure to do this!



It is therefore imperative that you read and follow all the instructions, warnings and notes in this manual before driving for the first time!



Also read and follow the instructions in the operating manuals for components such as axles, props and tail lifts!

The technical documentation is part of the product and should be kept in the driver's cab of the towing vehicle at all times for reference.

This operating manual draws attention to particularly important details with regard to the operation and use of the trailer and to the required care and maintenance work. Only with this information it is possible to avoid errors and ensure fault-free operation.

The manufacturer:

**Humbaur GmbH
Mercedesring 1
89368 Gersthofen (Germany)**

reserves the right to correct errors and make technical changes to the design, equipment and accessories referred to in the information, illustrations and descriptions in the operating manual.

No claims whatever may consequently be derived from the information, illustrations and descriptions contained herein.

Obligations of the operating company

Only operate the trailer when it is in perfect condition.

Ensure that the operating manual is included when the trailer is sold on, for example.

Use only trained and instructed personnel.



Ensure compliance with the operating manual throughout the life of the trailer and that the correct personal protective equipment (see „Personal protective equipment / rules and prohibited activities“ on page 19) is worn.

Provide the required consumables and auxiliary materials.

Identification

Dimensions, weights and performance data can be found in the trailer's registration documents.

In this operating manual, both vehicle types:
flatbed semi-trailer & centre pivot plate are described.

The respective categories are identified as "semi-trailer" or "centre pivot plate".

Vehicle type:	Version	<input checked="" type="checkbox"/>
Flatbed - centre pivot plate, 3-axe straight plateau (# 10618)	HTD 30 85 25-G	
Flatbed - centre pivot plate, 3-axe offset plateau (# 10618)	HTD 30 85 25-K	
Flatbed - centre pivot plate, 3-axe offset plateau (# 10620)	HTD 30 85 25-K (Wheel cavities)	
Flatbed - centre pivot plate, 4-axe offset plateau (# 10701)	HTD 40 95 25-K	
Flatbed - centre pivot plate, 4-axe offset plateau (# 10702), Version „Sweden“, LAXO	HTD 40 120 25-K	
Flatbed - centre pivot plate, 4-axe offset plateau (# 10703), Version „Skandinavia“	HTD 40 120 25-K	
Flatbed - semi-trailer, 3-axe high sloped plateau	HTS 30	



The relevant trailer should be indicated on delivery by means of a cross.

Index

Use the **index** starting on page **5** to search for **specific** topics.

1 Safety

The chapter entitled "Safety" from page **9** onwards contains safety-related information on handling the trailer properly.

Read this chapter before driving for the first time.

2 General information

The chapter entitled "General information" from page **21** onwards provides information on vehicle identification.

3 Operation

The chapter "Operation," from page **33** onwards provides information on loading and unloading, correct load distribution, hitching and unhitching or coupling and uncoupling the trailer.

4 Operation of the chassis

In the chapter "Operation of the chassis", from page **79** onwards provides everything you need to know about the controls of the chassis such as the raising/lowering system, landing gear as well as information on safe loading and unloading..

5 Operation: body

In the chapter "Operation: body", from page **137** onwards, you can see how to operate the vehicle body properly, for example, folding down ramps or which devices can be used to secure the load.

6 Electrical system

In the chapter "Electrical system" from page **215**, you will find information on the "Connectors and assignments" lamps.

7 Inspection, care and maintenance

In the chapter "Inspection, care and maintenance", from page **233**, you will be informed of the activities required for maintaining operational safety and the value of your vehicle.

8 Troubleshooting

The chapter entitled "Troubleshooting" on page **285** tells you what to do in the event of problems or malfunctions and provides contact details for Kögel's service team.

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Safety

Intended use

Vehicles and bodies from HUMBAUR GmbH are constructed in accordance with the technological regulations and the recognised safety regulations. Despite this, however, if used for other than their intended purpose, they can pose a hazard to life and limb for both users and third parties, or cause damage either to the HUMBAUR GmbH vehicle itself or to other property.

HUMBAUR GmbH vehicles and bodies are manufactured exclusively for transport operations in accordance with all relevant regulations and provisions.

Proper use entails adherence to regulations, descriptions and instructions provided in this manual and the suppliers' operating and maintenance manuals.

If you are planning to make subsequent modifications to your HUMBAUR GmbH vehicle or vehicle body, place an enquiry with HUMBAUR GmbH or an approved HUMBAUR GmbH workshop in good time.

Always check with HUMBAUR GmbH or an approved HUMBAUR GmbH workshop before having accessories fitted to your HUMBAUR GmbH vehicle or body.

The following is permitted:

- Transport of goods
- Operation only in the range of the total permitted payload
- Operation only with suitable towing vehicle
- Operation only in when in technically perfect condition
- Operation with uniform weight distribution of the load
- Driving only with properly secured load
- Driving only when in compliance with maximum legal speed and speed adjusted to poor road and weather conditions
- Loading and unloading only in secure areas or with additional safeguards in public streets
- Only stop/park the trailer with safeguards to prevent rolling away

Periodically subjecting the trailer to the general inspection and safety inspection by specialists as well as the certification of this is a prerequisite to participating in road transport.

The operator/user of the trailer is obligated to regularly care for/clean the trailer as well as perform maintenance.



HUMBAUR GmbH vehicles/ bodies carry a VIN (Vehicle Identification Number).

(siehe „Vehicle identification numbers“ auf Seite 30)

Please quote the VIN when making enquiries or ordering replacement parts!

Improper use that can reasonably be foreseen

Any use that goes beyond use for transport in accordance with the relevant regulations is considered to be improper. That includes, in particular:

- Transport of people/animals
- Transport of goods subject to special regulations and / or for which special vehicle versions are required (e.g. chemicals)
- Loading in excess of the payload
- Exceeding the maximum permissible axle, support and towed load
- Transport of hot materials (e.g. tar)
- Driving with a poorly secured or unsecured load
- Driving with a poorly distributed load (e.g. one-sided or concentrated load)
- Structural modifications to the trailer which are not approved by the manufacturer or are unauthorised
- Use of non-approved replacement parts and / or accessories
- Driving with faulty and / or damaged lighting
- Driving without a licence plate or with an illegible licence plate (e.g. dirt on the number plate)
- Driving with open structures (e.g. platform gates, curtains, doors, lids, toolbox, side guards, ramps, landing gear, etc.)
- Unauthorised maintenance/repair of safety-relevant components which must only be maintained or repaired by specialists
- Driving with excessive/inappropriate speed in poor weather conditions and/or on bad roads
- Parking trailer without taking sufficient safety precautions to prevent the trailer from rolling away
- Operating the trailer in a damaged condition and visible part wear or with broken safety-relevant components
- Operating a trailer without valid brake matching with the towing vehicle
- Operating the ramps when a person is in the danger area

- Transport of vehicles/loaded goods which protrude over the total width of the trailer

Any liability for damage resulting from non-compliance is rejected by the manufacturer:

Humbaur GmbH
Mercedesring 1
89368 Gersthofen (Germany)

The user shall bear sole responsibility for any such risk.

Traction test

A traction test must be completed to ensure correct usage.

Unlike a drum brake, a disc brake does not produce any detectable reduction in the braking effect to the driver when overloaded.

This overload can mean that the brakes of the towing vehicle or trailer overheat. Reduced braking force, greater brake lining or brake disk wear as well as wheel bearing or axle damage can occur as a consequence of overloaded brakes.

For optimal distribution of the deceleration of the entire vehicle combination, a traction test must be conducted on the loaded vehicle's brake system by an independent brake service in compliance with 71/320 EC or ECE R13 after a short run-in time of 1,000 to 5,000 km or within 14 days following vehicle handover and each time the towing vehicle is changed.



Fig. 1 Warning panel on the trailer



In the event of non-compliance with any of the above or failure to provide the results of a traction test, any warranty claims made against HUMBAUR GmbH will be invalidated.

Disclaimer

Any liability of the manufacturer is invalidated if:

- Changes have been made to the trailers or its components independently.
- The original parts or conversion parts/accessories approved by HUMBAUR GmbH have been replaced by other parts.
- Subsequent alterations have been made to the trailer (e.g. new holes made in the frame or existing holes enlarged). Any such intervention is classified by HUMBAUR GmbH as a structural change and, as such, invalidates the operating approval.
- non-approved accessories such as spares or components of other makes which are not original HUMBAUR GmbH parts being mounted or integrated. The operating approval for the vehicle is invalidated and possibly the insurance cover as well.
- the maintenance intervals prescribed by the manufacturer not being adhered to.

All resulting risks and liability waivers shall continue to apply in the event that:

- acceptances have been carried out by testers/experts from the technical testing authorities or officially recognised organisations,
- approvals have been granted by public authorities.

The warranty includes

Defects that occur during proper use of the trailer as specified, or which are design related or can be attributed to material faults. Repairs carried out during the guarantee period do not extend it.

The dealer is responsible for the guarantee as a contracting party.

Requirements

The maintenance instructions and regulations of the manufacturer, which are listed in this operating manual, must have been observed. Original replacement parts must be used for repairs.

Repairs must be carried out by a specialist workshop.

Defects may not be attributable to

Non-compliance with the technical and legal regulations listed in this operating manual. Improper use of the trailer or lack of experience on the part of the user.

Unauthorised alterations to the trailer or fittings not approved by Humbaur GmbH invalidate the guarantee.

Non-compliance with the respective statutory regulations.

The following conditions are not defects

Each trailer is a hand-made product. Despite the greatest of care, minor superficial scratches, which have no effect on the intended use, can occur during assembly.

Stress cracks in the surface (hairline cracks) caused during manufacture cannot be avoided. These hairline cracks have no effect on stability or the use of the trailer.

Gaps between the tailboard and the loading ramp.

Furthermore, polyester components are not 100% colour-fast. Here too, UV and weather effects can cause fading.

Furthermore, it should be noted that rubber parts generally age as a result of UV influences, and the formation of cracks and fading of the surface are possible.

Parts coated with the electrocoat process are not colour-fast. They can fade as a result of UV irradiation.

Galvanised parts are not normally shiny as they lose their bright finish after a short time. This is not a defect but rather a desired effect, as full protection against rusting of the metal is only guaranteed after oxidation. Wood is a natural material. Despite the most diverse types of processing and coating, it is therefore subject to natural, weather-dependent expansion and shrinkage, which can result in warping. Natural wood grain and irregularities are normal for this

natural material and can appear on the surface. Fading is also possible as a result of UV irradiation and weathering effects. A manufacturing tolerance is specified for the thickness of the wooden components used. Claims will not be accepted for deviations within the tolerance.

As the trailers are not generally insulated, temperature fluctuations can result in the formation of condensation under tarpaulins and polyester covers. In this case, adequate ventilation should be provided to prevent mould formation. Furthermore, the trailers are not 100% watertight. Water ingress at the doors, flaps and windows is still possible, even with extremely careful workmanship and the use of rubber seals.

The warranty will expire

If the regulations for operation, maintenance and inspection are not observed.

In the event of technical alterations to the trailer.

In the event of independently added fittings and superstructures which have not been approved by Humbaaur.

In the event of overloading and improper use of the trailer.

If non-original Humbaaur replacement parts are used.

If the safety instructions for the trailer are not observed.

If the service intervals are not adhered to, including for Humbaaur-fitted parts such as the axle, brakes, overrun hitch, hydraulic systems etc.

In the event of the incorrect surface treatment of the materials used.

In the event of the continued use of the trailer, even though defects have already been detected and reported and usage has been prohibited by the manufacturer until repairs have been carried out.

In the event of the continued use of the trailer with known defects where repair is not possible or is time-consuming or is only possible with significant additional expense and reduced function.

The guarantee does not include

Expenditure for ongoing maintenance.

Costs that can be attributed to normal wear or because the trailer has not been used for a long time.

Faults that can be attributed to not treating the trailer as specified.

Defects that can be attributed to the use of non-original Humbaaur replacement parts.

Defects that can be attributed to repair work not carried out by a specialist workshop.

Defects that can be attributed to structural alterations or assembly work on the vehicle.

Damage that can be traced back to snow and water loads on tarpaulin, plywood or Poly superstructures.

The manufacturer reserves the right to make design changes.

HUMBAUR GmbH vehicles and bodies and their operating components may only be used and maintained by personnel who have received instruction with regard to:

- This operating manual
- The trailer with the associated towing vehicle
- The suppliers' operating and maintenance manuals
- The road traffic regulations (StVO in Germany) and road traffic licensing regulations (StVZO in Germany)
- All relevant safety at work and accident prevention regulations as well as any other laws and regulations relating to safety, industrial health and road traffic
- Freight transport

Sources of danger

It is essential that you are aware of the following source of danger:

- Coupling and uncoupling of a trailer: There must be nobody in the danger area.
- Travelling with unsecured landing gear.
- Driving with unsecured loading aids (ramps).
- Clearance heights on the way when loading and unloading
- Exceeding the total permitted payload or uneven overloading due to incorrect distribution of weight
- Badly secured or unsecured load and/or vehicle body components.
- Reversing manoeuvres - check area behind vehicle!
- Excessive steering during manoeuvring
- Overloading of the trailer, axes and brakes
- Overstressing as a result of fitting incorrect sizes of wheels or tyres
- Use of wheels with incorrect wheel offset, unilateral runout or centrifugal imbalance.
- Overstressing due to unreasonable or improper driving or handling
- Impacts and stress on the axles
- Inappropriate speed for the quality of the road surface given the load of the vehicle – especially on bends.
- On ground that is not level or on soft ground, the parked trailer can topple over or sink.
- Driving on terrain with extreme slopes.
- Loading the trailer on terrain with steep gradients.

In the chassis frame area

Important general information:

- Connect the supply lines
 - Establish the electrical connections
 - Set the pneumatic suspension to the drive position
 - Put the side guard in the position for driving and secure them.
 - Retract the landing gear and secure it
 - Check the tyres and rims for damage
 - Check the tyre pressure, including the spare wheel
 - Check the tightening torque of the wheel nuts
 - With a new trailer, tighten the wheel nuts after 50 km and after its first journey carrying a load
 - Secure:
Spare wheel/spare wheel holder, operating bars, wheel chocks
 - Check the trailer's lights, and repair any faulty lights
 - Observe the permissible total weight
- Release the brakes and start to move off only when the operating brake pressure has been reached
 - Drain the compressed air tanks
 - Check that the air bellows of the axle unit have rolled carefully over the piston
 - Check the licence plate and signs

With the flatbed semi-trailer:

- Check that the king pin and fifth wheel coupling are in perfect condition
- Provide adequate grease to the fifth wheel coupling
- Interlock the fifth wheel coupling properly

With the flatbed centre pivot plate:

- Check that the drawbar and trailer coupling are in perfect condition
- Check for free motion between the towing vehicle and trailer
- Interlock the trailer coupling properly

Around the vehicle body

Close and secure all vehicle body components, such as:

- Posts, ramps
- Cable winches
- Platform gates, curtains, flaps, stowage box, toolbox
- Wooden plank, folding boom, wheel cavity covers, load securing equipment
- Fix and secure the load.
- Ensure that the load distribution is balanced.

Signal words



DANGER

Indicates an immediate danger

If this danger is not averted, it will result in death or very serious injury.



WARNING

Indicates a possibly dangerous situation

If this danger is not averted, it can result in death or serious injuries.



CAUTION

Indicates a possibly dangerous situation

If this danger is not averted, it can result in light or minor injuries.

NOTICE

Indicates a possibly dangerous situation

If this danger is not averted, it can result in damage to property.



General mandatory sign.

Indicates information that has to be heeded and complied with for safe use.

All warnings and instructions must also be passed on to other users or ancillary staff!

Text emphasis

You will find the following symbols in front of some lines or paragraphs in the manual:

- (Arrow) Prompt to take action
- (Dash) List
- 1. (Digit) List of components

Warning signs used

The following warning signs may be used in this operating manual and on the product. Heed these warning signs and proceed with particular caution.



Hazard area warning!
Be careful - there are several factors that could lead to risks to persons.



Risk of crushing injuries!
For limbs such as:
hands/fingers/feet



Risk of chemical burns!
Escaping battery acid.



Risk of crushing injuries!
Crushing of the body / parts of the body.



Risk of poisoning!
Poisonous substances.



Danger of falling!



Risk of injury!
Obstacles in the area of the head.



Danger of electrical shock!
Dangerous voltage.



Risk of slipping!



Risk of striking!
Falling objects.



Risk of tripping!



Danger of burning!
Hot surfaces.



Risk of explosion!
Explosive operating materials.

Personal protective equipment

Wear the prescribed personal protective equipment (PPE) for all the work described in this manual.

It includes the following:



Safety boots,
sturdy shoes



Protective gloves



Safety helmet



Safety goggles



Reflective clothing,
high-visibility vest



Protective mask,
respiratory protection



Hearing protection



Protective clothing

Warning or instruction sign

Keep to and heed the following rules and prompts for all the work described in this manual.



Important information!
To be observed and complied
with to ensure safe use



Read the relevant information
before performing the activity



Wash your hands thoroughly



Disconnect the power from live
components by unplugging the
connector before starting
working on them



Ensure good ventilation and
extraction



Work in pairs.



Instructions required from
another person

Prohibitory sign

Heed these prohibited activities.



Climbing up prohibited



Reaching in prohibited



Touching prohibited.



Entering this area prohibited



Open flames prohibited,
e. g. cigar, lighter



Jets of water are prohibited
(e.g. high-pressure cleaner).



Entry prohibited, unauthorised
persons must keep out



Stepping behind the swivel arm /
moving parts is prohibited.



Entering the area between
towing vehicle and trailer is
prohibited.



Allowing trailer to run up on
towing vehicle.

Other important pictograms

Observe the following pictograms for
correct disposal as well as first aid in the
case of emergency.



Problem waste!
Disposal with domestic waste
not allowed.



Danger of polluting the
environment.



Dispose of used oil properly
without polluting the
environment



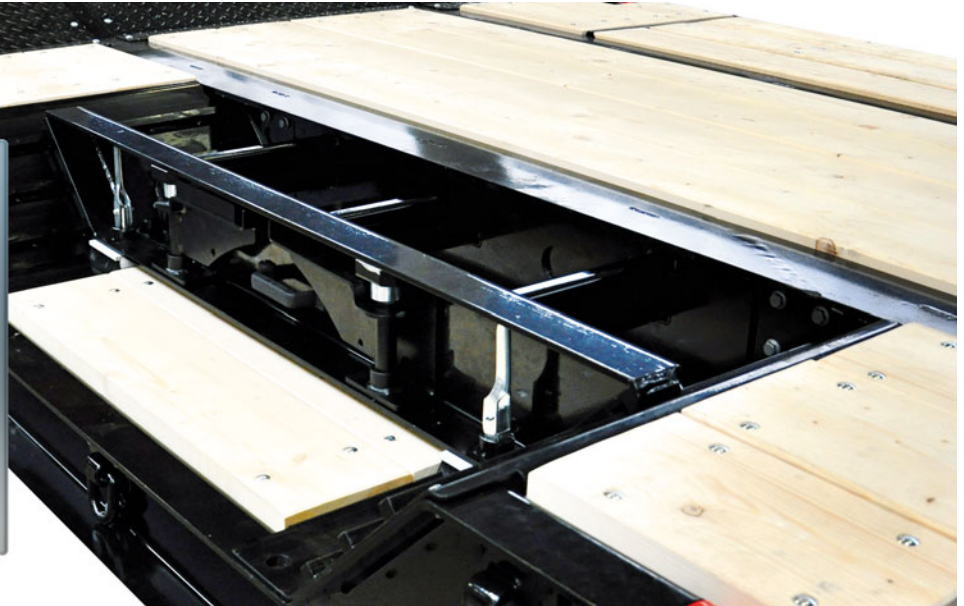
Dispose of used tyres properly
without polluting the
environment



Immediately wash your eyes out
with plenty of water



See a doctor



General Information

Flatbed centre pivot plate

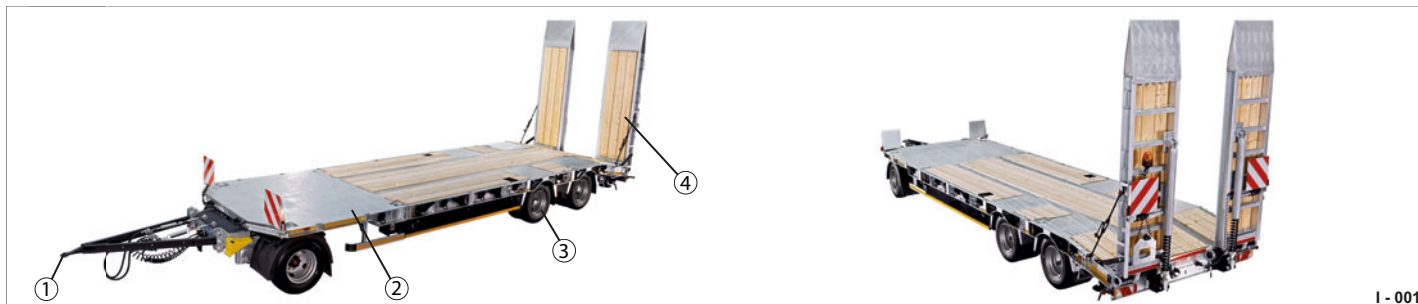


Fig. 1 "HTD 30 85 25-G" centre pivot plate

- 1 Towing eye/drawbar, straight
- 2 Plateau, straight
- 3 Axles, 3x
- 4 Ramps, one-piece/manual

There are different versions of the flatbed centre pivot plate:

- With straight plateau
- With offset plateau
- As 3 or 4-axle version

Manoeuvring is easy with the centre pivot plate due to the movable slewing ring.

The high plateau can optionally be formed as a platform gate structure.

The loading platform can optionally be equipped with container locking points in order safely transport ISO container sizes 10"/20".

The ramps and the support props in the rear area can be operated manually or hydraulically as an option.

For easier loading/unloading, the flatbed is equipped with a raising/lowering system for the rear axle unit, or optionally for the front axle.

Various storage compartments and toolboxes make it possible to stow away the load securing equipment.

The lateral folding boom and the adjustable warning panels at the front and rear make wide load transport possible.

The optional rotating light warns other drivers of heavy, wide load transport.

Connectable posts can optionally attached at the front and side to secure the load.



Fig. 2 "HTD 30 85 25-K" centre pivot plate

- 1 Plateau, offset
- 2 Axles, 3x

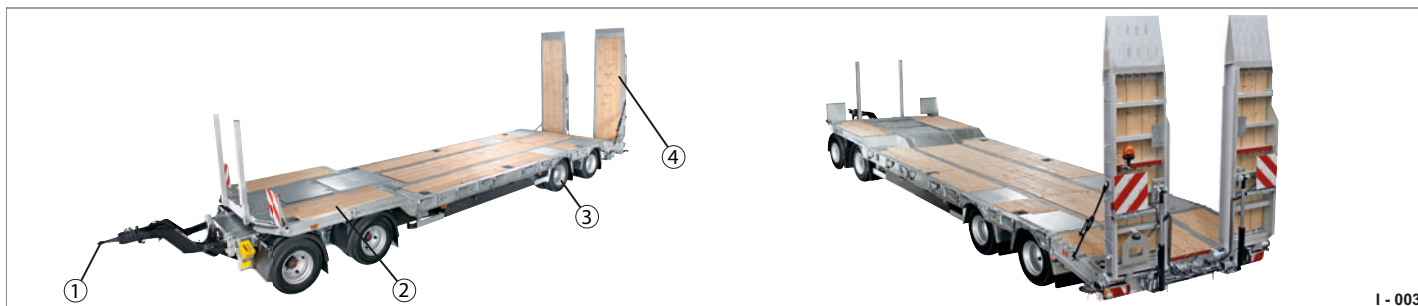


Fig. 3 "HTD 40 95 25-K" centre pivot plate

- 1 Towing eye/drawbar, offset
- 2 Plateau, offset
- 3 Axles, 4x
- 4 Ramps, one-piece/hydraulic

Flatbed semi-trailer

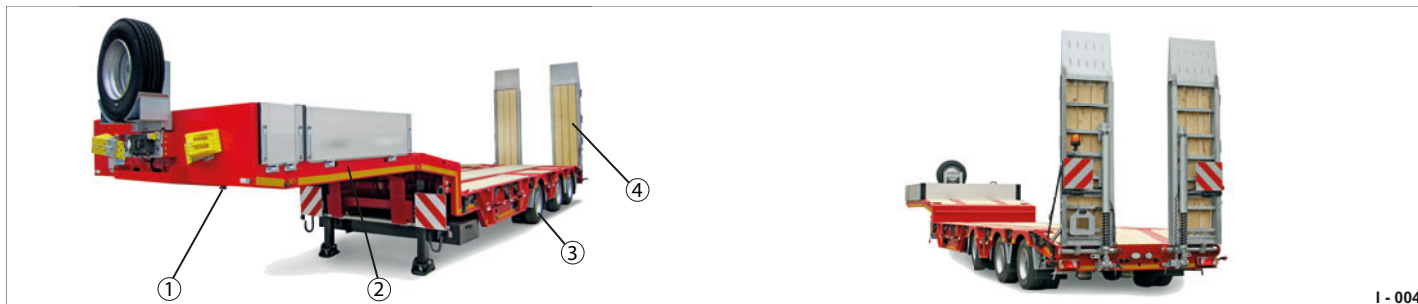


Fig. 4 "HTS 30" semi-trailer

- 1 Pins
- 2 Plateau, offset
- 3 Axles, 3x
- 4 Ramps, one-piece/manual

The Kögel flatbed semi-trailer can be used as to transport excavators/wheel loaders, ISO containers sizes 10"/20", lorries/cars or various cargo, depending on the equipment.

There is also the flatbed with coverable wheel cavities for larger construction transports.

The high plateau is formed as a closed platform gate structure.

The spare wheel on the front side or under the chassis makes it possible to change defective wheels in an emergency situation.

The ramps can optionally be divided in two. This minimises the loading angle.

The optional arm cavity storage recess on the rear of the loading platform secures the transported excavators.

The working lights on the rear of the flatbed guarantee lighting and safe operation of the trailer in the dark.

Equipment with rubber coating in the ramp area as well as lateral climbing rails make it easier to drive construction machinery up the ramp.

The floor covering made of exchangeable 50 mm soft wooden planks guarantees long trailer lifetime.

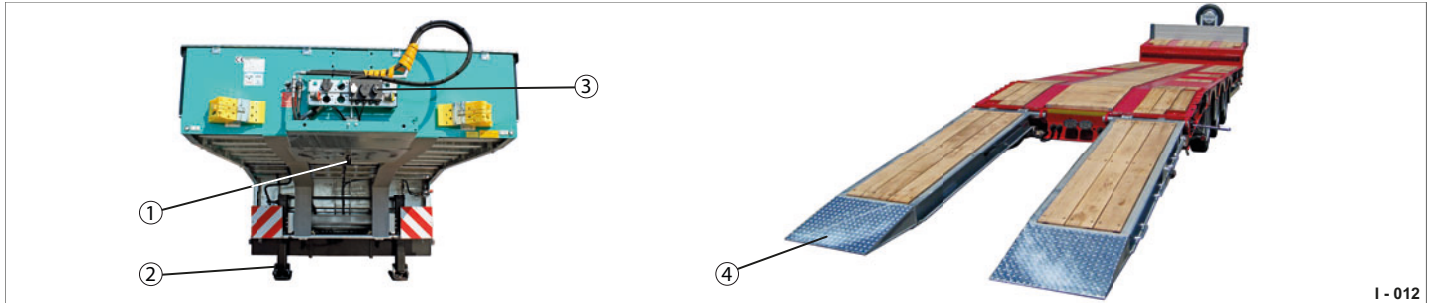


Fig. 5 "HTS 30" semi-trailer

- 1 King pin
- 2 Support equipment/landing gear
- 3 Connections (electrical system, pneumatic system)
- 4 Ramps, unloaded

Ramps, one-piece, manual



Fig. 6 Ramps, one-piece, with springs

Ramps, one-piece, hydraulic



Fig. 8 Ramps, one-piece, hydraulic

Support props, hydraulic



Fig. 10 Support props, hydraulic

Ramps, two-piece



Fig. 7 Ramps, two-piece

Support props, manual



Fig. 9 Support props at rear, manual

Sideways movement, hydraulic

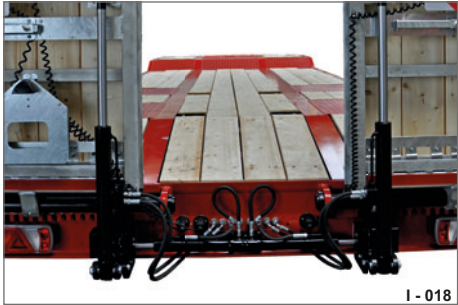


Fig. 11 Hydraulic cylinder for sideways movement of ramps

Wheel cavities



Fig. 12 Wheel cavities open

Storage compartment, lengthwise

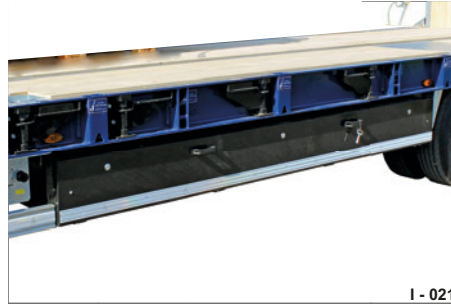


Fig. 14 Storage compartment, arranged lengthwise

Storage compartm. in high plateau

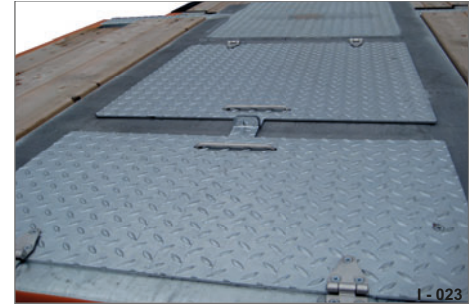


Fig. 16 Storage compartments, one behind the other

Arm cavity storage recess



Fig. 13 Storage recess open

Storage compartment, crosswise (semi-trailer)

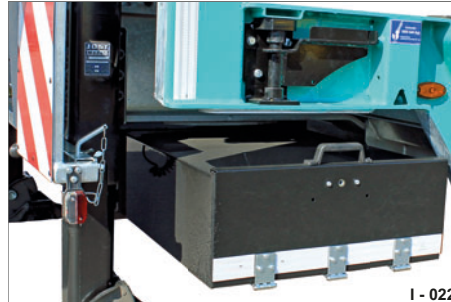


Fig. 15 Storage compartment, arranged crosswise

Toolbox



Fig. 17 Toolbox, lateral

3 m - wide load



Fig. 18 Folding boom for wooden planks

3 m - wide load



Fig. 20 Warning panels, extendable

Securing the load

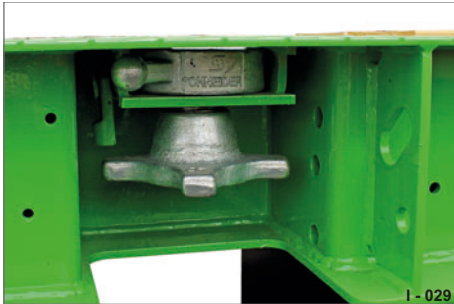


Fig. 22 Container locking points

3 m - wide load



Fig. 19 Rotating light on rear

Securing the load



Fig. 21 Posts, can be inserted/removed

Securing the load

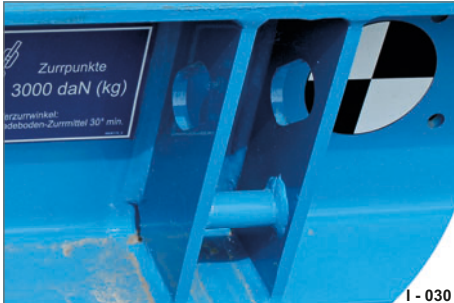


Fig. 23 Lashing points, lateral on chassis

Securing the load



Fig. 24 Loading safety rails

Loading aids



Fig. 26 Ramp planks

Loading aids

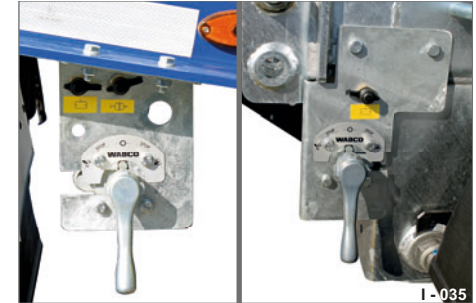


Fig. 28 Raising/lowering system, optionally in front

Securing the load

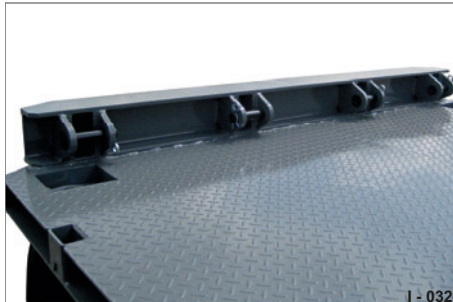


Fig. 25 Additional Loading safety lashing points

Loading aids




Fig. 27 Rubber coating, climbing rails

Power supply 12 V



Fig. 29 Voltage transformer EBS/ABV

There is a vehicle identification number (VIN) on the trailer to identify it.



If there are any queries about the trailer, this number has to be specified. The VIN number must be legible during the entire lifetime of the trailer.

VIN	WHD	000000	00000000
Item	1-3	4-9	10-17

Item	Explanation
1-3=	International code for Humbaar GmbH
4-9=	Filler character chosen by manufacturer
10-17=	Sequential numbering

Tab. 1 Example - VIN number

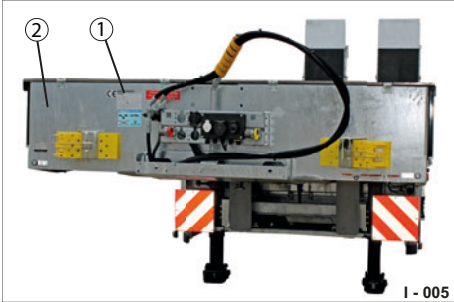


Fig. 30 Vehicle front (semi-trailer)

- 1 Vehicle identification numbers (VIN)
- 2 Front side, high plateau

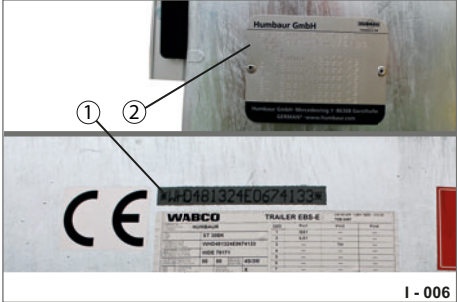


Fig. 32 Name plate (semi-trailer)

- 1 VIN - engraved
- 2 Name plate/weight specifications



Fig. 31 Vehicle front (centre pivot plate)

- 1 Vehicle identification numbers (VIN)
- 2 Front side, high plateau

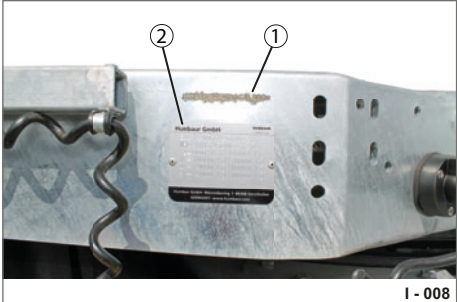


Fig. 33 Name plate (centre pivot plate)

- 1 VIN - engraved
- 2 Name plate/weight specifications

The support equipment in the flatbed semi-trailer is attached in the front area under the high plateau.

A name plate is attached to the spindle support to identify it.



If you have questions about the spindle support, you must specify the factory number/type and year of construction.



Read and comply with the operating and maintenance manual of the spindle support.

Manufacturer of the spindle support, e.g.:

haacon hebetechnik gmbh

Josef- Haamann-Strasse 6

D-97896 Freudenberg

Tel. +49 - 9375-84 - 0

Fax: +49 - 9375-84 - 66

www.haacon.de

or

JOST

Siemensstraße 2

D-63263 Neu-Isenburg

Tel. +49 - 6102 - 295-0

Fax: +49 - 6102 - 295-298

www.jost-world.com

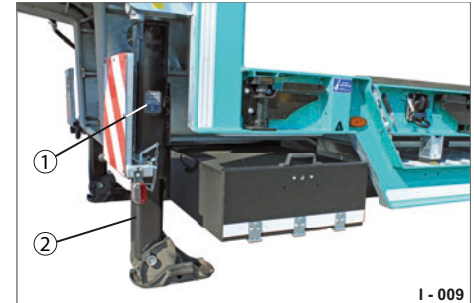


Fig. 34 Support equipment (semi-trailer)

- 1 Manufacturer name plate
- 2 Spindle support



Humbaur GmbH hereby confirms compliance with all relevant EC guidelines for the certification and safe operation of flatbed trailers.

You can separately request an EC declaration of conformity from us.

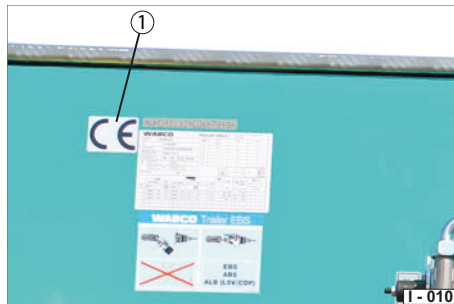


Fig. 35 EC declaration of conformity (semi-trailer)

1 CE label

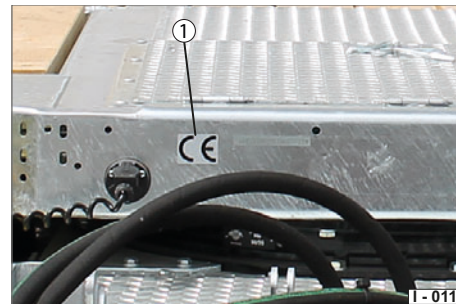


Fig. 36 EC declaration of conformity (centre pivot plate)

1 CE label



Operation

NOTICE

Exceeding the permissible tilt angle

When driving over slopes and descents, the maximum permissible inclination angle of the fifth wheel coupling and king pin can be exceeded.

The trailer and towing vehicle can collide or tip over.

Connections could be crushed or broken.

- Comply with the inclination angle defined in DIN ISO 1726 of
6 degrees to the front (Fig. 1)
7 degrees to the rear,
3 degrees to the side (Fig. 2).
- Do not kink the trailer more than 90 degrees with respect to the towing vehicle.



Additional information can be found in the brochure from the employers' liability insurance association: "BG-Information BGI 599 - safe coupling of vehicles."

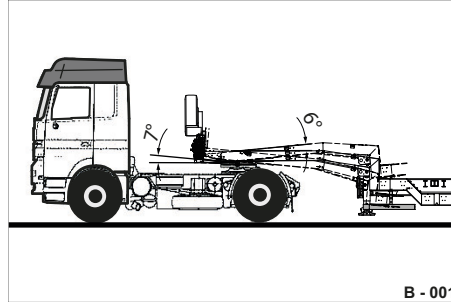


Fig. 1 Vertical angle of inclination

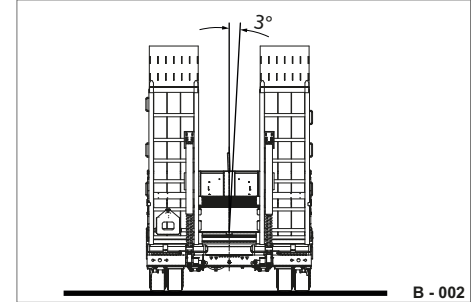


Fig. 2 Lateral angle of inclination

NOTICE**Exceeding the permissible tilt angle**

When driving over slopes and descents, the maximum permissible inclination angle of the towing eye and pin coupling can be exceeded.

Trailer, towing eye, and pin coupling can be damaged.

Connections could be crushed or broken.

- Drive especially carefully over dips or bumps.
- Do not kink the trailer more than 90 degrees with respect to the towing vehicle.
- Comply with the maximum inclination angle of:
Vertical ± 20 degrees,
Axial ± 25 degrees.



Additional information can be found in the brochure from the employers' liability insurance association: "BG-Information BGI 599 - safe coupling of vehicles."

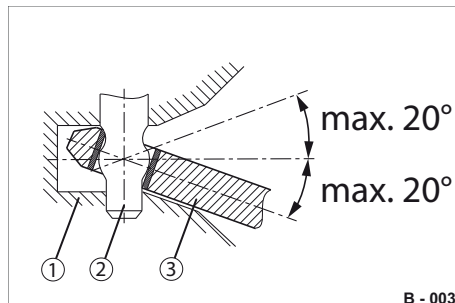


Fig. 3 Inclination angle of vertical transverse axis

- 1 Pin coupling (catcher)
- 2 Vertical pin
- 3 Towing eye

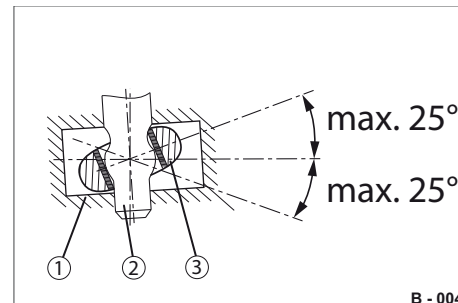


Fig. 4 Inclination angle of axial longitudinal axis

- 1 Pin coupling (catcher)
- 2 Vertical pin
- 3 Towing eye



WARNING



Driving the trailer

When driving the trailer or if the load distribution is not uniform, the trailer can tip to the side - risk of striking/crushing!

- ▶ Secure the trailer before loading/unloading with support equipment or connect it to the towing vehicle.
- ▶ Do not load or unload the trailer across the slope (terrain with steep gradients) - risk of tipping!

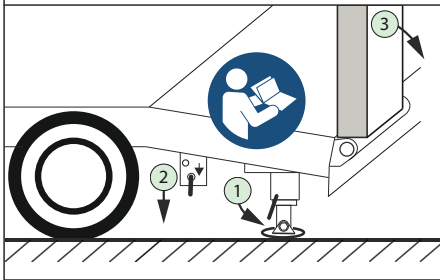


WARNUNG

Gefahr des Stabilitätsverlustes!

Anhänger kann beim Beladen die Standfestigkeit verlieren.

- ▶ ① Stützen herrunterlassen + verriegeln
- ② Anhänger ablassen ③ Rampen betätigen



WARNING

Risk of loss of stability!

Trailer may lose its steadfastness when loading.

- ▶ ① Supports unfold and lock
- ② Drain the Trailer ③ Operate ramps

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NOTICE

Loss of stability during loading and unloading

The rear axle and the chassis/well can get damaged/overloaded.

- ▶ Before loading/unloading the trailer, check that the rear support legs are lowered and locked - they stabilise the trailer and relieve the axle.

Fig. 5 Warning label

Preparing for loading



WARNING



Limited visibility

When driving in reverse, persons could be overlooked and run over.

- ▶ Correctly estimate the danger area around the vehicle using the mirrors.



- ▶ Have a second person assist you.



WARNING



Twisted centre pivot plate

A trailer with twisted centre pivot plate can tip over when loading - risk of crushing

- ▶ Always straighten the centre pivot plate before loading - drawbar points to the front.

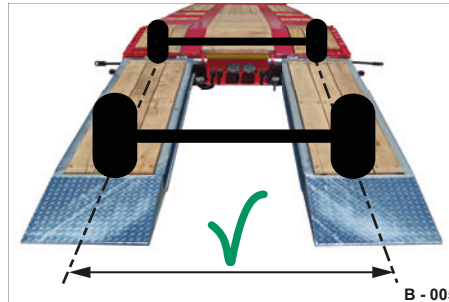


Fig. 6 Setting track width



WARNING

Ramps set to incorrect track width

The vehicle to be loaded can tip off the ramp - risk of striking/crushing!

- ▶ Set the ramp to the correct track width before loading/unloading.

Procedure:

- ▶ Place the trailer on firm ground to prevent it from sinking in or toppling over.
- ▶ Secure the trailer from rolling away.
- ▶ Apply the spring-loaded parking brake and use wheel chocks to secure the trailer in position.
- ▶ Extend the rear support feet and fold them down.
- ▶ Set the ramp to the necessary track width.
- ▶ Lower the ramps.

Loading and unloading



WARNING



Dirty/wet loading platform

The loading platform can get slippery due to dirt, water or ice - risk of slipping/falling!

- ▶ Carefully enter the loading platform and watch out for dirty, wet/icy patches.
- ▶ If necessary, clean the dirty areas before entering the loading platform.



WARNING

Shifted loaded goods

There is an increased danger of injury during loading and unloading.

This can result in cutting and crushing injuries.



Use



WARNING



Entering loading platform

There is a risk of falling when climbing on/off the mud guards, side guards, pallet stowage and toolboxes.



- ▶ Use
- ▶ Only enter the loading platform on the rear of the trailer.
- ▶ Do not jump on or off.



WARNING



Loading/load-securing elements on the loading platform

The loading platform can be misaligned with loaded goods, squared timber, ratchet straps and pallets - risk of tripping!

- ▶ Make sure there is enough light on the loading platform.
- ▶ Stow away unnecessary palettes, ratchet straps and tools in the stowage spaces provided.
- ▶ Keep the loading platform clean.

**WARNING****Loading/unloading with a crane**

The mounting can rip and the load can fall - swinging loads can hit/crush persons!



- ▶ Use
- ▶ Do not walk under swinging loads.



- ▶ Make sure no one is in the danger area.

Procedure:

- ▶ Also make sure that traffic is not blocked.
- ▶ If necessary, secure the surroundings.
- ▶ Slowly move the ramps.
- ▶ Drive the trailer straight ahead - not at an angle from the side.

After loading and unloading



The body must be completely closed and secured during the drive.

The load must be properly lashed/secured.



DANGER

Driving with folded down ramps/open platform gates/flaps

This can result in injury.

- ▶ Check that the ramps are up and secured before departing.
- ▶ Check that all platform gates/flaps/toolboxes are closed and secured before departing.
- ▶ Check that the side guards are up and secured before departing.



WARNING

Driving with ramps not folded up and unsecured support equipment

The support equipment (semi-trailers/rear folding supports) can be torn off during the drive and fly away - risk of accidents!

- ▶ Check that all support equipment is up and secured before departing.



WARNING

Driving with open or only partially closed curtain

The curtain can come loose and be pushed to the side.

If wind goes under the curtains, the trailer can rock to the side - risk of accidents!

- ▶ Check that the curtains are completely closed and secure before departure.



Prerequisites for safe driving with trailer:

- ▶ Comply with the total weight, axle loads, static vertical load or semi-trailer load.
- ▶ Keep the centre of gravity of the load as low as possible.
- ▶ Distribute the load uniformly - avoid selective/one-sided loads.
- ▶ Observe the load securing requirements in VDI 2700.

Permissible weights/load centre

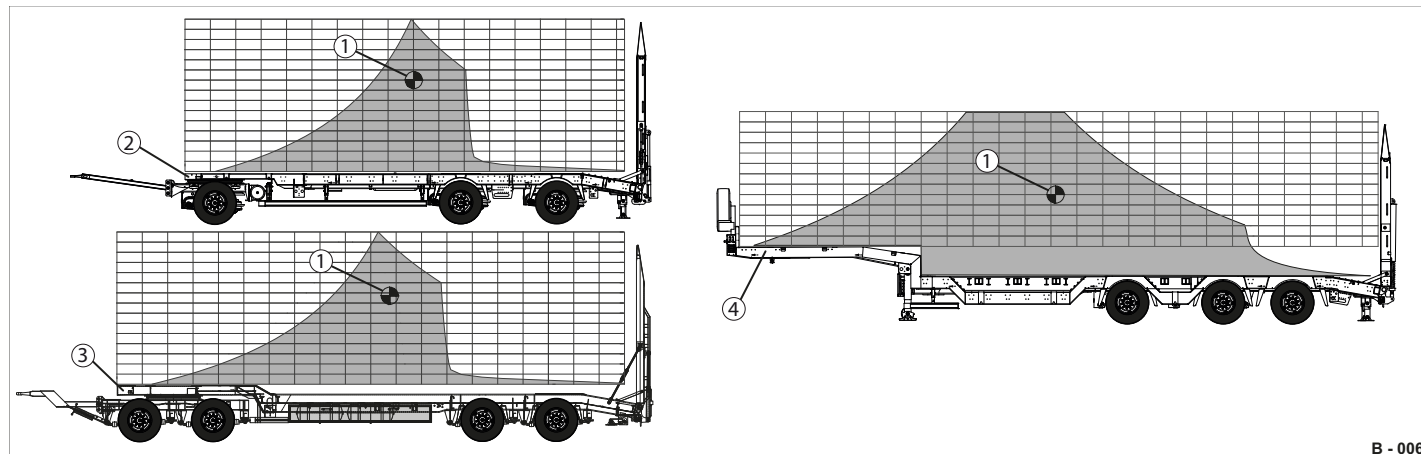


Fig. 7 Load distribution on the loading platform

- 1 Load centre
- 2 Centre pivot plate, 3-axle
- 3 Centre pivot plate, 4-axle
- 4 Flatbed semi-trailer, 3-axle

Stow away the load so that the combined load centre of the entire load lies over the longitudinal centre line of the trailer as far as possible.

You can orient it on the label (Fig. 8/2) for heavy-duty load points.

Keep this load centre as low as possible. Load your vehicle within the framework of the allowable total weight, the allowable axle loads and the allowable drawbar/fifth wheel loads.

Try for a uniform weight distribution even when there is only a part load, so that every axle is loaded proportionately and that there is sufficient drawbar load.

The maximum payload of the trailer can only be reached if the overall load centre of the load is within the permissible range.

The unladen weight can be found in the vehicle approval papers.

Restrict the load at particular points of the loading surface by distributing the load appropriately.

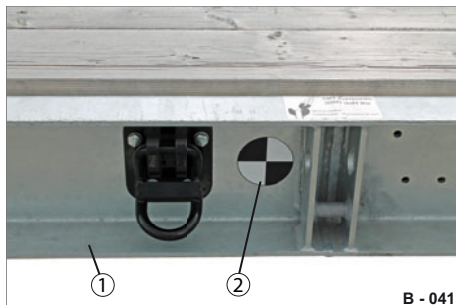


Fig. 8 Load centre - labelling

- 1 Chassis frame
- 2 Label

Use the load distribution chart as an aid to determine the optimum load distribution (ref. VDI 2700 sheet 4).

On the load distribution chart, the vertical scale indicates the load in tonnes and the horizontal scale shows the distance from the front wall in metres.



The exact type designation of your trailer can be found in the operation instructions, the certificate of load securing, the order confirmation or the vehicle documents.



The load distribution plan specifies the maximum technically feasible weight distribution.

This can deviate from the legal weights of the respective country.



The load distribution plans shown are examples and should only be used for orientation purposes for an optimal load distribution.

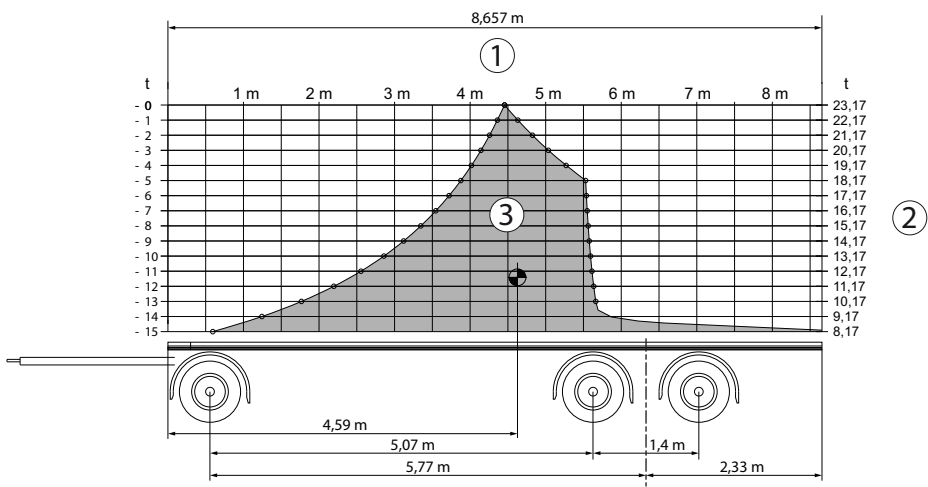
The load distribution plan depends on the measurements and weight of the trailer and is calculated individually for every trailer.

The load distribution plans are not completely transferable to your trailer.

Load distribution plans can be requested from manufacturer HUMBAUR GmbH if necessary.

Example - Load distribution plan type: HTD 30 82 25

Vehicle data	
Overall: LxWxH	10.78 m x 2.54 m x 3.73 m
Coupling height	approx. 0.91 m +/- 100 mm
Drawbar length	approx. 1.80 m
Distance between axle 1 and axle 2	5.07 m / 4.45 m with wheel cavities
Distance between axle 2 and axle 3	1.41 m / 2.01 m wheel cavities
Permissible weights	
Trailer unladen weight (basic equipment)	approx. 6.30 t
Trailer unladen weight with wheel cavities (basic equipment)	approx. 7.30 t
Permitted total weight	24.00 t; 30.00 t*
Payload (max.)/permitted range	16.70 t; 22.70 t*
Payload (max.) with wheel cavities/permitted range	17.70 t; 23.70 t*
* With indivisible load with special permission according to § 70 StVZO in Germany	



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Fig. 9 Example - load distribution plan for type: HTD 30 85 25 (without wheel cavities)

- 1 Distance of the load centre of gravity from the loading platform front wall in m
- 2 Dimensions of the additional load in t
- 3 Load distribution curve

Example - Load distribution plan type: HTD 40 95 25 / HTD 40 120 25

Vehicle data	
Overall: LxWxH	11.71 m x 2.54 m x 3.76 m
Coupling height	approx. 0.91 m +/- 100 mm
Drawbar length	approx. 1.50 m
Distance between axle 1 and axle 2	1.31 m
Distance between axle 2 and axle 3	5.20 m
Distance between axle 3 and axle 4	1.41 m
Permissible weights	
Trailer unladen weight (basic equipment)	approx. 7.50 t
Permitted total weight	24.00 t; 40.00 t*
Payload (max.)/permitted range	16.50 t; 32.50 t*
* With indivisible load with special permission according to § 70 StVZO in Germany	

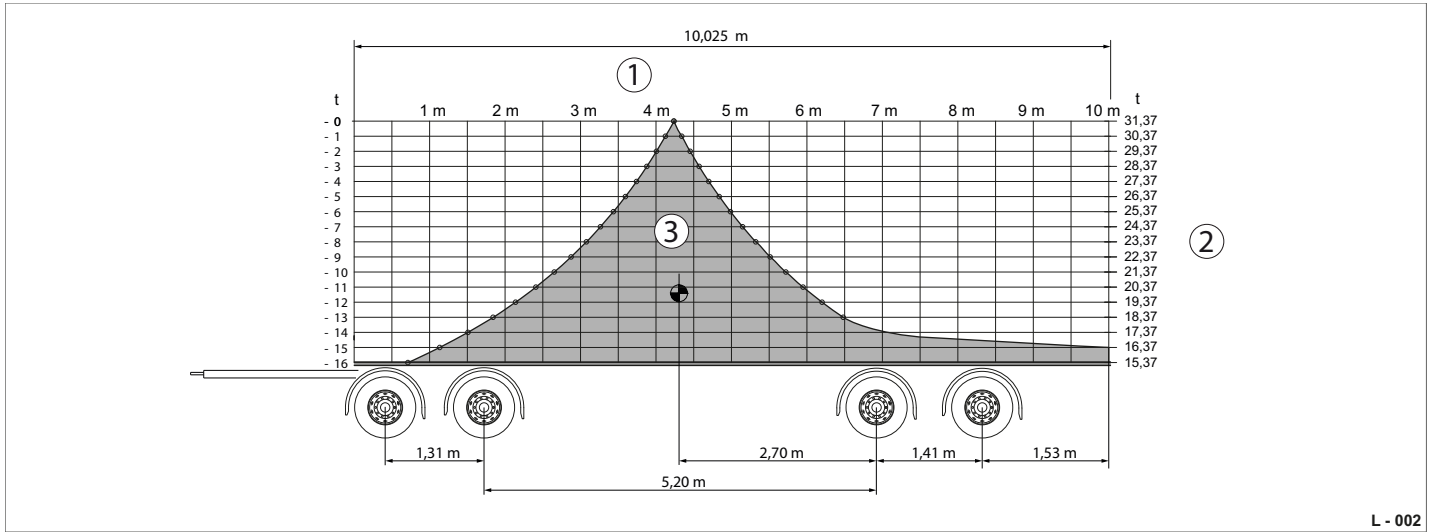


Fig. 10 Example - load distribution plan for type: HTD 40 95 25 / HTD 40 120 25

- 1 Distance of the load centre of gravity from the loading platform front wall in m
- 2 Dimensions of the additional load in t
- 3 Load distribution curve

Example - Load distribution plan type: HTS 30

Vehicle data	
Overall: LxWxH	12.47 m x 2.54 m x 3.75 m
Semi-trailer height	approx. 1.230 m
Distance between the kingpin and axle 1	6.71 m
Distance between axle 1 and axle 2	1.41 m / 1.81 m (with wheel cavities)
Distance between axle 2 and axle 3	1.31 m
Permissible weights	
Trailer unladen weight (basic equipment)	approx. 8.00 t
Permitted total weight	35.00 t; 45.00 t
Payload (max.)/permitted range	27.55 t
* With indivisible load with special permission according to § 70 StVZO in Germany	
Technical semi-trailer load	18.00 t
Technical axle loading	30.00 t

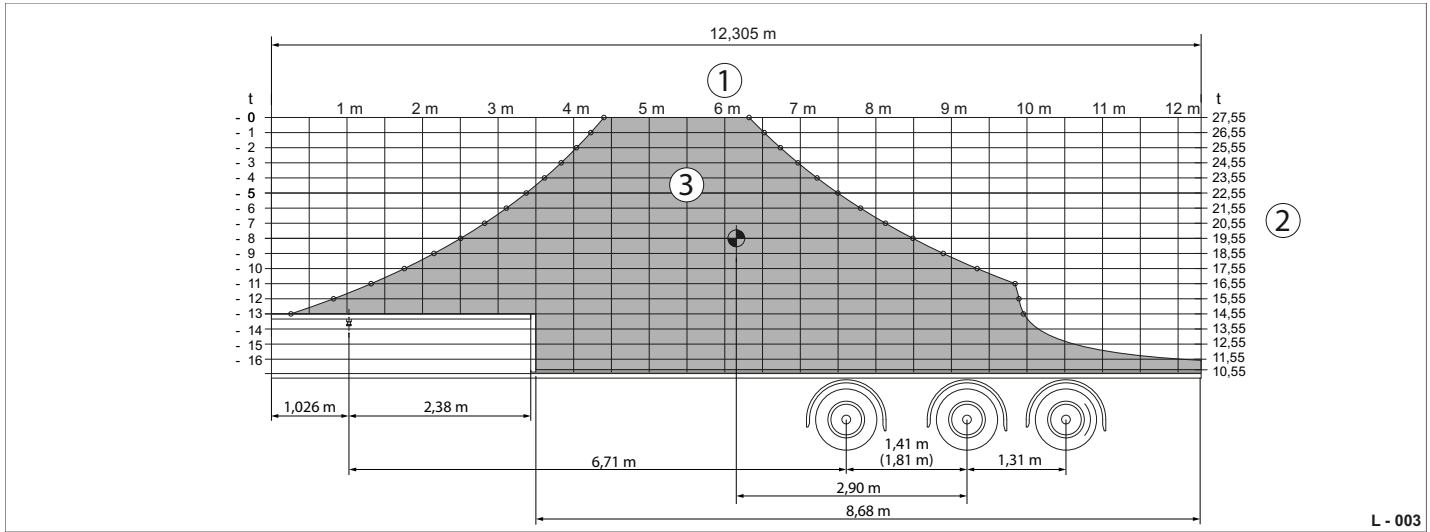


Fig. 11 Example load distribution plan for type: HTS 30

- 1 Distance of the load centre of gravity from the loading platform front wall in m
- 2 Dimensions of the additional load in t
- 3 Load distribution curve

In order to connect the trailer to a towing machine, regardless of the design of the trailer,

A kingpin - for flatbed semi-trailers,

A towing eye - for flatbed centre pivot plates, is used.



DANGER

Damaged connection element

The trailer could detach from the towing machine during the drive - risk of accidents!

- ▶ Check that the connection element is undamaged before departing.
- ▶ Have defective/damaged/deformed/worn connection elements repaired or replaced immediately.
- ▶ Monitor the connection elements regularly (siehe „Semi-trailer connection (flatbed semi-trailer)“ auf Seite 240 & siehe „Towing eye connection (flatbed centre pivot plate)“ auf Seite 241).



Fig. 12 Connection element for flatbed semi-trailer

1 King pin

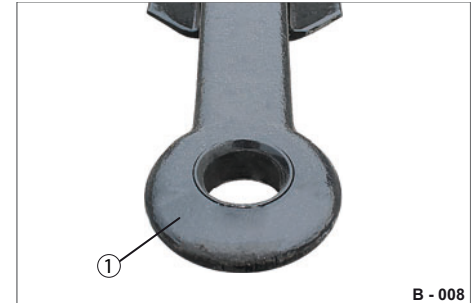


Fig. 13 Connection element for flatbed centre pivot plate

1 Towing eye

Connecting the towing machine to the trailer and detaching the trailer from the towing vehicle are two of the most dangerous procedures when operating the trailer.

These procedures require particular caution and attention of the operator.

The procedures are different depending on the connection element or trailer type:

- For flatbed semi-trailer:
Hitching and unhitching
- For flatbed centre pivot plate:
Coupling and uncoupling



Additional information can be found in the brochure provided: BG-Information BGI-599 on the safe coupling of vehicles.



WARNING



Rolling towing vehicle

There is risk of crushing between the trailer and towing machine when connection/detaching the towing machine to/from the trailer.



- ▶ Make sure danger area between the towing vehicle and trailer is empty.



- ▶ Agree on hand signals (in accordance with BGV-D29) when being guided by someone, and position this person within your field of vision and hearing distance.
- ▶ Keep the rear area of the towing vehicle clear.



WARNING



Improperly coupled trailer

Trailer can start moving and tip over.

The trailer can hit and run over persons - risk of crushing!

- ▶ Only couple a trailer if it is empty.
- ▶ Use wheel chocks before coupling to prevent the trailer from rolling.



CAUTION



Hitching and unhitching a semi-trailer

You could hit your head on the chassis in the semi-trailer area.

- ▶ Move carefully under/on the chassis - do not make any quick movements.

Preparation

- Before hitching for the first time, check that the towing vehicle - semi-trailer connection is permissible.
 - Semi-trailer load?
 - Construction height of the semi-trailer?
 - Semi-trailer end distance?
 - Trailer height (permissible maximum height) when hitched - not exceeded?
 - Certification of the fifth wheel coupling for positive steering of the trailer?

Hitching

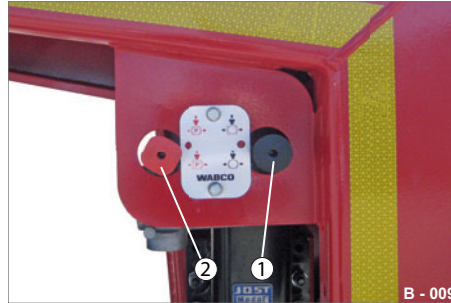


Fig. 14 Operating console: Brakes

- 1 Service brake release valve (black, round)
- 2 Spring-loaded parking brake (red, square)

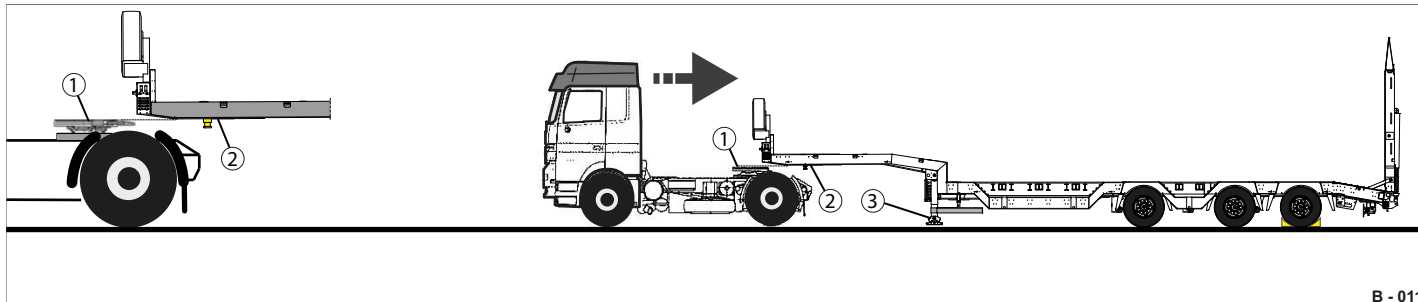
- Engage the spring-loaded parking brake (Fig. 14/2). This brakes the trailer.



Fig. 15 Wheel chocks positioned

- 1 Wheel chock

- If necessary, place the wheel chocks (Fig. 15/1) under the wheels of the fixed axle.
The trailer has an additional safeguard against rolling away.
- Check that the trailer is as horizontal and level on the ground as possible.



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Fig. 16 Hitching

- 1 Fifth wheel pick-up plate
- 2 Fifth wheel pick-up plate
- 3 Landing gear

- Drive the towing machine straight towards the trailer until the fifth wheel pick-up plate (Fig. 16/1) is located in front of the semi-trailer gliding plate (Fig. 16/2).
- Use the landing gear (Fig. 16/3) of the semi-trailer or the pneumatic suspension of the towing machine to adjust the height so that semi-trailer gliding plate (Fig. 16/2) is at the same height or a little lower (up to 50 mm) than the fifth wheel pick-up plate (Fig. 16/1).
- Check that the fifth wheel coupling is ready to be brought in, if necessary first open the fifth wheel coupling. Observe the manufacturer information on the coupling.



Fig. 17 Fifth wheel coupling

- 1 Hand lever
- 2 Fifth wheel pick-up plate
- 3 Coupling lock

- ▶ Position the hand lever (Fig. 17/1) in the drive-in position (open).
- ▶ Leave the danger area between the towing vehicle and trailer.

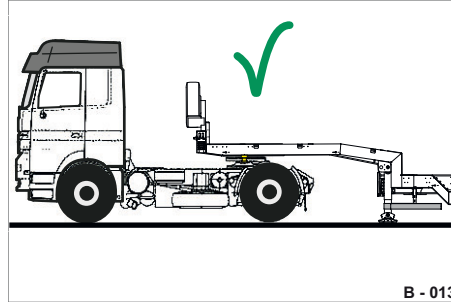


Fig. 18 Towing machine retracted

- ▶ Reverse the towing vehicle slowly until the fifth wheel coupling engages.
- ▶ Drive forwards until you feel a start-up jerk.
This indicates that the king pin and fifth wheel coupling are locked.

Monitoring

- ▶ Apply the towing vehicle parking brake.
- ▶ Check that the fifth wheel coupling is properly closed and secured.
There should not be a small gap between the fifth wheel pick-up plate and the semi-trailer gliding plate.
- ▶ After the closing procedure, check that the kingpin is located properly in the coupling lock.
- The safety trap of the fifth wheel coupling must be engaged or it must be possible to attach the spring hook or padlock - this varies depending on the manufacturer.

If the fifth wheel coupling is not properly locked:

- ▶ Open the fifth wheel coupling.
- ▶ Drive the towing vehicle forwards.
- ▶ Repeat the hitching process.

After coupling

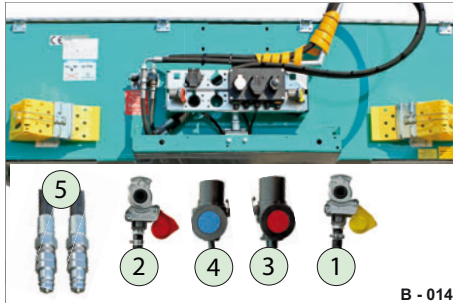


Fig. 19 Create connection

- 1 Brake line (yellow)
- 2 Supply line (red)
- 3 Lighting cable (electrical system)
- 4 EBS / ABS - cable (brake)
- 5 Hydraulic lines (flow/return line)

- Connect the lines to the towing vehicle, in this order:

1. Brake line (yellow)
2. Supply line (red)
3. Lighting cable
4. EBS / ABS - cable

(siehe „Coupling (flatbed semi-trailer“ auf Seite 87)

- If applicable, connect the hydraulic lines to the towing vehicle.
- Raise the support equipment.
- Put the wheel chocks in their holders and secure them in position.
- Do a departure check (siehe „Check before departing and when parking“ auf Seite 72).

Preparation

- Before unhitching, check whether a loaded trailer can be unhitched.



Observe the manufacturer information on the semi-trailer spindle support.

- Check whether the ground conditions for the contact area of landing gear are sufficiently stable.
- Check that the trailer can be positioned to be as straight as possible and that re-hitching is problem-free.
- Check that the ground is horizontal and level - no gradients.

Unhitching

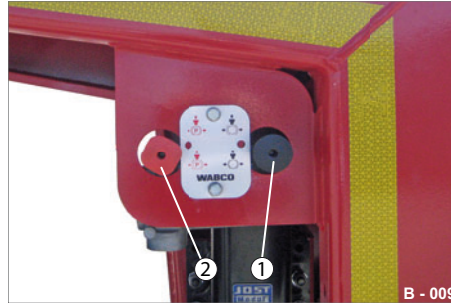


Fig. 20 Operating console: Brakes

- 1 Service brake release valve (black, round)
- 2 Spring-loaded parking brake (red, square)

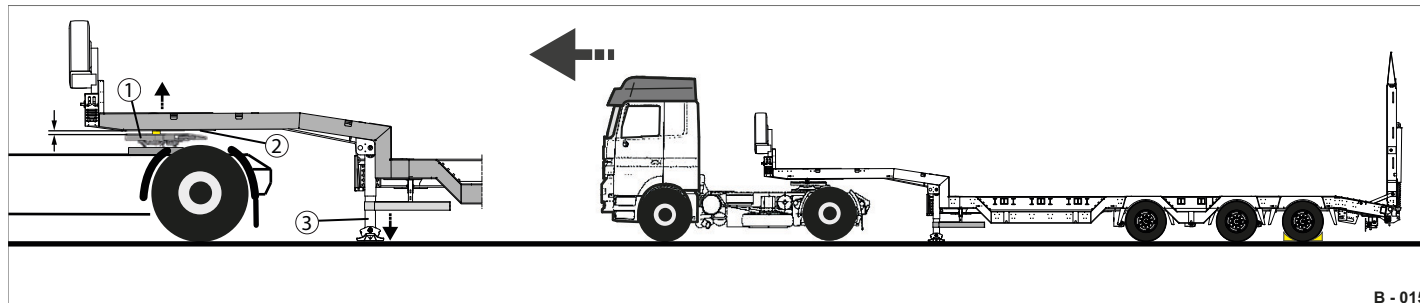
- Engage the spring-loaded parking brake (Fig. 20/2). This brakes the trailer.
- Apply the towing vehicle parking brake.



Fig. 21 Wheel chocks positioned

- 1 Wheel chock

- If necessary, place the wheel chocks (Fig. 21/1) under the wheels of the fixed axle.
The trailer has an additional safeguard against rolling away.
- Check that the trailer is as horizontal and level on the ground as possible.



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Fig. 22 Unhitching

- 1 Fifth wheel pick-up plate
- 2 Fifth wheel pick-up plate
- 3 Landing gear

- ▶ Drive out the (Fig. 22/3) landing gear until there is a small gap between the semi-trailer gliding plate (Fig. 22/2) and the fifth wheel pick-up plate (Fig. 22/1).
- ▶ Move the towing vehicle back gently and apply its parking brake.
This releases the coupling lock of the fifth wheel coupling.
- ▶ Disconnect the electrical and pneumatic supply lines, and if applicable, the hydraulic supply lines, and stow. Observe the order when disconnecting the lines:
 - 1. Supply line (red)
 - 2. Brake line (yellow)
 - 3. Lighting cable
 - 4. EBS / ABS - cable
 - 5. Hydraulic lines
- ▶ Unlock and open the coupling lock of the fifth wheel coupling.
- ▶ Only drive the towing vehicle forward carefully once there is nobody in the danger area.
- ▶ If necessary, slide out the parking warning panel.
- ▶ Do a check when parking (siehe „Check when parking“ auf Seite 72).

**WARNING****Allowing trailer to run up**

Coupling/joining the trailers on a gradient by rolling up to the standing towing vehicle can endanger the lives of persons.

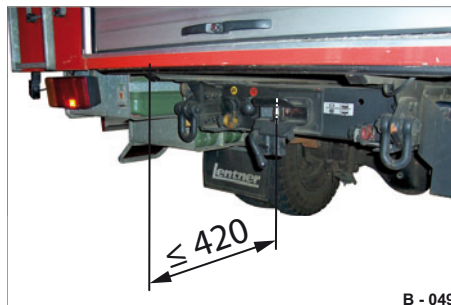


- ▶ Never allow a trailer to run up to a standing towing vehicle.
- ▶ Do a failed coupling attempt again.
- ▶ Drive the towing vehicle precisely - without lateral offset - to the towing eye of the trailer.
- ▶ If necessary, mark the driving distance on the ground.
- ▶ If necessary, ask an instructor for help.

**CAUTION****Pin coupling is difficult to access**

Hand/fingers can be crushed when operating the pin coupling. You could hit your head.

- ▶ Before operating the pin coupling, check that there is enough free space for safe operation.
- ▶ The rear clearance from the centre of the coupling pin to the outside of the platform gate should be max. 420 mm.



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**CAUTION****Sliding drawbar**

When releasing the parking brake on uneven ground, the centre pivot plate can twist and the drawbar can slide to the side - risk of striking!

- ▶ Only position the trailer on even ground.
- ▶ When releasing the parking brake, pay attention to the movement of the drawbar.

Available versions of Pin couplings

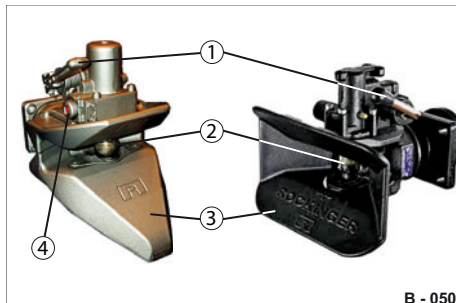


Fig. 23 Manual

- 1 Operating lever
- 2 Pin
- 3 Catcher
- 4 Control display

The pin is operated purely manually using the operating lever.

The safety monitoring of the condition can be seen on the position of the operating lever and the control display.

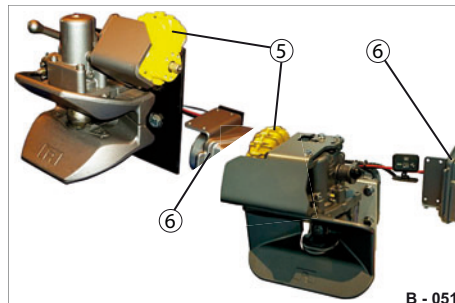


Fig. 24 Electrical

- 5 Electric motor
- 6 Control system

In addition, the state of the coupling (open/closed) is displayed in the driver's cab of the towing vehicle by a pneumatic or electrical remote indication.



Fig. 25 Pneumatic



You will find information on using the pin coupling in the manufacturer's operating instructions.

Available versions of towing eye

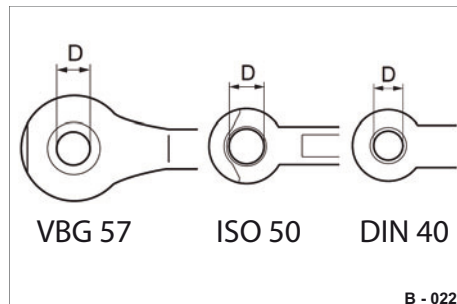


Fig. 26 Inner diameter of bushing

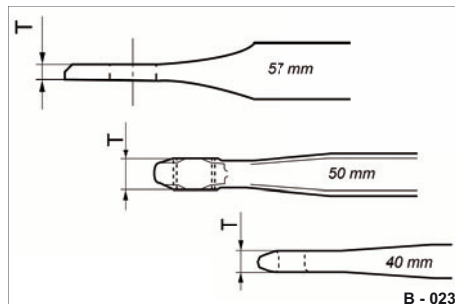


Fig. 27 Thickness of towing eye

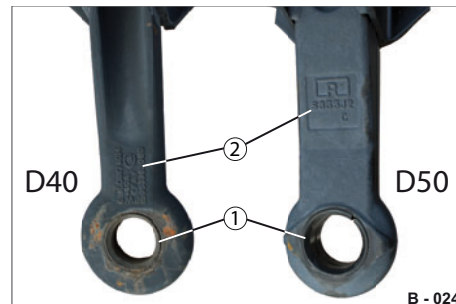


Fig. 28 Towing eyes with wear bushings

- 1 Bushing (inter diameter D40 / D50)
- 2 Towing eye identification

Towing eye: Type	Diameter max. D (mm)	Thickness min. T (mm)
VBG 57	59,5	19
ISO 50	52	41,5
DIN 40	42	28

Tab. 1 Towing eye dimensions

- Do regular visual inspections of the towing eye (siehe „Towing eye connection (flatbed centre pivot plate)“ auf Seite 241).
- Only allow qualified specialists to do repair work on the towing eye.
- Never do welding or adjustment work yourself on the towing eye.
- Only replace a worn/deformed towing eye with an original spare part - see label (Fig. 28/2) on the towing eye.

Preparation

- Before coupling for the first time, check that the towing vehicle - trailer connection is permissible.
- Do the trailer coupling size and the towing eye size match?
- Can the maximum permissible vertical load of the trailer be carried by the coupling of the towing machine?
- Does the position of the drawgear on the trailer and the height of the pin coupling match so that the towing eye is horizontal on flat surfaces in the coupled state?

(max. deviation of +/- 3 degrees is permitted)

Adjustable-length drawbar (option)

With different types of towing vehicles with different pin coupling attachments, using adjustable-length drawbars is beneficial.

Extending the drawbar increases the distance between the towing machine and trailer front side, providing more free space for necessary swinging movements.

NOTICE

Collision of towing vehicle and trailer

After changing the towing vehicle or adjusting the drawbar length, the bodies of the towing vehicle and trailer can collide.

- Match the towing machine to the trailer.
- Observe the swivel radius and the distance between the bodies.
- Observe the permitted maximum train length.



Self-locking hexagonal nut must be replaced after use.

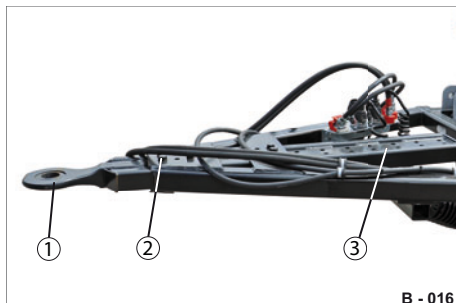


Fig. 29 Drawbar - variety 1

- 1 Towing eye (VBG 57)
- 2 Screw connection
- 3 Adjustable tube, square with bore holes

- ▶ Disassemble the screw connections (Fig. 29/2).
- ▶ Slide adjustment tube in/out (Fig. 29/3) with the towing eye (Fig. 29/1) to the required length.
- ▶ Assemble the screw connections with self-locking hexagonal nut.
- ▶ Tighten the screw connections with 300 Nm torque.

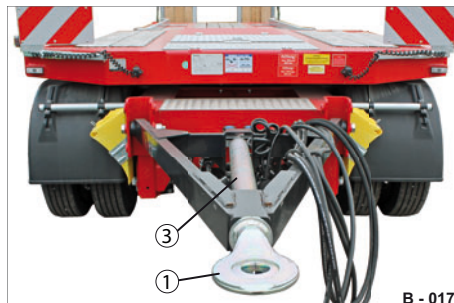


Fig. 30 Drawbar - variety 2

- 1 Towing eye (VBG 57)
- 3 Adjustable tube, round

- ▶ Disassemble the screw connections (Fig. 31/2).
- ▶ Slide adjustment tube in/out (Fig. 30/3) with the towing eye (Fig. 30/1; Fig. 31/1) to the required length.
- ▶ Assemble the screw connections with self-locking hexagonal nut in the adjustment tube rod (Fig. 31/3).
- ▶ Tighten the screw connections with 300 Nm torque.

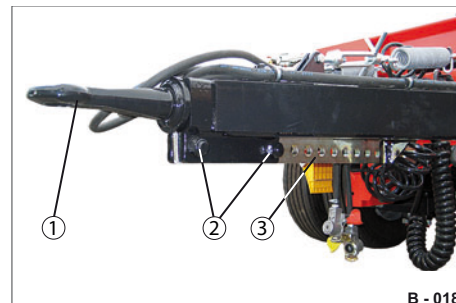


Fig. 31 Drawbar - variety 2 (adjustment)

- 1 Trailing eye (ISO 50 or DIN 40)
- 2 Screw connection
- 3 Adjustment tube - rod

- ▶ Regularly check that the screw connections are secure (siehe „Support equipment maintenance“ auf Seite 235).

Coupling (centre pivot plate)

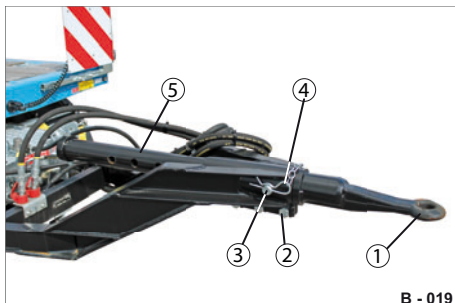


Fig. 32 Drawbar - variety 3

- 1 Towing eye
- 2 Screw connection
- 3 Socket pin
- 4 Spring pin
- 5 Adjustable tube, round with bore holes

- ▶ Remove the spring pin (Fig. 32/4) from the socket pin (Fig. 32/3).
- ▶ Knock the socket pin out of the adjustment tube - use a plastic hammer if necessary.

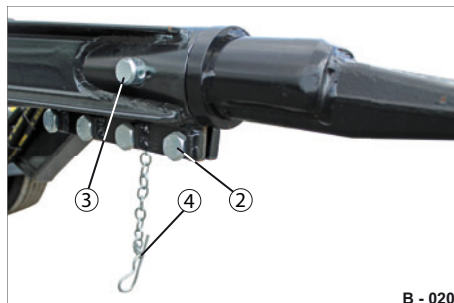


Fig. 33 Release the adjustment tube

- ▶ Disassemble the 4x screw connections (Fig. 32/2).
- ▶ Release the lock nut of the expansion screw (Fig. 34/3) and screw the expansion screw in until the adjustment tube is released (can be moved).
- ▶ Slide adjustment tube in/out (Fig. 34/1) with the towing eye to the required length.
- ▶ Position the adjustment tube so that the socket pin is inserted into one of the bore holes - do not turn it by 180°.

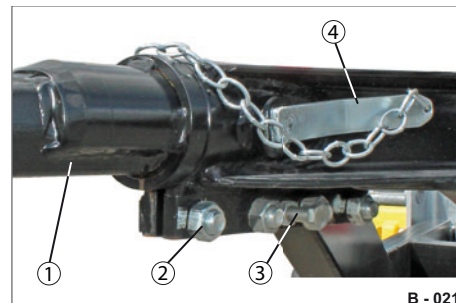


Fig. 34 Adjustment tube secured

- 1 Adjustment tube
 - 2 Screw connection
 - 3 Expansion screw with lock nut
 - 4 Lever with socket pins
- ▶ Put the socket pin through the adjustment tube and secure it with the spring pin.
 - ▶ Remove the expansion screw and counter it with the lock nut (Fig. 34/3).
 - ▶ Assemble the 4x screw connections.
 - ▶ Tighten the screw connections with 300 Nm torque.

Rotatable towing eye (option)

The rotatable towing eye can be used for coupling varieties on the towing machine with diameter D40 mm or D50 mm.



WARNING

Using incorrect towing eye

The towing eye can get overloaded and deformed during the journey. The trailer can detach from the towing machine - risk of accidents!

- ▶ When coupling the trailer, check that the correct side of the rotatable towing eye D40 or D50 is used.
- ▶ Do not drive with an incorrect towing eye.



CAUTION



Swivelling towing eye

If the towing eye swivels, fingers could be crushed between the towbar and towing eye.



- ▶ Use
- ▶ Turn the towing eye slowly and carefully.

NOTICE

Driving with unsecured rotatable towing eye

The screw connection can loosen during the journey. The towing eye can fold down during braking and damage the coupling.

- ▶ Secure the screw connection of the drawbar after every modification.
- ▶ Check that the screw connection is secured before departing.

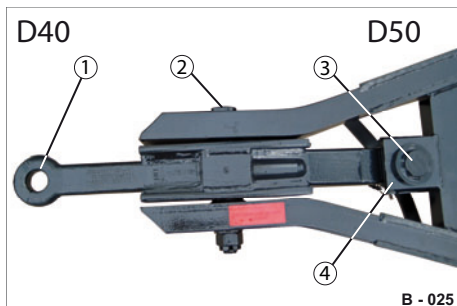


Fig. 35 Rotatable towing eye variety 1

- 1 Towing eye
- 2 Pivot point/axle
- 3 Fastening bolt
- 4 Holder

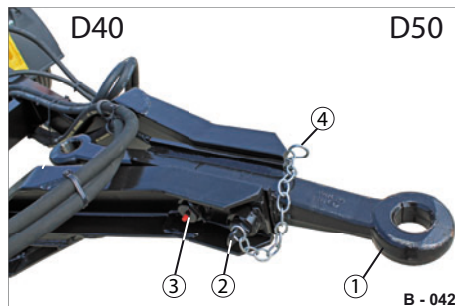
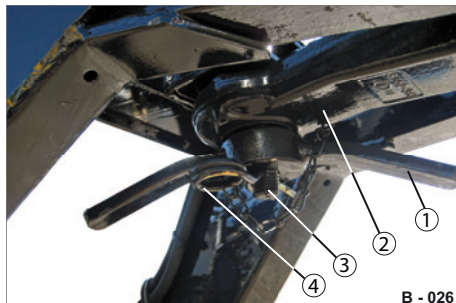


Fig. 36 Rotatable towing eye variety 2

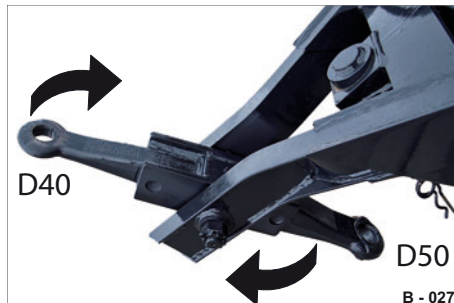
- 1 Towing eye
- 2 Fastening bolt
- 3 Pivot point/axle
- 4 Spring pin

Rotatable towing eye variety 1

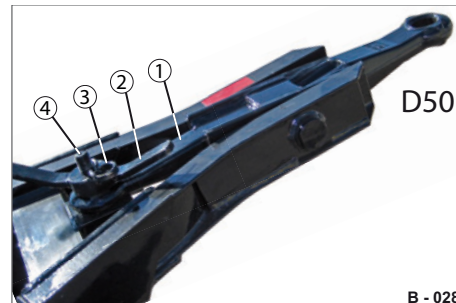
**Fig. 37** Mounting (from below)

- 1 Wing nut
- 2 Towing eye
- 3 Fastening bolt
- 4 Spring pin

- ▶ Remove the spring pin (Fig. 37/4) from the fastening bolt (Fig. 37/3).
- ▶ Release the wing nut (Fig. 37/1) and remove the fastening bolt (Fig. 37/3).
- ▶ Remove the fastening elements.

**Fig. 38** Turning the towing eye

- ▶ Turn the towing eye carefully. The towing eye with D40 mm is placed on top of the holder.

**Fig. 39** Securing towing eye

- 1 Towing eye
- 2 Wing nut
- 3 Spring pin
- 4 Fastening bolt

- ▶ Set the fastening bolt (Fig. 39/4) through the towing eye and holder. Make sure that the pin on the fastening bolt engages in the bore hole of the holder.
- ▶ Screw the wing nut (Fig. 39/2) on tightly.
- ▶ Insert the spring pin (Fig. 39/3) into the lowest visible bore hole of the fastening bolt.

Rotatable towing eye variety 2

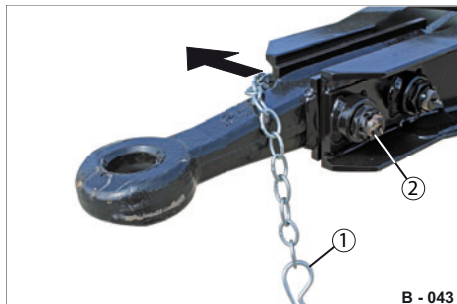


Fig. 40 Releasing mounting

- 1 Spring pin
- 2 Fastening bolt

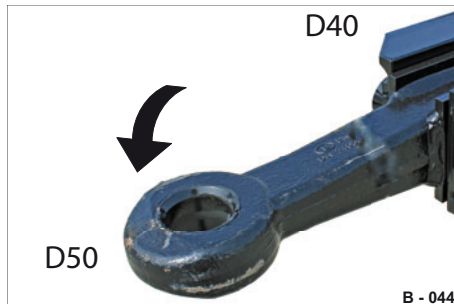


Fig. 41 Turn towing eye

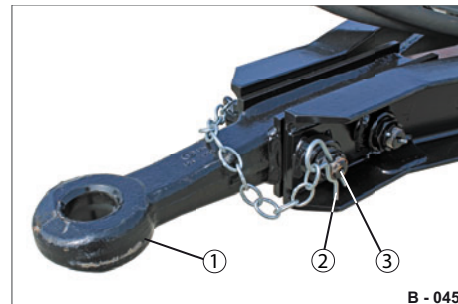


Fig. 42 Secure towing eye

- 1 Towing eye
- 2 Spring pin
- 3 Fastening bolt

- Remove the spring pin (Fig. 40/1) from the fastening bolt (Fig. 40/2).
- Unscrew the fastening bolt (Fig. 40/2) and completely remove it.
- Remove the fastening elements.

- Turn the towing eye carefully.

- Set the fastening bolt (Fig. 42/3) through the towing eye and tongue. Screw the fastening bolt tightly and make sure that the spring pin can be inserted.
- Stick the spring pin (Fig. 42/2) into the bore hole of the fastening screw. The rotatable towing eye is secured.

Coupling

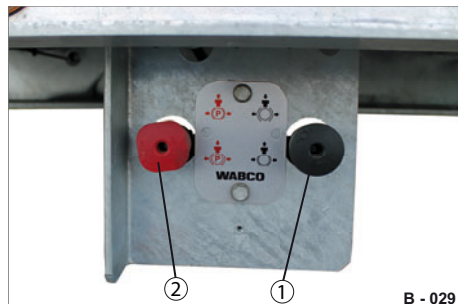


Fig. 43 Operating console: Brakes

- 1 Service brake release valve (black, round)
- 2 Spring-loaded parking brake (red, square)

- ▶ Engage the spring-loaded parking brake (Fig. 43/2). This brakes the trailer.



Fig. 44 Wheel chocks positioned

- 1 Wheel chock

- ▶ If necessary, place the wheel chocks (Fig. 44/1) under the wheels of the fixed axle.
The trailer has an additional safeguard against rolling away.
- ▶ Do an optical check to ensure the trailer is as horizontal and level as possible.

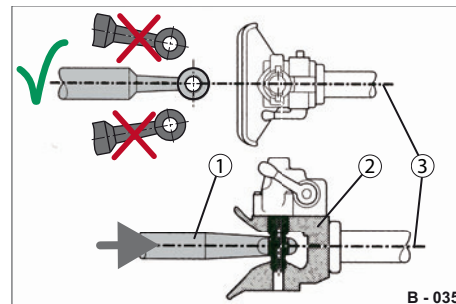


Fig. 45 Driving up

- 1 Towing eye
- 2 Pin coupling (catcher)
- 3 Central axis

- ▶ Drive the towing machine backwards until there is about 1 m distance between the coupling and the towing eye.
- ▶ Approach as straight and precisely as possible, not at an angle to the pin coupling.
- ▶ If necessary, correct the position of the trailer compared to the towing vehicle.
- ▶ If necessary, ask an instructor for help.

Setting height of the drawbar/towing eye

The towing eye is set to the height of the catcher of the towing vehicle with the height setting device.



Use of a height setting device is required by law.

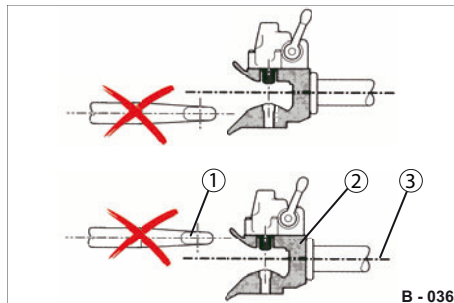


Fig. 46 Height adjustment false

- 1 Towing eye
- 2 Pin coupling (catcher)
- 3 Central axis

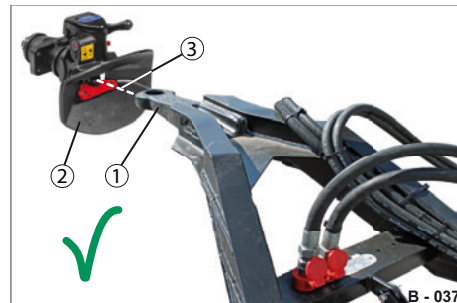


Fig. 47 Height correctly adjusted

- 1 Towing eye/drawbar
- 2 Pin coupling (catcher)
- 3 Central axis

► Set the height of the drawbar so that the towing eye meets at the middle axis (Fig. 46/3) or slightly on the lower flaps of the catcher.

► Use the available height setting devices to set the height.

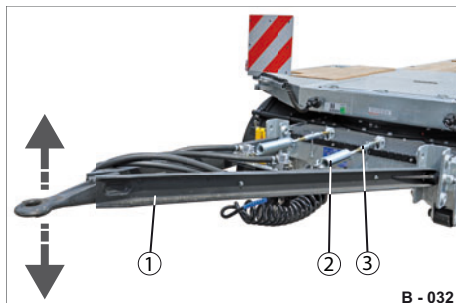


Fig. 48 Height adjustment - variety 1/2

- 1 Drawbar
- 2 Tension spring
- 3 Adjustment mechanics

The height of the drawbar is regulated with the two-piece adjustment mechanics (Fig. 48/3).

The tension spring (Fig. 48/2) ensures a certain clearance for deflection of the towing eye in the catcher of the coupling.

- Check the height of the drawbar (Fig. 48/1) before the uncoupling process.

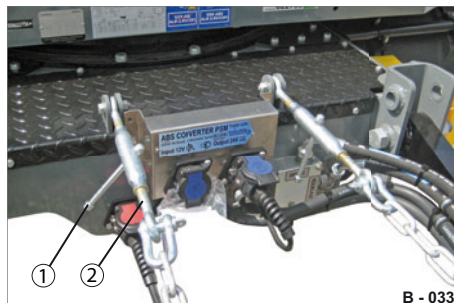


Fig. 49 Height adjustment - variety 1

- 1 Clamping bolt
- 2 Threaded bolt

- Turn both clamping bolts in parallel (Fig. 49/1) in the necessary direction. The drawbar lifts or sinks.

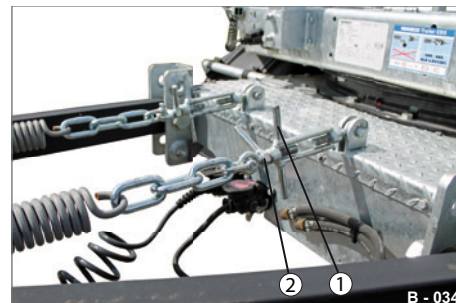


Fig. 50 Height adjustment - variety 2

- 1 Clamping bolt
- 2 Lock nut (threaded bolt)

- Loosen the two lock nuts (Fig. 50/2).
- Turn both clamping bolts in parallel (Fig. 50/1) in the necessary direction. The drawbar lifts or sinks.
- Tighten the lock nuts.

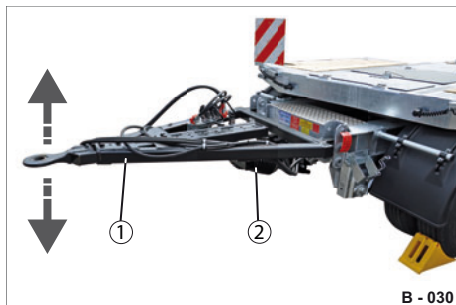


Fig. 51 Height adjustment - variety 3

- 1 Drawbar
- 2 Height setting device

The height of the drawbar is regulated with the one-piece height setting device (Fig. 51/2).

- Check the height of the drawbar (Fig. 51/1) before the uncoupling process.

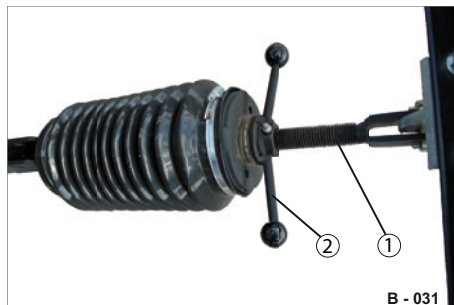
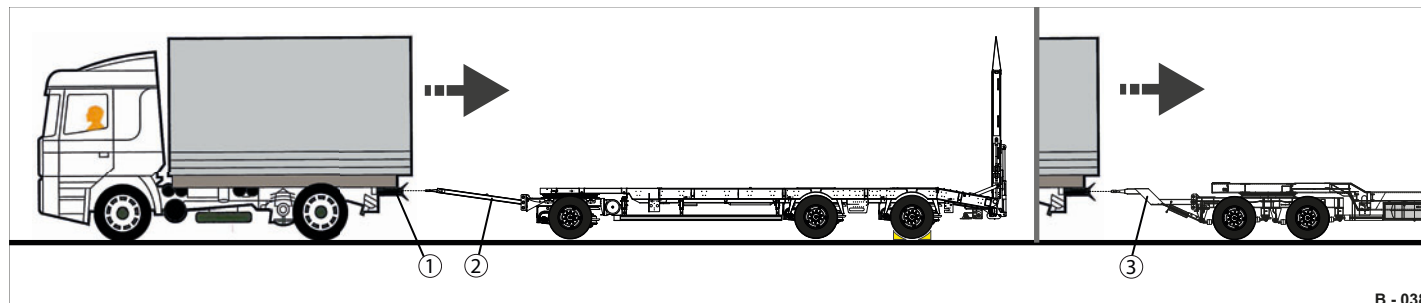


Fig. 52 Adjustment

- 1 Spindle
- 2 Tensioning lever

- Turn the tensioning lever (Fig. 52/2) around the spindle (Fig. 52/1) in the required direction. The drawbar lifts or sinks.

Coupling process



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Fig. 53 Coupling

- 1 Pin coupling (catcher)
- 2 Drawbar, straight
- 3 Drawbar, offset

- ▶ Open the pin coupling (Fig. 53/1).
- ▶ Leave the danger area between the towing vehicle and trailer.
- ▶ Set the towing vehicle back so that the towing eye on the drawbar (Fig. 53/2 or Fig. 53/3) engages in the pin coupling.

If the pin coupling does not engage:

You can run the height position of the towing eye into the catcher so that the coupling pin engages by operating the pneumatic suspension of the rear axle (by raising/lowering).

Alternatively, you can correct the height using the height setting device.

- ▶ Apply the towing vehicle parking brake.
- ▶ Check that the pin coupling is properly closed and secured.

If the coupling is not properly locked:

- ▶ Open the coupling.
- ▶ Drive the towing vehicle forwards.
- ▶ Repeat the coupling process.

After coupling

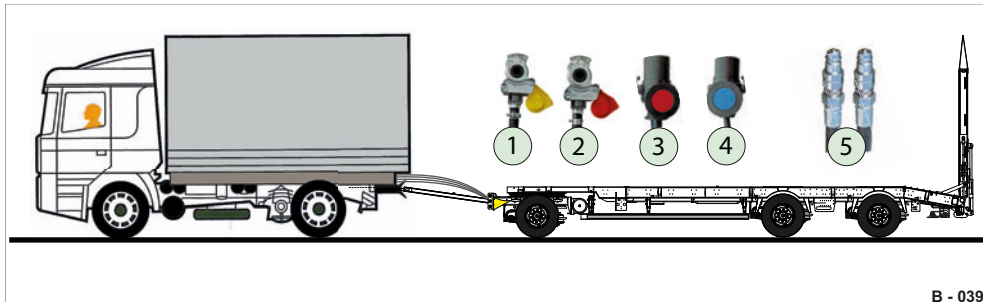


Fig. 54 Create connection

- 1 Brake line (yellow)
- 2 Supply line (red)
- 3 Lighting cable (electrical system)
- 4 EBS / ABS - cable (brake)
- 5 Hydraulic lines (flow/return line)

- Connect the lines to the towing vehicle, in this order:

1. Brake line (yellow)
2. Supply line (red)
3. Lighting cable
4. EBS / ABS - cable

(siehe „Coupling (centre pivot plate)“
auf Seite 88)

- If applicable, connect the hydraulic lines to the towing vehicle.

- Raise the support equipment.
- Put the wheel chocks in their holders and secure them in position.
- Do a departure check (siehe „Check before departing and when parking“ auf Seite 72).

Uncoupling

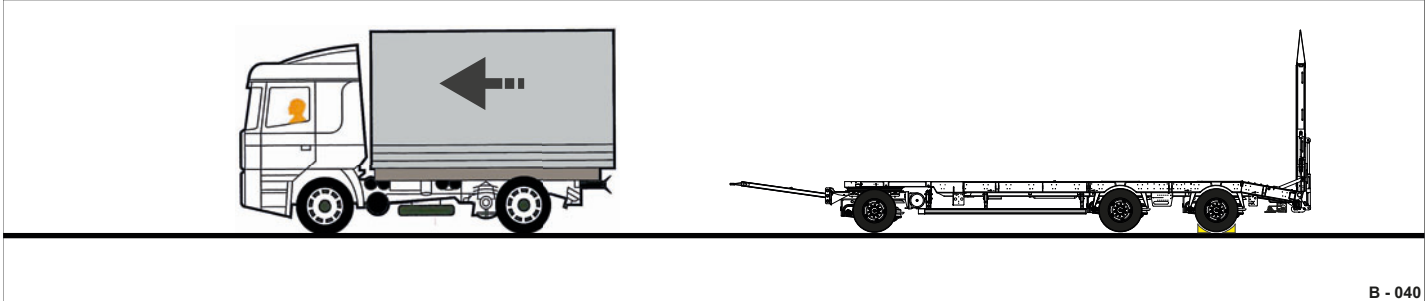


Fig. 55 Correctly coupling trailer

- ▶ Apply the trailer spring-loaded parking brake and the towing vehicle parking brake.
- ▶ Use wheel chocks to prevent the trailer from rolling.
- ▶ Disconnect and safely stow away the electrical and pneumatic, and if applicable, supply lines. Observe the order when disconnecting the lines:

1. Supply line (red)
2. Brake line (yellow)
3. Lighting cable
4. EBS / ABS - cable

(siehe „Coupling (centre pivot plate)“ auf Seite 88)

- ▶ Plug the line heads into the respective parking socket or place the lines securely on the tongue.
- ▶ Unlock and open the pin coupling on the towing vehicle.
- ▶ Only drive the towing vehicle forward carefully once there is nobody in the danger area.

- ▶ Close the pin coupling.
- ▶ If necessary, slide out the parking warning panel.
- ▶ Do a check when parking (siehe „Check when parking“ auf Seite 72).

Departure check

- The trailer is properly coupled.
- Braking and supply line are connected.
- Hydraulic lines are connected.
- Electrical lines and & EBS cable are connected.
- Landing gear is up and secured.
- Side guards are down and secured.
- Platform gates/curtains/flaps/posts are closed and secured.
- Parking brake is released.
- Raising/lowering system is in drive position.
- Toolboxes and pallet stowage boxes are locked and secured.
- Ramps are up in drive position and secured.
- Warning panels are retracted and secured.

Check when parking

- The trailer is properly uncoupled.
- Parking brake is activated.
- Wheel chocks are under the wheels.
- Landing gear is extended and secured.
- Brake and supply lines are disconnected and parked.
- Electrical lines and & EBS cable are disconnected and parked.
- Hydraulic lines are disconnected and parked.
- Raising/lowering system is in park position.
- Platform gates, curtains, flaps, are closed.
- Posts, lashing equipment, widening wooden planks are stowed away.
- Toolboxes, pallet stowage boxes are locked.
- Warning panels are pushed out.
- Ramps are up and secured.

Circling and cornering



B - 046

Fig. 56 Tight circling and cornering

Pay special attention to:

- Length of the vehicle team
- Axle unit of the flatbed:
Rigid axles or with self-steering axle
(siehe „Disabling the self-steering
axle“ auf Seite 107)
- Speed

Cornering



Fig. 57 Turning

- Particularly when going around tight curves, note the fact that the trailer can only be kinked a maximum of 90° to the towing vehicle.

Observe maximum height



Fig. 58 Total height of the loaded flatbed

- If applicable, measure the total height of the loaded trailer before starting the journey.
- Comply with the national regulations regarding the permissible maximum height.
- Before driving through underpasses and tunnels, pay attention to the maximum height specified on street signs.



Operation of the chassis

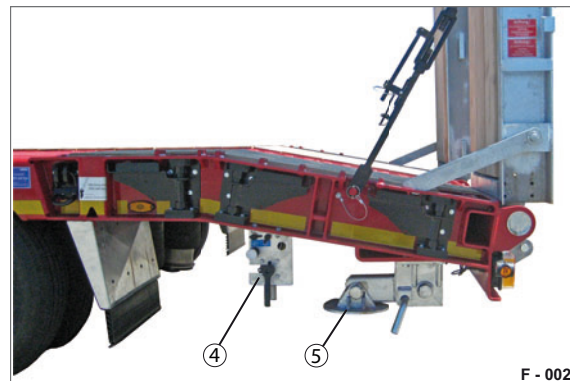
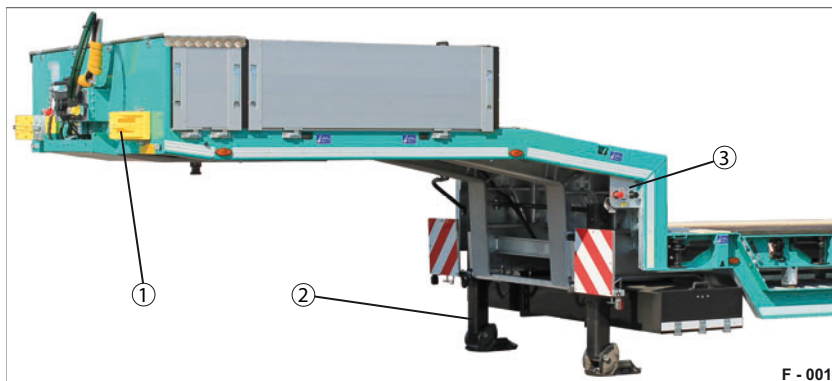


Fig. 1 Operation of the chassis

- 1 Wheel chocks
- 2 Landing gear (semi-trailer area)
- 3 Operating console: Brakes
- 4 Operating console: Raise/lower system
- 5 Support props (at rear)

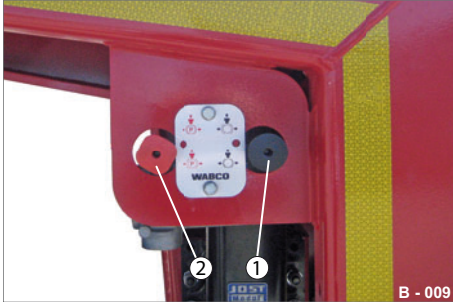


Fig. 2 Operating console: Brakes

- 1 Service brake release valve (black, round)
- 2 Spring-loaded parking brake (red, square)

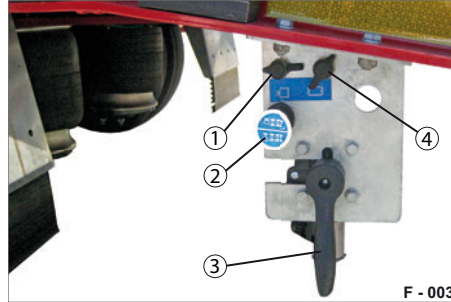


Fig. 3 Operating console: Raise/lower system

- 1 Test connection for brake cylinder pressure
- 2 Control: Self-steering axle
- 3 Turning lever pneumatic suspension (lifting/sinking valve)
- 4 Test connection for pneumatic suspension bellows pressure

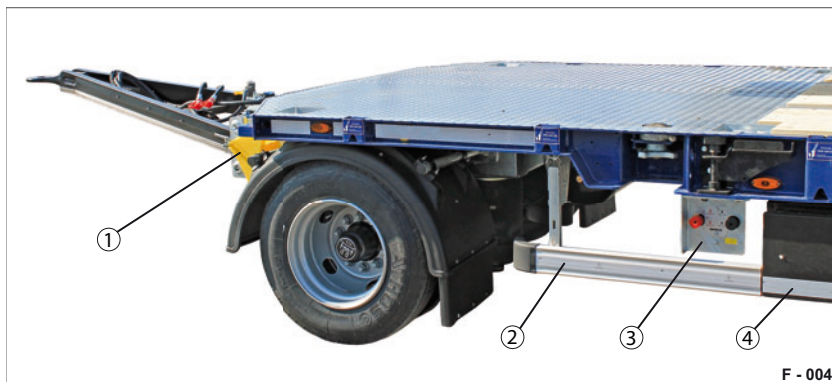


Fig. 4 Operation of the chassis, straight plateau, 3-axle

- 1 Wheel chocks
- 2 Side guard
- 3 Operating console: Brakes
- 4 Pallet/wooden plank stowage box
- 5 Operating console: Raise/lower system
- 6 Support props (at rear)



F - 006



F - 007

Fig. 5 Operation of the chassis, offset plateau, 4-axle

- 7** Operating console: Raising/lowering system for front axle
- 8** Operating console: Brakes integrated in chassis frame
- 9** Spring-loaded parking brake (red, square)
- 10** Service brake release valve (black, round)

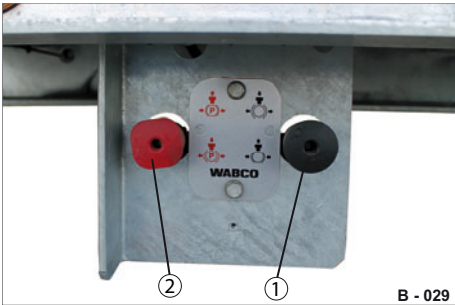


Fig. 6 Operating console: Brakes

- 1 Service brake release valve (black, round)
- 2 Spring-loaded parking brake (red, square)

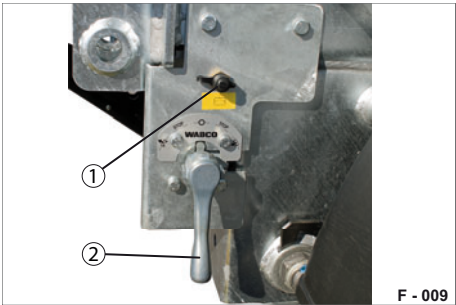


Fig. 7 Operating console: Raising/lowering system front axle unit

- 1 Test connection for pneumatic suspension bellows pressure
- 2 Turning lever pneumatic suspension (lifting/sinking valve)

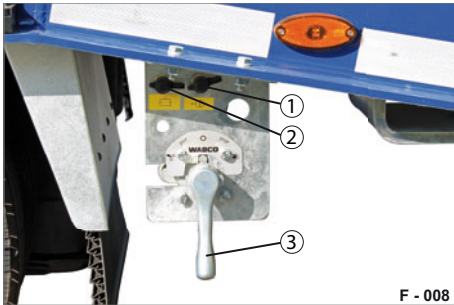


Fig. 8 Operating console: Raising/lowering system rear axle unit

- 1 Test connection for brake cylinder pressure
- 2 Test connection for pneumatic suspension bellows pressure
- 3 Turning lever pneumatic suspension (lifting/sinking valve)

General

The HUMBAUR GmbH braking system is an electronic braking system (EBS) and complies with Directive 71/320/EC and ECE R13.



Driving without one of these connections and/or driving without a plugged-in connection cable is illegal!

Trailers with EBS may only be operated behind towing vehicles with the following connections:

- ABS / EBS connector, 7-pin, 24 V, to ISO 7638-1996
- ABS / EBS connector, 5-pin, 24 V, to ISO 7638-1985

In addition, it is a requirement that the brake system be designed as a dual-line system with non-interchangeable compressed air connections. The non-interchangeable coupling heads prevent incorrect connection of the brake and the supply lines.

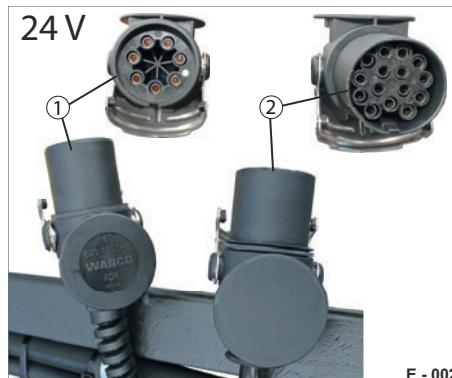


Fig. 9 Connections

- 1 EBS connection cable, 7-pin
- 2 Electrical system, 15-pin

The electronic braking system is fitted with load-dependent braking pressure regulation (automatically adjusts to the current load condition) and an automatic anti-blocking system (ABS).



The EBS module detects faults and damage in the braking system, and these can be indicated by means of warning lights in the towing vehicle.



WARNING

EBS connection cable not connected

The automatic braking force regulation is out of operation, the wheel could block during braking.

The vehicle does not come to a stop on time - risk of accidents!

- Connect the towing vehicle and the trailer using the EBS connection cable.
- Observe the label on trailer.

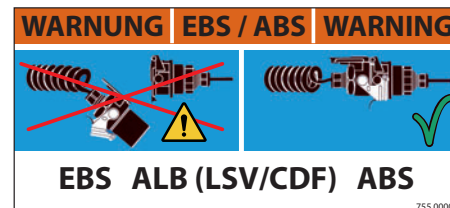


Fig. 10 Label on trailer - example



Observe the operating instructions of your towing vehicle.



DANGER



Incorrect order during coupling/uncoupling the lines

If the supply line is connected before the brake line, the service brake releases.

This releases the brake.

This can result in persons being crushed or run over - risk of accidents!

- ▶ Couple the brake line first.
- ▶ Uncouple the brake line last.



CAUTION



Coupling and uncoupling lines

You can crush your fingers in the connection points.

- ▶ Screw or unscrew the coupling heads carefully.
- ▶ Always pull at the coupling head, not at the hose.

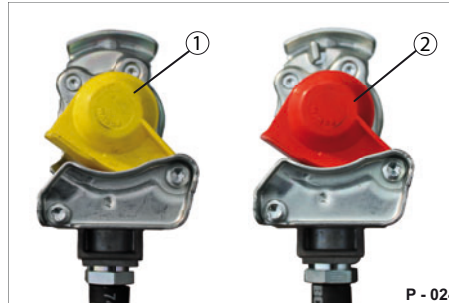


Fig. 11 Brake/supply line disconnected

- 1 Brake line (yellow)
- 2 Supply line (red)



Fig. 12 Duo-Matic quick-release coupling system

- 1 Coupling head with supply and brake

Coupling (flatbed semi-trailer)

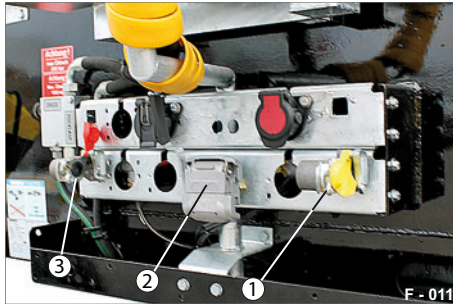


Fig. 13 Connections

- 1 Brake line (yellow)
 - 2 Duo-Matic quick-release coupling
 - 3 Supply line (red)
- Before coupling, check that the connection and coupling heads are clean and in perfect condition.
 - Couple the "brake" coupling head (Fig. 13/2).
 - Couple the "supply line" coupling head (Fig. 13/1).
 - Release the spring-loaded parking brake (see Seite 87).

Uncoupling (flatbed semi-trailer)

- Disconnect "Supply" coupling head (Fig. 13/2).
The trailer is automatically braked with the service brake by venting the supply line during the uncoupling process.
- Disconnect the "Brake" coupling head (Fig. 13/1).
- Tighten the cover plate.
This reliably protects the connections/ sealing surfaces from contamination and damage.

Taking out of operation

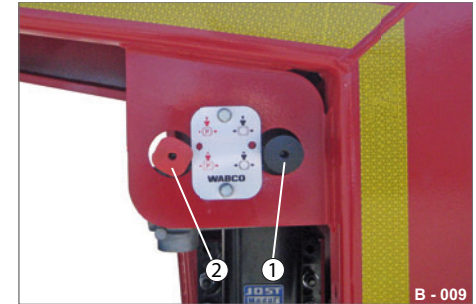


Fig. 14 Operating console

- 1 Service brake release valve
- 2 Spring-loaded parking brake

The service brake system must be taken out of operation for manoeuvring purposes.

- Press the release valve (Fig. 14/1).
The service brake releases.
- Manoeuvre with trailer.
- Pull the release valve (Fig. 14/1).
The service brake engages.

When the supply line is coupled up again, the release valve is automatically reset to the operating position.

Coupling (centre pivot plate)

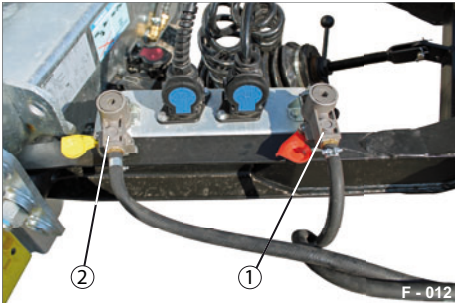


Fig. 15 Connections parked

- 1 Supply line (red)
- 2 Brake line (yellow)
- 3 Park console for lines

- ▶ Unscrew the coupling heads out of the park holders of the park console (Fig. 15/3).
- ▶ Before coupling, check that the connection and coupling heads are clean and in perfect condition.
- ▶ Couple the "Brake" coupling head (Fig. 15/2).
- ▶ Couple the "Supply" coupling head (Fig. 15/1).
- ▶ Release the spring-loaded parking brake (see Seite 87).

Uncoupling (centre pivot plate)

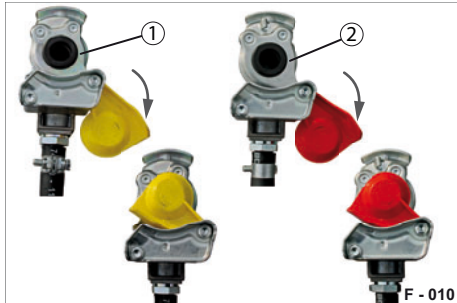


Fig. 16 Uncoupling

- 1 "Brake" coupling head (yellow)
- 2 "Supply" coupling head (red)

- ▶ Disconnect "Supply" coupling head (Fig. 16/2).
The trailer is automatically braked with the service brake by venting the supply line during the uncoupling process.
 - ▶ Disconnect the "Brake" coupling head (Fig. 16/1).
 - ▶ Screw the coupling heads on the park holders.
- This reliably protects the connections/ sealing surfaces from contamination and damage.

Taking out of operation

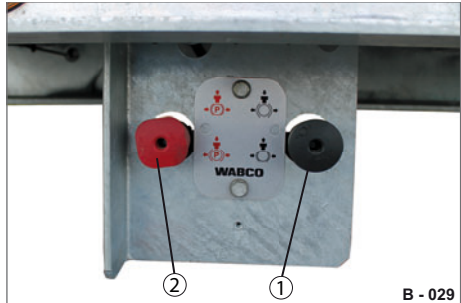


Fig. 17 Operating console

- 1 Service brake release valve
- 2 Spring-loaded parking brake

- The service brake system must be taken out of operation for manoeuvring purposes.
- ▶ Press the release valve (Fig. 17/1).
The service brake releases.
 - ▶ Manoeuvre with trailer.
 - ▶ Pull the release valve (Fig. 17/1).
The service brake engages.
- When the supply line is coupled up again, the release valve is automatically reset to the operating position.

The spring-loaded parking brake is pneumatically controlled and is applied via the spring-loaded diaphragm brake cylinders.

If spring-loaded parking brake is engaged and released several times, the pressure in the system sinks. If the pressure falls under 5.2 bar, the spring-loaded parking brake can no longer be released using the operating element.

The spring-loaded parking brake can then only be released via the emergency trigger device.



You can get information on the emergency trigger device in „Emergency trigger device (Version 1)” on page 266.

Braking (flatbed semi-trailer)

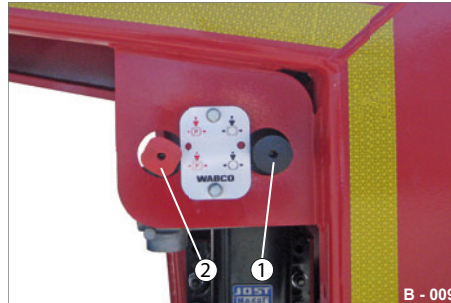


Fig. 18 Operating console

- 1 Release valve (round, black)
- 2 Spring-loaded parking brake (red, square)

- Engage the spring-loaded parking brake (Fig. 18/2).
This brakes the trailer.

Releasing

- Engage the spring-loaded parking brake (Fig. 18/2).
This releases the brake.

Braking (centre pivot plate)

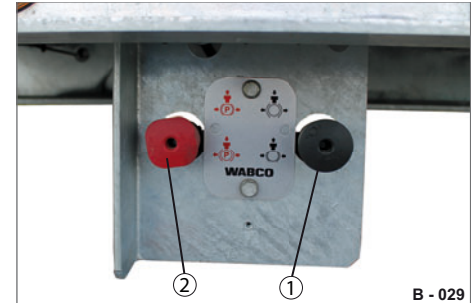


Fig. 19 Operating console

- 1 Release valve (round, black)
- 2 Spring-loaded parking brake (red, square)

- Engage the spring-loaded parking brake (Fig. 19/2).
This brakes the trailer.

Releasing

- Engage the spring-loaded parking brake (Fig. 19/2).
This releases the brake.

Operating quick-release coupling

HUMBAUR GmbH vehicles can be optionally equipped with the Duo-Matic automatic quick-release coupling system.

With this type, the supply and brake lines are always connected or disconnected at the same time, due to their design and construction.

In the uncoupled condition, the coupling heads are automatically closed.

Coupling (flatbed semi-trailer)

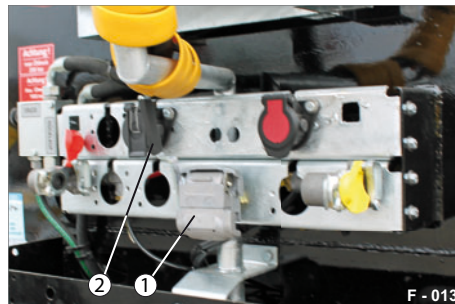


Fig. 20 Duo-Matic, coupled

- 1 Quick-release coupling socket on trailer
- 2 Handle

Uncoupling

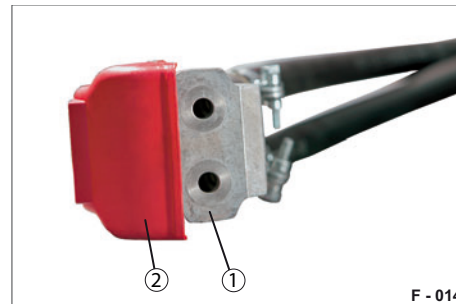


Fig. 21 Duo-Matic, uncoupled

- 1 Coupling head
- 2 Cover plate

- ▶ Make sure that sealing coupling head and coupling socket surfaces are clean.
- ▶ Clean the surfaces with a clean cloth, if necessary.
- ▶ Push the handle (Fig. 20/2) of the Duo-Matic quick-release coupling socket on the trailer downwards and slide the Duo-Matic coupling head (Fig. 21/1) under the opened protective cover.
- ▶ Release the handle.
The connection is made.

- ▶ Pull the handle (Fig. 20/2) of the Duo-Matic quick-release coupling socket upwards and pull out the Duo-Matic coupling head (Fig. 21/1) from under the protective cover.
The connection is disconnected from the trailer.
The cover plate automatically closes the coupling head and protects it from contamination and damage.
- ▶ Pull line/Duo-Matic coupling off securely.

Coupling (centre pivot plate)

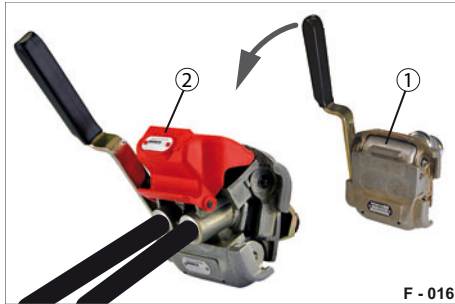


Fig. 22 Duo-Matic, coupled

- 1 Duo-Matic quick-release coupling socket on towing vehicle
- 2 Duo-Matic quick-release coupling

- Make sure that sealing coupling head and Duo-Matic quick-release coupling socket surfaces are clean (Fig. 22/1).
- Clean the surfaces with a clean cloth, if necessary.
- Push the handle (Fig. 20/2) of the Duo-Matic quick-release coupling socket downwards and slide the Duo-Matic coupling head (Fig. 21/1) under the opened protective cover.
- Release the handle.
The connection is made.

Uncoupling

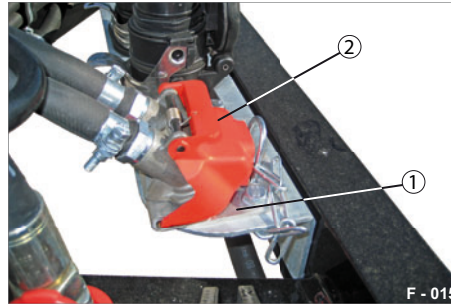


Fig. 23 Duo-Matic, uncoupled

- 1 Park console
- 2 Cover plate

- Pull the handle (Fig. 20/2) of the Duo-Matic quick-release coupling socket upwards and pull out the Duo-Matic coupling head (Fig. 21/1) from under the protective cover.
The connection is disconnected.
The cover plate automatically closes the coupling head and protects it from contamination and damage.
- Park the Duo-Matic quick-release coupling on the park console on the drawbar.

Brake lining wear indicator

The brake lining wear indicator is an additional way to establish the wear level on the brake linings with drum brakes.

Wear indicators - a wire integrated in the brake lining - monitor the wear of both linings of drum brake.

The supply voltage is 24 V.



The testing and maintenance requirements continue to apply in full regardless of the use of the brake lining wear indicator.

"WABCO"System



Fig. 24 Example – sign on trailer



The ABS warning light in the towing vehicle only indicates brake lining wear for the trailer.

1st warning level:

At 95 % brake lining wear.
A short circuit occurs.

2nd warning level:

The warning light warns the driver when the wear end has been reached (100 % brake lining wear).
If a SmartBoard is installed, the warning is also output on the SmartBoard.

Display of brake lining wear

► Switch on the ignition:

- The warning light flashes in 4 cycles (= 16 x)
- The wear limit has been reached.
- The brake lining must be replaced.
- The warning is interrupted when the vehicle exceeds a speed of 7 km/h.

► Start the engine:

- Warning light will go off.
- Warning light ceases flashing while vehicle is moving.

Hydraulic connection

The trailer can optionally be equipped with hydraulic devices for operating the ramps and rear support feet.

Two additional hydraulic lines through the towing vehicle supply the trailer with the necessary pressure.

The oil quantity distributor regulates the amount and flowrate of the oil via the pressure reduction valve.

The flowrate is set at the factory.



DANGER

Adjusting pressure/oil quantity

The maximum permitted pressure or the oil quantity is exceeded - the lines could burst/components are damaged.

Escaping oil can cause injury - risk of accidents!

- ▶ Do not adjust the pressure/oil quantity.
- ▶ Send a request to the workshop if the hydraulics system is defective.

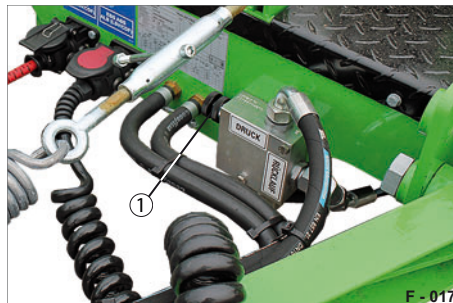


Fig. 25 Oil quantity distributor Qmax.=150 l/min

1 Pressure reduction valve



WARNING

Lines are under pressure

These are under pressure when decoupling the hydraulic lines.

The oil can escape under high pressure and cut people and lacerate skin.

- ▶ Before coupling, check that the lines are depressurised and the towing vehicle is switched off.



▶ Use

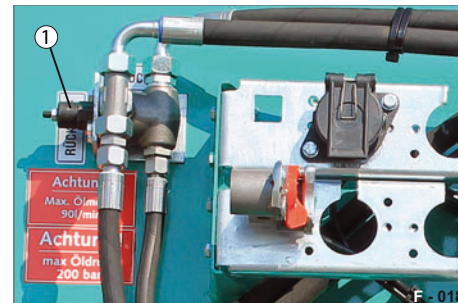


Fig. 26 Oil quantity distributor Qmax.=90 l/min

1 Pressure reduction valve




Read the operating manual on the hydraulic supply of the trailer for the towing vehicle for more information.



Fig. 27 Label on trailer

- 1 Max. oil pressure (P) in bar
- 2 Max. oil flowrate
(Qmax. = 150 l/min)
- 3 Max. oil flowrate
(Qmax. = 90 l/min)

 Maximum permissible pressure and the maximum permissible oil flowrate can be found on the labels near the oil distribution distributor on the trailer.

Connecting

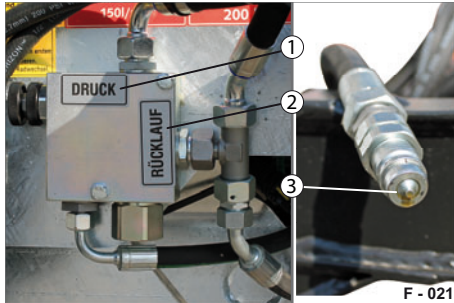


Fig. 28 Connecting hydraulic lines

- 1 Pressure line
- 2 Return line
- 3 Line connection

- ▶ Make sure that hydraulic line connections are clean (Fig. 28/3).
- ▶ Clean them with a clean cloth, if necessary.
- ▶ Plug the two connections (Fig. 28/1 & Fig. 28/2) into the connection sockets of the towing vehicle - observe the labelling of the connections.
Starting the towing vehicle builds up the pressure.

Uncoupling

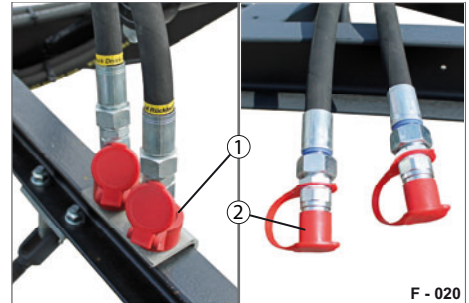



Fig. 29 Hydraulic lines, uncoupled

- 1 Parking socket
- 2 Cover plate

-  The lines must not be under pressure when uncoupling.
- ▶ Remove the connections from the connection sockets of the towing vehicle.
- ▶ Plug the connections in the parking sockets on the tongue and close the connections with the cover plate.

Druckniveau im Druckluftbehälter

The compressed air conveyed via the supply line from the towing vehicle to the trailer (up to 10 bar) has a maximum operating pressure of 8.5 bar (depending on the switch-off pressure of the compressor in the towing vehicle). When the trailer is uncoupled, the supply pressure can drop as a result of:

- Leaks in the brake system or
- Multiple actuation of the release valves.



WARNING



Activated emergency trigger device

If the emergency trigger device is activated, the brake system of the trailer is suspended.

The trailer can hit and run over persons - risk of crushing!

- Use wheel chocks to prevent the trailer from rolling.
- Actuate the emergency release system only on even ground.

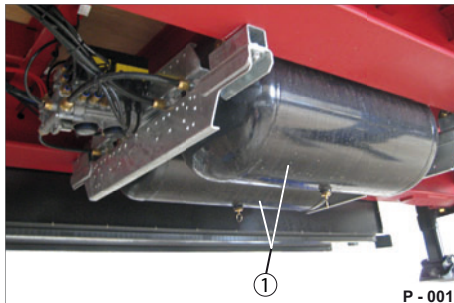


Fig. 30 Compressed air tank (semi-trailer)

1 Compressed air tank 2 x, centre

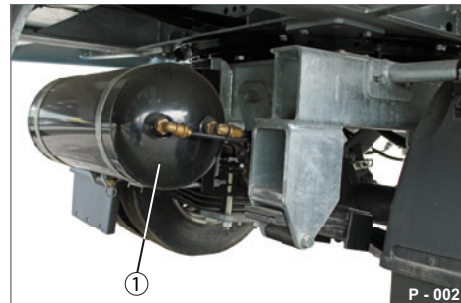


Fig. 31 Compressed air tank (centre pivot plate)

1 Compressed air tank 1 x, front

When the pressure in the tank drops below approx. 5 bar, the trailer braking valve automatically switches to the braking position, the wheel brakes are applied and cannot be released by actuating the release valve.

In the event that you want to manoeuvre the trailer in this state, you must fill the brake system with supply pressure.

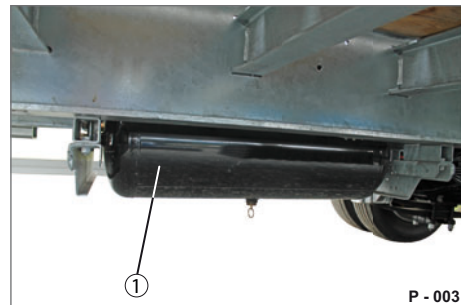


Fig. 32 Compressed air tank (centre pivot plate)

1 Compressed air tank 2 x, centre

Draining the compressed air tank



On trailers fitted with manual drainage valves, the tanks must be regularly drained and leaking drainage valves must be replaced.

With automatic water drain valves, manual water draining/bleeding is not required.



WARNING

Condensate in the compressed air system

The brake system can be destroyed or fall out.

- ▶ Regularly drain the compressed air system.



CAUTION

Escaping pressurised air

Actuating the drain valve causes a lot of noise.

This can cause tinnitus and hearing damage.



- ▶ Use



CAUTION



Working under the trailer

You could hit your head.

- ▶ Avoid jerky movements.
- ▶ Use an operating pole to drain the valves.



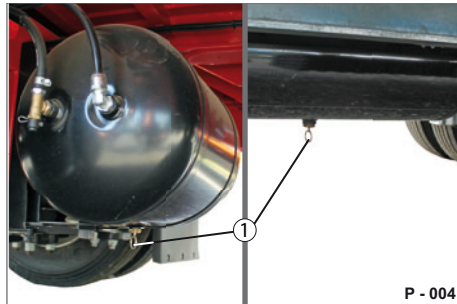
- ▶ Use

NOTICE

Compressed air system/valve freezing

The compressed air system/valves can freeze in the cold season and cause damage.

- ▶ Use antifreeze.
- ▶ Have the trailer raised and lowered at least once a week.



P - 004

Fig. 33 Compressed air tank

1 Operating pins

- ▶ Push in the operating pin (Fig. 33/1) or pull it to the side.
Accumulated condensate is forced out of the tank by the pressure.
- ▶ Release the operating pin (Fig. 33/1) when no more condensate comes out.
The drain valve closes automatically.
- ▶ Repeat the work steps for all drainage valves.

General

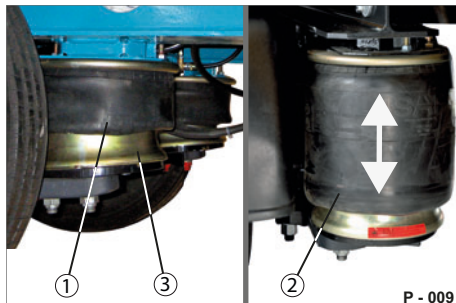


Fig. 34 Pneumatic suspension

- 1 Air bellows, vented
- 2 Air bellows, full
- 3 Air bellows

The raising/lowering system consists of air bellows that, when filled with or drained of air, prepare for loading/unloading.

Also, with the help of the pneumatic suspension, the driving level of the trailer is always kept at the same level in "drive position", regardless of the load. Filling and venting is controlled by the rotary slide valve.

The axle unit is also controlled by means of the raising/lowering valve.

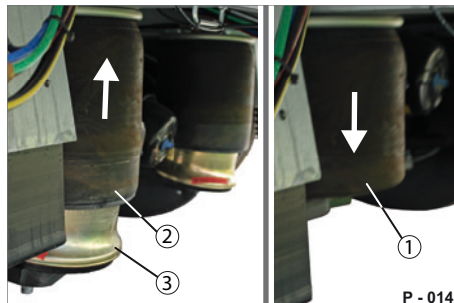


Fig. 35 Air bellows filled/vented



Ensure when lowering the trailer that the air bellows rolls carefully over the piston.

With flatbed trailers, raising/lowering valves are installed without an automatic reset to the driving level (RtR - Return-to-Ride).



WARNING



Actuating the raising/lowering valve of a braked trailer

The trailer can make a jerky motion upwards or downwards when the brake is released - risk of crushing/striking!



- ▶ Make sure that there is nobody in the danger area.
- ▶ Couple the trailer to the towing vehicle.
- ▶ Apply the towing vehicle parking brake.
- ▶ Release the parking brake only with a coupled trailer.
- ▶ On slopes, secure the trailer additionally using wheel chocks.

Drive position



Fig. 36 Drive position

- 1 Axle unit (rear wheel)
- 2 Chassis - neutral position

Raised position

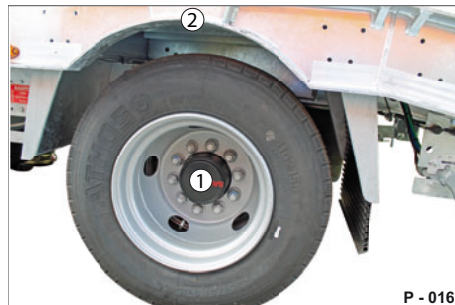


Fig. 37 Upwards position

- 1 Axle unit (rear wheel)
- 2 Chassis - raised

Lowered position

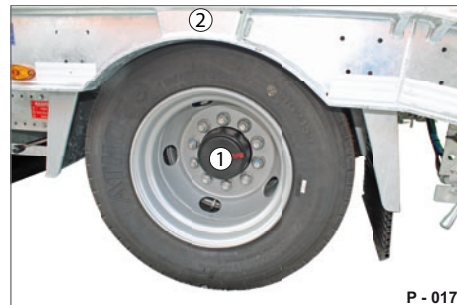


Fig. 38 Downwards position

- 1 Axle unit (rear wheel)
- 2 Chassis - lowered



The manual raising/lowering valve must be in drive position (0) before departing.

Driving the trailer in RAISING or LOWERING position is not allowed.

Flatbed semi-trailer

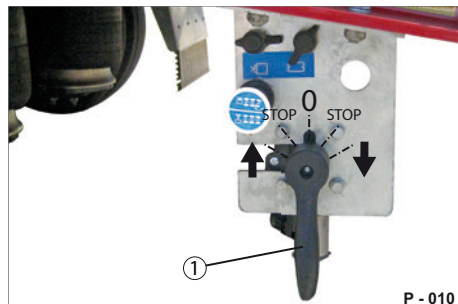


Fig. 39 Operating console at rear

- 1 WABCO (TASC™) raising/lowering valve, valve lever

The raising/lowering valve works semi-automatically.

When the end positions are reached, the valve lever does not jump to the stop position on its own (no deadman's control).

The WABCO-TASC™ system functions by simply turning the valve lever without pressing it down.

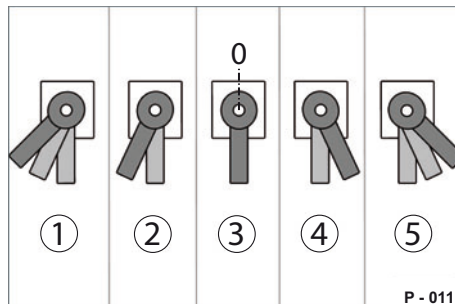


Fig. 40 Valve lever positions

- 1 Lower
- 2 Stop
- 3 Drive position (0)
- 4 Stop
- 5 Raise

WARNING

Impermissible vehicle height

The driving height of the trailer can be set too high for street traffic.

This negatively affects the driving performance.

The trailer can exceed the maximum height of bridges, lights and under-passes, causing collisions.

- ▶ Check that the driving height of the trailer is not exceeded before departing.
- Observe the national regulations.
- ▶ Check that the lifting/sinking valve is in drive position before departing.

NOTICE

Impermissible vehicle height

Incorrectly set driving height can lead to increased tyre and brake system wear.

- ▶ Check that the lifting/sinking valve is in drive position before departing.

Lifting trailer

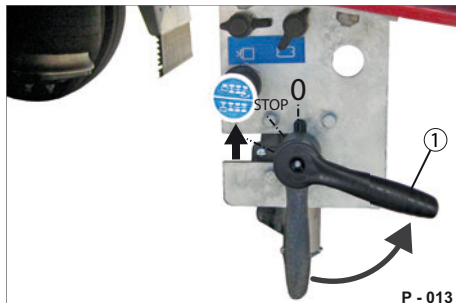


Fig. 41 Lifting trailer

1 Valve lever

- ▶ Turn the valve lever (Fig. 40/5) anti-clockwise two levels.
- ▶ When the height has been achieved, turn the valve lever back one stage, into the "Stop" position (Fig. 40/4).

Lowering the trailer

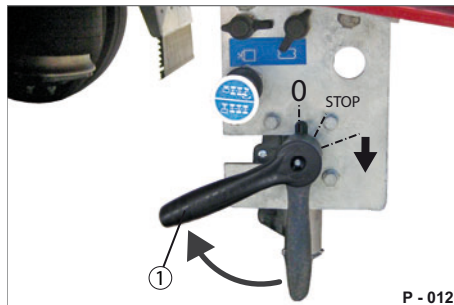


Fig. 42 Lowering the trailer (on block)

1 Valve lever

- ▶ Turn the valve lever clockwise (Fig. 40/1).
- ▶ When the height has been achieved, turn the valve lever back one stage, into the "Stop" position (Fig. 40/2).
- ▶ Check that the air bellows have rolled carefully over the piston.
If necessary, raise and lower the trailer again.

Flatbed centre pivot plate

The raising/lowering system is installed on the rear axle unit by default.

Optionally, the front axle unit can also be equipped with a raising/lowering system.

The rotary slide valve may be used with max. 7 Nm.

When the end positions are reached, the valve lever does not jump to the stop position on its own (no deadman's control).

The WABCO rotary slide valve functions by pressing down and turning the turning lever axially.

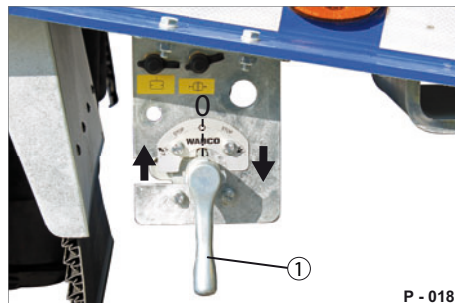


Fig. 43 Operating console at rear

- 1 Rotary slide valve from WABCO, turning lever

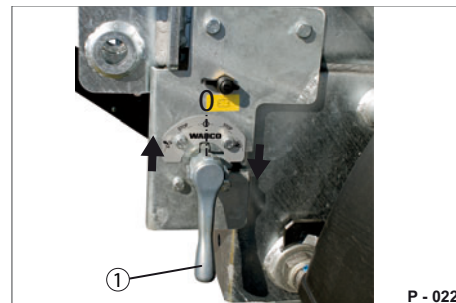


Fig. 44 Operating console, front

- 1 Rotary slide valve from WABCO, turning lever

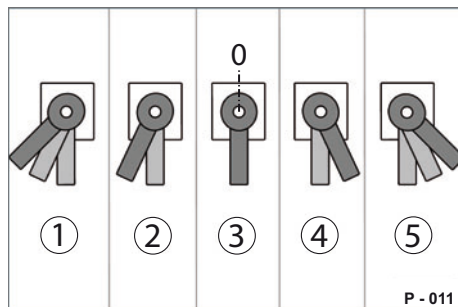


Fig. 45 Turning lever position

- 1 Lower
- 2 Stop
- 3 Drive position (0)
- 4 Stop
- 5 Raise



WARNING

Impermissible vehicle height

The driving height of the trailer can be set too high for street traffic.

This negatively affects the driving performance.

The trailer can exceed the maximum height of bridges, lights and underpasses, causing collisions.

- Check that the driving height of the trailer is not exceeded before departing.
Observe the national regulations.
- Check that the lifting/sinking valve is in drive position before departing.

NOTICE

Impermissible vehicle height

Incorrectly set driving height can lead to increased tyre and brake system wear.

- Check that the lifting/sinking valve is in drive position before departing.

Lifting trailer

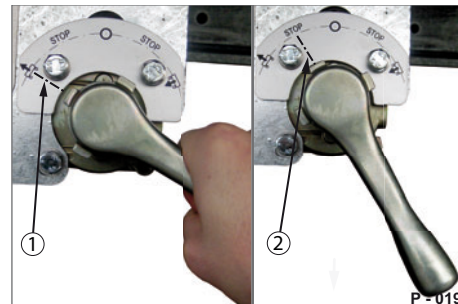


Fig. 46 Lifting trailer

- 1 "Raise" position
- 2 "STOP" position

- Press the turning lever inwards and turn it anti-clockwise towards the "Raise" icon (Fig. 45/5).
This raises the trailer.
- When the height has been achieved, turn the turning lever back one stage into the "Stop" position (Fig. 45/4).
The trailer stays at the desired height.

Lowering the trailer

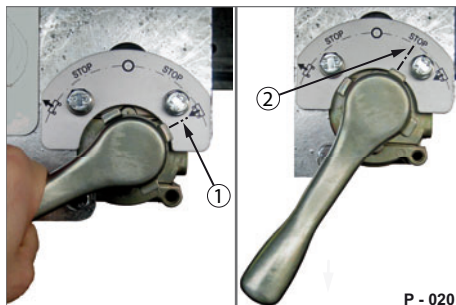


Fig. 47 Lowering the trailer (on block)

- 1 "Lower" position
- 2 "Stop" position

► Press the turning lever inwards and turn it clockwise towards the "Lower" icon (Fig. 45/1).
This lowers the trailer.

► When the height has been achieved, turn the turning lever back one stage into the "Stop" position (Fig. 45/2).

► Check that the air bellows have rolled carefully over the piston.
If necessary, raise and lower the trailer again.

Trailer in drive position

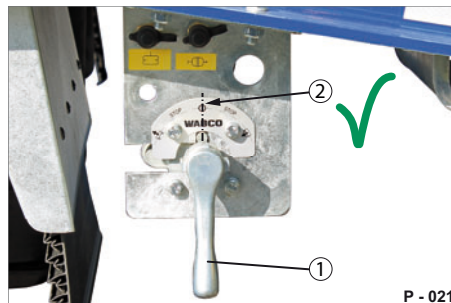


Fig. 48 Turning lever (at rear)

- 1 Turning lever extended
- 2 Drive position (centre position)

The raising/lowering valve is equipped with a safety function, a so-called "Stop position".

If the turning lever (Fig. 48/1) is in drive position (Fig. 48/2), it is pulled out and cannot be turned.

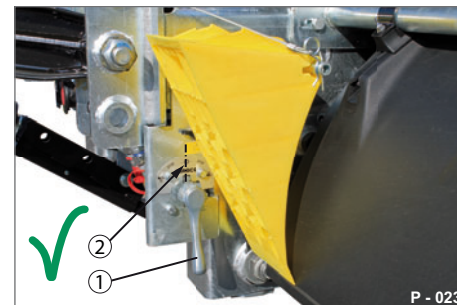


Fig. 49 Turning lever (front)

► Bring the turning lever (Fig. 48/1) into drive position before starting the journey.
You must only drive with the trailer in this position.

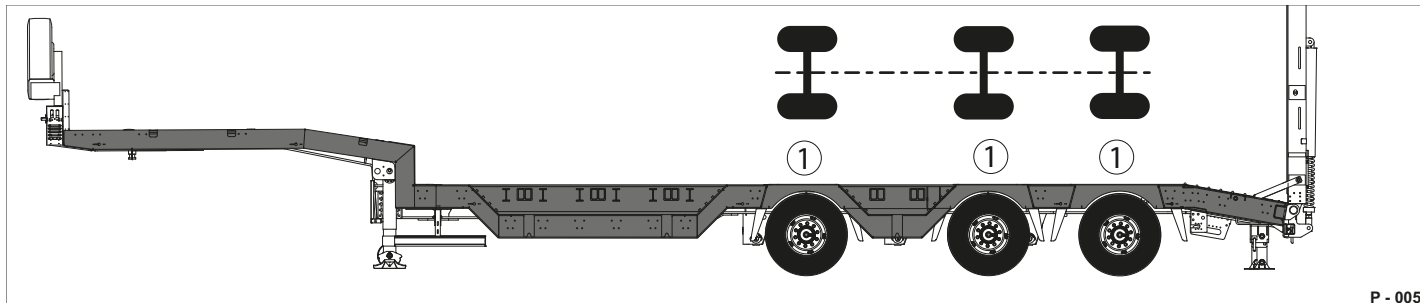
Flatbed semi-trailer

The flatbed semi-trailers can be equipped with different axle units.

By default, all three axles are designed as rigid axles.

As an option, the last axle can be designed as a self-steering axle.

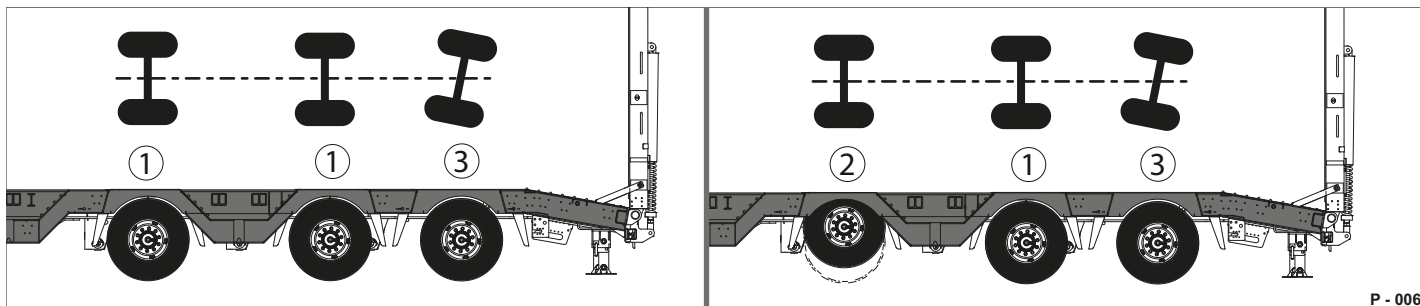
In addition, the first axle can be designed as a lift axle in combination with a last self-steering axle.



P - 005

Fig. 50 Standard version

- 1 STA (rigid axle)
- 2 LIA (lift axle)
- 3 NLA (self-steering axle)



P - 006

Fig. 51 Optional versions

General

The lift axle is always the first axle in flatbed semi-trailers.

The lift axle reduces tyre wear during empty runs.

The lift axle is normally controlled so that it is automatically lifted if the trailer is empty.

If the trailer is loaded and the permissible axle load of the other axles is exceeded, the lift axle automatically sinks.



WARNING



Danger of crushing due to moving lift axle

Persons may sustain crushing injuries when raising or lowering the lift axle.



- ▶ When raising or lowering the lift axle and when switching off the ignition, ensure that there are no persons in the hazard area.

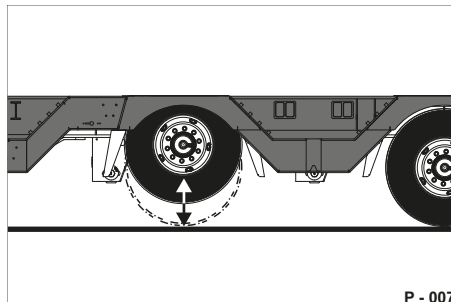


Fig. 52 Lift axle

Automatic control of the lift axle

The lift axle is controlled fully automatically and load-dependently way when the trailer is empty or partially loaded.

- When a speed of approx. 25 km/h is exceeded, the lift axle is raised.
- When the ignition is switched "OFF" the lift axle lowers.

General

Die steering of the self-steering axle is controlled by the friction caused during cornering.

This variety guarantees better cornering and low tyre wear compared to unsteered vehicles.

NOTICE**Turning in self-steering axle**

A self-steering axle may cause damage when turning in during manoeuvring.



Before manoeuvring, be sure to adhere to the following:

- ▶ Position the vehicle straight.
- ▶ Disable the self-steering axle.
- ▶ Re-enable the self-steering axle for driving operation.

Depending on the model, the reversing lock is implemented by:

- selecting the reverse gear,
- switch in the driver's cab or
- controls on the trailer.

The push-button (Fig. 53/1) is attached to the operating console.

The operating console is mounted behind the last axle on the left in the direction of travel.

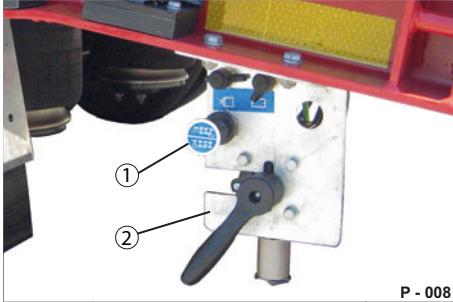


Fig. 53 Self-steering axle

- 1 Knob
- 2 Raising/lowering system operating console

Disabling the self-steering axle

- Drive straight ahead.
- Pull the knob (Fig. 53/1).
The self-steering axle is locked.

Enabling the self-steering axle

- Press the knob (Fig. 53/1).
The self-steering axle is re-enabled.

Operating landing gear



Read the support equipment operating instructions provided by the manufacturer.



WARNING



Sinking support equipment

The support equipment of the unhitched trailer can sink into soft or sagging ground.

The trailer can tip over and fall - risk of crushing!

- Check whether the ground is sufficiently stable.
- Use a stable base if the ground is soft or sagging.



WARNING

Driving with unsecured crank handle

A protruding crank handle can hit somebody when the vehicle is in motion.

- Check that the crank handle is secured before departing.



WARNING



Lowering the support equipment

Risk of crushing injuries below/next to the support equipment.



- Keep the danger area around the support equipment free.

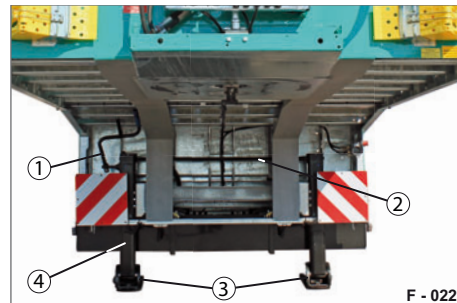


WARNING

Support equipment not completely raised

The support equipment can touch down on the road during the journey and rip off - risk of accidents!

- Check that the support equipment is completely raised before departing.



F - 022

Fig. 54 Semi-trailer support equipment

- 1 Crank handle
- 2 Tommy bar
- 3 Compensation feet
- 4 Support legs

The support equipment consists of the support winder with handle (Fig. 54/1) and the support legs (Fig. 54/4) with compensation feet (Fig. 54/3).



Observe general information:

Always completely retract support legs before the journey.

Only operate the support equipment using the crank handle.

Let the support legs down until they make contact with the ground.

Crank handle

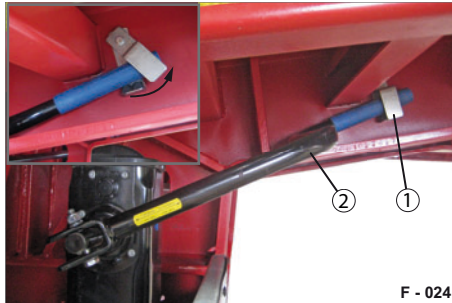


Fig. 55 Crank handle secured

- 1 Safety latch
- 2 Crank handle

Removing crank handle

- ▶ Turn the safety latch (Fig. 55/1) upwards.
- ▶ Pull out the hand crank (Fig. 55/2) and swivel it forwards under the vehicle body.

Inserting crank handle

- ▶ Insert the hand crank (Fig. 55/2) according to Fig. 55.
- ▶ Secure the crank handle with the safety latch (Fig. 55/1).

Support legs

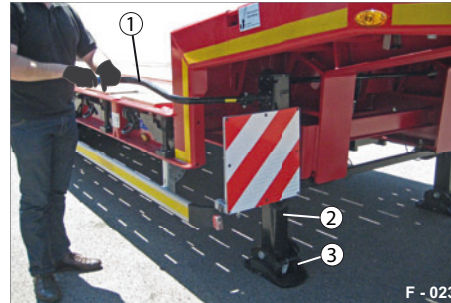


Fig. 56 Letting down support legs

- 1 Crank handle
- 2 Support
- 3 Compensation feet

- ▶ Crank up the support legs (Fig. 56/2) with the crank handle (Fig. 56/1) until the compensation feet (Fig. 56/3) are on the ground.
- ▶ Compensate for uneven ground, if applicable, so that the trailer is in a horizontal position.
- ▶ Set the crank handle to park position and secure it.

Support equipm. in drive position



Fig. 57 Support legs raised

- 1 Crank handle
- 2 Support

- ▶ Check that the support legs are completely raised and the crank handle secured before departing.

Operating support props

The support props at the rear of the trailer can be completely manually or hydraulic.

The support legs stabilise the trailer during loading/unloading.

The rear axle unit/pneumatic suspension are disburdened by the support feet.

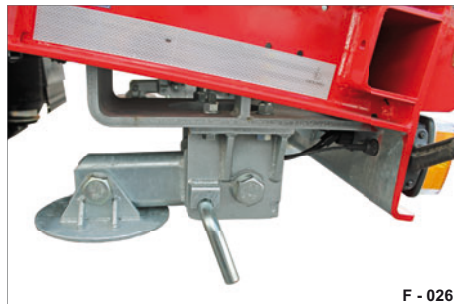


Fig. 58 Manual folding supports, folded up (drive position)



Fig. 60 Hydraulic support feet, folded up (drive position)

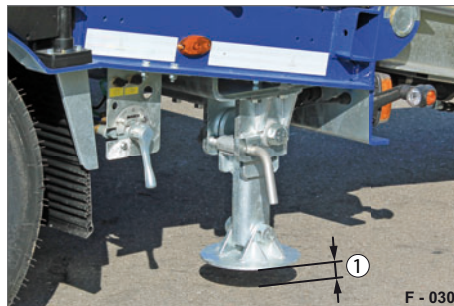


Fig. 59 Folding supports folded down, (position for loading/unloading)
1 Distance to ground (approx. 3-5 cm)



Fig. 61 Support props lowered, (position for loading/unloading)
1 Distance to ground (approx. 3-5 cm)



WARNING



Sinking support feet

The support legs can sink into soft /sagging ground.

The trailer can tip over - risk of crushing!

- Check whether the ground is sufficiently stable (firm).
- Use a stable base if the ground is soft or sagging.



WARNING



Driving with lowered support props

The support props can touch down on the road during the journey and rip off - risk of accidents!

- Check that the support props are folded up/raised and secured before departing.



WARNING



Loading/unloading without folded down/retracting support feet

Loading/unloading without folded down/retracting support feet can lead to loss of stability.

The trailer can tip over - risk of crushing!

- Fold down/lower the support props before loading/unloading.
- Check that the manual props are engaged.

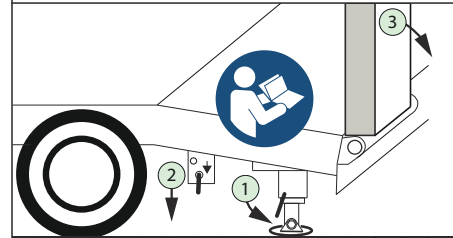


WARNUNG

Gefahr des Stabilitätsverlustes!

Anhänger kann beim Beladen die Standfestigkeit verlieren.

- ① Stützen herrunterlassen + verriegeln
- ② Anhänger ablassen ③ Rampen betätigen



WARNING

Risk of loss of stability!

Trailer may lose its steadfastness when loading.

- ① Supports unfold and lock
- ② Drain the Trailer ③ Operate ramps

620.00413

Fig. 62 Warning label

**CAUTION****Working under the trailer**

You could hit your head.

- ▶ Avoid jerky movements.
 - ▶ Only operate the folding supports if the platform gates are closed.
-

**CAUTION****Operating the folding supports**

Danger of fingers/hands being crushed between the chassis and folding supports.

- ▶ Use the folding supports carefully and in a controller manner - do not let them fall.



- ▶ Use



- ▶ Keep your feet out of the crushing zone when folding down the folding supports.
 - ▶ Only operate the folding supports when the trailer or tail lift are at a standstill.
-

Folding down manual supports

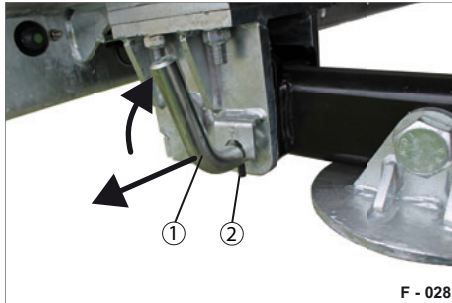


Fig. 63 Unlocking folding supports

- 1 Socket pin
- 2 Pin

- ▶ Rotate the socket pin (Fig. 63/1). The pin (Fig. 63/2) is released.
- ▶ Carefully remove the socket pin. Hold the support leg (Fig. 64/3) firmly while doing so.

Securing folding supports

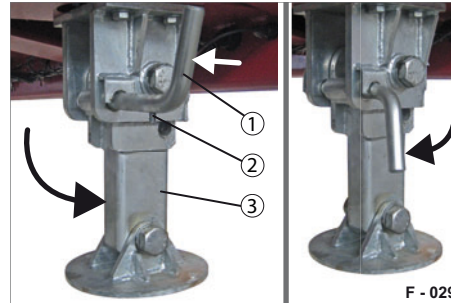


Fig. 64 Folding support folded down

- 1 Socket pin
- 2 Pin
- 3 Support leg with levelling foot

- ▶ Stick the socket pin into the bore hole (see Fig. 64).
- ▶ Turn the socket pin (Fig. 64/1) down so that it is secured with the pin (Fig. 64/2). The folding supports are folded down and secured.
- ▶ If the folding supports cannot be folded down because of limited ground clearance; first lift the chassis with the raising/lowering system.

Folding up folding supports

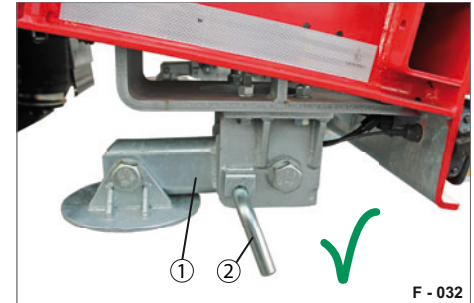


Fig. 65 Folding supports folded up/secured

- 1 Support leg with levelling foot
- 2 Socket pin

- ▶ Lift the chassis up to driving level with up the raising/lowering system.
- ▶ Turn and pull out the socket pin (Fig. 65/2).
- ▶ Fold up the support leg with levelling foot (Fig. 65/1).
- ▶ Stick the socket pin (Fig. 65/2) into the bore hole and turn it down.
- ▶ Check that both folding supports are folded up and secured.

Operating support props

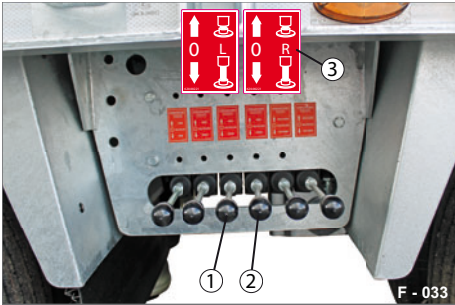


Fig. 66 Operating console on chassis

- 1 Lever for left support props
- 2 Lever for right support props
- 3 Identification (label)

The operating console is located on the rear of the trailer, on the last axle unit.

The operating levers on the operating console are labelled according to the function (see Fig. 66/3).

The hydraulic support props can be operated individually.

- Press the corresponding lever (Fig. 66/1 or 2) down and hold it.
The support feet extend completely.

Extending support props

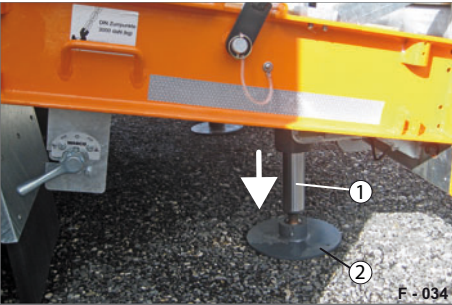


Fig. 67 Support props down, chassis lowered

- 1 Support cylinder
- 2 Connecting plate

- Extend the support cylinder before lowering the chassis.
Approximately 3-5 cm must remain between the ground and the connecting plate. This guarantees uniform support of the chassis and prevents the chassis from being raised with the support cylinder.
- Compensate for even ground by driving the individual support cylinders up and down.

Retracting support props

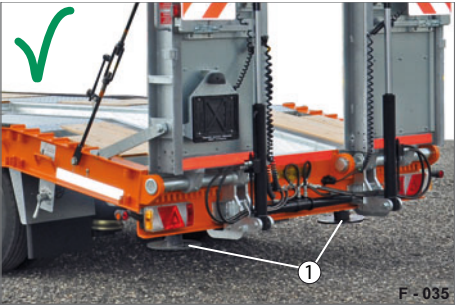


Fig. 68 Support cylinder raised

- 1 Support cylinder

- Lift the chassis up to driving level with up the raising/lowering system.
- Press the corresponding lever (Fig. 66/1 or 2) upwards and hold it.
The support foot raises completely.

Side guard (SSE)

The side guard is used as approach protection.

It is located on the sides of the trailer and is a legally required safety component.



Driving with folded up/no side guard is illegal.

There are two different side guard systems:

- With mechanical safeguard (locking bolt),
- With safety clamp in the retaining brackets.

The side guard can be installed as a screwed on variety.

Single-row side guards are used in flat-beds.

The side guard must be folded up and secured in order to remove the spare wheel under the chassis.



DANGER

Driving with folded up/damaged side guard

This does not provide sufficient side approach protection.

This can result in injury from folded up side guard - risk of striking.

- Check that the side guard is folded down and secured before departing.
- Have a damaged side guard repaired immediately.



CAUTION



Working under folded up side guard

The side guard can fold down unexpectedly - risk of crushing/striking!

- Secure the raised side guard.

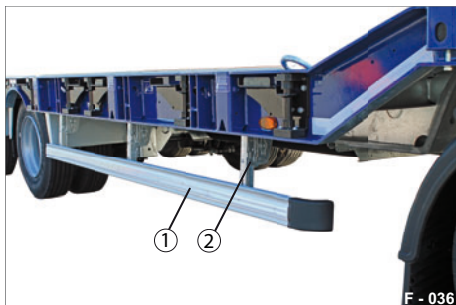


Fig. 69 Side guard on left, direction of travel

- 1 Side guard
- 2 Retaining brackets with safety clamp

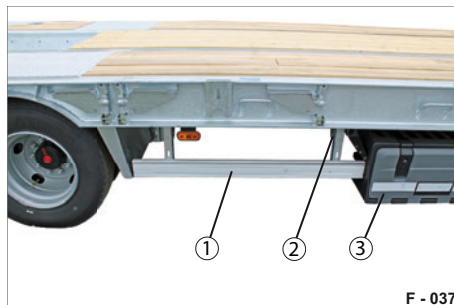


Fig. 70 Side guard on right, direction of travel

- 1 Side guard
- 2 Retaining brackets with locking bolt
- 3 Toolbox as side guard replacement

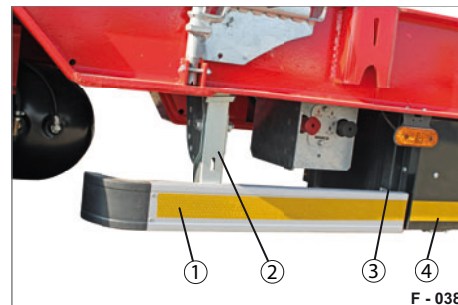
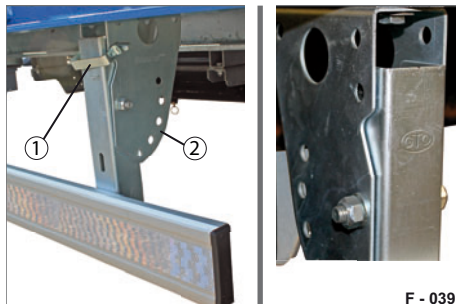


Fig. 71 Side guard, stationary

- 1 Side guard
- 2 Retaining brackets
- 3 Connection to pallet stowage box
- 4 Pallet stowage box as side guard replacement

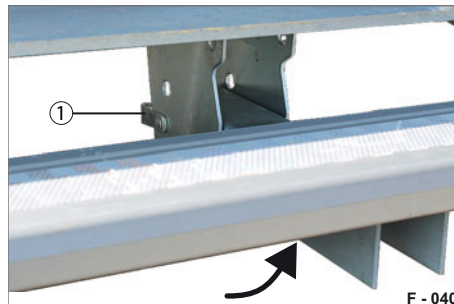
Side guard with locking bolt

Folding up

**Fig. 72** Unlocking

- 1 Locking bolt with seal strip
- 2 Adjustment step

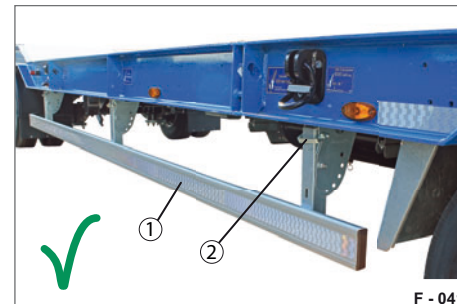
► Pull the locking bolt (Fig. 72/1) out of the upper perforation of the retaining brackets.

**Fig. 73** Fold up + secure

- 1 Locking bolt with seal strip

► Fold the side guard (Fig. 73/1) up.
 ► Slide the locking bolt (Fig. 73/1) on both sides of the side guard into the same perforation of the adjustment step (Fig. 72/2).
 Secure the side guard before folding down.

Folding down

**Fig. 74** Folded down + secured

- 1 Side guard
- 2 Locking bolt with seal strip

► Raise the side guard (Fig. 74/1) slightly, and remove the locking bolt (Fig. 74/2).
 ► Lower the side guard carefully.
 ► Plug in all locking bolts.
 Ensure that all locking bolts are secured by the seal strip.

Side guard with clamping function

Folding up

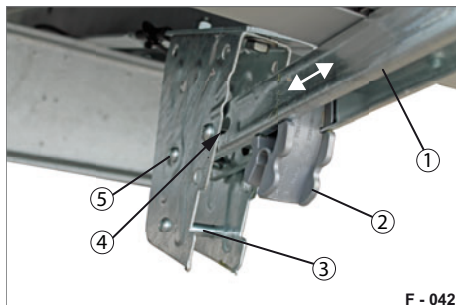


Fig. 75 Unlocking

- 1 Side guard
- 2 Clamping part (plastic)
- 3 Lower pin
- 4 Rotation axis with slot - open
- 5 Retaining bolt

The side guard with clamping function - with 3 retaining brackets - requires greater effort for operation.



Obtain help from a second person. Apply the side guard simultaneously.

- Pull the side guard (Fig. 75/1) out of the retaining brackets (Fig. 77/2).
- Push the side guard a bit upwards.



Fig. 76 Fold up + secure

- Pull the side guard towards you in the slot (Fig. 75/4).
- Position the side guard (Fig. 75/1) so that the open slot can slide over the retaining bolt (Fig. 75/5).
- Slide the side guard into the slot so that it locks into the retaining bolt. Secure the side guard (Fig. 75/1) before folding down.

Folding down

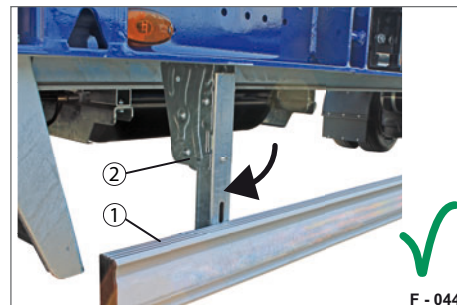


Fig. 77 Folded down + secured

- 1 Side guard
 - 2 Retaining brackets
- Pull the side guard towards yourself in the slot so that it protrudes over the retaining brackets (Fig. 75/5).
 - Lower the side guard carefully.
 - Press the side guard down with some force evenly into all retaining brackets (Fig. 77/2).
The clamping parts (plastic) lock on the lower bolts (Fig. 75/3).
The side guard (Fig. 77/1) is folded down and secured - drive position.

Spare wheel storage



You must observe the local regulations, safety rules and fundamental principles when removing/returning the spare wheels, and when maintaining and testing the spare wheel brackets, for example:

- Road Traffic Regulations (in Germany StVO)
- Road traffic licensing regulations (StVZO in Germany)
- Accident prevention regulations - vehicles (BGV 12)
- Safety rules for the storage of spare wheels (ZH 1/13)
- Fundamental principles for vehicle testing by the driving personnel (BGG 915)
- When working in the road with moving traffic, a warning vest must be worn.



WARNING

Unsecured spare wheel

The spare wheel can fall during the journey - risk of injury!

- ▶ Check that the spare wheels are properly secured before departing.



WARNING



Loading/removing spare wheel

Hands and feet could get crushed between the spare wheel, trailer parts and the ground.



- ▶ Use , , ,
- ▶ Avoid jerky movements.



WARNING



Working under the trailer

This can result in striking and crushing injuries.

- ▶ Make sure the raising/lifting system is not actuated.



- ▶ Use , , ,
- ▶ Avoid jerky movements.



WARNING



Spare wheel on the loading platform

Risk of falling from the loading platform when trying to ply the spare wheel out of its storage space!

- ▶ Carefully attach/move/remove the spare wheel - do not let it roll.



- ▶ Wheels are heavy.
Operate spare wheels in pairs.

Spare wheel transport

The spare wheels can be transported as follows:

- Under the chassis, in the spare wheel storage space
- On the loading platform, securely lashed down
- On the counterweights in the holder



Spare wheel, spare wheel holder and safety elements must be properly secured to prevent loss.



Spare wheels may only be transported in the provided spare wheel storage space.

Spare wheels being transported (on the loading platform) must be securely lashed down.

Damaged wheels – except for the profile – and damaged rims may only be transported to the nearest workshop or your own workshop in the spare wheel cage and must be removed there immediately, since it is not possible to fix damaged wheels in place adequately using the spare wheel securing system provided.

Damaged spare wheels must be additionally secured with a tensioning strap.

Check the pressure of the spare wheel regularly.

Securing defective wheel

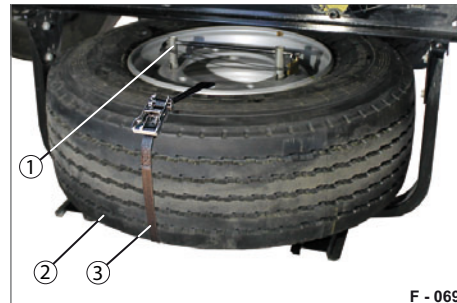


Fig. 78 Defective wheel secured

- 1 Spare wheel catches
- 2 Defective wheel
- 3 Tensioning strap

- ▶ Insert the defective wheel into the spare wheel holder.
- ▶ Mount the spare wheel catches (Fig. 78/1).
- ▶ Fasten the defective wheel to the holder (Fig. 78/2) through the rim frame with a tensioning strap (Fig. 78/3).
- ▶ Pull the tensioning strap (Fig. 78/3) tight.
- ▶ Check again that the defective wheel is secure.

Spare wheel storage (variety 1)



Fig. 79 Spare wheel storage (variety 1)

- 1 Side guard
- 2 Spare wheel
- 3 Bracket
- 4 Sliding lever
- 5 Safety latch

The spare wheel storage (variety 1) can be operated more easily by folding down the bracket (Fig. 79/3).

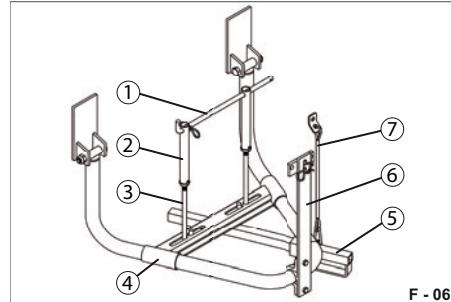


Fig. 80 Foldable system

- 1 Tommy bar (with spring pin)
- 2 Tube nut
- 3 Hook bolt
- 4 Bracket
- 5 Sliding lever
- 6 Safety latch with spring pin or padlock
- 7 Safety cable with spring hook

Releasing bracket

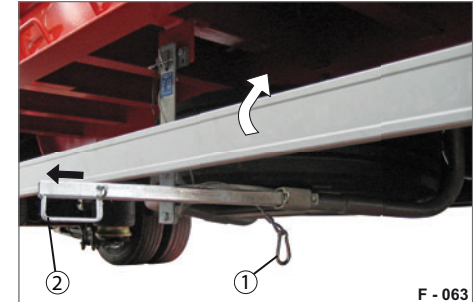


Fig. 81 Pulling out sliding lever

- 1 Safety cable with spring hook
- 2 Sliding lever

- Fold the side guard (Fig. 79/1) up and secure it from folding down.
- Release the spring hook (Fig. 81/1).
- Completely pull out the sliding lever (Fig. 81/2).

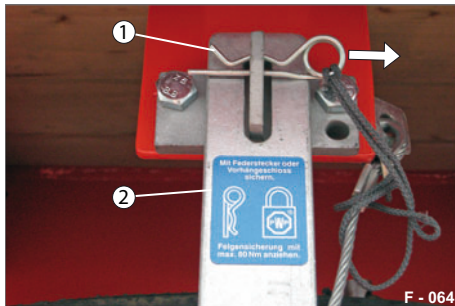


Fig. 82 Releasing safety latch

- 1 Spring pin or padlock
- 2 Safety latch

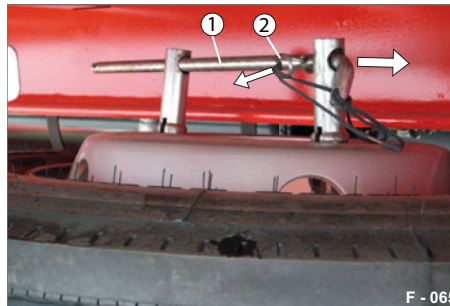


Fig. 83 Release tommy bar

- 1 Tommy bar
- 2 Spring pin

Removing the spare wheel

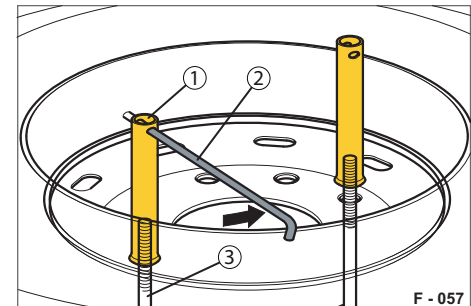


Fig. 84 Loosening the tube nuts

- 1 Tube nut
- 2 Tommy bar
- 3 Hook bolt

- ▶ Remove the spring pin (Fig. 82/1) or padlock.
- ▶ Pull the safety latch (Fig. 82/2) towards you and hold the bracket down with the sliding lever (Fig. 81/2).
- ▶ Carefully release the bracket with the spare wheel.

- ▶ Remove the spring pin (Fig. 83/2).
- ▶ Pull the tommy bar (Fig. 83/1) out of the two tube nuts.

- ▶ Unscrew the tube nuts (Fig. 84/1). Use the tommy bar as a lever and hold the hook bolt (Fig. 84/3) firmly in place.

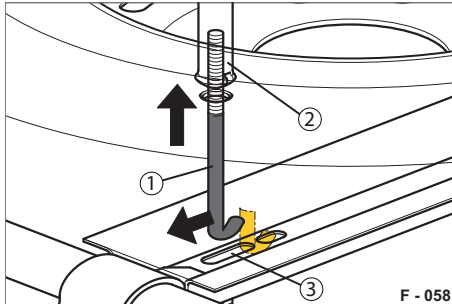


Fig. 85 Unscrewing the hook bolt

- 1 Hook bolt
- 2 Tube nut
- 3 Slot

- ▶ Lower the hook bolt (Fig. 85/1).
- ▶ Lead the hook bolt to the rear end of the slot (Fig. 85/3).
- ▶ Lift out the hook bolt.

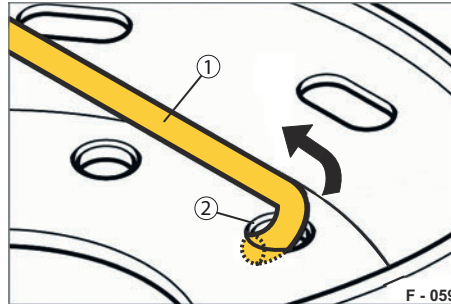


Fig. 86 Removing the hook bolt

- 1 Hook bolt
- 2 Pin hole

- ▶ Pull the hook bolt (Fig. 86/1) upward through the bolt holes (Fig. 86/2) of the spare wheel.
- ▶ Repeat the work steps with the second hook bolt.
- ▶ Carefully remove the spare wheel. Obtain help from another person - heavy spare wheel!

Inserting and securing spare wheel

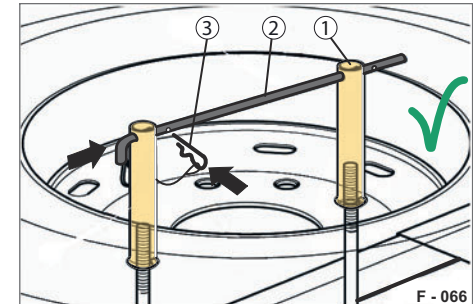


Fig. 87 Spare wheel secured

- 1 Tube nut
- 2 Tommy bar
- 3 Spring pin

- ▶ Place the spare wheel on the hook bolt.
- ▶ Slide the spare wheel onto the hook bolt.
- ▶ Turn the inserted spare wheel until two opposite bolt holes are located over the slotted holes in the spare wheel holder.
- ▶ Lead the hook bolt (Fig. 86/1) through the pin hole (Fig. 86/2) of the spare wheel.
- ▶ Lead the hook bolt to the front end of the slot (Fig. 85/3).

Spare wheel storage under chassis

- ▶ Raise the hook bolts until the hook point protrudes through the small front hole.
- ▶ Screw the tube nuts (Fig. 87/1) to the hook bolt.
- ▶ Tighten the two tube nuts by hand.
- ▶ Tighten the tube nuts with the tommy bar (Fig. 87/1) as a lever. Observe the torque specification on the safety latch (max. 80 Nm).
- ▶ Put the tommy bar (Fig. 87/2) through both tube nuts (Fig. 87/1).
- ▶ Push the spring pin (Fig. 87/3) through the rear bore hole on the tommy bar. The spare wheel is secured against falling out.

Securing spare wheel storage

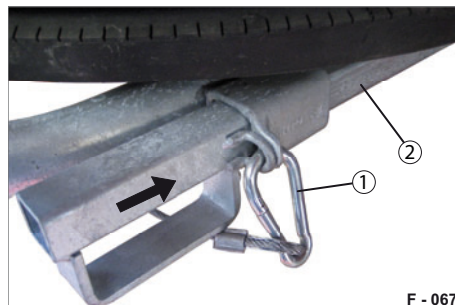


Fig. 88 Sliding lever secured

- 1 Spring hook
- 2 Sliding lever

- ▶ Carefully raise the hook bolt with spare wheel upwards with the sliding lever (Fig. 88/2).
- ▶ Attach the safety latch and secure it with the spring pin or padlock.
- ▶ Secure the sliding lever using the spring hook (Fig. 88/1).

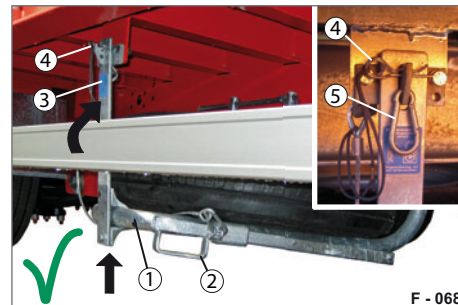


Fig. 89 Spare wheel storage secured

- 1 Bracket
- 2 Sliding lever
- 3 Safety latch
- 4 Spring pin
- 5 Spring hook or padlock

- ▶ Secure the safety latch (Fig. 89/3) with the spring pin (Fig. 89/4) and, if necessary, also with a padlock or spring hook. The spare wheel storage is secured.
- ▶ Fold down the side guard and secure it.

Spare wheel storage (variety 2)

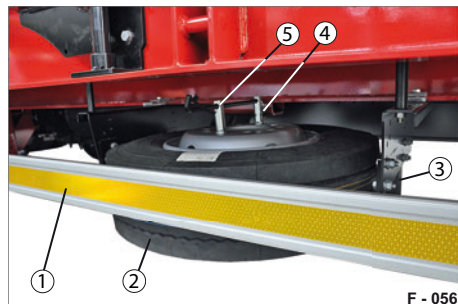


Fig. 90 Spare wheel storage (variety 2)

- 1 Side guard
- 2 Spare wheel
- 3 Basket
- 4 Padlock
- 5 Spare wheel safeguard

The spare wheel safeguard consists of two tube nuts, two hook bolts, a tommy bar and a padlock.



The side guard must be folded up and secured before removing the spare wheel.

Removing the spare wheel

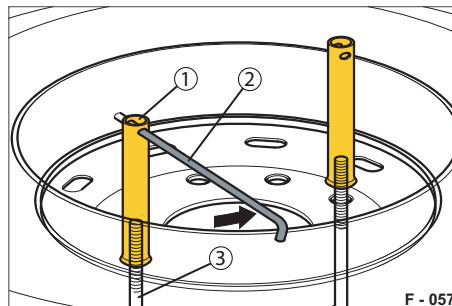


Fig. 91 Loosening the tube nuts

- 1 Tube nut
- 2 Tommy bar
- 3 Hook bolt

- ▶ Remove the padlock (Fig. 90/4).
- ▶ Remove the tommy bar (Fig. 91/2).
- ▶ Unscrew the tube nuts (Fig. 91/1).
Use the tommy bar as a lever and hold the hook bolt (Fig. 91/3) firmly in place.

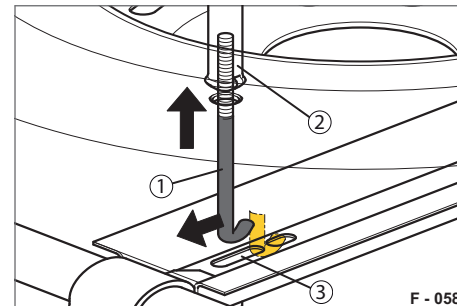


Fig. 92 Unscrewing the hook bolt

- 1 Hook bolt
- 2 Tube nut
- 3 Slot

- ▶ Lower the hook bolt (Fig. 92/1).
- ▶ Lead the hook bolt to the rear end of the slot (Fig. 92/3).
- ▶ Lift out the hook bolt.

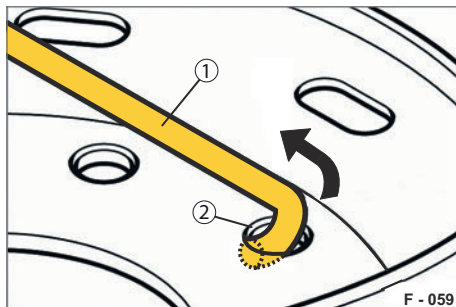


Fig. 93 Removing the hook bolt

- 1 Hook bolt
- 2 Pin hole

- ▶ Pull the hook bolt (Fig. 93/1) upward through the bolt holes (Fig. 93/2) of the spare wheel.
- ▶ Repeat the work steps with the second hook bolt.
- ▶ Carefully remove the spare wheel. Obtain help from another person - heavy spare wheel!

Positioning the spare wheel

- ▶ Put the spare wheel next to the spare wheel holder, and lift it onto the basket (Fig. 90/3).
- ▶ Push the spare wheel into the basket.
- ▶ Turn the inserted spare wheel until two opposite bolt holes are located over the slotted holes in the spare wheel holder.
- ▶ Lead the hook bolt (Fig. 93/1) through the pin hole (Fig. 93/2) of the spare wheel.
- ▶ Lead the hook bolt to the front end of the slot (Fig. 92/3).
- ▶ Raise the hook bolts until the hook point protrudes through the small front hole.
- ▶ Screw the tube nuts (Fig. 94/2) to the hook bolt.

Securing spare wheel

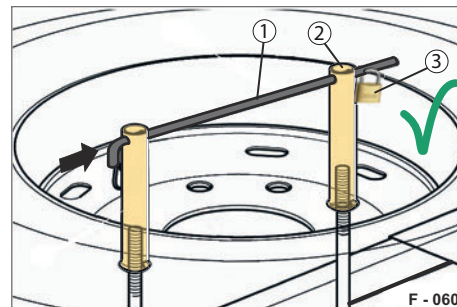


Fig. 94 Spare wheel secured

- 1 Tommy bar
- 2 Tube nut
- 3 Padlock

- ▶ Tighten the two tube nuts (Fig. 94/2) by hand.
- ▶ Tighten the tube nuts with the tommy bar (Fig. 94/1) as a lever (at least 5 rotations).
- ▶ Put the tommy bar (Fig. 94/1) through both tube nuts (Fig. 94/2).
- ▶ Attach the padlock (Fig. 94/3). The spare wheel is secured against falling out.
- ▶ Fold down the side guard and secure it.

Spare wheel holder

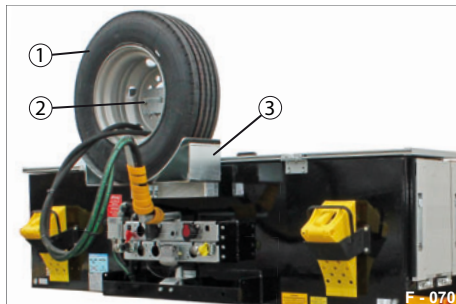


Fig. 95 Spare wheel on the front wall

- 1 Spare wheel
- 2 Catches
- 3 Holder console

The spare wheel must be operated from the high plateau of a flatbed semi-trailer.



The spare wheel is heavy!
Operate the spare wheel in pairs.

Removing the spare wheel

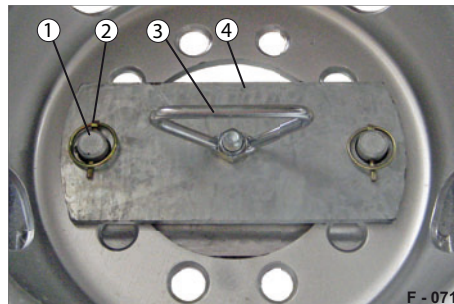


Fig. 96 Release catches

- 1 Stud
- 2 Locking pins
- 3 Wing nut
- 4 Locking plate

- ▶ Pull the locking pins Fig. 96/2) out of the studs (Fig. 96/1) on both sides.
- ▶ Unscrew the wing nuts (Fig. 96/3). Hold the spare wheel firmly.
- ▶ Remove the locking plate (Fig. 96/4).
- ▶ Remove the spare wheel from the holder console (Fig. 95/3).

Securing spare wheel



Fig. 97 Release catches

- ▶ Insert the spare wheel into the holder console (Fig. 95/3). The studs (Fig. 96/1) must go through two slots in the rim.
- ▶ Connect the locking plate (Fig. 96/4) to the studs. Hold the spare wheel firmly.
- ▶ Screw on the wing nuts (Fig. 96/3). The locking plate clamps the spare wheel rim down.
- ▶ Connect the locking pins (Fig. 96/2) on both sides. The spare wheel is secured.

General

Wheel chocks can be attached to different parts of the trailer, depending on the version and the optional equipment of the trailer.



WARNING



Parking trailer on a slope

The service brake can give way and the trailer starts moving - risk of accidents!

- ▶ On slopes, secure the trailer additionally using wheel chocks.
- ▶ Only put the wheel chocks under rigid axles.
- ▶ Replace lost or damaged wheel chocks.



WARNING

Unsecured wheel chocks

Unsecured wheel chocks can fall during the journey - risk of accidents!

- ▶ Check that the wheel chocks are secured before departing.
- ▶ Check the condition of the holders regularly for damage.



CAUTION



Operating wheel chocks under the chassis

You could hit your head on the chassis.

- ▶ Operate the wheel chock slowly and carefully.
- ▶ Avoid jerky movements.



Fig. 98 Wheel chocks in place

1 Wheel chock



In addition to the parking brake, the trailer must be secured with wheel chocks on up/down slopes, when loading and unloading and in the uncoupled state.

Mounting on centre pivot plate

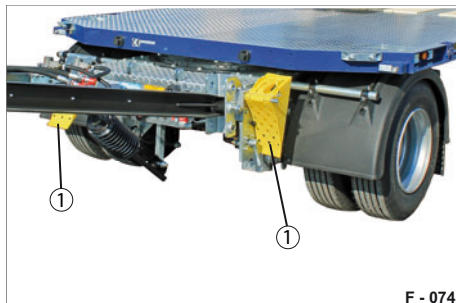


Fig. 99 Wheel chocks (2-fold) on retaining bolt

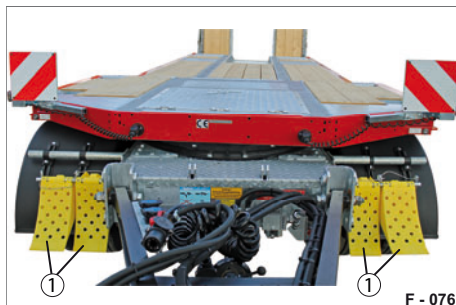


Fig. 100 Wheel chocks (4-fold) on retaining bolt

Wheel chock on retaining bolt

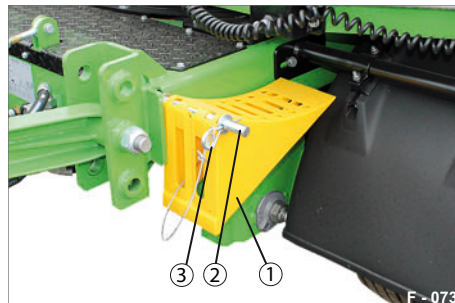


Fig. 101 Wheel chock on retaining bolt

- 1 Wheel chock
- 2 Retaining bolt
- 3 Spring pin (with washer)

Removing the wheel chock

- ▶ Remove the spring pin (Fig. 101/3). Remove the washer.
- ▶ Remove the wheel chock (Fig. 101/1).

Fitting wheel chock

- ▶ Fit the wheel chock onto the retaining bolt (Fig. 101/2).
- ▶ Secure the wheel chock using the spring pin (Fig. 101/3) and washer.

Wheel chock in retaining brackets

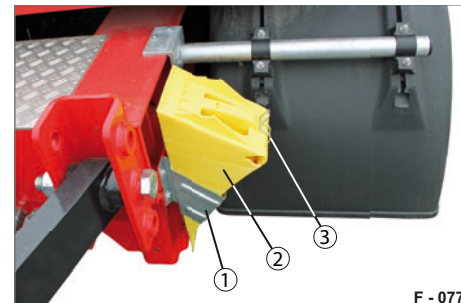


Fig. 102 Wheel chock in retaining brackets

- 1 Retaining brackets (steel plate)
- 2 Wheel chock
- 3 Spring clamp

Removing the wheel chock

- ▶ Pull the spring clamp (Fig. 102/3) towards yourself.
- ▶ Remove the wheel chock (Fig. 102/1).

Fitting wheel chock

- ▶ Fit the wheel chock into the retaining brackets (Fig. 102/1).
- ▶ Press the spring clamp (Fig. 102/3) onto the wheel chock.

Mounting on semi-trailer



Fig. 103 Wheel chock, horizontal, in retaining brackets (steel plate)

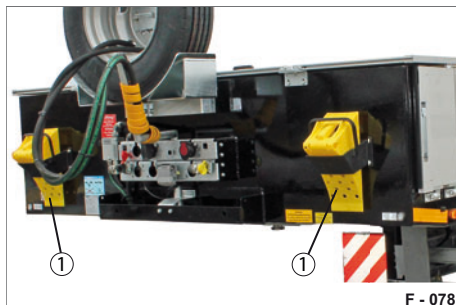


Fig. 104 Wheel chock, vertical, in retaining brackets (plastic)

Wheel chock on retaining bolt

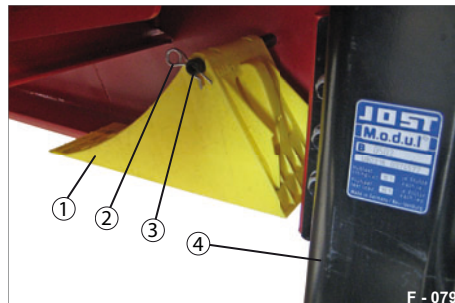


Fig. 105 Wheel chock on retaining bolt

- 1 Wheel chock
- 2 Spring pin
- 3 Retaining bolt
- 4 Landing gear

Removing the wheel chock

- Remove the spring pin (Fig. 105/2).
- Remove the wheel chock (Fig. 105/1).

Fitting wheel chock

- Fit the wheel chock onto the retaining bolt (Fig. 105/3).
- Secure the wheel chock using the spring pin (Fig. 105/2).

Wheel chock in retaining brackets

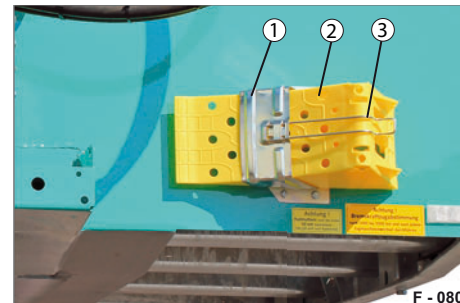


Fig. 106 Wheel chock in retaining brackets

- 1 Retaining brackets (steel plate)
- 2 Wheel chock
- 3 Spring clamp

Removing the wheel chock

- Pull the spring clamp (Fig. 102/3) towards yourself.
- Remove the wheel chock (Fig. 102/1).

Fitting wheel chock

- Fit the wheel chock into the retaining brackets (Fig. 102/1).
- Press the spring clamp (Fig. 102/3) onto the wheel chock.

Wheel chock in retaining brackets

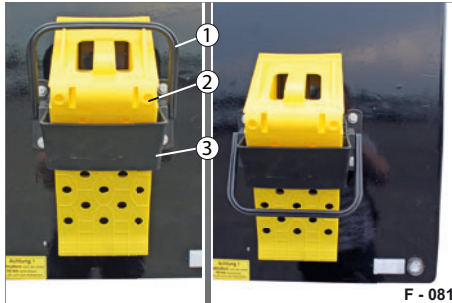


Fig. 107 Wheel chock in retaining brackets

- 1 Retaining clip
- 2 Wheel chock
- 3 Retaining brackets (plastic)

Removing the wheel chock

- Pull the retaining clip (Fig. 107/1) towards yourself.
- Remove the wheel chock (Fig. 107/2).

Fitting wheel chock

- Fit the wheel chock into the retaining brackets (Fig. 107/3).
- Press the retaining clip (Fig. 107/1) onto the wheel chock.

General

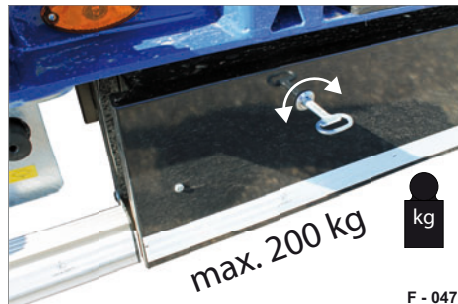


Fig. 108 Stowage box (can be closed)

Wooden planks, tools and lashing equipment can be kept in the stowage box.

The lengthwise stowage box is used as a replacement for the side guard.



DANGER



Driving with open stowage boxes

The cover can cause injuries. Objects could fall out - risk of injury!

- Check that the stowage box is closed and secure before departure.

Opening

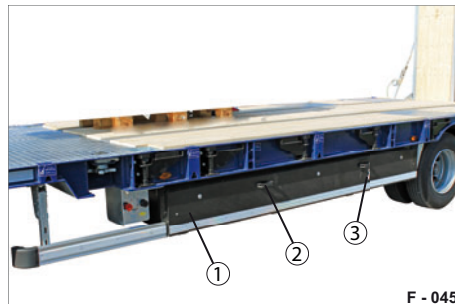


Fig. 109 Stowage box closed

- 1 Stowage box
- 2 Handle
- 3 Key

- Unlock the lid (Fig. 110/1) with the key (Fig. 109/3). Hold the lid tightly by the handle (Fig. 110/2).
- Carefully fold the lid down. The lid is held with the two support chains (Fig. 110/2) attached to the side.
- Do not place any objects on the cover.

Closing

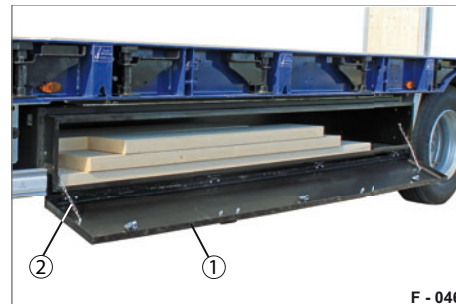


Fig. 110 Stowage box open

- 1 Lid
- 2 Support chain

- Carefully fold the lid (Fig. 110/1) up. Make sure that the support chains (Fig. 110/2) do not get caught on the side of the lid/stowage box.
- Hold the lid by the handle (Fig. 109/2) and lock the lid at the three locking points with the key (Fig. 109/3). The stowage box is closed and secured.

General



Fig. 111 Stowage box (can be closed)

- 1 Stowage box, crosswise

Wooden planks, tools and lashing equipment can be kept in the stowage box.

The crosswise stowage boxes have only one lock.



DANGER



Driving with open stowage boxes

The cover can cause injuries.
Objects could fall out - risk of injury!

- Check that the stowage box is closed and secure before departure.

Opening

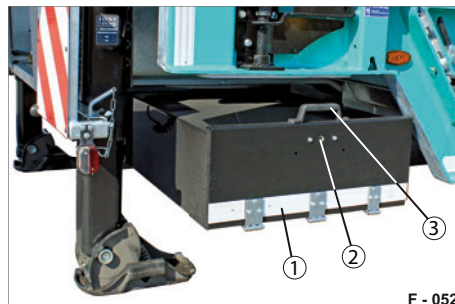


Fig. 112 Stowage box closed

- 1 Lid
2 Lock (square)
3 Handle

- Unlock the lid (Fig. 112/1) with the key.
Hold the lid tightly by the handle (Fig. 112/3).
- Carefully fold the cover down.
The lid is held with the two support chains attached to the side.
- No not place any objects on the cover.

Closing

- Carefully fold the lid (Fig. 112/1) up. Make sure that the support chains do not get caught on the side of the lid/ stowage box.
- Hold the lid by the handle (Fig. 112/3) and lock the lid with the square-bolt socket wrench at the lock (Fig. 112/2). The stowage box is closed and secured.

General



Fig. 113 Toolbox on chassis

- 1 Toolbox

A closable toolbox is available as an option.

The location depends on the other equipment on the trailer.

The toolbox is used to stow tie-down straps, tools, cleaning utensils, etc.

The toolbox is used as a replacement for the side guard.

The toolbox is not waterproof.

**WARNING****Unlocked toolbox**

Objects could fall during the journey.

The lid can be torn off - risk of accidents!

- Check that the toolbox is closed and secure before departure.

Operating toolbox

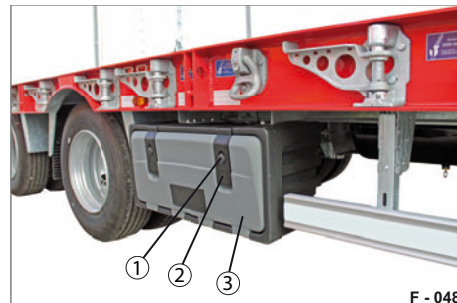


Fig. 114 Toolbox closed

- 1 Lock cylinder with cover
2 Lock
3 Lid



Note the specified surface loading (see the manufacturer's specifications inside the lid)

- When opening the cover, watch out for falling objects.
► Do not place any objects on the open lid of the toolbox.

Setting up toolbox



Fig. 115 Setting up toolbox

- 1 Intermediate base plate
- 2 Lid

► If necessary, lay the intermediate base plate (Fig. 115/1) at the required height.

Opening

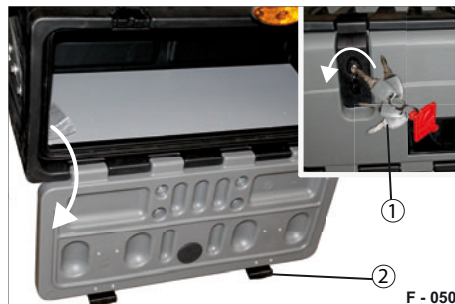


Fig. 116 Toolbox open

- 1 Key
- 2 Locks

- Remove the covers (Fig. 114/1) from the lock cylinders and close the lid (Fig. 114/3) with the key (Fig. 116/1).
- Pull out the locks (Fig. 116/2) from below and twist them downwards.
- Carefully swing the lid down.

Closing

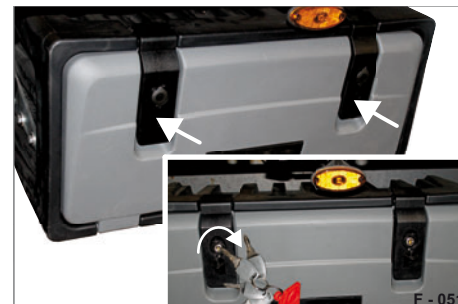


Fig. 117 Toolbox closed

- Swing the lid up.
- Clasp the locks (Fig. 116/2) from above and press them downwards. This lid is locked.
- Lock with the key (Fig. 116/1) and fasten the cover over the key cylinder (Fig. 114/1). The toolbox is closed and secured.



Operation: body

1

2

3

4

5

6

7

8

The construction mainly consists of:

- Ramps
- Lashing shackles/lashing rings
- Platform gate structure on high plateau (optional)
- Curtain/roof bow structure on high plateau (optional)
- Posts (optional)
- Folding booms with additional widening planks
- Wheel cavity with cover (optional)



WARNING



Climbing on the body

The body is not sturdy enough to hold a person's weight.

The components could cave in or break - risk of falling!

- ▶ Do not use the components as a ladder.
- ▶ Use a stable ladder when working on the body.



WARNING



Objects on the body

Ice, snow, branches and other objects can fall on the body/loading platform during the journey - risk of accidents!

- ▶ Before starting the journey, check that there are no accumulations of water, ice, snow, branches or other objects on the body/loading platform. Remove them if necessary.
- ▶ Use a secure ladder.



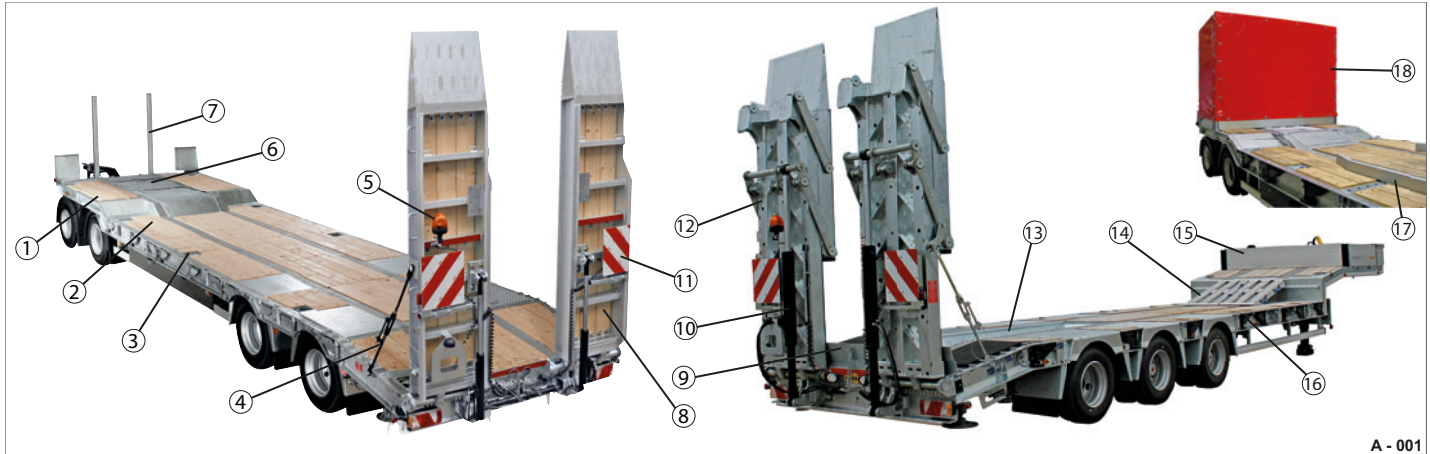
WARNING



Unsecured/shifted loading

Loads can fall out of the trailer when opening the clamping elements - risk of crushing/striking!

- ▶ Ensure that the load is upright and has not shifted.
- ▶ If the load has shifted, carefully open the clamping elements and secure the shifted and unsecured load.
- ▶ Open the body locking points from a position outside of the swivel range of the body components (ramps, platform gates, etc.).



A - 001

Fig. 1 Body of a flatbed (example)

- | | | | |
|----|-----------------------------|----|----------------------------|
| 1 | Plateau (high plateau) | 17 | Ramp/safety rails |
| 2 | Loading platform/flatbed | 18 | Curtain/roof bow structure |
| 3 | Lashing point | | |
| 4 | Turnbuckle (ramps) | | |
| 5 | Rotating light | | |
| 6 | Toolbox/stowage box | | |
| 7 | Side post | | |
| 8 | Ramps, one-piece | | |
| 9 | Ramp cover plate | | |
| 10 | Hydraulic cylinder | | |
| 11 | Warning panel, extendable | | |
| 12 | Ramps, two-piece | | |
| 13 | Bucket storage space/cavity | | |
| 14 | Ramps for high plateau | | |
| 15 | Platform gates | | |
| 16 | Widening folding boom | | |

Ramp safeguards

Ramps can be produced in different designs:

- One- or two-piece
- With wooden planks or grating

Ramps can be operated manually, or hydraulically as an option.

The ramps are secured using turnbuckles attached to the side, and using spring bars for mechanical ramps.



DANGER

Travelling with unsecured turn-buckles

Unsecured turnbuckles/spring bars can release.

The ramps could fold down on their own
- risk of accidents!

- Check that the turnbuckles are closed and secured before departing.
- Always insert the safety splint pins/spring bar from above.
- Replace defective safety elements immediately.

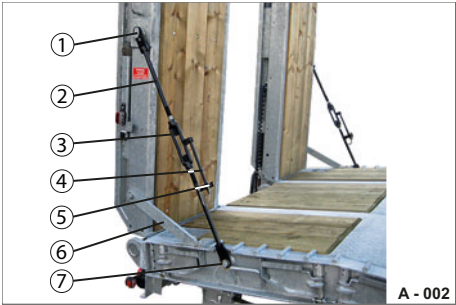


Fig. 2 Ramps secured with turnbuckle (with counter support)

- 1 Pin - ramp
- 2 Pull rod
- 3 Locking screw
- 4 Tensioning lever
- 5 Safety splint pin
- 6 Counter support
- 7 Pins with safety splint pins or spring bars



Fig. 3 Ramps secured with turnbuckle (with ramp cover plate)

- 1 Pin - ramp
- 2 Pull rod
- 3 Locking screw
- 4 Tensioning lever
- 5 Safety splint pin
- 6 Ramp cover plate
- 7 Pins with safety splint pins or spring bars

Opening turnbuckle

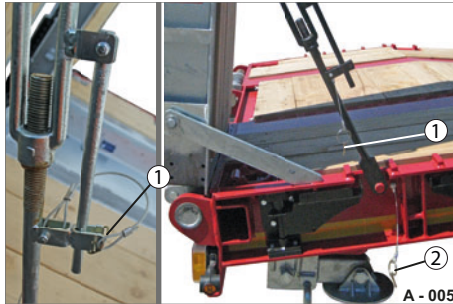


Fig. 4 Turnbuckle released

- 1 Safety splint pin (tensioning lever)
- 2 Safety splint pin or spring pin

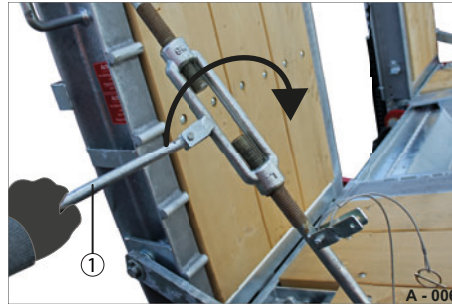


Fig. 5 Untwist turnbuckle

- 1 Tensioning lever

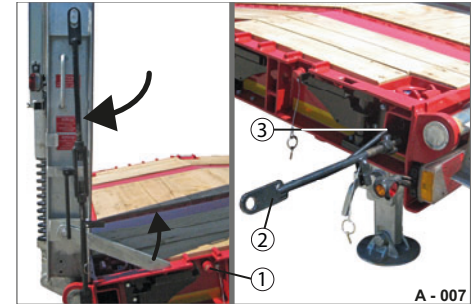


Fig. 6 Removing/stowing turnbuckle

- 1 Pin on chassis
- 2 Turnbuckle
- 3 Storage compartment in chassis

- Remove the safety splint pin (Fig. 4/1) on the tensioning lever.
- Remove the safety splint pin/spring pin (Fig. 4/2) on the lower pin.

- Rotate the turnbuckle with the tensioning lever (Fig. 5/1) until the rod lifts up from the lower pin on the chassis.

- Remove the turnbuckle (Fig. 6/2) from the lower pin (Fig. 6/1).
- Unhinge the turnbuckle from the upper pin (Fig. 6/2).
- Push the turnbuckle into the storage compartment (Fig. 6/3) in the chassis.
- Turn the counter supports (Fig. 7/1) into the locking plate (Fig. 7/2).

Closing turnbuckle

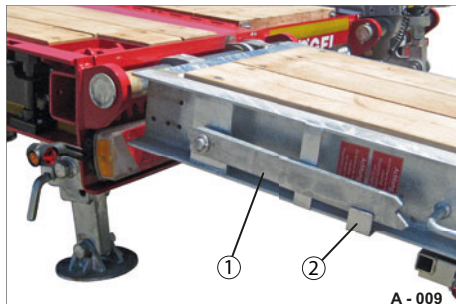


Fig. 7 Counter support secured

- 1 Counter support
- 2 Locking plate



Fig. 8 Counter support in drive position

- 1 Ramp in drive position
- 2 Counter support folded down

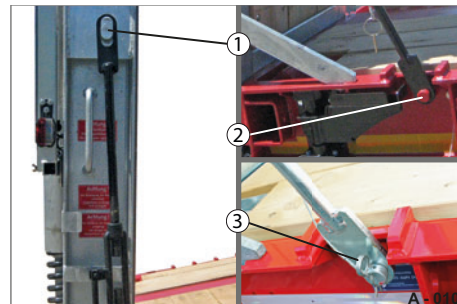


Fig. 9 Turnbuckle mounted

- 1 Pin on the ramp
- 2 Pin on chassis
- 3 Safety splint pin/spring pin



The ramps must be completely to the side on the chassis and folded up - drive position.

Positioning of ramps see „Ramps Adjusting laterally“ on page 143 & see „Ramps Raising/lowering“ on page 148

- Collapse the counter supports (Fig. 8/2) into the end stop opening.

- Mount the turnbuckle into the upper pin (Fig. 9/1) of the ramp.
- Plug the lower part of the turnbuckle onto the lower pin (Fig. 9/2) on the chassis.
- Secure the turnbuckle with the safety splint pin/spring pin (Fig. 9/3) on the lower pin.
Plug it in from above.

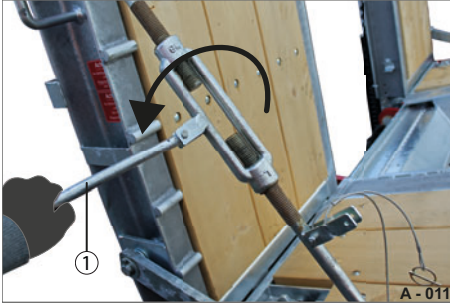


Fig. 10 Tightening turnbuckle

1 Tensioning lever

- Rotate the tensioning lever (Fig. 10/1) clockwise until the counter support hits the end stop or the ramps hit the ramp cover plate.
The turnbuckle is tightened.

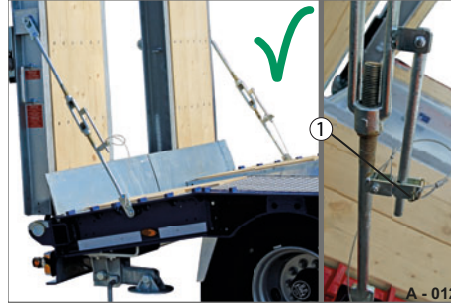


Fig. 11 Turnbuckle secured

1 Safety splint pin

- Secure the turnbuckle in the holder with the safety splint pin (Fig. 11/1). The turnbuckle is secured against turning by itself.



Fig. 12 Turnbuckle unsecured



Travelling with unsecured turnbuckles/ramps is not allowed.

- Check that both turnbuckles are secured with the tensioning lever.

Catches Divided ramps

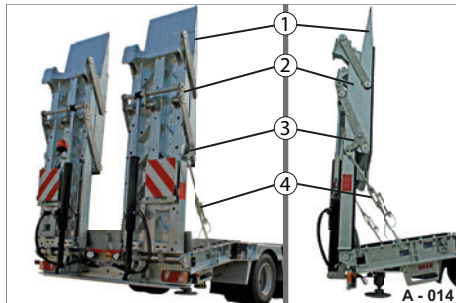


Fig. 13 Divided ramps secured

- 1 Upper ramp section
- 2 Lower ramp section
- 3 Safety lever
- 4 Turnbuckle

The upper ramp section is secured with an additional safeguard (Fig. 14).



The safeguard should release on its own when folding down the ramp. The safeguard can stick if it is soiled/corroded, and must be released by hand.

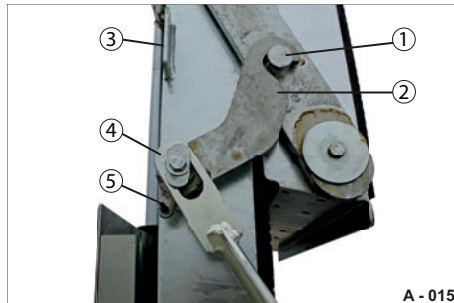


Fig. 14 Catches

- 1 Retaining pin
- 2 Safety lever
- 3 Limit position
- 4 Turnbuckle rod
- 5 Stop pin

► Bring the divided ramps into drive position.

The safety lever (Fig. 14/2) automatically folds down on the retaining pin (Fig. 14/1).

The end stop (Fig. 14/3) prevents the safety lever from folding down on its own.

► Operate the safety lever by hand or using the turnbuckle if it does not fold down on its own.



Fig. 15 Turnbuckle secured

- 1 Turnbuckle

Operation of the turnbuckle is the same as with one-piece ramps.



Travelling with unsecured turnbuckles/ramps is not allowed.

- Close the turnbuckle (Fig. 15/1).
- Secure the turnbuckle with safety splint pins/spring pins.

Ramps Adjusting laterally



DANGER

Travelling with unsecured ramps

If the spring bars are open, the ramps can slide to the side and break off the turnbuckle.

The ramps can fold down during the journey - risk of accidents!

- Check that the ramps are folded up and secured with the spring bars before departing.



WARNING



Ramps set to incorrect track width

The vehicle to be loaded can tip off the ramp - risk of striking/ crushing!

- Set the ramp to the correct track width before loading/unloading.
- Make sure the ramps are resting completely on the ground.

NOTICE

Loading vehicle slides off the ramps

The loading vehicle and ramps can get damaged/deformed.

- During loading/unloading, check that the loading vehicle drives up the centre of the ramps.

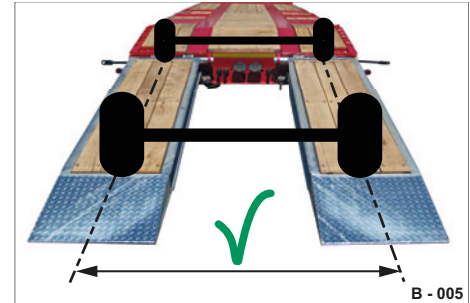


Fig. 16 Track width set correctly



The ramps must be the same distance to the centre line of the flatbed after adjustment.

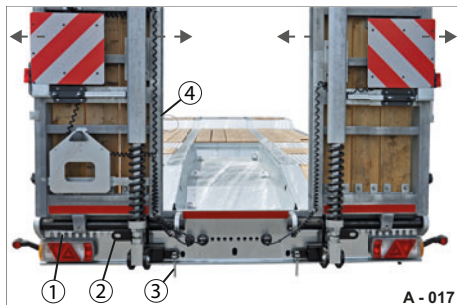


Fig. 17 Mechanical adjustment

- 1 Adjustment steps
- 2 Latches
- 3 Spring bars
- 4 Lever handle

The ramps are moved manually by means of a lever handle (Fig. 17/4).

The spring bar (Fig. 17/3) secures the ramps from moving on their own.

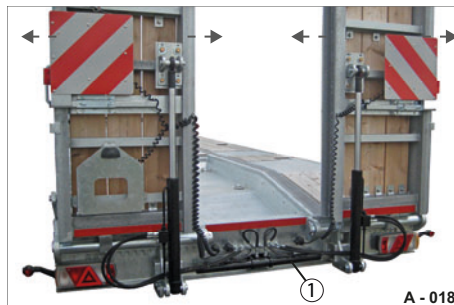


Fig. 18 Hydraulic adjustment

- 1 Hydraulic cylinder

The ramps are moved hydraulically by means of a hydraulic cylinder (Fig. 18/1).

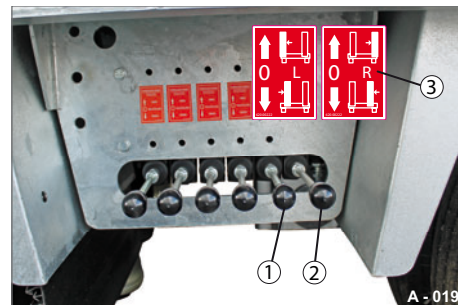


Fig. 19 Operating console for hydraulic, lateral adjustment

- 1 Lever for left ramp
- 2 Lever for right ramp
- 3 Identification (label)

The devices (Fig. 19/1 & Fig. 19/2) for lateral movement of the ramps is located on the side of the chassis.

The corresponding levers are identified with labels (Fig. 19/3).

Adjusting ramps mechanically

The supplied lever handle is needed to operate the ramps.



WARNING

Driving with unsecured lever handle

The lever handle can fall out and be pushed to the side - risk of accidents!

- Check that the lever handle is secured in the holder with the spring pin before departing.

NOTICE

Operating ramps with other objects

The adjustment step/latch/ramps can get deformed.

- Only adjust the ramps using the supplied lever handle.

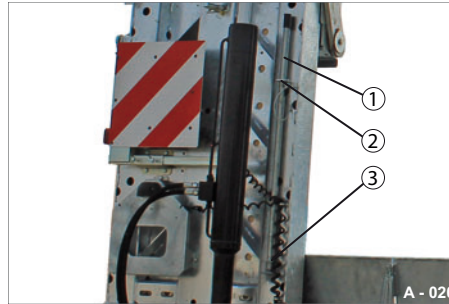


Fig. 20 Lever handle in drive position

- 1 Lever handle
- 2 Spring pin
- 3 Lower holder

The lever handle is located on one of the ramps.

- Do not leave the lever handle in the work area/loading platform during loading/unloading.

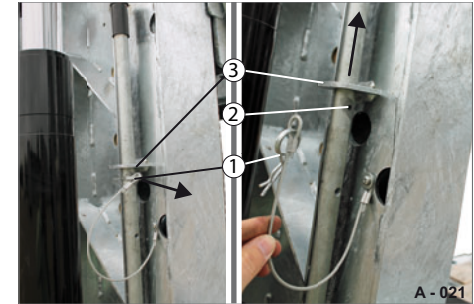


Fig. 21 Removing lever handle

- 1 Spring pin
- 2 Perforation
- 3 Upper holder

- Remove the spring pin (Fig. 21/2) from the perforation.
- Pull the lever handle (Fig. 20/1) completely out of the upper holder (Fig. 21/3).

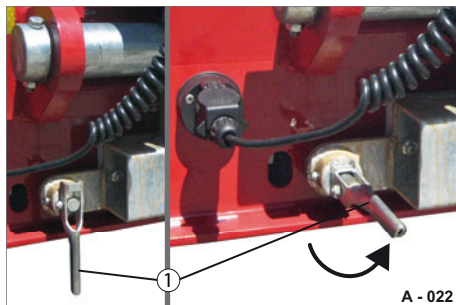


Fig. 22 Releasing ramp

- 1 Spring bars

- Open the spring bar (Fig. 22/1).
The ramp can now be moved.

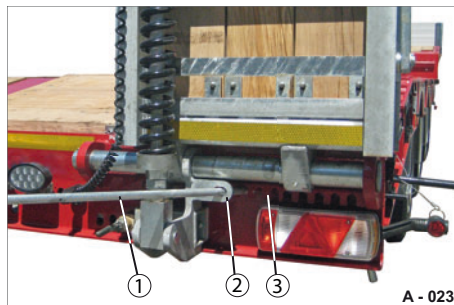


Fig. 23 Adjustment, lateral

- 1 Lever handle
2 Latches
3 Adjustment steps

- Lead the lever handle (Fig. 23/1) through the latch (Fig. 23/2) as a leverage point.
- Move the ramp into the desired position in the adjustment steps (Fig. 23/3) by moving the lever.
- Set the required track width with both ramps.
Check that both ramps are symmetrical to the centre of the flatbed.
- Leave the spring bar open.
The ramp can now be folded down.

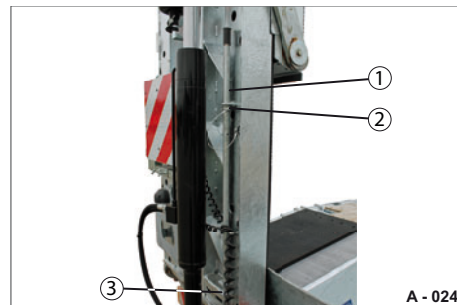


Fig. 24 Lever handle secured

- 1 Lever handle
2 Spring pin
3 Lower holder



The lever handle must be completely secured in its holder during the drive. Driving with the lever handle loose on the loading platform is not allowed.

- Lead the lever handle (Fig. 24/1) through the upper holder.
- Plug the lever handle into the upper holder (Fig. 24/3).
- Plug the spring pin (Fig. 24/2) through the perforation (see Fig. 21).
The lever handle is secured.

Adjusting hydraulic ramps

The hydraulic lines must be connected to a suitable towing machine to carry out the hydraulic adjustment of the ramps.

The towing vehicle must be started.



WARNING



Movable ramps

People can be hit or crushed by swivel movements of the ramps.

- Make sure that there is nobody in the danger area before operating the ramp.

NOTICE

Operating ramps secured with turnbuckle

The turnbuckles could snap.

The ramps become deformed.

- Make sure that the turnbuckles are released and removed before operating the ramp.

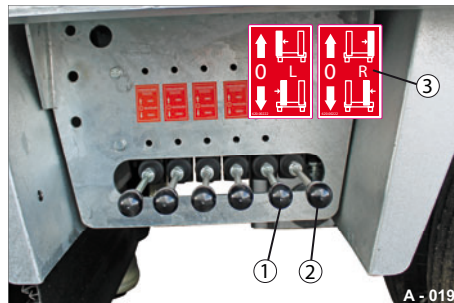


Fig. 25 Controls

- 1 Lever for left ramp
- 2 Lever for right ramp
- 3 Identification (label)

The ramps are operated individually with the respective lever.



The ramps must only be adjusted in a vertical, standing position.

- Press the lever (Fig. 25/1 & Fig. 25/2) upwards or downwards in order to approach the desired position of the ramps.
After releasing the lever, it jumps to the zero position.

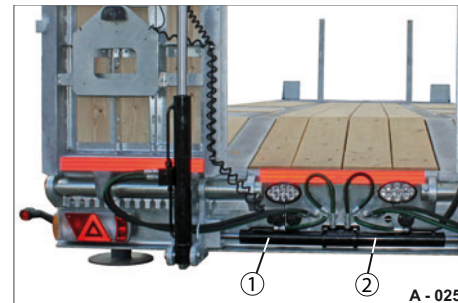


Fig. 26 Drive position of ramps

- 1 Hydraulic cylinder, left ramp
- 2 Hydraulic cylinder, right ramp

After the loading/unloading process, the ramps must be raised and driven into the outer position.

- Actuate the respective lever.
Position both ramps flush with the outer chassis edge.
- Secure the ramps with limit stop and turnbuckles.

Ramps Raising/lowering

Prerequisite for lowering the ramps:

- The support props are folded down/ lowered
- The pneumatic suspension of the rear axle unit is vented or the chassis is lowered
- The turnbuckle with limit stop has been removed
- The track width has been set



WARNING



Lowering lamps

This can result in injury - risk of striking and crushing!

- ▶ When unfolding the ramp, stand to the side next to the chassis, outside of the swivel range.



- ▶ Keep the danger area in the swivel range of the ramp free from persons.



CAUTION



Operating the ramps from the loading platform

You can slip on the soiled, wet loading platform when operating the ramps - risk of falling!

- ▶ Operate the ramps from the ground.



WARNING



Lowering two-piece ramps

Two-piece ramps have a larger swivel range than one-piece ramps.

This can result in injury - risk of striking and crushing!

- ▶ Never reach into the crushing zone while operating the two-piece ramp.
- ▶ When unfolding the ramp, stand to the side next to the chassis, outside of the swivel range.



- ▶ Keep the danger area in the swivel range of the ramp free from persons.

Preparatory work for lowering



Fig. 27 Ramps are secured in drive position and ready for the loading/unloading process

- 1 Support feet
- 2 Raise/lower system/pneumatic suspension
- 3 Turnbuckles/limit position
- 4 Ramps

- ▶ Lower the support feet (Fig. 27/1) on both sides.
- ▶ Place the trailer on the support feet using the pneumatic suspension (Fig. 27/2).
- ▶ Remove the turnbuckles (Fig. 27/3) and the limit positions.
- ▶ Set the ramps (Fig. 27/4) to the necessary track width.
- ▶ Leave the spring bar open with mechanical ramps (see Fig. 22).



The ramps can be lowered. See the following pages for manual or hydraulic operation.

Moving the hinged block down

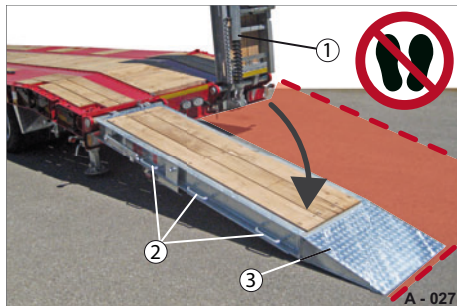


Fig. 28 Folding down manually

- 1 Spring cylinder
- 2 Handles
- 3 Ramp

- Stand outside to the side of the ramp (Fig. 28/3).
- Pull the ramp by one of the handles (Fig. 28/2). Hold the ramp tightly and set it slowly on the ground.



Fig. 29 Ramps folded down



The ramps must lie completely on the ground..
The frame must be horizontally levelled.

- If necessary, correct the position of the trailer.
Do not load/unload the trailer in a sloping position.

NOTICE

Ramps are folded down for a long period

The springs on the cylinders quickly lose their tensioning force.

The spring cylinders do not have sufficient force to lift up the ramps.

- Raise the ramps immediately after the loading/unloading process.

Folding up and securing



A - 029

Fig. 30 Folding up ramps

The ramps are individually folded up one after another.

► Pull the ramp up by the handle (Fig. 28/2).

► Move the ramps laterally to the side so that the spring bars can be locked (see Fig. 22). Press the spring bar downwards.

► Fold up the limit stop.

► Attach the turnbuckle and secure it with spring pins. The ramps are secured and are in drive position.

Raising/lowering ramps hydraulically

The hydraulic lines must be connected to a suitable towing machine to carry out the hydraulic operation of the ramps.

The towing vehicle must be started.



WARNING



Risk of crushing/striking

People can be hit or crushed by movements of the ramps.

- Make sure that there is nobody in the danger area before operating the ramp.

NOTICE

Operating ramps secured with turn-buckle

The turnbuckles could snap.

The ramps become deformed.

- Make sure that the turnbuckles are released and removed before operating the ramp.

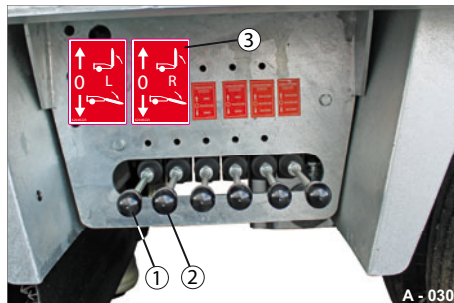


Fig. 31 Operating point

- 1 Lever for left ramp
- 2 Lever for right ramp
- 3 Identification (label)

The ramps are operated individually with the respective lever.

- Press the lever (Fig. 31/1 & Fig. 31/2) upwards or downwards in order to approach the desired position of the ramps.
- After releasing the l

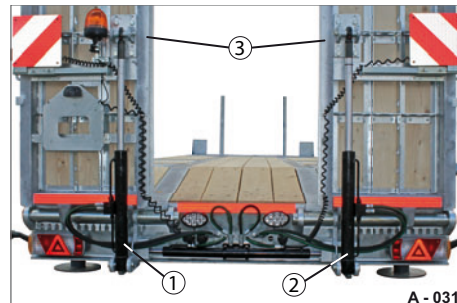


Fig. 32 Operating one-piece ramps

- 1 Hydraulic cylinder, left ramp
- 2 Hydraulic cylinder, right ramp
- 3 One-piece ramps

After the loading/unloading process, the ramps must be raised and driven into the outer position.

- Actuate the respective lever on the control panel.
Position both ramps flush with the outer chassis edge.
- Secure the ramps with limit positions and turnbuckles.

Lowering

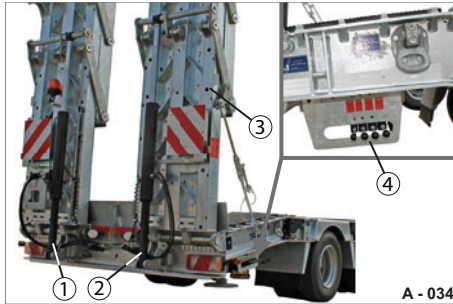


Fig. 33 Operating two-piece ramps

- 1 Hydraulic cylinder, left ramp
- 2 Hydraulic cylinder, right ramp
- 3 Two-piece ramps
- 4 Operating point

- ▶ Press the respective lever downwards (see Fig. 31).
- ▶ Check in the centre position of the lowered ramps that the safeguard of the upper ramp section is released. Release the safeguard by hand, if necessary.
- ▶ Operate the respective lever until the ramps are completely extended and lie completely on the ground.

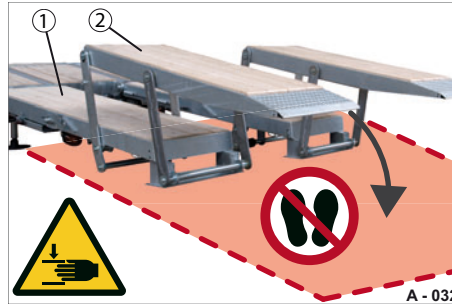


Fig. 34 Process of folding down

- 1 Lower ramp section
- 2 Upper ramp section

- ▶ Always keep your eyes on the rear during the lowering process.
- ▶ Stop the lowering process if the folding mechanism of the ramp does not work smoothly.

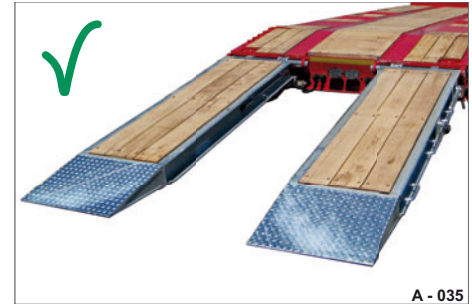


Fig. 35 Ramps lowered



The ramps must lie completely on the ground.

The frame must be horizontally levelled.

- ▶ If necessary, correct the position of the trailer.
Do not load/unload the trailer in a sloping position.

Raising and securing



Fig. 36 Raising ramps

- ▶ Press the respective lever upwards (see Fig. 31).
- ▶ Move or drive the ramps laterally to the side so that the spring bars can be locked (see Fig. 22) or the turnbuckle can be attached.
- ▶ Fold up the limit stop.
- ▶ Attach the turnbuckle and secure it with spring pins.
The ramps are secured and are in drive position.

Platform gates

The platform gates make form-fit load securing possible.



Driving with unconnected/
unlocked platform gates is
illegal.



DANGER

Driving with platform gates open

This can result in injury.

The load can fall out - risk of accidents!

- ▶ Check that all platform gates/flaps/
toolboxes are closed/connected and
secured before departing.



CAUTION



Disassembled platform gates

Disassembled platform gates
can become obstacles - risk of
tripping!

- ▶ Do not place disassembled platform
gates in the direct work area for
loading and unloading.
- ▶ Place the platform gates lengthwise
(secured against accidents) - do not
place them upright.



CAUTION



Platform gates under loading pressure

The platform gates can shoot up
when opening - risk of striking!

- ▶ Before releasing the platform gate
locks, check that the load is not
pressing against the platform gate.
- ▶ If necessary, reposition the load
before opening.
- ▶ When opening the platform gates,
stand to the side, outside of the swivel
range.



CAUTION



Operating board gates and locks

Fingers/hands can get crushed
when opening/closing the plat-
form gates and locks.



- ▶ Use
- ▶ Fold down the ramps in a controlled
manner - do not let them fall.
- ▶ When locking a platform gate, do not
reach directly into the area of posts/
locks.
- ▶ Close the hand lever with your hand
flat.

Connectable platform gates



Fig. 37 Platform gate structure, aluminium

- 1 Platform gate
- 2 Handle
- 3 Corner post

The high plateau is built as a closed loading platform with connected platform gates.

The platform gates can be removed individually as needed.

The corner posts are screwed firmly into the chassis.

They can be unscrewed to completely disassemble the platform gate structure.

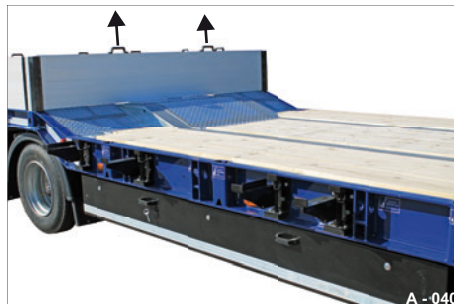


Fig. 38 Operating platform gates

Operating platform gate

- Pull the platform gate (Fig. 37/1) by the handles (Fig. 37/2) completely out of the corner posts (Fig. 37/3).
- Set the platform gate carefully aside outside of the work area.
- Secure a loose platform gate on the loading platform or store it in the stowage box.

Fixed platform gates



Fig. 39 Platform gate structure, steel

- 1 Corner post
- 2 Steel platform gate, fixed
- 3 Handle
- 4 Aluminium platform gate, connectable

The high plateau is formed as a fixed platform gate structure.

The connectable aluminium platform gate for the loading platform can be individually removed.

The corner posts of the steel platform gates are screwed firmly into the chassis. They can be unscrewed to completely disassemble the platform gate structure.

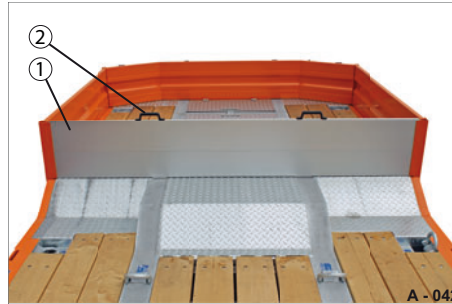


Fig. 40 Aluminium platform gate, connected

- 1 Aluminium platform gate, connectable
- 2 Handle

Operating connectable platform gate

- Pull the connectable platform gate (Fig. 40/1) by the handles (Fig. 40/2) completely out of the corner posts.
- Set the platform gate carefully aside outside of the work area.

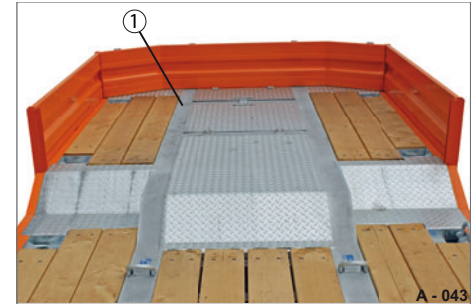


Fig. 41 Aluminium platform gate, disconnected

- 1 Loading platform on high plateau

The loading platform (Fig. 41/1) on the high plateau can also be used to load a vehicle.

- Secure a loose platform gate on the loading platform or store it in the stowage box.

Roof bow/curtain structure

The high plateau is formed as a roof bow/curtain structure.

The roof bow frame is inserted into the corner posts and secured with push-in slats and curtains.

Push-in slats serve to stabilise the structure during the journey.

Push-in slats prevent curtain rips and bulges which can be caused by crushing loads or side winds.



Push-in slates are not designed for friction-lock load securing. These may not be used for friction-lock lashing.



WARNING

Driving with open or only partially closed curtains

The curtain can come loose and be pushed to the side. If wind goes under the curtains, the trailer can rock to the side - risk of accidents!

- ▶ Check that the curtains are completely closed and secure before departure.



Fig. 42 Roof bow structure

- 1 Roof bow frame
- 2 Push-in slat (wood)
- 3 Platform gate
- 4 Corner post



WARNING



Push-in slates left off

The curtains can get pushed inward by wind during the journey.

The trailer can rock to the side - risk of accidents!

- ▶ Insert all push-in slats.
- ▶ Check that the push-in slates are firmly inserted before departing.



WARNING



Handling push-in slats/curtains

There is a risk of falling when climbing on/off the platform gates, mud guards, side guards, pallet stowage, toolboxes, towing bar.

- ▶ Only enter the loading platform through the areas provided for this purpose.
- ▶ If possible, handle push-in slats/curtains from the loading platform.
- ▶ Only use stable climbing aids, e.g. stable stepladders, to handle the push-in slats/curtains from outside.



Fig. 43 Curtains/roof bow secured

- 1 Curtain
- 2 Tensioning rope
- 3 Cramp
- 4 Spring hook

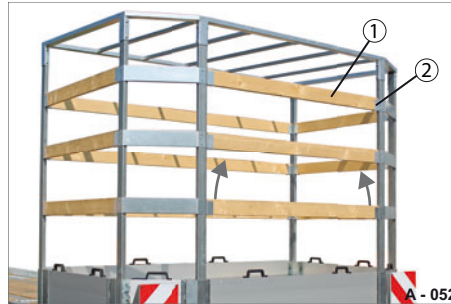


Fig. 44 Inserting/removing push-in slats

- 1 Push-in slat
- 2 Pocket



Fig. 45 Handling curtain

- 1 Curtain section
- 2 Tensioning rope
- 3 Cramp
- 4 Spring hook

Opening the curtain

- ▶ Release the spring hook (Fig. 43/4) from the outer (Fig. 43/3) staples.
- ▶ Release the tensioning rope (Fig. 43/2) from the latches.
- ▶ Turn all staples (Fig. 43/3) to the side to be opened.
- ▶ Place the curtain section (Fig. 43/1) on top of the roof bow frame.

Handling push-in slat

- ▶ Pull the corresponding push-in slats (Fig. 44/1) out of the pockets (Fig. 44/2).
- ▶ Set the push-in slates carefully aside outside of the work area.
- ▶ After the loading/unloading process: Insert all push-in slats into the pockets.
- ▶ Check that the push-in slates are firmly inserted.

Closing and securing curtain

- ▶ Cover all eyes of the curtain to be closed using the staples. Make sure the curtain sections correctly overlap.
- ▶ Pull and turn the staples (Fig. 45/3) vertically.
- ▶ Pull the tensioning rope (Fig. 45/2) alternately around the latches from above and below and hook the spring hook (Fig. 45/4) into the staples.

Platform gate structure

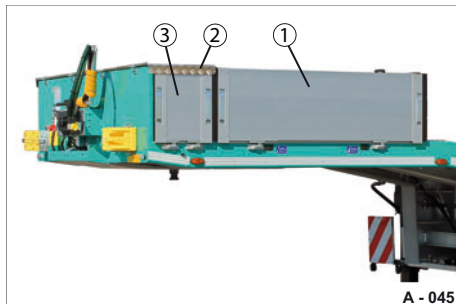


Fig. 46 Platform gate structure, aluminium

- 1 Side platform gate
- 2 Lid
- 3 Storage compartment flap

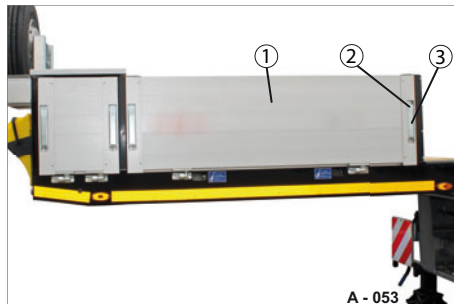


Fig. 47 Platform gate closed

- 1 Platform gate
- 2 Catches
- 3 Hand lever lock

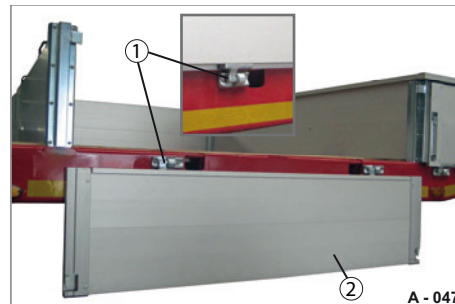


Fig. 48 Platform gate folded down

- 1 Hinge
- 2 Platform gate

The high plateau is built as a closed loading platform with a storage compartment and platform gates.

The platform gates have a sunken lock with safeguard on the right and left.

The platform gates can be removed individually as needed.



Driving with unlocked/unsecured platform gates is illegal.

Open the platform gate

- ▶ Press the safeguard (Fig. 47/2) on the hand lever lock (Fig. 47/3).
- ▶ Pull the hand lever towards yourself until it completely unfolds.
- ▶ Hold the platform gate (Fig. 47/1) firmly with one hand and unlock the second hand lever lock.

- ▶ Fold up the platform gate (Fig. 48/2) with both hands in a controlled manner - do not let it fall.
- ▶ Leave the hand lever locks open.

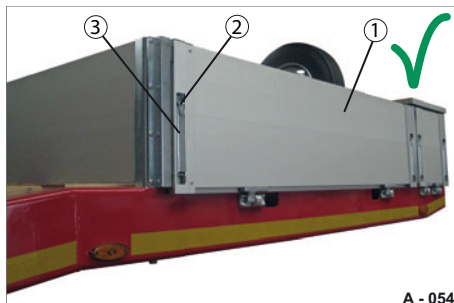


Fig. 49 Platform gate locked

- 1 Platform gate
- 2 Catches
- 3 Hand lever lock

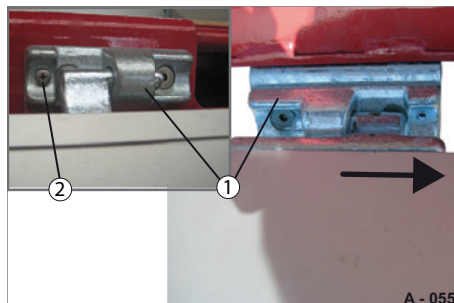


Fig. 50 Platform gate released on hinge

- 1 Hinge
- 2 Screw

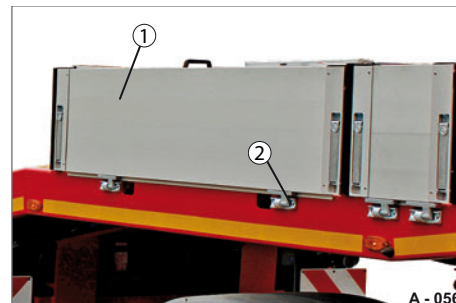


Fig. 51 Platform gate secured in hinge

- 1 Platform gate closed
- 2 Screw

Closing the platform gate

- ▶ If necessary, clean contamination out of the locks and along the closing edges.
- ▶ Fold the platform gate (Fig. 49/1) up with both hands.
Ensure that the hand lever locks are open.
- ▶ Press the platform gate together completely.
- ▶ Close the hand lever lock (Fig. 49/3) - press it shut with your hand flat.
The safeguard (Fig. 49/2) automatically snaps shut.

Disassembling platform gate

- The platform gate is secured against falling out on its own with a screw in one of the hinges.
- ▶ Open the platform gate and fold it completely outwards.
 - ▶ Release the screw (Fig. 50/2).
 - ▶ Raise the platform gate into a horizontal position until it is straight with the loading platform.
 - ▶ Slide the platform gate out to the side.

Mounting platform gate

- ▶ Slide the platform gate into the hinges (Fig. 50/1).
- ▶ Fasten the screw (Fig. 51/2) into one of the hinges.
- ▶ Close the platform gate (Fig. 51/1) and lock the hand lever locks.

Storage compartment

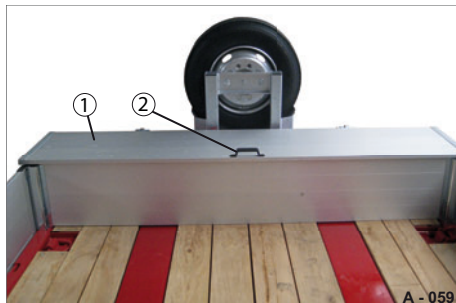


Fig. 52 Storage compartment, cannot be closed

- 1 Lid, aluminium
- 2 Handle

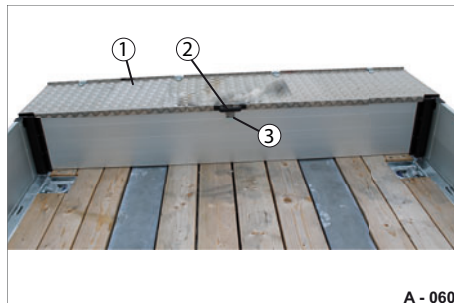


Fig. 53 Storage compartment, lockable

- 1 Lid, steel plate
- 2 Handle
- 3 Locking bracket (e.g. for lock)

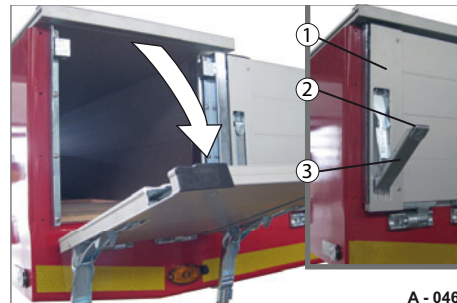


Fig. 54 Side storage compartment flap

- 1 Flap
- 2 Catches
- 3 Hand lever lock



CAUTION



Open lid

An open lid can unexpectedly close due to wind - risk of crushing!

- Hold the lid tightly closed during operation.
- Close the lid immediately after operation.

The storage compartment can be operated from the high plateau.

The lid can be made of aluminium or steel plate.

The lid can be lockable.

Handling storage compartment flap



- Handling the side storage compartment flap is done in the same ways as with the platform gates (see from Page 160).

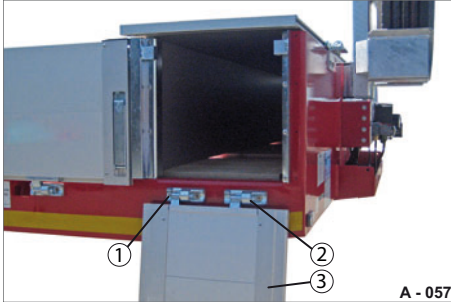


Fig. 55 Storage compartment flap folded down

- 1 Screw
- 2 Hinge
- 3 Flap

You can access the storage compartment from the ground.

- Lay/remove e.g. connection lines, cleaning utensils, lashing equipment in the storage compartment.

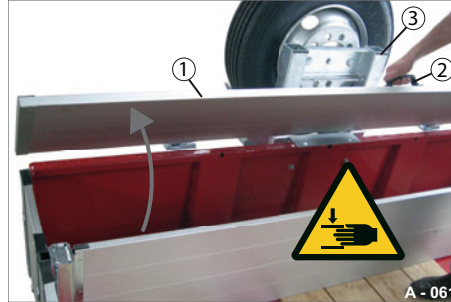


Fig. 56 Opening storage compartment lid

- 1 Lid, aluminium
- 2 Handle
- 3 Wheel mount as limit stop

Opening storage compartment lid

- Close the lid if necessary.
- Grab the handle (Fig. 56/2) and open the lid (Fig. 56/1) completely up to the limit stop (Fig. 56/3), or until the safety chain (Fig. 57/3) limits the opening of the lid.

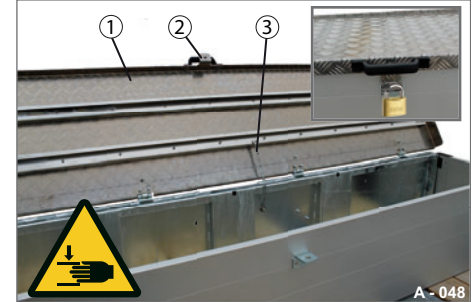


Fig. 57 Closing storage compartment lid

- 1 Lid, steel plate
- 2 locking bracket (e.g. for lock)
- 3 Safety chain

Closing storage compartment lid

- Grab the handle (Fig. 56/2) and close the lid in a controlled manner - do not let it fall.
- Lock the lid with a U-lock on the locking bracket (Fig. 57/2) if necessary.

Connectable platform gate

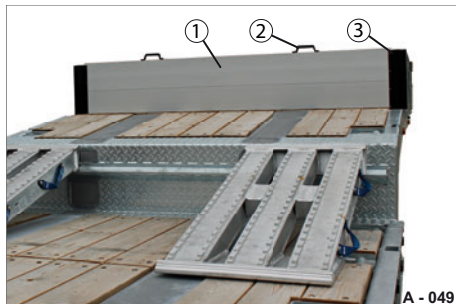


Fig. 58 Connectable platform gate

- 1 Aluminium platform gate, connectable
- 2 Handle
- 3 Corner post

The high plateau is equipped with a connectable platform gate.

The connectable platform gate for the loading platform can be individually removed.

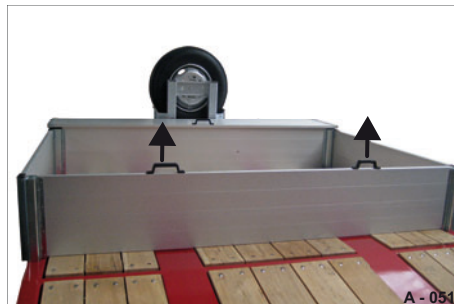


Fig. 59 Connectable platform gate connected

Operating connectable platform gate

- Pull the platform gate (Fig. 58/1) by the handles (Fig. 58/2) completely out of the corner posts (Fig. 58/3).
- Set the platform gate carefully aside outside of the work area.

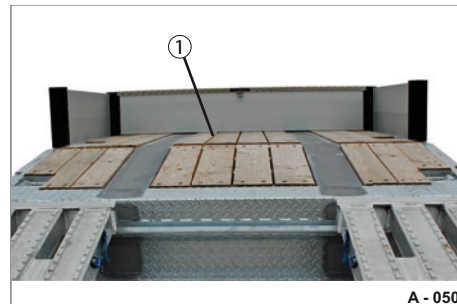


Fig. 60 Connectable platform gate removed

- 1 Loading platform on high plateau

The loading platform (Fig. 60/1) on the high plateau can also be used to load a vehicle.

- Secure a loose platform gate on the loading platform or store it in the stowage box.

Stowage box

The stowage boxes in the high plateau make it possible to transport lashing equipment/heavy tools, etc.

The stowage boxes can be locked together or separately.



CAUTION



Closing lid

The lid can fall closed unexpectedly - risk of crushing!



- ▶ Use
- ▶ Hold the lid tightly closed during operation.
- ▶ If applicable, secure the lid against falling closed with limit positions.
- ▶ Close the lid immediately after operation.

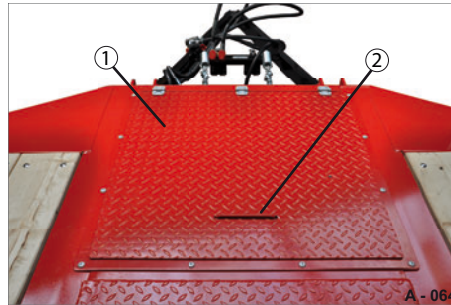


Fig. 61 Stowage box, simple

- 1 Lid
- 2 Handle, countersunk

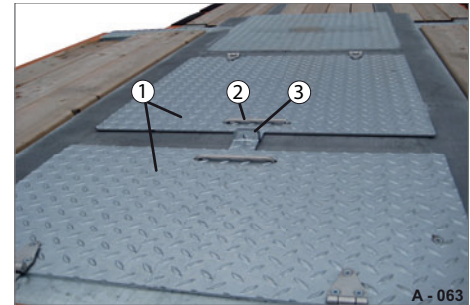


Fig. 63 Stowage boxes two-fold, lockable

- 1 Lid
- 2 Handle, countersunk
- 3 Locking bracket

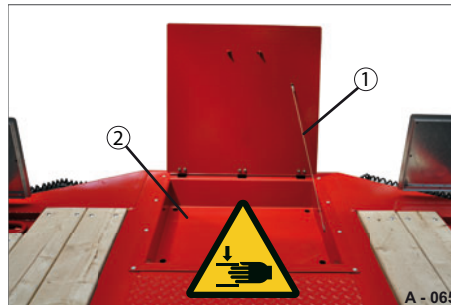


Fig. 62 Stowage box open

- 1 Restricting rope
- 2 Storage compartment

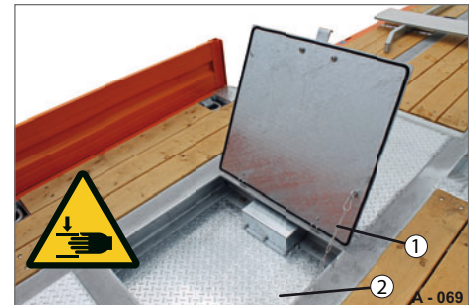


Fig. 64 Stowage box open

- 1 Limit chain
- 2 Storage compartment

Stowage boxes, opposing direction of opening

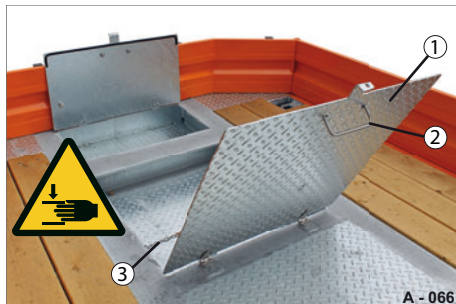


Fig. 65 Storage compartments, two-fold, open

- 1 Lid
- 2 Handle
- 3 Limit chain

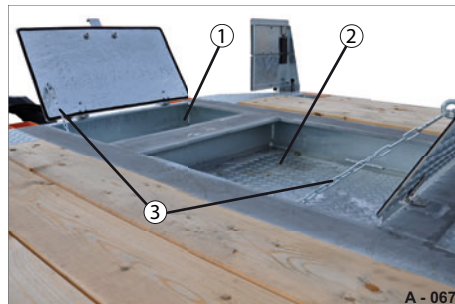


Fig. 66 Storage compartments, two-fold, open

- 1 Small storage compartment
- 2 Storage compartment, large
- 3 Limit chains

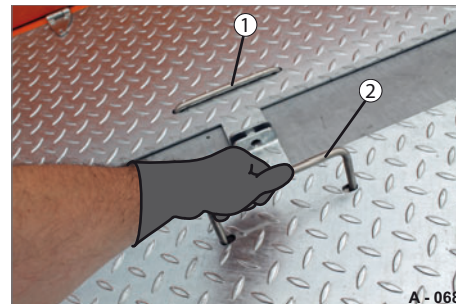


Fig. 67 Open the stowage box

- 1 Handle, countersunk
- 2 Handle, lifted out

Opening lid

- Stand to the side of the lid (Fig. 65/1).
- Remove the countersunk handle (Fig. 67/2).
- Pull the cover upwards completely. The limit chain (Fig. 66/3) holds the lid open.

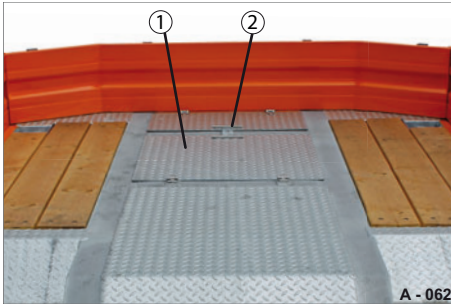


Fig. 68 Storage compartment closed

- 1 Lid
- 2 Handle, countersunk

Closing lid

- Hold the lid (Fig. 68/1) tightly with the handle (Fig. 68/2) and carefully let it down.
Make sure that the limit chain (Fig. 66/3) is not in the closing edge.
- Make sure that the lid is completely closed.
- Lock the lid on the other side on the locking bracket, (Fig. 63/3) e.g. using a U-lock.

Stowage boxes, consecutive direction of opening

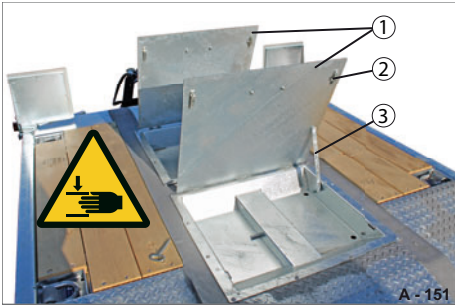


Fig. 69 Storage compartments, open

- 1 Lid
- 2 Locks, lateral
- 3 Limit position

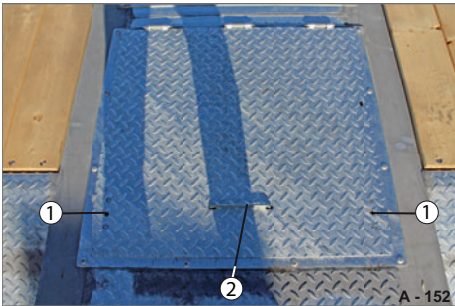


Fig. 70 Storage compartment closed

- 1 Perforation, for square
- 2 Handle, countersunk

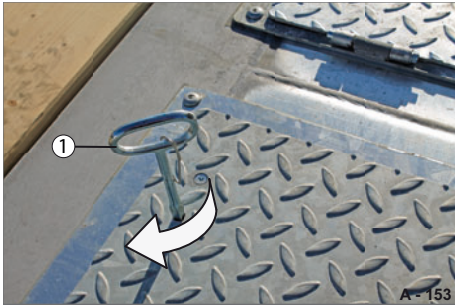


Fig. 71 Unlocking stowage box

- 1 Square-bolt socket wrench

Unlocking lid

- ▶ Stick the square-bolt socket wrench (Fig. 71/1) into the perforation and turn it.
- ▶ Release the lid on both sides.

Opening lid

- ▶ Remove the countersunk handle (Fig. 70/2).
- ▶ Pull the lid upwards and hold it firmly.

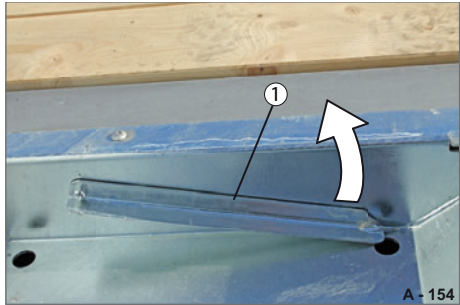


Fig. 72 Securing lid

- 1 Limit stop, one-sided

Securing lid

- ▶ Swivel open the limit position (Fig. 72/1) (to the side in storage compartment).
- ▶ Insert the limit position into the bore hole in the lid.



Fig. 73 Lid open, secured

- 1 Lid
- 2 Limit position, inserted

Closing lid

- Hold the lid (Fig. 73/1) tightly by the handle.
- Pull the limit position (Fig. 73/2) out of the bore hole on the lid.
- Rotate the limit position into the storage compartment.
- Close the lid carefully.
- Make sure that the lid is completely closed.

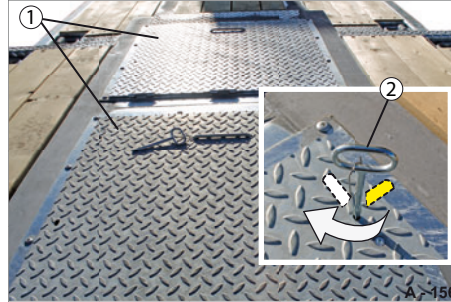


Fig. 74 Lid closed, locked

- 1 Lid
- 2 Square-bolt socket wrench

Closing lid

- Stick the square-bolt socket wrench (Fig. 74/2) into the perforation and turn it around.
The tongue of the lock engages in the recess in the storage compartment.
- Lock the lid on both sides (Fig. 74/1).
- Make sure that the lid is locked (pull on handle).
- Keep the square-bolt socket wrench in a safe place.

Widening to 3 m

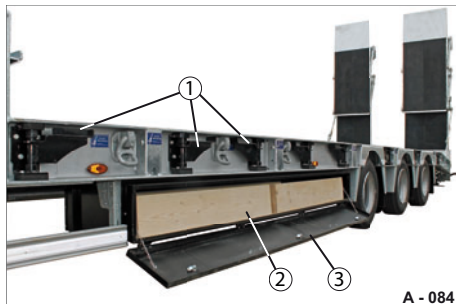


Fig. 75 Trailer with wide load

- 1 Folding boom, folded in
- 2 Planks (wood), stored
- 3 Stowage box, open

The loading platform can be widened to 3 m for the transport of wide construction machines.

Folding booms are arranged on the sides of the vehicle. The planks are cut to the lengths of the distance between the folding booms.



Observe the country-specific regulations on transporting vehicles with wide loads - an exemption may be necessary.



WARNING

Falling planks

Incorrectly inserted/unloaded planks could fall out during the journey - risk of accidents!

- ▶ Check that the all planks are correctly inserted and loaded with goods before departing.
- ▶ Store unused planks in the stowage box and lash them down securely on the loading platform.
- ▶ Fold in unused folding booms.



WARNING

Breaking planks

Rotten or brittle planks can break during movement and the construction vehicle can tip off the trailer.

- ▶ Regularly control the planks for damage.
- ▶ Replace rotten or brittle plans immediately.



CAUTION



Operating folding booms

Fingers and hands can get crushed when operating the folding booms and inserting the planks.



- ▶ Use
- ▶ Move the folding booms carefully in and out - do not slam with force.
- ▶ Lay the planks carefully on the folding booms - do not let them fall.

Operating folding booms

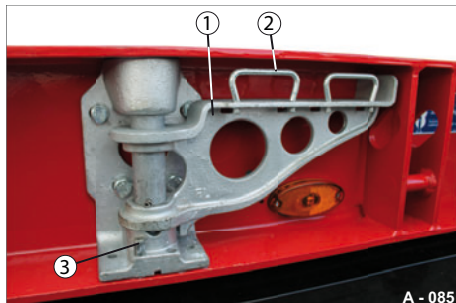


Fig. 76 Folding boom, folded in

- 1 Folding booms made of cast iron
- 2 Retainer bracket
- 3 Stop pin



Fig. 77 Folding boom, folded out

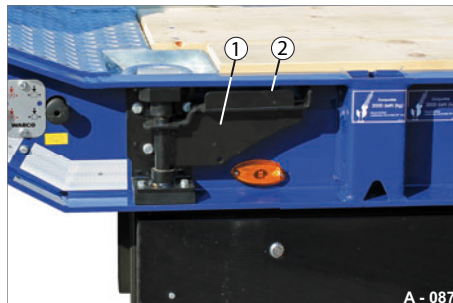


Fig. 78 Folding boom, folded in

- 1 Folding booms made of steel
- 2 Retainer sheet

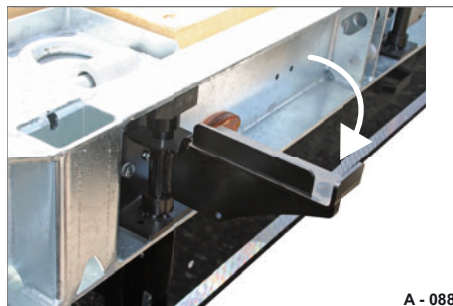


Fig. 79 Folding boom, folded out

Folding out folding booms

- Lift the folding boom (Fig. 76/1 or Fig. 78/1) somewhat and open it outward at the same time.

The boom locks itself in about 90 ° to the loading platform.

Folding in folding booms

- Lift the folding boom (Fig. 76/1 or Fig. 78/1) somewhat and open it inwards at the same time - do not let it slam.

The boom locks in the folded-in position.

Laying planks



Fig. 80 Folding boom, folded out

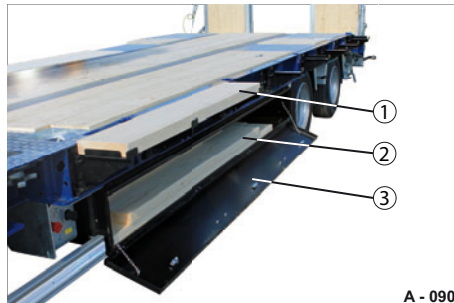


Fig. 81 Position planks correctly

- 1 Plank, inserted
- 2 Planks in stowage boxes
- 3 Stowage compartment lid

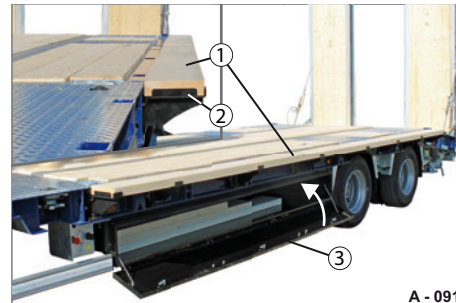


Fig. 82 All planks inserted

- 1 Planks, inserted
- 2 Limit position
- 3 Stowage compartment lid

► Only fold out as many folding booms as are needed for the length of the construction transport.

- Open the lid of the storage compartment (Fig. 81/3).
- Carefully remove a plank (Fig. 81/1) and lay it on the folding boom. Make sure the plank is the correct length.

- Position all planks on every vehicle side (Fig. 82/1) up to contact - they must be clamped between the limit positions (Fig. 82/2).
- Close the lid (Fig. 82/3) of the stowage box.

- Pull out the warning panels.
 - Attach the rotating light.
- This trailer is ready for wide load journeys.

Stowing planks

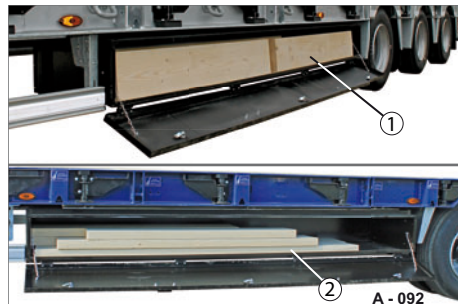


Fig. 83 Storing planks in stowage box

- 1 Planks standing/vertical
- 2 Planks lying/horizontal

The planks can be arranged in the stowage box in a standing or lying position.

- Insert the individual planks in the stowage boxes so that they cannot slide back and forth.
If necessary, use other accessories, such as non-slip matting, flaps, etc.
- Let damp planks air-dry before stowing them - wet wood is heavy.

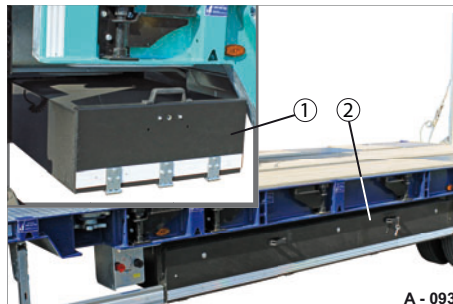


Fig. 84 Stowage box locked

- 1 Stowage box, crosswise
- 2 Stowage box, lengthwise



Handling the stowage box (see „Stowage boxes, lengthwise (option)“ on page 132 & see „Stowage boxes, crosswise (flatbed semi-trailer option)“ on page 133)

- Lock the stowage box.

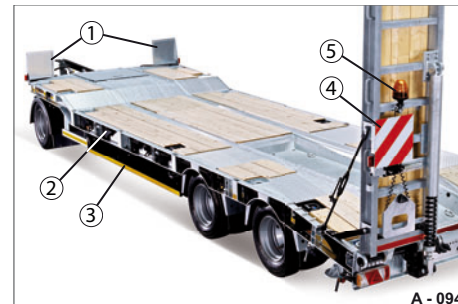


Fig. 85 Trailer with normal width

- 1 Front warning panels, retracted
- 2 Folding boom, folded in
- 3 Stowage box, locked
- 4 Warning panel at rear, retracted
- 5 Rotating light, off

Driving with normal width

- Retract all warning panels.
- Fold in all folding booms.
- Switch off the rotating light or disassemble it.

Operating warning panel

When transporting extra wide loads, warning panels with the relevant lighting equipment are required.

The warning panels are arranged on the right and left on the front and rear sides.

The side peripheral light is fastened on the warning panel and moves in or out along with the warning panel.

The warning panels at the rear are arranged the same on the ramps with the centre pivot plate and flatbed semi-trailer.



WARNING

Driving with wide load and non-extended warning panels

The width of the vehicle is incorrectly gauged by others on the road - risk of accidents!

- Check that the warning panels are set to the respective width of the total vehicle before departing.

Warning panels (centre pivot plate)

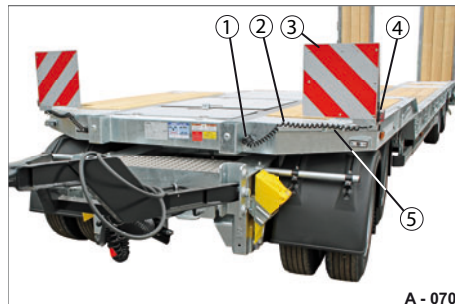


Fig. 86 Warning panel, front side

- 1 Securing pin
- 2 Cable
- 3 Warning panel
- 4 Peripheral light
- 5 Rod

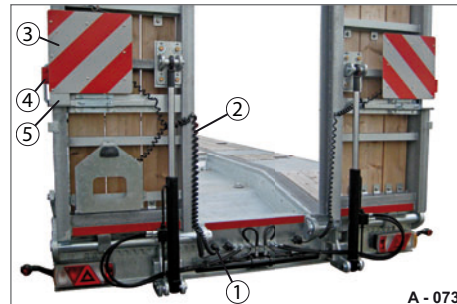


Fig. 87 Warning panel, rear side

- 1 Securing pin
- 2 Cable
- 3 Warning panel
- 4 Peripheral light
- 5 Rod



Fig. 88 Warning panel extended

- 1 Rod
- 2 Wing nut

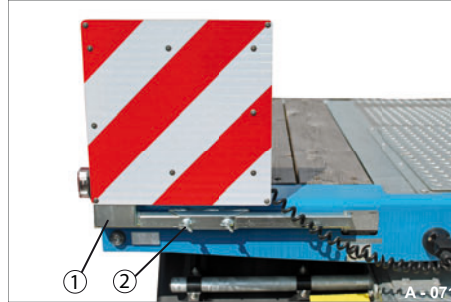


Fig. 89 Warning panel pulled in

- 1 Rod
- 2 Wing nut

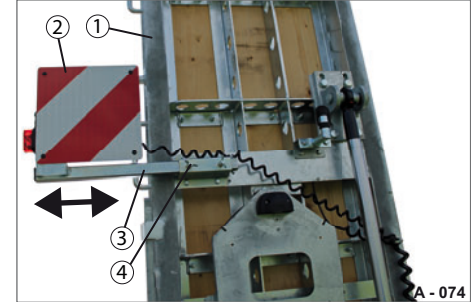


Fig. 90 Warning panel at rear

- 1 Ramp
- 2 Warning panel
- 3 Rod
- 4 Wing nut

Pulling out warning panel

- Loosen the wing nuts (Fig. 88/2).
- Pull out the rod (Fig. 88/1) with the warning panel as far out as necessary.
- Tighten the wing nuts (Fig. 88/2).

Retracting warning panel

- Loosen the wing nuts (Fig. 89/2).
- Retract the rod with (Fig. 89/1) the warning panel so that it is flush with the chassis.
- Tighten the wing nuts (Fig. 89/2).

Operating warning panel at rear

- Loosen the wing nuts (Fig. 90/4).
- Position the rod (Fig. 90/3) with the warning panel (Fig. 90/2) to the required position.
- Tighten the wing nuts (Fig. 90/4).

Warning panels (flatbed semi-trailer)

The warning panels on the flatbed semi-trailer are located on the front side under the chassis in the landing gear area.



CAUTION



Operating warning panels under the chassis

You could hit your head on the chassis in the semi-trailer area.

- Move carefully under/on the chassis - do not make any quick movements.



Fig. 91 Warning panel, front side

- 1 Peripheral light
- 2 Warning panel
- 3 Cable
- 4 Rod

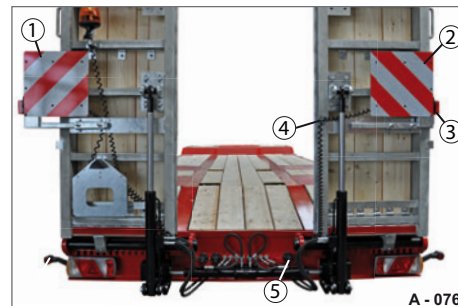


Fig. 92 Warning panel, rear side

- 1 Warning panel extended
- 2 Warning panel retracted
- 3 Peripheral light
- 4 Cable with guide
- 5 Securing pin

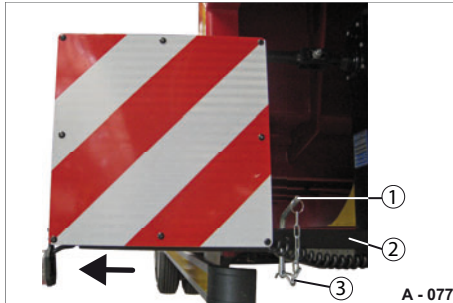


Fig. 93 Warning panel extended

- 1 Socket pin
- 2 Rod
- 3 Spring pin

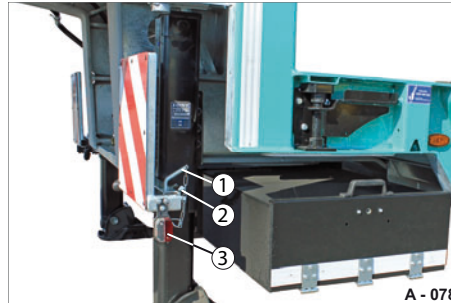


Fig. 94 Warning panel pulled in

- 1 Socket pin with guide
- 2 Wing nut
- 3 Peripheral light

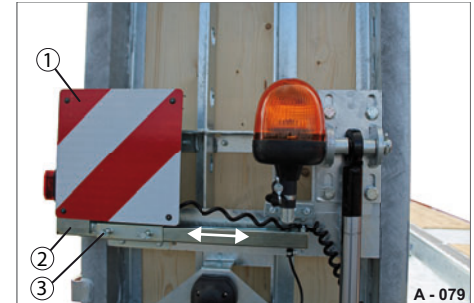


Fig. 95 Warning panel at rear

- 1 Warning panel
- 2 Rod
- 3 Wing nut

Pulling out warning panel

- ▶ Remove the spring pin (Fig. 93/3).
- ▶ Remove the socket pin (Fig. 93/1).
- ▶ Pull out the rod (Fig. 93/2) with the warning panel as far out as necessary.
- ▶ Put the socket pin through the bore hold and secure it with the spring pin.
- ▶ Tighten the wing nuts (Fig. 94/2).

Retracting warning panel

- ▶ Loosen the wing nuts (Fig. 94/2).
- ▶ Insert the rod (Fig. 89/1) with warning panel so that the socket pin (Fig. 94/1) fits in the bore hole.
- ▶ Put the socket pin through the bore hold and secure it with the spring pin.
- ▶ Tighten the wing nuts (Fig. 94/2).

Operating warning panel at rear

- ▶ Loosen the wing nuts (Fig. 95/3).
- ▶ Position the rod (Fig. 95/2) with the warning panel (Fig. 95/1) to the required position.
- ▶ Tighten the wing nuts (Fig. 95/3).

Rotating light

A rotating light is necessary when transporting wide loads (more than 2.55 m).

Observe the national regulations.

If the prescribed visibility of the rotating light of the towing vehicle is impaired by the trailer, another rotating light must be fitted to the rear of the trailer.



WARNING

Falling rotating light

Unsecured rotating lights can fall during the journey - risk of injury!

- ▶ Always tighten the wing nuts of the rotating light.
- ▶ Check that the rotating light is securely fastened before departing.

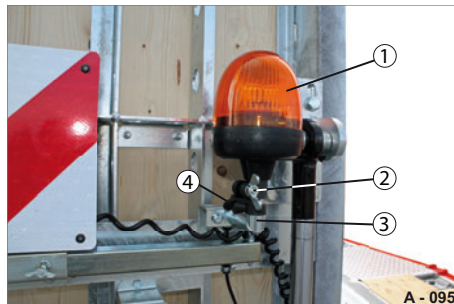


Fig. 96 Rotating light, installed

- 1 Rotating light
- 2 Wing nut
- 3 Extension rod
- 4 Protective cap

Installation

- ▶ Remove the protective cap (Fig. 97/4).
- ▶ Fit the rotating light (Fig. 96/1) onto the extension rod (Fig. 96/3).
- ▶ Tighten the wing nuts (Fig. 96/2) of the clamping screw.

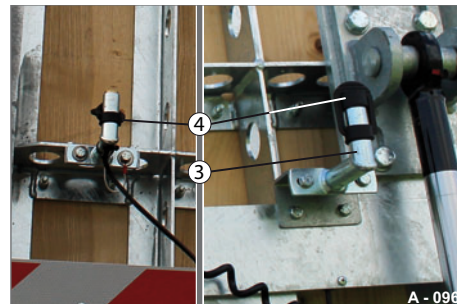


Fig. 97 Rotating light, disassembled

Disassembly

- ▶ Release the wing nuts (Fig. 96/2) from the clamping screw.
- ▶ Remove the rotating light from the extension rod (Fig. 96/3). Keep the rotating light in a safe place to protect it from damage.
- ▶ Fit the protective cap (Fig. 97/4) onto the extension rod.

Connectable posts



Fig. 98 Flatbed with connectable posts

- 1 Side posts
- 2 Front side posts
- 3 Side post pocket, solid
- 4 Side post pocket, short
- 5 Front post pocket

Flatbed trailers can optionally be equipped with connectable posts.

The posts can be arranged on the front and sides.

The posts also serve as form-fit friction-lock load securing.

The posts do not replace the necessary friction-lock load securing.

They are designed as limit positions for goods, e.g. logs.

The post pockets can be used as lashing points for connectable posts (see „Lashing points“ on page 198).

WARNING

Falling posts

Unsecured posts can fall during the journey - risk of injury!

- ▶ Check that the posts are completely inserted and secured with screws before departing.
- ▶ Unused posts must be kept in a safe place to prevent damage. Transport the posts in the stowage boxes, if necessary.

WARNING

Lashing goods with posts

The posts are overloaded and can break. Loaded goods can fall during the journey - risk of injury!

- ▶ Do not lash on the posts - they are not designed for this.

WARNING

Overloading of posts

Goods pressing on the posts can overload them. The posts can break away.

Loaded goods can fall during the journey - risk of injury!

- ▶ Check that the posts are not overloaded before departing.
- ▶ Prevent the load from pressing on the posts - they are only designed as limit positions.
- ▶ Only use original manufacturer posts, and no other manufacturers' equipment, as they might not be able to stand up to the stress.

CAUTION



Handling posts

Fingers and hands can get crushed when handling posts.



- ▶ Use



- ▶ in pairs.

Front side posts

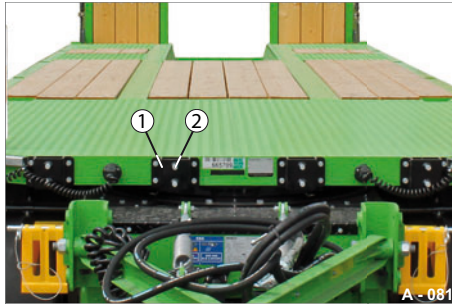


Fig. 99 Post pocket, front side

- 1 Side post pocket
- 2 Screw
- 3 Side post inserted

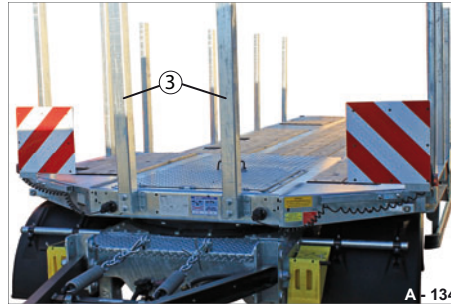


Fig. 100 Front side posts

- ▶ Insert the post (Fig. 100/3) completely into the post pocket (Fig. 99/1).
- ▶ Secure the post with both screws (Fig. 99/2).
- ▶ Check that the side post is secure.

Side posts

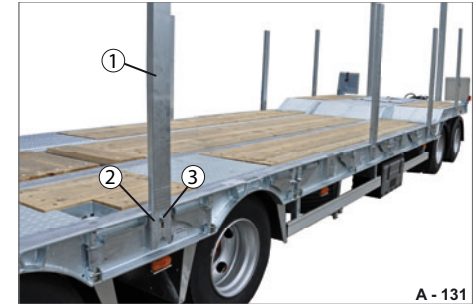


Fig. 101 Side posts

- 1 Side post inserted
- 2 Side post pocket
- 3 Screw with washer/spring washer

- ▶ Insert the post (Fig. 101/1) completely into the post pocket (Fig. 101/2).
- ▶ Secure the post with screws / washers (Fig. 101/3).
- ▶ Check that the side post is secure.

Handling side posts

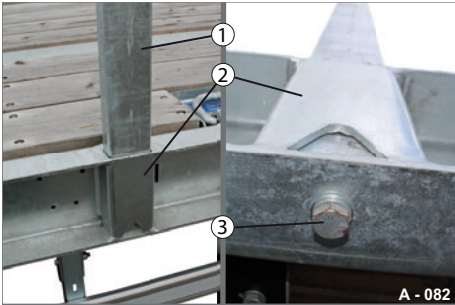


Fig. 102 Posts, safeguard from below

- 1 Side post inserted
- 2 Side post pocket
- 3 Screw with washer/spring washer

- ▶ Insert the post (Fig. 102/1) completely into the post pocket (Fig. 102/2).
- ▶ Secure the post with screws/washers (Fig. 102/3) from below.
- ▶ Check that the side post is secure.

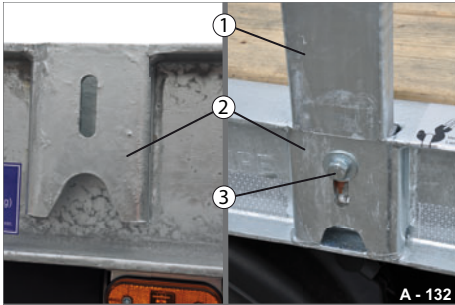


Fig. 103 Posts, safeguard from the front

- 1 Side post inserted
- 2 Side post pocket
- 3 Screw with washer/spring washer

- ▶ Insert the post (Fig. 103/1) completely into the post pocket (Fig. 103/2).
- ▶ Secure the post with screws/washers (Fig. 103/3) from the front.
- ▶ Check that the side post is secure.

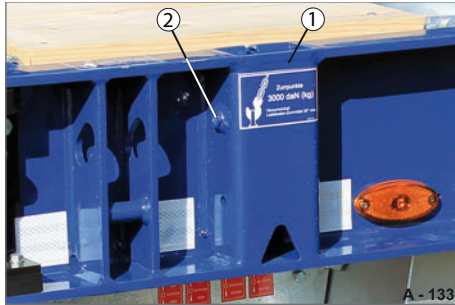


Fig. 104 Posts, safeguard from the side

- 1 Side post pocket
- 2 Lock nut , welded on

- ▶ Insert the post (Fig. 104/1) completely into the post pocket (Fig. 104/1).
- ▶ Secure the post with screws/lock nuts (Fig. 104/2) from the side.
- ▶ Check that the side post is secure.

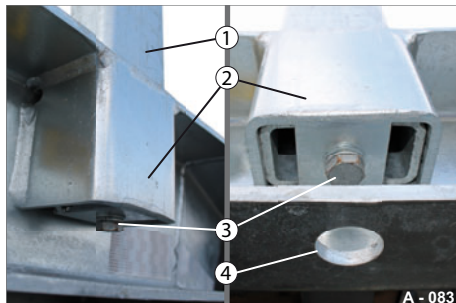


Fig. 105 Side posts/loft area

- 1 Side post inserted
- 2 Side post pocket
- 3 Screw with washer/spring washer
- 4 Bore hole in chassis

- ▶ Insert the post (Fig. 105/1) completely into the post pocket (Fig. 105/2).
- ▶ Secure the post with screws/washers (Fig. 105/3) from below.
- ▶ Check that the side post is secure.

Handling wheel cavities

Flatbed trailers can optionally be manufactured with wheel cavities and cover boards.

The wheel cavities are necessary for transporting construction machines with large wheels so as not to exceed the maximum permissible height of the transporter.

The loaded construction vehicle is form-fitted in the wheel cavities.

The cover boards can be transported in the stowage box.

The wheel cavity frame can be manually pushed in or out.



CAUTION



Handling wheel cavity frames/cover plates

Hand/fingers can be crushed when handling the wheel cavity frame and cover plates.



- Use
- Carefully insert the wheel cavity frame.
- Carefully place the plates.



WARNING

Falling cover boards

Incorrectly inserted cover plates can fall during the journey - risk of injury!

- Check that the cover plates are correctly inserted before departing.
- Check that the locking pin is inserted for all wheel cavities before departure.

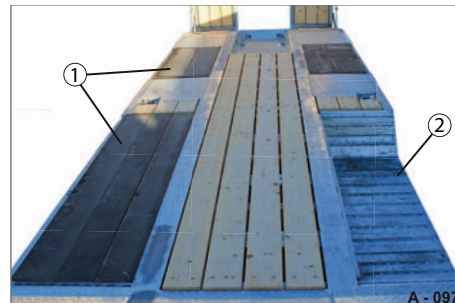


Fig. 106 Flatbed with wheel cavities

- 1 Wheel cavity with cover, closed
- 2 Wheel cavity, open

Opening wheel cavities

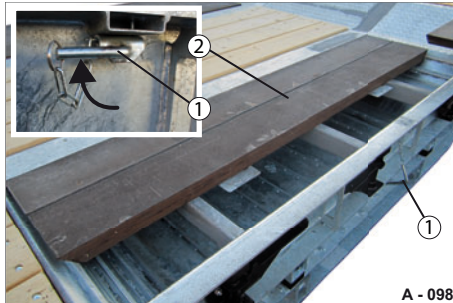


Fig. 107 Removing cover boards

- 1 Locking pin
- 2 Cover boards

- ▶ Turn and pull out the locking pin (Fig. 107/1).
- ▶ Remove the cover plates (Fig. 107/2) one after another.
- ▶ Stow the cover plates in the stowage box, for instance.

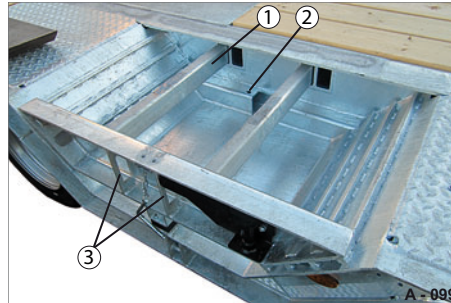


Fig. 108 Small wheel cavity

- 1 Wheel cavity frame
- 2 Bore hole for locking pin
- 3 Handles

- ▶ Check that the guides of the wheel cavity frame (Fig. 108/1) are free of dirt.

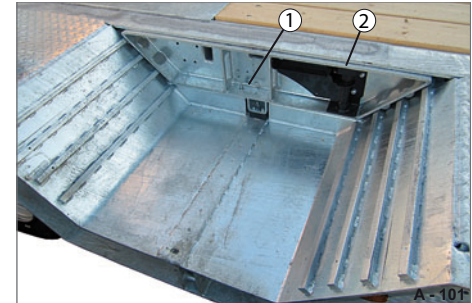


Fig. 109 Wheel cavity frame, secured

- 1 Locking pin, inserted
- 2 Wheel cavity frame, pushed in

- ▶ Grab the handles (Fig. 108/3) and push in wheel cavity frame (Fig. 109/2) completely.
- ▶ Insert the locking pin (Fig. 109/1) into the bore hole.

Closing wheel cavities

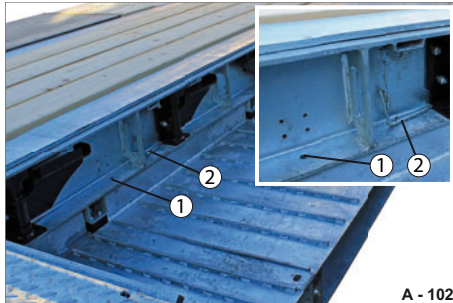


Fig. 110 Wheel cavity frame, released

- 1 Bore hole
- 2 Locking pin

► Unplug the locking pin (Fig. 110/2) from the bore hole (Fig. 110/1).

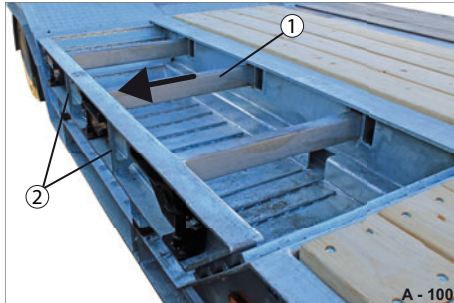


Fig. 111 Wheel cavity frame, pushed out

- 1 Wheel cavity frame
- 2 Handles

► Grab the handles (Fig. 111/2) and pull out wheel cavity frame (Fig. 111/1) completely.

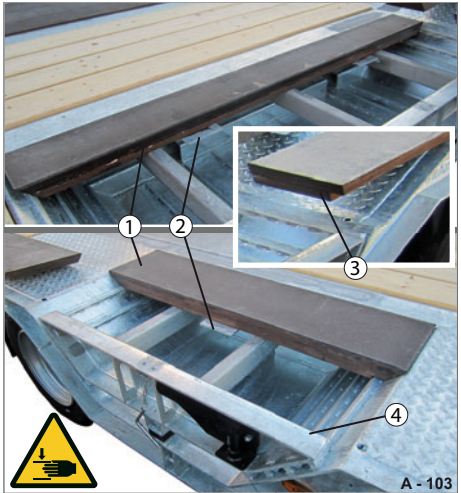


Fig. 112 Placing cover boards

- 1 Cover boards
- 2 Plate tappet
- 3 Cover plate with overlapping
- 4 Frame edge

► Place the cover plates (Fig. 112/1) from inside out - the plate tappets (Fig. 112/2) must point outward.

► The cover plate with overlapping (Fig. 112/3) is placed last on the frame edge (Fig. 112/4).

Securing wheel cavities

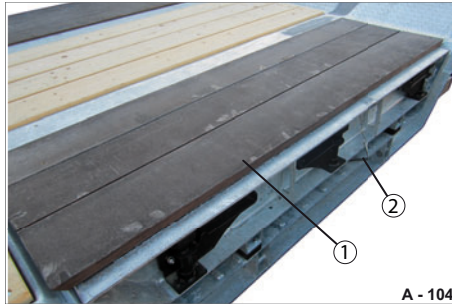


Fig. 113 Cover boards, placed

- 1 Cover boards
- 2 Locking pin, loose

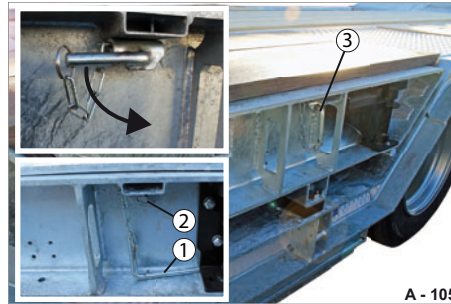


Fig. 114 Small wheel cavity, secured

- 1 Locking pin, loose
- 2 Bore hole
- 3 Locking pin, inserted

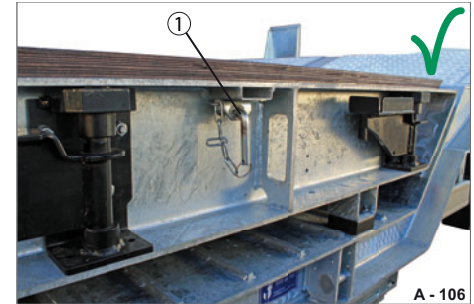


Fig. 115 Large wheel cavity, secured

- 1 Locking pin in drive position

► Check that all cover plates sit properly and are undamaged.

► Insert the locking pin (Fig. 114/1) into the bore hole (Fig. 114/2) horizontally.
 ► Rotate by 90°.

The locking pin is vertical and is secured against falling out.

► Check that all wheel cavities are locked and secured before departing.

Arm cavity

Flatbed vehicles can optionally be equipped with a continuous arm cavity.

The arm cavity can be designed as an open variety or closed with wooden planks.



WARNING

Travelling with unsecured/partially closed arm cavity

Individual wooden planks could fall during the journey - risk of accidents!

- ▶ Check that the all wooden planks are inserted and secured with wing screws before departing.
- ▶ Stow unused wooden planks in the storage compartment.
- ▶ Replace rotten/cracked wooden planks immediately.

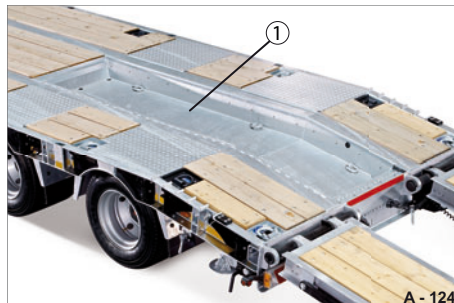


Fig. 116 Arm cavity

1 Arm cavity, open

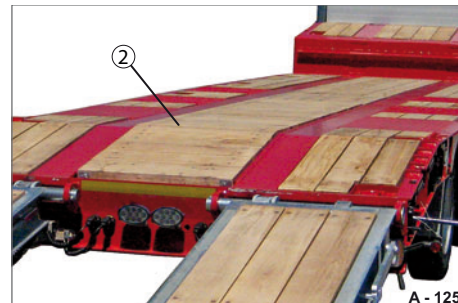


Fig. 117 Arm cavity

2 Arm cavity, closed

Opening arm cavity

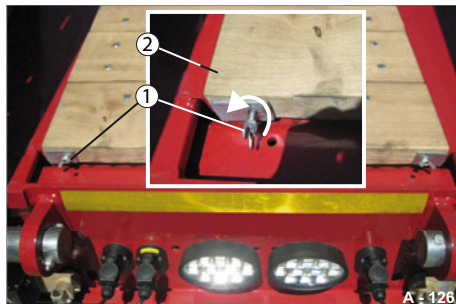


Fig. 118 Arm cavity closed

- 1 Wing screws
- 2 Wooden plank

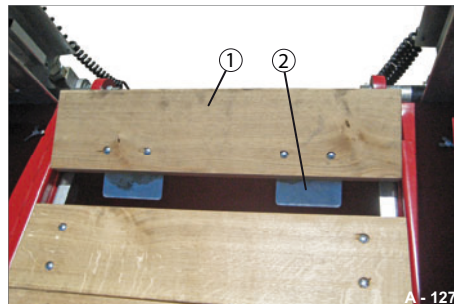


Fig. 119 Opening arm cavity

- 1 First wooden plank
- 2 Plate lug

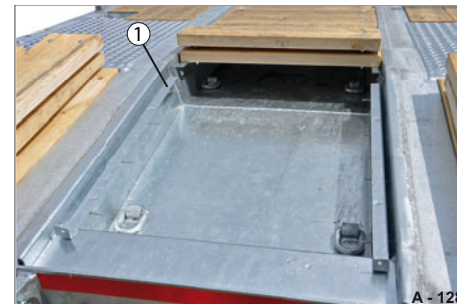


Fig. 120 Remove wooden plank

- 1 Support metal bracket

- Unscrew the wing screws (Fig. 118/1).
- Keep the wing screws in a safe place.

- Pull out the first wooden plank (Fig. 119/1).

- Remove all wooden planks, one after the other.
- Stow the wooden planks in the stowage box, for instance.

Closing arm cavity

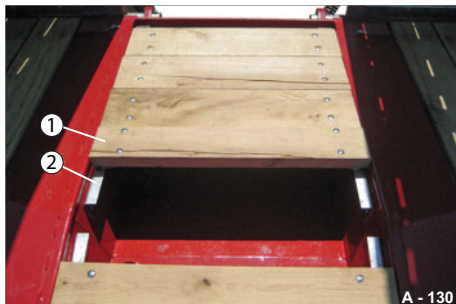


Fig. 121 Closing arm cavity

- 1 Wooden plank
- 2 Support metal bracket

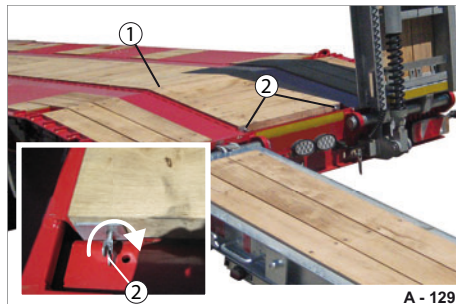


Fig. 122 Arm cavity, secured

- 1 Wooden plank, inserted
- 2 Wing screws, screwed in

- ▶ Place the wooden planks (Fig. 121/1) on the support metal bracket (Fig. 121/2) in the correct order.
- ▶ Insert the first wooden plank last (see Fig. 119).
- ▶ Screw the wing screws on (Fig. 122/2) tightly.
- ▶ Check that the arm cavity is closed and secured before departing.

General information

Many accidents are still attributable to deficiencies in loading safety.

Correctly secured loads prevent:

- Injury to persons,
- Damage to consignment,
- Damage to vehicles,
- Unnecessary wait times at traffic stops

Legal fundamentals/legal requirements

Loading safety is regulated in Germany by the legal authorities in the following laws and regulations:

- Road Traffic Type Approval Law (StVZO) Section 31,
- StVO Section 22/23,
- Accident prevention regulation - vehicles (in Germany VBG 12)
- German Commercial Code (HGB) Section 412.

On this basis, the following group of people is responsible for loading safety:

- Vehicle driver,
- Vehicle owner,
- Loader,
- Dispatcher,
- Freight carrier.

You can find additional information/ practical tips from brochure BGI 649 "Ladungssicherung auf Fahrzeugen": ("Load Securing on Vehicles": A Manual for Entrepreneurs, Shift Planners, Driving and Loading Personnel).

Guidelines of series VDI 2700

These are the state of the art of the accepted engineering standards.

- VDI 2700 Load securing on road vehicles
- VDI 2700, Page 2, Lashing forces
- VDI 2700, Page 4, Load distribution plan
- VDI 2700, Page 6, Loading general cargo together
- VDI 2700, Page 7, Load securing in combined load traffic

Other standards for load securing:

- DIN EN 12195 -1, Calculation of lashing forces
- DIN EN 12195 -2, Tie-down straps made of synthetic fibres
- DIN EN 12195 -3, Load securing devices on road vehicles, tie-down chains
- DIN EN 12640 Load restraint points on goods transporting commercial vehicles
- DIN EN 12642 Minimum requirements for bodies of commercial vehicles

Physical fundamentals

The forces acting on the consignment during the journey are those due to starting and braking as well as change of direction.

These dynamic forces cause the loaded goods to shift if they are not adequately secured and goods which are not firmly tied down.

An appropriate driving style minimises exerted forces and wear, and is always safer.

§ 3 of StVO (German Road Traffic Regulations) "Speed" contains a passage on "adapting the driving speed on the properties of the vehicle and load by the driver."

If you get into a dangerous situation, however, even the best driving style is not a replacement for a load securing system.

Example:

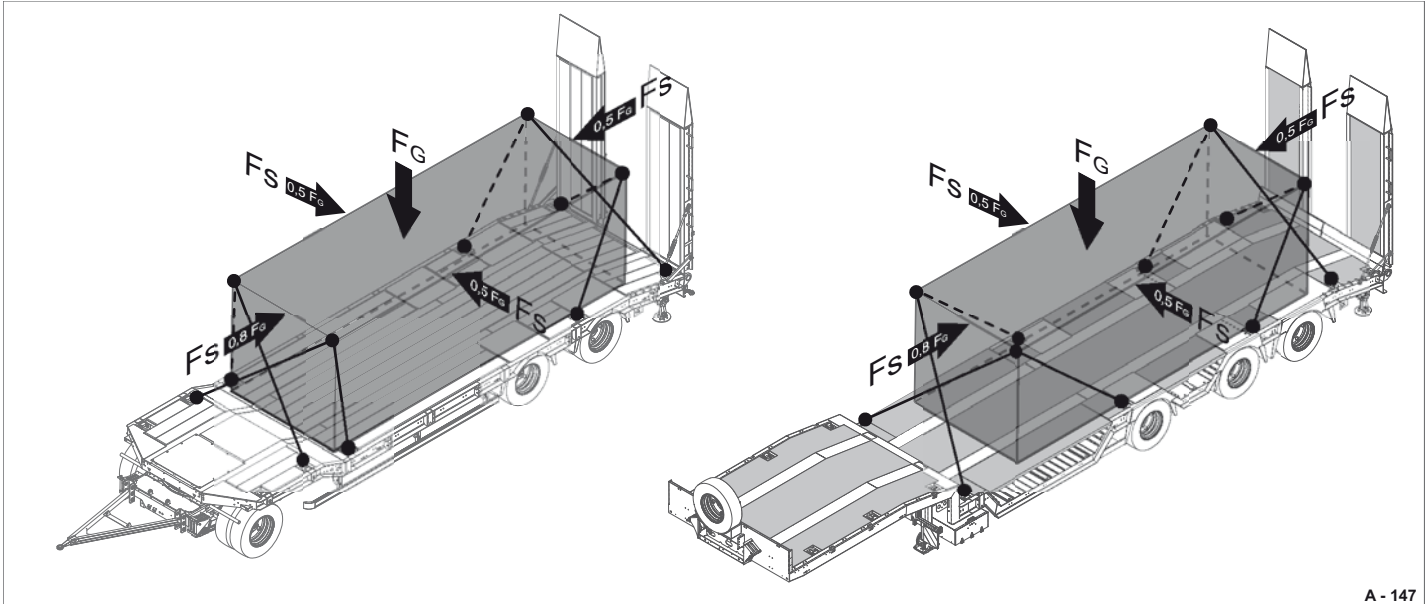
- Inertia $F_G = 20,000 \text{ daN}$
- Maximum forward acceleration = 0.8 g ($1 \text{ g} = \text{earth's acceleration } 9.81 \text{ m/s}^2$)

Result: $F_G \text{ forward} = 20,000 \text{ daN} \times 0.8 \text{ g} = 16,000 \text{ daN (kg)}$

The actual necessary load securing force F_S is reduced for tip-stable loaded goods by the amount of the frictional force F_R (between the load and vehicle floor).

Other details about coefficient of friction matching are given in the guideline VDI 2700.
All matches of coefficient of friction are valid for cleaned surfaces.

Tab. 1



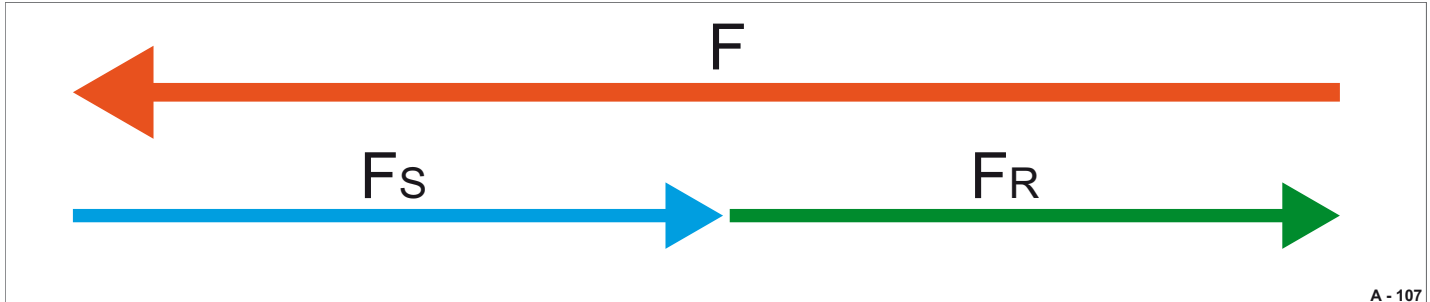
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Fig. 123 Maximum inertial forces (flatbed centre pivot plate & flatbed semi-trailer)

Resulting from the driving dynamic in street traffic
FS Load securing force, **FG** Load inertia

Tab. 2 Load securing force (F_S)

Inertia F
Force which counters any change in the state of movement



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Load securing force F_S : Force which must be absorbed by the lashing method or by the vehicle body

Friction F_R : Coefficient of friction x weight

Formula: $F_S = F - F_R$

Example:

- Forward inertia F_G : 16,000 daN
- Coefficient of friction $m_o = 0.3$ (screen printed mat/pallet)
- Friction force, $F_R = 0.3 \times 20,000 \text{ daN} = 6,000 \text{ daN}$

Actual load securing force F_S : $16,000 \text{ daN} - 6,000 \text{ daN} = \underline{10,000 \text{ daN}}$ (kg).

Types of load securing

Form-fit load securing

Supporting the load in stacks one on top of the other as well as body components such as the front platform gates or on posts, barrier beams or wooden fixing is called "form-fit load securing".

Provided:

The measurements of the goods and bodies fit together.

Otherwise the gaps must be filled with pallets or airbags, for example.



In the case of multiple different goods types, it is not possible to use form-fitting loading for transporting.

These loads are to be secured, in addition to the specifications of DIN EN 12640, by several lashing points as specified in DIN EN 12195 and the VDI Guidelines, in line with practice.

Friction-lock load securing

Direct anchoring and tying down the load with lashing equipment is called "friction-lock load securing."

Direct anchoring as "angular or diagonal lashing", due to the considerably higher lashing forces achievable than with tying down, is counted as a form-fit safety process.

Pre-condition:

Lashing points are available on the required points on the load and on the vehicle.

Tying down is the most common type of load securing.

The necessary securing force is reached alone by the increase in friction.

The load is "pressed" onto the loading platform with the help of lashing equipment (e.g. tie-down straps).

NOTICE

Exceeding lashing forces/ exceeding the lashing angle

Lashing points can break.

- ▶ Observe the label on the lashing points.
- ▶ Comply with the following specifications:

- Maximum tension load on the lashing points on the loading platform:
10,000 daN (kg) per lashing ring.

- Maximum tension load on the lashing points on the outer frame:
6,000 daN (kg) per lashing ring.

- Maximum tension load on post pockets, lashing shackles and lashing points in the arm cavity:
3,000 daN (kg) per post pocket..

The angle between the loading floor and the lashing equipment (e.g. ratchet strap) must be 30° or greater.

- ▶ Only use suitable/tested lashing equipment.

Friction-lock load securing

Force specifications



Fig. 124 Example: Label on lashing point



WARNING



Impermissible tensile loads/ lashing angles

Lashing equipment break/tear.
The load is not sufficiently
secured - risk of accidents!

- ▶ Comply with the maximum values for force specifications.
- ▶ Use suitable lashing equipment.
The maximum possible tension is specified on the lashing equipment.
- ▶ Do not lash the clamping devices under a 30° angle.
Situate the fixing point on the load as high as possible.

The lashing points on the semi-trailer are suited for all common and standardised lashing equipment.

The lashing equipment can be fastened from inside or outside.

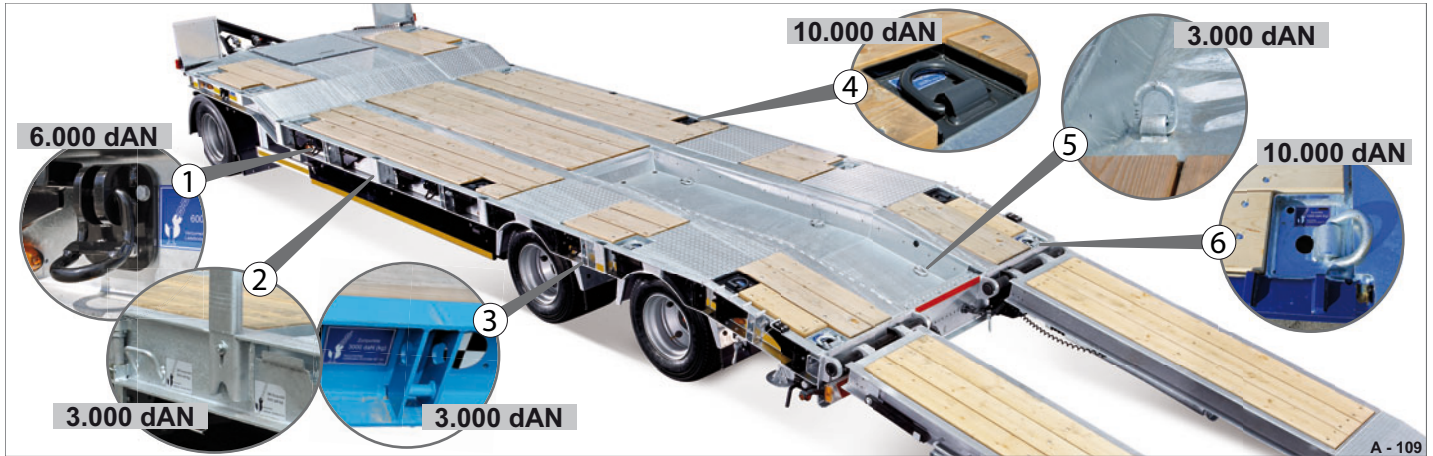


Fig. 125 Lashing points
(example of equipment)

- 1 Lashing ring (exterior frame)
- 2 Lashing shackles, post pocket
- 3 Lashing point (outer frame)
- 4 Lashing ring (loading platform)
- 5 Lashing ring (arm cavity)
- 6 Lashing ring (loading platform ramp)

Lashing points

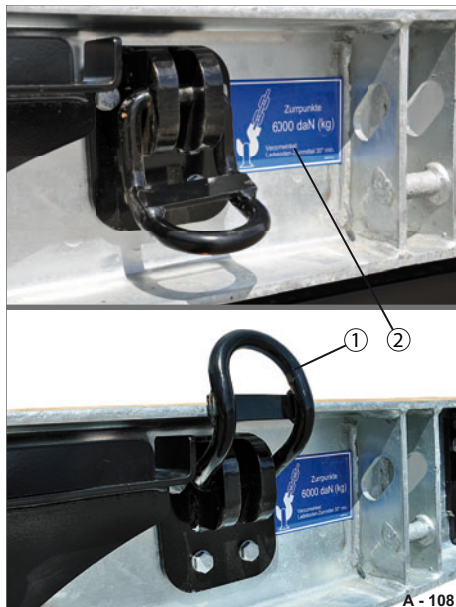


Fig. 126 Lashing point, on the side of outer frame: 6,000 daN (kg)

- 1 Lashing ring, foldable
- 2 Label (max. lashing capacity specification)



Fig. 127 Lashing point, up on loading platform: 10,000 daN (kg)

- 1 Lashing ring, foldable
- 2 Label (max. lashing capacity specification)

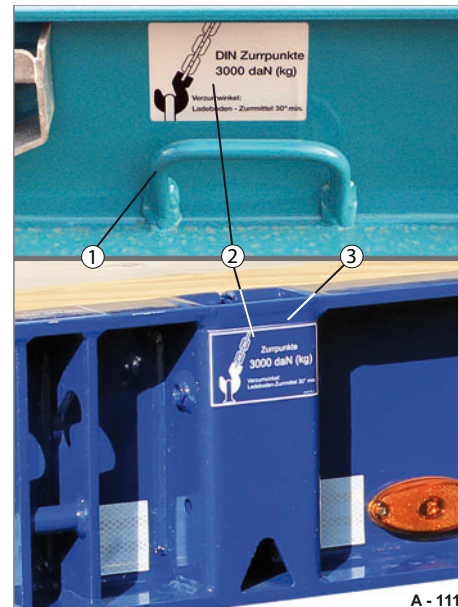


Fig. 128 Lashing point, on the side of outer frame: Lashing shackles/post pocket 3,000 daN (kg)

- 1 Lashing shackles
- 2 Label (max. lashing capacity specification)
- 3 Post pocket as lashing point

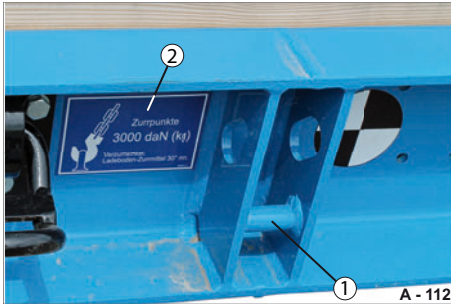


Fig. 129 Lashing point, frame console
3,000 daN (kg)

- 1 Lashing point
- 2 Label (max. lashing capacity specification)

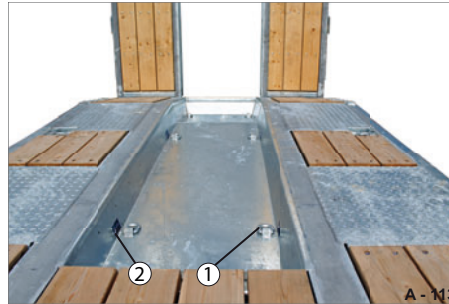


Fig. 130 Lashing point in arm cavity:
3,000 daN (kg)

- 1 Lashing eye, foldable
- 2 Label (max. lashing capacity specification)

► Lower the required lashing points in the vehicle frame or fold them in.

Lashing option on the front wall (special solutions)

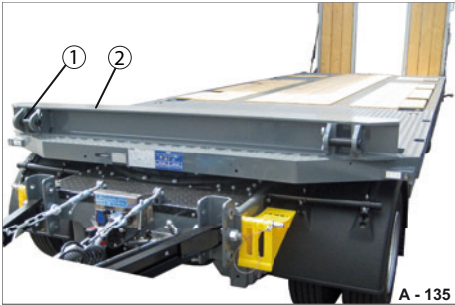


Fig. 131 Lashing limit positions, outside

- 1 Lashing pin
- 2 Bar
- 3 Spring pin

Other lashing options can optionally be attached to the vehicle.

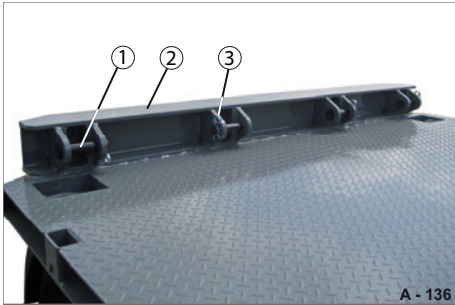


Fig. 132 Lashing limit positions, inside

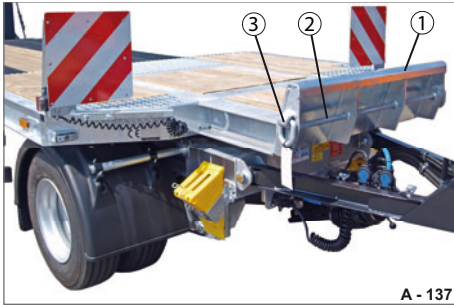


Fig. 133 Lashing limit positions, end face

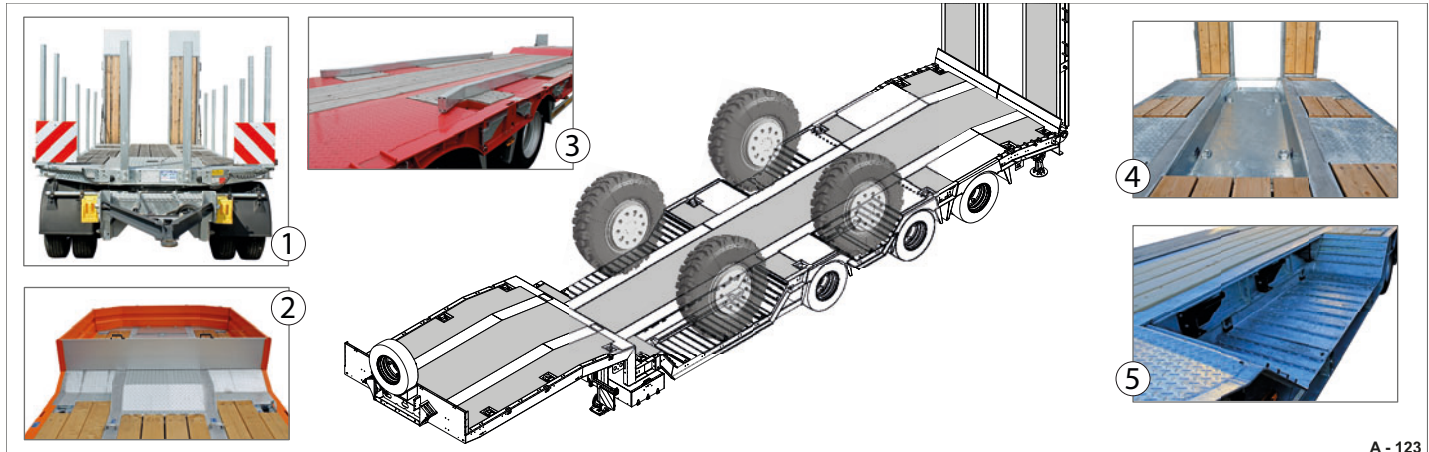
- 1 Front platform
- 2 Tethering poles
- 3 Lashing eye, side

Form-fit load securing

Form-fit load securing is only possible to a limited extent for flatbed semi-trailers.

A combination of form-fit and friction-lock securing is achieved with:

- Platform gate structure on the high plateau
- Wheel cavities
- Safety rails
- Posts
- Arm cavity



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Fig. 134 Flatbed with wheel cavities

- 1 Posts
- 2 Platform gate structure
- 3 Safety rails
- 4 Arm cavity
- 5 Wheel cavities

Container transport / safeguard

Flatbed vehicles with straight loading platforms can be equipped for container transport with "twist lock" locking points.

Two locking points are arranged in the front area.

Optionally with four locking points, 2 in front and 2 in back

In this version, the flatbed is designed straight in the back (without angled ramp) with mounting rail (without ramps).

Individual containers of size 20' can be transported.

In addition, two containers of size 10' can be placed here.



The loader and driver are responsible for properly securing the container.

Driving with insufficient load securing equipment for the container and its content (goods) leads to poor driving performance - increased risk of lurching and rolling!



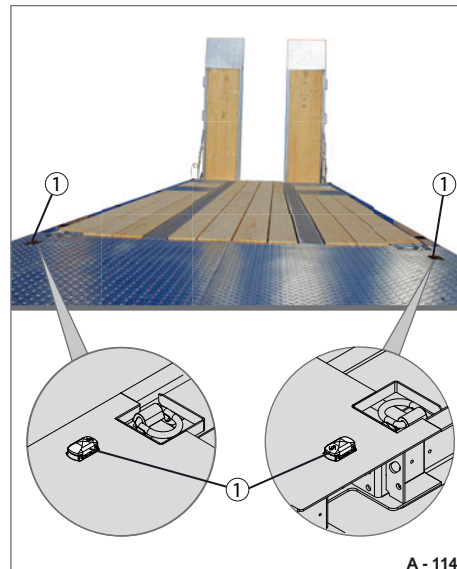
WARNING



Improper handling for container transport

Unsecured containers can fall or slip during the journey - risk of accidents!

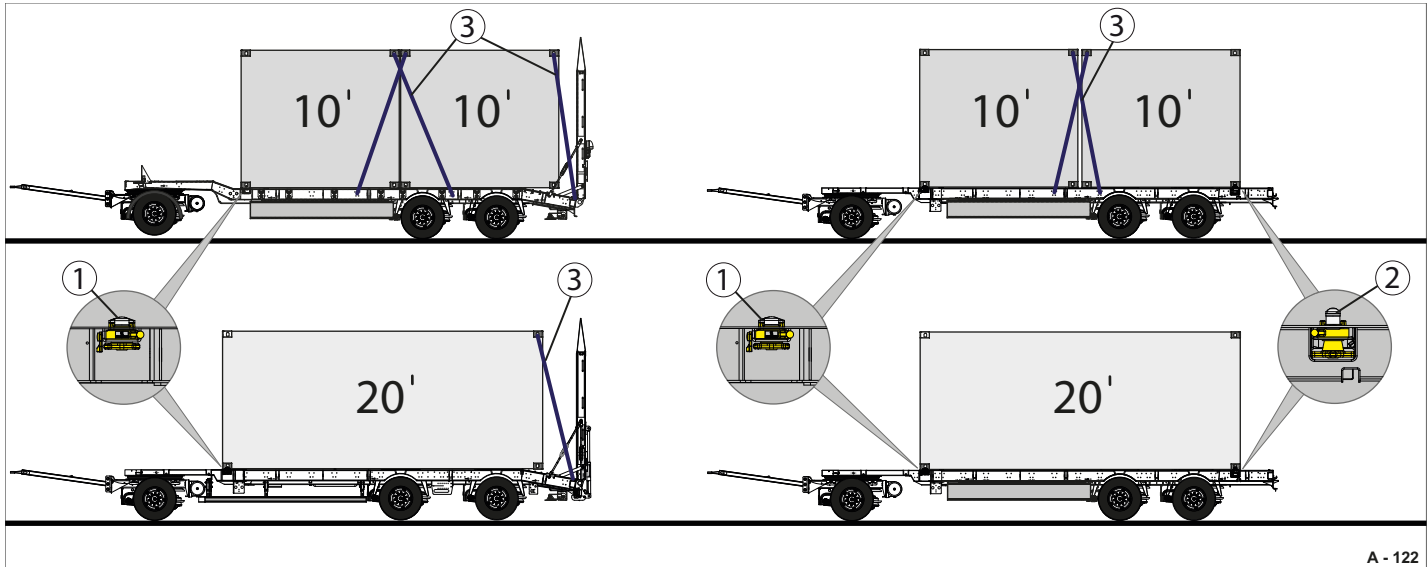
- ▶ Check that the container is locked with the twist lock locking points before departure.
- ▶ Check that the locking points are lowered and secured before empty runs without containers.
- ▶ Set a container carefully on the loading platform - do not let it fall.
- ▶ Set containers down horizontally, not at a slant.
- ▶ Check that the container is properly secured before departing, if necessary lash it down again.



A - 114

Fig. 135 Container locking point

1 Twist lock locking points, front



A - 122

Fig. 136 Possible containers - loading varieties

- 1 Locking points, front
- 2 Locking points, rear
- 3 Lashing equipment (chains, ratchet straps, etc.)



Standard containers sizes 20' and 10' (base), depending on the flatbed model, are to be placed so that the front locking points secure the container.

When transporting only one size 10' container, it must be placed in the front area and secured with locking points. In addition, the container must be securely lashed down.

With flatbeds with 4 locking points, a size 20' container can be transported without additional lashing equipment.

Locking container

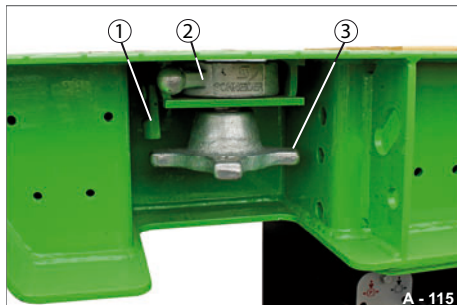


Fig. 137 Locking point completely lowered

- 1 Safety locking points
- 2 Grooved bush
- 3 Clamping nut
- 4 Pivot pin
- 5 Guide bush



Fig. 138 Drive position without container

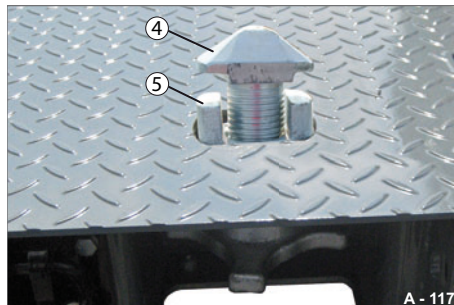


Fig. 139 Locking point extended

Locking point extended

- Raise the safety locking mechanism (Fig. 137/1), and lock it.
 - Unscrew the clamping nuts (Fig. 137/3).
 - Turn the grooved bush (Fig. 137/2) to the right.
 - Raise and rotate the clamping nuts and the pivot pin (Fig. 137/4) simultaneously.
- The guide bush (Fig. 137/5) comes out the top.
- Tighten the clamping nut.
 - Secure the clamping nut with safety locking mechanism (Fig. 137/1).



Fig. 140 Locking point in intake position

The pivot pin lays on the guide bushes (see Fig. 140).

The container can be set down or removed.

- Check that all locking points are extended before setting down the container.

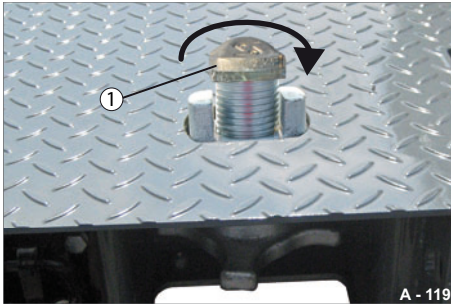


Fig. 141 Loosen pivot pin

- 1 Pivot pin rotated by 90°



Fig. 142 Locked (container transport)

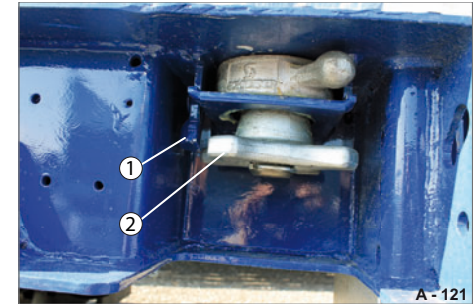


Fig. 143 Locking point secured

- 1 Safety locking mechanism, lower
- 2 Clamping nut, tightened

Locking

- ▶ Raise the safety locking mechanism (Fig. 137/1), and lock it.
- ▶ Unscrew the clamping nuts (Fig. 137/3).
- ▶ Rotate the pivot pin (Fig. 141/1) by 90 °.
- ▶ Tighten the clamping nut.
- ▶ Secure the clamping nut with safety locking mechanism (Fig. 137/1).

The pivot pin moves downwards and locks the container (see Fig. 142).

- ▶ Check that the container is securely locked before departing.

The safety locking mechanism (Fig. 143/1) blocks the die clamping nut (Fig. 143/2) and prevents it turning by itself during the journey.

Loading safety rails

The loading safety rails are attached on the loading platform in the required width.

The loading safety rails secure the goods in a form-fitting manner.

Placing the safety rails on the goods prevents them from sliding to the side.

WARNING

Driving with loose safety rails

Unsecured/uninserted safety rails can fall during the journey - risk of accidents!

- ▶ Check that the safety rails are firmly inserted or lashed down before departing.



CAUTION



Operating safety rails

Safety rails are heavy. They can crush fingers/hands/feet.

They can fall from the loading platform when moved.



- ▶ Use



in pairs.

- ▶ When moving the safety rails, make sure that your hands/feet are not under the safety rails.
- ▶ Carefully insert the safety rails - do not let them fall.

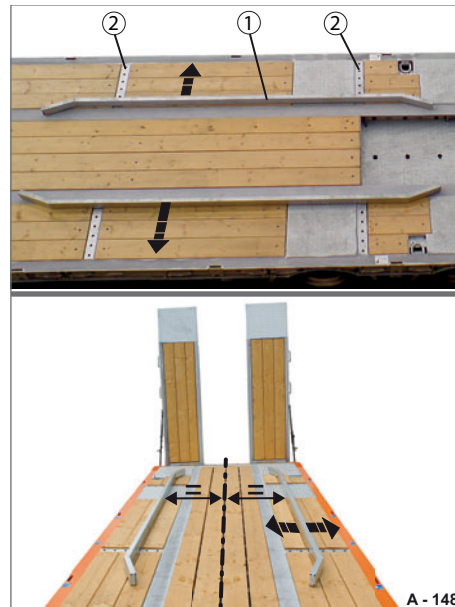


Fig. 144 Loading safety rails

- 1 Safety rails, inserted
- 2 Adjustment steps/perforation

Adjusting safety rails

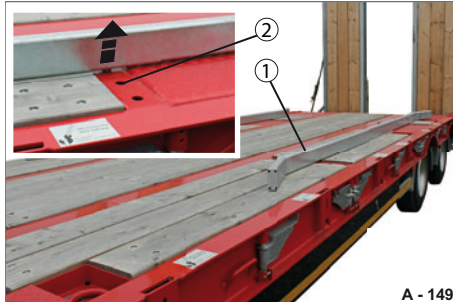


Fig. 145 Adjusting safety rails

- 1 Safety rails
- 2 Adjustment steps/perforation



The safety rails must be placed at the same distance from the centre of the loading platform (see Fig. 144).

- ▶ Raise the safety rails (Fig. 145/1).
- ▶ Insert the safety rails into the appropriate perforation (Fig. 145/2).

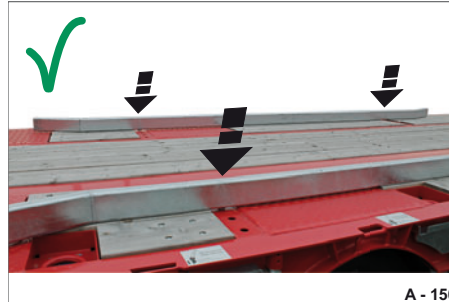


Fig. 146 Safety rails, inserted

- ▶ Check that the safety rails lie flat on the loading platform before departing.
- ▶ After loading, check that the safety rails secure the goods in a form-fit load manner and lie on the goods.
- ▶ If necessary, use other load securing equipment, e.g. squared timber, to create a form fit.

Slip-resistant coating

The flatbed vehicles can be equipped with slip-resistant coating.

- Rubber floor, in flatbed area
- Rubber strips, sides
- Rubber mats, ramp area

The slip-resistant material (rubber) is attached to the wooden planks.

The rubber makes for better wheel adhesion.

The increased grip facilitates the loading/unloading of the vehicle.

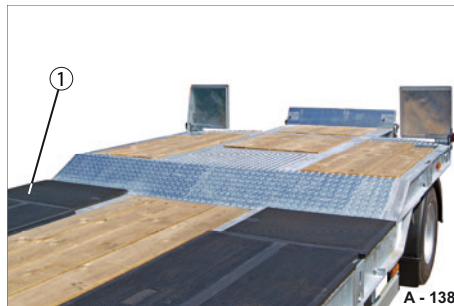


Fig. 147 Rubber floor covering

- 1 Rubber floor, continuous in flatbed

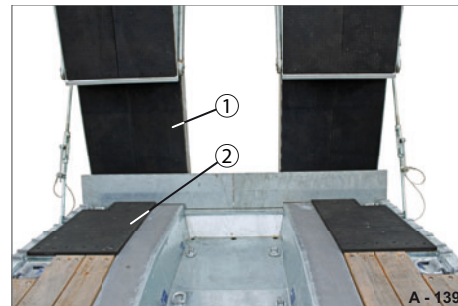


Fig. 148 Rubber mats in ramp area

- 1 Rubber mats on ramps
2 Rubber mats, ramp area/slopes



Fig. 149 Rubber mats in ramp area

- 1 Chassis outer edge
2 Rubber strips

Climbing rail

The climbing rails is attached to the left and right ramp area of the flatbed.

The climbing rail creates a better grip for the wheel of wide loading vehicles.

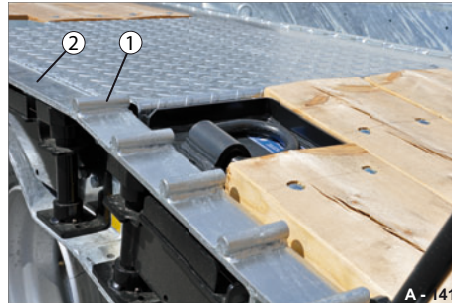


Fig. 150 Climbing rails

- 1 Climbing rod in ramp area
- 2 Chassis outer edge

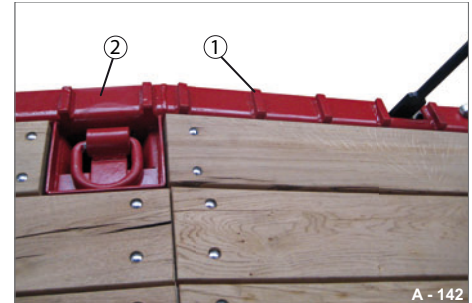


Fig. 151 Climbing rails

- 1 Climbing rod in ramp area
- 2 Chassis outer edge

Ramp planks for high plateau

The high plateau can be driven over in the flatbed semi-trailer using the aluminium ramp planks.

The ramp planks are removable and can be stowed on the high plateau when not in use.



WARNING



Overloading ramp planks

The ramp planks can get deformed and hang from the suspension strip.

The loading vehicle can get unbalanced and tip/fall over.

- Observe the name plate with maximum load specifications.
- Comply with the maximum values.



WARNING

Unsecured ramp planks

The ramp planks can fall during the journey - risk of injury!

- Check that the ramp plans are secured, e.g. are lashed on the high plateau, before departing.



WARNING

Driving with suspended ramp planks

The ramp planks can fall during the journey - risk of injury!

- Check that the suspended ramp planks are loaded with the weight of the loaded vehicle before departing.
- If necessary, lash the ramp planks down again.



CAUTION



Handling ramp planks

The ramp planks are heavy (approx. 43 kg). Danger of fingers/hands being crushed. They can fall from the loading platform.



- Use
- Handle the ramp planks with the handles. Remove them carefully.



Fig. 152 High plateau can be driven over

- 1 High plateau
- 2 Suspension strip
- 3 Ramp planks, suspended



The ramp planks must only be used for loading/unloading the high plateau.

Handling ramp planks

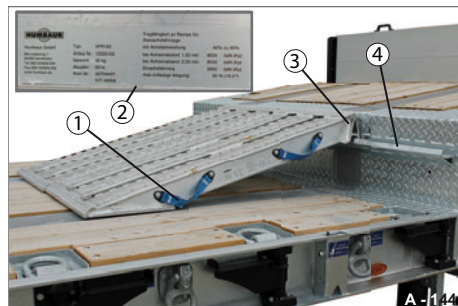


Fig. 153 Ramp planks placed

- 1 Handles
- 2 Name plate with load specifications
- 3 Suspension tappet
- 4 Suspension strip

Suspending

- ▶ Grab the individual ramp planks by the handles (Fig. 153/1). Observe that they weight approx. 43 kg.
- ▶ Hang the ramp plank with the suspension tappet (Fig. 153/3) on the suspension strip (Fig. 153/4) on the high plateau.

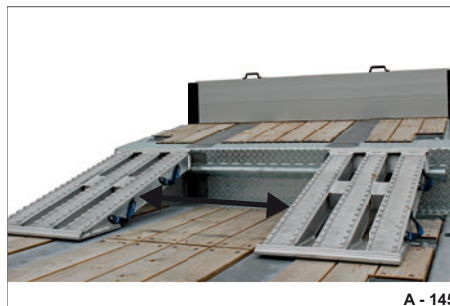


Fig. 154 Track width set

Setting track width

- ▶ Pull on the handles and set the track width to the approaching vehicle. Observe that two ramp planks must be averaged out compared to the loading platform.

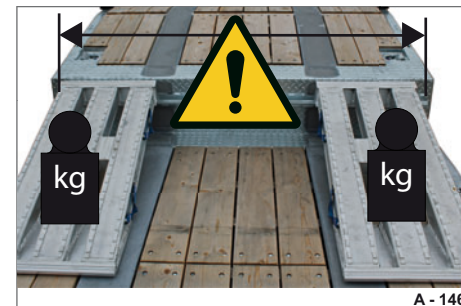
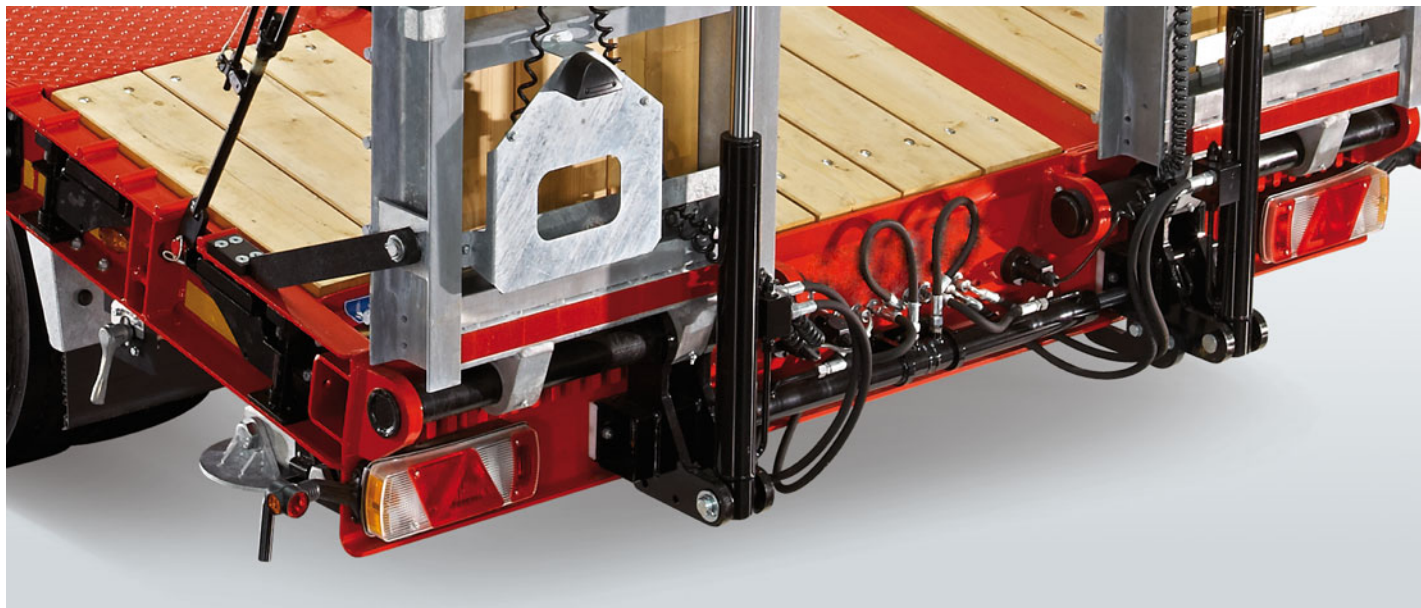


Fig. 155 Loading ramp planks

Driving over

- ▶ Before driving over the ramp planks, make sure that the maximum permissible load is not exceeded - see name plate (Fig. 153/2).
- ▶ Before driving over, check that the ramp planks are lying completely on the suspension strip (Fig. 153/4) - they must not protrude over the suspension strip.



Electrical system

Light system

The electrical light system operates at 24 V by default.

The flatbed vehicles can optionally be converted to 12 V.

In the flatbed semi-trailer, the connection points are arranged on a console on the front wall.

In the flatbed centre pivot plate, the plug connections are arranged on the tongue.

The flatbed vehicles can also be equipped with working lights.



WARNING

Failure of electrical function

Driving performance and the braking distance can worsen - risk of accidents!

- ▶ Check that all electrical connections are established before departing.
- ▶ Check the state of plugs and cables before departing.
- ▶ Do not drive with broken, defective electrical connections.



CAUTION



Coupling/uncoupling lines

You can crush your fingers in the connection points.

- ▶ Screw and unscrew the coupling heads carefully.
- ▶ Pull at the connector – not at the cable.

Standard version of electrical connection:

- with 7-pin EBS/ABS plug acc. to ISO 7638
- with 15-pin electrical plug acc. to ISO 12098

In addition, the trailer can be equipped with a 15-pin electrical plug with two 7-pin plug connections: 24 V-N acc. to ISO 1185 and 24 V-S acc. to ISO 3731.

Flatbed semi-trailer vehicles are generally equipped with both connection options.

Securing pin connections

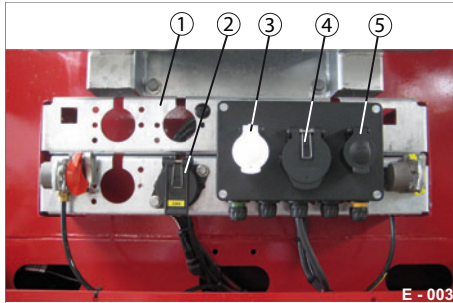


Fig. 1 Flatbed semi-trailer operating point

- 1 Operating console, modular
- 2 Socket: 7-pin EBS/ABS plug, acc. to ISO 7638
- 3 Socket: 7-pin plug 24 V-S, acc. to ISO 3731 (white)
- 4 Socket: 15-pin plug 24 V, acc. to ISO 12098
- 5 Socket: 7-pin plug 24 V-N, acc. to ISO 1185

Connecting electrical system

- Open the socket (Fig. 1/4) and connect the plug (15-pin) from the towing vehicle. Alternatively, you can insert the two 7-pin plugs into the sockets (Fig. 1/3 & Fig. 1/5).
- Check that the socket is secure.

Connecting EBS/ABS

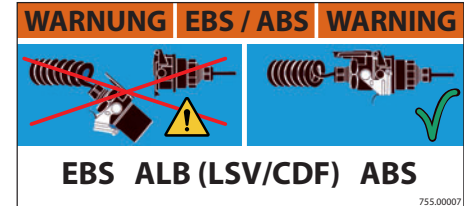


Fig. 2 Label on trailer - example



EBS/ABS plug must be connected from the towing vehicle into the socket (Fig. 1/2) of the trailer before departing.

Securing pin connections

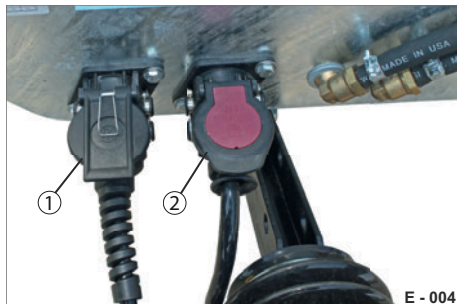


Fig. 3 Flatbed centre pivot plate operating point

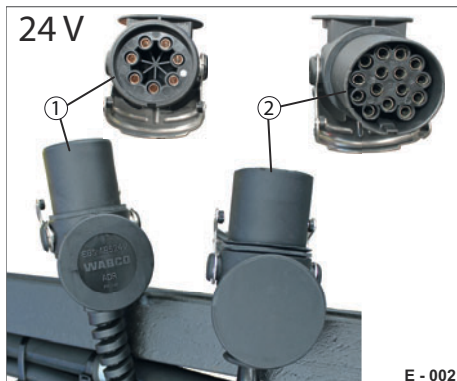


Fig. 4 Connection cable Standard

- 1 7-pin EBS/ABS plug (ISO 7638)
- 2 15-pin electrical plug (ISO 12098)

Connecting electrical system

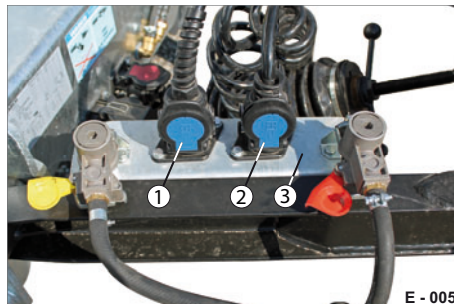


Fig. 5 Park position on tongue

- 1 EBS/ABS plug parking socket (7P)
- 2 Electrical plug parking socket (15P)
- 3 Park console

- ▶ Pull the plug out of the parking socket (Fig. 5/2) and insert the plug (15-pin) into the towing machine.
- ▶ Check that the plug is secure.

Connecting EBS/ABS

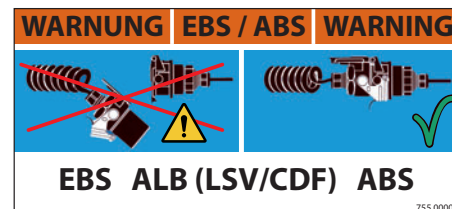


Fig. 6 Label on trailer - example



EBS/ABS plug must be inserted in the towing machine before departure.

- ▶ Pull the plug out of the parking socket (Fig. 5/1) and insert the plug (7-pin) into the towing machine.
- ▶ Check that the plug is secure.

Plug connections (optional)



Fig. 7 Connection cable, optional

- 1 7-pin plug, 24 V-S (ISO 3731), white
- 2 7-pin plug, 24 V-N (ISO 1185), black

Connecting electrical system

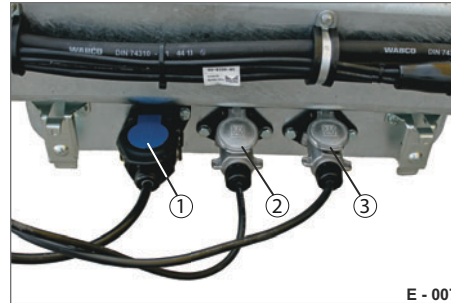


Fig. 8 Park position on tongue

- 1 EBS/ABS plug parking socket
- 2 24 V-N plug parking socket
- 3 24 V-S plug parking socket

- ▶ Pull the respective plug out of the parking socket (Fig. 8/2 & Fig. 8/3) and insert the plugs (7-pin) into the towing machine.
- ▶ Check that the plug is secure.

Connecting EBS/ABS

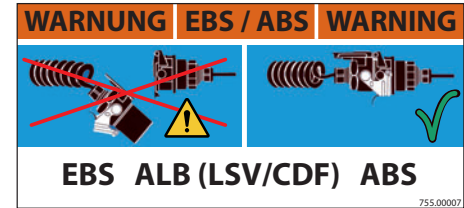


Fig. 9 Label on trailer - example



EBS/ABS plug must be inserted in the towing machine before departure.

- ▶ Pull the plug out of the parking socket (Fig. 8/1) and insert the plug (7-pin) into the towing machine.
- ▶ Check that the plug is secure.

Parking plug

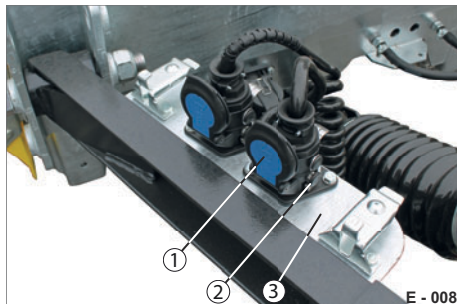


Fig. 10 Plug, parked

- 1 Parking socket
- 2 Bracket
- 3 Park console



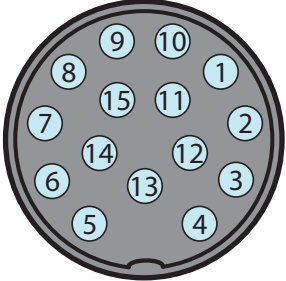
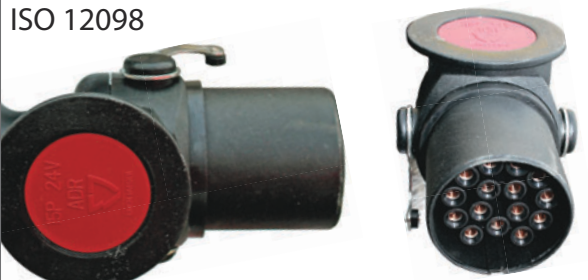
Driving with damaged/dirty plug connections is illegal.

Parked plug connections are protected from damage/contamination.

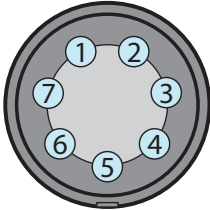

- ▶ With uncoupled trailer, connect the sockets into the respective parking sockets (Fig. 10/1).
- ▶ Rotate the bracket (Fig. 10/2) onto the Nippons in the parking socket.
The plug is firmly in the parking socket in the park console.

The contacts are protected against contamination.
- ▶ Maintain the contacts of the plug connections with contact spray, if necessary.
- ▶ Clean dirty plug connections before departing.
- ▶ Have defective, torn, worn plug connections replaced immediately in a workshop.

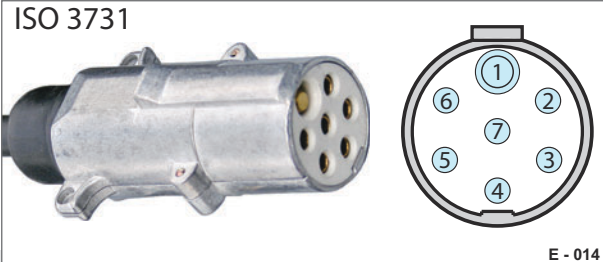
15-pin connector ISO 12098

Pin	Function	Cross section	Colour	Image/arrangement
1	Turn indicator, left	1.5 mm ²	Yellow	<p>ISO 12098</p>  <p>E - 010</p>
2	Turn indicator, right	1.5 mm ²	Green	
3	Rear fog lights	1.5 mm ²	Blue	
4	Earth	2.5 mm ²	White	
5	Tail light left	1.5 mm ²	Black	
6	Tail light right	1.5 mm ²	Brown	
7	Brake lights	1.5 mm ²	Red	
8	Reversing light	1.5 mm ²	Grey	
9	Continuous positive power supply 24 V	2.5 mm ²	Brown/blue	
10	Steering axle, sensor brake lining wear	1.5 mm ²	Brown/red	<p>ISO 12098</p>  <p>E - 011</p>
11	Approach aid, pressure sensor spring-loaded brake	1.5 mm ²	Yellow/black	
12	Lift axle	1.5 mm ²	Pink	
13	CAN bus earth	2.5 mm ²	White/black	
14	CAN bus high	1.5 mm ²	Violet	
15	CAN bus low	1.5 mm ²	Orange	

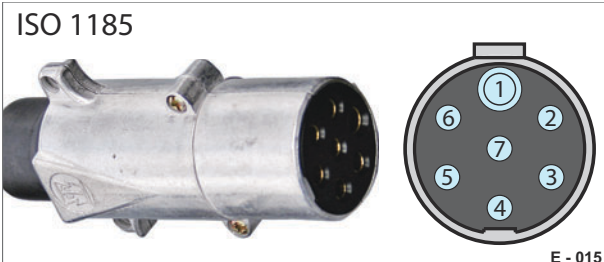
7-pin EBS plug-in connector ISO 7638

Pin	Function	Cross section	Colour	Image/arrangement
1	Positive solenoid valve (KL30)	4 or 6 mm²	Red	<div>ISO 7638</div>  <div>E - 012</div>
2	Positive (KL15)	1.5 mm²	White/red	
3	Minus electronics (KL31b)	1.5 mm²	Brown/blue	
4	Minus solenoid valve (KL31)	4 or 6 mm²	Brown	
5	Warning device	1.5 mm²	Yellow/blue	
6	Not assigned			
7	Not assigned			
				<div>ISO 7638</div>  <div>E - 013</div>

7-pin plug-in connector ISO 3731 (white)

Pin	Function	Cross section	Colour	Image/arrangement
1	Earth (31)	2.5 mm ²	White/black	 <p>ISO 3731</p> <p>E - 014</p>
2	Not assigned (58L)	1.5 mm ²	Violet	
3	Reversing light (L)	1.5 mm ²	Blue	
4	Continuous positive power (54)	2.5 mm ²	Brown/blue	
5	Control over earth (R)	1.5 mm ²	Orange	
6	Power over ignition switch	2.5 mm ²	Pink	
7	Fog light (54G)	1.5 mm ²	Blue	

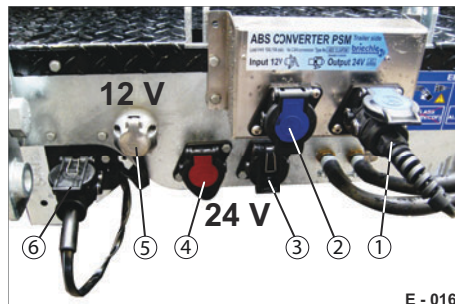
7-pin plug-in connector ISO 1185 (black)

Pin	Function	Cross section	Colour	Image/arrangement
1	Earth (31)	2.5 mm ²	White	 <p>ISO 1185</p> <p>E - 015</p>
2	Left tail light/sidemarkers light/licence plate light (58L)	1.5 mm ²	Black	
3	Turn indicator, left (L)	1.5 mm ²	Yellow	
4	Brake lights (54)	1.5 mm ²	Red	
5	Turn indicator, right (R)	1.5 mm ²	Green	
6	Right tail light/sidemarkers light/licence plate light (58R)	2.5 mm ²	Brown	
7	Trailer braking control (54G)	1.5 mm ²	Blue	

Operating voltage transformer

With the voltage transformer, the flatbed trailers can optionally be operated with 12 V.

Towing vehicles which only feature 12 V connections can drive the trailer with conversion of 24 V to 12 V.



E - 016



WARNING

Incorrect supply voltage/driving without ABS/electrical system

Driving without ABS/electrical system or with incorrect supply voltage can lead to the vehicle not being correctly identified or braked - risk of accidents!

- Check that the trailer is supplied with the correct voltage before departing.
- Check that the connection cables are not damaged and are correctly inserted before departing.
- Make sure that the correct connection cables are used for 12 V or 24 V operation.

Fig. 11 Voltage transformer connections

- 1 ABS plug (parking socket)
- 2 ABS connection 12 V
- 3 ABS connection 24 V
- 4 Electrical connection 24 V
- 5 Electrical connection 12 V
- 6 Electrical plug (parking socket)

24 V operation

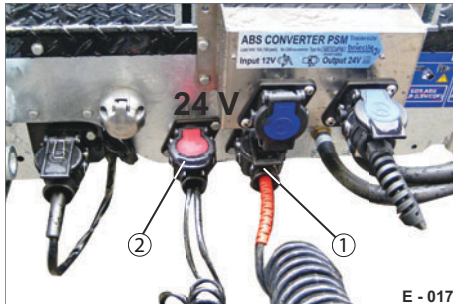


Fig. 12 Connection for 24 V operation

- 1 ABS cable (24 V) from towing machine
- 2 Electrical cable (24 V) from towing machine
e.g. 2x7-pin; 15-pin; 7+4-pin

In 24 V operation, the voltage transformer plugs stay in the parking socket.

- Plug the ABS cable (Fig. 12/1) from the towing vehicle into the socket (Fig. 11/3) for the ABS connection.
- Plug the electrical cable (Fig. 12/2) from the towing vehicle into the socket (Fig. 11/4) for the electrical connection.

12 V operation

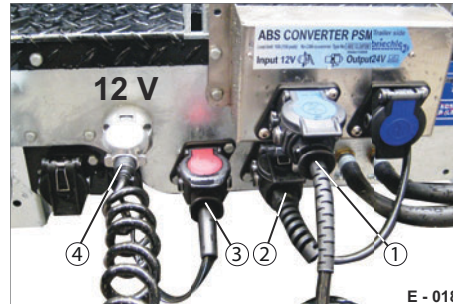


Fig. 13 Connection for 12 V operation

- 1 ABS cable (12 V) from towing machine
- 2 ABS plug from voltage transformer
- 3 Electrical plug from voltage transformer
- 4 Electrical cable (12 V) from towing machine

In 12 V operation, the voltage transformer plugs stay in the 24 V sockets.

- Plug the ABS cable (Fig. 13/1) from the towing vehicle into the socket (Fig. 11/2) for the ABS connection.
- Plug the electrical cable (Fig. 13/4) from the towing vehicle into the socket (Fig. 11/5) for the electrical connection.

Parking plug

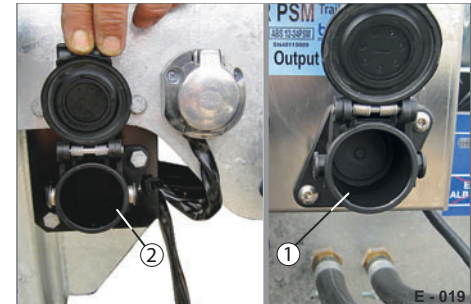


Fig. 14 Parking socket open

- 1 Parking socket for ABS plug
- 2 Parking socket electric plug



When the voltage transformer is not being used, the plugs must be connected to the parking socket.

- Insert the ABS plug (Fig. 11/1) of the voltage transformer into the parking socket (Fig. 14/1).
- Insert the electric plug (Fig. 11/6) of the voltage transformer into the parking socket (Fig. 14/2).

Using working lights

The working lights illuminate the work environment at the rear of the trailer.

They increase work safety when loading/unloading when it is dark.

The working lights are switched on and off through the towing vehicle.

The light device can be adjusted separately.

The LED working lights are swivel-mounted.

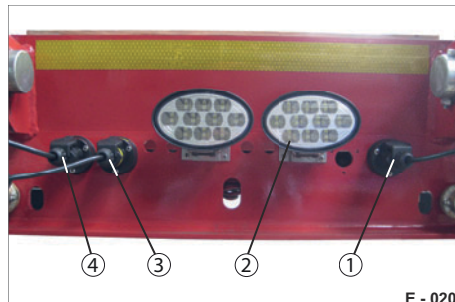


Fig. 15 Working light at rear

- 1 Securing pin: Peripheral light, right
- 2 Working light
- 3 Securing pin: Rotating light
- 4 Securing pin: Peripheral light, left



Fig. 16 Side position of the working lights

- 1 Working light right/left

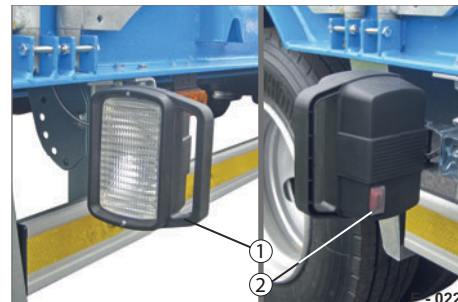


Fig. 17 Side working lights (optional)

- 1 Working light right/left
- 2 ON/OFF switch

Working lights can optionally be installed with their own ON/OFF switch.

Operating peripheral lights

The peripheral lights are installed at the front and rear on the warning panels.

The electrical plug connection is located on the chassis.



WARNING

Non-functioning peripheral lights

The road users cannot correctly gauge/identify the vehicle width - risk of accidents!

- ▶ Check that the peripheral lights work and are extended to the entire width of the trailer.

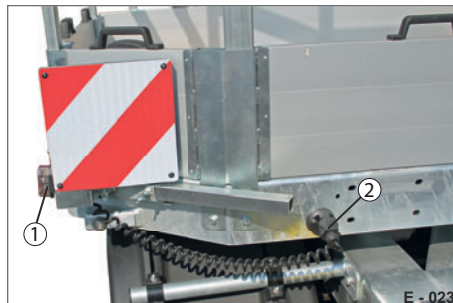


Fig. 18 Peripheral light on the warning panel, front side

- 1 Peripheral light
- 2 Plug connection/spiral cable



Fig. 19 Peripheral light on the warning panel, rear side on ramps

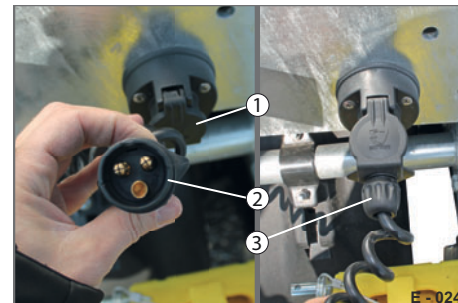


Fig. 20 Inserting peripheral light

- 1 Plug for peripheral light
- 2 Securing pin
- 3 Peripheral light plug, inserted

Inserting peripheral lights

- ▶ Open the cover of the socket
- ▶ (Fig. 20/1) and insert the plug (Fig. 20/2).
- ▶ Secure the plug with the cover of the socket.

Operating rotating light

The rotating light is installed at the rear on one of the ramps.

The electrical plug connection is located below on the chassis.



WARNING

Non-functioning rotating light

The road users cannot correctly gauge/identify the wide-load vehicle - risk of accidents!

- Check that the rotating light is securely fastened before departing if driving with a wide load.

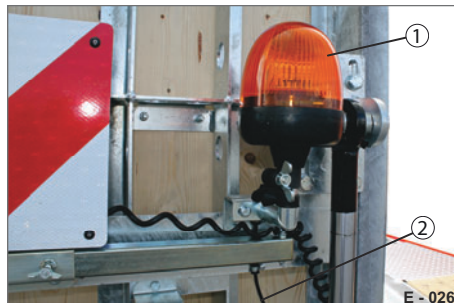


Fig. 21 Rotating light on rear

- 1 Lamp
- 2 Connection cable



For information on attaching/removing the rotating light/lamp, see „Rotating light (option)” auf Seite 180.

If not used, the rotating light can be completely disassembled and unplugged.

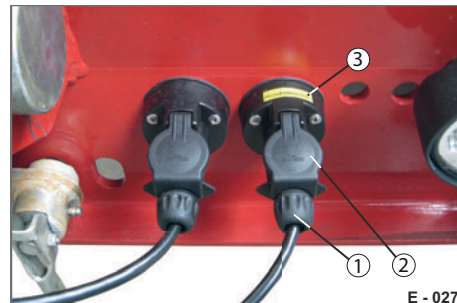


Fig. 22 Inserting rotating light

- 1 Plug, inserted
- 2 Socket/cover
- 3 Label

Inserting

- Open the cover of the socket (Fig. 22/2) and insert the plug (Fig. 22/1). Observe the label (Fig. 22/3) on the socket for the rotating light.
- Secure the plug with the cover of the socket.

Marking/limit lights

The limit lights, white, are installed on the front side of the chassis.

The marking lights, orange, are installed on the side of the chassis.

The marking/limit lights are LED lights supplied with 24 V by the electrical system.



WARNING

Non-functioning marking/limit lights

The road users cannot correctly gauge/identify the vehicle - risk of injury!

- Check that the marking and limit lights are secured before departing.

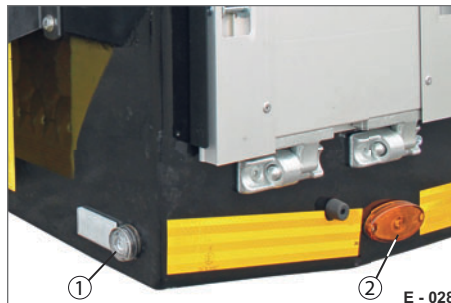


Fig. 23 Marking lights flatbed semi-trailer

- 1 Limit light, front side
- 2 Side marking lights



Maintenance of marking/limit lightssiehe „Side marking light“ auf Seite 272 & „Limit light“ auf Seite 272.

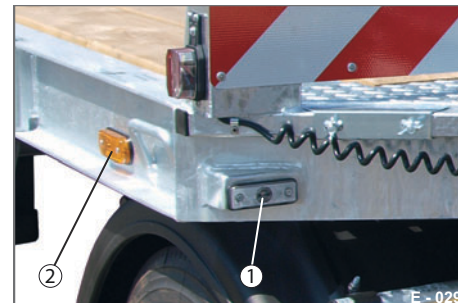


Fig. 24 Marking lights flatbed centre pivot plate

- 1 Limit light, front side
- 2 Side marking lights

Tail light with peripheral light

The rear multi-functional light are equipped with a peripheral light.

The multi-functional tail light is equipped with the following functions:

- Fog light
- Reversing light
- Tail lights with reflectors
- Brake light
- Indicator

The peripheral light labels the vehicle with the following colours:

- Red, to the rear
- Orange, side
- White, forwards



WARNING

Non-functioning tail lights

The road users cannot correctly gauge/ identify the vehicle - risk of injury!

- Check that the tail and peripheral lights are secured before departing.

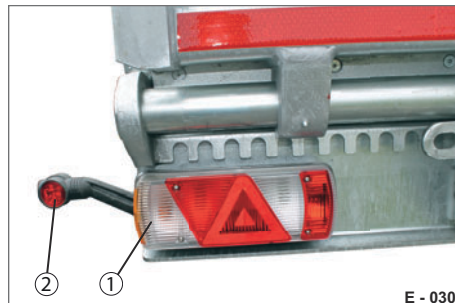


Fig. 25 Tail light with peripheral light

- 1 Tail light, multifunctional
- 2 Peripheral light



Maintenance of tail and peripheral lights (siehe „Tail light“ auf Seite 270).

Licence plate light

The licence plate light is attached directly above the licence plate area.



It is required by law that the licence plate be illuminated.



Fig. 26 Licence plate light

1 light

2 Licence plate area/holder



Maintenance of the licence plate light (siehe „Licence plate light“ auf Seite 272).



Inspection, care and maintenance

Trailers must be inspected as frequently as required, but at least once a year, by an authorised / qualified specialist to ensure that they are in a roadworthy condition.

This applies also to all components associated with the securing of the load in accordance with VDI 2700 and/or EN 12642.

For safety reasons, all important mechanical components must be tested and serviced at regular intervals.

These include:

- Axles
- Brakes
- screws,
- pipe connections,
- attachments,
- electrical system.

You can find the regular intervals in "Maintenance intervals", Page 234.



- Always observe the accident prevention regulations when performing maintenance work.
- Observe environmental conservation guidelines.
- Switch off the engine before starting all maintenance work.
- Damaged fifth wheel couplings / king pins should never be repaired; instead, they should be replaced with new parts.
- Damaged and non-functioning trailer components must be replaced with original HUMBAUR GmbH spare parts.

Certificate of general inspection/ safety assessment



Fig. 1 Inspection log book for trailer

HU = General inspection
SP = Safety assessment

- ▶ Enter the completed general inspection/safety assessment (§29 para. 12 of StVZO).
- ▶ Keep the last inspection report (general inspection) and the last test log (safety assessment) at least until the next inspection/assessment (§29 para. 10 of StVZO).
- ▶ Keep the inspection log book until the vehicle is taken off the road for good (§29 para. 13 of StVZO).

Axle/wheel maintenance



Fig. 2 Maintenance log book for axle unit

ZU Intermediate inspection
HU = General inspection
BSU = Special brake inspection

- ▶ Have the legally stipulated visual inspections and maintenance work done by qualified workshops.
- ▶ Document the test in the service log book.

Support equipment maintenance



Fig. 3 Operating and service manual for support equipment

- ▶ Have the legally stipulated visual inspections and maintenance work done by qualified specialists.
- ▶ Document the test in the trailer inspection log book (Fig. 1).

Maintenance regulations

Maintenance includes regular controls of individual components and corresponding action based on checks.

The rhythm must be adapted to user behaviour.
There is a difference between the initial inspection after commissioning (Table 1 on page 234) and the regular inspection in daily operation (Table 2 on page 235).

Defective trailer parts must be replaced by original spare parts.

One-time maintenance work	after	50 km	2000 km	5000 km	6 months	6 years
Wheel nuts: Tightening (also after every tyre change)		X				
Brake system: Perform traction test			X			
Screw connections of spring leaks, shock absorber and axle connections: Visual inspection			X		X	
King pin/towing eye: Lubricating				X		
King pin/slewing ring Check if fixing bolts are secure				X		
Hydraulic lines/components: Check for leaks and replace if necessary						X

Tab. 1 Maintenance table, initial commissioning

Maintenance work	every	500 km or 14 days	1500 km or 30 days	5000 km or 3 months	10000 km or 6 months	20000 km or 12 months
Axle and wheel brake ^{*1} : Check state and wear						
Wheel nuts: Check they are secure and adjust if necessary		X			X	
King pin/towing eye/drawbar/slewing ring: Lubricating		X				X
Light system: Check for damage		X				
Wheels: Check air pressure, tyre wear		X				
Compressed air system: Check for leaks/crack formations			X			
Hydraulics system/hoses: Check for leaks/crack formations						X
Shock absorber/hydraulic cylinder: Check for escaping oil					X	
King pin/towing eye: Check for wear					X	
King pin/drawbar Check they are secure					X	
Line filter of the pressure system: Clean					X	
Brake system: Draining the compressed air tank		X				
All attachments: Check they are secure						X
Screw connections of spring leaks, shock absorber and axle connections: Visual inspection						X
Screws/riveted joints on body/chassis/ramps: Visual inspection						X



^{*1}: You will find information on the maintenance in the manufacturer's operating instructions

Tab. 2 Maintenance table

Tightening torques for screw connections

Name	Thread	Strength class	Tightening torque
Valve clamp (pneumatic control stage)	M 12	10.9	73 Nm
Mud guard clamp	M 8	8.8	10 Nm
Mud guard pipe	M 16	8.8	85 Nm
Side guard	M 12	10.9	73 Nm
Spare wheel holder, cage	M 12	10.9	73 Nm
Spare wheel holder, with winch	M 12	10.9	73 Nm
Spare wheel holder, with strap	M 12	10.9	73 Nm
Spare wheel holder, lifting nut	M 20	4.6	approx. 50 Nm
Spare wheel holder, tube nut	M 12	4.6	80 Nm
Seat support	M 16	10.9	265 Nm
Toolbox	M 12	10.9	73 Nm
Plastic lamp holder	M 10	10.9	30 Nm
Fixing screws, tail light			1.5 Nm

Tab. 3 Tightening torques for special attachments

Tightening torques for wheel nuts

Axle manufacturer	Thread	Wheel nuts	Tightening torque
BPW, SAF, GFA, WAP	Observe size	Observe version	<div>  See manufacturer's specifications </div>

Implementation instructions



Instructions for maintenance work on the following assemblies can be found in the manufacturer's operating and maintenance manuals:

- support equipment,
- Axles

Without a central lubrication system, all the following lubrication work has to be carried out.

Use only high-pressure grease guns that do not exceed a lubrication pressure of 250 bar. Damage can occur at bearing points, seals, etc. if the grease gun used does not have a safety mechanism.



CAUTION

Contact with lubricants

Lubricants can cause skin reactions.

- ▶ Only use approved lubricants.
- ▶ Clean lubrication nipples carefully before lubricating.



Use



after working with lubricants.

NOTICE

Dirty lubrication nipple

The bearing can get dirty.

Lubrication nipple and bearing points can get damaged.

- ▶ Clean the lubrication nipple before using it.

Lubricating grease

Lubrication point	Lubricant
- Fifth wheel coupling,	High pressure grease (EP) with MOS ₂ or graphite additive, e.g.:
- King pin,	- BP, L21 M or HTEP 1
- Fifth wheel pick-up plate,	- ESSO, multi-purpose grease M
- Landing gear	- Shell, Retinax AM
- Ball swivel bearing	- Rolling bearing lubrication, e.g. lithium grease, NLGI 2
Central lubrication system	Special grease, eg.: Texaco, Glis-sandro FL283

Semi-trailer connection (flatbed semi-trailer)



Fig. 4 Lubricating semi-trailer connection

- 1 King pin
- 2 Fifth wheel pick-up plate on the semi-trailer

► Smear with a long-term high pressure lubricant:

- Fifth wheel pick-up plate on the semi-trailer
- King pin
- The wear parts
- The wearing ring

The lubrication grooves of the fifth wheel coupling plate must be completely filled with grease.

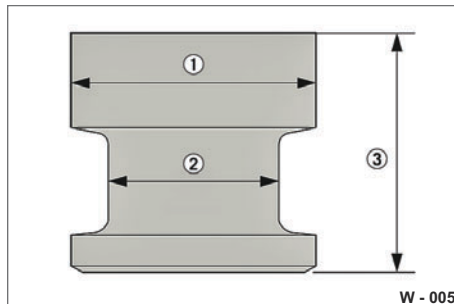


Fig. 5 King pin 50 (2")

- 1 Outer diameter
- 2 Inner diameter
- 3 Length

Wear inspection



You will find information on maintenance/care in the manufacturer's operating instructions.

- Check the dimensions of the king pin every 10,000 km and every half year:
 - 1) D= new 73 mm / min. 71 mm
 - 2) D= new 50.8 mm / min. 49 mm
 - 3) D= max. 84 mm / min. 82.5 mm
- Exchange the king pin after the wear limit has been reached.



Fig. 6 Fifth wheel pick-up plate

- 1 Wear parts
- 2 Fifth wheel pick-up plate
- 3 Wearing ring



DANGER

Adjusting fifth wheel coupling

The semi-trailer connection release - risk of accidents!

- Do not tighten the fifth wheel coupling to compensate for king pin wear.
 - Replace worn components immediately.
-
- Do wear tests every 10,000 km and every half year.

Towing eye connection (flatbed centre pivot plate)

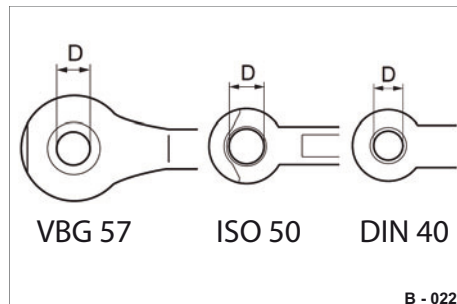


Fig. 7 Inner diameter of bushing

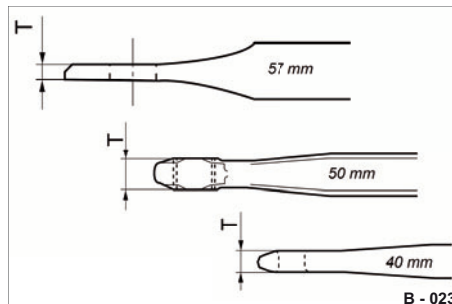


Fig. 8 Thickness of towing eye

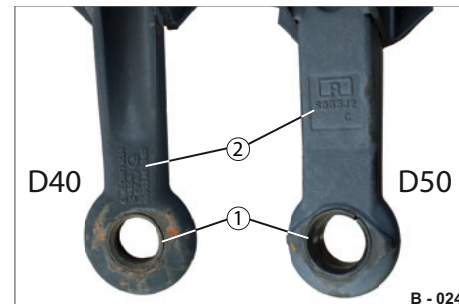


Fig. 9 Lubricating towing eyes/wear inspection

- 1 Wear bushing
- 2 Towing eye

Towing eye: Type	Diameter max. D (mm)	Thickness min. T (mm)
VBG 57	59,5	19
ISO 50	52	41,5
DIN 40	42	28

Tab. 4 Towing eye dimensions

- Clean the wear bushing (Fig. 8/1) and the towing eye (Fig. 8/2) with a clean, dry cloth.
- Check the diameter (D) of the wear bushing- see Tab. 4.
- When exceeding the maximum diameter values of:
42 mm / 52 mm or 59.5 mm,
the wear bushing must be replaced.

- Check the towing eye for damage.
- Lubricate the wear bushing (Fig. 9/1) and the rounded area of the towing eye (Fig. 9/2) with long-term high pressure lubricant.

Rotatable towing eye

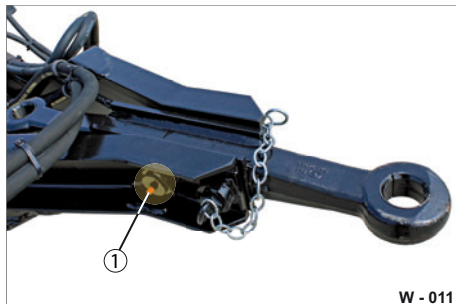


Fig. 10 Lubricating swivel axis

- 1 Lubrication nipple (with protective cap)

- ▶ Lubricate the swivel axis on the lubrication nipple (Fig. 10/1) with a grease gun until lubricant escapes.
- ▶ Turn the towing eye around a few times.
The grease spreads out into the swivel axis.
- ▶ Clean the escaping/excess lubricant with a cloth.
- ▶ Close the lubrication nipple with the protective cap.

Support props, mechanical

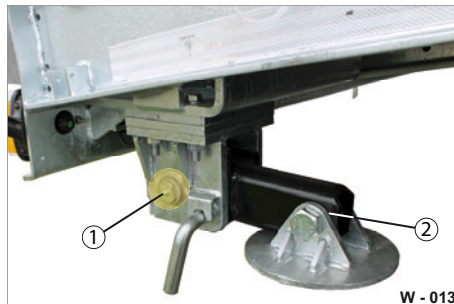


Fig. 11 Lubricating support props

- 1 Lubrication nipple
2 Bearing for support foot

- ▶ Lubricate the support foot on the lubrication nipple (Fig. 11/1) with a grease gun until lubricant escapes.
- ▶ Lubricate the bearing point (Fig. 11/2) on both sides with machine lubricant.
- ▶ Turn the support foot up and down a few times.
The grease spreads out.
- ▶ Clean the escaping/excess lubricant with a cloth.

Support props, hydraulic



Fig. 12 Lubricating support props

- 1 Lubrication nipple
2 Ball bearing for support foot

- ▶ Lubricate the support foot on the lubrication nipple (Fig. 12/1) with a grease gun until lubricant escapes.
- ▶ Turn the support foot back and forth to the side.
The grease spreads out.
- ▶ Clean the escaping/excess lubricant with a cloth.

Height setting device



Fig. 13 Lubricating height setting

- 1 Lubrication nipple
- 2 Spindle, upper

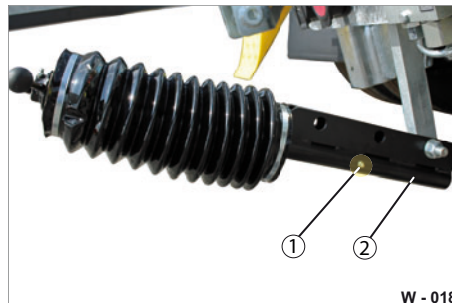


Fig. 14 Lubricating height setting

- 1 Lubrication nipple
- 2 Spindle, lower

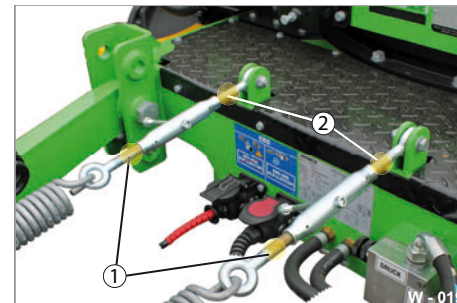


Fig. 15 Lubricating height setting

- 1 Threaded bolt, lower
- 2 Threaded bolt, upper

► Lubricate the swivel axis on the upper spindle (Fig. 13/1) with a grease gun until lubricant escapes.

► Lubricate the swivel axis on the lower spindle (Fig. 14/1) with a grease gun until lubricant escapes.

► Move the height adjustment up and down.

The grease spreads out.

► Clean the escaping/excess lubricant with a cloth.

► Clean the threaded bolt with a clean cloth.

► Lubricate the threaded bolt (Fig. 15/1 & Fig. 15/2) all around with machine lubricant.

► Move the height adjustment up and down.

The grease spreads out.

► Clean the escaping/excess lubricant with a cloth.

Ball swivel bearing (centre pivot plate)

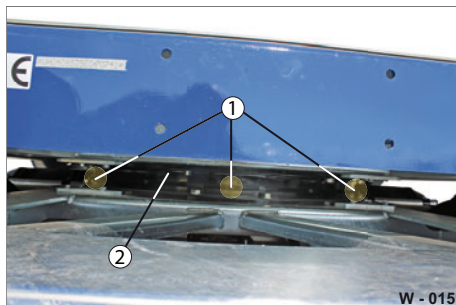


Fig. 16 Lubricating ball swivel bearing

- 1 Lubrication nipple (6x, all around)
- 2 Bearing gap

- Clean the lubrication nipple and the bearing gap (Fig. 16/2) with a clean cloth.
- Lubricate the ball swivel bearing (with rolling bearing lubrication) on the lubrication nipple (Fig. 16/1) with a grease gun until lubricant escapes from the bearing clearance.
- Turn the slewing ring and lubricate all 6 points.
The grease spreads out.
- Clean the escaping/excess lubricant with a cloth.

- Close the lubrication nipple with the protective cap.

Hydraulic cylinder bearing

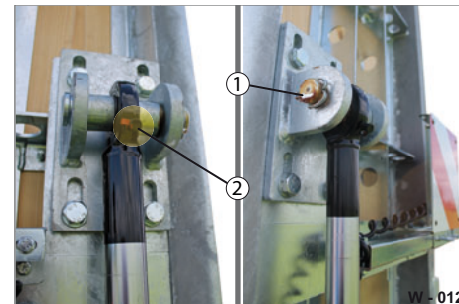


Fig. 17 Upper ramp bearing point, hydraulic cylinder

- 1 Pin
- 2 Lubrication nipple (with protective cap)

- Lubricate the bearing on the lubrication nipple (Fig. 17/2) with a grease gun until lubricant escapes.
- Lubricate the pins (Fig. 17/1) with machine lubricant.
- Clean the escaping/excess lubricant with a cloth.
- Close the lubrication nipple with the protective cap.

Suspended lifting gear bearing



Fig. 18 Upper ramp bearing point,
suspended lifting gear

1 Pin

- ▶ Clean the pin with a clean cloth.
- ▶ Lubricate the pin (Fig. 18/1) with machine lubricant.
- ▶ Clean the escaping/excess lubricant with a cloth.

Ramps

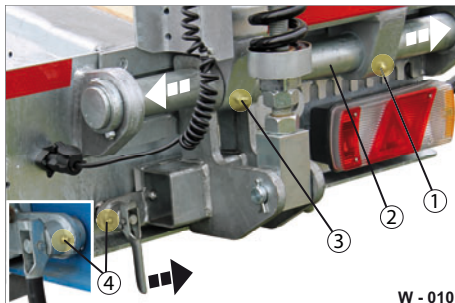


Fig. 19 Lubricating ramp bearing

- 1 Lubrication nipple
- 2 Pin bearing points
- 3 Lubrication nipple
- 4 Lubrication nipple, lever

- ▶ Clean the lubrication nipple and pin with a clean cloth.
- ▶ Lubricate the bearing on the lubrication nipple (Fig. 19/1,3,4) with a grease gun until lubricant escapes.
- ▶ Lubricate the pin bearing points (Fig. 19/2) with machine lubricant.
- ▶ Move the ramps from side to side. Raise and lower the ramps. The grease spreads out.

Turnbuckle

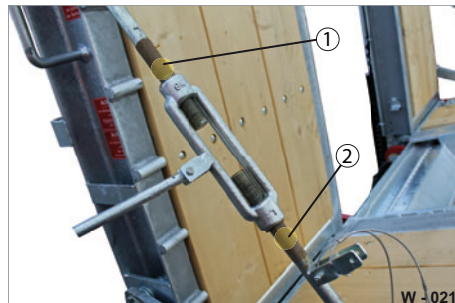


Fig. 20 Lubricating turnbuckle

- 1 Threaded rod, upper
- 2 Threaded rod, lower

- ▶ Clean the threaded rod with a clean cloth.
- ▶ Lubricate the threaded rod (Fig. 20/1,2) with machine lubricant.
- ▶ Close and open the turnbuckle several times. The grease spreads out.
- ▶ Clean the escaping/excess lubricant with a cloth.

Two-piece ramps



Fig. 21 Lubricating bearing points

- 1 Pin bearing points
- 2 Transfer mechanic bearing points

- ▶ Clean the bearing points with a clean cloth.
- ▶ Lubricate the bearing points (Fig. 21/1 & Fig. 21/2) on both sides with machine lubricant.
- ▶ Raise and lower the ramps. The grease spreads out.
- ▶ Clean the excess lubricant with a cloth.

Wheel cavities

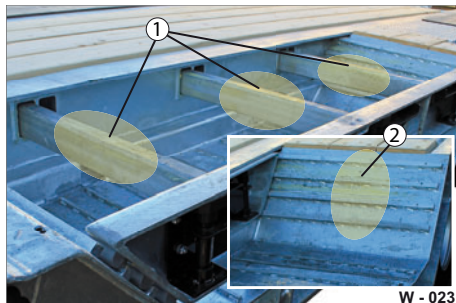


Fig. 22 Lubricating sliding points

- 1 Sliding rod
- 2 Guides

- ▶ Clean the sliding points with a clean cloth.
- ▶ Lubricate the bearing points (Fig. 22/1,2) on both sides with machine lubricant.
- ▶ Move the wheel cavity frame in and out several times.
The grease spreads out.
- ▶ Clean the excess lubricant with a cloth.

Folding booms



Fig. 23 Lubricating bearing points

- 1 Bearing points

- ▶ Clean the sliding points with a clean cloth.
- ▶ Lubricate the bearing points (Fig. 23/1 & Fig. 24/1) with machine lubricant.
- ▶ Move the folding booms in and out several times.
The grease spreads out.
- ▶ Clean the excess lubricant with a cloth.



Fig. 24 Lubricating bearing points

- 1 Bearing points

- ▶ Remove the folding booms if they are very dirty.
- ▶ Clean the bearing points.
- ▶ Install the folding booms.

Container locking point

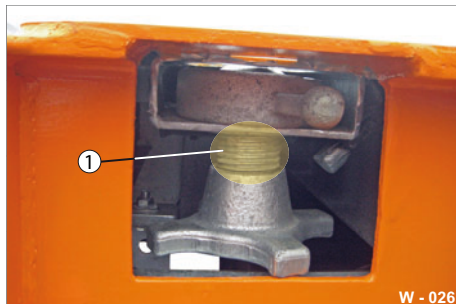


Fig. 25 Lubricating thread

1 Threaded pin

- ▶ Clean the threaded pin with a clean cloth.
- ▶ Lubricate the threaded rod (Fig. 25/1) with machine lubricant.
- ▶ Screw the locking point in and out several times.
The grease spreads out.
- ▶ Clean the excess lubricant with a cloth.

Drawbar bearing

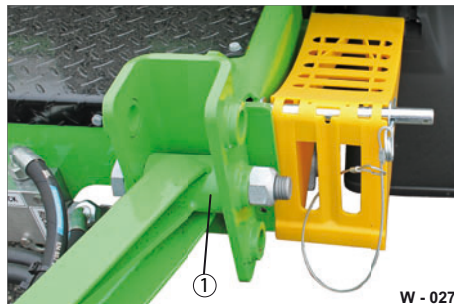


Fig. 26 Drawbar bearing point

1 Bearing pin

Grease filling is applied to the bearing point at the factory. The bearing pin is stored in silent bushes.

Regular lubrication is not necessary

- ▶ When doing repairs on the drawbar bearing, fill the bearing points with lubricant.
- ▶ Clean the excess lubricant with a cloth.

Axles/wheel suspension/spring system

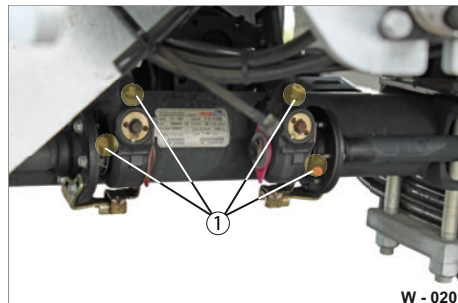


Fig. 27 "SAF" axle unit

- 1 Lubrication points (lubrication nipple)



You can find the service documents of the axle unit manufacturer in the maintenance work/lubrication plan.

- Lubricate the components regularly.

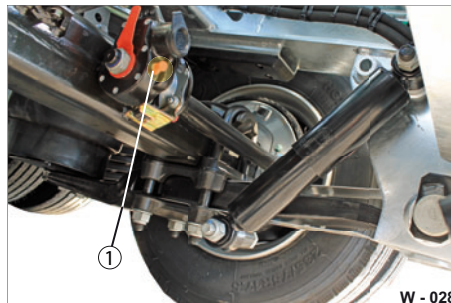


Fig. 28 "BPW" axle unit

- 1 Lubrication points (lubrication nipple)



Performing and documenting repair work is required by law.

- Document the maintenance and repair work in the service documents or in the inspection log book.

Maintaining hydraulics system

Trailers with hydraulics systems require special maintenance.



Maintenance/repair work on hydraulics systems must be done only by qualified specialists.

Observe the national regulations, e.g. BGR 237 on handling/maintaining/repairing hydraulic components.



WARNING

Lines are under pressure

These are under pressure when decoupling the hydraulic lines.

The oil can escape under high pressure and cut people and lacerate skin.

- Before doing repair work on the hydraulics, check that the lines are depressurised and the towing vehicle is switched off.



► Use

Hydraulic connections

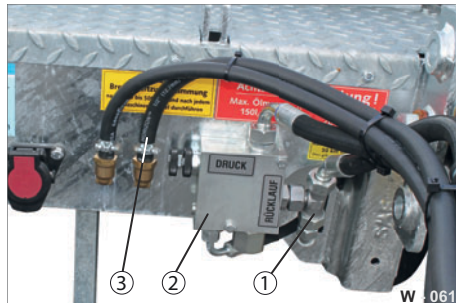


Fig. 29 Checking/maintenance of connections

- 1 Connection points/screw fittings
- 2 Hydraulic oil distributor
- 3 Hoses

- Check all hydraulic connection points (Fig. 29/1) for leaks (oil loss) and tight fit.
- If necessary, clean escaping oil from the hydraulic components.
- Replace defective hydraulic components, e.g. distributor (Fig. 29/2) immediately.
- Check the hoses (Fig. 29/3) for crack formations/deformation.

- Replace the hoses after about 6 years.

Hydraulic cylinder

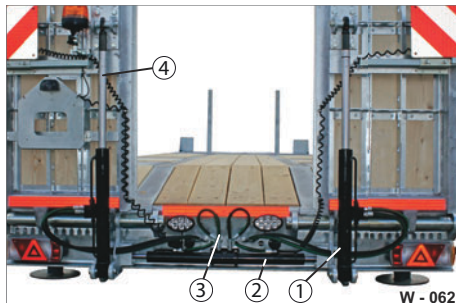


Fig. 30 Checking/maintenance of cylinders

- 1 Cylinder, vertical
- 2 Cylinder, horizontal
- 3 Hoses/distribution

- Check the cylinders (Fig. 30/1,2) for leaks (oil loss) and tight fit.
- If necessary, clean escaping oil from the hydraulic components.
- Replace defective cylinders/distributors immediately.
- Check the hoses (Fig. 30/3) for crack formations/deformation.
- Replace the hoses after about 6 years.

Suspended lifting gear

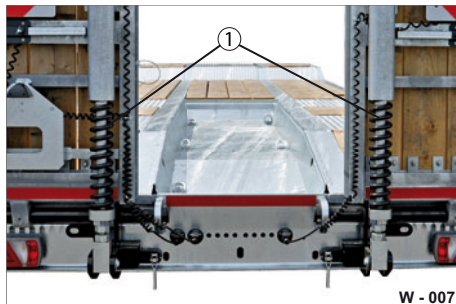


Fig. 31 Suspended lifting gear for ramps

- 1 Springs

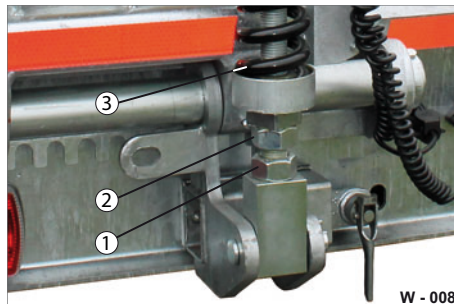


Fig. 32 Spring, factory setting

- 1 Adjusting screw
2 Lock nut
3 Spring

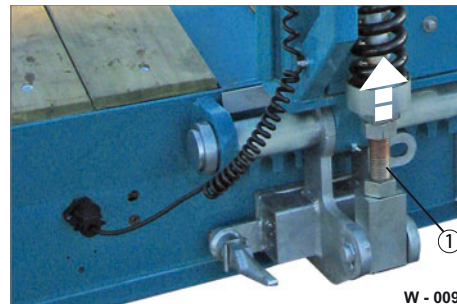


Fig. 33 Spring, tightened

- 1 Adjusting screw



The springs sit up to 50 mm in a new trailer

The springs were set tighter at the factory.

The ramps should be folded down for about 24 hours in a new vehicle.

The spring tensioning force will decrease over time.

Tightening springs

- ▶ Tighten both springs if the tensioning force subsides.
- ▶ Release the lock nuts (SW 56) (Fig. 32/2).
- ▶ Screw the adjusting screw (Fig. 32/1) anti-clockwise. The spring is tightened.
- ▶ Tighten the lock nut.

- ▶ Let down the ramps and check that enough tensioning force is created for lifting or releasing.
- ▶ Adjust the springs if the tensioning force is insufficient or too high.
- ▶ Have the springs replaced after about 3 years or if the tensioning force is too weak.

Tyre types

			Tyre pressure in bar (psi) maximum pressure (kg)											
Type	Load bearing capacity (index)	Tyre equipment	3,00 (44)	3,25 (47)	3,50 (51)	3,75 (54)	4,00 (58)	4,25 (62)	4,50 (65)					
215 R 14 C	112	Single	1620	1725	1830	1935	2040	2140	2240					
	110	Twin	3065	3270	3470	3665	3860	4050	4240					
225/70 R15C	112	Single		1750	1830	1935	2040	2140	2240					
	110	Twin		3270	3460	3660	3860	4050	4240					
			Tyre pressure in bar (psi) maximum pressure (kg)											
			6,50 (94)	6,75 (98)	7,00 (102)	7,25 (105)	7,50 (109)	7,75 (112)	8,00 (116)	8,25 (120)	8,50 (123)	8,75 (127)	9,00 (131)	
215/75 R17.5	135	Single	3520	3630	3730	3840	3940	4050	4150	4260	4360			
	133	Twin	6650	6850	7050	7250	7450	7650	7850	8050	8240			
235/75 R17.5	143	Single		4430	4460	4580	4710	4840	4960	5080	5200	5330	5450	
	141	Twin		8180	8420	8660	8900	9140	9370	9610	9840	10070	10300	
			Tyre pressure in bar (psi) maximum pressure (kg)											

			Tyre pressure in bar (psi) maximum pressure (kg)										
			4,50 (65)	5,00 (73)	5,50 (80)	6,00 (87)	6,50 (94)	7,00 (102)	7,50 (109)	8,00 (116)	8,50 (123)	8,75 (127)	9,00 (131)
245/75 R17.5	136	Single	2690	2960	3160	3390	3610	3835	4050	4265	4480		
	134	Twin	5095	5545	5985	6415	6840	7260	7670	8075	8480		

Tab. 5 Tyre pressure/max. load

Tyre tread / Tyre pressure

Tyre fitting should only be carried out by trained technical personnel.

**WARNING****Driving with degraded tread /incorrect tyre pressure**

The tyres can burst during the journey - risk of accidents!

- ▶ Do regular tyre checks.
- ▶ Check the tyre pressure, profile and overall condition of the tyres.

NOTICE**Driving with incorrect tyre pressure**

The tyres wear excessively.

- ▶ Check that the tyres have the correct pressure before departing or at least every 14 days.

- ▶ Check the tyre pressure of all tyres regularly (see Page 253). Tyre pressures should be checked when the tyres are cold (before starting journey or after lengthy break from driving).
- ▶ See the tyre type table (Page 251) for the tyre equipment of the trailer to find the correct tyre pressure. If the tyre type used is not listed, please directly contact the tyre manufacturer.
- ▶ Inflate the spare wheel to highest tyre pressure used on the trailer.
- ▶ Check the tyre tread in the middle area of the tyre (a minimum of 1.6 mm is stipulated in Germany).
- ▶ Visually inspect the entire tyre. Note crack formations and foreign objects. Recommendation: The tyres should be changed after every 6 years of use.

Wheel nuts**WARNING****Wheel nuts loosen**

Wheels can fall off during the journey - risk of accidents!

Wheel nuts that are tightened to an excessive torque can break and result in loss of a wheel.

- ▶ Check that the wheel nuts are secure on a regular basis.
- ▶ Re-tighten the wheel nuts: after the first hour of service (50 km), after the first trip with a load (max. 500 km) and after the first 5,000 km, then after every 100 hours of service.
- ▶ When using new or freshly painted rims, always additionally re-tighten wheel nuts after 20 to 100 hours of service.
- ▶ Tighten the wheel nuts in opposite pairs.
- ▶ Note the required tightening torques of the axle manufacturer (see Page 236).

Wheel changing



DANGER

Carelessness on the road

You can hinder the flow of traffic when changing tyres - risk of accidents!

Moving vehicles could hit you!

- Secure the location on the road.
- Set up a warning triangle.



► Use



► Use



WARNING

Unsecured wheels

Unsecured wheel can roll away - risk of accidents!

Persons can be hit by the wheels.

- Secure the removed wheels from rolling away.
- Also make sure that traffic is not blocked.



WARNING



Unsecured trailer

The trailer can start moving and tip over - danger of accidents!
Persons can be hit or run over.
The trailer can slip off the lifting device and fall - risk of crushing!

- Use wheel chocks before coupling to prevent the trailer from rolling.
- Only use approved lifting device when working on the trailer.
- Check that the trailer is on flat and level ground before changing the wheel.



CAUTION



Hot brakes

You can burn yourself on hot brake disks/drum brakes when changing a wheel.

- Let the brakes cool off before changing the wheel.

Always observe the following:

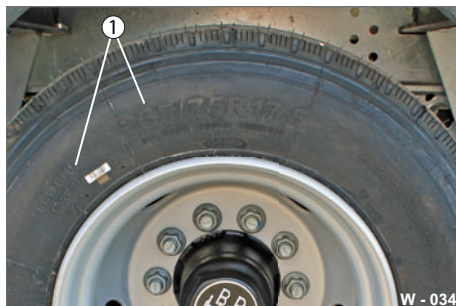


Fig. 34 Tyres/wheels:

- 1 Technical specifications
- Only use the prescribed rims and tyre sizes.
 - Observe the prescribed tyre carrying capacity and speed index.
 - Observe the direction of rotation of the wheels.
 - Dual tyre pairs should have the same tread
 - Check tyre pressure after changing the tyre
 - Replacing damaged wheel bolts.
 - Wheel nuts: tighten (see Page 236 & Page 253)

Securing the trailer




Fig. 35 Secure the vehicle

- 1 Wheel chocks
- ▶ Apply the towing vehicle parking brake.
 - ▶ Engage the trailer service brake.
 - ▶ Also use wheel chocks to secure the trailer and prevent it from rolling off (Fig. 35/1).

Putting lifting device into position



Fig. 36 Putting lifting device into position

- 1 Axle tube
 - 2 Area for lifting device
 - 3 Tyre
- ▶ Set the lifting device on firm ground or use a firm support.
 - ▶ Position the lifting device as far outside as possible, in the lifting device area (Fig. 36/2) under the axle tube (Fig. 36/1).
- 

- ▶ You can find the exact lifting point in the operating/maintenance instructions of the respective axle unit manufacturer.

Replacing defective tyre

- ▶ Get the spare tyre.
- ▶ Unscrew the nuts of the defective tyre.
- ▶ Carefully pull the tyre off the axle.
- ▶ Carefully set the spare tyre on the axle
 - do not damage the wheel bolts - and screw them by hand with the same nuts.
- ▶ Screw the nuts on with a torque wrench, in a crosswise sequence if possible.
 - Observe the stipulated tightening torque.
- ▶ Carefully set down the trailer.
- ▶ Carefully stow away the defective tyre on the loading platform.
- or
- ▶ Put the defective tyre in the spare tyre holder.
- ▶ Carefully stow away any tools/lifting equipment used.

Spare wheel storage

Adhere to the following regulations, safety rules and principles when maintaining and checking spare wheel holders:

- Road traffic regulations (StVO in Germany).
- Accident prevention regulations - vehicles (BGV 12).
- Technical: Principles for the testing of vehicles by driving personnel (BGG 915) and (ZH 1/282.1).

Supplying spare wheel



- ▶ Obtain help from another person - wheels are heavy!
- ▶ Removing the spare wheel siehe „Spare wheel storage“ auf Seite 119.

Alloy wheels

Lubricants for the hubs



Alloy wheels are only approved for hub centring.

Approved lubricant

- "Freylube"
- "Rocol MG"
- "Esso (Moly)" or
- similar lubricants

These lubricants prevent the wheel and hub from sticking together. The surfaces of the hub and wheel must be smooth, flat and clean.

No conical or spherical nuts may be used.

Only fit the supplied valves or those with nickel or chrome plating.

- ▶ Only lubricate the hubs with the approved lubricants when changing a tyre.

Fixings, lines, Cable clips

- ▶ Thoroughly clean the dirty trailer.
- ▶ Remove rust from fixings.
- ▶ Check the plug connections of the electrical connections.
- ▶ Replace damaged lines and cable clips.
- ▶ Replace the hydraulic hoses every 6 years.



Brake systems are safety-relevant components.

- Adhere to the road traffic licensing regulations (StVZO in Germany).
- Main inspections must only be conducted by accredited workshops
- Have the braking system checked and serviced regularly.
- Work on the brake system may only be carried out by qualified specialists with the appropriate levels of knowledge and experience.
- Any faults found in the braking system must be repaired immediately by a brake service workshop
- The settings made in the factory to the brake valves must not be modified
- When replacing brake linings use only approved brake linings.

Wheel brake



Fig. 37 Brake system



The maintenance and repair work to be done on wheel brakes is described in the manufacturer's documentation for the relevant axle.

When changing the brake linings use only the same brake linings as fitted originally or those approved "Brake Linings" listed in the constructional description.

Using any other brake linings will invalidate the operating permit.

Warranty claims against the brake or trailer manufacturer will also be void.

Compressed air system

WARNING

Condensate in the compressed air system

The braking system may malfunction or fail - risk of accident!

- Regularly drain the compressed air system.

CAUTION

Escaping pressurised air

Actuating the drain valve causes a lot of noise.

This can cause tinnitus and hearing damage.



► Use

With automatic water drain valves, manual water draining/bleeding is not required.

The maintenance work described below must be performed conscientiously by the driver before each journey.

Compressed air tank

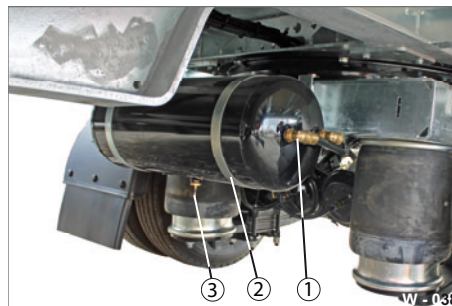


Fig. 38 Chassis underside

- 1 Screw fittings, hose/pipes
- 2 Holders
- 3 Operating pin



On trailers fitted with manual drainage valves, the tanks must be regularly drained and leaking drainage valves must be replaced (see Page 95).

- Check that the screw fittings (Fig. 38/1) are secure.
- Tighten non-tight screw fittings or replace them.
- Replace damaged hoses and pipes (Fig. 38/2).

Clean Duo-Matic coupling

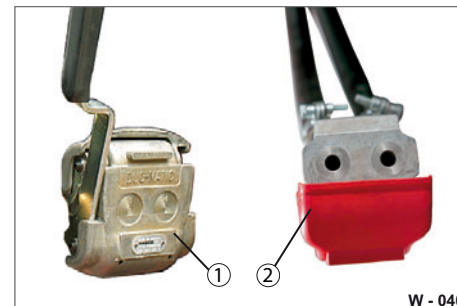


Fig. 39 Coupling head disassembled

- 1 Coupling (socket)
- 2 Coupling head (plug)



The Duo-Matic coupling for "supply, brake" must be regularly cleaned (see Table 2 on page 235).

- Clean the sealing surfaces of the coupling head (Fig. 39/2) and the coupling socket (Fig. 39/1) with a clean, dry cloth.
- Replace the coupling head if damaged.

Cleaning coupling heads

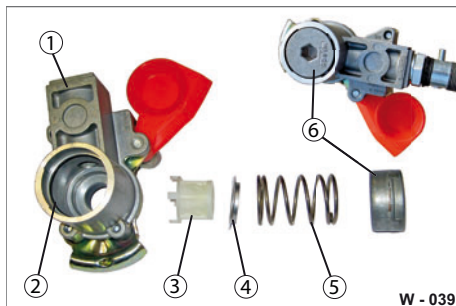


Fig. 40 Coupling head disassembled

- 1 Housing
- 2 Seal
- 3 Filter
- 4 Metal ring
- 5 Spring
- 6 Lid



The coupling heads for "supply, brake" with filter insert must be regularly cleaned (see Tabelle 2 on page 235).

Disassembling

- ▶ Press in the cover (Fig. 40/6) with a hexagon socket up to the limit position in the housing (Fig. 40/1). Turn the hexagon socket key by 90°.

The cover opens.

- ▶ Remove the spring (Fig. 40/5), the metal ring (Fig. 40/4) and the filter (Fig. 40/3) from the housing.
- ▶ Clean the housing with a clean, dry cloth.
- ▶ Clean the filter.
Replace the filter in the event of major contamination or damage.
- ▶ Check if the seal (Fig. 40/2) is present or damaged.
Replace damaged seals.
- ▶ Lubricate the seal with a bit of grease.

Assembly

- ▶ Insert the metal ring into the spring with the edge downwards.
- ▶ Place the filter into the spring with the filter body downwards.
- ▶ Plug the spring into the housing.
- ▶ Press the cover downwards with a hexagon socket until the limit position. Turn the hexagon socket key by 90°.
The coupling head is ready for use.

Cleaning line filter

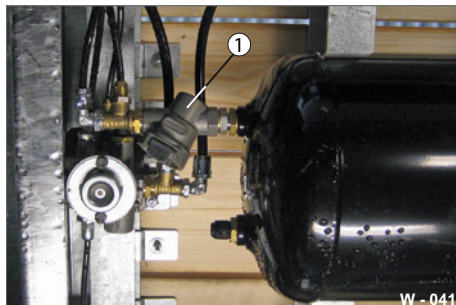


Fig. 41 Line filter for compressed air system

1 Line filter



The line for the compressed air system must be cleaned every 5,000 km or every 3 months.



CAUTION

Opening the cover

The cover is pre-tensioned with a spring and can fly upwards - risk of striking!

► Open the cover carefully.

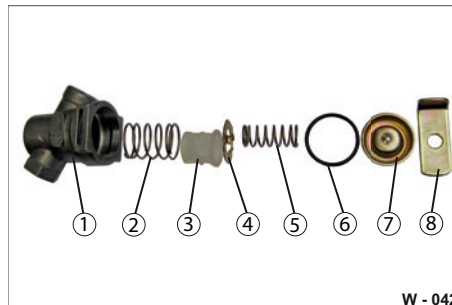


Fig. 42 Line filter disassembled

- 1 Filter housing
- 2 Large spring
- 3 Filter
- 4 Intermediate plate
- 5 Small spring
- 6 Seal
- 7 Lid
- 8 Bracket

Disassembling

- Press the cover (Fig. 41/8) downwards with a screwdriver and pull out the bracket (Fig. 41/9).
- Remove both springs (Fig. 41/3 & Fig. 41/6), the seal (Fig. 41/7), the intermediate plate (Fig. 41/5) and the filter (Fig. 41/4).
- Clean the filter housing (Fig. 41/2) with a clean, dry cloth.
- Clean the filter (Fig. 41/4). Replace the filter in the event of major contamination or damage.
- Check if the seal (Fig. 41/7) is present or damaged. Replace damaged seals.
- Lubricate the seal with a bit of grease.

Assembly

- ▶ Insert the intermediate plate into the filter housing with the latches pointing upwards.
- ▶ Set the small springs (Fig. 41/6) on the latches of the intermediate plate.
- ▶ Set the cover (Fig. 41/8) on top.
- ▶ Press the cover into the filter housing and slide the bracket through the perforations in the filter housing.

Operating emergency trigger device

In the event of a pressure failure in the brake system, the pre-tensioned spring is released, and this triggers automatic braking.

Operation of the emergency release device disables the braking system of the trailer.

For repair purposes, the spring-loaded diaphragm cylinders can be triggered manually (emergency trigger device).



WARNING



Activated emergency trigger device

If the emergency trigger device is activated, the brake system of the trailer is suspended.

Persons can be hit or run over by the trailer.

- Use wheel chocks to prevent the trailer from rolling.
- Only actuate the emergency release system on even ground.



WARNING



Unbraked trailer

If the emergency trigger device is activated, the brake system of the trailer is suspended.

The towing vehicle brakes are insufficient for stopping the vehicle train.

- Drive the loaded trailer no faster than walking speed (4 km/h).



CAUTION

Pre-tensioned spring under pressure

When opening the spring-loaded membrane cylinder, the pre-tensioned spring can be ejected - risk of striking!

- Only allow repairs to the spring-loaded diaphragm cylinder to be carried out by HUMBAUR GmbH or an approved HUMBAUR GmbH workshop.

Emergency trigger device (Version 1)

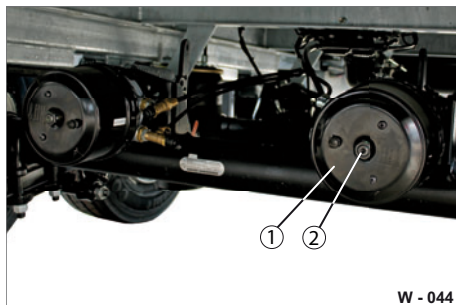


Fig. 43 Chassis underframe

- 1 Spring-loaded diaphragm cylinder
- 2 Release screw

When the pressure in the system falls below 5.2 bar, you can manually release the parking brake individually for each wheel.

The release screw (Fig. 43/2) is firmly integrated in the membrane cylinder.

A suitable tool for operating the emergency release device (Fig. 43/2) must be carried in the toolbox in the towing vehicle.

Releasing parking brake

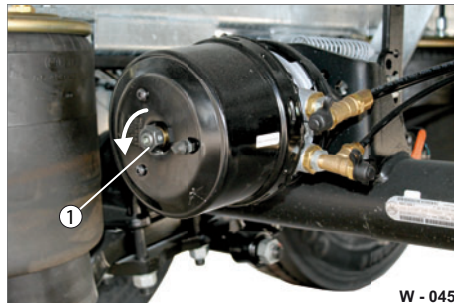


Fig. 44 Releasing parking brake

- 1 Release screw

- Unscrew the release screw (Fig. 44/1).
The release screw unscrews itself - the spring is tightened.
- Release the parking brake, see spring-loaded membrane cylinder.

Deactivating emergency release function



Fig. 45 Releasing spring tension



Before restoring pressure to the brake system (before departing), you must release the spring-loaded cylinders.

- Screw on the release screw (Fig. 44/1).
The release screw screws itself in - the spring is relaxed.
- Deactivate the emergency release function for all spring-loaded membrane cylinders.
The trailer can be braked with the spring-loaded parking brake.

Emergency trigger device (Version 2)

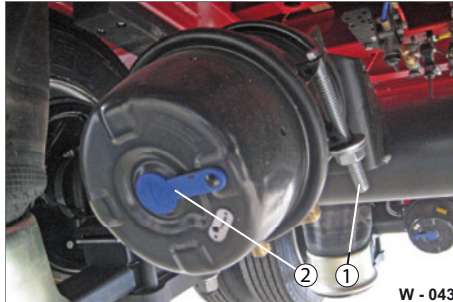


Fig. 46 Spring-loaded diaphragm cylinder

- 1 Release screw
- 2 End cap (bore hole)

When the trailer is ready to be driven, the release screw (Fig. 46/1) must be fixed in place in a location provided for the purpose.

The end cap (Fig. 46/2) covers the hole in the cover of the spring accumulator diaphragm cylinder.

Releasing parking brake

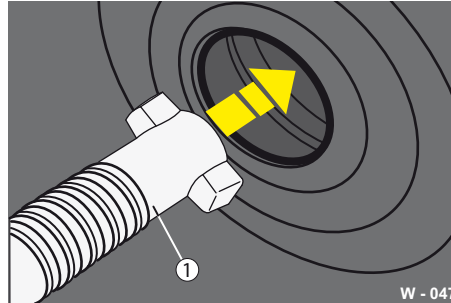


Fig. 47 "Keyhole" aperture

- 1 Release screw

- ▶ Insert the release screw (Fig. 47/1) through the hole in the cover at the back into the "keyhole" aperture.
- ▶ Turn the release screw by 90°.
- ▶ Slide on the washer (Fig. 48/1).
- ▶ Screw the hexagonal nut (Fig. 48/2) onto the release screw (Fig. 48/3).
- ▶ Continue to turn this so that the release screw is drawn out.

Deactivate the emergency release device

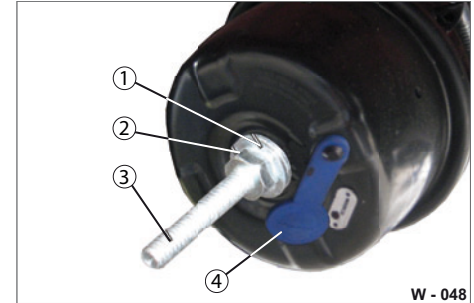


Fig. 48 Releasing spring tension

- 1 Washer
 - 2 Hexagonal nut
 - 3 Release screw
 - 4 End cap
- ▶ Unscrew the hexagonal nut (Fig. 48/2).
 - ▶ Remove the washer (Fig. 48/1).
 - ▶ Turn the release screw (Fig. 48/3) by 90° and remove it.
 - ▶ Fix the release screw to the diaphragm cylinder in the location provided (see Fig. 46).
 - ▶ Close the hole with the end cap (Fig. 46/2).



CAUTION



Short-circuit in the electrical system

Peoples may suffer burns.
Short circuits could light the trailer on fire.

Before working on the electrical system always:

- ▶ Disconnect all plug-in connections to the towing vehicle.



- ▶ Unplug all connections to external power supplies.
- ▶ Switch all consumers off.
- ▶ Disconnect the negative terminal (-) on the battery. Use insulated tools.
- ▶ Only allow qualified specialists to do work on electrical systems.

NOTICE

Contamination during installation

Electrical elements, lights can become contaminated during installation when touched with bare fingers or a dirty work environment.

Contacts can malfunction.

- ▶ Only do electrical work in protected areas - protect equipment from water.



- ▶ Do not touch the new lamp with your bare fingers - this significantly reduces the lifetime of the lamp.
- ▶ Use clean gloves or a clean, dry cloth when handling lamps/lights, or use the lamp packaging.

Lighting terminal diagram



WARNING

Insufficient lighting

Increased risk of accident due to failure of vehicle lighting.

- ▶ Before setting off, check the:
 1. Tail lights
 2. Number plate lights
 3. Side marking lights
 4. Limit lights
- ▶ Replace faulty lights.
Use lights of the type and power listed in the tables below.

Lights

Function	DIN desc.	Cap type	Output (W)
Side marking light / rear reflector light (orange)		LED	
Limit light (white)		LED	
Peripheral light/outline marker (red/white/yellow)	R5W	Ba9s	5
Working light (headlight)		LED	
Rear lights			
Indicator	P21W	Ba15s	21
Brake light	P21W	Ba15s	21
2 x tail lights	R10W	Ba15s	10
Reversing light	P21W	Ba15s	21
Rear fog lights	P21W	Ba15s	21

Tab. 6 Lamp type

Replacing lights

Tail light

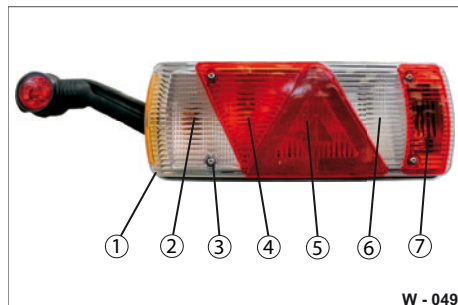


Fig. 49 Rear light components

- 1 Outer light lens
- 2 Rear fog lights
- 3 4x fixing screws
- 4 Reversing light
- 5 Tail lights with reflectors
- 6 Brake light
- 7 Indicator



The electrical system must be switched off before beginning work.

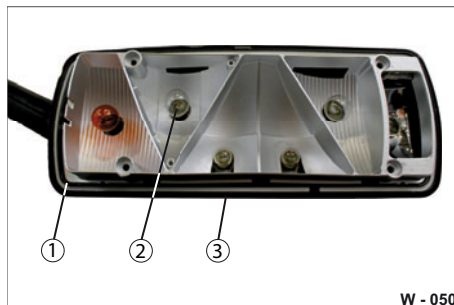


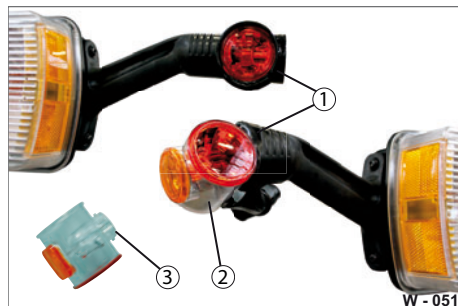
Fig. 50 Tail light open

- 1 Seal
- 2 Lamp
- 3 Housing

- ▶ Unscrew the 4 fixing screws (Fig. 49/3).
- ▶ Remove the outer light lens (Fig. 49/1). Remove them carefully.
- ▶ If necessary, clean the housing interior of dirt.
- ▶ Clean the contacts.
- ▶ Unscrew the defective lamp.
- ▶ Screw in the new lamp.

- ▶ Check that the lamp is secure.
- ▶ Set the outer light lens close to the housing (Fig. 50/3).
- ▶ Ensure that the seal is correctly seated (Fig. 50/1). Replace damaged/ripped seals.
- ▶ Screw on the fixing screws (Fig. 49/3). Tighten the screw connections with max. 1.5 Nm tightening torque. Cracked light lenses must be replaced.
- ▶ Monitor the connections/cable connections.

Replacing a peripheral light

**Fig. 51** Pulling off the rubber arm

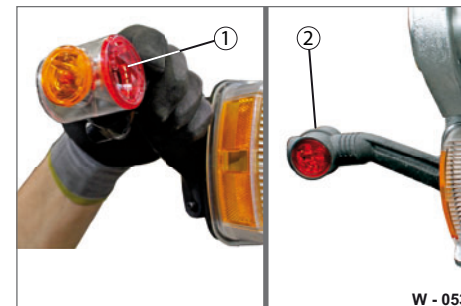
- 1 Rubber arm cover
- 2 Lamp body
- 3 Screw fitting

- ▶ Spray an ample amount of silicon spray on rubber arm coating (Fig. 51/1) - this makes turning up and down easier.
- ▶ Remove the rubber arm coating (Fig. 51/1) from the lamp (Fig. 51/2) using a slotted screwdriver.
- ▶ Loosen the screw connection (Fig. 51/3) and remove the lamp (Fig. 51/2).

**Fig. 52** Replacing lamp

- 1 Lamp
- 2 Socket

- ▶ Unscrew the defective lamp (Fig. 52/1).
- ▶ Screw in the new lamp.

**Fig. 53** Turning up rubber arm

- 1 Lamp
- 2 Rubber arm cover

- ▶ Screw on the lamp (Fig. 53/1) with the screw fitting (Fig. 51/3). Ensure that the seal is fitted correctly.
- ▶ Put the rubber arm (Fig. 53/2) over the lamp.
- ▶ Check the peripheral light for damage. Damaged peripheral lights must be completely replaced.

Licence plate light

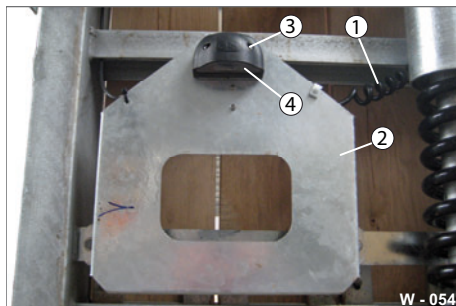


Fig. 54 Number plate holder

- 1 Connection cable
- 2 Number plate holder
- 3 Fastening bolt
- 4 light

The licence plate light is attached directly above the licence plate holder.

- ▶ Loosen the fixing screws (Fig. 54/3).
- ▶ Open the lamp carefully.
- ▶ Replace the lamp (Fig. 54/4).
- ▶ Close the folding lamp.
- ▶ Screw on the fixing screws.

Side marking light

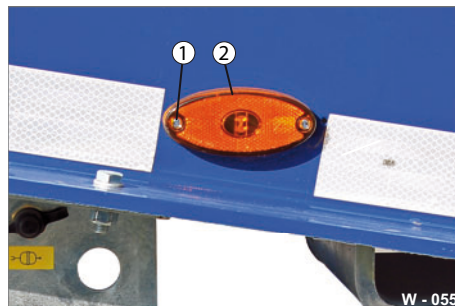


Fig. 55 Side marking light

- 1 Fastening bolt
- 2 LED light (orange)

A defective LED light must be completely replaced.

- ▶ Loosen the fixing screws (Fig. 55/1).
- ▶ Remove the LED light (Fig. 55/2) - remove connection.
- ▶ Insert the new LED light.
- ▶ Screw in the fixing bolts securely, but not too tightly.

Limit light

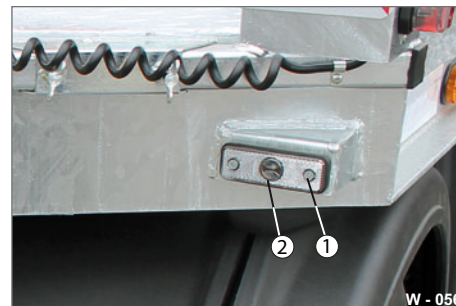


Fig. 56 Front wall limit light

- 1 Fastening bolt
- 2 LED light (white)

A defective LED light must be completely replaced.

- ▶ Loosen the fixing screws (Fig. 56/1).
- ▶ Remove the LED light (Fig. 56/2) - remove connection.
- ▶ Insert the new LED light.
- ▶ Screw in the fixing bolts securely, but not too tightly.

Working light



Fig. 57 Working light right/left

- 1 LED light (white)
- 2 Connection cable with plug connection
- 3 Holder
- 4 Fastening bolt



Fig. 59 Working light fixation

- 1 Fastening bolt
- 2 Name plate
- 3 LED light (white)

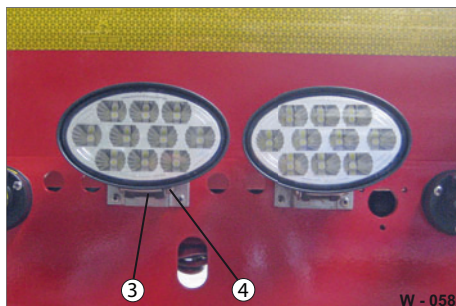


Fig. 58 Working lights at rear



LED lights can only be replaced for original parts of the same type from the manufacturer. Observe the name plate of the LED working light.

- ▶ Unplug the plug connection (Fig. 57/2).
- ▶ Loosen the fixing screw (Fig. 59/1).
- ▶ Remove the LED light (Fig. 59/3).
- ▶ Insert the new LED light.
- ▶ Screw on the fixing screw.
- ▶ Unplug the plug connection.

HUMBAUR GmbH trailers and bodies are also painted with air-drying 2-component acrylic paint.

The rate at which these paints dry out depends on the ambient temperature and can take several months at low temperatures.

The paints are not fully resistant during the curing period.



During this time, we recommend avoiding the use of high-pressure washing equipment or steam jets to clean the trailer.



Lettering work

To avoid damage to the paint during lettering work, please observe the following:

- Fresh paint must be allowed to dry for at least 48 hours at +20°C and to be hardened to such an extent that the ancillary foils and strips which will be removed subsequently do not leave any marks on the painted surface (do not use any aggressive adhesive foils which form a long-term adhesion to the painted surface).
- Trailers that have been exposed to dampness (snow, rain, fog) must be dried off in a temperature-controlled hall (20°C) for at least 24 hours before any kind of lettering work. In frosty conditions, the drying time must be extended until the trailer has reached the temperature of the hall.

These process guidelines and remarks are not intended for specific materials; they are generally applicable.

Necessity

The lifetime and functionality of the trailer depends on how often and how intensively you clean your trailer and how the different materials, surfaces and components are cared for.

Cleaning, maintenance and care of your trailer are important elements of driving safety and conservation of warranty claims.

To prevent accidents and avoid personal injury and property damage, it is important to regularly clean and maintain the trailer.

The intervals of cleaning and care depend on the operational environment and degree of contamination.



WARNING



Cleaning/maintenance products can be toxic

There is a danger of injury and poisoning if the products are swallowed or come into contact with the skin.

- ▶ Read the instructions for use of the maintenance products.
- ▶ Reseal the containers securely after use.



- ▶ Use ,



- ▶ after working with cleaning/maintenance products.



CAUTION



Entering trailer/loading platform when cleaning

There is a risk of slipping when cleaning the trailer with liquids (water, cleaning agents).

- ▶ Only enter the loading platform very carefully through the areas provided for this purpose.





- ▶ Use ,
- ▶ Never enter an unsecured trailer.
- ▶ Do not go under an unsecured loading surface.

NOTICE**Use of aggressive cleaning agents**

The surfaces/materials can attack with chemicals, salts, acids and bases.



- ▶ Use  ,
- ▶  In the first 3 months, wash only using cold water and do not use high-pressure cleaners or steam cleaners.
- ▶ Wash using plenty of clean water (not over 60° C), in order to avoid scratching the paintwork.
- ▶ Do not use any aggressive cleaning agents, acids or alkalis.
- ▶ Use only weak acid to weak alkaline cleaning agents having a pH value of 6-10.
- ▶ Use only soft, clean cloths or brushes.
- ▶ Repair any paintwork damage immediately.
- ▶ Carefully remove any greasy areas using pure petroleum ether (not petrol).
- ▶ Do not expose brake and hydraulic

hoses to petrol, benzene, petroleum or mineral oil.

Use only water to remove any stubborn dirt.

- ▶ Do not apply sprays or grease to the brake and hydraulic hoses.
- ▶ Do not clean seals using mineral oils, petrol or solvents.
- ▶ In salty conditions (winter/marine climate), external cleaning must be carried out more frequently (approx. every 3-4 weeks). This also especially applies to the thorough cleaning of the brushed, bare stainless steel gentries.
- ▶ Only use appropriate cleaning agents when cleaning the curtains and walls.
- ▶ Do not let grease come into contact with sealing rings.

Environmental protection regulations

DANGER for the environment!



Cleaning agents, brake dust, hydraulic oil and lubricants can get into the groundwater.

- ▶ Clean/care for your trailer only in suitable washing areas.
- ▶ Observe the local environmental safety regulations.

High-pressure cleaners

NOTICE

Cleaning with high-pressure cleaners

Components/surfaces which are sprayed directly with too much pressure at a short distance or with very hot water can be damaged.

► Do not point the jet directly at:

- Name plate
- EBS/ABS system plate
- Door gaps, seals
- Electrical components
- Plug connections
- Seals or cables
- Piston areas of hydraulic cylinders
- Oil/fuel tank closures
- Braking or hydraulic hoses
- Batteries
- Voltage transformer

Proceed as follows when cleaning with high-pressure cleaner:



► Read the manufacturer's instructions.

► Lubricate all lubrication points until grease exudes before cleaning.



- Use , ,
- During the cleaning process, always keep the water jet moving.
- Only use high pressure cleaners with a maximum pressure of 50 bar and a maximum temperature of 80 °C.
- Minimum distance between the high-pressure nozzle and the item to be cleaned approx. 700 mm with round jets, and approx. 300 mm with 25° flat nozzles and dirt removers.
- Do not use round jet nozzles to clean tyres and curtains. A hard jet of water can damage the tyres or curtain.

Cleaning alloy wheels

- Wash the alloy wheels regularly, especially after uses such as:
- transporting alkaline materials,
 - driving in winter when roads have been treated with salt.

Alloy wheels do not require any particular maintenance apart from occasional polishing.

Trailer materials

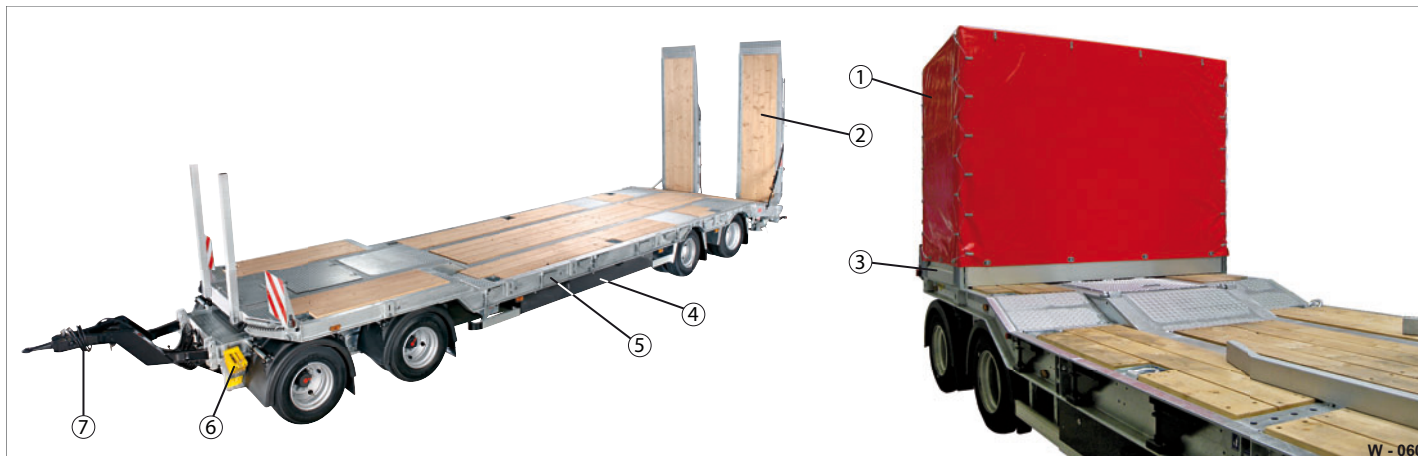


Fig. 60 Materials/surfaces

- 1 PVC/synthetic fabric
- 2 Wood
- 3 Aluminium, anodised
- 4 Steel, painted/coated
- 5 Steel, galvanised
- 6 Plastic
- 7 Rubber (hoses)

The trailers are made of different materials.

Observe the special instructions for caring for the materials/surfaces.

Galvanised steel surfaces

Galvanised surfaces/components (e.g. chassis, drawbar, ramp) must first oxidise in order to develop anti-rusting properties. This can last a few months. Anti-rusting properties are not achieved until the surface loses its glossy zinc surface.

White rust can develop on surfaces. Dampness/high humidity promotes/ causes this, e.g. with road salt. White rust is not a shortcoming or damaged to the surface – the galvanising workshop cannot affect this and does not justify a warranty claim.

- ▶ Clean the galvanised components with clean water immediately after contact with aggressive substances.
- ▶ Let the surfaces dry well.

Treating white rust:

- ▶ Clean the affected places with lots of clean water and dry them thoroughly.
- ▶ Wipe away the white rust with a nylon brush.
- ▶ Apply zinc protection (zinc spray) on the affected areas.
- ▶ If necessary, seal the surface with wax.

Painted or powder-coated steel surfaces

Painted surfaces/components (e.g. stowage box, turnbuckle) have a mild rust protection effect.

Painted surfaces/components which are directly exposed to braking dust, loose chipping, road salt, sand, etc. required special intensive care so that the painted surfaces maintain their appearance and are protected from rust in the long-term.

- ▶ Clean the painted surfaces after every exposure to the aggressive substances.
- ▶ Let the surfaces dry well.
- ▶ If necessary, seal the surfaces with wax.
- ▶ Paint damages (chips, scratches) on the surface should be repaired immediately by specialists.

Aluminium

Aluminium components/profiles with anodised coating are optimally protected from corrosion.

Anodised aluminium surfaces are hard and smooth and can be cleaned with mild cleaning agents.

In order to remove heavy contamination and maintain the aluminium shine, we recommend using aluminium and canvas cleaning agents.

Surface scratches are not a defect and do not lead to rust accumulation, since aluminium itself is resistant to corrosion.

- ▶ Clean the aluminium surfaces with water and neutral cleaning agents.
- ▶ Let the surfaces dry well.

Wooden components

Wood floors are made of 50 mm wooden planks.

Wood is an organic material and reacts strongly to water logging, UV light, major dehydration, overloading and selective loading.

Wood is subject to weather-related expansion and shrinkage, which can lead to tension and stress cracks (hair-line cracks).

Natural wood blemishes and unevenness are normal for wood and can show on the surface. This is not a safety risk and is not a reason for complaint. Prevent swelling and oxidation with galvanised materials:

- ▶ Remove water, snow, ice, branches, leaves, sand, grass, etc. from the wood surfaces immediately after/ before using the trailer as well as after parking it.
- ▶ Avoid waterlogging on the wood surfaces.
- ▶ Thoroughly dry the wood surfaces regularly after using the trailer.
- ▶ Ensure good ventilation, e.g. outdoors, until the surface is completely dry.

- ▶ Close and seal scratches, damages by goods on the wooden surface with wood treatment – this prevents dampness from entering the wooden planks.

PVC/synthetic fabric

Curtains made of synthetic fabric (PES) two PVC coating on both sides is a high-quality, easy-to-care-for material which is used universally for covering trailers.

- ▶ It is best to clean the curtains during damp weather (rain, fog) and mid-range temperatures (20 +/-5 °C). Do not clean the curtains when it is very hot (bright sunshine) or very cold (curtains can harden).
- ▶ Spray the curtains with plastic or canvas cleaning agents and let soak in.
- ▶ Use a soft brush on the curtains if they are very dirty.
- ▶ Hose the curtains down thoroughly, e.g. with high-pressure cleaner a water hose.
- ▶ Let the surfaces dry well.

Cleaning curtains with writing:

- ▶ Inscribed curtains (with writing, pictures) should be cleaned very carefully. Depending on the writing/ colours, the cleaning process should first be tried out on a small area.
- ▶ Do not use high-pressure cleaners/ steam-jet devices.

- Ensure that the writing does not come off.

Pay special attention to:

Curtains which are exposed to weather conditions, e.g. bright sunshine, for a long period of time can fade or get spots. Condensate can form under tightly closed curtains due to temperature difference, causing mould to form.

- Ensure there is good circulation in the trailer body during long periods of non-use.

Rubber / seals

Rubber parts such as elastic seals, sealing joints made of PU adhesive sealant, e.g. on doors, ceilings, flaps, vent windows, loading platform, etc. are subject to certain ageing/wear processes during use.

The rubber/seals become hard over time due to mechanical loads and environmental influences (cold, heat, UV ray, dampness). They can shrink and crack.

- When cleaning, check the condition, fullness and adhesion of seals.
- Have damaged, missing, or porous seals replaced.
- Regularly clean seals (in winter) with talcum powder, vaseline or silicon spray.

Approved consumables



The perfect functioning, operational safety and working life of a trailer depend largely on the quality and correct selection of the consumables used.

Only use consumables for your trailer and its assemblies that are approved by HUMBAUR GmbH and the relevant assembly manufacturers.



Follow the rules and instructions of the individual manufacturers on approved and recommended consumables.

Consumables are:

- Fuels (petrol, diesel, gas)
- Coolants / antifreeze,
- Refrigeration fluid,
- Lubricants, e.g.: engine oils, hydraulic oils, grease
- Batteries, rechargeable batteries



WARNING



Flammable/toxic consumables

Fuel/refrigerants and their vapours are highly flammable and pose a health hazard - danger of poisoning!



- ▶ Do not smoke or allow naked flames near.

- ▶ Avoid sparking.



- ▶ Do not inhale the vapours.
- ▶ Immediately take care of escaping/spilling consumables.



- ▶ Wear personal protective equipment.



WARNING



Explosive operating materials

The battery can explode as a result of sparking or short circuits.

- ▶ Cover the battery poles before starting work.



- ▶ Do not smoke or allow naked flames near.

- ▶ Avoid short circuits or sparking.

- ▶ Do not place any tools on the battery.

- ▶ Observe the manufacturer's safety instructions.

Disposing of consumables



Used oil, lubricating grease, cooling and refrigeration fluids, fuels and batteries and rechargeable batteries are waste that requires monitoring.

DANGER of environmental pollution!



- ▶ Never dispose of environmentally harmful materials with your domestic waste or into the environment. Dispose of environmentally-harmful waste in accordance with national and local regulations.

Used oil/lubricants



- ▶ Used oil, lubricants, oil-soaked rags and hoses are to be emptied/disposed of in suitable containers.

Tyres



- ▶ Old tyres may never be disposed of into the environment. These must be properly stored and disposed of by municipalities.
- ▶ Get information from public disposal points in your country.

Electrical and electronic waste

- ▶ Dispose of electrical and electronic waste in your local recycling centre (electronic scrap recycling).

Batteries



- Batteries are subject to EU Directive 2006/66/EC and can be returned to the manufacturer free of charge.
- ▶ Be very careful when removing batteries.

Taking trailer out of operation

- ▶ Secure the trailer against unauthorised use by third parties, e.g. secure power supply from being switched on.
- ▶ Do not park the trailer on public streets, only on private property.
- ▶ Park the trailer so that it does not pose a risk to third parties, e.g.: Tipping over, rolling away.
- ▶ Secure the trailer with wheel chocks.
- ▶ Remove environmentally harmful operating materials/substances (oil, batteries, etc.) properly.

Disposing of trailer

- ▶ Bring the entire trailer to a vehicle recycling centre.
The vehicle recycling centre specialists will properly dispose of the individual components.



Troubleshooting

What to do in the event of a fault

This section contains information relating to possible faults of the trailer. The information is intended to help with the search for the cause of a fault and to resolve it to the extent that it is possible to go to the nearest HUMBAUR GmbH Service Station.

Any faults that can occur as a result of ignoring the operating instructions or insufficient maintenance are not covered.

Unfortunately, it is not possible here to cover all eventualities or problems that may occur.

In the event of more serious faults, please inform our **Humbaur Service** (see contact addresses listed below).



WARNING

Improper troubleshooting

Improper troubleshooting can lead to the failure of components - risk of accidents

- Have the faults rectified by qualified personnel at an approved workshop.

What to do in the event of fire



WARNING



A great deal of heat can be generated and toxic gases released by burning paint and plastic parts

Danger of burning and suffocation.

- When trying to extinguish a fire, keep a safe distance from the flames.
- Do not inhale any toxic gases.

HUMBAURService

Any attempt to repair or dismantle trailer components or sub-assemblies without our prior written approval will result in voiding of the warranty cover.

Technical customer service contact details

tel.: +49 821 24929 570

fax.:+49 821 24929 540

E-Mail: service@humbaur.com

Service address

Humbaur GmbH
Mercedesring 1
86368 Gersthofen (Germany)
tel.: +49 821 24929 0
fax.:+49 821 24929 100
www.humbaur.com
info@humbaur.com

Humbaur Service Partner

to find on: www.humbaur.com
under Dealers/Service

Replacement parts



Only use original spare parts from HUMBAUR GmbH.

Replacement parts can be purchased as follows quoting the vehicle identification number (**VIN**) and part designation:

– Online, email, phone

Parts logistics contact details

tel.: +49 821 24929 204

fax.:+49 821 24929 200

E-Mail: parts@humbaur.com

Fault	Possible causes	Rectification
The trailer pulls to the left/right when driving.	- The load is not evenly distributed.	Distribute the load evenly.
	- The tyre pressure is not uniform.	Adjust the tyre pressure properly for all tyres.
	- The load is not properly secured and is slowly shifting.	Align the load and secure it properly.
	- The brakes are incorrectly set/blocked.	The fault must be rectified by personnel at an approved workshop.
The trailer rocks during drive.	- The tyre pressure is incorrect.	Adjust the tyre pressure properly for all tyres.
	- The speed is too high for the load and road conditions.	Slowly reduce the speed. Adjust your driving behaviour to the road conditions.
	- The load centre is too far back.	Correct the load centre to the front. The semi-trailer load must be at least 15% of the overall weight of the trailer.

The trailer rattles during the journey.	- The load is not sufficiently secured.	Secure the load properly.
	- Cables/hoses loosen	The fault must be rectified by personnel at an approved workshop.
	- The turnbuckle is not correctly set/secured.	Close/tighten the turnbuckle and secure it.
	- A limit position on the counter support gets lost.	Replace the limit position in a workshop.
	- A toolbox/storage compartment is not correctly closed.	Close and secure the toolbox/storage compartment properly.

Fault	Possible causes	Rectification
Brake does not correctly disengage.	<ul style="list-style-type: none"> - Brake is not correctly adjusted. - Brake shoe return spring slackened. - Brake shaft sticking (drum brake). - Pressure/brake line kinked. - Fault in the compressed air system. 	The fault must be rectified by personnel at an approved workshop.
Brake locked	<ul style="list-style-type: none"> - Too little operating pressure. 	Check the pneumatic connections. Check that the correct operating pressure is achieved.
	<ul style="list-style-type: none"> - Parking brake activated. 	Release the parking brake.
	<ul style="list-style-type: none"> - The brake has seized on to the drum. 	The fault must be rectified by personnel at an approved workshop.
Insufficient braking effort/ brakes pull to one side.	<ul style="list-style-type: none"> - Brake linings worn, contaminated with oil or glazed. - Brake not correctly adjusted. - Fault in the compressed air system. 	The fault must be rectified by personnel at an approved workshop.
Operating pressure is not reached.	<ul style="list-style-type: none"> - Pneumatic connections incorrectly connected. 	Check the pneumatic connections.
	<ul style="list-style-type: none"> - Pressure regulator or compressor faulty (towing vehicle). 	The fault must be rectified by personnel at an approved workshop.

Fault	Possible causes	Rectification
Wiring/switches	- Terminals loose or contaminated.	Clean the connections.
	- Cable broken or terminal damaged.	The fault must be rectified by personnel at an approved workshop.
Lighting does not work.	- Lamp failure.	Replace the lamp.
	- Terminals loose or contaminated.	Clean the connections.
	- Short circuit or open circuit in the electrical circuit.	Replace faulty LED lights and lamps. The fault must be rectified by personnel at an approved workshop.

Fault	Possible causes	Rectification
The trailer creaks during the journey/ bearing wear.	<ul style="list-style-type: none"> - Bearing adjustment too slack or too tight. - Foreign bodies in the axle bearing. 	The fault must be rectified by personnel at an approved workshop.
	<ul style="list-style-type: none"> - Insufficient axle lubrication. 	Lubricate the axles in line with the axle manufacturer's instructions.
	<ul style="list-style-type: none"> - Axle overload. 	Observe the axle loads applicable to the trailer.
Worn or damaged wheel bolts	<ul style="list-style-type: none"> - Wheel nuts screwed on with incorrect torque. - Wheel nuts not properly tightened. 	<p>Replace the wheel bolts and nuts, as well as the rim if required.</p> <p>Tighten the wheel nuts with the torque specified by the axle manufacturer.</p> <p>The fault must be rectified by personnel at an approved workshop.</p>

Fault	Possible causes	Rectification
The trailer is not horizontal after coupling.	- Coupling height is not correctly adjusted.	Set the coupling height correctly.
	- The support foot is not folded up.	Fold it up.
	- The raising/lowering valve is not in drive position.	Pull the raising/lowering valve into drive position.
Rotatable towing eye does not rotate, or only with difficulty.	- The bearing of the rotatable towing eye has seized up.	Re-lubricate the towing eye bearing points.

Fault	Possible causes	Rectification
The trailer can only be steered with difficulty.	- Ball slewing ring is defective.	Have the ball slewing ring checked and repaired in a workshop.
	- Ball slewing ring was not sufficiently lubricated.	Lubricate the entire ball slewing ring until lubricant escapes.

Fault	Possible causes	Rectification
Manual ramps cannot be adjusted.	- Spring is defective/broken.	Have the spring replaced in a workshop.
	- Spring is incorrectly set/tightened.	Tighten/adjust the spring tensioning force of the spring.
	- Bearing points are not sufficiently lubricated.	Lubricate all bearing points.
Hydraulic ramps cannot be adjusted.	- Too little oil pressure in the system.	Check that enough oil pressure is created by the towing vehicle.
		Check that there are no oil leaks, e.g. cracked hoses, leaking connection points. Have the hydraulics system checked in a workshop.

Fault	Possible causes	Rectification
Trailer loses oil.	- A hydraulic line or screw connection is defective.	Have the line/screw connection replaced in a workshop.
	- A hydraulic screw connection has loosened.	Screw in the connection tightly.

MACHT'S MÖGLICH



MAKES IT HAPPEN



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