

Operating Instructions

Construction Machine / Building Material Transporter

Wheels-In Trailer HBT / HBTZ

en



A

ABS **72**
 Access aids **202**
 Address
 Manufacturer **1**
 Replacement parts **305**
 Service **305**
 Aluminium disc wheels **274**
 cleaning **294**
 Lubrication **274**

B

Batteries
 Battery box **90**
 charging **266**
 Disposal **300**
 Body **123**
 Brake nameplate **275**
 Brake system **276**
 Cleaning line filter **278**
 Coupling heads cleaning **277**
 Maintenance **275**
 Service brake system **72**
 Troubleshooting **307**

Bumper guard **114**

C

Cable clips **274**
 Cable winch
 General **218**
 Identification **34**
 operation **220**
 Central lubrication **254**
 Certificate of general inspection/safety
 assessment **249**
 Chapter
 Electrical system **229**
 General information **23**
 Inspection, care and maintenance **247**
 Operation **37**
 Operation body **123**
 Operation chassis **69**
 Safety **11**
 Troubleshooting **303**
 Charging plug
 Battery charging **267**
 Chassis operation **69**
 Cleaning **292**
 Aluminium disc wheels **294**

High-pressure cleaners **294**
 Cleaning line filter **278**
 Clearance lights replacement **289**
 Coefficient of friction matching **181**
 Compressed-air tank **82**
 Draining **83**
 Maintaining **276**
 Connecting electrical system **233**
 Connection element **49**
 Connector
 ABS/EBS **72**
 Contact assignment **236**
 15-pin (ISO 12098) **236**
 7-pin (ISO 1185) **240**
 7-pin (ISO 3731) **240**
 7-pin (ISO 7638 - EBS) **237**
 Contact assignment, plug connection
 13-pin (ISO 11446-12V) **239**
 4-pin (DIN ISO 72575-24V) **242**
 7-pin (ISO 1724-12V) **238**
 Container transport **190**
 Controls **70**
 Conveyor belt carrier **209**
 Coupling **60**

Duo-Matic **80**
Hydraulic line **89**
Manual **73**
Coupling heads
cleaning **277, 279**
Duo-Matic **80**
Red (supply line) **73**
Yellow (brake) **73**
Curtain
cleaning **297**

D

Danger signs **20**
Defective wheel **273**
Departure check **66**
Diagnosis connection for EBS / ABS **275**
Disc wheels **274**
Disposing of tyres **300**
Disposing of used oil/lubricants **300**
Drawbar height adjustment
Lubrication **255**
operation **62**
Drive-up ramps **139**
Driving off **18**

Duo-Matic **80**
Coupling cleaning **279**

E

EBS **72**
Electrical system **229**
Maintaining **283**
Troubleshooting **308**
Electro-hydraulic system **90**
Electro-hydraulic unit **264**
Emergency release device
Brake **280**
Deactivating **281**
Parking brake **281**

F

Folding support **99**
Lubrication **255**
operation **101**
Form-fit load securing **189**
Friction-lock load securing **184**

G

Geared support winch **96**
General information **23**

Grease gun **254**
Grid wall **211**
Load securing **187**

H

Handling plugs **233**
High-pressure cleaners **294**
Hydraulic system
Connection maintenance **263**
Hydraulic cylinder maintenance **263**
Maintaining **263**

I

Identification
Cable winch **34**
Spindle supports **35**
Index **5**
Inspections **247**
Instruction signs **21**
Intended use **12**

K

Keywords **5**

L

Lashing points **186**
 Loads **188**
 VarioFix **187**
 Lettering **291**
 License/number plate light **241**
 License/number plate light replacement **288**
 Lifting device (wheel change) **272**
 Lighting
 Bulb type overview **284**
 Terminal diagram **283**
 Lighting system **230**
 Lights
 replacement **285**
 Load definition **45**
 Load distribution plan **45**
 Load securing **180**
 Container transport **190**
 Form-fit **183**
 Friction-locked **183**
 Fundamentals **180**
 General **183**
 Load securing rail **194**
 Slot-in posts **196**
 Load securing force **180**
 Load securing rail **194**
 Loading **41**
 Loading notes **41**
 Lubricating **254**
 Lubrication
 Cable winch **262**
 Container locking point **261**
 Folding support **255**
 Geared support winch **255**
 Hydraulic cylinder **259**
 Platform gate hinges **261**
 Ramps **260**
 Rotatable towing eye **259**
 Screw parking brake **256**
 Securing tensioner **260**
 Suspended lifting gear **259**
 Swivel support **255**
 Towing eye **257**
 Lubrication nipple **254**
 Lubrication pressure **254**
 M
 Maintaining compressed-air system **276**
 Maintaining mechanics **268**
 Maintenance **247**
 “LED” tail light replacement **287**
 “Standard” tail light replacement **285**
 Axles/wheels **249**
 Brake system **275**
 Cleaning line filter **278**
 Clearance lights replacement **289**
 Compressed-air system **276**
 Compressed-air tank **276**
 Drawbar height adjustment **255**
 Electrical system **283**
 Folding support **255**
 Hydraulics **263**
 License/number plate light replacement **288**
 Lighting **283**
 Mechanical components **268**
 Peripheral light replacement **286**
 Service brake system **275**
 Side marker light replacement **289**
 Support equipment **249**
 Suspended lifting gear **268**
 Wheel brake **276**

Maintenance intervals
Maintenance work regular **251**
One-time maintenance work **250**
Maintenance regulations **250**
Manufacturer **1**
Marker/clearance lights **246**
Middle post (platform gate) **175, 179**
Misuse **13**
Mountings
Cable clips **274**
Multi-voltage version 12 V - 24 V **235**

N

Notes
Operating manual **1**

O

Operating consoles **70**
Operating fluids/consumables **299**
Disposal **300**
Using lubricating greases **254**
Operation **37**
Body **123**
Chassis **69**

P

Painting **291**
Parking the plug **234**
Peripheral light replacement **286**
Personal protective equipment **21**
Personnel qualifications **17**
Physical fundamentals
Friction force **181**
Pin couplings **58**
Platform gates **170**
Closing **176**
closing **177**
Folding down **174**
Platform gate attachment **204**
removal **175, 179**
Slot-in platform gate (rear end) **207**
Unlocking **172, 173**
Unlocking (aluminium platform gates) **172**
Unlocking (steel platform gates) **173**
Plug connection
13-pin (ISO 11446-12V) **239**
15-pin (ISO 12098) **236**
4-pin (DIN ISO 72575-24V) **242**

7-pin (ISO 1185) **240**
7-pin (ISO 1724-12V) **238**
7-pin (ISO 3731) **240**
7-pin (ISO 7638 - EBS) **237**
Plug connections (standard) **231**
Plug connections 2x7-pin (optional) **232**
Posts (platform gate) **175, 179**
Prohibition signs **22**
Push-in slats (curtain structure) **213**

Q

Quick-release coupling (Duo-Matic) **80**

R

Raising and lowering system **84**
Ramp planks **126**
Driving over **136**
Positioning **131**
removal **128**
Setting track width **134**
stowage **137**
ramp planks / ramps **125**
Ramps
Driving over **166**
Hydraulic raising **169**

Hydraulic track width setting **159**
Lowering **160**
slide **156**
Unlocking the track width notches **157**
Rectifying axle faults **309**
Replacement parts address **305**
Roof bow/curtain structure **213**

S

Safety **11**
Safety instructions **19**
Screw parking brake **77**
Securing trailer **272**
Service address **305**
Service brake
activation (from 19t) **76**
activation (up to 13t) **75**
deactivation (from 19t) **76**
deactivation (up to 13t) **75**
deactivation when manoeuvring **74**
Service brake system **72**
Cleaning line filter **278**
Compressed-air tank maintenance **276**
Coupling heads cleaning **277**

Maintenance **275**
Troubleshooting **307**
Side guard **103**
with clamping function **105**
with locking bolt **106**
Side marker light replacement **289**
Signal words **19**
Slot-in platform gate (rear end) **207**
Slot-in posts (load securing) **196**
Sockets
Standard **231**
Sources of danger **17**
Spare wheel
removal **273**
Spare wheel storage **108, 273**
Spare wheel storage maintenance **273**
Spare wheel holder
behind the side guard **111**
General **108**
on the front wall **110**
Spare wheel storage
behind the side guard **111**
General **108**
on the front wall **110**

Spare wheel transport **113**
Spindle supports
Identification **35**
Spring-loaded parking brake **79**
Emergency release **280**
Steam cleaners **294**
Supply lines **236**
Supplying spare wheel **273**
Support equipment **94**
Folding support **99**
Geared support winch **96**
Spindle support optional **96**
Swivel support **97**
Support frame **198**
Swivel support **97**

T

Tail light
“LED” replacement **287**
“Standard” replacement **285**
LED with peripheral light **245**
Standard with peripheral light 24 V **244**
Test connection
Brake cylinder pressure **71**

Pneumatic suspension bellows pressure
71

Tightening torques **253**
for screw connections **252**

Toolbox **119**

Towing eye **49**

Traction test **14**

Troubleshooting **303**

Axles **309**

Cable winch **313**

Electrical system **308**

General **304**

Hydraulics **312**

Loading **306**

Ramps **311**

Service brake system **307**

Towing eye/drawbar **310**

Tyre pressure/tread **270**

Tyre types **269**

U

Uncoupling **65**

Duo-Matic **81**

Manual **73**

Underrun guard **107**

Unloading **41**

Use

intended **12**

Misuse **13**

Using lubricating greases **254**

V

Vehicle identification number **33**

W

Warning sign **118**

Warning signs **20**

Warranty **15**

Weights

Load distribution **45**

What to do

in the event of faults **304**

in the event of fire **304**

What to do in the event of fire **304**

Wheel bolts **270**

Wheel brake maintenance **276**

Wheel changing **271**

Wheel chocks **117**

Wheel nuts **270**

Working light **243**

Working lights
replacement **290**
replacement **295**



Safety

1

2

3

4

5

6

7

8

Intended use

HUMBAUR vehicles and bodies 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 vehicle itself or to other property.

HUMBAUR 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 vehicle or vehicle body, place an enquiry with Humbaure GmbH in good time.

Always check with Humbaure GmbH an approved HUMBAUR workshop before having accessories fitted to your HUMBAUR 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 and approved coupling
- Operation only 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 vehicles/bodies carry a VIN (vehicle identification number), see page 33. Always quote the VIN when making enquiries or ordering parts.

Reasonably foreseeable misuse

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 necessary (e.g. chemical substances)
- Loading with exceeded payload
- Exceeding the maximum permissible axle/bearing/trailing load
- Transport of hot/liquid materials (e.g. tar)
- Driving only with poorly or unsecured load
- Driving with poor load distribution (one-sided, selective loading)
- Unauthorised constructional changes to the trailer or those not approved by the manufacturer
- Use of non-authorised replacement parts or accessories
- Driving with defective lighting system or with faulty electrical system
- Driving with trailer dirty so that the license/number plate, lighting, markings are not visible or not clearly visible
- Driving with open structures (e.g. platform gates, curtains, doors, lids, toolbox, side guards, 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 a valid traction test 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 refused by the manufacturer:

Humbaur GmbH
Mercedesring 1
86368 Gersthofen (Germany)

The operator / 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 2,000 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 Humbaур GmbH will be invalidated.

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 covers

Defects occurring in the course of correct and proper use of the trailer which are caused by the design or can be traced back to material defects. Repairs carried out during the warranty period do not extend this period. The dealer as the contracting party is responsible for the warranty.

Prerequisites:

Original replacement parts must be used during repairs.
Repairs must be carried out by an approved workshop.
The manufacturer's maintenance directions and instructions set out in this operating manual must have been followed.

Defects may not be traced back to

Non-compliance with the technical and legal regulations set out in this operating manual.
Improper use of the trailer or lack of user experience.
Unauthorised modifications to the trailer or built-on accessories not approved by Humbaur GmbH will invalidate the warranty. Non-observance of the relevant legal regulations.

The following are not defects

Every trailer is a product manufactured by craftsmen. Although every care has been taken, minor, superficial scratches can occur that have no effect on the intended use. Production-related stress cracks in the surface (hairline cracks) cannot be avoided. These hairline cracks have not effect on the stability or use of the trailer.
Gaps between platform gate and loading ramp. Furthermore, polyester components are not 100% colour-fast. UV and weather influences can give rise to bleaching here too. It must also be noted that rubber part generally age due to UV influences, and the surface may be subject to cracking and bleaching. Parts coated by electro dip painting (edp) are not colour-fast. They may bleach as a result of UV radiation.
Galvanised parts are normally not glossy, but lose their lustre after a short period of time. This is not a defect, but instead a desired quality since full protection against metal corrosion is only guaranteed by oxidation. Wood is a natural material. For this reason, in spite of the most varied types of machining and coating, it is subject to natural, weather-dependent stretching or shrinkage, which can lead to distortions. Natural wood blemishes and unevenness are normal for this natural material and can show on the surface. Bleaching caused by UV radiation and weather influences is possible. A manufacturing tolerance regarding thickness is defined

for the wood components used. Claims cannot be made for deviations within the tolerance band.
Because trailers are generally not insulated, condensation may form under curtain and polyester covers in the event of temperature fluctuations. In this event, ensure adequate ventilation to prevent mould from forming. Trailers are not 100% watertight either. Water may get in through doors, flaps and windows even when rubber seals are used and applied with the utmost care.

The warranty is invalidated

If the operating, maintenance, cleaning and inspection regulations are not observed.

If technical modifications are made to the trailer.

If structures and accessories that are not approved by Humbaaur are built on.

If the trailer is overloaded and used incorrectly.

If non-original replacement parts are used.

If the safety instructions on the trailer are not observed.

If the service intervals are not observed, including those for Humbaaur-fitted parts such as axle, brake, overrunning equipment, hydraulic systems, etc..

If the materials used are subject to incorrect surface treatment.

If the trailer continues to be used despite defects already being known and communicated and use has been prohibited by the manufacturer until repair has been carried out.

If the trailer continues to be used despite defects being known and repair is impossible, complicated or only possible after enormous additional expenditure and use of the trailer is diminished.

The warranty does not cover

Outlay for routine maintenance.

Costs that can be traced back to normal wear and tear or also because the trailer has not been used for a long time.

Faults that can be traced back to improper handling of the trailer.

Defects that can be traced back to the use of non-original replacement parts.

Defects that can be traced back to the consequence of a repair carried out by a non-approved workshop.

Defects that can be traced back to structural modifications or installations on the vehicle.

Damage that can be traced back to snow and water loads on curtain, plywood or polyester structures.

The manufacturer reserves the right to make structural modifications.

HUMBAUR 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 motor vehicle traffic regulations (StVO in Germany) and motor vehicle construction and use regulations (StVZO in Germany).
- all the relevant working safety and accident prevention regulations as well as other laws relating to safety, industrial health and road traffic.
- knowledge of the transport of goods.

Sources of danger

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

- Coupling and uncoupling of a trailer: It is forbidden for persons to remain in the danger area.
- Travelling with unsecured landing gear. Ensure that landing gear is doubly secured.
- Travelling with unsecured ramps.
- Driving with objects on the roof or loading platform, such as snow, ice, branches, etc.
- 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.
- Unlocked platform gates and doors.
- Reversing manoeuvres - check area behind vehicle.
- Excessive steering during manoeuvring.

- Overloading of the trailer, axles 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.
- Unmodified driving style depending on visibility and weather conditions.

Check, adjust and secure before every journey

In the chassis frame area

Pay attention to the following:

- Check that the towing eye and the eye coupling are in perfect condition.
 - If necessary, coat the eye coupling (catcher) with a sufficient amount of grease.
 - Lock the eye coupling properly.
 - Connect the supply lines.
 - Establish the electrical connections.
 - Set the pneumatic suspension to the drive position.
 - Put the side guard and underrun guard in the position for driving and secure them.
 - Retract the landing gear and secure it.
 - Check the tyres and rims for damage and foreign bodies.
 - 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 the spare wheel, spare wheel holder, operating bars, access ladder and wheel chocks.
 - Check the trailer lights, and repair any faulty lights.
 - Do not exceed the permissible total weight, the permissible drawbar load and the permissible axle loads.
 - Release the screw parking brake / parking brakes and start to move off only when the operating brake pressure has been reached.
 - Drain the compressed-air tank.
 - Check that the air bellows of the axle unit have rolled carefully over the piston.
 - Check that the license/number plate and signs are in place and visible.

Around the vehicle body

Close and secure all vehicle body components, such as:

- platform gates and posts
- rear walls, rear doors, rear wall flaps, tailgates
- cover, curtains and push-in slats
- ramp planks / ramps
- Fix and secure the load
- Ensure that the load distribution is balanced - no punctiform load.

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 potentially dangerous situation

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



CAUTION

Indicates a potentially dangerous situation

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

NOTICE

Indicates a potentially dangerous situation

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



General warning or instruction 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

Danger signs

The following warning signs can appear in this 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 crushing injuries!
Body or parts of the body



Danger of falling!



Danger of electrical shock!
Dangerous voltage.



Risk of striking!
Falling objects.



Danger of burning!
Hot surfaces.



Risk of chemical burns!
Escaping battery acid.



Risk of poisoning!
Poisonous substances.



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



Risk of slipping!



Risk of tripping!



Risk of explosion!
Explosive operating fluids/
consumables.

Personal protective equipment

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

It includes the following:



Safety shoes, solid footwear



Protective gloves



Hard hat



Safety goggles



High-visibility clothing, high-visibility jacket



Protective mask, respiratory protection



Ear defenders



Protective clothing

Instruction signs

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 an 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.



Briefing by an assistant is required.

Prohibition signs

Heed these prohibitions.



Climbing up prohibited.



Reaching in prohibited.



Touching prohibited.



Entering this area prohibited.



Open flames are prohibited
(e.g. cigar, lighter).



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



Entry prohibited
(unauthorised persons have to
keep out).



Going behind the swivel arm or
near moving parts is prohibited.



Walking between the 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 rinse your eyes with
plenty of water



Consult a doctor.



General information

Tandem wheels-in trailer as multi-transporter in the building trade



Fig. 1 Example HBT - front view

- 1 Tube drawbar with towing eye
- 2 24 V electrical connections
- 3 Compressed-air connections: supply, brake
- 4 Geared support winch
- 5 Screw parking brake (up to 13 t)
- 6 Height adjustment, vertical
- 7 Swivel support (option)
- 8 Height adjustment, horizontal
- 9 Front wall, slot-in
- 10 Rear platform gate

The construction machine transporters HBT BE / HBT BS / HBTZ BS differ in the type of loading aids such as different ramp planks / drive-up ramps and the different payload.

The coupling height to the towing vehicle can be infinitely varied with the standard tube drawbar height adjustment.

The geared support winch ensures that the trailer can be easily set down on off-road terrain. The trailer can be secured against rolling away with the screw parking brake.



I - 002

Fig. 2 Example HBTZ - side view

- 1 Raising / lowering system
(up to 19 t as an option /
from 19 t as standard)
- 2 Side platform gate
- 3 Side guard
- 4 Middle post
- 5 Wheel chocks
- 6 Folding supports

The trailer can be stabilised with the folding supports at the rear when loading / unloading construction vehicles.

The fold-down side platform gates enable the trailer to be loaded / unloaded from the side.

The side platform gates can be fashioned from aluminium continuously as a single platform gate or from steel split into two parts with a middle post.

The different design variants of the front wall or attachments e.g. as a steel grid or aluminium slot-in gate serve to secure the load and increase safety when driving.

Design variants



Fig. 3 HBT BE (10 t) - rear view

- 1 Rear platform gate
- 2 Ramp plank bay

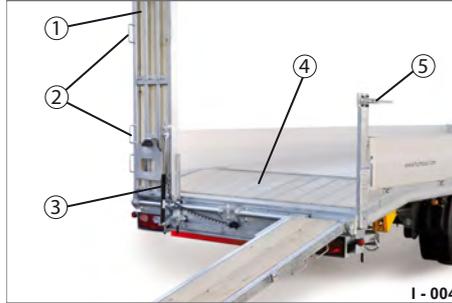


Fig. 4 HBT BS (from 10 t) - rear view

- 1 Ramp
- 2 Handle
- 3 Gas pressure spring
- 4 Loading platform, sloping (option)
- 5 Ramp latch

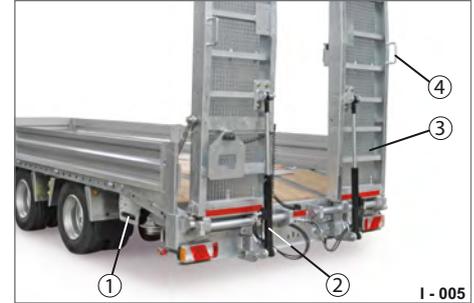


Fig. 5 HBTZ BS (13 t - 19 t) - rear view

- 1 Drive-up ramp operating point (option)
- 2 Hydraulic ramp cylinder (option)
- 3 Ramp
- 4 Handle

Particular features:

The HBT BE is designed as a closed box. The loading platform is secured all round with platform gates. Loose loads such as for example building materials, coarse bulk material etc. can be easily transported. The HBT BE can also be used as a transporter for construction vehicles thanks to the slide-in ramp planks.

Particular features:

The chassis is constructed with load balancing. The track width can be individually adjusted with the fold-down and laterally sliding drive-up ramps. The drive-up ramps are secured to the posts with latches. A sloping loading platform at the rear reduces the drive-up angle and makes it easier to drive construction vehicles onto the loading platform.

Particular features:

The twin tyres (Z) offer a higher payload. The chassis with load balancing provides versatility in off-road applications. The drive-up ramps can be designed as a single part / two parts or as a continuous drive-up wall. The hydraulic ramp cylinders for raising / lowering and the track width setting provide enhanced operation convenience.

Drive-up ramps, hydraulic Raising / lowering



I - 006

Fig. 6 Operating point

Drive-up ramps, two-piece



I - 009

Fig. 8 1/3 section, with suspended lifting gear

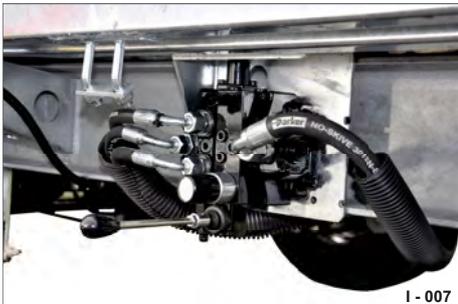
Drive-up ramps, two-piece



I - 008

Fig. 10 1/2 section, with gas pressure springs

Hydraulic track width adjustment of drive-up ramps



I - 007

Fig. 7 Operating point

Drive-up ramps, one-piece



I - 010

Fig. 9 Three drive-up ramps

Drive-up ramp lining



I - 042

Fig. 11 Rubber / gridiron

Support pedestal



Fig. 12 Front side, removable

Climbing aid



Fig. 14 Folding step on the rear platform gate

Duomatic coupling



Fig. 16 Duomatic coupling head

Slot-in gate



Fig. 13 Front side, removable

Battery box



Fig. 15 At side under the chassis

Through-load facility



Fig. 17 Front wall, slot-in

Slot-in rear platform gate



I - 016

Fig. 18 Slot-in

Spare wheel



I - 020

Fig. 20 Bracket on the front wall

Conveyor belt carrier



I - 022

Fig. 22 Mounted on the tube drawbar

Electro-hydraulic unit



I - 019

Fig. 19 Under the chassis

Spare wheel in the basket



I - 021

Fig. 21 Bracket behind the side guard

Loading platform, sloping



I - 023

Fig. 23 For easier loading / unloading

Loading platform, lining



Fig. 24 Aluminium chequer plate

Load securing



Fig. 26 "Twist-Lock" container lock

Load securing



Fig. 28 Securing rail as wheel stop

Raising / lowering system



Fig. 25 Operating point at the rear, for chassis height adjustment

Load securing



Fig. 27 Posts, can be inserted/removed

Curtain structure



Fig. 29 Bow frame with full curtain

Swivel towing eye



I - 030

Fig. 30 Swivel towing eye D 40 mm / 50 mm

Voltage transformer



I - 029

Fig. 32 Voltage transformer (12 V - 24 V)

Swivel support



I - 032

Fig. 34 Mounted on the tube drawbar

Cable winch



I - 028

Fig. 31 At front on the loading platform

Steel grid attachment



I - 015

Fig. 33 Front side, removable

Loading wall



I - 033

Fig. 35 Hydraulically actuated

Wheel chocks



I - 040

Fig. 36 Under the chassis

Toolbox



I - 034

Fig. 37 Under the chassis

Toolbox



I - 043

Fig. 38 Two boxes as side guard replacement

VIN number / nameplate

The trailer has a vehicle identification number (VIN) for identification purposes.

If you have any queries about the trailer, please specify this VIN number.

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

Item	Explanation
1-3=	World manufacturer number of Humbaar GmbH
4-9=	Filler character chosen by manufacturer
10-17=	Sequential numbering

Tab. 1 Example - VIN number



Fig. 39 Vehicle front

- 1 Nameplate
- 2 Engraved VIN number

► Do not remove, tape over or paint over the nameplate (Fig. 39/1) and the engraved VIN number (Fig. 39/2) on the chassis.



The VIN number must be legible during the entire lifetime of the trailer.

2 Cable winch identification

A nameplate is attached to the operating unit to identify the cable winch.



If you have any queries about the cable winch, specify the factory no. / type and the year of construction.



Read and heed the operating manual and test booklet of the cable winch manufacturer.

Operation of the cable winch is explained in the operating manual.

Cable winch manufacturer:

Ramsey Winch

P.O. Box 581510
74158-1510 Tulsa, OK
USA

Tel. (918) - 438-2760

Fax: (918) - 438-6688

CustomerService@RamseyIndustrial.com

www.ramsey.com



Fig. 40 Cable winch

1 Technical data / manufacturer

Two types of spindle support are installed by the manufacturer haacon: the geared support winch and the swivel support:

A nameplate is attached to identify the geared support winch / swivel support.

haacon hebetechnik gmbh

Josef- Haamann-Strasse 6
D-97896 Freudenberg

Tel. 09375-84-0

Fax: 09375-84-66

www.haacon.de



If you have any queries, specify the factory no. / type and the year of construction.



Read and comply with the relevant operating and maintenance manuals.

Geared support winch

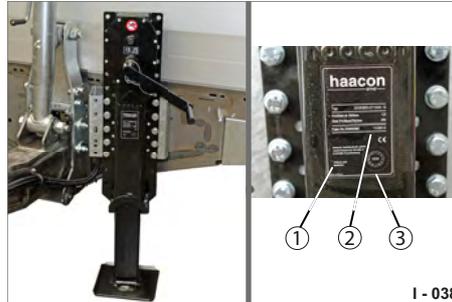


Fig. 41 Geared support winch

- 1 Manufacturer specs
- 2 Technical data
- 3 Inspection badge

Swivel support



Fig. 42 Swivel support

- 1 Manufacturer specs
- 2 Technical data
- 3 Inspection badge



Humbaur GmbH hereby confirms that all the relevant EC Directives for type approval and safe operation of HBT / HBTZ trailers are complied with. You can separately request an EC declaration of conformity from us.

Original – Konformitätsantrag gemäß EN ISO/IEC 17065-1

EG - Konformitätserklärung

Dokument-Nr. / Model-Jahr - Seite 10000 / V01.13

Für das nachfolgend bezeichnete Erzeugnis

Bezeichnung	Serie 10000 HBT-Bauarttransporter-Tandem-Hochlader
Typ	HBT 106224 BE / 106224 BE HBT 106224 BS / 106224 BS HBTZ 136224 BS gerade / 137224 BS gerade HBTZ 136224 BS schräg / 137224 BS schräg HBTZ 196524 BS gerade / 197224 BS gerade HBTZ 196524 BS schräg / 197224 BS schräg
mit Anbaueinrichtungen	Angebrachte Maschinen auf Fahrzeugen nach Artikel 1, Abs. 2 (b) der MRL: Feststellende Aufhängen mit Geschwinder-Unterstützung Eiszerückführung vorne Elektro-Hydraulik-Aggregate Elektrische Zugseilwinde

wird hiermit erklärt, dass es den grundlegenden Anforderungen entspricht, die in den nachfolgend bezeichneten Harmonisierungsvorschriften festgelegt sind:

RICHTLINIE 2006/42/EG DES EUROPÄISCHEN PARLAMENTES UND DES RATES vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 90/16/EG (Neufassung) – kurz: „Maschinenrichtlinie „MRL““

Angabe der einschlägigen harmonisierten Normen, die zugrunde gelegt wurden, oder Angabe der Spezifikationen, für die die Konformität erklärt wird:

Für die Teile	Ausgabedatum	Titel
Harmonisierte Normen nach MRL DIN EN ISO 12100 - 2011-03		Sicherheit von Maschinen – Allgemeine Gestaltungsregeln – Risikobeurteilung und Risikominimierung (ISO 12100:2010)

Diese Erklärung wird verantwortlich für den Hersteller oder seinen Bevollmächtigten. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung in Bezug auf die Erfüllung der grundlegenden Anforderungen und die Anfertigung der technischen Unterlagen trägt der Hersteller:

Name:	Humbaur GmbH
Anschrift:	Mercedesring 1, 86368 Gersthofen (Germany)

abgegeben durch:

Funktion, Name:	Geschäftsleitung Technik: Däminger, Christian
	Geschäftsleitung Produktion: Czech, Oliver

Die technischen Unterlagen können auf begründete Vorlagen angefordert werden bei:
Herrn Peter Güntheroth (Abt. Homologation), Mercedesring 1, 86368 Gersthofen.

Gersthofen /

Ort / Datum

(Legittimierter Unterschriften)

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Harmonisierungsvorschriften, beinhaltet jedoch keine Zustimmung von Eigentümern.
Zusätzliches: Diese Erklärung gilt für alle Exemplare, die zum der entsprechenden Fertigungszeitraum/-en der Bestandteil der technischen Unterlagen sind, hergestellt werden. Weitere Angaben über die Einhaltung dieser / dieser Hersteller enthält die Fertigungs- oder Konformitätsbescheinigung unterzeichnende Begleitdokumentation.

The geared support winch and the swivel support from Haacon and the cable winch from Ramsey as power-operated machines have a separate EC declaration of conformity in accordance with Machinery Directive 2006/42/EC.



The CE sticker must be clearly affixed - after commissioning - to the operating unit.





Operation

1

2

3

4

5

6

7

8

NOTICE**Exceeding the permitted inclination 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.
- ▶ Do not exceed 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".

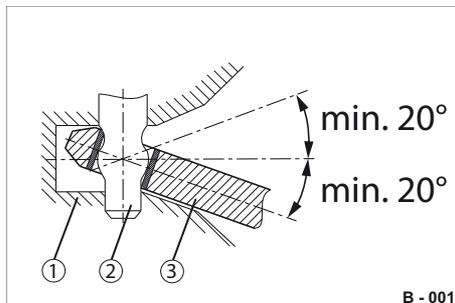


Fig. 1 Inclination angle of vertical transverse axis

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

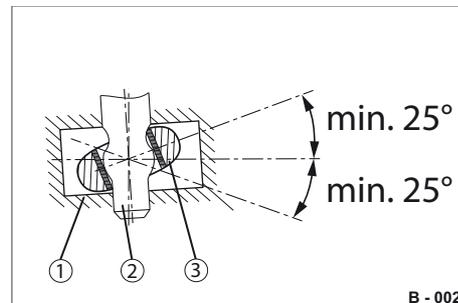


Fig. 2 Inclination angle of axial longitudinal axis

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

NOTICE**Loss of stability during loading and unloading**

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

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



B - 003

Fig. 3 Folding supports folded down

**WARNING****Driving the trailer**

When driving on the loading platform/drive-up ramps/ramp planks or in the event of an uneven load distribution, the trailer can tilt forwards or backwards.

Persons can be trapped or crushed by the trailer.

- ▶ Secure the parked trailer at the front and rear with props to load or unload, or connect it to the towing vehicle.
- ▶ Do not load or unload the trailer across the slope (terrain with steep gradients) - risk of tipping!



B - 004

Fig. 4 Driving the trailer

WARNING



Overloading ramp planks

The ramp planks may become deformed.

The vehicle may fall down / tip over - risk of crushing / striking!

- ▶ Observe the nameplate with max. load specifications.
- ▶ Do not exceed the maximum values.



B - 005

Fig. 5 Nameplate, ramp plank

Max. values / load bearing capacity

Drive-up angle max.	30 % (16.5°)
Single-axle vehicles	1420 daN (Kp)

Double-axle vehicles:

Axle load distribution	40 % to 60 %
Wheelbase 1 m	1875 daN (Kp)
Wheelbase 1.5 m	2195 daN (Kp)

Preparation



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

Ramp planks not secured

The ramp planks may slip off the loading platform edge and the vehicle to be loaded may topple off the ramp planks - risk of crushing / striking!

- ▶ Check before loading/unloading that the ramp planks are secured on the loading platform edge.

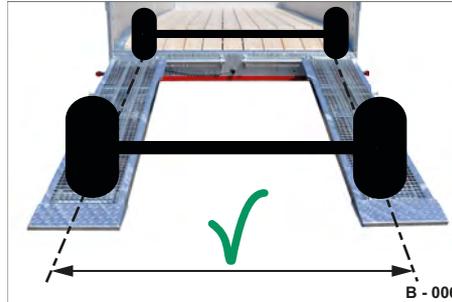


Fig. 6 Setting track width
(example: drive-up ramps)



WARNING

Ramps set to incorrect track width

The vehicle to be loaded may topple off the ramp planks/drive-up ramps - risk of striking / crushing!

- ▶ Set the ramp planks/drive-up ramps to the correct track width when 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 screw parking brake and use wheel chocks to secure the trailer in position.
- ▶ Fold down the folding supports and secure them.

HBT BE:

- ▶ Place the ramp planks on the vehicle frame at the rear, set the required track width and secure the ramp planks.

HBT BS / HBTZ BS:

- ▶ Set the drive-up ramps to the necessary track width and fold down the ramps.
- ▶ Slowly drive onto the ramps.
- ▶ Drive the trailer straight ahead - not at an angle from the side.

Loading and unloading

 **WARNING**

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

- ▶ Carefully enter the loading platform and watch out for dirty, wet/icy patches.
- ▶ Open the doors, platform gates and curtains if the vehicle is not being used for an extended period. Clean the loading platform if necessary.
- ▶ If necessary, clean the dirty areas before entering the loading platform.

 **WARNING**

 **Entering loading platform**
Persons may fall when climbing onto/down from the loading platform/chassis, over mudguards, side guards, tube drawbar, chassis and toolboxes.



- ▶ Wear
- ▶ Only enter the loading platform through the areas provided for this purpose.
- ▶ Do not jump onto or down from the loading platform.
- ▶ If necessary, use a stable ladder to climb up and down.

 **WARNING**

 **Loading/unloading with a crane**
The mounting can rip and the load can fall - swinging loads can hit/crush persons!



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



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

**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 ratchet straps and tools in the stowage spaces provided.
- ▶ Keep the loading platform clean.

**WARNING****Shifted loaded goods**

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

This can result in cutting and crushing injuries.



Wear

,

,

.

After loading



The body must be completely closed during the drive.

DANGER

Driving with folded-down ramp planks / drive-up ramps / open platform gates / doors / flaps

Persons may become trapped.
The load may fall out.

- ▶ Check before driving that the ramp planks are stowed/the drive-up ramps are up and secured.
- ▶ Check before driving that all platform gates/doors/flaps are closed and secured.
- ▶ Check before driving that the side guards are folded down and secured.

WARNING

Driving with support equipment not folded up and not secured

The support equipment (geared support winch/swivel support/folding supports) may be ripped 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:

- ▶ Do not exceed the total weight, the axle loads and the static drawbar load (see page 45).
- ▶ Keep the load centre of gravity as low as possible (see tables on pages 46 & 47 & 48).
- ▶ Distribute the load evenly.
- ▶ Avoid punctiform/one-sided loading.
- ▶ Adhere to loading securing instructions as set out in VDI 2700 (see page 180).



Permissible weights and load distribution

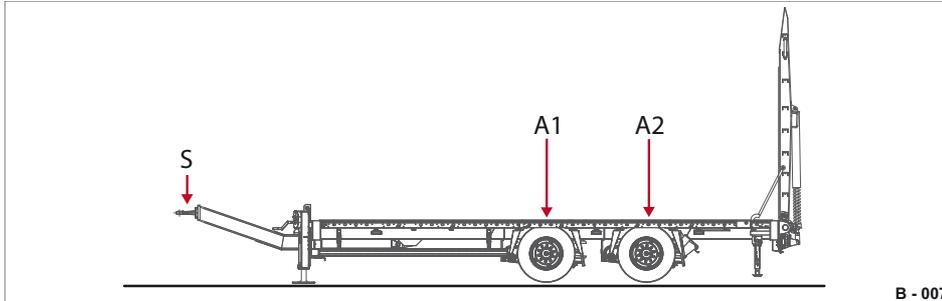


Fig. 7 Load definition

S Drawbar load

A1 Axle load - 1st axle

A2 Axle load - 2nd axle

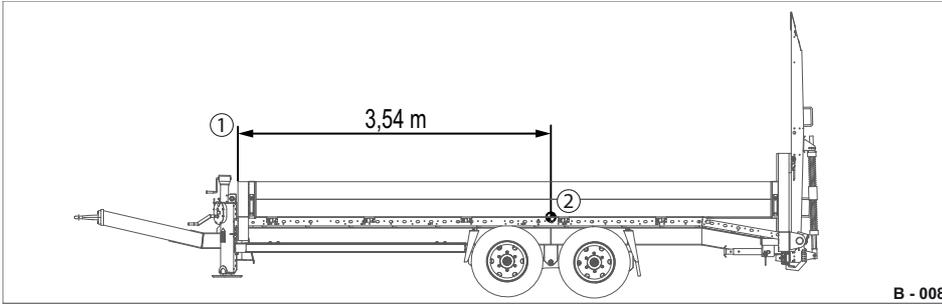
Stow away the load so that the load centre of the entire load lies over the longitudinal centre line of the trailer as far as possible.

Keep this load centre as low as possible. Load your vehicle within the permissible total weight, the permissible axle loads and the permissible drawbar load.

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.

Restrict the load at particular points of the loading platform by distributing the load appropriately to the permissible extent.



B - 008

Fig. 8 Example 10 t - load distribution plan

- 1 Distance of the load centre of gravity from the loading platform front wall
- 2 Centre of gravity of the load

Loads	Max. weights
Perm. total weight	10,500 kg
Axle 1 (A1)	5,500 kg
Axle 2 (A2)	5,000 kg
Drawbar load (S)	500 kg
Unladen weight	2,800 kg
Payload	7,700 kg

Tab. 1 Example - HBT BS 10 t (sloping loading platform)

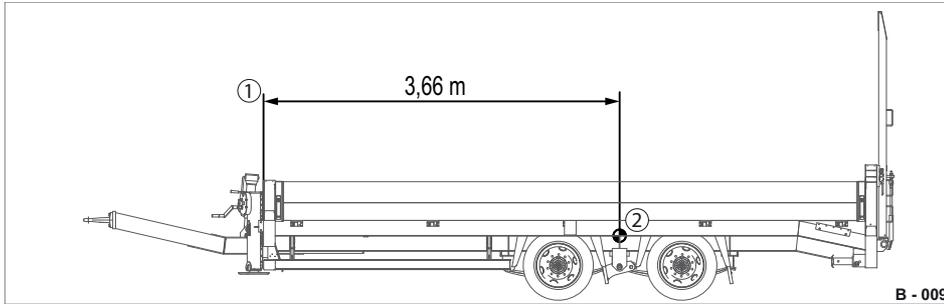


Fig. 9 Example 13 t - load distribution plan

- 1 Distance of the load centre of gravity from the loading platform front wall
- 2 Centre of gravity of the load

Loads	Max. weights
Perm. total weight	13,600 kg
Axle 1 (A1)	7,000 kg
Axle 2 (A2)	7,000 kg
Drawbar load (S)	1,000 kg
Unladen weight	3,600 kg
Payload	10,000 kg

Tab. 2 Example - HBTZ BS 13 t (sloping loading platform)

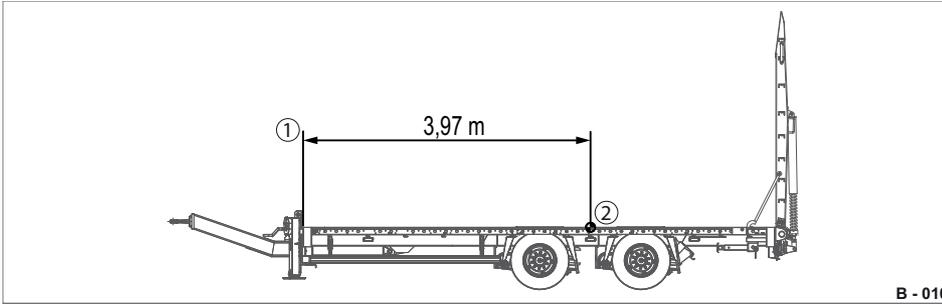


Fig. 10 Example 19 t - load distribution plan

- 1 Distance of the load centre of gravity from the loading platform front wall
- 2 Centre of gravity of the load

Loads	Max. weights
Perm. total weight	19,000 kg
Axle 1 (A1)	11,000 kg
Axle 2 (A2)	11,000 kg
Drawbar load (S)	1,000 kg
Unladen weight	5,300 kg
Payload	13,700 kg

Tab. 3 Example - HBTZ BS 19 t (straight loading platform)

General

A towing eye is connected to the tube drawbar to connect the trailer to a towing vehicle.



DANGER

Damaged connection element

The trailer could detach from the towing vehicle 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.
- ▶ Carry out regular maintenance of the connection elements (see Maintenance section on page 250).

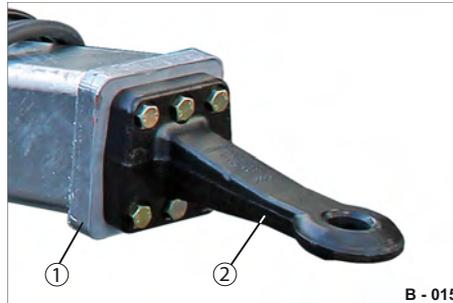


Fig. 11 Connection element

- 1 Drawbar
- 2 Towing eye

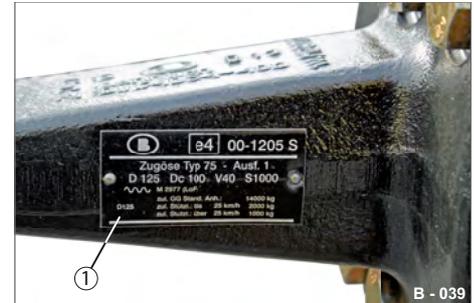


Fig. 12 Connection element

- 1 Nameplate

Possible versions of towing eye

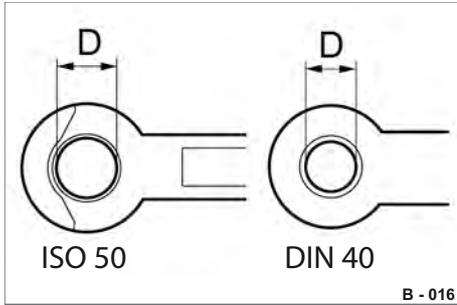


Fig. 13 Inner diameter of bushing

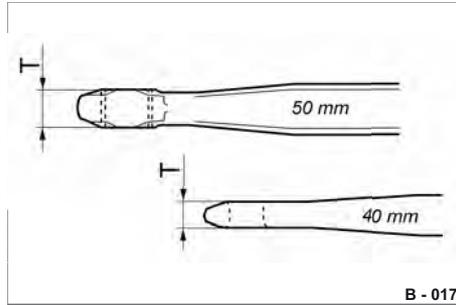


Fig. 14 Thickness of towing eye

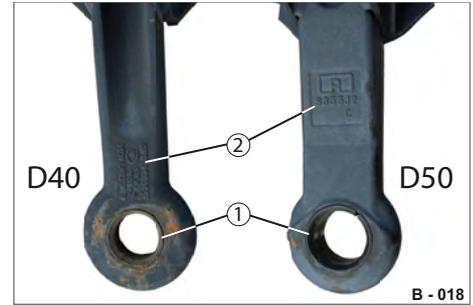


Fig. 15 Towing eyes with wear bushings

Towing eye: Type	Diameter max. D (mm)	Thickness min. T (mm)
ISO 50	52	41.5
DIN 40	42	28

Tab. 4 Towing eye dimensions

- 1 Bushing (inner diameter D40 / D50)
 - 2 Towing eye identification
- ▶ Carry out regular visual inspections of the towing eye (see “Towing eye connection” on page 257).
 - ▶ Only allow a qualified specialist to carry out repair work on the towing eye.
 - ▶ Never attempt welding/straightening work on the towing eye yourself.
 - ▶ Only replace a worn/deformed towing eye with an original replacement part - see identification (Fig. 15/2) on the towing eye.

Rotatable towing eye (option)

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

The rotatable towing eye is secured with the following mounting elements:

- Fastening bolt
- Spacer sleeve
- Wing nut
- Shim rest

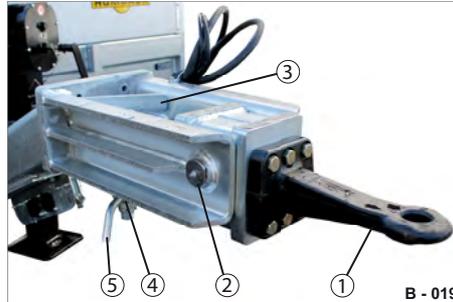


Fig. 16 Rotatable towing eye

- 1 Towing eye
- 2 Pivot point/axle
- 3 Fastening bolt
- 4 Spacer sleeve
- 5 Wing nut



Fig. 17 Rotating the towing eye



CAUTION



Swivelling towing eye

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



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



WARNING

Towing eye secured incorrectly

The screw connection can loosen during the journey. The trailer can detach from the towing vehicle - risk of accidents!

- ▶ Check before driving that the rotatable towing eye is properly secured.



WARNING

Using incorrect towing eye

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

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

3 Connection element: towing eye

Releasing

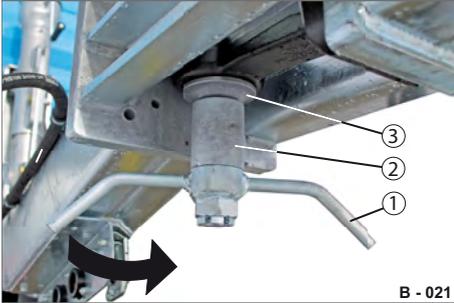


Fig. 18 Towing eye locked at bottom

- 1 Wing nut
- 2 Spacer sleeve
- 3 Shim rest

- ▶ Unscrew the wing nut (Fig. 18/1) completely.
- ▶ Remove the spacer (Fig. 18/2) and the shim rest (Fig. 18/3).

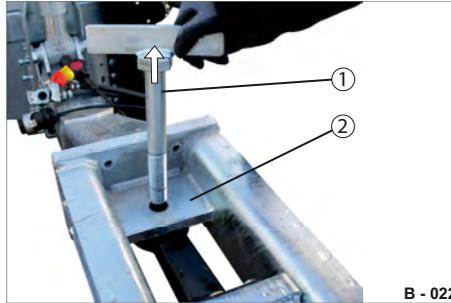


Fig. 19 Removing fastening bolt

- 1 Fastening bolt
- 2 Bracket

- ▶ Pull out the fastening bolt (Fig. 19/1).
- ▶ Remove the fastening elements.

Rotating



Fig. 20 Rotating the towing eye

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

Securing

Securing the towing eye (D50)

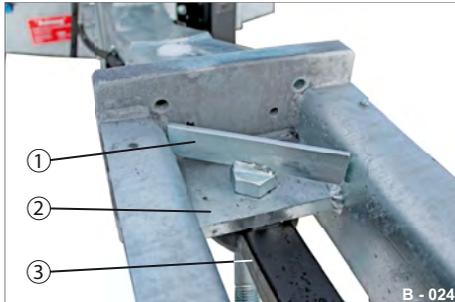


Fig. 21 Towing eye D50 locked at bottom

- 1 Fastening bolt
- 2 Bracket
- 3 Towing eye (D50)

► Insert the fastening bolt (Fig. 21/1) from above through the bracket (Fig. 21/2) and the towing eye (Fig. 21/3).

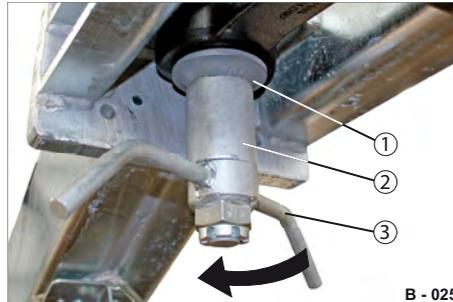


Fig. 22 Securing the towing eye D50 at bottom

- 1 Shim rest
- 2 Spacer sleeve
- 3 Wing nut

- Engage the shim rest (Fig. 22/1) and the spacer (Fig. 22/2) from below on the fastening bolt of the towing eye (Fig. 21/3).
- Screw the wing nut (Fig. 22/3) onto the fastening bolt.
- Firmly tighten down the connection. The towing eye is friction-locked.



Fig. 23 Towing eye D50 secured



Check before driving that the rotating towing eye is firmly tightened.

3 Connection element: towing eye

Securing the towing eye (D40)

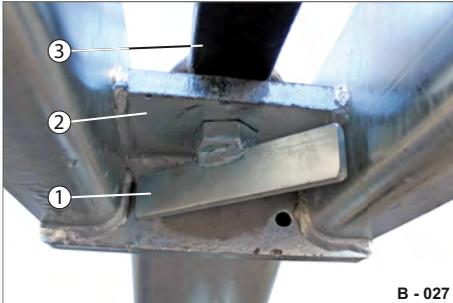


Fig. 24 Towing eye D40 locked at top

- 1 Fastening bolt
- 2 Bracket
- 3 Towing eye (D40)

► Insert the fastening bolt (Fig. 24/1) from below through the bracket (Fig. 24/2) and the towing eye (Fig. 24/3).

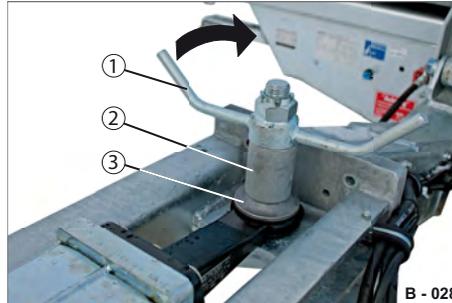


Fig. 25 Securing the towing eye D40 at top

- 1 Wing nut
- 2 Spacer sleeve
- 3 Shim rest

- Engage the shim rest (Fig. 25/3) and the spacer (Fig. 25/2) from above on the fastening bolt of the towing eye (Fig. 24/3).
- Screw the wing nut (Fig. 25/1) onto the fastening bolt.
- Firmly tighten down the connection. The towing eye is friction-locked.



Fig. 26 Towing eye D40 secured



Check before driving that the rotating towing eye is firmly tightened.

Incorrectly secured towing eyes

NOTICE

Incorrectly securing the towing eye

The towing eye bushing may be damaged - premature wear.

- ▶ Secure the towing eye properly.
- ▶ Insert the fastening bolt only in the pockets of the bracket - not directly on the towing eye.

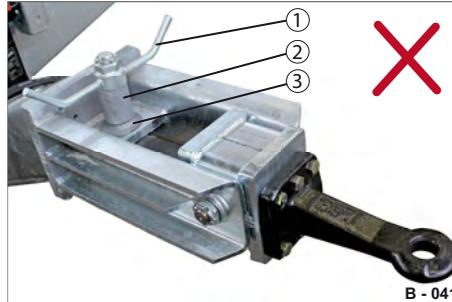


Fig. 27 Incorrectly secured - view, top

- 1 Wing nut
- 2 Spacer
- 3 Shim rest

The shim rest (Fig. 27/3) was not used as a rest for the towing eye, but only as a height compensator.



Fig. 28 Incorrectly secured - view, bottom

- 1 Towing eye bushing
- 2 Fastening bolt / wing

The towing eye bushing (Fig. 28/1) is pressed in by the tightening force. The fastening bolt (Fig. 28/2) is not secured against independently coming loose in that the wing is freely mobile.

Connecting trailer to the towing vehicle / detaching from the towing vehicle

Connecting the towing vehicle 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.



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 vehicle when connection/detaching the towing vehicle 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



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.



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



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.

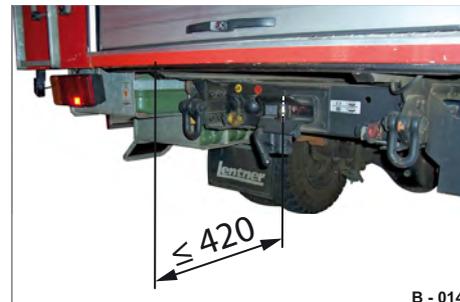
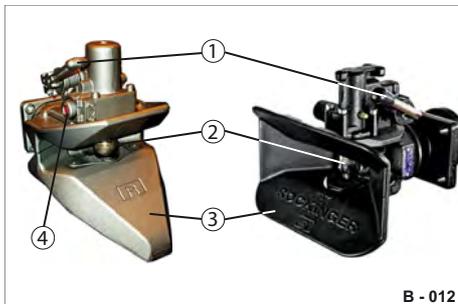


Fig. 29 Max. rear clearance

Available versions of Pin couplings



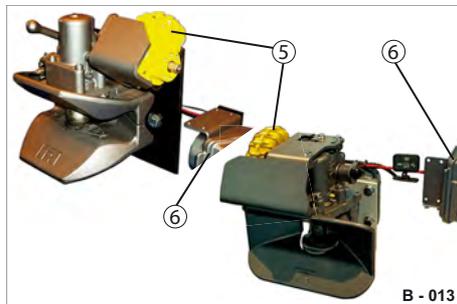
B - 012

Fig. 30 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.



B - 013

Fig. 31 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.



B - 014

Fig. 32 Pneumatic



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

Preparation



Fig. 33 Coupling the trailer

- ▶ 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 vehicle?

- 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)

Coupling



Fig. 34 Screw parking brake
(HBT BE / HBT BS / HBTZ BS 13 t)

- 1 Securing cable with hook
- 2 Crank

- ▶ Release the hook (Fig. 34/1) from the crank (Fig. 34/2).
- ▶ Turn the screw parking brake in the clockwise direction until it is applied. This brakes the trailer.

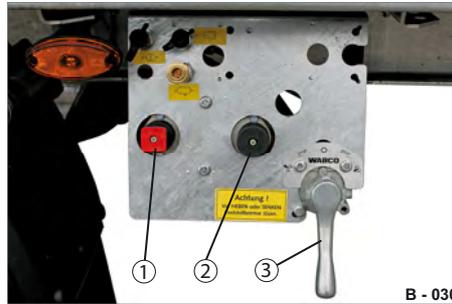


Fig. 35 Actuating the parking brake
(HBTZ 19 t)

- 1 Spring-loaded parking brake (red)
- 2 Service brake release valve (black)
- 3 Pneumatic suspension turning lever

- ▶ Check that the pneumatic suspension turning lever (Fig. 35/3) is in the neutral position. The trailer is not lowered or raised.
- ▶ Engage the spring-loaded parking brake (Fig. 35/1). This brakes the trailer.

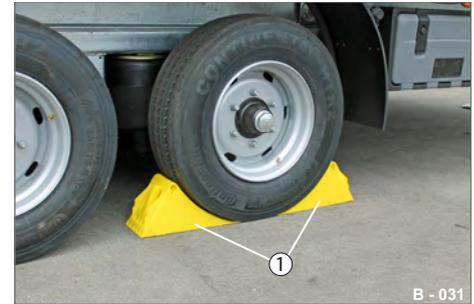


Fig. 36 Wheel chocks positioned

- 1 Wheel chock

- ▶ If necessary, place the wheel chocks (Fig. 36/1) under the wheels of the fixed axle. The trailer has an additional safeguard against rolling away.



Fig. 37 Height equalisation / alignment

- 1 Tube drawbar - height
- 2 Geared support winch

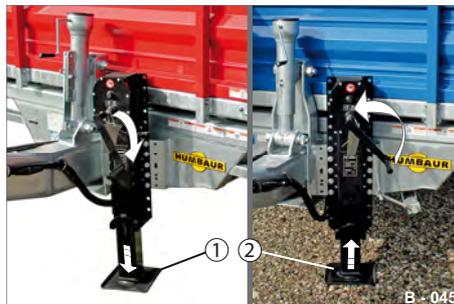


Fig. 38 Height equalisation / alignment

- 1 Crank down geared support foot
- 2 Crank up geared support foot

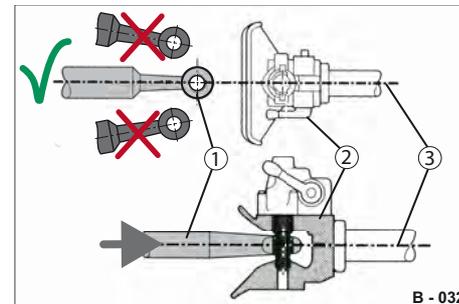


Fig. 39 Driving up

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

► If necessary, correct the tube drawbar setting (Fig. 37/1) by means of the geared support winch (Fig. 37/2).

► Crank the foot of the geared support (Fig. 38/1) down or up (Fig. 38/2).

► Do an optical check to ensure the trailer is as horizontal and level as possible.

► Reverse the towing vehicle 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.

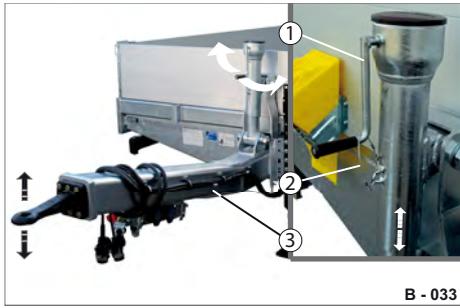


Fig. 40 Height adjustment of drawbar
 1 Crank
 2 Securing cable
 3 Drawbar

- ▶ Unclamp the securing cable (Fig. 40/2).
- ▶ Turn the crank (Fig. 40/1) clockwise or anticlockwise and adapt the height of the drawbar (Fig. 40/3) of the pin coupling (Fig. 43/2) on the towing vehicle.

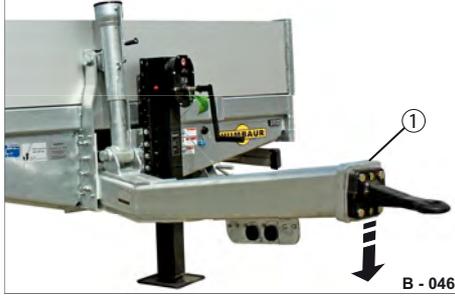
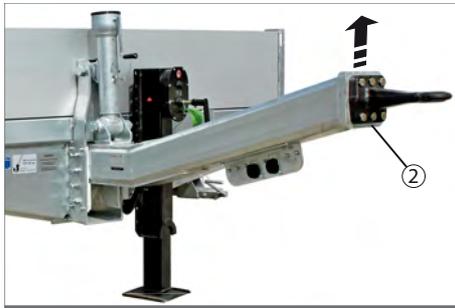


Fig. 41 Height adjustment of drawbar
 1 Tube drawbar, fully down
 2 Tube drawbar, full up

Towing eye too low:
 - The tube drawbar would be pressed up during coupling.

Towing eye too high:
 - The rear of the towing vehicle would be pressed up during coupling.

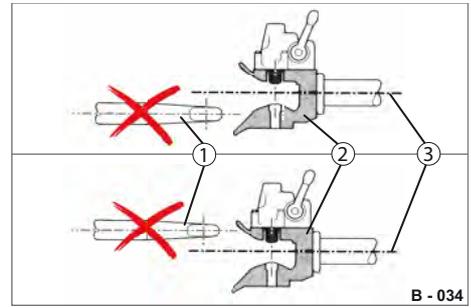
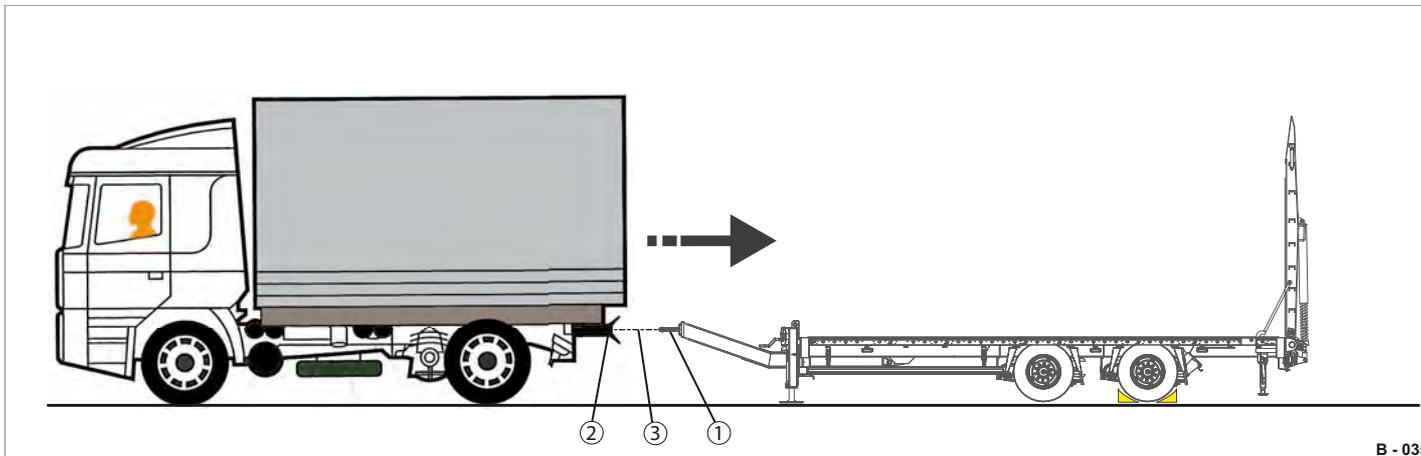


Fig. 42 Incorrect height adjustment
 1 Towing eye
 2 Pin coupling (catcher)
 3 Central axis

- ▶ Set the height so that the towing eye meets at the middle axis (Fig. 42/3) or slightly on the lower flaps of the catcher.
- ▶ Position the crank (Fig. 40/1) downward.
- ▶ Clamp the securing cable (Fig. 40/2). The crank is secured against turning of its own accord.



B - 035

Fig. 43 Coupling

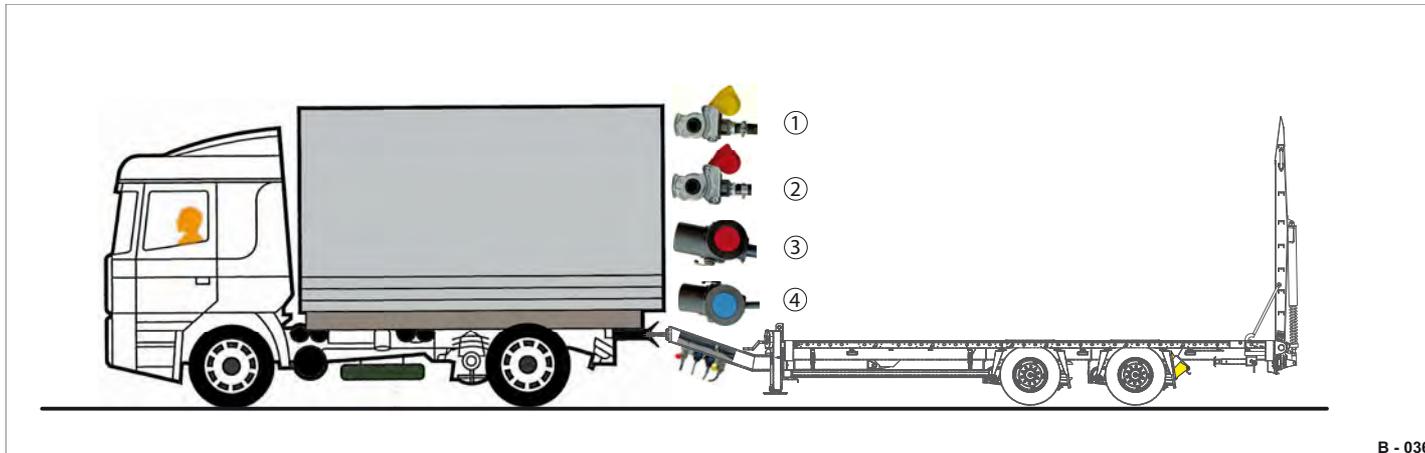
- 1 Towing eye
- 2 Pin coupling (catcher)
- 3 Central axis

- ▶ Open the pin coupling (Fig. 43/2).
- ▶ Leave the danger area between the towing vehicle and trailer.
- ▶ Move the towing vehicle back so that the towing eye (Fig. 43/1) 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 (option) of the rear axle (by raising/lowering).

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

After coupling



B - 036

Fig. 44 Create connection

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

► Connect the lines in the following order to the towing vehicle:

1. Brake line (yellow)
 2. Supply line (red)
 3. Lighting cable
 4. EBS / ABS cable
- (see "Coupling" on page 73)

► Move the support equipment up (see page 99).

► Insert used wheel chocks in the holders and secure them in position (see page 115).

► If necessary:

Readjust the air spring (option), cover/remove the park warning sign (option).

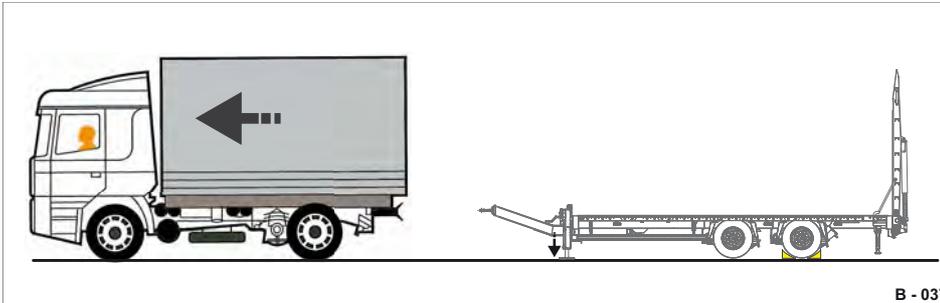
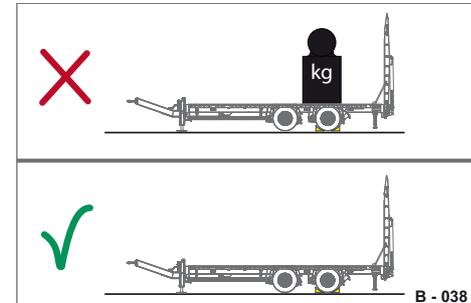


Fig. 45 Correctly coupling trailer



Uncoupling

- ▶ Actuate the trailer screw parking brake/spring-loaded parking brake (see page 77 or 79) and the towing vehicle parking brake.
- ▶ Secure the trailer with wheel chocks against rolling away (see page 115).
- ▶ Extend the support leg of the geared support winch down to the ground or until the trailer is roughly in the horizontal and the towing eye is slightly raised from the catcher (see page 96).
- ▶ Disconnect the lines in the following order from the towing vehicle:
 1. Brake line (yellow)
 2. Supply line (red)
 3. Lighting cable
 4. EBS / ABS cable

(see “Coupling” on page 73)
- ▶ Plug the line heads into the respective parking socket or place the lines securely on the drawbar (see page 73).
- ▶ Unlock and open the pin coupling on the towing vehicle (see page 58).
- ▶ Only drive the towing vehicle forward carefully once there is nobody in the danger area.
- ▶ Close the pin coupling.
- ▶ If necessary, attach park warning signs to the trailer (see page 118).

Check before departing and when parking

Departure check

- Trailer properly coupled.
- Brake and supply lines are connected.
- Hydraulic lines are connected.
- Electrical lines and & EBS cable are connected.
- Side guard is down and secured.
- Support equipment is up and secured.
- Platform gates/curtains/posts are closed and secured.
- Screw parking brake/spring-loaded parking brake is released.
- Raising/lowering system is in drive position.
- Toolbox is closed and secured.
- Ramp planks are slid in, ramp plank bay is closed and secured.
- Drive-up ramps are up and secured.
- Wheel chocks are properly secured.
- Warning signs are retracted and secured.

Check when parking

- The trailer is properly uncoupled.
- Screw parking brake/spring-loaded parking brake is actuated.
- Wheel chocks are under the wheels.
- Support equipment is extended and secured.
- Brake and supply lines are disconnected and parked.
- Electrical line & EBS cable are disconnected and parked.
- Hydraulic lines are disconnected and parked.
- Raising/lowering system is in park position.
- Platform gates/curtain are closed.
- Posts/lashing equipment are stowed.
- Toolbox is closed.
- Ramp planks are slid in, ramp plank bay is closed and secured.
- Drive-up ramps are up and secured.
- Warning sign is extended.

Circling and cornering



Fig. 46 HBT BS when driving

Pay special attention to:

- Length of the vehicle team
- Speed
- Kinking of the trailer to the towing vehicle when cornering tightly (max. 90 ° possible)

Observe maximum height



Fig. 47 Total height of the loaded trailer

B - 048

- ▶ 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: chassis

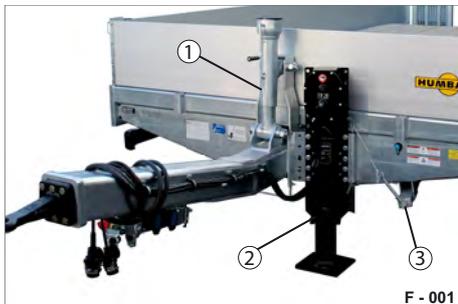


Fig. 1 Controls - front

- 1 Height adjustment of drawbar
- 2 Geared support winch
- 3 Screw parking brake



Fig. 2 Controls - left side in direction of travel

- 1 Service brake release valve
(HBT BE / HBT BS / HBTZ BS 13 t)

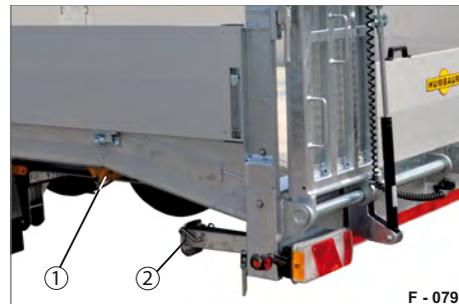


Fig. 3 Controls - rear right and left sides

- 1 Wheel chock
- 2 Folding support

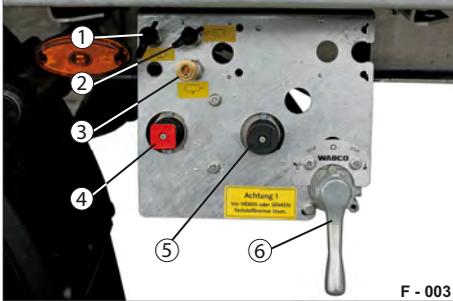


Fig. 1 Operating console - chassis (HBTZ BS 19 t)

- 1 Test connection, brake cylinder pressure
- 2 Test connection, pneumatic suspension bellows pressure
- 3 Test connection, air tank pressure
- 4 Spring-loaded parking brake (square)
- 5 Service brake release valve (round)
- 6 Raising/lowering system (option)

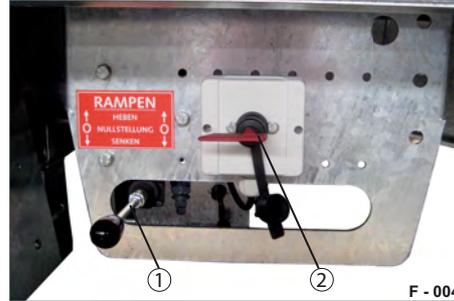


Fig. 2 Operating console - electro-hydraulic unit for drive-up ramps (option)

- 1 Operating lever (raising/lowering)
- 2 Power switch (ON/OFF)

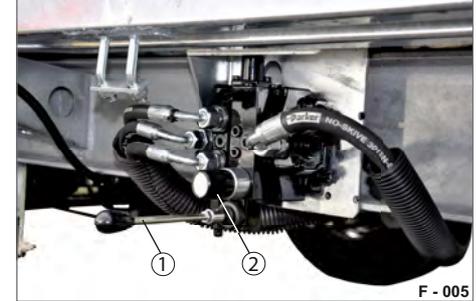


Fig. 3 Operating console - hydraulic track width displacement of drive-up ramps (option)

- 1 Operating lever (displaced)
- 2 Pressure regulator

General

The Humbaer GmbH braking system is an electronic braking system (EBS) and complies with EC Directive 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 plug connector, 7-pin, 24 V, complying with ISO 7638-1996
- ABS / EBS plug connector, 5-pin, 24 V, complying with 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.

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

72 Operation: chassis



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.

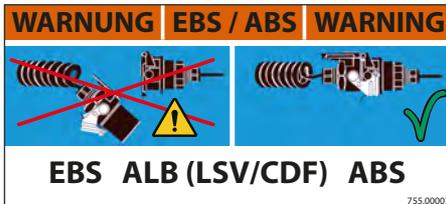


Fig. 4 Label on trailer



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.



DANGER



Incorrect order during coupling/uncoupling the lines

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

The trailer is unbraked.

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

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



Refer to the operating manual for the relevant towing vehicle.



Fig. 5 Connections parked

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

Coupling



Fig. 6 Coupling

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

Uncoupling



Fig. 7 Uncoupling

- 1 Parking sockets for coupling heads

⚠ CAUTION



Coupling/uncoupling lines

You can crush your fingers in the connection points.

- ▶ Screw and unscrew the coupling heads carefully.
- ▶ Turn the coupling head - not the hose.

- ▶ Before coupling, check that the connections and coupling heads are clean and undamaged.
 - ▶ Connect the "Brake" coupling head (Fig. 6/1).
 - ▶ Couple the "supply line" coupling head (Fig. 6/2).
 - ▶ Release the screw parking brake (see page 77).
- or**
- ▶ Release the spring-loaded parking brake (see page 79).

- ▶ Disconnect "Supply" coupling head (Fig. 6/2).
- ▶ Disconnect the "Brake" coupling head (Fig. 6/1).
When the supply line is uncoupled, the trailer is braked.
- ▶ Twist the coupling heads into the parking sockets (Fig. 7/1).
This reliably protects the connections/sealing surfaces from contamination and damage.

Operating the service brake for manoeuvring

A coupled trailer, but without connected lines, can be manoeuvred by releasing the service brake.

The trailer is automatically braked with the service brake by venting the supply line during the uncoupling process.

The service brake can be manually released via the release valve.

The service brake does not replace the screw parking brake function!



At a lower tank pressure of approx. 2.5 bar the service brake can no longer be released (residual pressure safeguarding).

When the supply line is recoupled to the towing vehicle the released valve is automatically switched to the drive position (release valve is pressed out/activated with excess pressure).



WARNING



Deactivate service brake with release valve

The trailer may start moving unchecked and roll over persons - risk of accident!

- ▶ Before releasing the service brake check that the trailer is properly coupled or secured with the screw parking brake.



WARNING



Close release valve with compressed-air tank empty

The trailer is not braked and may start moving unchecked and roll over persons - risk of accident!

- ▶ Couple the brake line to the towing vehicle with the compressed-air tank empty.



WARNING



Park trailer only with activated service brake

The service brake function may diminish over time and the trailer may start moving unchecked and roll over persons - risk of accident!

- ▶ Secure a parked trailer with the screw parking brake and wheel chocks.

HBT BE / HBT BS / HBTZ BS 13 t

Service brake deactivation

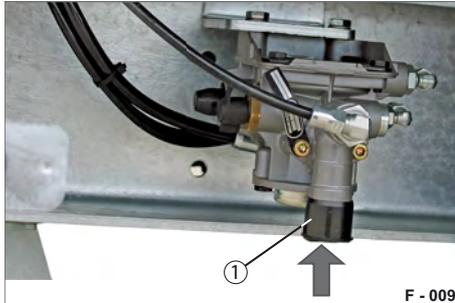


Fig. 8 Releasing the service brake

1 Release valve, pressed in

- ▶ Press the release valve (Fig. 8/1).
The service brake releases.
Trailer is unbraked.
You can manoeuvre with the trailer.

Service brake activation

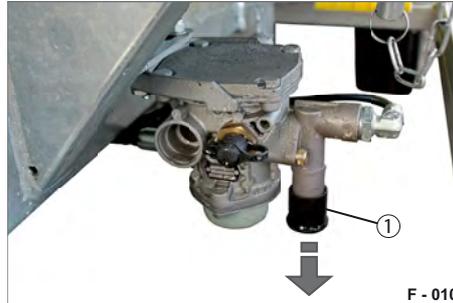


Fig. 9 Service brake in drive position

1 Release valve, pulled out

- ▶ Pull the release valve (Fig. 9/1).
The service brake engages.
Trailer is braked.

HBTZ BS 19 t

Service brake deactivation



Fig. 10 Releasing the service brake

1 Release valve (round, black) pressed in

- ▶ Press the release valve (Fig. 10/1).
The service brake releases.
Trailer is unbraked.
You can manoeuvre with the trailer.

Service brake activation



Fig. 11 Service brake in drive position

1 Release valve, pulled out

- ▶ Pull the release valve (Fig. 11/1).
The service brake engages.
Trailer is braked.

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

Operating the screw parking brake

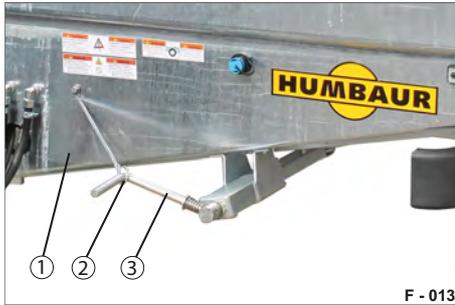


Fig. 12 Screw parking brake secured in drive position

- 1 Front wall / chassis
- 2 Securing cable with hook
- 3 Crank

The screw parking brake is operated 100% manually.

The screw parking brake secures the trailer against rolling away when parking in the uncoupled state.



The screw parking brake may only be released with the trailer in the coupled state!

Applying

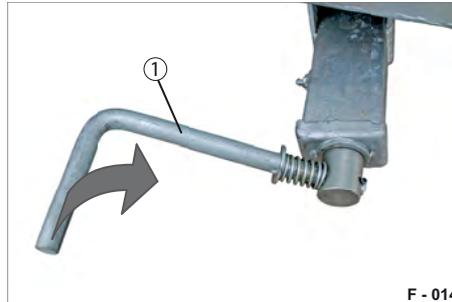


Fig. 13 Applying the screw parking brake

- 1 Crank

- ▶ Release the hook (Fig. 12/2) from the crank (Fig. 13/1).
 - ▶ Turn the crank (Fig. 13/1) in the clockwise direction until the brake is applied.
- The trailer is braked.

Securing in park position

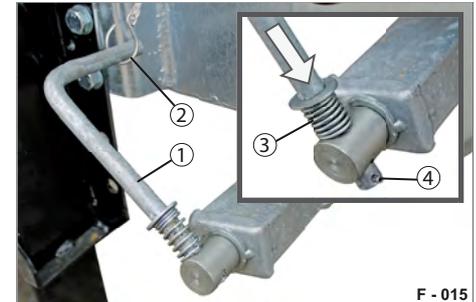


Fig. 14 Screw parking brake secured

- 1 Crank
- 2 Securing cable with hook
- 3 Compression spring
- 4 Pin

- ▶ Press the crank (Fig. 14/1) against the compression spring (Fig. 14/3).
 - ▶ Turn the crank (Fig. 14/1) at the same time so that the pin (Fig. 14/4) engages.
- Crank handle points to the chassis.
- ▶ Fit the hook of the securing cable (Fig. 14/2) over the crank.
- The screw parking brake is secured against unauthorised releasing.

Releasing

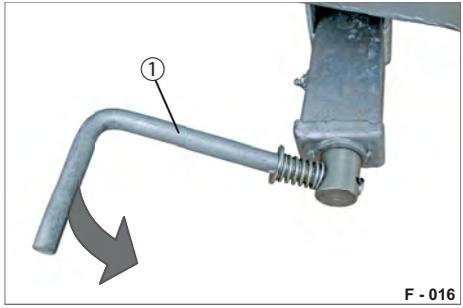


Fig. 15 Releasing the screw parking brake

- 1 Crank

- ▶ Release the hook (Fig. 14/2) from the crank (Fig. 15/1).
- ▶ Rotate the crank (Fig. 15/1).
- ▶ Rotate the crank (Fig. 15/1) anticlockwise as far as it will go. The trailer is unbraked.

Securing in the drive position



Fig. 16 Screw parking brake secured

- 1 Crank
- 2 Securing cable with hook

- ▶ Fit the hook of the securing cable (Fig. 16/2) over the crank (Fig. 16/1). The screw parking brake is secured against turning of its own accord.

WARNING

Driving with unsecured crank

The crank may be ripped off during driving - risk of striking!

- ▶ Check before driving that the crank is secured with the securing cable.

Operating the spring-loaded parking brake

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 release device.



For information on the emergency release device, refer to the chapter entitled "Emergency release device", see page 280.

Securing trailer



Fig. 17 Trailer secured

- 1 Wheel chocks in place

- ▶ Check before releasing the spring-loaded parking brake that:

- the wheel chocks are in place and/or
- the trailer is properly coupled to the towing vehicle.

Brakes



Fig. 18 Operating point

- 1 Spring-loaded parking brake (red, square)

- ▶ Pull out the spring-loaded parking brake (Fig. 18/1).
The trailer is braked.

Releasing

- ▶ Press the spring-loaded parking brake (Fig. 18/1).
The trailer is unbraked.

Operating the 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.

Removing

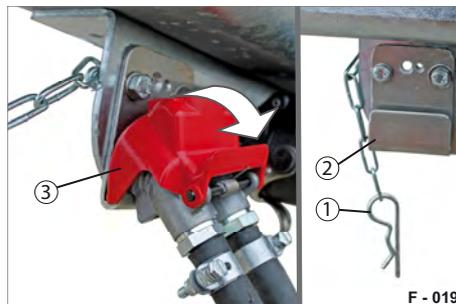


Fig. 19 Duo-Matic on park console

- 1 Securing cable with spring pin
- 2 Park console
- 3 End cap, Duo-Matic coupling

- ▶ Pull the spring pin (Fig. 19/1) out of the park console (Fig. 19/2).
- ▶ Press off the end cap (Fig. 19/3) and remove the Duo-Matic coupling from the park console.

Coupling

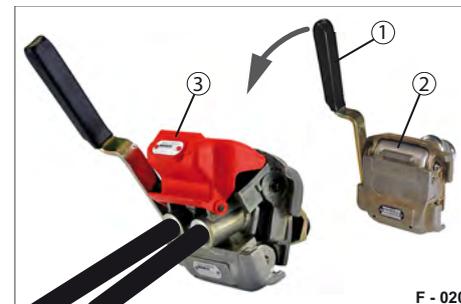


Fig. 20 Duo-Matic, coupled

- 1 Handle
- 2 Quick-release coupling on the towing vehicle
- 3 Duo-Matic coupling head

- ▶ Make sure that the coupling head and quick-release coupling socket sealing surfaces are clean.
- ▶ Clean the surfaces with a clean cloth, if necessary.
- ▶ Push the handle (Fig. 20/1) of the Duo-Matic quick-release coupling socket downwards and slide the coupling head (Fig. 20/3) under the opened protective cover.
- ▶ Release the handle.
The connection is made.

Uncoupling

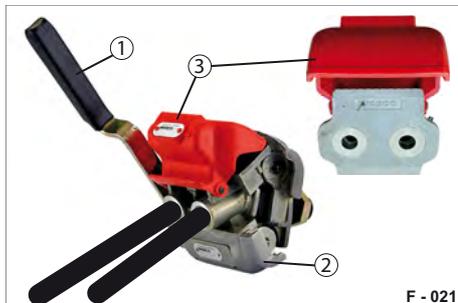


Fig. 21 Duo-Matic, uncoupled

- 1 Handle
- 2 Quick-release coupling on the towing vehicle
- 3 Duo-Matic coupling head

- ▶ Pull the handle (Fig. 21/1) of the Duo-Matic quick-release coupling socket upwards and pull out the coupling head (Fig. 21/3) from under the protective cover.

The connection is disconnected.
The cover plate automatically closes the coupling head and protects it from contamination and damage.

Parking

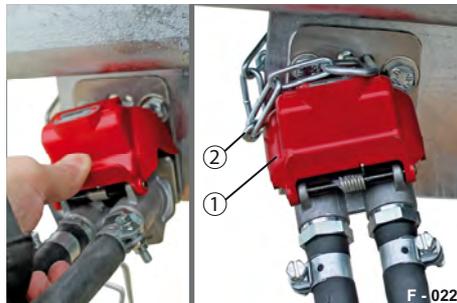


Fig. 22 Duo-Matic, parked

- 1 End cap, Duo-Matic coupling
- 2 Securing chain with spring pin

- ▶ Park the Duo-Matic quick-release coupling on the park console.
- ▶ Insert the spring pin (Fig. 22/2) into the bore holes.
The Duo-Matic coupling is secured against falling down.

Pressure level in the compressed-air tank

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.

When the pressure in the tank drops below approx. 3 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.

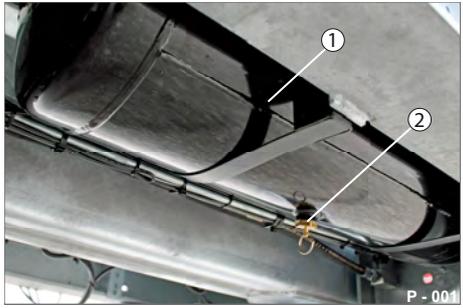


Fig. 23 Compressed-air tank
1 Compressed-air tank
2 Drain valve

Depending on the trailer equipment specification/version, the compressed-air tank can be located centrally under the chassis or on the side.

In the 19 t version two compressed-air tanks are arranged next to each other.

WARNING



Activated emergency release device

When the emergency release device is activated, the trailer brake system is put out of operation.

Persons can be hit or run over by the trailer.

- ▶ Use wheel chocks to prevent the trailer from rolling.
- ▶ Only actuate the emergency release device on even ground.

Draining the compressed-air tank



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



- ▶ Wear .



CAUTION



Working under the trailer

You could hit your head.

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



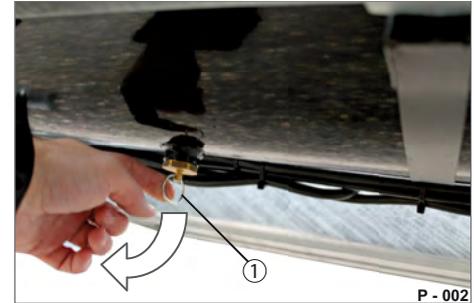
- ▶ Wear .

NOTICE

Compressed-air system/valve freezing

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

- ▶ Use antifreeze.



P - 002

Fig. 24 Compressed-air tank

1 Operating pin

- ▶ Pull on the operating pin (Fig. 24/1) or press it to one side.
Accumulated condensate is forced out of the tank by the pressure.
- ▶ Release the operating pin (Fig. 24/1) when no more condensate comes out.
The drain valve closes automatically.
- ▶ Repeat the work steps for all drain valves.

General

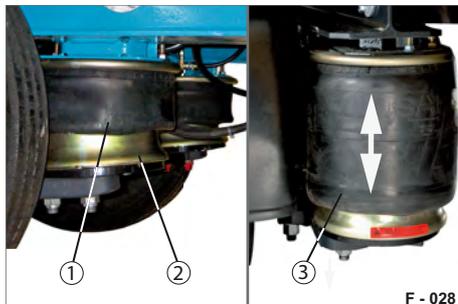


Fig. 25 Pneumatic suspension

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

The raising/lowering system consists of air bellows which, when filled with or drained of air, can adapt to different ramp heights or serve as height equalisation 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 simultaneously activated by means of the raising/lowering valve.



The permissible vehicle height can vary between the countries of use. The country-specific vehicle heights must not be exceeded.



Stresses occur in the raising/lowering system when a braked trailer is raised and lowered. When the brake is released, the trailer - in response to the stresses - makes a sudden downward movement after lowering and a sudden upward movement after raising.



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



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!



- ▶ Check 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.

Raising the trailer

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.

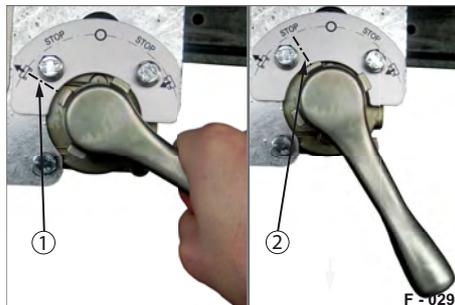


Fig. 26 Raising the trailer

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

- ▶ Press the turning lever inwards and turn it anti-clockwise towards the "Raise" icon (Fig. 26/1).
This raises the trailer.
- ▶ When the height has been achieved, turn the turning lever back one stage into the "Stop" position (Fig. 26/2).
The trailer stays at the desired height.

Lowering the trailer

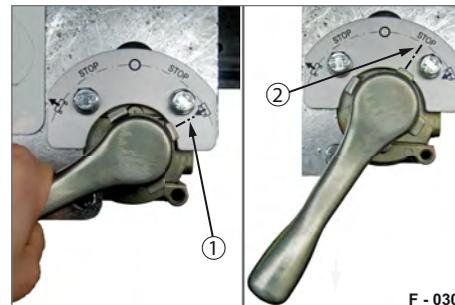


Fig. 27 Lowering the trailer

- 1 "Lower" position
- 2 "STOP" position

- ▶ Press the turning lever inwards and turn it clockwise towards the "Lower" icon (Fig. 27/1).
This lowers the trailer.
- ▶ When the height has been achieved, turn the turning lever back one stage into the "Stop" position (Fig. 27/2).
- ▶ Check that the air bellows have rolled carefully over the piston.
If necessary, raise and lower the trailer again.

Moving the trailer to the drive position

WARNING

Driving with the turning lever not in the drive position

Risk of accident due to the permissible trailer drive height being exceeded.

- ▶ Check before driving that the turning level is in the drive position (centre position).

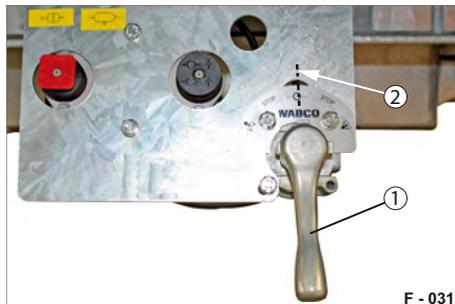


Fig. 28 Turning lever in drive position

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

If the turning lever (Fig. 28/1) is in drive position (Fig. 28/2), it is pulled out and cannot be turned.

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

- ▶ Bring the turning lever (Fig. 28/1) into drive position before starting the journey.
You must only drive with the trailer in this position.

Hydraulic system:

Trailers with hydraulically actuated drive-up ramps require a hydraulic fluid supply.

The trailer is supplied with the necessary pressure as standard by the hydraulic line via the towing vehicle.

The hydraulic supply is designed as standard as a dual-circuit system.

**DANGER****Excessive operating pressure**

The max. permissible pressure is exceeded - the lines can burst/ component are damaged.

Escaping oil can cause injury - risk of accidents!

- ▶ Do not exceed the maximum specs for oil pressure and oil quantity - see label on the trailer.
- ▶ Send a request to the workshop if the hydraulic system is defective.

**WARNING****Lines are under pressure**

The hydraulic line is under pressure when it is uncoupled.

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.



- ▶ Wear

NOTICE**Using wrong / old hydraulic fluid**

The hydraulic system (hoses, connections, cylinders) could corrode rapidly and malfunction.

- ▶ Use only HL, HLP and HPLD group hydraulic fluids, e.g. HLP ISO 46.



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



The hydraulic system of the towing vehicle must have the necessary oil quantity and must not exceed the max. permissible operating pressure.

Teleskop-Zylinder / Hydraulik	
Max. Nennlast (Zuladung)	
Rated load =	16.000 kg
	(= max. 200 bar)
	= 17,0 l (dm³)
	= -30 ... + 100 °C
<small>620.00524</small>	

Fig. 29 Label on trailer

- 1 Max. oil pressure (Pmax.): 180 bar
- 2 Max. oil quantity: 10 l
- 3 Operating temperature: -30 °C / + 100 °C

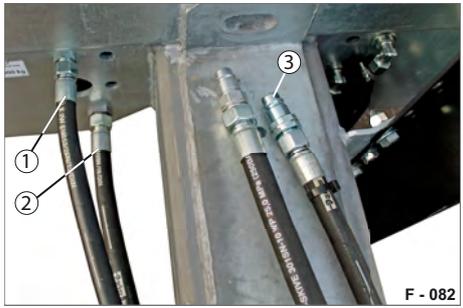
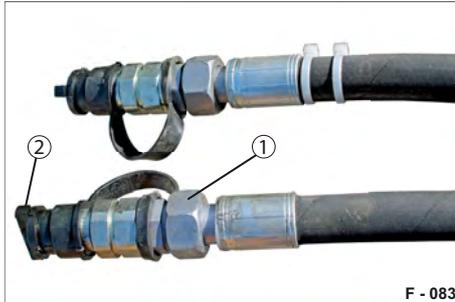


Fig. 30 Hydraulic lines for towing vehicle

- 1 "PRESSURE" hydraulic line
- 2 "RETURN" hydraulic line
- 3 Line connection (SVK BG3)

Coupling



F - 083

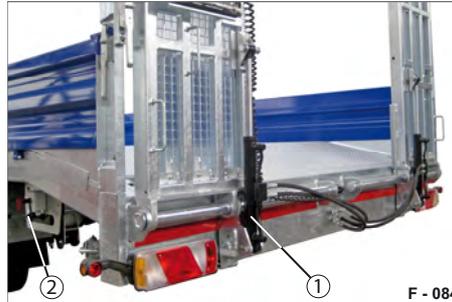
Fig. 31 Connecting hydraulic lines

- 1 Line connection
- 2 Protective cap

- ▶ Remove the protective cap (Fig. 31/2).
- ▶ Make sure that the hydraulic line connection is clean (Fig. 31/1).
- ▶ Clean it with a clean cloth, if necessary.
- ▶ If necessary, check the hydraulics fluid level of your towing vehicle.
- ▶ Insert the line connection into the connection socket on the towing vehicle.

Starting the towing vehicle builds up the pressure.

Operating drive-up ramps



F - 084

Fig. 32 Lowering drive-up ramps

- 1 Hydraulic cylinder
- 2 Operating point

The hydraulic cylinders (Fig. 32/1) for drive-up ramps are activated from the operating point (Fig. 32/2) at the rear.

- ▶ Check before operating the ramps that the trailer is coupled to the towing vehicle and/or secured against rolling away.
- ▶ Operating the drive-up ramps - see the section entitled Body starting on page 165.

Uncoupling



F - 085

Fig. 33 Parking the hydraulic line

- 1 Hydraulic line



The hydraulic lines must not be under pressure when uncoupling.

- ▶ Pull the line connection from the connection socket on the towing vehicle.
- ▶ Lay the hydraulic lines (Fig. 33/1) firmly on the tube drawbar; if necessary, park the line connections into the parking sockets on the front wall.

Electro-hydraulic system

The electro hydraulics unit consists of electric pump, oil tank, and batteries mounted under the chassis.

The battery box replaces a part of the side guard.

The electric pump is powered by 2 batteries with 12 V.

The oil tank is filled at the factory with hydraulic fluid and started up.



WARNING



Danger when handling batteries

The batteries can explode as a result of sparking or short circuits.

- ▶ Avoid short circuiting and sparking.
- ▶ Do not place any tools / objects on the batteries.
- ▶ Cover the battery poles before starting work on the batteries.



- ▶ Do not smoke or allow naked flames near the batteries.



WARNING



Escaping battery acid

Battery acid is corrosive and can cause chemical burns if it comes into contact with the skin.



- ▶ Consult a doctor immediately in the event of acid burns.



WARNING



Hot batteries

Bridged batteries can become hot - risk of burns!



- ▶ Allow bridged batteries to cool down before commencing work on them.



WARNING



Swivelling ramps

Risk of striking in the ramp swivelling range!



- ▶ Keep other persons away from the area of the swivelling drive-up ramps.

Electro-hydraulic unit

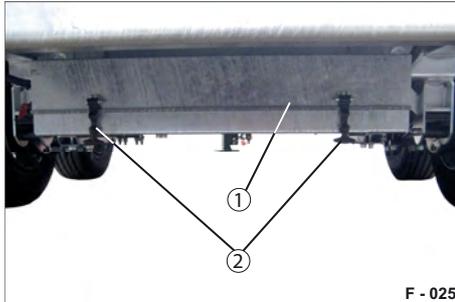


Fig. 34 Electro-hydraulic unit under chassis

- 1 Cover, closed
- 2 Locks

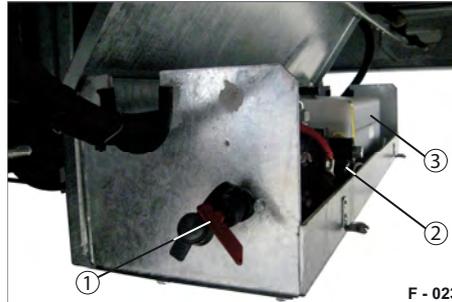


Fig. 35 Electro-hydraulic unit

- 1 main switch
- 2 Electric pump
- 3 Oil tank

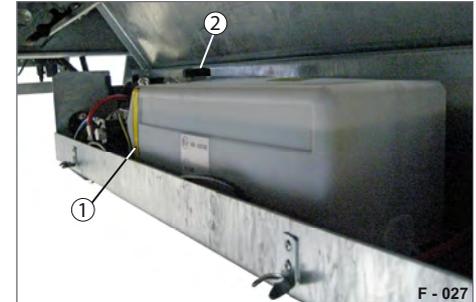


Fig. 36 Checking oil fill quantity

- 1 Check bar for oil level (Min. / Max.)
- 2 Filler connection



Maintenance/repair work on the electro-hydraulic unit may only be carried out by an approved workshop!



Follow the safety instructions when handling hydraulic fluid in the chapter entitled Maintenance, see page 264.

The oil level must be regularly checked (see Maintenance, page 264).

The oil level in the oil tank is indicated on the check bar (Fig. 36/1).

The oil level must be between the Min. and Max. limits.

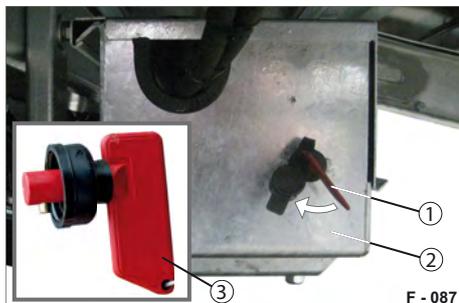


Fig. 37 Electro-hydraulic unit activated

- 1 Main power switch
- 2 Electro-hydraulic unit box
- 3 Socket key

Activating

- ▶ Insert the socket key (Fig. 37/3).
- ▶ Turn the main power switch (Fig. 37/1) to ON.

Deactivating



The power must be interrupted during extended breaks or periods of non-use.

- ▶ Turn the main power switch to OFF and remove the socket key.
- ▶ Attach the protective cap.

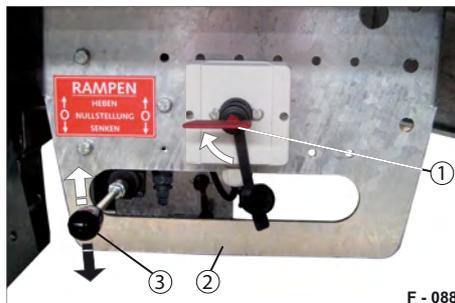


Fig. 38 Operating point

- 1 Main power switch (ON)
- 2 Operating point
- 3 Operating lever for drive-up ramps

Operating point activation

- ▶ Insert the socket key and turn the power switch (Fig. 38/1) to ON.
- ▶ Actuate the operating lever (Fig. 38/3) for drive-up ramps - see section entitled Body starting on page 165.

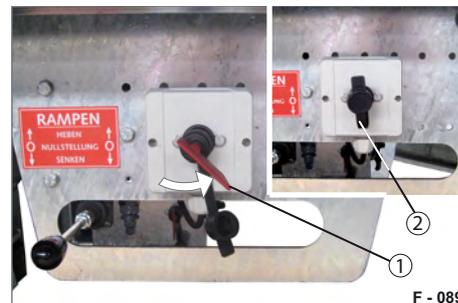


Fig. 39 Operating point

- 1 Main power switch (OFF)
- 2 Cap

Operating point deactivation

- ▶ Turn the power switch (Fig. 39/1) to OFF.
- ▶ Remove the socket key.
- ▶ Attach the protective cap (Fig. 39/2).
- ▶ Keep the socket key in a safe place.

Battery box



Fig. 40 Battery box on side under the chassis

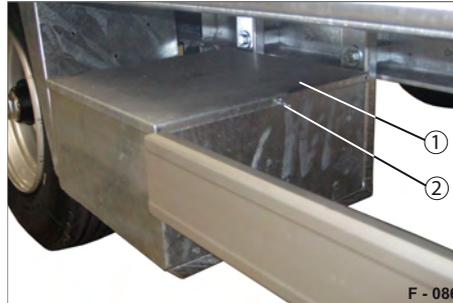


Fig. 41 Battery box closed

- 1 Cover
- 2 Wing nut

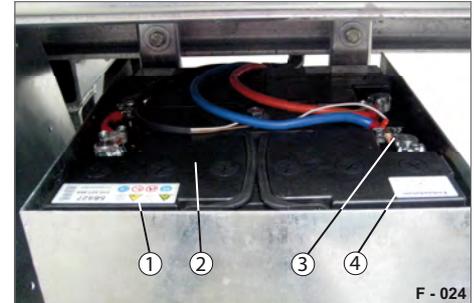


Fig. 42 Battery box, open

- 1 Danger notices / warnings
- 2 Batteries (2x 44 Ah, 12 V)
- 3 Clamping point
- 4 Date of manufacture

The battery box as a galvanised sheet metal box is located in the direction of travel on the left.

The battery box is not watertight.



The power from the batteries may only be used to supply the electro-hydraulic unit with power.



The batteries must be maintained on a regular basis - see section entitled Maintenance starting on page 264.

Opening

- ▶ Unscrew the wing nuts (Fig. 41/2) on the right and left sides.
- ▶ Carefully pull the cover (Fig. 41/1) upwards.
- ▶ Set down the cover and wing nuts safely to avoid damage.

Closing

- ▶ Fit the cover and firmly tighten down the wing nuts.

Charging



The full power of the batteries is sufficient for approx. 4 actuation cycles.

- ▶ Check the power of the batteries on a regular basis (Fig. 42/2). Note the date of manufacture (Fig. 42/4) of the batteries.
- ▶ Charge the batteries in the event of reduced power (see section entitled Maintenance, page 266).

General

Always remember:

- The geared support winch and the swivel support may only be operated with the hand crank.
- The support feet of the support equipment must be moved downwards until contact is made with the ground.
- When cleaning with a high-pressure cleaner, avoid a direct jet of water on the support equipment gearing.



Read the operating manual provided by the manufacturer for operation.



Fig. 43 Support foot stabilised

1 Stable/fixed base

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

Driving with lowered support feet

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.
- ▶ Check before driving that the hand crank has been secured with the securing cable.



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.

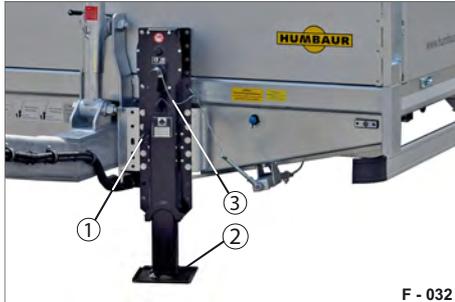


Fig. 44 Geared support winch

- 1 Hand crank
- 2 Support foot
- 3 Securing cable

The geared support winch is permanently mounted at the front on the chassis.

The support foot is cranked up in the drive position.

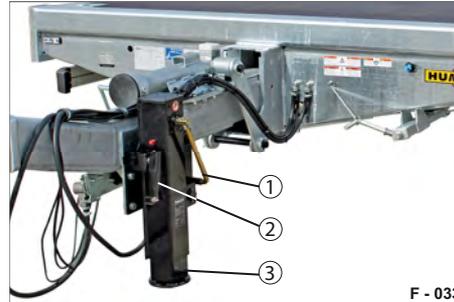


Fig. 45 Swivel support

- 1 Hand crank
- 2 Locking lever
- 3 Support foot

The swivel support is mounted roughly centrally on the drawbar.

The swivel support is mounted on trailers with through-load facilities.

The swivel support is swivelled in the drive position into the horizontal.

Operating the geared support winch

Lowering

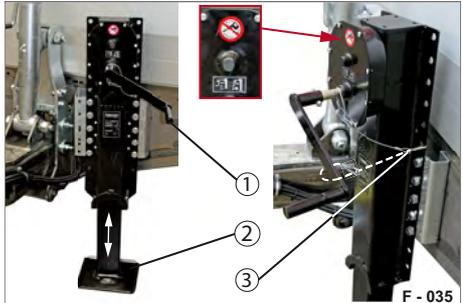


Fig. 46 Support foot extended

- 1 Hand crank
- 2 Support foot
- 3 Safety cable

- ▶ Release the securing cable (Fig. 46/3) from the hand crank (Fig. 46/1).
- ▶ Crank the support foot (Fig. 46/2) down with the hand crank - in high gear - until just before ground contact.

Activating low gear

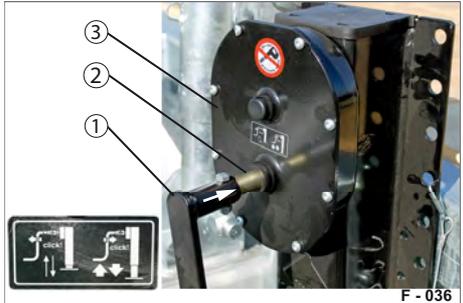


Fig. 47 Switching on low gear

- 1 Hand crank
- 2 Crankshaft
- 3 Gearing

- ▶ Press in the hand crank so that the shift arrester in the gearing engages.
- ▶ Crank the support foot (Fig. 46/2) fully down to the ground.
- ▶ If necessary, compensate any ground irregularity using, for example, a fixed base.
- ▶ Leave the crankshaft (Fig. 47/2) in low gear (pressed in).
- ▶ Secure the hand crank with the securing cable (Fig. 48/3).

Retracting / securing

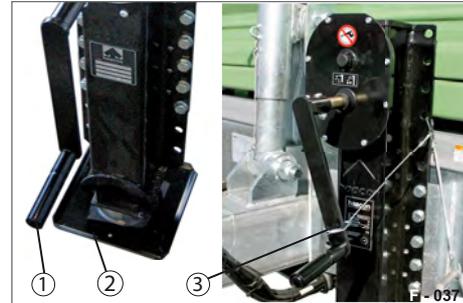


Fig. 48 Support foot retracted

- 1 Hand crank
- 2 Support foot
- 3 Safety cable

- ▶ Crank the support foot (Fig. 48/2) in high gear - only after coupling the trailer - fully up.
- ▶ Press the crankshaft (Fig. 47/2) into low gear.
- ▶ Lay the securing cable (Fig. 48/3) around the hand crank and secure it with the hook.
The hand crank is securing against turning of its own accord during driving.

Operating the swivel support

Unlocking



Fig. 49 Swivel support / drive position

- 1 Locking lever, engaged

- ▶ Pull the locking lever (Fig. 49/1) towards you.
The pin extends from the locating hole.
The swivel support is enabled.

Rotating

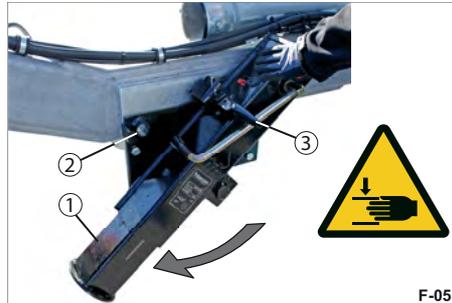


Fig. 50 Turning the swivel support

- 1 Swivel support
- 2 Locating hole
- 3 Locking lever, unlocked

- ▶ Turn the swivel support (Fig. 50/1) into the vertical support position.
- ▶ Swing the locking lever (Fig. 50/3) downwards.
The pin retracts into the locating hole (Fig. 50/2).
The swivel support is secured.

Unlocking the hand crank



Fig. 51 Swivel support - support position

- 1 Retaining plate
- 2 Hand crank
- 3 Compression spring

- ▶ Pull the hand crank (Fig. 51/2) out of the retaining plate (Fig. 51/1).
- ▶ Press against the compression spring (Fig. 51/3) and turn the hand crank so that the handle points forwards.
The hand crank is unlocked.

Lowering

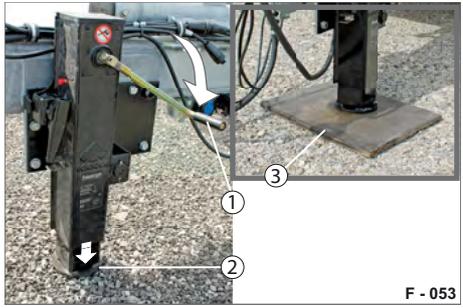


Fig. 52 Swivel support / support position

- 1 Hand crank
- 2 Support foot
- 3 Stable/fixed base

- ▶ Using the hand crank (Fig. 52/1), crank the support foot (Fig. 52/2) fully down to the ground.
- ▶ Compensate for uneven ground, if applicable, so that the trailer is in a horizontal position. If necessary, used a fixed base (Fig. 52/3).

Retracting / secure the hand crank

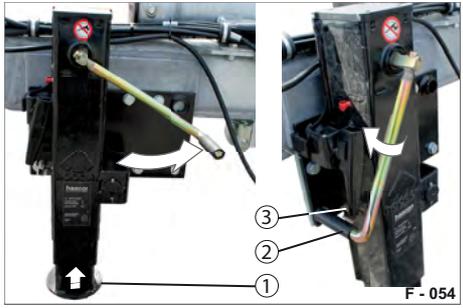


Fig. 53 Support foot retracted

- 1 Support foot
- 2 Hand crank
- 3 Retaining plate

- ▶ Using the hand crank (Fig. 53/2), crank the support foot (Fig. 53/1) - only after coupling the trailer - fully up.
- ▶ Press against the compression spring (Fig. 51/3) and turn the hand crank so that the handle points to the retaining plate (Fig. 53/3). The hand crank is secured.

Securing the swivel support



Fig. 54 Securing the swivel support

- 1 Locking lever, disengaged
- 2 Swivel support

- ▶ Pull on the locking lever (Fig. 54/1). The pin extends from the locating hole. The swivel support is enabled.
- ▶ Swing the swivel support into the horizontal drive position (see Fig. 49).
- ▶ Locate the swivel support with the locking lever in the locating hole (see Fig. 49).

Handling folding supports

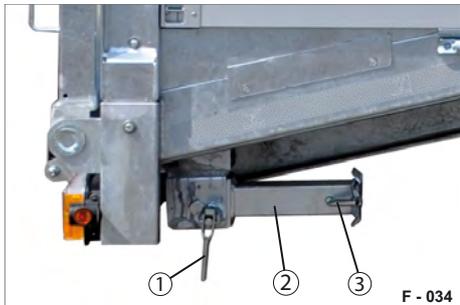


Fig. 55 Folding support

- 1 Spring bars
- 2 Folding support
- 3 Socket pin with spring bar

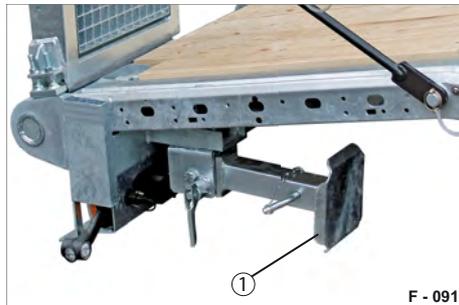


Fig. 56 Folding support (option)

- 1 Support foot plate, enlarged

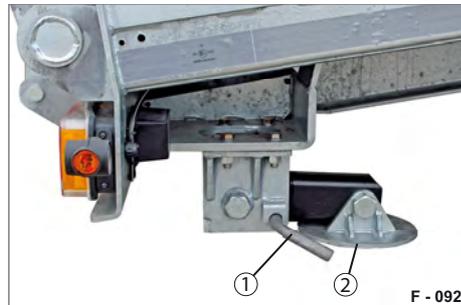


Fig. 57 Folding support, heavy (option)

- 1 Socket pin
- 2 Support foot plate, pivot-mounted



WARNING



Sinking support feet

The support feet 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 folded-down flap supports

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

- ▶ Check before driving that the folding supports are folded up and secured.



CAUTION



Working under the trailer

You could hit your head.

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

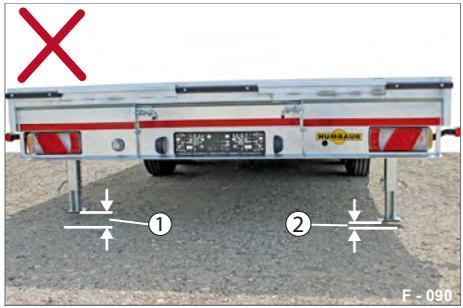


Fig. 58 Folding supports unequal
 1 Distance to the ground - large
 2 Distance to the ground - small

WARNING

 **Unequally lowered support feet**

The trailer may become unbalanced when driven on with the loading vehicle and cause the loading vehicle to tip over - danger of crushing!

- ▶ Adjust the support leg at equal distances.

WARNING

 **Loading / unloading without folded-down folding supports**

Loading/unloading without folded-down support feet can lead to loss of stability. The trailer can tip over - danger of crushing!

- ▶ Fold down the folding supports loading/unloading.
- ▶ Check that the folding supports are engaged.

CAUTION

 **Handling 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.
- ▶ Wear .
- ▶  Keep your feet out of the crushing zone when folding down the folding supports.
- ▶ Only operate the folding supports when the trailer is at a standstill.

Folding out

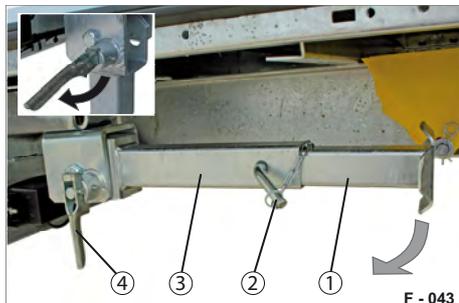


Fig. 59 Folding out the folding support

- 1 Levelling foot
- 2 Socket pin with guide
- 3 Folding support
- 4 Spring bar

- ▶ Pull on the spring bar (Fig. 59/4).
The folding support (Fig. 59/3) is unlocked.
This automatically folds downwards.
- ▶ Release the spring bar (Fig. 59/4).
The spring bars locks automatically when the folding support is fully folded out.
- ▶ Check the locking.

Adjustment

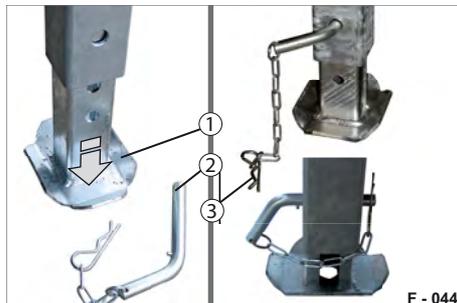


Fig. 60 Adjusting the levelling foot

- 1 Levelling foot
- 2 Socket pin
- 3 Spring pin

- ▶ Remove the spring pin (Fig. 60/3) from the socket pin (Fig. 60/2).
- ▶ Pull out the socket pin.
- ▶ Place the levelling foot (Fig. 60/1) on firm ground and adjust the levelling foot downwards until it can still be located in the further hole.
- ▶ Push the socket pin through the hole.
- ▶ Secure the socket pin with the spring pin.

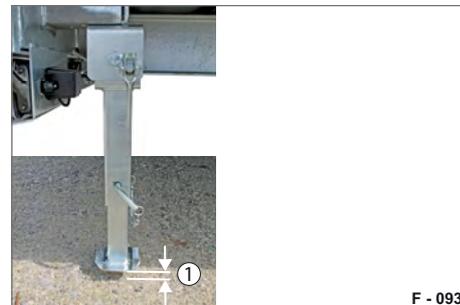


Fig. 61 Support feet adjusted

- 1 Distance to ground (approx. 3 - 5 cm)

- ▶ Check after folding down and if necessary adjusting the folding supports that there is still an air gap (Fig. 61/1) between the ground and the levelling foot plate.
When a vehicle is loaded/unloaded, the chassis is compressed via the axle suspension and the foldings supports set down on the ground.

Folding in

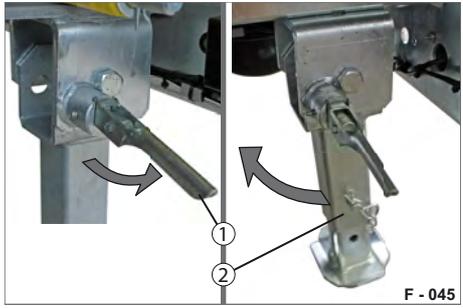


Fig. 62 Folding in the folding support

- 1 Spring bar
- 2 Folding support

Checking the position

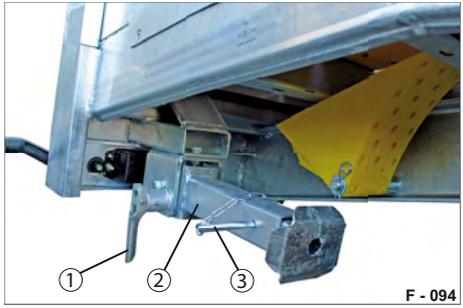


Fig. 63 Drive position

- 1 Spring bar, snapped in
- 2 Folding support, folded up
- 3 Socket pin, inserted/secured

- ▶ Adjust the levelling foot (Fig. 60/1) upwards and secure it with the socket pin (Fig. 60/2) and spring pin (Fig. 60/3).
- ▶ Pull the spring bar (Fig. 62/1) into the horizontal position.
- ▶ Fold the folding support (Fig. 62/2) upwards (into the horizontal position) and lock it with the spring bar (Fig. 62/1).
The spring bar snaps in.

- ▶ Check before driving that both folding supports are in the drive position (see Fig. 63).

General

The side guard is used as approach protection.

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

The side guard can be designed as a single component or split in two, e.g. with a toolbox.

There are three different side guard systems:

- stationary (not pivoting)
- folding-up with mechanical safeguard (locking bolt)
- folding-up with safety clamp in the retaining brackets



Driving with folded up/no side guard is illegal.



Fig. 64 Side guard, stationary

- 1 Side guard
- 2 Retaining bracket, bolted

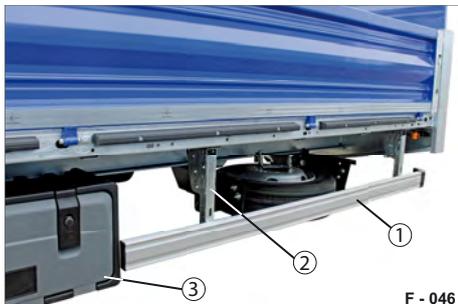


Fig. 65 Side guard in drive position

- 1 Side guard, folded down
- 2 Retaining brackets with safety clamp
- 3 Toolbox as side guard replacement

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



Fig. 66 Side guard

- 1 Side guard, folded up



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 folded-up side guard.

Side guard with clamping function

Folding up

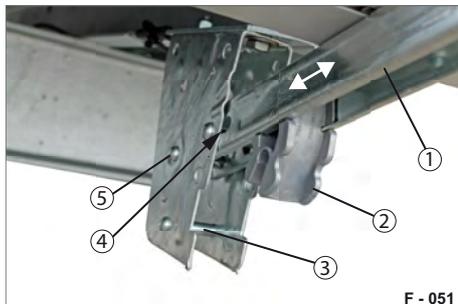


Fig. 67 Unlocking

- 1 Side guard
- 2 Clamping part (plastic)
- 3 Lower pin
- 4 Rotation axis with elongated hole - 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. 67/1) out of the retaining brackets (Fig. 69/2).
- ▶ Push the side guard a bit upwards.



Fig. 68 Fold up + secure

- ▶ Pull the side guard towards you in the elongated hole (Fig. 67/4).
- ▶ Position the side guard (Fig. 67/1) so that the open elongated hole can slide over the retaining bolt (Fig. 67/5).
- ▶ Slide the side guard into the elongated hole so that it locks into the retaining bolt.
The side guard (Fig. 67/1) is secured before folding down.

Folding down

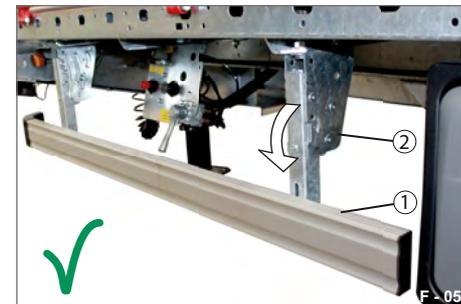


Fig. 69 Folded down + secured

- 1 Side guard
 - 2 Retaining brackets
- ▶ Pull the side guard towards yourself in the elongated hole so that it protrudes over the retaining brackets (Fig. 67/5).
 - ▶ Lower the side guard carefully.
 - ▶ Press the side guard down with some force evenly into all retaining brackets (Fig. 69/2).
The clamping parts (plastic) lock on the lower bolts (Fig. 67/3).
The side guard (Fig. 69/1) is folded down and secured - drive position.

Side guard with locking bolt

Folding up

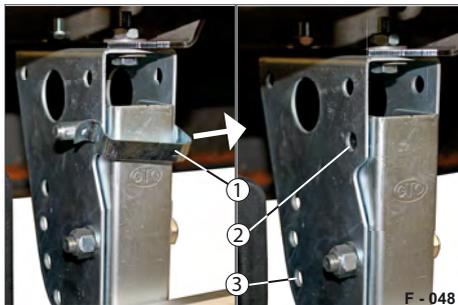


Fig. 70 Unlocking

- 1 Locking bolt with seal strip
- 2 Upper hole (drive position)
- 3 Adjustment grid

- ▶ Pull the locking bolt (Fig. 70/1) - on both sides of the side guard - out of the upper hole.



Fig. 71 Fold up + secure

- ▶ Fold the SSE (Fig. 66/1) all the way up.
- ▶ Slide the locking bolt (Fig. 70/1) on both sides of the side guard into the same hole of the adjustment grid (Fig. 70/3).

The side guard (Fig. 66/1) is secured before folding down.

Folding down

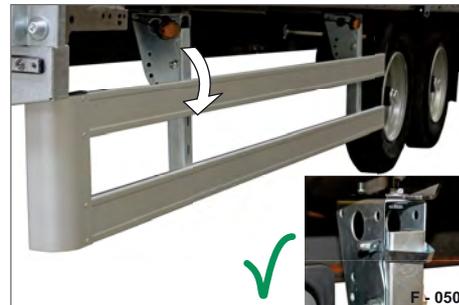


Fig. 72 Folded down + secured

- ▶ Raise the side guard (Fig. 66/1) slightly and pull out the locking bolts (Fig. 70/1) on both sides.
 - ▶ Lower the side guard carefully.
 - ▶ Insert the locking bolts (Fig. 70/1) on both sides.
- Ensure that the locking bolts are secured by the seal strip.

Underrun guard



Fig. 73 Rear end of trailer

1 Underrun guard

The underrun guard, as a safety component, prevents vehicles from sliding under the chassis in the event of an accident.



Driving with a deformed/
damaged underrun guard is not
permitted.

General

 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:

- Motor vehicle traffic regulations (StVO in Germany)
- Motor vehicle construction and use regulations (StVZO in Germany)
- Accident prevention regulations - vehicles (BGV 12)
- Safety rules for accommodation 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 suitable high-visibility jacket 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.

- ▶ Wear  ,  ,  .

- ▶  Wheels are heavy. Work in pairs.

 **WARNING**



Working under the trailer

This can result in striking and crushing injuries.

- ▶ Make sure that the vehicle is secured against rolling away.

- ▶ Wear  ,  ,  , ..

- ▶ Avoid jerky movements.

 **WARNING**



Spare wheel on the loading platform

You may fall off the loading platform when handling the spare wheel!

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

- ▶  Wheels are heavy. Work in pairs.

Spare wheel transport

The spare wheels can be transported as follows:

- on the front wall (page **110**),
- under the loading platform (page **111**),
- on the loading platform (page **113**).



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

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



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

NOTICE

Tightening spare wheel nuts too tight

The wheel rim may be deformed.

- ▶ Tighten the spare wheel nuts to max. 80 Nm.

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.

Regularly check that the spare wheel is securely seated.

Spare wheel on the front wall



Fig. 74 Spare wheel on the front wall

- 1 Spare wheel
- 2 Bracket
- 3 Nuts

Removing

- ▶ Unscrew all 4 nuts (Fig. 74/3). Hold the spare wheel firmly in the process.
- ▶ With a second person helping, remove the spare wheel from the bracket (Fig. 74/2). If necessary, use an auxiliary aid for this purpose.
- ▶ Screw the 4 nuts onto the bracket.

Fitting

- ▶ With a second person helping, place the spare wheel (Fig. 74/1) onto the bracket bolts (Fig. 74/2).
- ▶ Firmly screw on the spare wheel with min. 4 nuts (Fig. 74/3).

Spare wheel under the loading platform

General

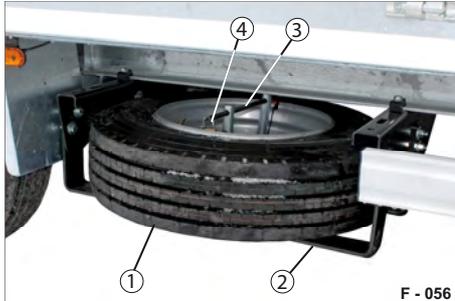


Fig. 75 Spare wheel storage (variety 2)

- 1 Spare wheel
- 2 Basket
- 3 Spare wheel safeguard
- 4 Padlock

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 the spare wheel is removed.

Removing the spare wheel

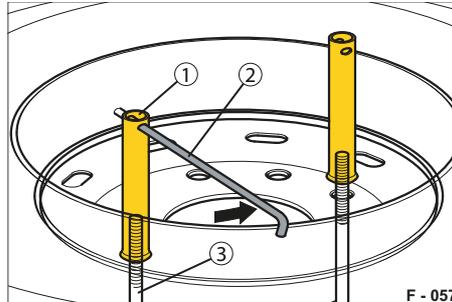


Fig. 76 Releasing the tube nuts

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

- ▶ Remove the padlock (Fig. 75/4).
- ▶ Remove the tommy bar (Fig. 76/2).
- ▶ Unscrew the tube nuts (Fig. 76/1). Use the tommy bar as a lever and hold the hook bolt (Fig. 76/3) firmly in place.

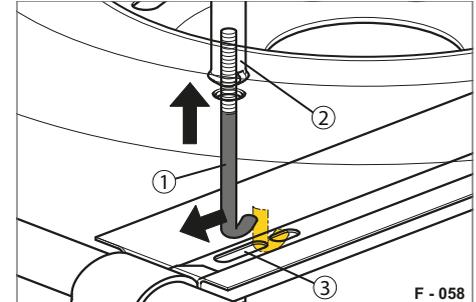


Fig. 77 Unscrewing the hook bolt

- 1 Hook bolt
 - 2 Tube nut
 - 3 Elongated hole
- ▶ Lower the hook bolt (Fig. 77/1).
 - ▶ Lead the hook bolt to the rear end of the elongated hole (Fig. 77/3).
 - ▶ Lift out the hook bolt.

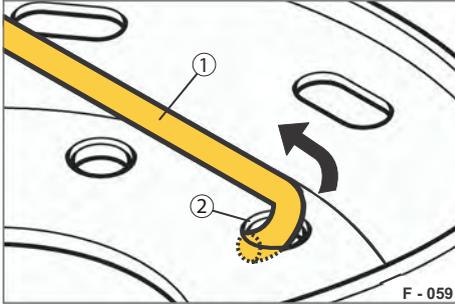


Fig. 78 Removing the hook bolt

- 1 Hook bolt
- 2 Pin hole

- ▶ Pull the hook bolt (Fig. 78/1) upward through the bolt holes (Fig. 78/2) 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. 75/3).
- ▶ Push the spare wheel into the basket.
- ▶ Turn the inserted spare wheel until two opposite bolt holes are located over the elongated holes in the spare wheel holder.
- ▶ Lead the hook bolt (Fig. 78/1) through the pin hole (Fig. 78/2) of the spare wheel.
- ▶ Lead the hook bolt to the front end of the elongated hole (Fig. 77/3).
- ▶ Raise the hook bolts until the hook point protrudes through the small front hole.
- ▶ Screw the tube nuts (Fig. 79/2) to the hook bolt.

Securing spare wheel

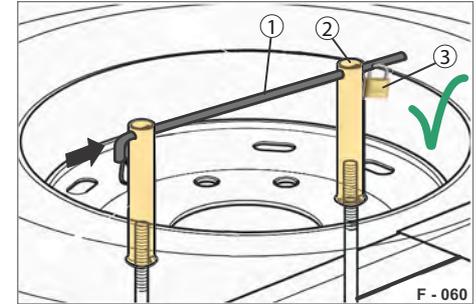


Fig. 79 Spare wheel secured

- 1 Tommy bar
- 2 Tube nut
- 3 Padlock

- ▶ Tighten the two tube nuts (Fig. 79/2) by hand.
- ▶ Tighten the tube nuts with the tommy bar (Fig. 79/1) as a lever (at least 5 rotations).
- ▶ Feed the tommy bar (Fig. 79/1) through both tube nuts (Fig. 79/2).
- ▶ Attach the padlock (Fig. 79/3). The spare wheel is secured against falling out.
- ▶ Fold down the side guard and secure it.

Spare wheel on the loading platform



Fig. 80 Spare wheel unsecured

- 1 Spare wheel loose

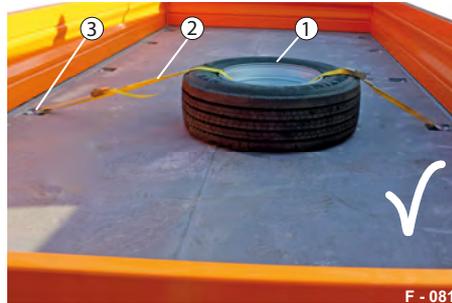


Fig. 81 Example: Spare wheel secured

- 1 Spare wheel
- 2 Lashing equipment (e.g. ratchet strap)
- 3 Lashing point



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

- ▶ Lash the spare wheel (Fig. 81/1) to the loading platform with suitable lashing equipment (Fig. 81/2) at the lashing points (Fig. 81/3).



Fig. 82 Bumper guard, side
1 Bumper guard, individual section

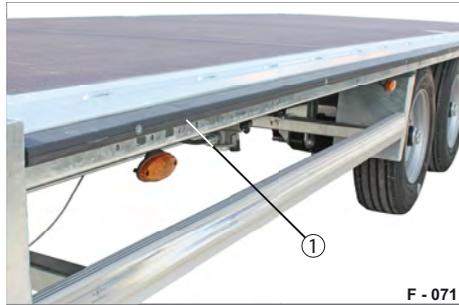


Fig. 83 Bumper guard, side view
1 Bumper guard, continuous line

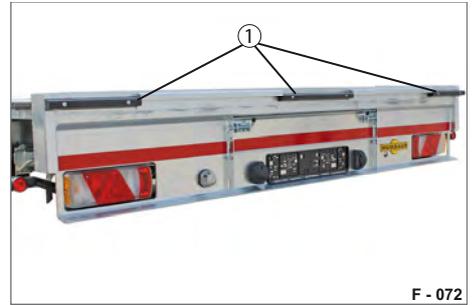


Fig. 84 Bumper guard, rear view
1 Bumper guard, sections

The bumper guard is optionally obtainable and serves to protect the chassis frame when the trailer is being loaded and unloaded, for example, with a fork-lift truck.

The bumper guard consists of screwed-on hard rubber strips.

The bumper guard can be attached in individual sections between platform gate hinges or in a continuous line.

General

The wheel chocks serve to secure the trailer when it is parked.

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



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.

Observe the direction of inclination on a slope.



See that both wheel chocks are always present.
Replace lost or damaged wheel chocks immediately.



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 place the wheel chocks under rigid axles.



WARNING

Unsecured wheel chocks

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

- ▶ Check that the wheel chocks are secured before departing.
- ▶ Regularly check the condition of the holder for damage.

Using wheel chocks



Fig. 85 Example: Wheel chocks in place



CAUTION



Handling wheel chocks under the chassis

You could hit your head on the chassis.

- ▶ Operate the wheel chock slowly and carefully.
 - ▶ Avoid jerky movements.
-
- ▶ Place the wheel chocks under the wheel so that they touch the full surface.

Handling wheel chocks in retaining bracket

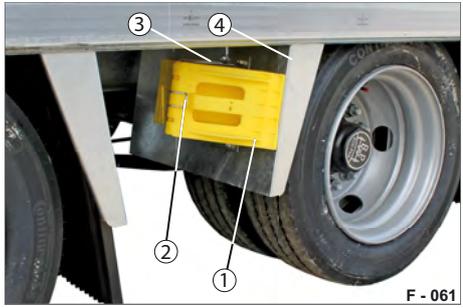


Fig. 86 Wheel chocks on the mudguard

- 1 Wheel chock
- 2 Retaining spring
- 3 Holder
- 4 Mudguard

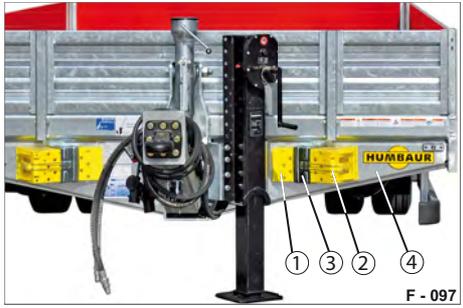


Fig. 87 Wheel chocks on the front end

- 1 Wheel chock
- 2 Retaining spring
- 3 Holder
- 4 Chassis



Fig. 88 Handling the wheel chock

Removing

- ▶ Press down the retaining spring (Fig. 86/2) from the chock.
- ▶ Pull the chock (Fig. 86/1) out of the holder.

Attachment & securing

- ▶ Insert the chock fully into the holder (Fig. 86/3).
- The retaining spring (Fig. 86/2) automatically secures the chock.
- The chock is captively secured.

Handling wheel chocks on retaining bolt



Fig. 89 Wheel chock parked on both sides under the chassis

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

Removing

- ▶ Pull out the spring pin (Fig. 89/2). Remove the washer.
- ▶ Carefully pull out the chock (Fig. 89/2).

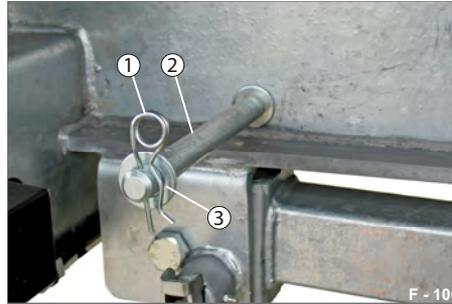


Fig. 90 Wheel chock holder

- 1 Spring pin
- 2 Retaining bolt
- 3 Washer

Securing retaining elements

- ▶ Place the washer (Fig. 90/3) on the retaining bolt (Fig. 90/2).
- ▶ Insert the spring pin (Fig. 90/1) into the retaining bolt bore hole. The retaining elements are captively secured.

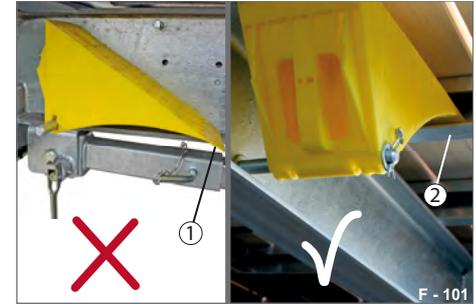


Fig. 91 Insert wheel chock

- 1 Wheel chock tip
- 2 Chassis strut

Inserting & securing

- ▶ Fit the wheel chock onto the retaining bolt (Fig. 90/2).
- ▶ Place the tip (Fig. 91/1) of the upper chock onto the chassis strut (Fig. 91/2). The chock is correctly positioned.
- ▶ Place the washer (Fig. 90/3) on the retaining bolt (Fig. 90/2).
- ▶ Insert the spring pin (Fig. 90/1) into the retaining bolt bore hole so that the chock is firmly seated.

Park warning sign (option)

General

The park warning signs can be attached to the front and rear of the trailer on the left side in the direction of travel.

These signs help other road users to discern/recognise a parked trailer.



Driving with opened park warning sign

An opened park warning sign may conceal the rear lights and the license/number plate at the rear end - risk of accident!

- ▶ Check before driving that the park warning signs are closed.



Dirty park warning signs

Other road users may discern parked trailers with difficulty or not in time - risk of accident!

- ▶ Clean dirty park warning signs.

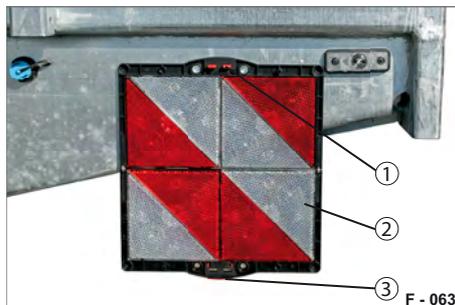


Fig. 92 Example: park warning sign

- 1 Lock
- 2 Warning sign (top half)
- 3 Press-catch

NOTICE

Driving with opened park warning signs

The park warning signs rattle during driving and may break off.

- ▶ Check before driving that the park warning signs are closed and that the lock is not damaged.

Handling the park warning sign

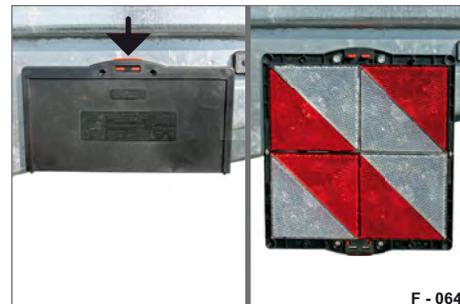


Fig. 93 Closed / opened

Opening

- ▶ Press the press-catch (Fig. 92/3) and fold down the top half of the warning sign.

Closing

- ▶ Fold up the opened half of the warning sign.
The press-catch (Fig. 92/3) automatically engages in the lock (Fig. 92/1).

General

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 can be used as a replacement for the side guard.

The toolbox is not waterproof.

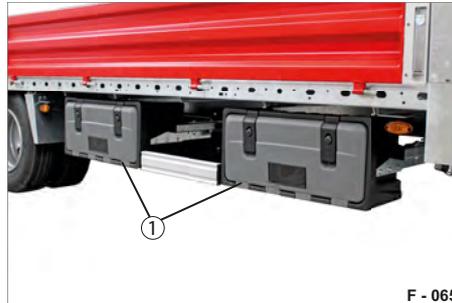
WARNING

Unlocked toolbox

Objects could fall out during the journey and hit persons.

The lid can be torn off - risk of accidents!

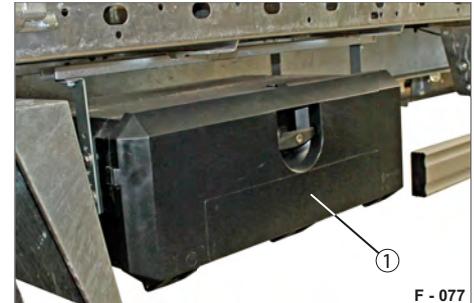
- ▶ Check that the toolbox is closed and secure before departure.



F - 065

Fig. 94 On side of chassis

- 1 Toolboxes, 2 x



F - 077

Fig. 96 On side of chassis

- 1 Toolbox (RimBox) with allround seal



F - 066

Fig. 95 On the front end

- 1 Toolbox

Operation

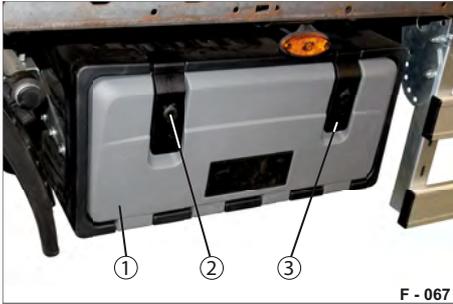


Fig. 97 Toolbox closed

- 1 Lid
- 2 Lock cylinder with cover
- 3 Locks



Note the specified surface loading (see the manufacturer's specs on the inside of the lid).

- ▶ When opening the cover, watch out for falling objects.
- ▶ No not place any objects on the open lid of the toolbox.

Setting up



Fig. 98 Setting up toolbox

- 1 Lid
- 2 Intermediate base plate

Opening



Fig. 99 Toolbox open

- 1 Key
- 2 Locks

- ▶ Remove the covers (Fig. 97/2) from the lock cylinders and close the lid (Fig. 97/1) with the key (Fig. 99/1).
- ▶ Pull out the locks (Fig. 99/2) from below and twist them downwards.
- ▶ Carefully swing the lid down.

Opening (RimBox)

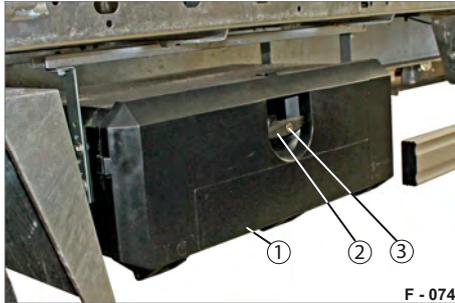


Fig. 100 Toolbox overview

- 1 Lid
- 2 Handle
- 3 Lock

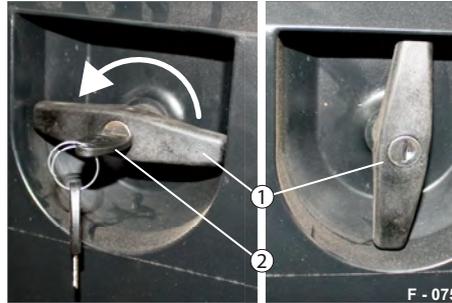


Fig. 101 Handle closed/opened

- 1 Handle
- 2 Key



Fig. 102 Opening the toolbox

- 1 Lid

- ▶ Unlock the lid (Fig. 100/1) with the key (Fig. 101/2).
- ▶ Turn the handle (Fig. 101/1) anticlockwise.

- ▶ Carefully swing the lid down.

Closing

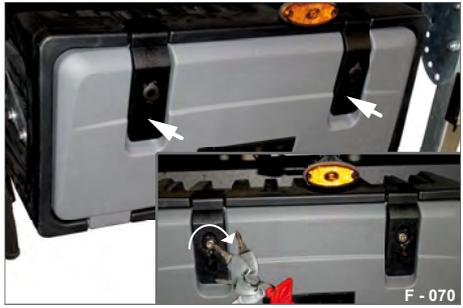


Fig. 103 Toolbox closed

- ▶ Swing the lid up.
- ▶ Clasp the locks (Fig. 99/2) from above and press them downwards.
This lid is locked.
- ▶ Lock with the key (Fig. 99/1) and fasten the cover over the key cylinder (Fig. 97/2).
The toolbox is closed and secured.

Closing (RimBox)

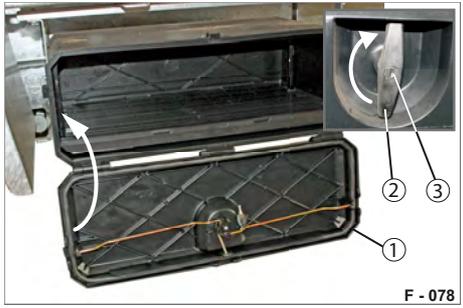


Fig. 104 Closing the toolbox

- 1 Lid
 - 2 Handle
 - 3 Key
- ▶ Swing the lid (Fig. 104/1) up.
 - ▶ Turn the handle (Fig. 104/2) clockwise.
This lid is locked.
 - ▶ Lock with the key (Fig. 104/3).
The toolbox is closed and secured.



Operation: body

1

2

3

4

5

6

7

8

The construction mainly consists of:

- Floor / loading platform
- Side platform gates
- Front wall
- Rear platform gate
- Ramp planks / ramps
- Platform gate attachments
- Support frame
- Conveyor belt carrier
- Posts

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



Unsecured/shifted load

Loads can fall out of the trailer when the body is opened - risk of crushing/striking!

- ▶ Make sure there are no bulges in the curtain.
- ▶ If there is bulging, open the curtain from the rear or from the opposite side and secure slipping and unsecured loads.
- ▶ Open the body locking points from a position outside of the movement range of the body components (platform gates, posts, etc.).

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 before driving that the curtain is completely closed and secured with tension ropes.



Fig. 1 Loading platform with snow/ice on top

WARNING



Objects on the body

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

- ▶ Check before driving that there are no accumulations of water, ice, snow, branches or other objects on the roof structure. Remove them if necessary.
- ▶ Use a secure ladder.

Ramp planks

are installed on the HBT BE 10 t and stowed at the rear end in the ramp plank bay under the loading ramp.

Drive-up ramps

are installed on the HBT BS 10 t, HBTZ BS 13 t and HBTZ BS 19 t.

The one- or two-part drive-up ramps are mounted upright at the rear end of the trailer.

Drive-up ramps can be actuated:

- manually with suspended lifting gear
- manual with gas pressure springs
- hydraulically

The drive-up ramps can be designed in a variety of widths and with a different lining.

**WARNING****Danger of loss of stability**

The trailer may lose stability when loaded/unloaded with vehicles and the load may tip over.

- ▶ Before actuating the ramp planks/ drive-up ramps, fold out the support feet and secure them.
- ▶ Carry out loading/unloading only on firm, secure ground. If necessary, place a firm base underneath the support feet.
- ▶ Keep all persons away from the danger area.

NOTICE**Exceeding load bearing capacity of ramp planks / drive-up ramps**

The ramp planks/drive-up ramps may be overloaded and lose their function or become deformed.

- ▶ Refer to and do not exceed the load bearing capacity specs on the operating unit nameplate and the centre of gravity marking on the platform.
- ▶ Also take into account the weight of the person operating the equipment.
- ▶ Avoid one-sided loads. The load bearing capacity specs are reduced by 50% with a one-sided load on the loading wall.

General

The ramp planks are made of aluminium and designed to suit the trailer type. The chequered surface increases safety.



The max. load bearing capacity of the ramp planks and the max. permissible drive-up angle must not be exceeded!



Fig. 2 Ramp plank nameplate



Fig. 3 Warning label



WARNING



Overloading ramp planks

The ramp planks may become deformed.

The vehicle may fall down / tip over - risk of crushing / striking!

- ▶ Observe the nameplate with max. load specifications.
- ▶ Comply with the maximum values.

Max. values / load bearing capacity

Drive-up angle max.	30 % (16.5°)
Single-axle vehicles	2400 daN (Kp)
Double-axle vehicles:	
Axle load distribution	40 % to 60 %
Wheelbase 1.5 m	3800 daN (Kp)
Wheelbase 2.0 m	4000 daN (Kp)



WARNING



Driving on unsecured ramp planks

The ramp planks may slip off the loading platform edge.

The vehicle may fall down / tip over - risk of crushing / striking!

- ▶ Check before driving on the ramp planks that they are secured against slipping off.
- ▶ Refer to the warning sticker on the ramp planks.



Fig. 4 Walking on ramp planks

CAUTION

 **Walking on ramp planks**
Ramp planks may be dirty and wet.

You may slip - risk of falling!

- ▶  Wear
- ▶ Walk on the ramp planks slowly and with extreme caution.

WARNING

 **Positioning the ramp planks**
Risk of crushing fingers / hands / feet!

- ▶  ,  Wear
- ▶ Grip the ramp planks with both hands.

- ▶  Ramp planks are heavy!
2 workers are recommended.

Removing ramp planks

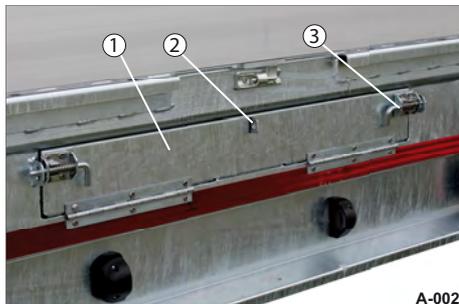


Fig. 5 Ramp plank bay

- 1 Flap
- 2 Striking plate for e.g. padlock
- 3 Spring bar



Fig. 6 Ramp plank bay, opening

- ▶ If necessary, open the padlock of the ramp plank bay.
- ▶ At the same time turn the spring bars upwards and pull them towards the middle.
- ▶ Fold the flap (Fig. 5/1) of the ramp plank bay down.

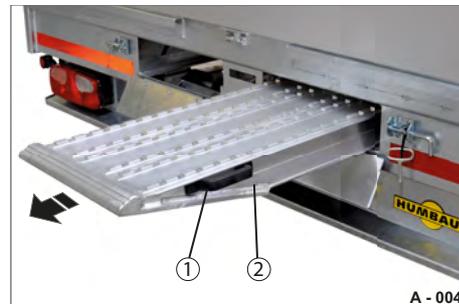


Fig. 7 Pulling out the ramp plank

- 1 Handle
- 2 Ramp plank

- ▶ Grip the handle (Fig. 7/1) and pull out the ramp plank (Fig. 7/2) slightly.
- ▶ Pull the ramp plank (Fig. 7/2) in stages with both hands out of the ramp plank bay up to the stop, not completely.



Fig. 8 Lifting out the ramp plank

- ▶ Lift the end of the ramp plank length slightly out of the ramp plank bay.
- ▶ Set the ramp planks down on the ground slowly and safely - do not drop them.

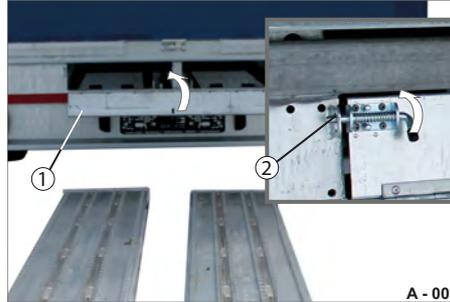


Fig. 9 Ramp planks removed

- 1 Flap (ramp plank bay)
- 2 Spring bar, snapped in

- ▶ Close the flap (Fig. 9/1) of the ramp plank bay.
- ▶ Turn the two spring bars (Fig. 9/2) into the horizontal position.
The spring bars automatically snaps in (by spring force).
The flap of the ramp plank bay is locked.

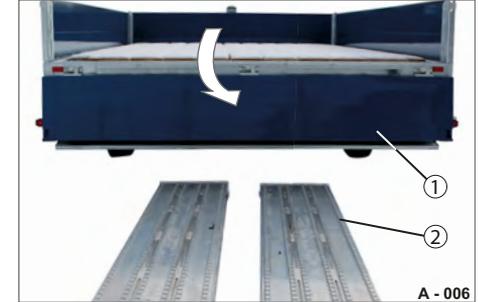


Fig. 10 Rear platform gate folded down

- 1 Rear platform gate
- 2 Ramp plank

- ▶ Carefully fold down the rear platform gate (Fig. 10/1), see page 172.

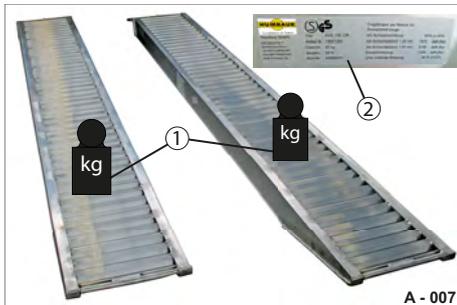


Fig. 11 Checking ramp planks

- 1 Load bearing capacity / load limits
- 2 Nameplate

- ▶ Check the ramp planks for deformation/cracking - defective ramp planks must not be used.
- ▶ Make sure that the vehicle to be loaded does not exceed the max. load bearing capacity (Fig. 11/1) of the ramp planks.
- ▶ Compare the max. values on the nameplate (Fig. 11/2) of the ramp planks.
Observe the axle load distribution.

Positioning the ramp planks

There are 2 securing rails along the loading platform edge. The securing hook under the run-on plate of each ramp plank are slotted into these securing rails and secured.



Position the ramp planks with the locking lever facing outwards on the securing rail.



The ramp planks must be centrally positioned on the securing rails.



The dead weight of the ramp planks is approx. 31 kg. If necessary, have 2 workers lift the ramp planks.

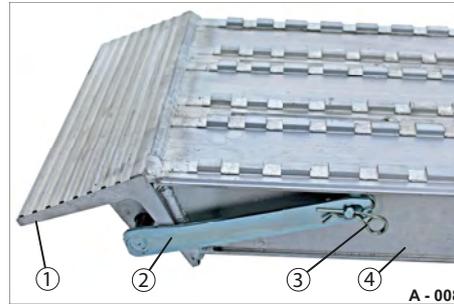


Fig. 12 Opening the locking lever

- 1 Run-on plate
- 2 Locking lever
- 3 Spring pin
- 4 Ramp plank

- ▶ Pull the spring pin (Fig. 12/3) out of the retaining bolt (Fig. 13/2).
The locking lever is released.

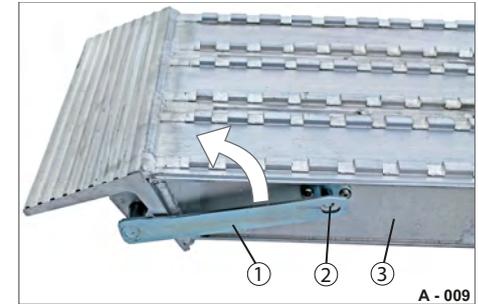


Fig. 13 Locking lever unsecured

- 1 Locking lever
- 2 Retaining bolt
- 3 Ramp plank

- ▶ Swing the locking lever (Fig. 13/1) upwards.

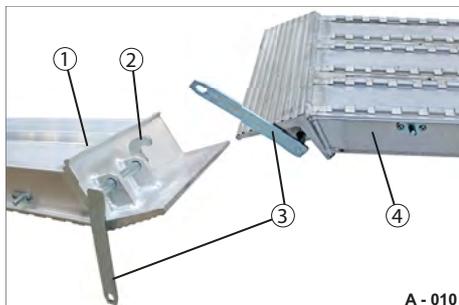


Fig. 14 Locking lever opened

- 1 Ramp plank, turned over
- 2 Securing hook, opened
- 3 Locking lever, opened
- 4 Ramp plank

The securing hook opens.

- ▶ Check that the locking lever (Fig. 14/3) and securing hook (Fig. 14/2) are not deformed.

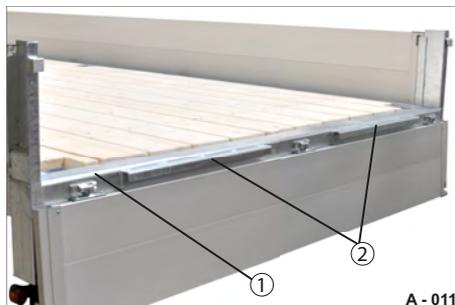


Fig. 15 Chassis loading platform edge

- 1 Loading platform edge
- 2 Securing rail

- ▶ If necessary, clean the securing rail (Fig. 15/2) and securing hook (Fig. 14/2) to remove all dirt.



Fig. 16 Locking lever opened

- 1 Ramp plank
- 2 Run-on plate
- 3 Locking lever
- 4 Loading platform edge
- 5 Securing rail

- ▶ Lay the run-on plate (Fig. 16/2) on the loading platform edge (Fig. 16/4).
- ▶ Pull the locking lever (Fig. 16/3) down.

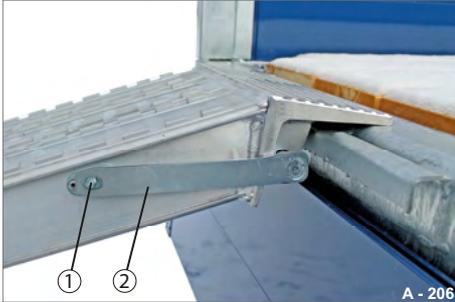


Fig. 17 Repositioning the locking lever

- 1 Retaining bolt
- 2 Locking lever

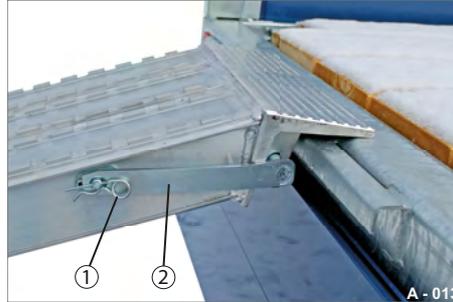


Fig. 18 Securing the locking lever

- 1 Spring pin
- 2 Locking lever

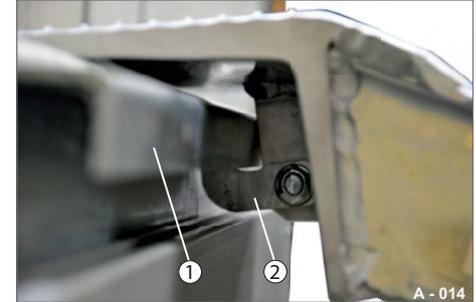


Fig. 19 Securing hook secured

- 1 Securing rail
- 2 Securing hook

► Press the locking lever (Fig. 17/2) onto the retaining bolt (Fig. 17/1).

► Insert the spring pin (Fig. 18/1) into the retaining bolt (Fig. 17/1).
The locking lever is secured against unlocking of its own accord.

► Check that the securing hook (Fig. 19/2) engages the securing rail (Fig. 19/1).

Setting track width



Fig. 20 Ramp planks - centrally positioned



Before the vehicle to be loaded is driven on, the ramp planks must be set to the correct track width of the vehicle to be loaded.

WARNING

Ramp planks positioned to incorrect track width

The vehicle to be loaded can tip off the ramp planks - risk of striking/crushing!
▶ Position the ramp planks to the correct track width before loading/unloading.

WARNING



Ramp planks positioned outside the securing rails

The securing hook does not engage the securing rail. The ramp planks are not secured and may slip off the loading platform edge.

The vehicle to be loaded may fall down / tip over - risk of crushing / striking!

▶ Check before driving on the ramp planks that they are secured in the securing rails.

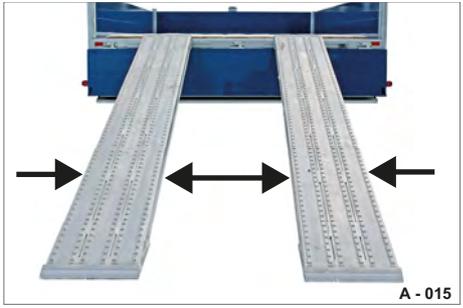


Fig. 21 Positioning the ramp planks

- ▶ Check what track width is exhibited by the vehicle to be loaded.
- ▶ The wheels of the vehicle to be loaded must be able to drive centrally onto the ramp planks.
- ▶ Position the ramp planks to the correct track width.
- ▶ Check that the ramp planks are centralised on the securing rails.

Negative examples



Fig. 22 Ramp planks - not proportionally positioned

The trailer is unevenly loaded, overloaded on one side - loss of stability!

The ramp planks are unsecured.



Fig. 23 Ramp planks - too far apart

The wheels of the vehicle to be loaded may damage the side platform gates.

The ramp planks are outside the securing rails - not secured.

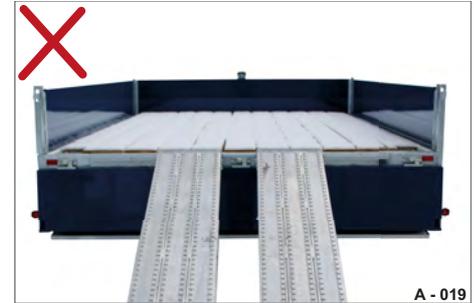


Fig. 24 Ramp planks - too close together

The ramp planks are outside the securing rails - not secured.

Driving on ramp planks

Driving on the ramp planks is only permitted when there is a direct line of sight between the driver and the wheels. If there is no line of sight - only with the supervision of a banksman.



Avoid sudden stopping and restarting when driving on the ramp planks!

Drive on the ramp planks slowly, at a speed of no more than 0.3 m/second.



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

Ramp planks not secured

The ramp planks may slip off the loading platform edge and the vehicle to be loaded may topple off the ramp planks - risk of crushing / striking!

- ▶ Check before loading/unloading that the ramp planks are secured on the loading platform edge/securing rail.

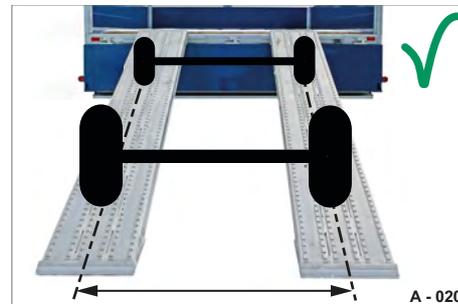


Fig. 25 Driving on ramp planks

- ▶ Slowly drive onto the ramp planks straight ahead - not at an angle from the side.

Stowing ramp planks



The ramp plank bay serves to transport the ramp planks only. Carrying other objects in the ramp plank bay is not permitted!

WARNING

Driving with unsecured ramp planks

The ramp planks may be thrown out of the ramp plank bay - risk of accident!

- ▶ Check before driving that the flap of the ramp plank bay is locked (with the ramp planks stowed inside).

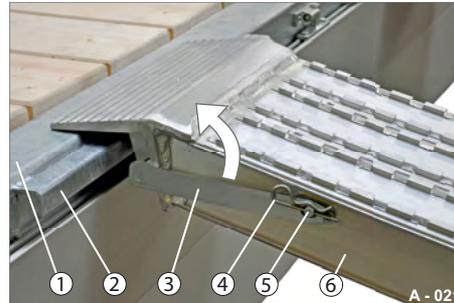


Fig. 26 Setting ramp planks down

- 1 Loading platform edge
- 2 Securing rail
- 3 Locking lever
- 4 Spring pin
- 5 Retaining bolt
- 6 Ramp plank

- ▶ Pull the spring pin (Fig. 26/4) out of the retaining bolt (Fig. 26/5).
- ▶ Swing the locking lever (Fig. 26/3) upwards.
- ▶ Lift the ramp plank (Fig. 26/6) down from the loading platform edge and set it slowly and safely down on the ground - do not drop.

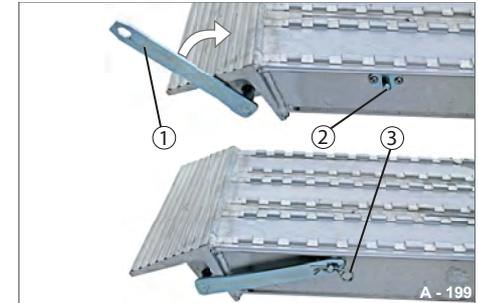


Fig. 27 Closing the locking lever

- 1 Locking lever
- 2 Retaining bolt
- 3 Spring pin

- ▶ Swing the locking lever (Fig. 27/1) towards the retaining bolt (Fig. 27/2) and attach it to the retaining bolt.
- ▶ Feed the spring pin (Fig. 27/3) through the hole in the retaining bolt. The locking lever is closed and secured.



Fig. 28 Closing the rear platform gate

- 1 Rear platform gate, closed
- 2 Ramp planks

- ▶ Close the rear platform gate (Fig. 28/1) - see page 170.



Fig. 29 Unlocking the ramp plank bay

- 1 Spring bar
- 2 Flap (ramp plank bay)

- ▶ At the same time turn the spring bars (Fig. 29/1) upwards and pull them towards the middle.
- ▶ Fold the flap (Fig. 29/2) of the ramp plank bay down.

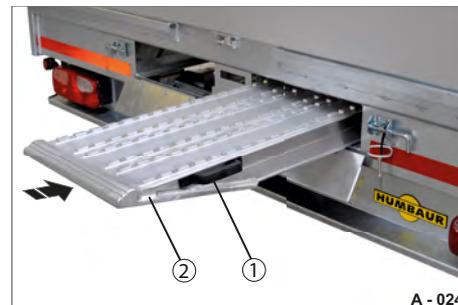


Fig. 30 Sliding in the ramp planks

- 1 Handle
- 2 Ramp plank

Position the ramp planks in stages in their respective ramp plank bay.

- ▶ Insert one end of the ramp plank in the ramp plank bay.
- ▶ Slide the ramp planks (Fig. 30/2) from the rear fully into the ramp plank bay.
- ▶ Close the flap (Fig. 29/2) of the ramp plank bay.
- ▶ Lock the flap with the spring bars (Fig. 29/1) and if necessary with a padlock.

The ramp planks are secured.

General

The drive-up ramps are made of steel and designed to suit the trailer type.

Drive-up ramps can be equipped:

- with a different lining
- as a single part / in two parts
- with gas pressure springs
- with suspended lifting gear
- as a loading wall
- with hydraulic raising/lowering
- with hydraulic track width setting


WARNING



Standing under the drive-up ramps
Persons may be crushed when the drive-up ramps are lowered.



▶ Do not stand under moving drive-up ramps.



▶ Keep all persons away from the danger area.

▶ Always be aware of the movement of the ramps while they are in operation.


WARNING

Schwenkende Rampe!
Treffgefahr im Schwenkbereich der Rampen.

▶ Nicht unter herunter-schwenkende Rampe treten.





WARNING

Pivoting ramp!
Risk of hurt in the pivoting area of the ramps.

▶ Keep away from the pivoting ramps.

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Fig. 31 Warning label

WARNING



Opening drive-up ramp latches

Fingers and hands may be crushed between drive-up ramps and latches/corner posts when the latches are be unlocked and locked!



- ▶ Wear .
- ▶ Make sure when unlocking and locking the latches that your fingers are not in the crushing area.



Fig. 32 Operating drive-up ramps

WARNING



Positioning the drive-up ramps

Hands may be crushed between drive-up ramps and corner posts when the ramps are being moved!



- ▶ Wear .
- ▶ Use both hands and the handles/ grips when moving the ramps.



Fig. 33 Walking on drive-up ramps

CAUTION



Walking on drive-up ramps

Drive-up ramps may be dirty and wet.
You may slip - risk of falling!



- ▶ Wear .
- ▶ Walk on the ramps slowly and with extreme caution.

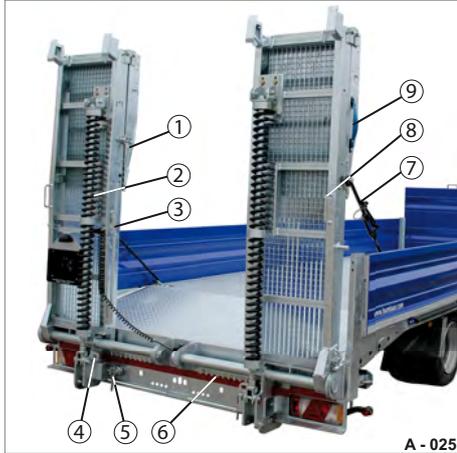


Fig. 34 HBT BS 13 t
Drive-up ramps with suspended lifting gear

- 1 Rotary lever latch for ramp section
- 2 Suspended lifting gear
- 3 Operating pole for track width adjustment
- 4 Eye (for operating pole - track width)
- 5 Spring lever
- 6 Track width notches
- 7 Securing tensioner
- 8 Handle
- 9 Grip (ramp section)

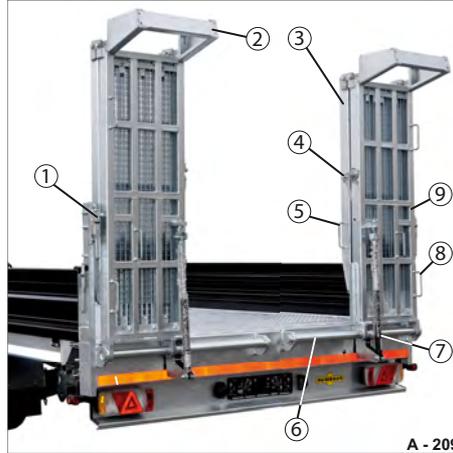


Fig. 35 HBT BS 13 t
Drive-up ramps with gas pressure springs

- 1 Latch
- 2 Support foot
- 3 Ramp section
- 4 Rotary lever latch for ramp section
- 5 Handle for ramp section
- 6 Track width guide linkage
- 7 Gas pressure spring
- 8 Handle
- 9 Ramp

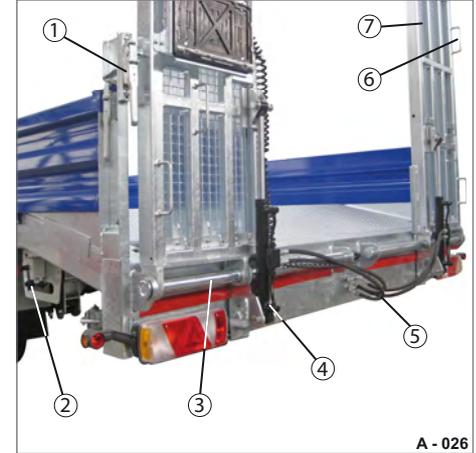


Fig. 36 HBTZ BS 19 t
Drive-up ramps with hydraulic cylinders

- 1 Latch
- 2 Operating point for ramps
- 3 Track width guide linkage
- 4 Hydraulic cylinder
- 5 Hydraulic connections
- 6 Handle
- 7 Ramp

Unlocking the drive-up ramps

Type variants

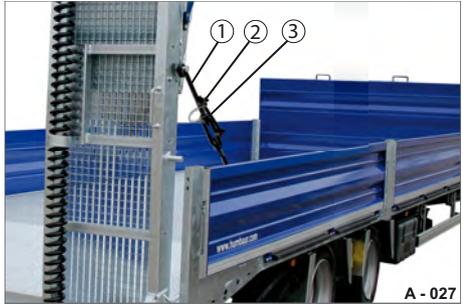


Fig. 37 Drive-up ramps with securing tensioner 1

- 1 Securing tensioner
- 2 Safety catch
- 3 Lever



Fig. 38 Drive-up ramps with securing tensioner 2

- 1 Eye
- 2 Safety catch
- 3 Lever
- 4 Linkage with hook

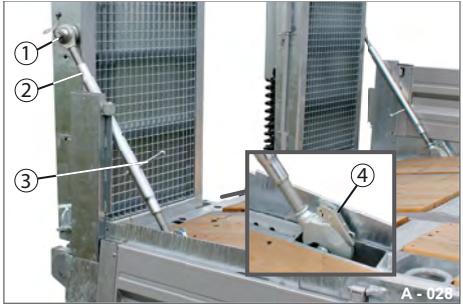


Fig. 39 Drive-up ramps with securing rod

- 1 Safety split pin
- 2 Securing rod
- 3 Lever
- 4 Arrester



Fig. 40 Drive-up ramps with securing latch

- 1 Safety catch
- 2 Corner post
- 3 Latch handle

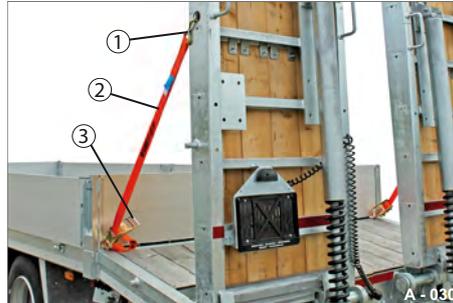


Fig. 41 Drive-up ramps with ratchet strap

- 1 Hook
- 2 Tensioning strap
- 3 Tightening ratchet



Fig. 42 Three drive-up ramps with securing latch and linkage

- 1 Latch handle
- 2 Corner post
- 3 Safety catch
- 4 Tommy bar
- 5 Screw safety catch

Securing tensioner 1

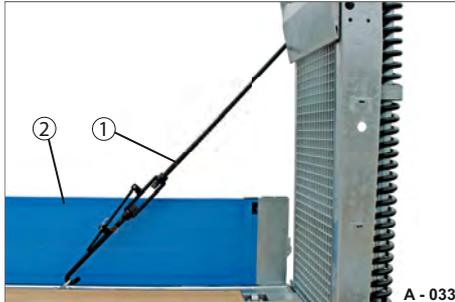


Fig. 43 Open the platform gate
 1 Securing tensioner
 2 Platform gate

► Unlock (if fitted) the platform gate (Fig. 43/2) and carefully fold it down - see page 172.

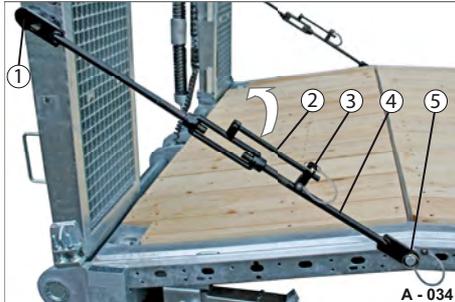


Fig. 44 Unlocking the securing tensioner
 1 Gudgeon
 2 Lever
 3 Locking pin on the lever
 4 Securing tensioner
 5 Locking pin on the bolt

► Pull out the locking pin (Fig. 44/3) and swing the lever (Fig. 44/2) upwards.

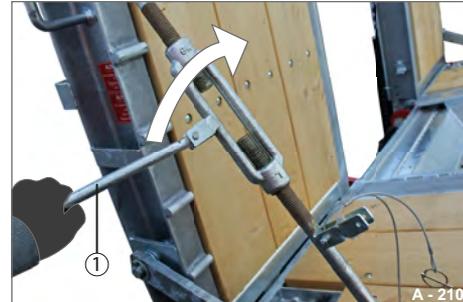
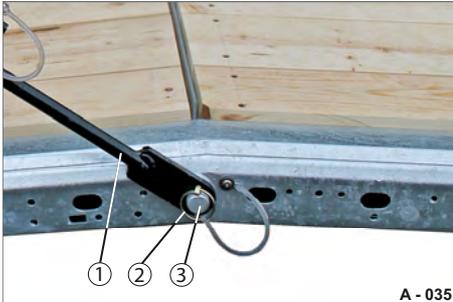


Fig. 45 Releasing the securing tensioner
 1 Lever

► Turn the lever (Fig. 45/1) until the securing tensioner (Fig. 44/4) has been relieved of strain. The securing tensioner is slack and can be removed at the top from the gudgeon (Fig. 44/1).

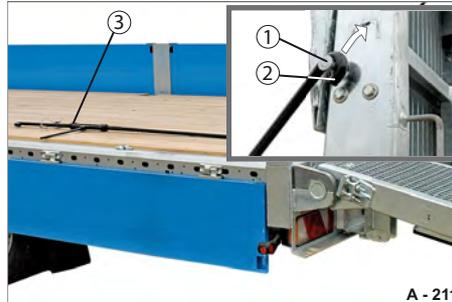


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Fig. 46 Removing the securing tensioner

- 1 Securing tensioner with tab
- 2 Locking pin
- 3 Bolt

- ▶ Pull out the locking pin (Fig. 46/2).
- ▶ Pull the bottom part of the securing tensioner (Fig. 46/1) off the bolt (Fig. 46/3).
- ▶ Set down the complete securing tensioner safely to avoid damage.



A - 211

Fig. 47 Removing the securing tensioner

- 1 Gudgeon
- 2 Securing tensioner with hook
- 3 Securing tensioner removed

- ▶ Lift the securing tensioner (Fig. 47/2) from the gudgeon (Fig. 47/1) on the ramp and from the lashing ring on the loading platform.
- ▶ Set down the complete securing tensioner (Fig. 47/3) safely to avoid damage.

The drive-up ramps are unlocked and can be moved to the required track width and lowered - see page **155**.

Securing tensioner 2

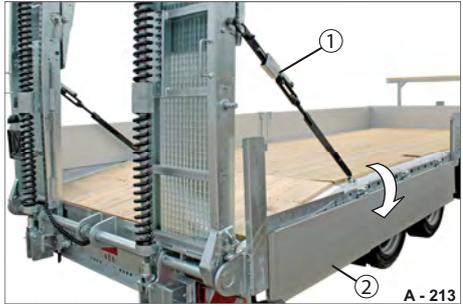


Fig. 48 Open the platform gate

- 1 Securing tensioner
- 2 Platform gate, folded down

► Unlock (if fitted) the platform gate (Fig. 48/2) and carefully fold it down - see page 172.

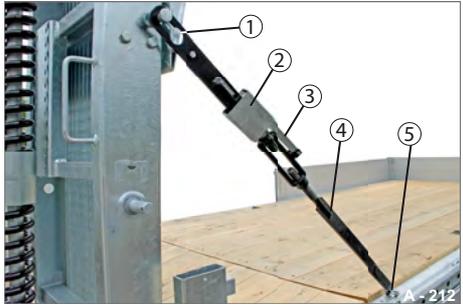


Fig. 49 Securing tensioner 2 overview

- 1 Eye
- 2 Rectangular securing element
- 3 Lever
- 4 Bottom tensioner part with hook
- 5 Lashing ring

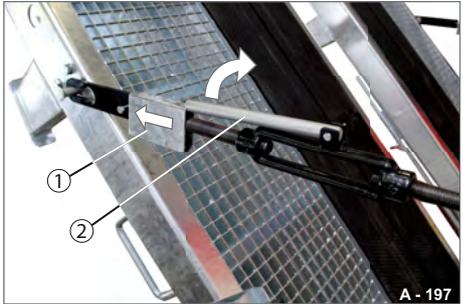


Fig. 50 Unlocking the securing tensioner

- 1 Rectangular securing element
- 2 Lever

► Slide the rectangular securing element (Fig. 50/1) upwards. The lever is released.

► Swing the lever (Fig. 50/2) out.



Fig. 51 Relieving the securing tensiometer strain

- 1 Lever

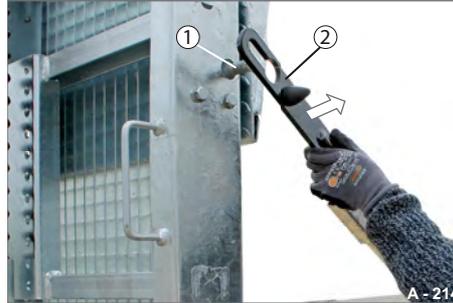


Fig. 52 Removing the securing tensiometer

- 1 Gudgeon
- 2 Securing tensiometer

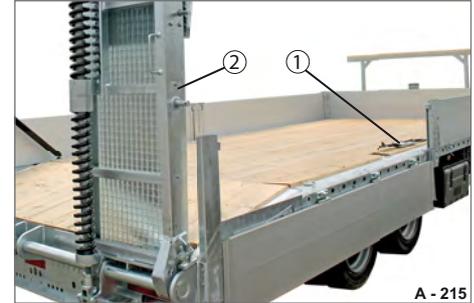


Fig. 53 Removing the securing tensiometer

- 1 Securing tensiometer
- 2 Drive-up ramp, unlocked

► Turn the lever (Fig. 51/1) until the hook (Fig. 49/4) can be removed from the lashing ring (Fig. 49/5).

► Remove the securing tensiometer (Fig. 52/2) from the gudgeon (Fig. 52/1).

► Set down the complete securing tensiometer (Fig. 53/1) safely to avoid damage.
The drive-up ramps are unlocked and can be moved to the required track width and lowered - see page 155.

Securing rod

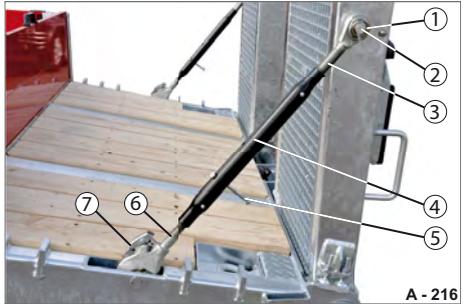


Fig. 54 Securing rod overview

- 1 Locking pin
- 2 Pin
- 3 Top linkage with ring
- 4 Securing rod
- 5 Lever
- 6 Bottom linkage with hook
- 7 Arrester

► Unlock (if fitted) the platform gate and carefully fold it down - see page 172.

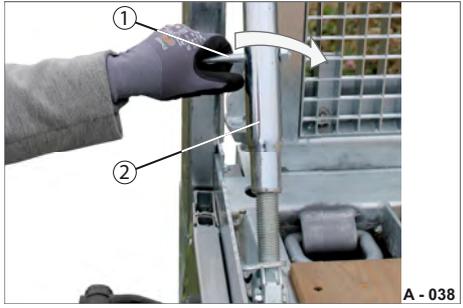


Fig. 55 Relieving the securing rod strain

- 1 Lever
- 2 Securing rod

► Turn the lever (Fig. 55/1) to slacken the securing rod (Fig. 55/2).



Fig. 56 Unlocking the securing rod (bottom)

- 1 Arrester
- 2 Hook
- 3 Securing rod

► Hold the securing rod (Fig. 56/3) firmly and pull the arrester (Fig. 56/1) upwards.

The hook (Fig. 56/2) is unlocked and the securing rod released.

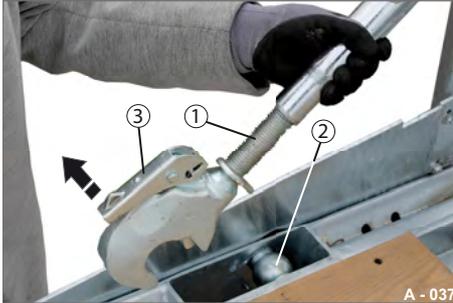


Fig. 57 Disengaging the securing rod (bottom)

- 1 Bottom linkage with hook
- 2 Ball pin
- 3 Arrester

- ▶ Pull the bottom linkage with hook (Fig. 57/1) out of the ball pin (Fig. 57/2).
- ▶ Close the arrester (Fig. 57/3).

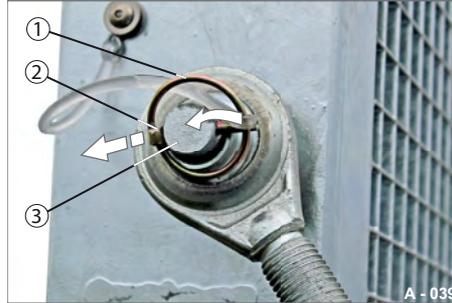


Fig. 58 Unlocking the securing rod (top)

- 1 Circlip
- 2 Locking pin

- ▶ Twist open the circlip (Fig. 58/1).
- ▶ Pull the locking pin (Fig. 58/2) out of the bolt (Fig. 58/3).

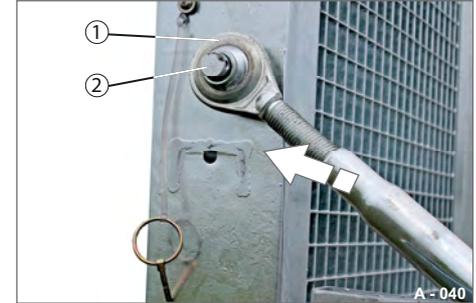


Fig. 59 Removing the securing rod (top)

- 1 Top linkage with ring
- 2 Bolt

- ▶ Pull the top linkage with ring (Fig. 59/1) out of the bolt (Fig. 59/2).
- ▶ Set down the complete securing rod (Fig. 54/4) safely to avoid damage. The drive-up ramps are unlocked and can be moved to the required track width and lowered - see page 155.

Securing latch

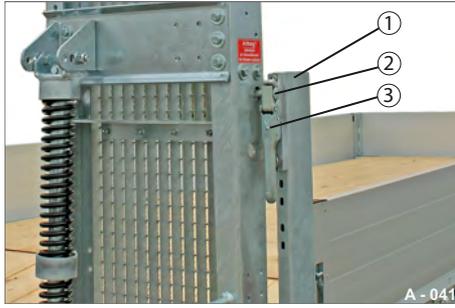


Fig. 60 Securing latch - overview

- 1 Corner post
- 2 Gudgeon
- 3 Securing latch

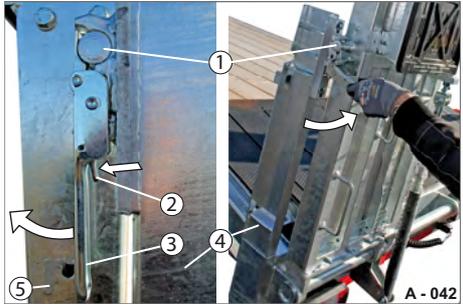


Fig. 61 Unlocking the securing latch

- 1 Gudgeon
- 2 Latch retainer
- 3 Latch lever
- 4 Corner post
- 5 Ramp

- ▶ Press in the latch retainer (Fig. 61/2) and
- ▶ Pull on the latch bar (Fig. 61/3). The gudgeon (Fig. 61/1) of the ramp (Fig. 61/5) is released.
- ▶ Swing the ramp down a little so that the securing latch can be closed.

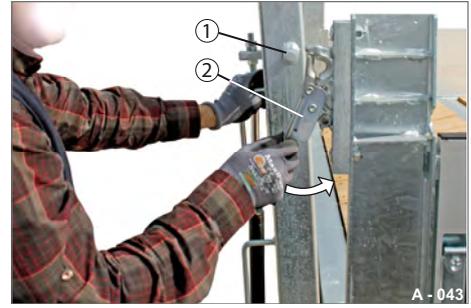


Fig. 62 Closing the securing latch

- 1 Gudgeon, released
- 2 Securing latch

- ▶ Press the latch lever (Fig. 61/3) towards the corner post (Fig. 61/4). The latch retainer (Fig. 61/2) snaps in. The securing latch is locked.
- The drive-up ramps can be moved to the required track width and lowered - see page 155.

Ratchet strap

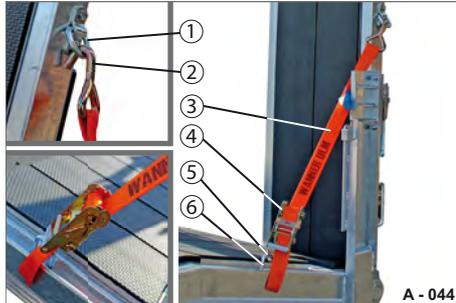


Fig. 63 Ratchet strap - overview

- 1 Lashing eye
- 2 Hook (ramp)
- 3 Ratchet strap
- 4 Ratchet
- 5 Hook (loading platform)
- 6 Lashing shackle

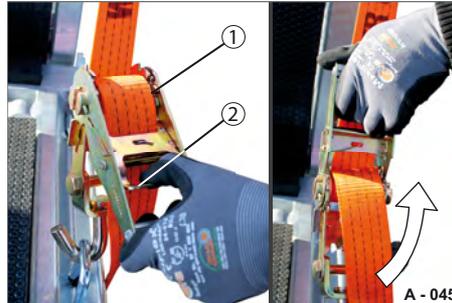


Fig. 64 Releasing the ratchet strap

- 1 Ratchet
- 2 Lever

- ▶ Press the lever (Fig. 64/2) and simultaneously pull the ratchet (Fig. 64/1) upwards.
- ▶ Repeat this operation several times until the ratchet strap has slackeden.

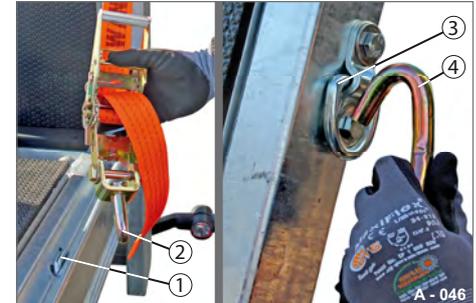


Fig. 65 Disengaging the hook

- 1 Lashing shackle
 - 2 Hook (loading platform)
 - 3 Lashing eye
 - 4 Hook (ramp)
- ▶ Remove the hook (Fig. 65/2) from the lashing shackle (Fig. 65/1).
 - ▶ Remove the hook (Fig. 65/4) from the lashing eye (Fig. 65/3).
 - ▶ Set down the ratchet strap safely to avoid damage.

The drive-up ramp is unlocked.

The drive-up ramps can be moved to the required track width and lowered - see page **155**.

Three drive-up ramps

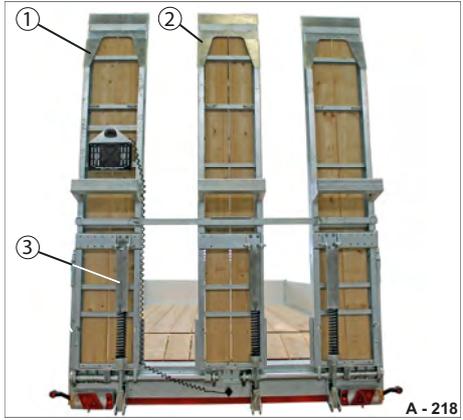


Fig. 66 Three drive-up ramps

- 1 Drive-up ramp, outer
- 2 Drive-up ramp, middle
- 3 Suspended lifting gear

The trailer can optionally be equipped with three drive-up ramps.

The middle ramp cannot be adjusted from the side.

The middle ramp alone is secured with the cross-bar.

The side ramps can be pushed towards the middle.

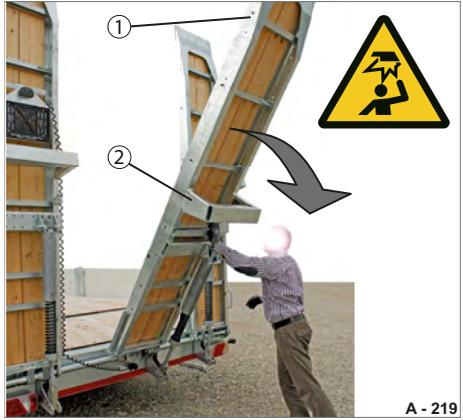


Fig. 67 Operating drive-up ramps

- 1 Drive-up ramp, middle
- 2 Support foot

WARNING



Unlocking drive-up ramps

The ramps may fold down in an uncontrolled movement - risk of striking/crushing!

- ▶ Stand outside the movement range when removing the cross-bar or operating the ramps.

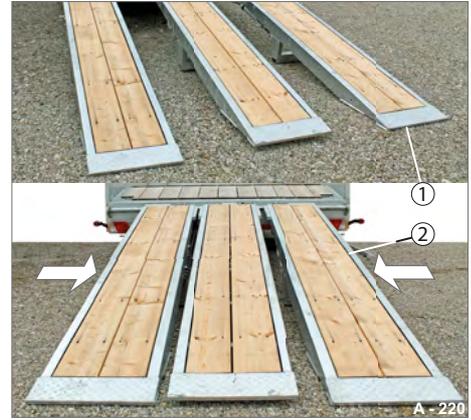


Fig. 68 Ramps lowered

- 1 Drive-up ramp, positioned on outside
- 2 Drive-up ramp, push to middle

WARNING



Operating heavy drive-up ramps

Persons may be struck by the ramps when the ramps are being moved/ folded down!

- ▶ Keep all persons away from the movement range.



Fig. 69 Ramp retainer

- 1 Ramps
- 2 Cross-bar, continuous
- 3 Retainer
- 4 Eye bolts with retainer

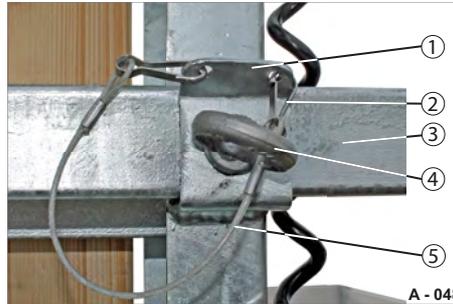


Fig. 70 Eye bolt secured

- 1 Holder
- 2 Karabiner
- 3 Cross-bar
- 4 Eye bolt
- 5 Cable

- ▶ Release the karabiner (Fig. 70/2) from the holder (Fig. 70/1).

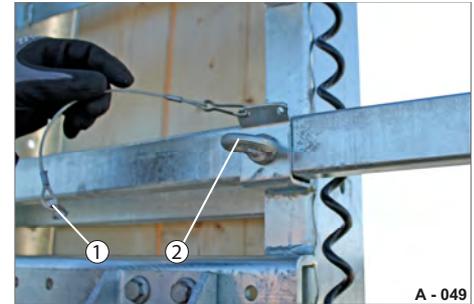


Fig. 71 Eye bolt unlocked

- 1 Cable with karabiner, released
- 2 Eye bolt

- ▶ Pull the cable with karabiner (Fig. 71/1) out of the eye bolt (Fig. 71/2).

The middle ramp is secured with the cross-bar.

The outer ramps are secured with the securing latches.

- ▶ First unlock the cross-bar and lower the middle ramp.
- ▶ Unlock the outer ramps one after the other.

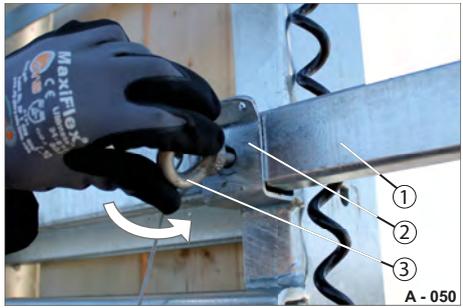


Fig. 72 Releasing the cross-bar

- 1 Cross-bar
- 2 Holder
- 3 Eye bolt

► Screw the eye bolt (Fig. 72/3) out of the cross-bar (Fig. 72/1) and the holder (Fig. 72/2) completely.

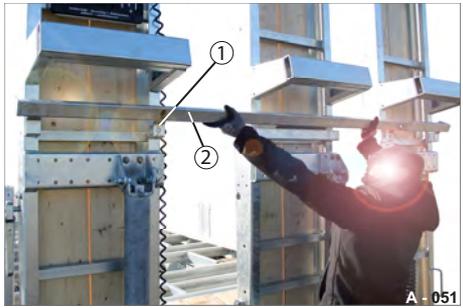


Fig. 73 Removing the cross-bar

- 1 Holders
- 2 Cross-bar

► At the same time lift the cross-bar (Fig. 73/2) out of the holders (Fig. 73/1).

► Carefully lower the middle ramp (Fig. 74/1).

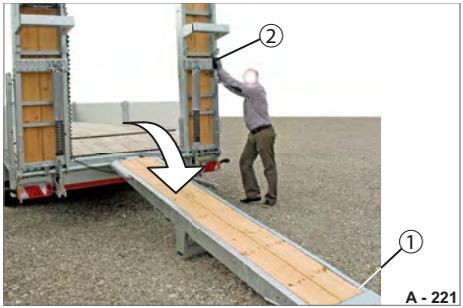


Fig. 74 Operating drive-up ramps

- 1 Drive-up ramp, middle, lowered
- 2 Securing latch, side, unlocking

► Unlock the securing latch (Fig. 74/2) - see page 150.

The drive-up ramps can be moved to the required track width and lowered - see page 155.

Moving drive-up ramps

The drive-up ramps can be moved

- directly with side handles
- indirectly by means of track width notches, if fitted.

A hydraulic track width setting mechanism can be installed as an option.

 The tyres of the vehicle to be transported must drive centrally onto the ramps.

 The ramps must be adjusted in the vertical position.

WARNING

Incorrect track width set

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

- ▶ Position the ramps to the correct track width before loading/unloading the vehicle to be loaded.

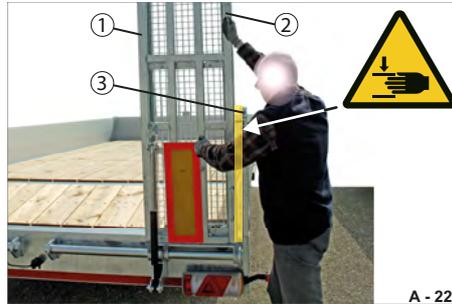


Fig. 75 Moving the drive-up ramp

- 1 Ramp
- 2 Handles
- 3 Corner post

CAUTION



Moving drive-up ramps

Danger of hands being crushed between the ramps and corner posts.



- ▶ Wear .
- ▶ Use both hands when moving the ramps.
- ▶ Hold on to the handles/grips.

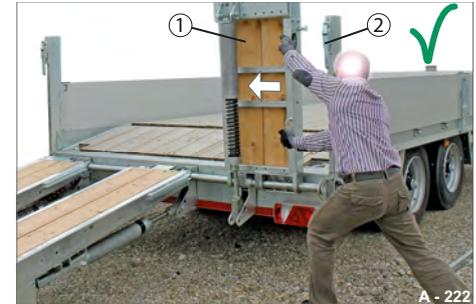


Fig. 76 Moving the drive-up ramp

- 1 Ramp
- 2 Securing latch, CLOSED

CAUTION



Moving drive-up ramps

You could hit your head on opened securing latches.

- ▶ Close the securing latches before moving the ramps.

Direct manual track width setting

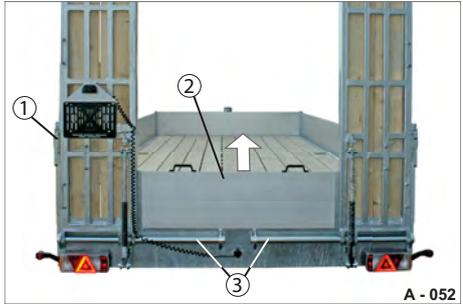


Fig. 77 Unlocking the drive-up ramps

- 1 Ramp safeguards
- 2 Slot-in gate
- 3 Track width guide linkage

Preparation

- ▶ Lower the two folding supports at the rear end.
- ▶ If necessary, remove the slot-in gate (Fig. 77/2).
- ▶ Check that the track width guide linkages (Fig. 77/3) are free of dirt - if necessary, clean and apply a little grease beforehand.
- ▶ Unlock the ramp retainer (Fig. 77/1).

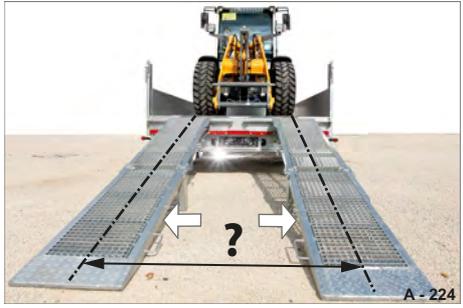


Fig. 78 Determining the track width

- ▶ If necessary, determine the track width of the vehicle to be loaded.



Fig. 79 Setting track width

Moving drive-up ramps

- ▶ Slide the ramps (in the vertical position) one after the other to the required track width.

Indirect track width setting with operating pole

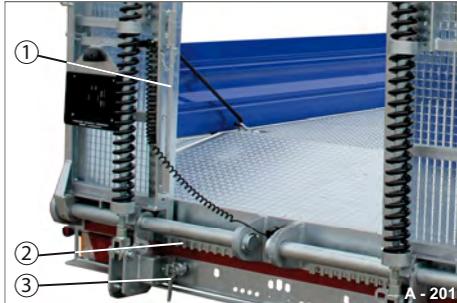


Fig. 80 Track width notch controls

- 1 Operating pole
- 2 Track width notches
- 3 Spring lever

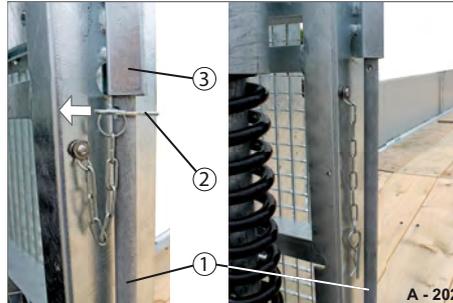


Fig. 81 Unlocking the operating pole

- 1 Operating pole
- 2 Spring pin
- 3 Holder

Removing the operating pole

- ▶ Pull the spring pin out of the (Fig. 81/2) bore hole of the operating pole (Fig. 81/1).

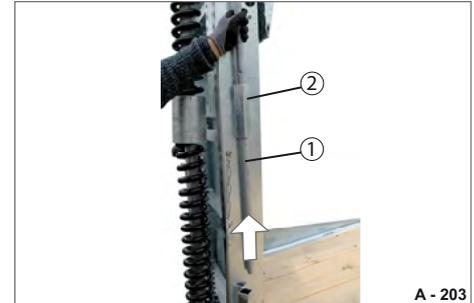


Fig. 82 Removing the operating pole

- 1 Operating pole
- 2 Holder

- ▶ Pull the operating pole (Fig. 82/1) upwards out of the holder (Fig. 82/2).

Setting track width

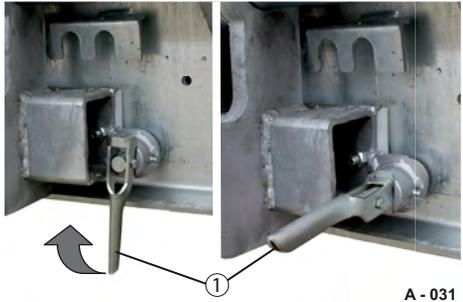


Fig. 83 Unlocking the track width notches
 1 Spring lever

- ▶ Pull the spring lever (Fig. 83/1) into the horizontal position.
 The track width notch is unlocked.

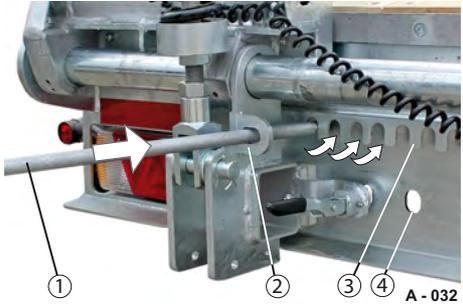


Fig. 84 Setting track width
 1 Operating pole
 2 Eye
 3 Notch
 4 Retaining hole

- ▶ Insert the operating pole (Fig. 84/1) through the eye (Fig. 84/2).
- ▶ Using the operating pole, grip one notch (Fig. 84/3) after another and slide the ramp to the required position. Make sure that the spring lever can be secured in one of the next retaining holes (Fig. 84/4).

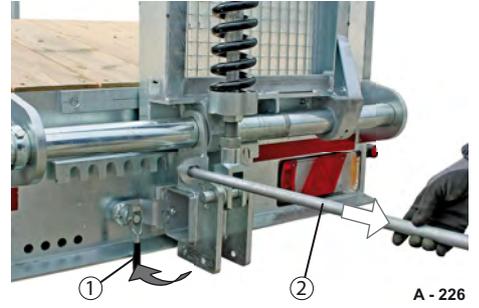


Fig. 85 Securing the track width notches
 1 Spring lever
 2 Operating pole

- ▶ Press the spring lever (Fig. 85/1) downwards.
 The spring lever engages in the retaining hole (Fig. 84/4).
- ▶ Pull out the operating pole (Fig. 85/2) and set it down safely to avoid damage.

Hydraulic track width setting

The operating point for hydraulic side positioning of the ramps is located on the left side in the direction of travel on the rear of the vehicle.

The hydraulic fluid flow rate can be infinitely varied from slow to fast at the pressure regulator.

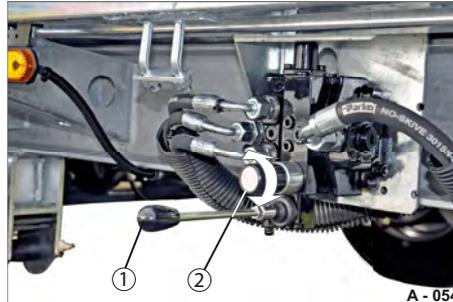


Fig. 86 Operating point

- 1 Lever
- 2 Pressure regulator

- ▶ Unlock the ramps, see page 144.
- ▶ Set the pressure at the pressure regulator (Fig. 86/2).
- ▶ Operate the lever (Fig. 86/1) until the correct track width is set.

Lowering drive-up ramps

WARNING



Standing under the drive-up ramps

Persons may be crushed/struck when the drive-up ramps are lowered.
Feet/hands may be crushed.

▶  Do not stand under moving drive-up ramps.

▶  Keep all persons away from the danger area.

▶ Always be aware of the movement of the ramps while they are in operation.



Fig. 87 Danger areas - crushing



Fig. 88 Avoid crushing

 The ramps must be operated from the outer side of the trailer!
Use the provided handles/grips.

Manual lowering

The weight of the ramps is held by the gas pressure springs or the suspended lifting gear.

The ramps are pulled down by the handles.

The gas pressure spring/suspended lifting gear provides operating assistance.

One-piece and two-piece ramps are operated in the same way.

On two-piece ramps the top section must be additionally secured.

! The effect of the lifting gear springs or the gas pressure springs may be diminished after repeated operating cycles. If the effect is diminished, readjust the suspended lifting gear or have the gas pressure springs replaced - see section entitled Maintenance starting on page 268.



Fig. 89 Drive-up ramps, one-piece

- 1 Drive-up ramp, one-piece
- 2 Handle
- 3 Gas pressure spring

One-piece ramps

- ▶ Unlock the ramps - turn to page 144.
- ▶ If necessary, set the track width - turn to page 155.
- ▶ If necessary, remove the slot-in gate.



Fig. 90 Lowering the ramp

- 1 Handle

- ▶ Pull the ramps - individually one after the other (Fig. 90/1) - down.

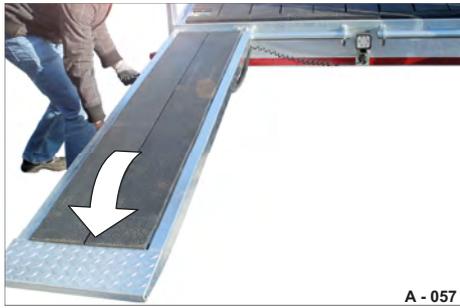


Fig. 91 Setting the ramp down



Fig. 92 Ramps lowered

- ▶ Set the ramp down slowly on the ground - do not drop.

- ▶ Check that the ramps rest fully on the ground.
- ▶ Check to ensure the stability of the trailer, e.g. when the trailer is on a slope or uneven ground when loading/unloading.

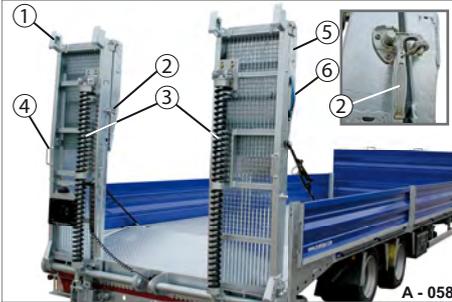


Fig. 93 Drive-up ramps, two-piece

- 1 Support
- 2 Rotary lever latch, for securing top section
- 3 Suspended lifting gear
- 4 Handle
- 5 Ramp - top section
- 6 Strap

Two-piece ramps

- ▶ Unlock the ramps - turn to page **144**.
- ▶ If necessary, set the track width - turn to page **155**.
- ▶ If necessary, remove the slot-in gate.



Fig. 94 Lowering the ramp

- 1 Drive-up ramp, complete with top section
- 2 Handle/grip

- ▶ Pull or push the ramp (Fig. 94/1) down.

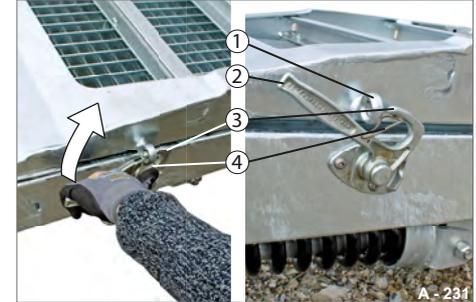


Fig. 95 Unlocking the rotary lever latch

- 1 Eye
- 2 Lever
- 3 Hook
- 4 Closing spring

Unlocking the top section

- ▶ Unlock the rotary lever latch (Fig. 93/2): Press in the closing spring (Fig. 95/4) and simultaneously open the lever (Fig. 95/2) fully. The hook (Fig. 95/3) is released. The top section of the ramp is unlocked.

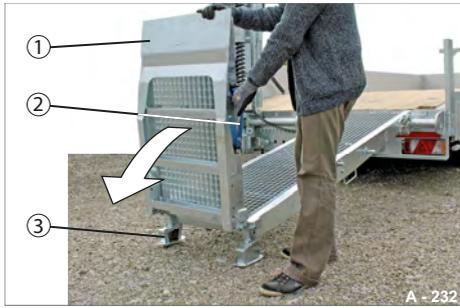


Fig. 96 Folding out the top section

- 1 Top section
- 2 Grip
- 3 Support

- ▶ Grasp the grip (Fig. 96/2).
- ▶ Fold out the top section (Fig. 96/1).
- ▶ Carefully set down the top section on the ground - do not drop.

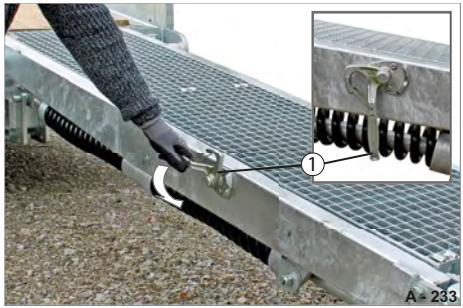


Fig. 97 Turning the rotary lever latch

- 1 Rotary lever latch

- ▶ Turn the rotary lever latch (Fig. 97/1) downwards into the vertical position.



The rotary lever latch must be turned down before the vehicle is driven onto the ramps - so that the latch does not protrude.



Fig. 98 Ramps lowered

- ▶ Check that the ramps rest fully on the ground.
- ▶ Check to ensure the stability of the trailer, e.g. when the trailer is on a slope or uneven ground when loading/unloading.

Hydraulic lowering

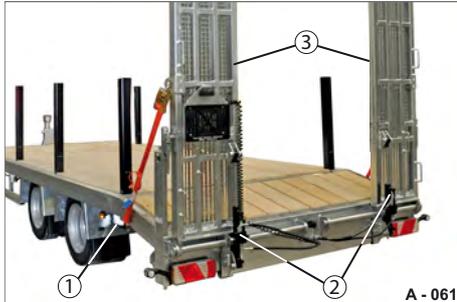


Fig. 99 Drive-up ramps, hydraulic

- 1 Operating point (raising/lowering)
- 2 Hydraulic cylinder
- 3 Ramps, one-piece



Fig. 101 Loading wall, hydraulic

- 1 Operating point (raising/lowering)
- 2 Hydraulic cylinder
- 3 Loading wall, continuous

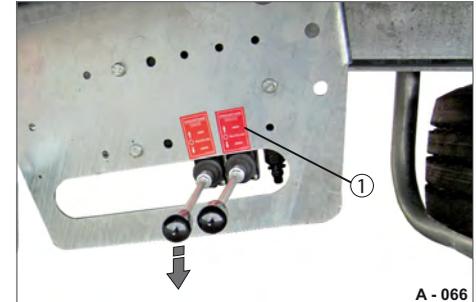


Fig. 103 Lowering the ramps

- 1 Sticker, hydraulic cylinders

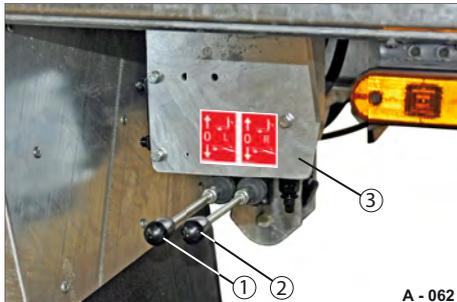


Fig. 100 Operating point

- 1 Lever (left ramp)
- 2 Lever (right ramp)
- 3 Console

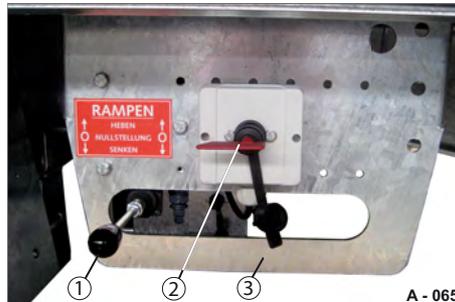


Fig. 102 Operating point (electro-hydraulic)

- 1 Lever (loading wall)
- 2 Power switch (ON/OFF)
- 3 Console

- ▶ Unlock the ramps - turn to page **144**.
- ▶ If necessary, set the track width - turn to page **155**.
- ▶ If necessary, remove the slot-in gate.
- ▶ Operate the corresponding lever (Fig. 100/1 or Fig. 100/2) or the lever (Fig. 102/1) for the loading wall to activate the hydraulic cylinders.
- ▶ Release the lever when the ramp/loading wall rests on the ground.

Driving on drive-up ramps

Driving on the ramps is only permitted when there is a direct line of sight between the driver and the wheels.

If there is no line of sight - only with the supervision of a banksman.



Avoid sudden stopping and restarting when driving on the ramps!

Drive on the ramps slowly, at a speed of no more than 0.3 m/second.

WARNING

Ramps positioned to incorrect track width

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

- ▶ Position the ramps to the correct track width before loading/unloading.

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.



- ▶ Keep all persons away from the danger area all round the trailer.



- ▶ Have a second person assist you.

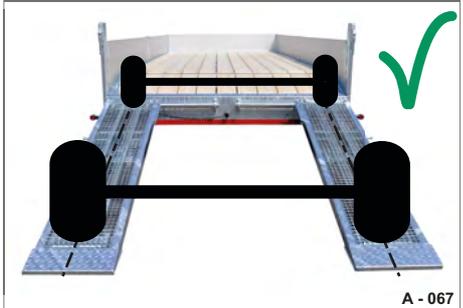


Fig. 104 Driving on drive-up ramps

- ▶ Slowly drive onto the ramps straight ahead - not at an angle from the side.

Raising & securing ramps



Driving with unsecured ramps is illegal!



If necessary, clean off dirt before raising the ramps.

The ramps are individually folded up one after another.

Refer to the following sections for details on operating the different retainer arrangements:

- Securing tensioner 1, turn to page 144.
- Securing tensioner 2, turn to page 146.
- Securing rod, turn to page 148.
- Securing latch, turn to page 150.
- Ratchet strap, turn to page 151.

The retainer arrangements are operated in reverse order.

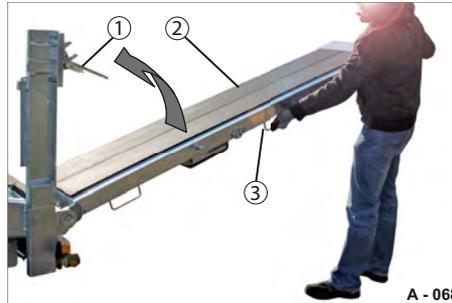


Fig. 105 Raising the drive-up ramp, one-piece

- 1 Securing latch, OPEN
- 2 Ramp
- 3 Handle

Raising the one-piece drive-up ramp

- ▶ Raise the ramp (Fig. 105/2) by the handles (Fig. 105/3).
- ▶ Press the ramp into the vertical position.
The gas pressure springs or the suspended lifting gear provide assistance and hold the ramps in the vertical position.

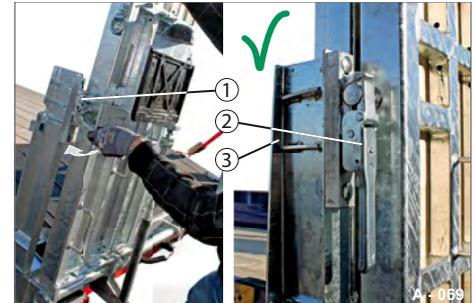


Fig. 106 Securing the drive-up ramp

- 1 Gudgeon
- 2 Securing latch, CLOSED
- 3 Corner post

Securing

- ▶ If necessary, slide the ramp outwards towards the corner post (Fig. 106/3).
- ▶ Insert the gudgeon (Fig. 106/1) on the ramp in the securing latch (Fig. 106/2).
- ▶ Press the latch lever closed with the palm of your hand.
The latch engages.
The drive-up ramp is secured.

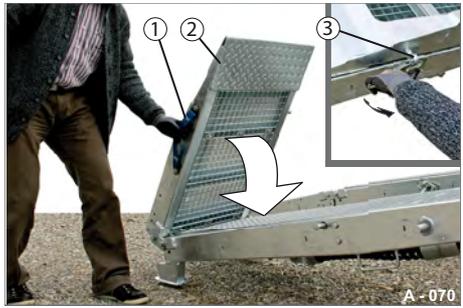


Fig. 107 Raising the drive-up ramp, two-piece
1 Strap
2 Ramp, top section
3 Rotary lever latch, CLOSED

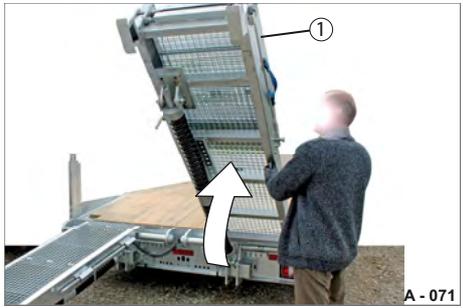


Fig. 108 Raising the drive-up ramp, two-piece
1 Ramp

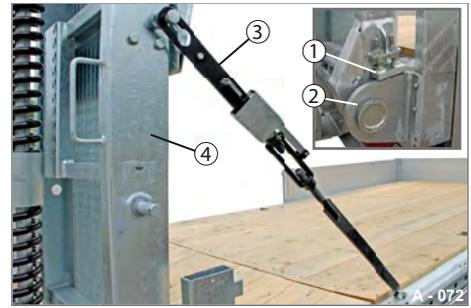


Fig. 109 Securing the drive-up ramp, two-piece
1 Support mount
2 Mounting plate
3 Securing tensioner
4 Ramp, secured

Raising the two-piece drive-up ramp

- ▶ If necessary, open the rotary lever latch (Fig. 107/3).
- ▶ Grasp the grip (Fig. 107/1).
- ▶ Fold in the top section (Fig. 107/2) of the ramp.
- ▶ Close the rotary lever latch (Fig. 107/3).
The top section is joined to the ramp and secured.

- ▶ Press the ramp (Fig. 108/1) upwards into the vertical position.
The gas pressure springs or the suspended lifting gear provide assistance and hold the ramps in the vertical position.
- ▶ If necessary, move the ramp outwards towards the corner post.
Move the ramp with the operating pole and track width notches - see page 157.

Securing

- ▶ Check that the support mount (Fig. 109/1) rests on the mounting plate (Fig. 109/2).
- ▶ Apply the securing tensioner (Fig. 109/3) - turn to page 144.
- ▶ Tighten down the ramp (Fig. 109/4) with the securing tensioner and secure the tensioner.
The drive-up ramp is secured.

Hydraulic raising & manual securing

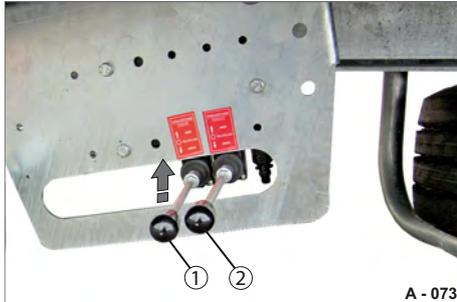


Fig. 110 Ramps, raising

- 1 Lever, left ramp
- 2 Lever, right ramp

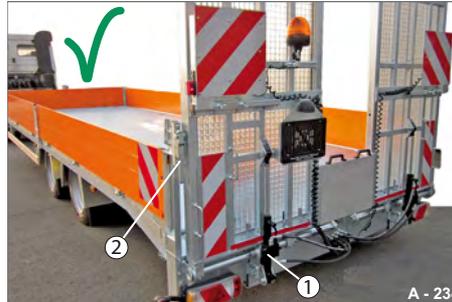


Fig. 111 Ramps, securing

- 1 Hydraulic cylinder
- 2 Securing latch, CLOSED



Fig. 112 Ramps, securing

- 1 Hydraulic cylinder
- 2 Ratchet strap, tightened

- ▶ Operate the corresponding lever (Fig. 110/1 or Fig. 110/2) upwards. The ramps are raised.
- ▶ Release the lever when the ramp is in the vertical position.

- ▶ If necessary, move the ramp outwards towards the corner post. Move the ramp with the operating pole and track width notches - see page 157.
- ▶ Press the latch lever closed with the palm of your hand. The latch engages. The drive-up ramp is secured.

- ▶ Also attach, if provided, the ratchet strap (Fig. 112/2) - turn to page 151.
- ▶ Tighten down the ramp with the ratchet strap and secure the strap. The drive-up ramp is secured.

General

The side platform gates can be fashioned as single parts or in two parts with a middle post.

The platform gates are made of aluminium as standard.

As an option, the platform gates can also be made of steel.

The side platform gates can be folded down and removed.

The platform gates make form-fit load securing possible.

Aluminium platform gates have a countersunk fastener with catch.

Steel platform gates have a gudgeon and mounted fasteners with catch.



Driving with opened/folded-down platform gates is not permitted.



DANGER

Driving with platform gates open

Persons may become trapped.

The load may fall out.

- ▶ Check before driving that all platform gates are closed and secured.



CAUTION



Platform gates under load pressure

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

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

NOTICE

Platform gates with load securing

The platform gates may be damaged during opening by load securing elements.

- ▶ Check before opening the platform gates that there are no load securing elements attached to the platform gates.
- ▶ If necessary, remove these beforehand.



A - 187

Fig. 113 Side platform gates - version: aluminium

- | | | |
|--|-----------------------------------|----------------------|
| 1 Platform gate fastener | 3 Platform gate, two-piece | 5 Corner post |
| 2 Platform gate, one-piece/continuous | 4 Middle post | |



A - 236

Fig. 114 Side platform gates - version: steel

Unlocking (aluminium platform gates)



CAUTION



Working platform gates and fasteners

Fingers/hands can get crushed when opening/closing the platform gates and fasteners.



► Wear

- 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 the posts/fasteners.
- Close the platform gate fasteners with the palm of your hand.



If there is load pressure, the platform gate folds outwards approx. 10 mm.

The platform gate fastener (Fig. 116) is inhibited and can only be pulled further out by applying great force (integrated load pressure recognition).

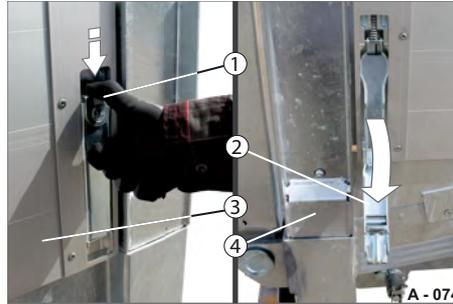


Fig. 115 Platform gate fastener unlocked

- 1 Catch
- 2 Platform gate fastener
- 3 Platform gate
- 4 Corner post

- Press the catch (Fig. 115/1) on the platform gate fastener (Fig. 115/2).
- Pull the platform gate fastener towards you.

The platform gate fastener opens automatically - if there is not load pressure.

- Hold the platform gate (Fig. 115/3) firmly with one hand and unlock the platform gate fastener at the other end of the platform gate.

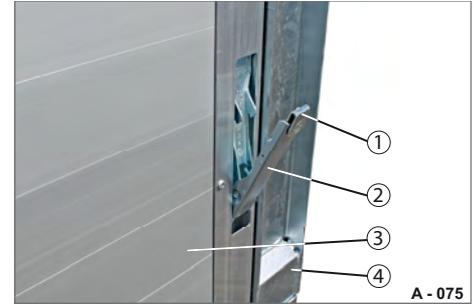


Fig. 116 Platform gate under load pressure

Load pressure recognition

- Do not pull on the platform gate fastener with force.
- Close the platform gate fastener (Fig. 115/2).
The catch (Fig. 115/1) engages.
- Remove the load items that are pushing against the platform gate.
Once there is no more load pressure, the platform gate fastener can be fully opened without force.
- Open both platform gate fasteners.

Unlocking (steel platform gates)

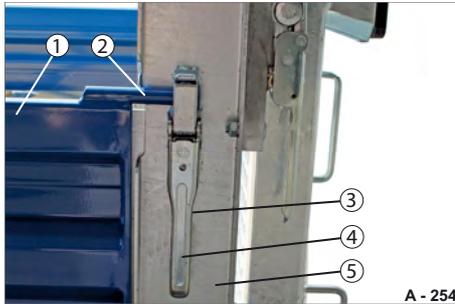


Fig. 117 Platform gate fastener CLOSED

- 1 Platform gate
- 2 Gudgeon
- 3 Fastener catch
- 4 Fastener lever
- 5 Corner post

- ▶ Press in the fastener catch (Fig. 117/3) and
- ▶ Pull on the fastener bar (Fig. 117/4). The gudgeon (Fig. 117/2 & Fig. 118/1) of the platform gate (Fig. 117/1) is released.



Fig. 118 Platform gate fastener OPEN

- 1 Gudgeon, released

- ▶ If necessary, remove the load items that are pushing against the platform gate.
- ▶ Hold the platform gate firmly with one hand and unlock the platform gate fastener at the other end of the platform gate. The platform gate is unlocked and can be folded down.

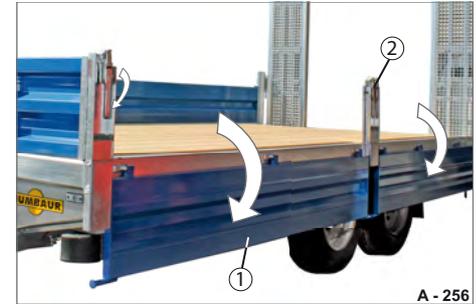


Fig. 119 Platform gates folded down

- 1 Platform gate, folded down
- 2 Middle post

- ▶ Fold down the platform gates.
- ▶ If necessary, close the platform gate fasteners by pressing with the palm of your hand.

Folding down (aluminium / steel platform gates)



Fig. 120 Platform gate unlocked

- 1 Platform gate fasteners, OPEN
- 2 Platform gate, unlocked



Fig. 121 Platform gate, one-piece, folded down

- 1 Platform gate
- 2 Platform gate hinge

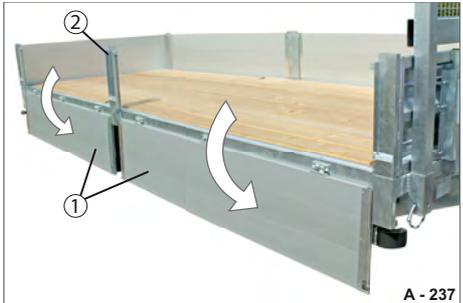


Fig. 122 Platform gate, two-piece, folded down

- 1 Platform gate, folded down
- 2 Middle post



The fasteners must be operated on the right and left one after the other.

The platform gate must be held firmly.

► Fold down the platform gate (Fig. 120/2) with both hands in a controlled manner - do not drop.

► Make sure that the platform gate (Fig. 121/1) does not slip out of the platform gate hinges (Fig. 121/2).

► Fold down the platform gates (Fig. 122/1) one after the other. The middle post (Fig. 122/2) remains inserted in the post pocket.

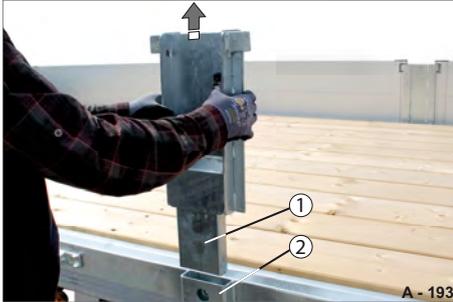


Fig. 123 Removing the middle post

- 1 Middle post
- 2 Side post pocket

Removing the middle post

- ▶ Pull the middle post (Fig. 123/1) out of the post pocket (Fig. 123/2).
- ▶ Set down the middle post safely to avoid damage.

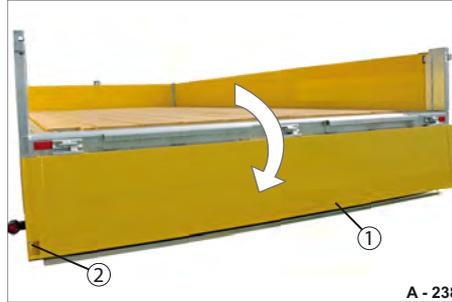


Fig. 124 Rear platform gate, folded down

- 1 Rear platform gate
- 2 Platform gate fastener, CLOSED

Folding down the rear platform gate

- ▶ Unlock the platform gate fasteners (Fig. 124/2).
- ▶ Open the rear platform gate (Fig. 124/1) a little and close the platform gate fasteners.
- ▶ Fold down the rear platform gate (Fig. 124/1) with both hands in a controlled manner - do not drop. The platform gate fasteners cannot butt against the underrun guard/tail lights.



Fig. 125 Platform gates folded down all-round

- 1 Bar fastener

The platform gates can be folded down all-round for loading/unloading.



Before driving, the middle posts must be inserted and the platform gates folded up and secured.

The platform gates can optionally be fitted e.g. for container transport with securing elements (Fig. 125/1) for folded-down platform gates.

The middle posts must be removed and the platform gates secured in their folded-down state!

Closing (aluminium platform gate)

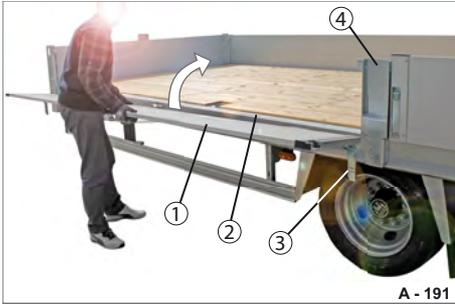


Fig. 126 Closing the platform gate

- 1 Platform gate
- 2 Loading edge
- 3 Platform gate fastener, OPEN
- 4 Middle post

- ▶ If necessary, insert the middle post (Fig. 126/4) into the post pocket.
- ▶ Check before folding up that the platform gate fasteners (Fig. 126/3) are opened.
- ▶ If necessary, clean to remove dirt along the loading edge (Fig. 126/2) on the chassis.
- ▶ Fold the platform gate (Fig. 126/1) up with both hands.



Fig. 127 Closing the platform gate

- 1 Middle post, inserted
- 2 Platform gate fastener
- 3 Catch

- ▶ Press the platform gate together completely.
- ▶ Close the platform gate fastener (Fig. 127/2) by pressing it shut with the palm of your hand. The catch (Fig. 127/3) automatically snaps in.



Fig. 128 Platform gate locked

- 1 Platform gate
- 2 Platform gate fastener
- 3 Catch, snapped in

If the catch fails to snap in:

- ▶ Open the platform gate fastener (Fig. 128/2).
- ▶ Firmly press the platform gate (Fig. 128/1) closed and simultaneously press the platform gate fastener upwards. The catch (Fig. 128/3) snaps in. The platform gate is locked.

Closing (steel platform gate)

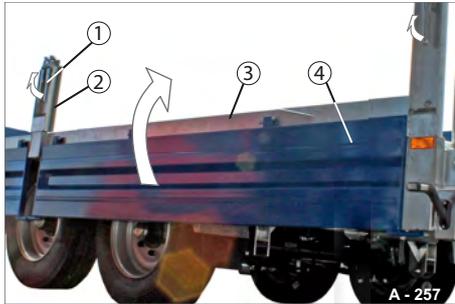


Fig. 129 Closing the platform gate

- 1 Platform gate fastener, OPEN
- 2 Middle post
- 3 Loading edge
- 4 Platform gate

- ▶ If necessary, insert the middle post (Fig. 129/2) into the post pocket.
- ▶ Check before folding up that the platform gate fasteners (Fig. 129/1) are opened.
- ▶ If necessary, clean to remove dirt along the loading edge (Fig. 129/3) on the chassis.
- ▶ Fold the platform gate (Fig. 129/4) up with both hands.

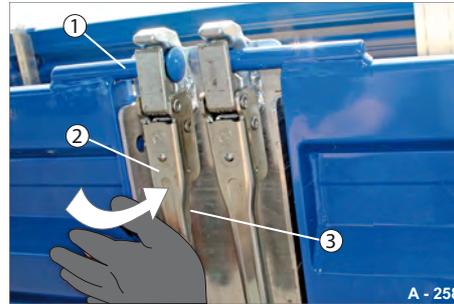


Fig. 130 Closing the platform gate

- 1 Gudgeon, locked
- 2 Fastener lever
- 3 Fastener catch, snapped in

- ▶ Press the platform gate together completely.
- ▶ Close the fastener lever (Fig. 130/2) by pressing it shut with the palm of your hand. The safeguard (Fig. 130/3) automatically snaps shut.

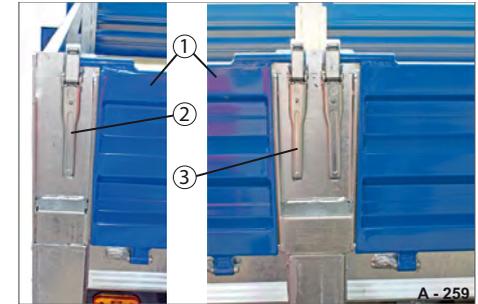


Fig. 131 Platform gate locked

- 1 Platform gate
- 2 Platform gate fastener, front end
- 3 Platform gate fastener, middle

If the catch fails to snap in:

- ▶ Open the platform gate fasteners (Fig. 131/2 & Fig. 131/3).
- ▶ If necessary, clear any pushing load and firmly press the platform gate (Fig. 131/1) closed.
- ▶ Close the platform gate fasteners. The catch snaps in. The platform gate is locked.

Disassembly

The platform gates can be disassembled individually as needed.



Driving with removed platform gates constitutes a greater accident risk.

- Ensure that the load is adequately secured.
- Form-fit load securing is not possible.



Removal/attachment of the continuous platform gate must be carried out by 2 workers!

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).

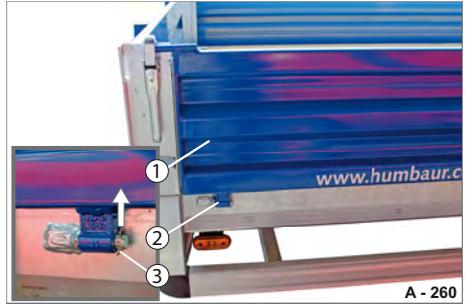


Fig. 132 Unlocking the hinge

- 1 Platform gate
- 2 Platform gate hinge
- 3 Split pin

Unlocking

In the case of steel platform gates one of the platform gate hinges is secured with a split pin against falling out.

- ▶ Pull the split pin (Fig. 132/3) out of one of the platform gate hinges (Fig. 132/2).
- ▶ Keep the split pin for subsequent re-use.
- ▶ Replace the split pin if deformed.

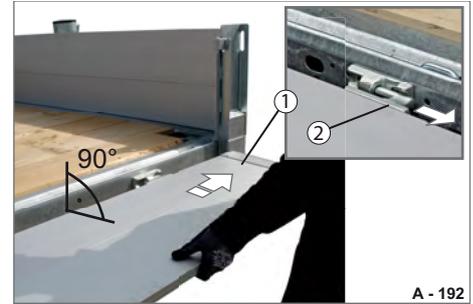


Fig. 133 Removing the platform gate

- 1 Platform gate
- 2 Platform gate hinge

Removing

- ▶ Unlock the platform gate fasteners.
- ▶ Fold the platform gate (Fig. 133/1) at 90° down - flush with the loading platform.
- ▶ Carefully slide the platform gate to the side out of the platform gate hinges (Fig. 133/2).
- ▶ Close the platform gate fasteners.
- ▶ Set the platform gate down safely on the ground.

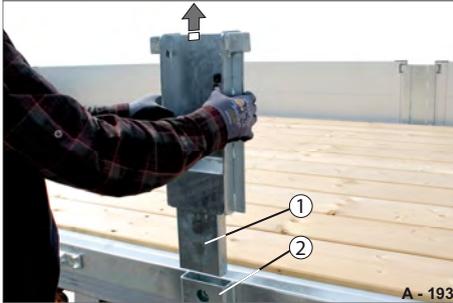


Fig. 134 Removing the middle post

- 1 Middle post
- 2 Side post pocket

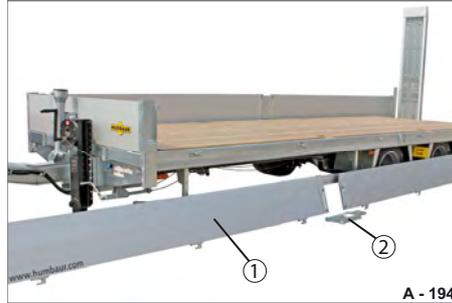


Fig. 135 Setting down the platform gates safely

- 1 Platform gate
- 2 Middle post

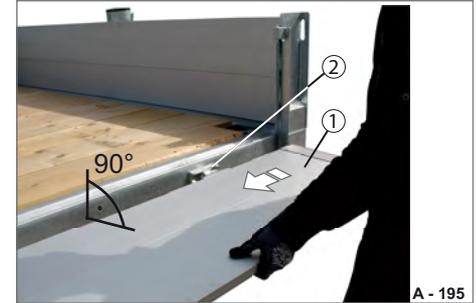


Fig. 136 Sliding in the platform gate

- 1 Platform gate
- 2 Platform gate hinge

- ▶ Pull the middle post (Fig. 134/1) out of the post pocket (Fig. 134/2).

- ▶ Make sure that the removed platform gates (Fig. 135/1) and middle post (Fig. 135/2) are set down safely to avoid damage.
- ▶ Make sure that the platform gates are not damaged during loading/unloading.

Fitting

- ▶ If necessary, insert the middle post into the post pocket.
- ▶ Slide the platform gate (Fig. 136/1) into the platform gate hinges (Fig. 136/2).
- ▶ Open the platform gate fasteners.
- ▶ Fold the platform gate up and lock it with the platform gate fasteners - see page 176.
- ▶ Steel platform gate: Insert the split pin into one of the platform gate hinges.

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 ("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.

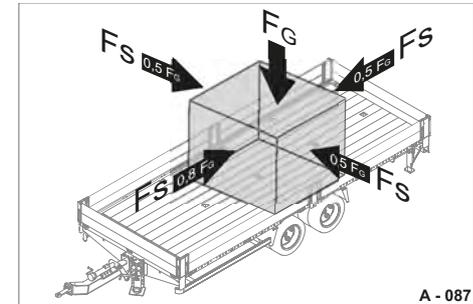


Fig. 137 Maximum inertial forces
Resulting from the driving dynamic in
street traffic
F_S Load securing force, **F_G** Load inertia

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 Example calculation

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 wall and platform gates or on wedges, 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:

6,000 daN (kg)
for HBT BE / HBT BS / HBTZ BS
(up to 19 t)
10,000 daN (kg)
for HBTZ BS (from 19 t).

- Maximum tensile load on the lashing rings in the outer frame:
2,000 daN (kg)

- ▶ Only use suitable/tested lashing equipment.

Friction-lock load securing

Force specifications

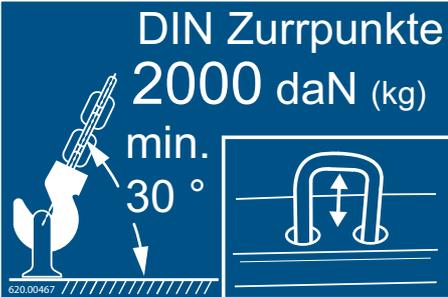


Fig. 138 Example: Sign - lashing shackle



Fig. 139 Example: Sign - lashing ring

The lashing equipment can be used from inside as well as from outside.

Lashing points that are not required must be recessed in the outer frame or the loading platform.

WARNING



**Impermissible tensile loads/
lashing angles**

Lashing equipment may break/
tear.

The load is not sufficiently secured - risk of accidents!

- ▶ Comply with the maximum values for force specifications.
- ▶ Use suitable lashing equipment. The max. possible tension values are specified on the lashing equipment.
- ▶ Lash the load with a lashing angle of min. 30° or greater. Situate the fixing point on the load as high as possible.
- ▶ Do not lash the load to corner posts/middle posts.
- ▶ Do not lash/secure the load on the sloping loading platform, e.g. in the rear area.

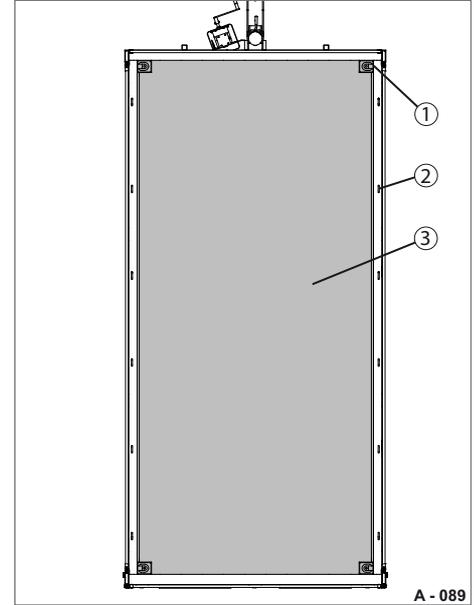


Fig. 140 Example - HBT BE (10 t):

- 1 Lashing ring 6 t (right 2x, left 2x)
- 2 Lashing shackle 2 t (right 6x, left 6x)
- 3 Loading platform

Lashing point arrangement

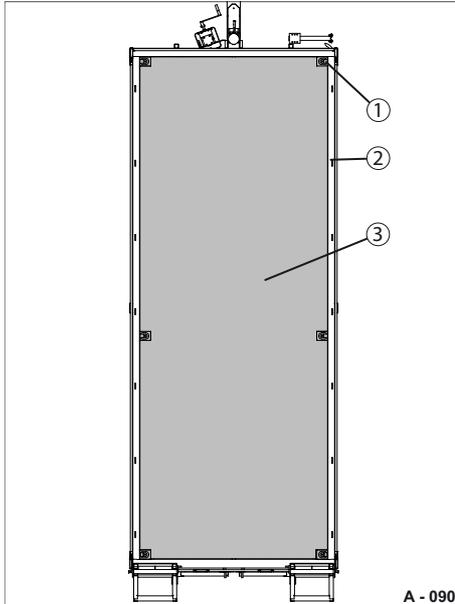


Fig. 141 Example - HBT BS (10 t):

- 1 Lashing ring 6 t (right 3x, left 3x)
- 2 Lashing shackle 2 t (right 7x, left 7x)
- 3 Loading platform

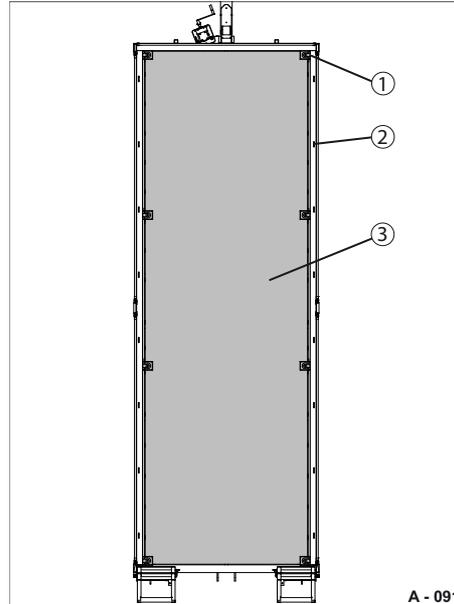


Fig. 142 Example - HBTZ BS (13 t):

- 1 Lashing ring 6 t (right 4x, left 4x)
- 2 Lashing shackle 2 t (right 8x, left 8x)
- 3 Loading platform

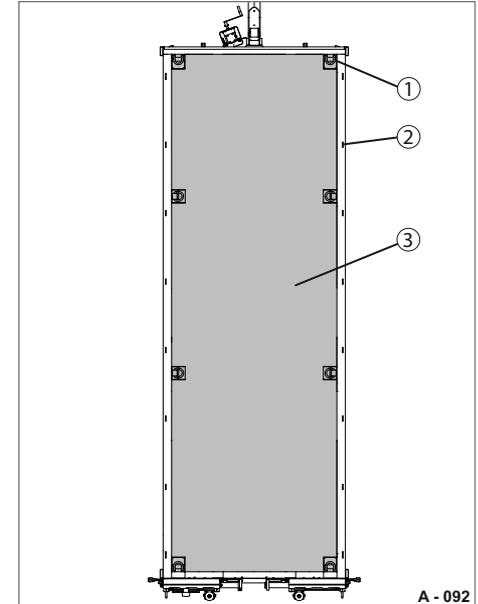


Fig. 143 Example - HBTZ BS (19 t):

- 1 Lashing ring 10 t (right 4x, left 4x)
- 2 Lashing shackle 2 t (right 8x, left 8x)
- 3 Loading platform

Lashing points

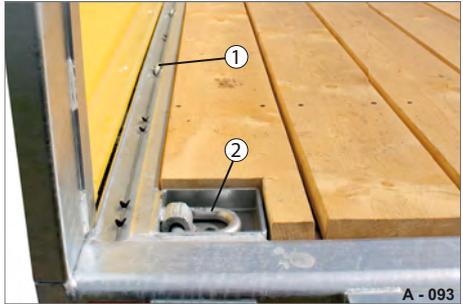


Fig. 144 Example: Lashing points

- 1 Lashing shackle (outer frame)
- 2 Lashing ring (loading platform)

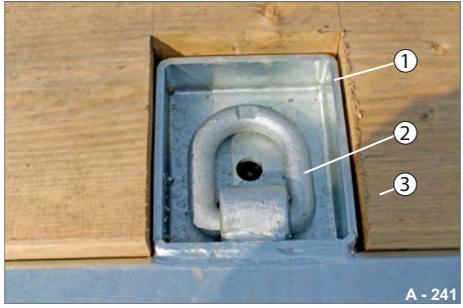


Fig. 145 Lashing ring folded in

- 1 Pocket, recessed
- 2 Lashing ring
- 3 Loading platform

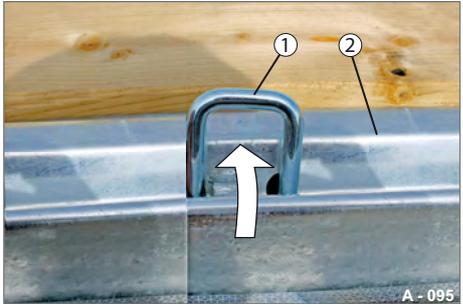


Fig. 147 Lashing shackle pressed out

- 1 Lashing shackle
- 2 Outer frame



Fig. 146 Lashing ring folded out

- ▶ Press out the lashing shackle (Fig. 147/1) from below upwards.
- ▶ Raise the lashing ring (Fig. 145/2).
- ▶ Recess lashing points that are not required in the outer frame or the loading platform.

Lashing points on the grid wall (option)

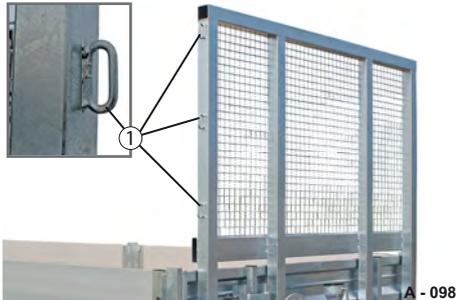


Fig. 148 Grid wall

- 1 Attachment rings 500 kg, welded on

Lashing points for VarioFix (option)

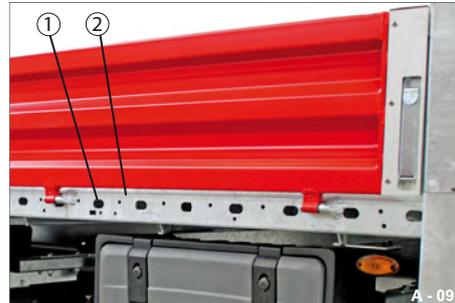


Fig. 149 VarioFix lashing points

- 1 Elongated holes
- 2 Outer frame, side

F_{max} Maximum permissible tensile load
= 500 daN (kg)



The load can be connected to the front wall with welded-on attachment rings (Fig. 148/1).

The VarioFix outer frame allows you to have continuous lashing over the entire body length.

The standard lashing points (Fig. 144) within the outer frame can be used in parallel.

Lashing point loads

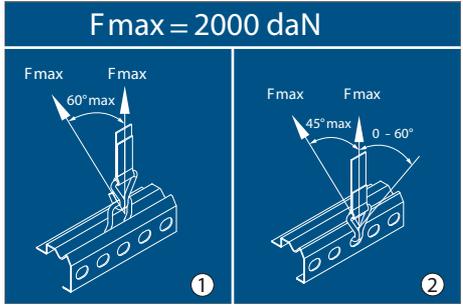


Fig. 150 Load per lashing point
 1 Standard lashing point (lashing shackle)
 2 VarioFix lashing point (elongated holes)

Fmax Maximum permissible tensile load
 = 2000 daN (kg)

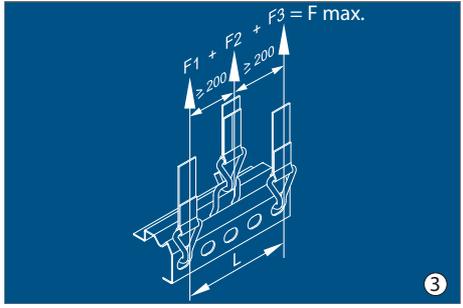


Fig. 151 Simultaneous lashing point load
 3 Simultaneous lashing at standard and VarioFix lashing points

The permissible simultaneous load of VarioFix and standard lashing points is dependent on the actual distances (L) between VarioFix lashing points (see Fig. 152).

- F1, F3** Tensile load on the Vario Fix lashing points
- F2** Tensile load on a DIN lashing point
- Fmax** Total allowable tensile load according to chart
- L** Distance between two Vario Fix lashing points

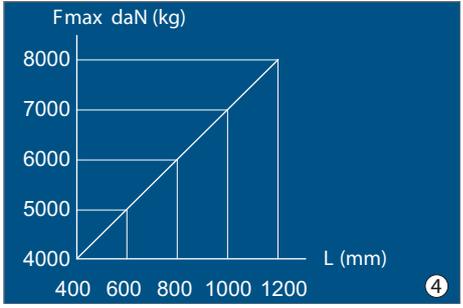


Fig. 152 Chart: Permissible load
 4 VarioFix lashing points in relation to the distances between two VarioFix lashing points

- Fmax** Maximum allowable total tensile load
- L** Distance between two VarioFix lashing points

Form-fit load securing

The load can be form-fit secured with modular components along the platform gates and on the front wall.

A combination of form-fit and friction-lock securing is achieved with:

- platform gates,
- platform gate attachments,
- steel grid attachments,
- support frame,
- slot-in posts,
- “Twist-Lock” container lock.

and the correct lashing of the load units to DIN lashing points.



Observe the legal requirements for form-fit load securing, e.g. VDI 2700 Guideline.

Container transport (option)

The construction machine transporters 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 the version for container transport the HBT / HBTZ is designed straight in the back (without angled ramp).

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 is secured before departing, if necessary lash it down again.

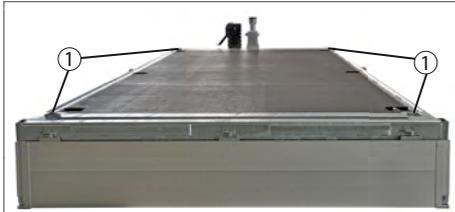
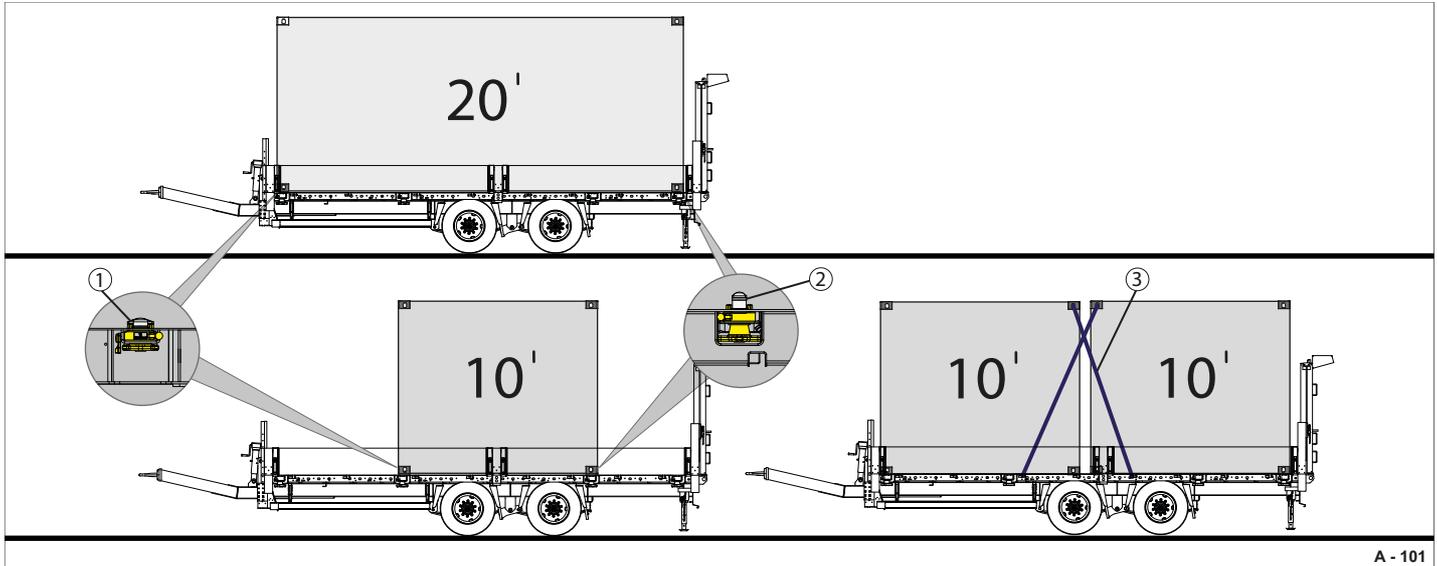


Fig. 153 Container locking point
1 "Twist-Lock" locking point



A - 101

Fig. 154 Possible container loading/securing variants

- 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 model, are to be placed so that the front locking points secure the container.

When only one size 10' container is transported, it must be secured in accordance with the correct load distribution and the available locks.

In addition, the container must be securely lashed down.

In the case of construction transporters with 4 locking points, a size 20' container can be transported without additional lashing equipment.

General

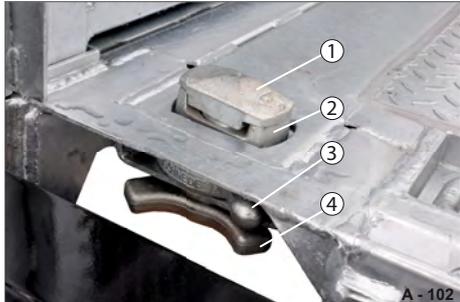


Fig. 155 "Twist-Lock" overview

- 1 Pivot pin
- 2 Guide bush
- 3 Grooved bush
- 4 Clamping nut
- 5 Safety locking mechanism

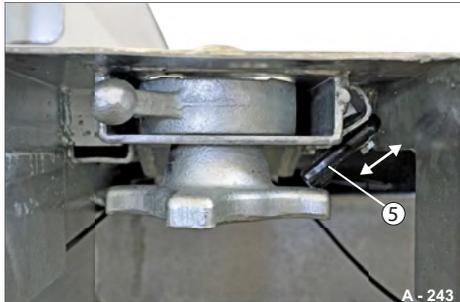


Fig. 156 "Twist-Lock" overview

Locking point extended

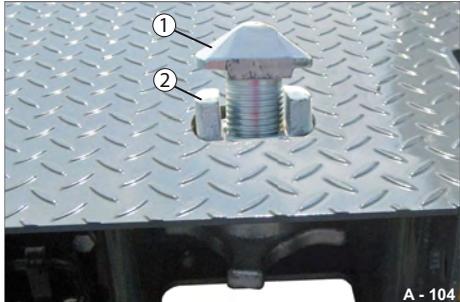


Fig. 157 Locking point extended

- 1 Pivot pin
 - 2 Guide bush
- ▶ Raise the safety locking mechanism (Fig. 156/5) and secure it.
 - ▶ Unscrew the clamping nuts (Fig. 155/4).
 - ▶ Turn the grooved bush (Fig. 155/3) to the right.
 - ▶ Raise and rotate the clamping nuts and the pivot pin (Fig. 157/1) simultaneously. The guide bush (Fig. 157/2) comes out the top.
 - ▶ Tighten the clamping nut.
 - ▶ Secure the clamping nuts using the safety device.



Fig. 158 Locking point in intake position

The pivot pin lays on the guide bushes (see Fig. 158).
 The container can be set down or removed.

- ▶ Check that all locking points are extended before setting down the container.

Extending the locking point

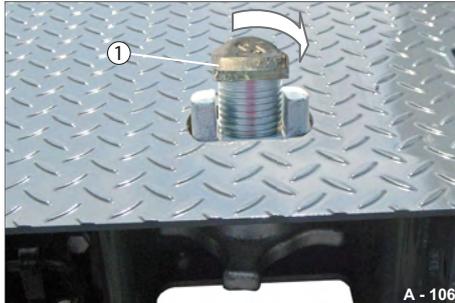


Fig. 159 Releasing the pivot pin

- 1 Pivot pin rotated by 90°



Fig. 160 Locked (container transport)

The pivot pin moves downwards and locks the container (Fig. 160).

- ▶ Check that the container is securely locked before departing.

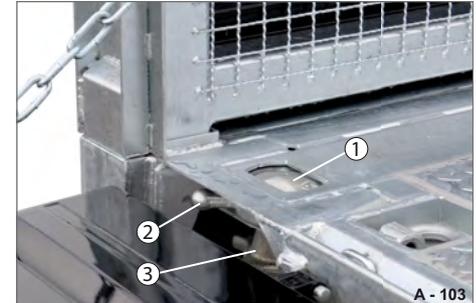


Fig. 161 Drive position without container

- 1 Pivot pin, recessed
- 2 Grooved bush, left, secured
- 3 Clamping nut, secured with safety locking mechanism

Recessing the locking points

- ▶ Recess all the container locking points when they are not in use: Retract the pivot pin (Fig. 161/1) and the guide bushes fully. Secure the locking point with the grooved bush (Fig. 161/2) - turn anticlockwise.
- ▶ Secure the clamping nut (Fig. 161/3) with the safety locking mechanism. The safety locking mechanism blocks the clamping nut and prevents it from unscrewing of its own accord during driving.

Load securing rail (option)

The load securing rail is mounted on the loading platform at the required distance.

The load securing rail secures the load in a form-fitting manner.

Placing the securing rails on the load prevents the load from sliding.

! WARNING

Driving with loose securing rails

Unsecured/uninserted securing rails can fall during the journey - risk of accidents!

- ▶ Check before driving that the securing rails are inserted and secured.

! WARNING

Lashing to the securing rails

Lashing to the securing rails may result in deformation of the securing rails, causing them to come loose during driving - risk of accident!

- ▶ Lash the load to the designated lashing points.

! CAUTION

Working the securing rail

They can crush fingers/hands/feet. They can fall from the loading platform when moved.



- ▶ Wear , .
- ▶ When moving the securing rails, make sure that your hands/feet are not under the securing rails.
- ▶ Carefully insert the securing rails - do not let them fall.

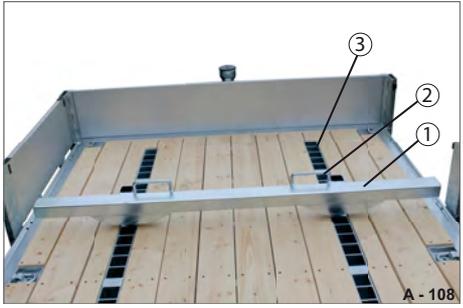


Fig. 162 Load securing rail

- 1 Securing rail
- 2 Handle
- 3 Adjustment grid



Fig. 163 Adjustment possibilities

Adjusting the securing rail

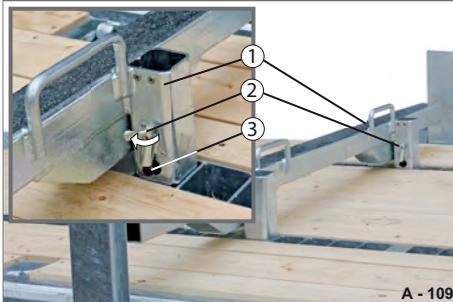


Fig. 164 Unlocking securing rails

- 1 Securing rail
- 2 Pin
- 3 Bolt

- ▶ Turn the pin (Fig. 164/2).
The bolt (Fig. 164/3) moves out.
The securing rail (Fig. 164/1) is released.
- ▶ Raise the securing rail by the handles (Fig. 162/2).

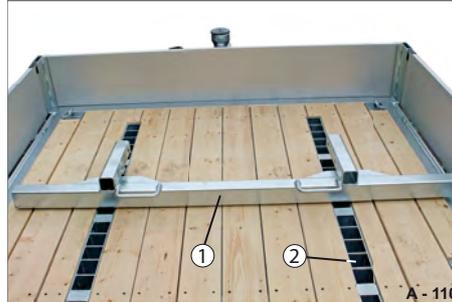


Fig. 165 Moving the securing rail

- 1 Securing rail, loose
- 2 Adjustment grid

- ▶ Insert the securing rail (Fig. 165/1) into the required adjustment grid (Fig. 165/2).

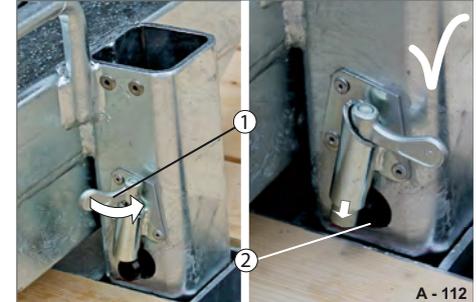


Fig. 166 Securing the securing rails

- 1 Pin
- 2 Bolt, secured

- ▶ Turn the pin (Fig. 166/1) so that the bolt is secured.
- ▶ Check after loading that the securing rail secures the load in a form-fitting manner - resting on the load.

Slot-in posts (option)

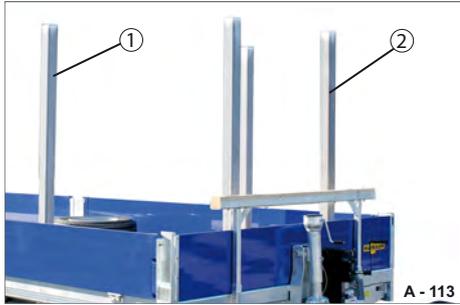


Fig. 167 Example:
Slot-in posts with platform gates

- 1 Slot-in posts, side
- 2 Slot-in posts, front end

The slot-in posts can be mounted along the sides and/or on the front end of the outer frame.

The slot-in posts secure the load in a form-fitting manner.

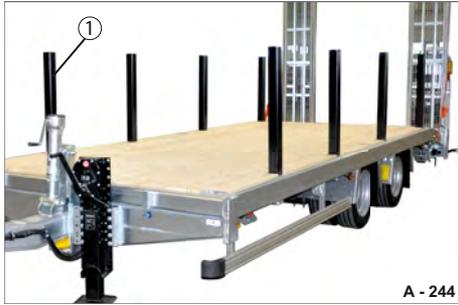


Fig. 168 Example:
Slot-in posts without platform gates

- 1 Slot-in posts, side

! WARNING

Lashing to the slot-in posts

Lashing to the slot-in posts may result in deformation of the slot-in posts, causing them to come loose during driving - risk of accident!

- ▶ Lash the load to the designated lashing points.

! CAUTION



Working the slot-in posts

The slot-in posts are heavy. They can crush fingers/hands/feet. They can fall from the loading platform when moved.



- ▶ Wear gloves, boots.
- ▶ When moving the slot-in posts, make sure that your hands/feet are not under the slot-in posts.
- ▶ Carefully insert the slot-in posts - do not drop.



- ▶ The slot-in posts must be worked by 2 workers.

Working the slot-in posts

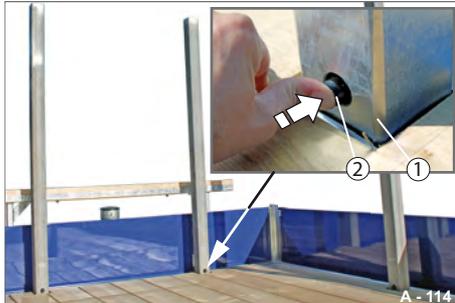


Fig. 169 Unlocking the slot-in posts

- 1 Slot-in posts
- 2 Locking button

- ▶ Press in the locking button (Fig. 169/2).
- The slot-in post (Fig. 169/1) is released.

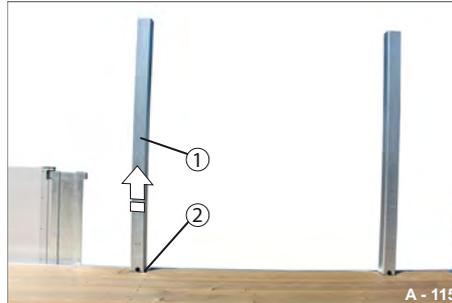


Fig. 170 Removing the slot-in post

- 1 Slot-in posts
- 2 Side post pocket

- ▶ Lift the slot-in post (Fig. 170/1) out of the post pocket (Fig. 170/2).
- ▶ Set the slot-in post down carefully and safely to avoid damage.

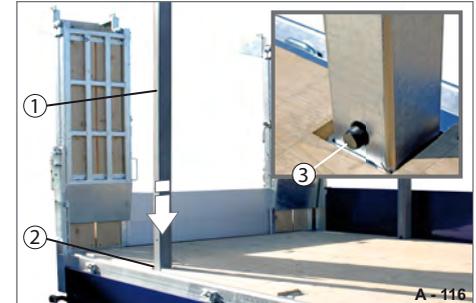


Fig. 171 Inserting the slot-in post

- 1 Slot-in posts
- 2 Side post pocket
- 3 Locking button, extended

- ▶ Insert the slot-in post (Fig. 171/1) completely into the post pocket (Fig. 171/2).
- The slot-in post automatically engages in the post pocket and is secured with the integrated locking button (Fig. 171/3).

General

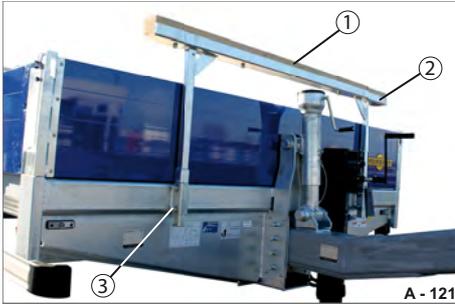


Fig. 172 Support frame on the chassis

- 1 Wood support
- 2 Support frame
- 3 Bolt connection in post pocket on the chassis

The support frame is positioned at the front on the front wall or chassis.

It is used to accommodate for example a dredging shovel or a wheel loader.

It can be disassembled if it is not needed.

The support frame is either bolted on inserted.

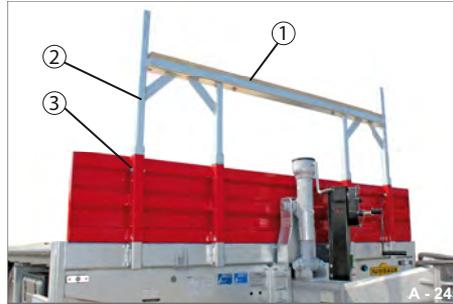


Fig. 173 Support frame on front wall

- 1 Wood support
- 2 Support frame
- 3 Bolt connection in post pocket on the front wall

WARNING

Unsecured support frame

The support frame may fall out during driving and strike persons - risk of accident!

- ▶ Check before driving that the support frame is secured.

WARNING

Lashing load to the support frame

The support frame is not designed to accommodate lashing forces. It may become deformed. The load would be unsecured - risk of accident!

- ▶ Lash the load, e.g. dredging shovel, to the lashing points on the loading platform only.
- ▶ Do not incorporate any attachment options (lashing points) on the support frame.

**WARNING****Assembling / disassembling the support frame**

Hands and feet could get crushed between the support frame and trailer parts.



▶ Wear

**CAUTION****Standing on the support frame**

Persons may slip and fall off.

- ▶ Do not climb on the support frame.

**WARNING****Working on the loading platform**

You may fall off the loading platform when handling the support frame!

- ▶ Walk on the loading platform with care!
- ▶ Clean the dirty loading platform before working on it.



▶ Wear

- ▶ Fit / move / remove the support frame with care.

Disassembly

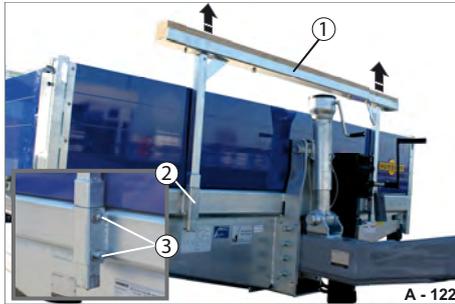


Fig. 174 Unlocking the support frame

- 1 Support frame
- 2 Side post pocket
- 3 Bolt connection

- ▶ Release the bolt connection (Fig. 174/3) on both post pockets (Fig. 174/2).
- ▶ Pull the support frame (Fig. 174/1) slowly and simultaneously out of the post pockets.
- ▶ Set the support frame down safely to avoid damage.
- ▶ Insert the bolt captively in the post pocket bore holes.

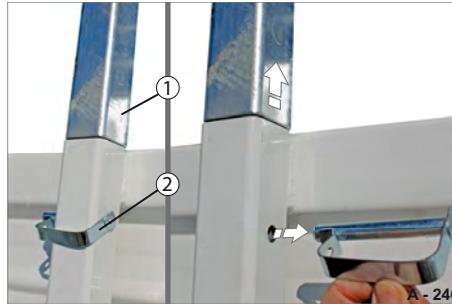


Fig. 175 Unlocking the support frame

- 1 Support frame
- 2 Spring pin bolt

Alternative securing

- ▶ Pull the spring pin bolts (Fig. 175/2) out of the post pockets.
- ▶ Pull the support frame (Fig. 175/1) slowly and simultaneously out of the post pockets.
- ▶ Set the support frame down safely to avoid damage.
- ▶ Insert the spring pin bolts captively in the post pocket bore holes.

Installation

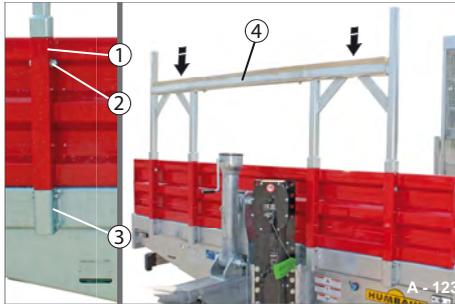


Fig. 176 Support frame secured on front wall

- 1 Post, front wall
- 2 Bolt connection
- 3 Post pocket, chassis
- 4 Support frame

- ▶ If necessary, remove the bolt connection from the front wall posts (Fig. 176/1).
- ▶ Insert the support frame (Fig. 176/4) simultaneously into the front wall post (Fig. 176/1).
- ▶ Secure the support frame with the bolt connection (Fig. 176/2).

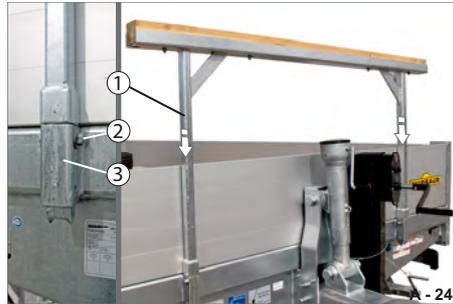


Fig. 177 Support frame secured on the chassis

- 1 Support frame
- 2 Bolt connection
- 3 Post pocket, chassis

- ▶ If necessary, remove the bolt connection from the post pockets (Fig. 177/3).
- ▶ Insert the support frame (Fig. 177/1) simultaneously into the post pockets on the chassis.
- ▶ Secure the support frame with the bolt connection (Fig. 177/2).

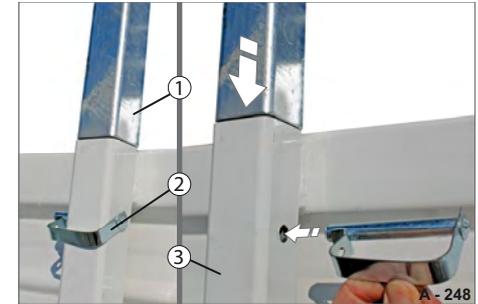


Fig. 178 Support frame secured

- 1 Support frame
- 2 Spring pin bolt
- 3 Posts

Alternative securing

- ▶ If necessary, pull the spring pin bolts (Fig. 178/2) out of the bore holes.
- ▶ Insert the support frame (Fig. 178/1) simultaneously into the posts (Fig. 178/3).
- ▶ Insert the spring pin bolts completely through the post bore holes. The support frame is secured.

Access aids

The rear platform gate on the HBT BE can optionally be fitted with a folding step.

The loading platform can be accessed and exited via the folding step.

The folding step is situated on the inside of the rear platform gate near the corner post.



Fig. 179 Example: climbing opportunity

- 1 Folding step
- 2 Rear platform gate, folded down



Fig. 180 Example: climbing opportunity

- 1 Loading platform
- 2 Underrun guard

WARNING



Accessing the loading platform

Persons may fall when climbing/alighting via the platform gates, mudguards, side guards, underrun guard and toolboxes.

- ▶ Only climb onto the loading platform via the areas provided for this purpose.
- ▶ To grip, if necessary use the designated handles on the body/ramps.
- ▶ Do not jump onto or down from the loading platform.

CAUTION



Accessing / exiting the loading platform via the folding step

Persons may lose their balance - risk of falling!

- ▶ Use the folding step solely for the purpose of accessing/exiting the loading platform.
- ▶ Use the full surface area of the step to stand on.
- ▶ Use the corner post to grip when climbing and alighting.

The loading platform on the HBT BS and HBTZ BS can be accessed from the rear.

Working the folding step

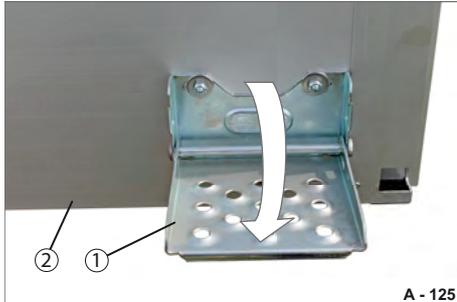


Fig. 181 Folding step, opened

- 1 Step
- 2 Rear platform gate

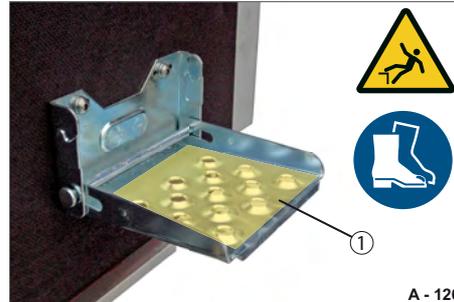


Fig. 182 Folding step, closed

- 1 Step surface

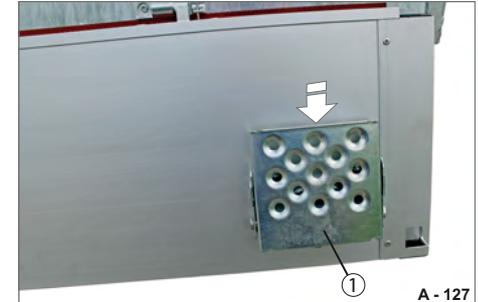


Fig. 183 Folding step, closed

- 1 Step, secured

Opening the step

- ▶ Unlock and fold down the rear platform gate (Fig. 181/2) - see page 170.
- ▶ Pull the step (Fig. 181/1) upwards and fold it down.
The step locks in the horizontal position.

Standing on the step

- ▶ Where possible, use the full surface area of the step to stand on.
- ▶ Hold on to the secured corner post.

Closing the step

- ▶ Fold the step (Fig. 183/1) upwards and then slide it down.
The step locks in the vertical position.
- ▶ Fold the rear platform gate up.

General

The platform gate attachment is positioned at the front end on the front wall.

The platform gate attachment can be made of aluminium or steel.

The platform gate attachment serves to secure the load in the forward direction.

The platform gate attachment can be disassembled if it is not needed.



WARNING



Assembling / disassembling platform gate attachments

Platform gate attachments may fall down - risk of striking/ crushing!



▶ Work in pairs.



▶ Wear



WARNING

Unsecured platform gate attachment

The platform gate attachment may fall out during driving and strike persons - risk of accident!

- ▶ Check before driving that the platform gate attachment is secured.



CAUTION



Accessing the platform gate attachment

Persons may slip and fall off.

- ▶ Do not climb on the platform gate attachment.



A - 128

Fig. 184 Aluminium platform gate attachment

- 1 Platform gate attachment
- 2 Post, front wall
- 3 Spring pin bolt
- 4 Front wall



A - 250

Fig. 185 Steel platform gate attachment

Disassembly

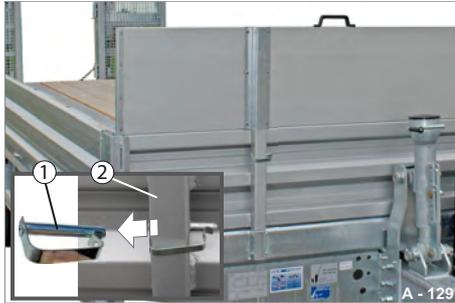


Fig. 186 Unlocking

- 1 Spring pin bolt
- 2 Post, front wall

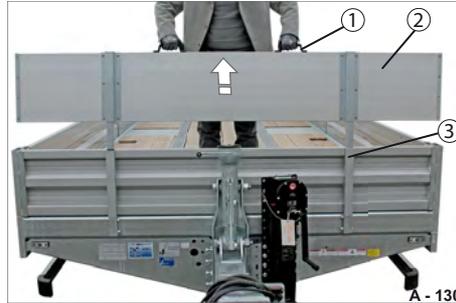


Fig. 187 Removal

- 1 Handle
- 2 Platform gate attachment
- 3 Post, front wall

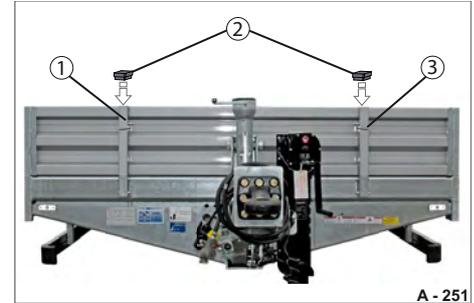


Fig. 188 without platform gate attachment

- 1 Post, front wall
- 2 Caps
- 3 Spring pin bolt, inserted

▶ Pull the spring pin bolts (Fig. 187/1) out of the posts (Fig. 187/2).

▶ Carefully pull the platform gate attachment (Fig. 187/2) by the handles (Fig. 187/1) out of the posts (Fig. 187/3).

▶ Set down the platform gate attachment safely to avoid damage.

▶ Insert the spring pin bolts (Fig. 188/3) into the bore holes (Fig. 188/1) of the front wall.

▶ Insert the caps (Fig. 188/2) into the posts of the front wall.

Installation

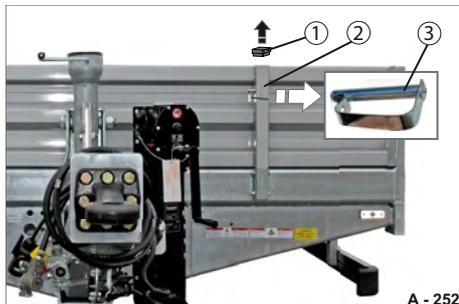


Fig. 189 Preparing installation

- 1 Caps
- 2 Post, front wall
- 3 Spring pin bolt, detached

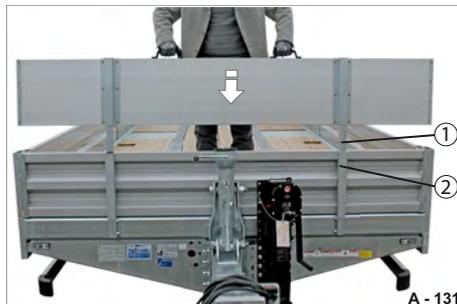


Fig. 190 Inserting the platform gate attachment

- 1 Platform gate attachment slot-in post
- 2 Post, front wall

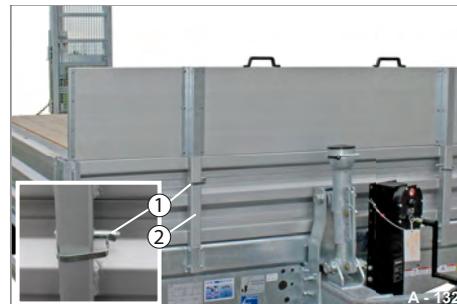


Fig. 191 Securing the platform gate attachment

- 1 Spring pin bolt
- 2 Post, front wall

- ▶ Remove the caps (Fig. 189/1) from the posts (Fig. 189/2).
- ▶ If necessary, pull out the spring pin bolts (Fig. 189/3).

- ▶ Insert the slot-in posts of the platform gate attachment (Fig. 190/1) simultaneously into the posts (Fig. 190/2) of the front wall.

- ▶ Secure the platform gate attachment with the spring pin bolts (Fig. 191/1) in both posts (Fig. 191/2).
- ▶ If necessary, insert the caps into the posts of the platform gate attachment.
- ▶ Check before driving that the front wall attachment is secured.

General

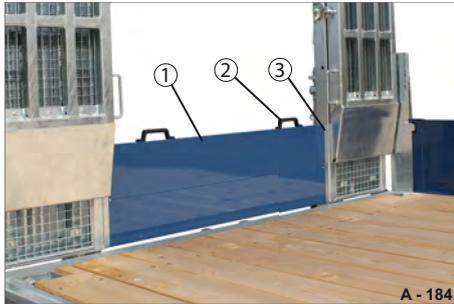


Fig. 192 Slot-in platform gate overview

- 1 Slot-in platform gate
- 2 Handle
- 3 Slot-in rail

The aluminium slot-in platform gate between the upright ramps can be optionally installed.

The ramps each feature a slot-in rail on the inside.

The slot-in platform gate can be used as a replacement for a rear platform gate.



Fig. 193 Slot-in platform gate, one on top of the other



The slot-in platform gate must be removed before the ramps are unlocked.



WARNING



Driving with a loose slot-in platform gate

A slot-in platform gate that is carried loose on the loading platform or only partly slotted in may be thrown onto the road surface during driving - risk of accident!

- ▶ Check before driving that the slot-in platform gate is fully slotted in.

5 Slot-in platform gate (option)

Removing

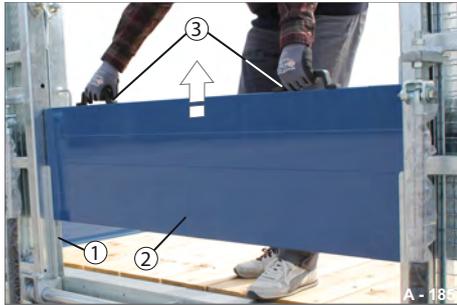


Fig. 194 Removing the slot-in platform gate

- 1 Slot-in rail
- 2 Slot-in platform gate
- 3 Handles

- ▶ Pull the slot-in platform gate (Fig. 194/2) by the two handles (Fig. 194/3) simultaneously out of the slot-in rails (Fig. 194/1) fully.

Slotting in

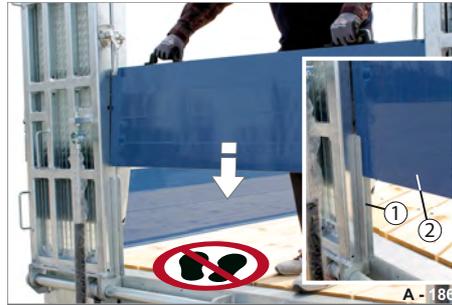


Fig. 195 Slotting in the slot-in platform gate

- ▶ Grip the slot-in rear platform gate (Fig. 194/2) by the two handles.
- ▶ Slot the slot-in platform gate simultaneously into the left and right slot-in rails (Fig. 194/1).
- ▶ Slide in the slot-in rear platform gate down to the lower stop. Make sure that your feet are not under the slot-in platform gate.

General

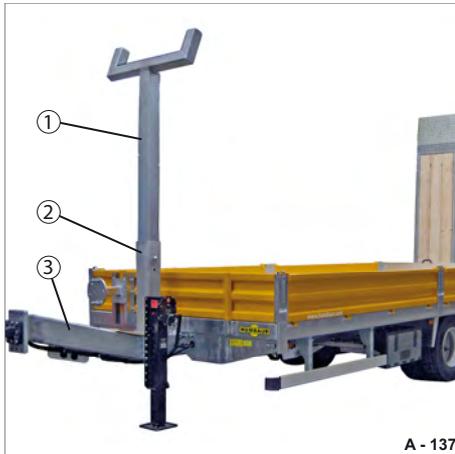


Fig. 196 Conveyor belt carrier overview

- 1 U-tube fork
- 2 Mount with shoe console
- 3 Drawbar

The conveyor belt carrier consists of a U-tube fork (Fig. 196/1) and mount with shoe console (Fig. 196/2), which is positioned and bolted at the front on the drawbar.

The conveyor belt carrier serves to accommodate conveyor belts.

The height of the U-tube fork is configured to meet your requirements.

WARNING



Fitting / removing the conveyor belt carrier

Hands and feet may get crushed between the conveyor belt carrier and trailer parts.



▶ Wear



▶ Conveyor belt carrier is heavy!
Work in pairs.
If necessary, use lifting gear.

WARNING

Unsecured conveyor belt carrier

The conveyor belt carrier may fall down during driving and strike persons - risk of striking/accident!

▶ Check before driving that the conveyor belt carrier is firmly bolted/secured.

WARNING



Working on the loading platform

You may fall off the loading platform when handling the conveyor belt carrier!

- ▶ Walk on the loading platform with care!
- ▶ Clean the dirty loading platform before working on it.



▶ Wear

▶ Fit / move / remove the conveyor belt carrier with care.

CAUTION



Accessing the conveyor belt carrier

Persons may slip and fall off.

▶ Do not climb on the conveyor belt carrier.

5 Conveyor belt carrier (option)

Disassembling the U-tube fork

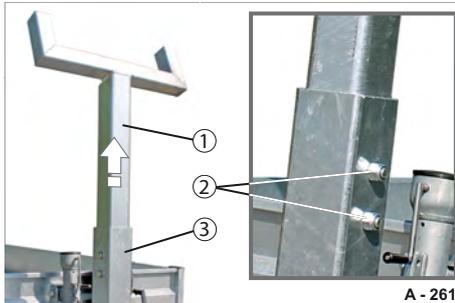


Fig. 197 U-tube fork

- 1 U-tube fork
- 2 Bolt connection
- 3 Mount

- ▶ Release the bolt connection (Fig. 197/2) on the mount.
- ▶ Pull out the U-tube fork (Fig. 197/1) in an upward direction.
- ▶ Secure the bolt connection on the mount.

If necessary, the U-tube fork can be assembled in reverse order.

The bolt connection must be tightened to 150 Nm.

Disassembling the mount

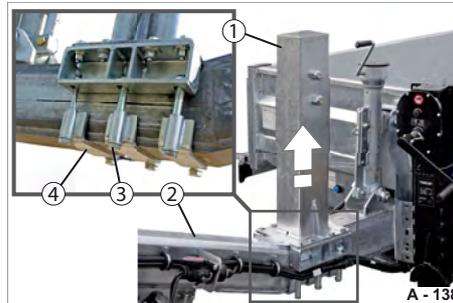


Fig. 198 Disassembling the mount

- 1 Mount with shoe console
- 2 Drawbar
- 3 Bolt connection
- 4 Clamp

- ▶ Release the bolt connection (Fig. 198/3) on the drawbar (Fig. 198/2) - grip the clamp (Fig. 198/4) firmly.
- ▶ Lift the mount (Fig. 198/1) off the drawbar.
- ▶ Secure the clamps, bolts, nuts and washers on the mount for storage.

Installation

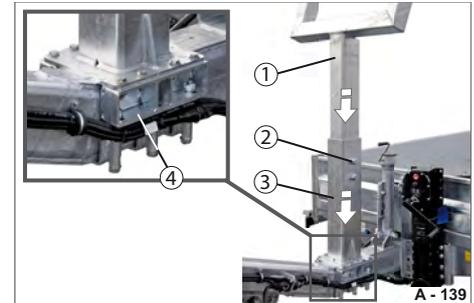


Fig. 199 Conveyor belt carrier assembled

- 1 U-tube fork
- 2 Bolt connection
- 3 Mount with shoe console
- 4 Shoe console with clamps

- ▶ Position the mount (Fig. 199/3) with shoe console (Fig. 199/4) on the drawbar.
- ▶ Tighten down the shoe console with clamps and bolt connections around the drawbar to 150 Nm.
- ▶ Insert the U-tube fork (Fig. 199/1) at the top into the mount.
- ▶ Tighten down the bolt connection (Fig. 199/2).
- ▶ Check before driving that the conveyor belt carrier is secured.

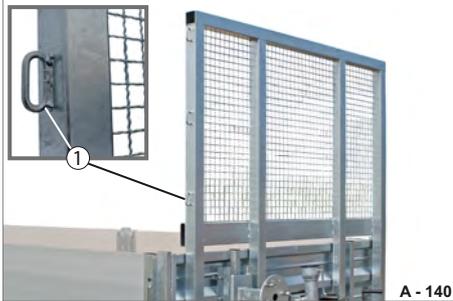


Fig. 200 Grid wall

1 Attachment ring (max. 500 kg)

The grid wall is positioned at the front end on the chassis.

The grid wall is slotted into posts and can be disassembled if not needed.



The attachment rings are not designed for load securing. They have a max. load capacity of 500 kg.

WARNING



Assembling / disassembling the grid wall

Hands and feet may get crushed between the grid wall, trailer parts and the ground.



- ▶ Wear
- ▶ Use technical auxiliary equipment, e.g. a crane, to assemble/ disassemble the grid wall.



- ▶ Grid wall is heavy!
Work in pairs.

WARNING

Unsecured grid wall

The grid wall may fall down during driving and strike persons - risk of accident!

- ▶ Check before driving that the grid wall is secured.

CAUTION

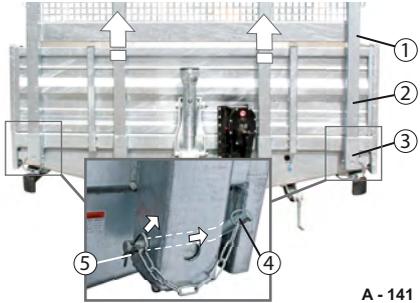


Climbing on the grid wall

Persons may slip and fall off.

- ▶ Do not climb on the grid wall.

Disassembly



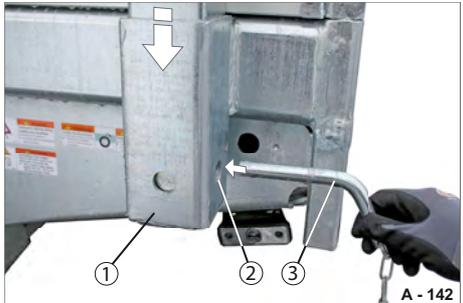
A - 141

Fig. 201 Unlocking the grid wall

- 1 Grid wall
- 2 Slot-in posts
- 3 Post pockets
- 4 Bolt
- 5 Spring pin

- ▶ Pull the spring pin (Fig. 201/4) out of the bolt (Fig. 201/3).
- ▶ Pull the bolt out of the post pocket (Fig. 201/3) and the slot-in post (Fig. 201/2).
- ▶ Lift the grid wall (Fig. 201/1) simultaneously out of all the post pockets.
- ▶ Store the grid wall safely with the securing elements to avoid damage.

Installation



A - 142

Fig. 202 Slotting in the grid wall

- 1 Side post pocket
- 2 Bore hole
- 3 Bolt

- ▶ Insert simultaneously all the slot-in posts (Fig. 201/2) into the post pockets (Fig. 202/1) - the bore holes (Fig. 202/2) for the bolts must be flush.
- ▶ Insert the bolt (Fig. 202/3) through the outer post pocket (Fig. 202/1).



A - 143

Fig. 203 Slot-in posts secured

- 1 Bolt
- 2 Spring pin

- ▶ Insert the spring pin (Fig. 202/3) through the bolt bore hole. Make sure that the bolt handle points upwards. The grid wall is secured in the outer post pockets against falling out.

Working the roof bow / curtain structure

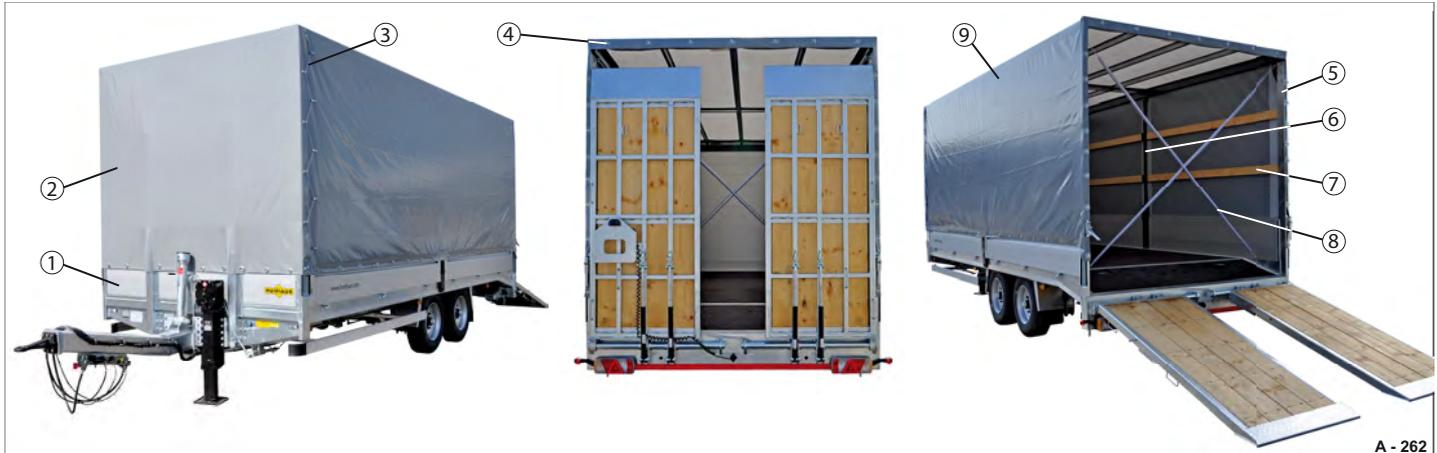


Fig. 204 Example: Trailer with roof bow/curtain structure

- 1 Front wall
- 2 Full curtain
- 3 Tension rope
- 4 Cramp
- 5 Corner post
- 6 Middle post
- 7 Push-in slat
- 8 Diagonal structure bracing
- 9 Side curtain section

HBT / HBTZ trailers can optionally be manufactured with a roof bow/curtain structure.

Roof bow/curtain structure (option)

Handling the diagonal structure bracing



Fig. 205 Diagonal bracing

- 1 Top connection
- 2 Corner post
- 3 Chain
- 4 Turnbuckle
- 5 Lashing shackle, bottom connection



The roof bow/curtain structure must be braced and secured at the rear end with the diagonal bracing.

⚠ WARNING

Driving with loosened diagonal bracing

The roof bow/curtain structure would be unstable and could become deformed during driving, causing the trailer to roll - risk of accident!

- ▶ Check before driving that the diagonal bracing is fitted and secured.

Fitting

The chains must be diagonally braced in succession.

- ▶ Pull the chain (Fig. 205/3) diagonally to the lashing shackle (Fig. 205/5).
- ▶ Fasten the hook (Fig. 206/2) from below to the lashing shackle (Fig. 206/3).
- ▶ Tension the turnbuckle (Fig. 206/1) hand-tight with a tool.

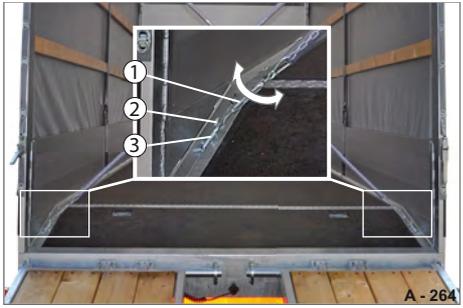


Fig. 206 Releasing the diagonal bracing

- 1 Turnbuckle
- 2 Hook
- 3 Lashing shackle

Releasing

- ▶ Release the two chains (Fig. 205/3) from the bottom connection (Fig. 205/5).
- ▶ Turn the turnbuckle (Fig. 206/1) with a tool until the hook (Fig. 206/2) can be removed from the lashing shackle (Fig. 206/3).
The chains are released and hang vertically at the sides.

Handling the curtain



Fig. 207 Handling the side curtain section

- 1 Tension rope
- 2 Lug
- 3 Cramp, secured
- 4 Karabiner hook
- 5 Eye
- 6 Side curtain section

The curtain can be opened at the side, e.g. for loading/unloading from the side.



The curtain must be completely closed and secured during driving.

Opening

- ▶ Release the karabiner hook (Fig. 207/4) from the cramp (Fig. 207/3).
- ▶ Release the tension rope (Fig. 207/1) from the cramps and lugs (Fig. 207/2).
- ▶ Turn all the cramps (side + rear).
- ▶ Lay the side curtain section (Fig. 207/6) on the roof.

Closing

- ▶ Fit all eyes (Fig. 207/5) over the opened cramps.
- ▶ Close all the cramps - turn through 90 °.
- ▶ Lay the tension rope in turns around the lugs from the top downwards.
- ▶ Pull the tension rope through the cramps and engage the karabiner hook.

Handling the push-in slats

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 slats can be made of wood or aluminium.



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



WARNING



Inserting push-in slats incorrectly

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

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

- ▶ Insert the push-in slats evenly over the entire trailer length.
- ▶ Check that the push-in slats are firmly inserted before departing.



CAUTION



Removing push-in slats

Push-in slats that are not correctly inserted or under tension may jump out and fall down in the course of removal - risk of striking!

- ▶ If necessary, remove the load pressure from the push-in slats prior to removal.
- ▶ Do not use damaged push-in slats.



- ▶ Wear

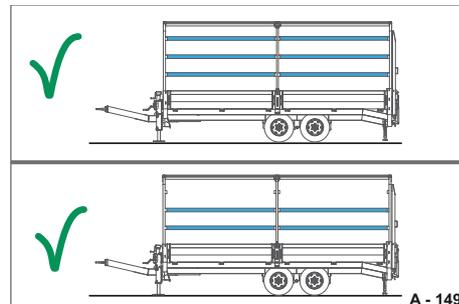


Fig. 208 Correct

Push-in slats are inserted consistently and uniformly.

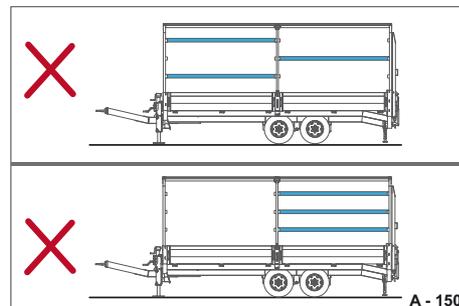


Fig. 209 Incorrect

Push-in slats are not inserted consistently and uniformly.



WARNING



Handling the push-in slats

Persons may fall when climbing/alighting via the platform gates, mudguards, side guards, underrun guard pallet stowage box and toolboxes.

- ▶ Only enter the loading platform through the areas provided for this purpose.
- ▶ Only use stable climbing aids, e.g. stable stepladders, to handle the push-in slats from the outside.
- ▶ Use a telescopic operating rod to handle the top push-in slats.

The push-in slats can be worked from the inside (from the loading platform) or from the outside.

When working from the outside, e.g. with the trailer fully laden, the curtain must be opened at the side beforehand.

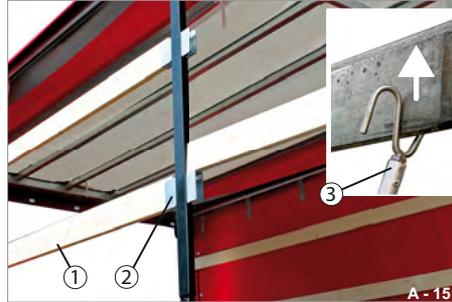


Fig. 210 Disengaging push-in slats

- 1 Push-in slat (wood, aluminium)
- 2 Slot-in pocket
- 3 Telescopic operating rod

Disengaging

- ▶ Disengage the top push-in slats (Fig. 210/1) from one side - if necessary, use the telescopic operating rod (Fig. 210/3).
- ▶ Disengage the push-in slats from the other side.
- ▶ Remove these carefully and set them down safely to avoid damage.



Fig. 211 Push-in slats inserted

- 1 Slot-in pocket, corner post
- 2 Push-in slat
- 3 Slot-in pocket, middle post

Inserting

- ▶ Insert the push-in slats (Fig. 211/2) in succession, starting from below, into the slot-in pockets (Fig. 210/1) of the corner/middle posts.
- ▶ Check that the push-in slats are firmly seated - they must be fully seated in the slot-in pockets.
- ▶ Close the curtain.

General

The construction machine transporter can optionally be equipped with an electric cable winch.

The cable winch is fitted at the front in the middle.

The cable winch is installed in a robust housing (Fig. 212/1).

The cable winch can be operated manually or by radio remote control.

The radio operation requires a 12 V or 24 V power supply.

If the radio remote operation fails, the cable winch can be operated manually.

The cable winch consists of the following main components:

- clutch / brake housing,
- cable drum,
- gearbox,
- radio remote control.

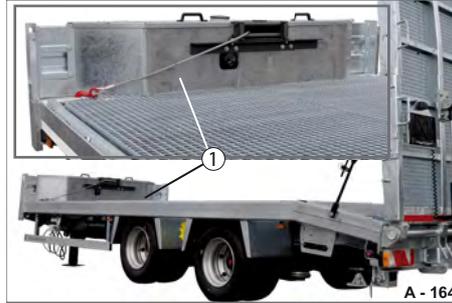


Fig. 212 Cable winch in the housing

1 Housing



The cable winch must only be used to pull up vehicles with wheels!

Any other application, e.g. pulling up loads without wheels (with tracks), lifting loads, pulling vehicles behind the trailer, transport of persons, etc. is prohibited!

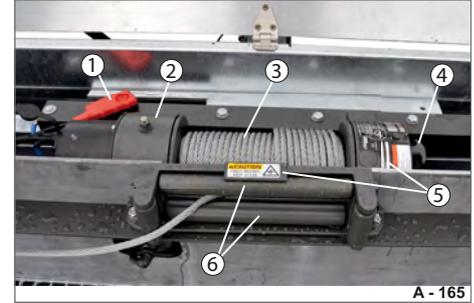


Fig. 213 Cable winch overview

- 1 Radio remote control
- 2 Gearbox
- 3 Cable drum
- 4 Clutch lever, manual
- 5 Nameplate / warning
- 6 Guide pulley, top / bottom

Technical data			
Winch force max.			34.9 kN
Noise level max.			80 dB
Ambient temperature			- 28 °C to 60 °C
Weight (without cable / accessories)			approximately 53 kg
CABLE POSITION	1	2	3
	34.9 kN	28.9 kN	24.9 kN
Cable length per POSITION*	3 m	9 m	15 m
* with wire cable D=10 mm			

Tab. 3 Basic technical data

**WARNING****Overloading the cable winch**

The cable winch / cable / holder, etc. may break - risk of accident!

- ▶ Do not overload the cable winch - do not exceed the max. approved forces for the cable winch.
- ▶ Do not pull up loads without their own wheels, e.g. track vehicles.
- ▶ Observe the response from the cable and cable components while pulling up the load.

Safety information / Warnings

The cable winch for pulling up vehicles onto the loading platform of HBT / HBTZ construction machine transporters is subject to Machinery Directive 2006/42/EC.

 The cable winch may only be operated by trained personnel!

 The operating manual for HBT / HBTZ construction machine transporters must be read and understood!

All warnings are set out in the operating manual for HBT / HBTZ construction machine transporters!

The following section contains additional information on dangers associated with handling of the cable winch.

 Maintenance/servicing work on the cable winch may only be performed by qualified specialists in a specialist workshop!



Read and observe the safety notes from the manufacturer in the operating manual and on the cable winch!

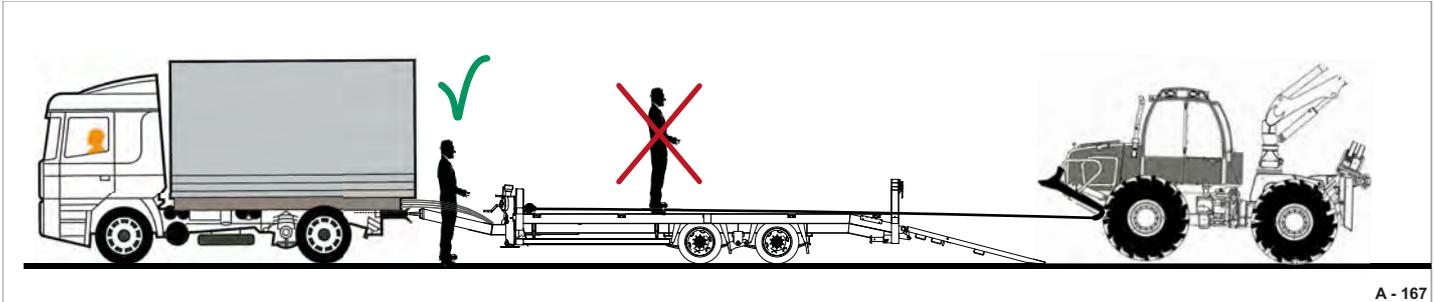


Fig. 214 Example: Nameplate on the cable winch



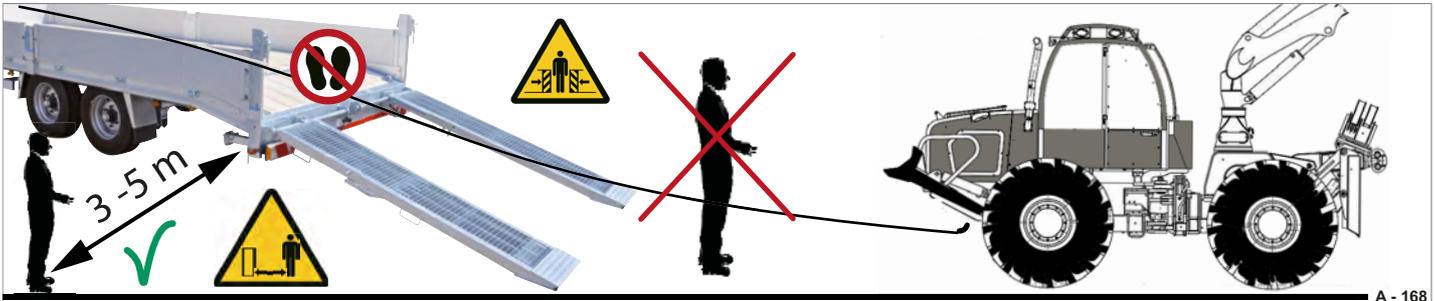
Compliance with the items below is mandatory prior to and during operation of the cable winch!

- Check to make sure the clutch lever is latched into position.
- Do not disengage the clutch with an applied load.
- Check to make sure that the cable drum has at least 2 cable coils.
- Check the condition of the unwound cable and hook. The cable must not have any tears / fraying / bends. The hook must not be deformed.
- Never attempt to guide the cable while pulling up a load.
- Never stay below / next to or on top of the load to be pulled.
- Stay at a safe distance to the vehicle and/or cable.
- Keep additional support personnel away from the danger zone.
- If a problem occurs, abort pulling up the load.



A - 167

Fig. 215 Danger zones when pulling up loads / vehicles



A - 168

Fig. 216 Danger zones when pulling up loads / vehicles

Specific warnings:



Keep away!



Rotating drums!



Moving loads!

5 Cable winch (option)

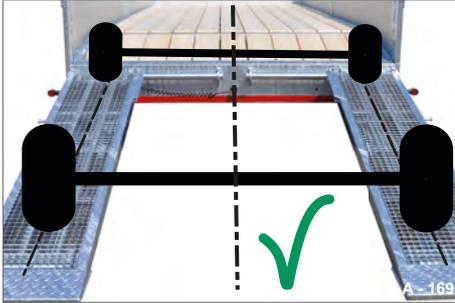


Fig. 217 RIGHT: Pulling up a load straight



Fig. 218 WRONG: Pulling up a load at an angle



The load / vehicle must always be pulled up straight onto the loading platform - never at an angle from the side!

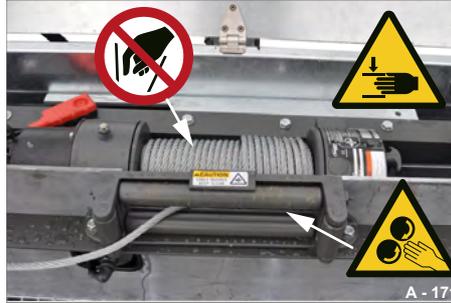


Fig. 219 Cable winch danger areas



Fig. 220 Clutch lever is latched into position



The clutch must be engaged prior to operating the cable winch - clutch lever latched into position!

The clutch lever must never be pulled out with an applied load!

WARNING

Cable striking out

The cable may strike out to the side in the event of a tear and hit or whip you / personnel.



▶ Keep a safety distance to the trailer of at least 3 - 5 m when pulling the load up.



▶ Keep personnel away from the danger zone.

▶ When pulling up very heavy loads, hang a blanket, sheathing or canvas over the cable approximately 1.5 to 1.8 m behind the hook. This will buffer the recoil / lashing of the cable in the event of a break and minimize the risk of injury.



DANGER



Crushing hazard between trailer and load

You can be crushed between the frame of the vehicle and the load pulling up!

- ▶ Do not step between the trailer and the load to be pulled up.



Keep a safety distance to the trailer of at least 3 - 5 m when pulling the load up.

- ▶ Observe the process and stop immediately if problems occur.

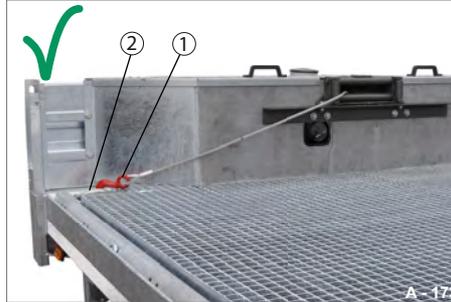


Fig. 221 Cable parked

- 1 Hook
- 2 Lashing ring



WARNING



Unsecured load

The load may tip over / fall off the loading platform - crushing / hitting / accident danger!

- ▶ Secure the load at the appropriate lashing points.
- ▶ Never lash the load with the hook of the cable winch - the cable winch is not designed for this.
- ▶ For example, park the cable / hook at a lashing ring.



WARNING



Moving loads

Moving loads, e.g. vehicles, may tip over / fall down - danger of getting hit or crushed!

- ▶ Never step below or next to raised loads.
- ▶ Avoid excessive "Tipping Operation".
- ▶ Pull the load straight onto the loading platform, not at an angle.
- ▶ Always use the radio remote control to operate the cable winches. Manual operation is only permitted in the event of an emergency or radio remote control malfunction.



- ▶ Keep support personnel away from the danger zone. If necessary, interrupt the work.

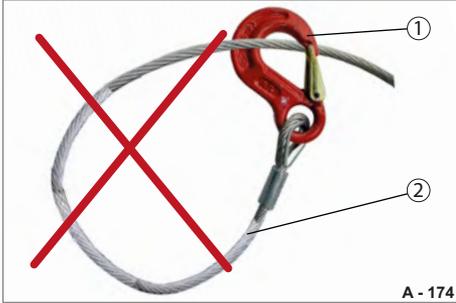


Fig. 222 Entangled cable

- 1 Hook
- 2 Cable



Fig. 223 Hook operation

Remote operation

The remote control is fitted with a START button.

The cable winch is activated when this button is pressed.



For details on how to operate by remote control, refer to the cable winch manufacturer's documentation.

WARNING

Using the cable as a sling

The cable may be damaged and break - Danger of getting hit / accident risk!

- ▶ Always connect the load directly to the hook and/or use a separate nylon sling for this purpose.

WARNING

Putting a finger through the hook

The finger can be sprained / ripped off by an unexpected movement!



- ▶ Wear  .
- ▶ Always touch the hook from the outside - never the inside.

Pulling the load / vehicle up

Preparatory work

Prerequisites:

- The trailer is properly coupled with the tractor and secured with the parking brake
- Power connected
- Trailer for the load / vehicle to be pulled up parked straight for straight pull-up

The steps below must be taken in sequence:

- Lower/fold down the supports at the rear of the trailer, see page 99.
- Lower/fold down the loading wall / ramp planks / drive-up ramps, see page 125.

Releasing the slings

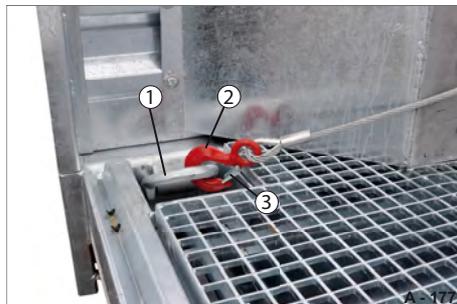


Fig. 224 Releasing the slings

- 1 Lashing point
- 2 Hook
- 3 Retaining tab

- ▶ Press the retaining tab (Fig. 224/3) in.
- ▶ Detach the sling (Fig. 224/2) from the lashing point (Fig. 224/1).

Uncoiling the cable

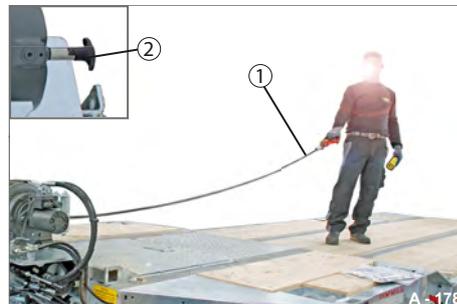


Fig. 225 Example: Uncoiling the cable

- 1 Cable
 - 2 Clutch lever, latched into position
- ▶ Check to make sure the clutch lever (Fig. 225/2) is latched into position.
 - ▶ Take the hook and operate the cable winch.
 - ▶ Press and hold down the remote control button.
The cable (Fig. 225/1) will unwind slowly.
 - ▶ Guide the cable so that it will not get tangled.
 - ▶ Release the button when the cable has reached a sufficient length.

Checking the cable

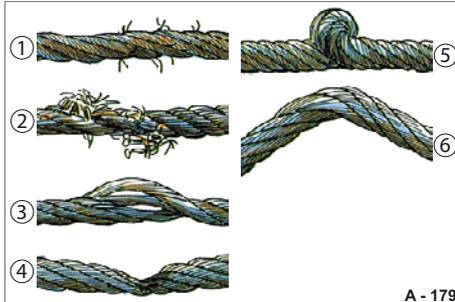


Fig. 226 Cable damage

- 1 Cable breaks, individual
- 2 Wire breaks
- 3 Bulges
- 4 Crushing
- 5 Bends
- 6 Tangled loops

 Never operate damaged cables or slings!

- ▶ Check the unwound cable for possible damage (Fig. 226/1-6).
- ▶ Have the damaged cable/sling replaced immediately at a specialised repair shop.

Guiding the cable

 Cable may be damaged by rubbing against sharp edges!

- ▶ If possible, guide the cable in the centre area of the loading platform / loading wall.
- ▶ Make sure that the cable does not get caught at an edge.

Tying the load

 The transporter is responsible for securely tying up the load with slings!

- ▶ Check to ensure that the retaining tab is latched securely into the hook.
- ▶ Check to ensure that the cable / cable tie will not be deformed when force is applied.
- ▶ Stay at a safe distance to the vehicle / load.
- ▶ Keep support personnel away from the danger zone.

Retracting the cable with load



Pulling up the load / vehicle is the most dangerous phase of the cable winch operation!

Compliance with the following important items is absolutely mandatory:

- Start the retraction process carefully and slowly.
 - Never place yourself and/or support personnel on the loading platform / behind the loading platform / directly next to the loading platform. Always maintain a safe distance.
 - Never try to guide the cable.
 - Observe and take care of any noises that may occur during retraction. Stop the procedure immediately if the load / vehicle is pulled up unevenly and/or the load moves off to the side.
 - Prevent jerking when pulling up the load - pull up as smoothly as possible without interruptions.
 - Pull the load / vehicle onto the loading platform until it can be lashed securely at the lashing points.
- Do not release the cable / sling until the load / vehicle is securely lashed.
 - Lashing with the cable winch is not secure and prohibited by law - always lash the load at the lashing points on the loading surface / vehicle frame.
 - Never drive the hook / cable completely into the cable drum. Fasten the hook at a suitable point on the vehicle, e.g. lashing point.
 - Make sure that the cable coils up properly in the cable drum.

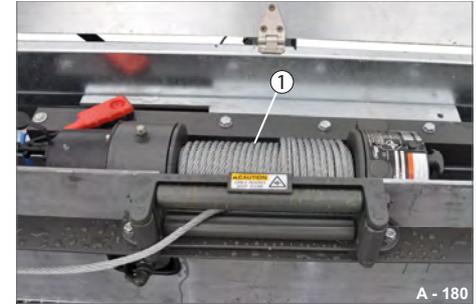


Fig. 227 Cable drum / cable coiled up

1 Cable coils

Retracting the cable

- ▶ Operate the cable winch with the radio remote control:
- ▶ Press the button.
- ▶ Hold down the button until the vehicle has been pulled up.

5 Cable winch (option)

Ending the pull-up procedure



Fig. 228 Example: Load / vehicle secured



The transporter / driver is responsible for securing the load!

- ▶ Secure the load/vehicle, see page 180.
- ▶ Secure the cable winch hook.

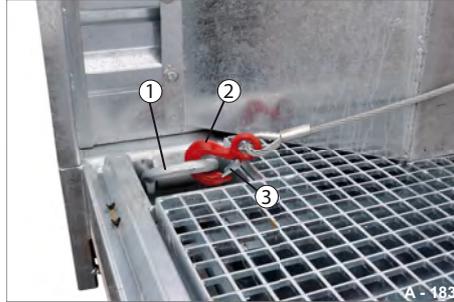


Fig. 229 Securing the cable winch hook

- 1 Lashing shackle
- 2 Hook
- 3 Catch

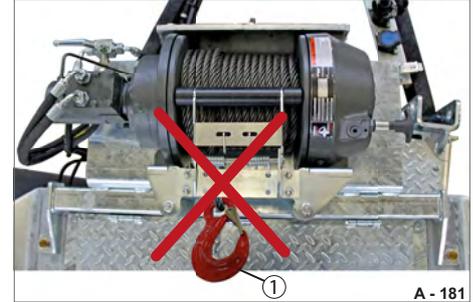
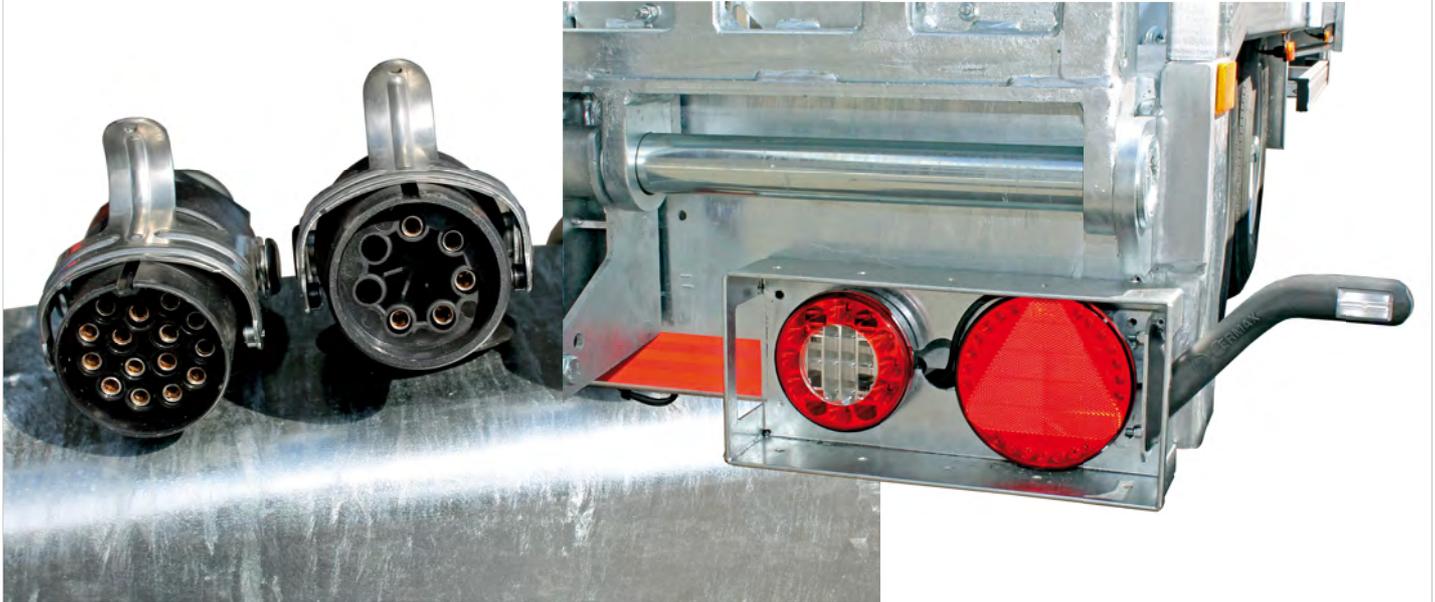


Fig. 230 Example:
Hook pulled in completely - WRONG

- 1 Hook pulled in

- ▶ Fold the drive-up ramps/loading wall up and secure them.
- ▶ If necessary, adjust the raising/lowering system to the driving level.
- ▶ Raise the supports at the rear.
- ▶ Carry out a departure check.



Electrical system

1

2

3

4

5

6

7

8

Lighting system



Fig. 1 Brake module, programmable
1 Brake module (EBS modulator)

The electrical lighting system operates at 24 V by default.

The lighting system can optionally be configured to operate at 12 V.

The lighting system can be ordered in an LED version.

The LED lighting system operates with a 12 to 24 V power supply.

The EBS module (Fig. 1/1) can be programmed at the factory to 24 V or 12 V.

Optionally, the EBS module can be programmed to detect 12 to 24 V.

WARNING

Failure of electrical function

Driving performance and stopping distance may deteriorate - risk of accident!

- ▶ 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.

Connecting EBS/ABS

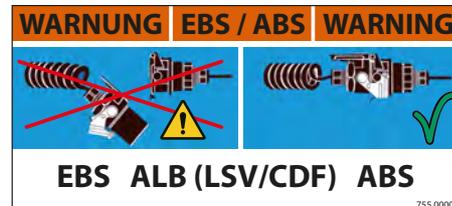


Fig. 2 Label on trailer - example



EBS/ABS plug must be inserted in the towing vehicle before departure.

- ▶ Check before driving that the EBS/ABS plug is inserted on the towing vehicle.
- ▶ Check that the plug is secure.

Plug connections (standard)

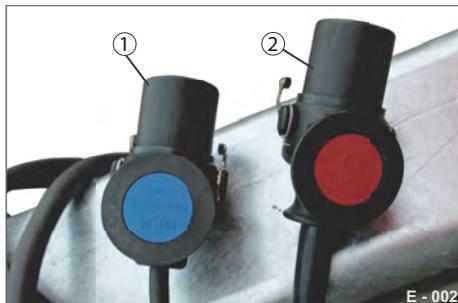


Fig. 3 Connection cable Standard

- 1 7-pin EBS/ABS plug (ISO 7638)
- 2 15-pin electrical plug (ISO 12098)

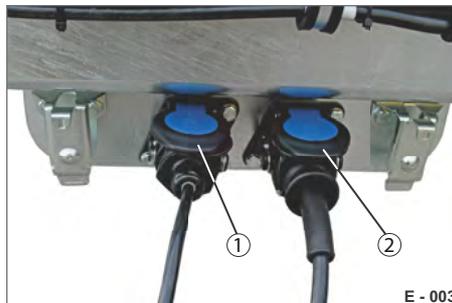


Fig. 4 Park position on drawbar

- 1 EBS/ABS plug parking socket (7P)
- 2 Electrical plug parking socket (15P)



Fig. 5 Adapters, 7-pin to 13-pin

- 1 13-pin (socket)
- 2 7-pin (plug)

Standard version of electrical connection in 24 V:

- with 7-pin EBS/ABS plug acc. to ISO 7638
- with 15-pin electrical plug acc. to ISO 12098

- ▶ With the trailer uncoupled, connect the plugs into the respective parking sockets.
- ▶ 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.

The electrical system (12 V) can optionally be configured with an intermediate cable in accordance with DIN ISO 1724 and 7-pin/13-pin adapter.

Plug connections: 2 x 7-pin (optional)



Fig. 6 Connection cable 24 V, optional

- 1 7-pin plug, 24 V-S (ISO 3731)
- 2 7-pin plug, 24 V-S (ISO 1185)

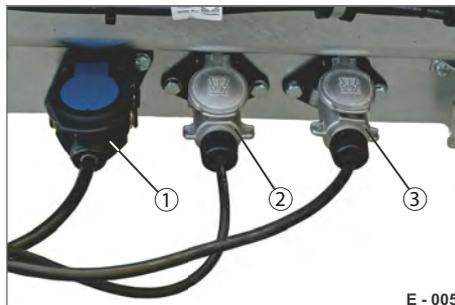


Fig. 7 Park position on drawbar

- 1 EBS/ABS plug parking socket
- 2 24 V-N plug parking socket
- 3 24 V-S plug parking socket

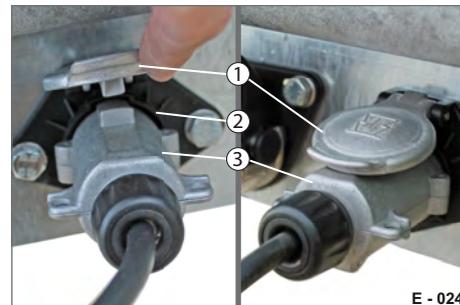


Fig. 8 Plug, parked

- 1 Cap
- 2 Parking socket
- 3 Plug, 7-pin

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.

- ▶ Open the cap (Fig. 8/1).
- ▶ Pull the plug (Fig. 8/3) from the parking socket (Fig. 8/2) - do not pull on the cable.
- ▶ Connect the plug to the towing vehicle.
- ▶ Check that the plug is secure.
- ▶ Insert the plug in the parking socket after uncoupling the trailer.
 The cap secures the plug.

Connecting electrical system / Handling plugs



Driving with damaged/dirty plug connections is illegal.



CAUTION



Coupling/uncoupling cables

You can crush your fingers in the connection points.

▶ Carefully twist the cliplock onto/off the locking nubs.

▶ Pull on the plug – not on the cable.

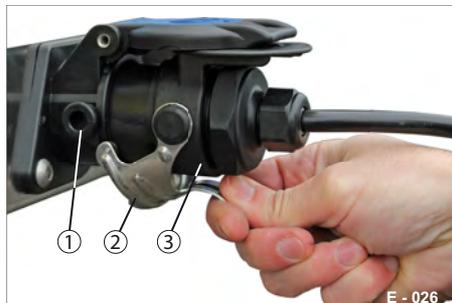


Fig. 9 Unlocking the plug

- 1 Locking nubs
- 2 Cliplock
- 3 Plug

- ▶ Pull on the cliplock (Fig. 9/2).
The clip lock twists out of the locking nubs.
- ▶ Pull the plug (Fig. 9/3) from the parking socket (Fig. 10/3) - do not pull on the cable.

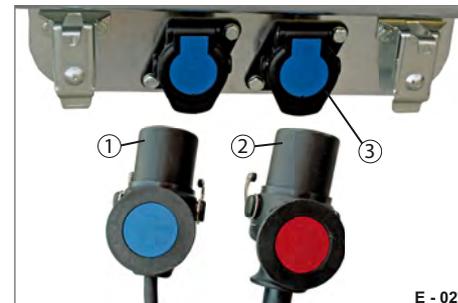


Fig. 10 Park position on tube drawbar

- 1 EBS/ABS plug (7-pin)
- 2 Electrical system plug (15-pin)
- 3 Parking socket, cap closed

- ▶ Connect the electrical system plug (Fig. 10/2) to the towing vehicle.
- ▶ Check that the plug is secure.

Parking the plug



Fig. 11 Securing the plug

- 1 Locking nubs
- 2 Cliplock
- 3 Plug

► After uncoupling the trailer, insert the plugs into the respective parking sockets (Fig. 11/3).

► Twist the cliplock (Fig. 11/2) onto the locking nubs (Fig. 11/1) on the parking socket.

The plugs are firmly seated in the parking socket in the park console.

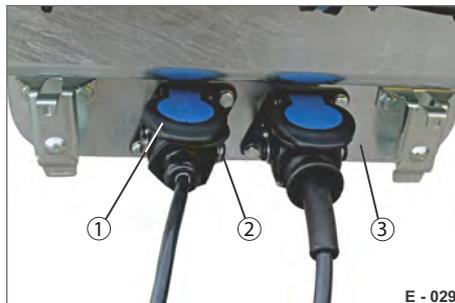


Fig. 12 Plug, parked

- 1 Parking socket / cap
- 2 Cliplock
- 3 Park console

Parked plug connections are protected from damage/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 an approved workshop.

Multi-voltage version 12 V - 24 V

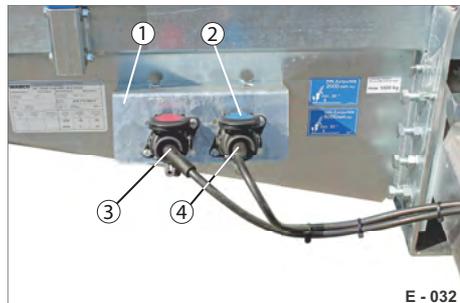


Fig. 13 Plug console 12 V - 24 V

- 1 Console, front end
- 2 Empty socket
- 3 Electrical system plug, for 24 V
- 4 Electrical system plug, for 12 V

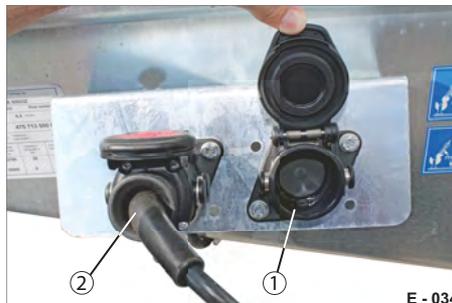


Fig. 14 Empty socket open

- 1 Empty socket
- 2 Plug 12 V or 24 V
- 3 Socket (15P), multi-voltage

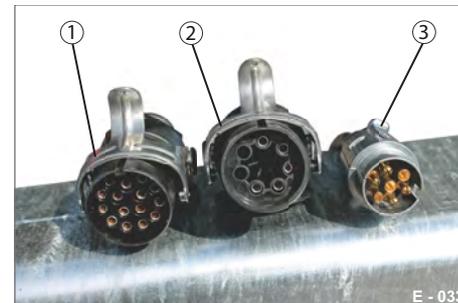


Fig. 16 Plug 12 V - 24 V

- 1 Electrical system (15P) - ISO 12098 (24 V)
- 2 Braking (7P) - ISO 7638-1/2 (12 / 24 V)
- 3 Electrical system (7P) - DIN ISO 1724 (12 V)

WARNING

Incorrect plug assignment 12 V - 24 V multi-voltage!

Electrical system not working!

- ▶ Check before driving that the electrical system is working.
- ▶ Check that the plugs are correctly assigned in the console.

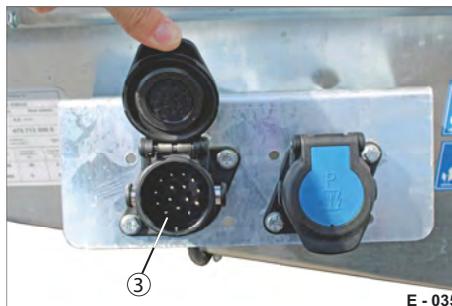


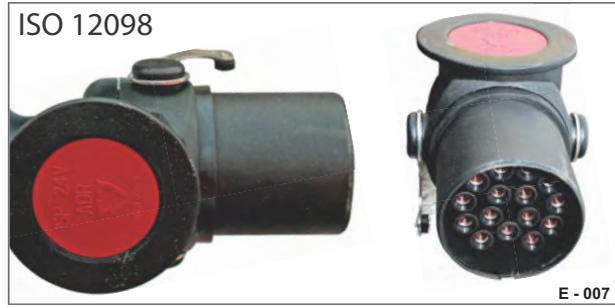
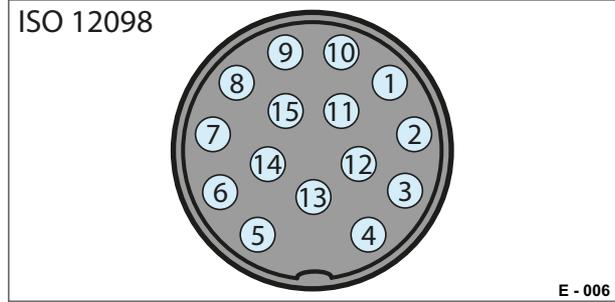
Fig. 15 Multi-voltage socket open

Create connection

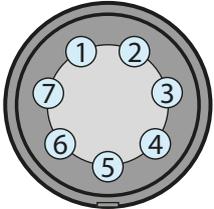
- ▶ Insert the required 12 V or 24 V plug (Fig. 13/3 or 4) into the multi-voltage socket (Fig. 15/3) on the console.
- ▶ Insert the plug not required in the empty socket (Fig. 14/1).
- ▶ Connect the electrical system plug (Fig. 16/1 or 3) and the EBS plug (Fig. 16/2) to the towing vehicle.

15-pin plug connection ISO 12098

Pin	Function	Cross-section	Colour	Image/arrangement
1	Turn indicator, left	1.5 mm ²	Yellow	
2	Turn indicator, right	1.5 mm ²	Green	
3	Rear fog light	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	
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/ground	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 connection ISO 7638-1/2 for 12 V / 24 V

Pin	Function	Cross-section	Colour	Image/arrangement
1	Positive solenoid valve (term. 30)	4 or 6 mm ²	Red	 <p>ISO 7638</p> <p>E - 008</p>
2	Positive (term. 15)	1.5 mm ²	Black	
3	Minus electronics (term. 31b)	1.5 mm ²	Yellow	
4	Minus solenoid valve (term. 31)	4 or 6 mm ²	Brown	
5	Warning device (ABS)	1.5 mm ²	White	
6	Not assigned			
7	Not assigned			

The 12 V system differs from the 24 V system in that it has different codings.

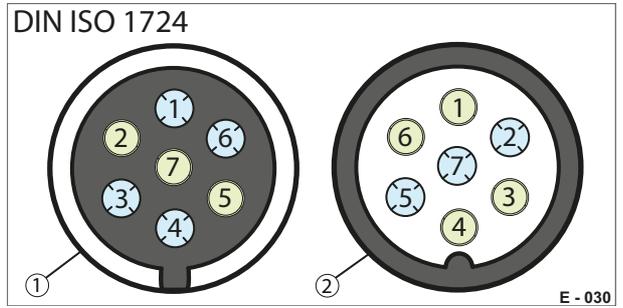


6 Contact assignment

7-pin plug connection DIN ISO 1724 - 12 V

Pin	Function	Cross-section	Colour
1	Turn indicator, left (L)	1.5 mm ²	Yellow
2	Fog light (54G)	1.5 mm ²	Blue
3	Earth (31)	2.5 mm ²	White
4	Turn indicator, right (R)	1.5 mm ²	Green
5	Right tail light / clearance light (58R)	1.5 mm ²	Brown
6	Brake lights (54)	1.5 mm ²	Red
7	Left tail light / clearance light (58L)	1.5 mm ²	Black

Image/arrangement



Tab. 1 No. 1) Plug / No. 2) Socket

13-pin plug connection DIN 72570, ISO 11446 - 12 V

Pin	Function	Cross-section	Colour	Image/arrangement
1	Turn indicator, left (L)	1.5 mm ²	Yellow	<p>DIN 72570, ISO 11446</p> <p>E - 024</p> <p>DIN 72570, ISO 11446</p> <p>E - 025</p>
2	Fog light (54g)	1.5 mm ²	Blue	
3	Earth/ground (31) for contact nos. 1-8	2.5 mm ²	White	
4	Turn indicator, right (R)	1.5 mm ²	Green	
5	Right tail light / clearance light (58R)	1.5 mm ²	Brown	
6	Tail light, right	1.5 mm ²	Brown	
7	Brake lights (54)	1.5 mm ²	Red	
8	Reversing light (1)	1.5 mm ²	Grey/pink	
9	Continuous current / continuous positive (4)	2.5 mm ²	Brown/blue/orange	
10	Charging cable (6)	2.5 mm ²	Brown/red	
11	Earth/ground (3) for circuit no.10 (charging cable)	2.5 mm ²	White/black/blue	
12	Trailer detection (empty)	- mm ²	-	
13	Earth/ground for circuit no. 9 (empty)	2.5 mm ²	White/red	

Tab. 2 No. 1) Socket / No. 2) Plug

7-pin plug connection ISO 3731 (White)

Pin	Function	Cross-section	Colour	Image/arrangement
1	Earth (31)	2.5 mm ²	White/black	<p>ISO 3731</p> <p>The image shows a 7-pin ISO 3731 connector. On the left is a perspective view of the metal plug with seven pins. On the right is a circular diagram of the connector face with pins numbered 1 through 7. Pin 1 is at the top, pin 2 is at the top-right, pin 3 is at the right, pin 4 is at the bottom-right, pin 5 is at the bottom-left, pin 6 is at the left, and pin 7 is at the top-center.</p> <p>E - 010</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 connector ISO 1185 (Black)

Pin	Function	Cross-section	Colour	Image/arrangement
1	Earth (31)	2.5 mm ²	White	<p>ISO 1185</p> <p>The image shows a 7-pin ISO 1185 connector. On the left is a perspective view of the metal plug with seven pins. On the right is a circular diagram of the connector face with pins numbered 1 through 7. Pin 1 is at the top, pin 2 is at the top-right, pin 3 is at the right, pin 4 is at the bottom-right, pin 5 is at the bottom-left, pin 6 is at the left, and pin 7 is at the top-center.</p> <p>E - 011</p>
2	Left tail light / clearance / license/	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 / clearance light / license/number plate light (58R)	2.5 mm ²	Brown	
7	Trailer braking control (54G)	1.5 mm ²	Blue	

License/number plate light

The license/number plate light (two-line) can optionally be attached to the drive-up ramp.

The connection cable for the license/number plate light must be plugged in separately.

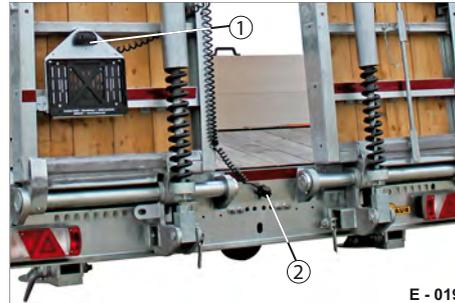


Fig. 17 License/number plate light (option)

- 1 License/number plate carrier with lighting
- 2 Plug, 4-pin

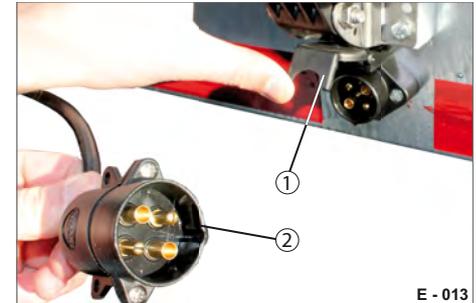


Fig. 18 License/number plate light plug

- 1 Cap
- 2 Plug, 4-pin

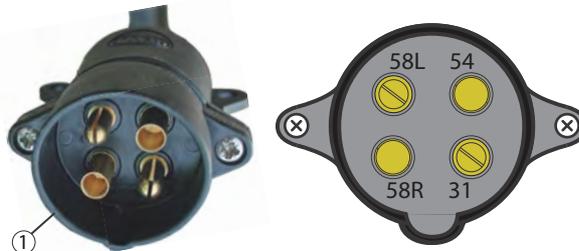
License/number plate light (option)

4-pin plug connection DIN ISO 72575 (6 - 24 V)

for license/number plate light

Pin	Function	Cross-section	Colour	Image/arrangement
1	Earth (31)	2.5 mm ²	White/black	
2	Not assigned (58R)	1.5 mm ²	Violet	
3	Reversing light (58L)	1.5 mm ²	Blue	
4	Continuous positive power (54)	2.5 mm ²	Brown/blue	

DIN ISO 72575



E - 036

DIN ISO 72575



E - 037

Tab. 3 No. 1) Plug / No. 2) Socket

Working light

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 direction can be adjusted separately.

The LED working light is pivot-mounted.

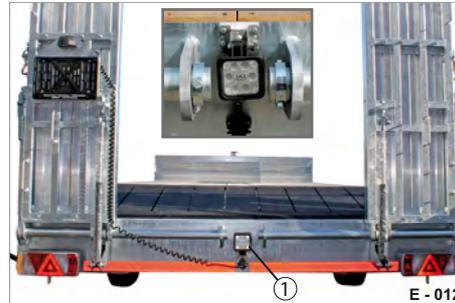


Fig. 19 Example: HBTZ BS 13t - rear view

1 Working light

Tail light with peripheral light 24 V

The rear multi-functional lights are equipped with a peripheral light.

The multi-functional tail light is equipped with the following functions:

- Fog light
- Reversing light
- Tail light with reflector
- Brake light
- Indicator

The peripheral light identifies the vehicle with the following colours:

- Red, to the rear
- Orange, side
- White, forwards

The lighting system can optionally be converted at the factory to 12 V.



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.

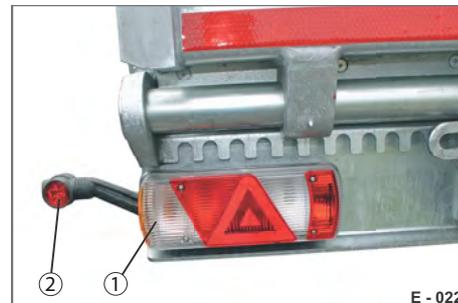


Fig. 20 Tail lighting 24 V

- 1** Tail light complete with:
fog light,
reversing light,
tail light with reflector,
brake light,
indicator
- 2** Peripheral light

LED tail light with peripheral light

The rear LED tail lights are equipped with the following functions:

- Fog and reversing lights
- Tail light with reflector, brake light and indicator
- Peripheral light

**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.

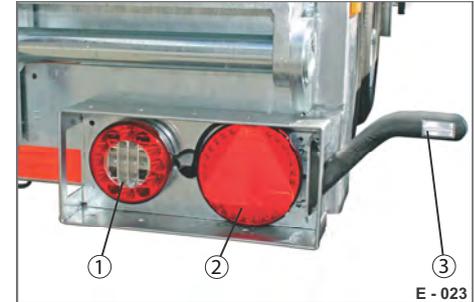


Fig. 21 “LED” tail lighting

- 1** Light source with:
fog/reversing light
- 2** Light body with:
Tail light with reflector, brake light and indicator
- 3** Peripheral light

Marker / clearance lights

The white clearance lights are installed on the front side of the chassis.

The orange clearance lights are installed on the side of the chassis.

The marker/clearance lights are LED lights supplied with 24 V by the electrical system.



WARNING

Non-functioning marker / clearance lights

The road users cannot correctly gauge/ identify the vehicle - risk of injury!

- ▶ Check that the marker and clearance lights are secured before departing.

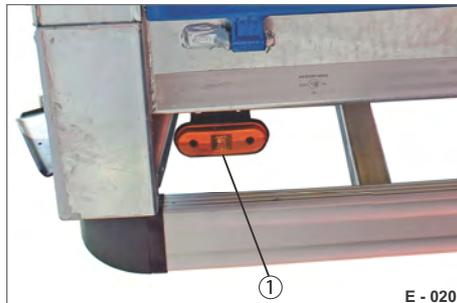


Fig. 22 Marker light, side

- 1 Side marker light, orange

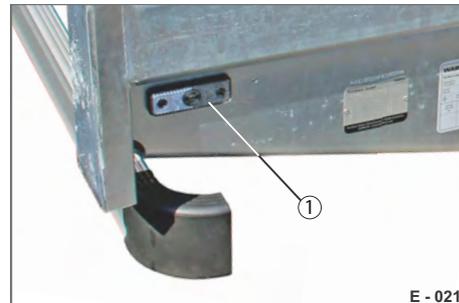


Fig. 23 Clearance light, front side

- 1 Clearance light, white



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.



Instructions for maintenance work on the following assemblies can be found in the manufacturer's operating and maintenance manuals:

- Support equipment
- Axles
- Cable winch



- Always observe the accident prevention regulations when performing maintenance work.
- Observe environmental conservation guidelines.
- Switch off the engine before starting all maintenance work.
- Damaged coupling/towing eyes should never be repaired; instead, they should be replaced with new parts.
- Damaged and non-functioning trailer components must be replaced with original Humbaaur replacement parts.

For safety reasons, all important mechanical components must be tested and serviced at regular intervals.

These include:

- Axles
- Brakes
- Screws/bolts
- Tube/pipe connections
- Attachments
- Electrical system

The regular intervals are set out on the page **250** "Maintenance intervals".

Certificate of general inspection/ safety assessment



W - 001

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



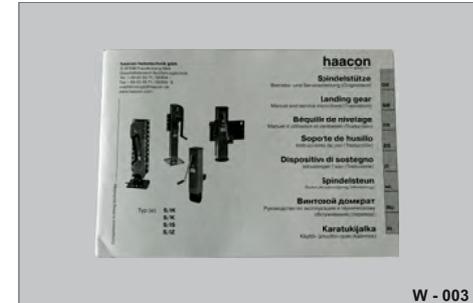
W - 002

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



W - 003

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.

Defective trailer parks must be replaced by original spare parts.

The following specifications refer to normal use of the trailer at max. 20,000 km per year.

One-time maintenance work	After	50 km	2000 km	5000 km	6 months	6 years
Wheel nuts: Tightening (also after every wheel change)		X				
Brake system: Perform traction test / lubrication work			X			
Screw connections of spring leaks, shock absorber and axle connections: Visual inspection			X		X	
Drawbar height adjustment: Lubricating				X		
Retighten towing eye bolt connection			X			
Check / adjust brake setting				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	
Towing eye: Lubricating		X				X
Lighting system: Check for damage		X				
Wheels: Check air pressure, tyre wear		X				
Compressed-air system: Check for leaks/crack formations			X			
Hydraulic system/hoses: Check for leaks/crack formations						X
Shock absorbers: Check for escaping oil					X	
Towing eye / drawbar: Check for wear and firm seating					X	
Electro-hydraulic unit: Check for fluid loss / check battery condition					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: 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

Thread	Strength 8.8	Strength 10.9
	Tightening torque	
M5	5.5 Nm	8.1 Nm
M6	9.6 Nm	14 Nm
M8	23 Nm	34 Nm
M8x1	25 Nm	37 Nm
M10	46 Nm	67 Nm
M10x1.25	49 Nm	71 Nm
M12	79 Nm	115 Nm
M12x1.5	83 Nm	120 Nm
M14	125 Nm	185 Nm
M14x1.5	135 Nm	200 Nm
M16	195 Nm	290 Nm
M16x1.5	210 Nm	310 Nm
M18	300 Nm	430 Nm
M18x1.5	340 Nm	485 Nm

Thread	Strength 8.8	Strength 10.9
	Tightening torque	
M20	425 Nm	610 Nm
M20x1.5	475 Nm	980 Nm
M22	580 Nm	820 Nm
M22x1.5	630 Nm	900 Nm
M24	730 Nm	1050 Nm
M24x2	800 Nm	1150 Nm
M27	1100 Nm	1550 Nm
M27x2	1150 Nm	1650 Nm
M30	1400 Nm	2000 Nm
M30x2	1500 Nm	2150 Nm
M36	2450 Nm	3500 Nm
M36x2	2650 Nm	3780 Nm
M42	3930 Nm	5600 Nm
M42x2	4280 Nm	6050 Nm

Tab. 3 Tightening torques general



Tightening torques for special attachments

Name	Thread	Strength class	Tightening torque
Valve clamp (pneumatic control stage)	M 12	10.9	73 Nm
Mudguard clamp	M 8	8.8	10 Nm
Mudguard pipe	M 16	8.8	85 Nm
Side guard	M 12	10.9	73 Nm
Spare wheel holder, basket mount	M 12	10.9	73 Nm
Spare wheel holder, front wall	M 12	10.9	73 Nm
Support foot of geared support winch	M 16	10.9	265 Nm
Toolbox	M 12	10.9	73 Nm
Fixing screws, tail light			1.5 Nm

Tightening torques for wheel nuts

Axle manufacturer	Thread	Wheel nuts	Tightening torque
BPW, SAF	Observe size	Observe version	See manufacturer's specifications



Implementation instructions

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.

NOTICE

Dirty lubrication nipple

Dirt may get into the bearing and cause extensive wear.

Lubrication nipple and bearing points can get damaged.

- ▶ Clean the lubrication nipples carefully before lubricating.

Lubricating grease



CAUTION

Contact with lubricants

Lubricants can cause skin reactions.

- ▶ Use only approved lubricants.



Use



after working with lubricants.

Lubrication point	Lubricant
– Towing eye	Multipurpose grease in acc. with ISO-L-XCCHB3 or in acc. with DIN 51825 type K with application range -30 °C to +120°C
– Support equipment	
– Drawbar height adjustment	
– Screw parking brake	
– Latches / fasteners / locks	
– Suspended lifting gear	
– Ramps	
– Cable winch	

Drawbar height adjustment

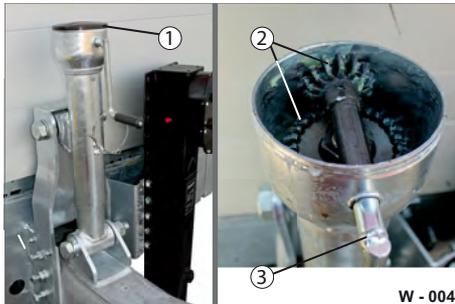


Fig. 4 Lubricating the drawbar height adjust.

- 1 Cover
- 2 Gears
- 3 Crank

- ▶ Remove the cover (Fig. 4/1).
- ▶ If necessary, clean the gears with a clean, dry cloth.
- ▶ If necessary, remove dirt and old, hardened grease.
- ▶ Lubricate the gears (Fig. 4/2) with grease.
- ▶ Use the crank (Fig. 4/3) to crank the height adjustment up and down - this distributes the grease.
- ▶ Close the cover.
- ▶ Remove excess grease if necessary - environmental pollution!

Folding support

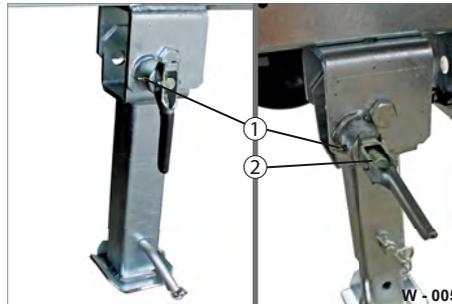


Fig. 5 Lubricating folding supports

- 1 Lubrication nipple
- 2 Locking handle bearing point

- ▶ Clean the lubrication nipples (Fig. 5/1) with a clean, dry cloth.
- ▶ If necessary, remove fouling such as grass and twigs from the bearing points (Fig. 5/2).
- ▶ Grease the folding supports with a grease gun on the lubrication nipple.
- ▶ Fold the folding supports up and down several times.
The locking handle must automatically engage.
- ▶ Remove excess grease if necessary - environmental pollution!

Support winch

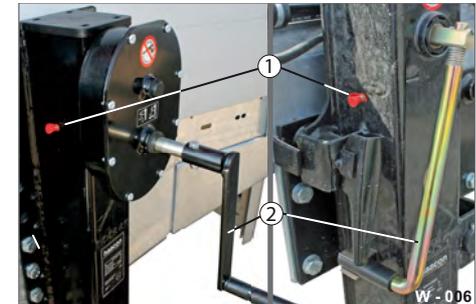


Fig. 6 Geared support winch / swivel support

- 1 Lubrication nipple
- 2 Crank



Observe/adhere to the manufacturer's maintenance instructions/intervals.

- ▶ Extend the foot of the support winch fully using the crank (Fig. 6/2).
- ▶ Removal the cap from the lubrication nipple (Fig. 6/1).
Clean the lubrication nipple with a clean, dry cloth.
- ▶ Grease the support winch with a grease gun on the lubrication nipple.
- ▶ Slowly retract the foot of the geared support winch - this distributes the grease.

Screw parking brake

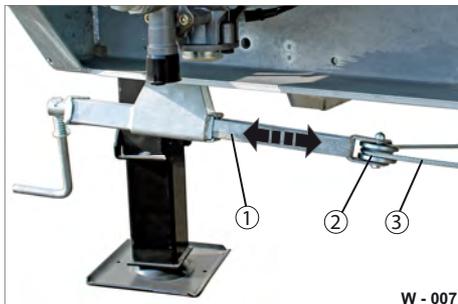


Fig. 7 Lubricating the screw parking brake

- 1 Stroke linkage
- 2 Guide pulley
- 3 Transfer cable

- ▶ Actuate the screw parking brake several times and carefully clean the lubrication points and the lubrication nipple (Fig. 8/1) with a clean, dry cloth.
- ▶ Check the stroke linkage (Fig. 7/1), guide pulley (Fig. 7/2) and transfer cable (Fig. 7/3) for damage/ deformation/cracks.
- ▶ Grease the guide pulley (Fig. 7/2).

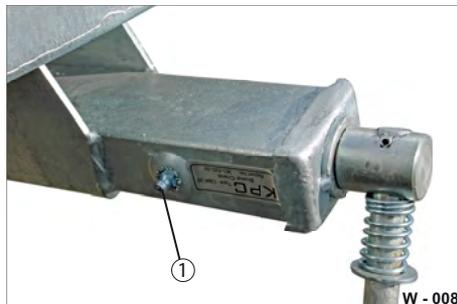


Fig. 8 Lubrication point

- 1 Lubrication nipple

- ▶ Grease the screw parking brake with a grease gun on the lubrication nipple.
- ▶ Actuate the screw parking brake several times. This distributes the grease.
- ▶ Remove excess grease if necessary - environmental pollution!

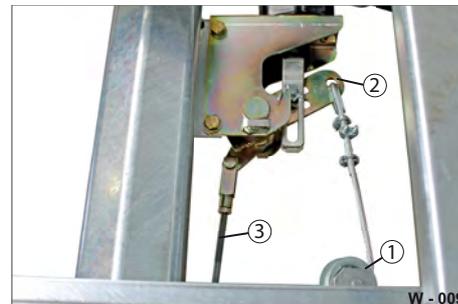


Fig. 9 Transfer mechanism

- 1 Guide pulley
- 2 Lever
- 3 Transfer linkage

Adjusting the mechanism



Maintenance/repair work on the brake system may only be carried out by qualified specialists.

- ▶ Check that the transfer mechanism is in perfect working order.
- ▶ Readjust if necessary.
- ▶ Lubricate the guide pulley (Fig. 9/1) and friction and bearing points with grease.

Towing eye

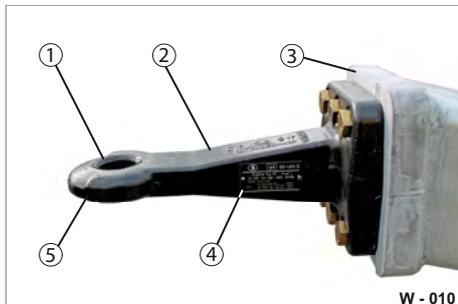


Fig. 10 Lubricating the towing eye

- 1 Wear bushing
- 2 Towing eye
- 3 Drawbar
- 4 Manufacturer's nameplate / Technical data
- 5 Rounded area of towing eye

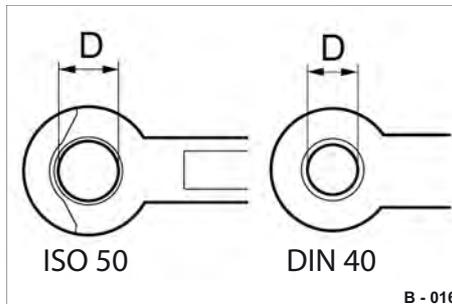


Fig. 11 Inner diameter of bushing

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

Tab. 4 Towing eye dimensions

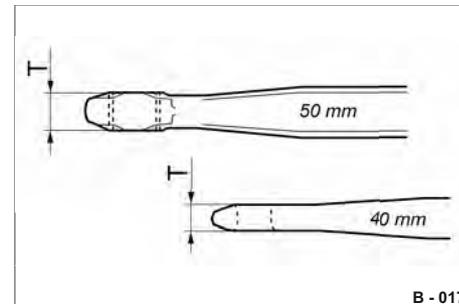


Fig. 12 Thickness of towing eye

- ▶ Clean the wear bushing (Fig. 10/1) and the towing eye (Fig. 10/2) with a clean, dry cloth.
- ▶ Check the diameter of the wear bushing:
 - D=40 mm, max. + 1.5 mm
 - D=50 mm, max. + 2,5 mm.
- ▶ When exceeding the maximum diameter values of: 42 mm / 52 mm or 59.5 mm, the wear bushing must be replaced.

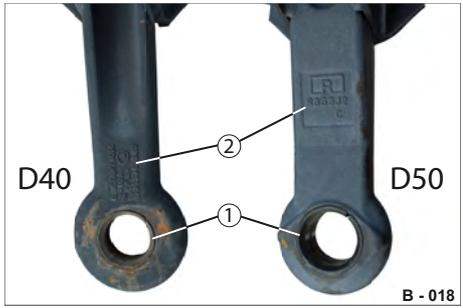


Fig. 13 Lubricating towing eyes/wear inspection

- 1 Wear bushing
- 2 Towing eye

- ▶ Check the towing eye for damage.
- ▶ Lubricate the wear bushing (Fig. 10/1) and the rounded area of the towing eye (Fig. 13/2) with long-term high-pressure grease.

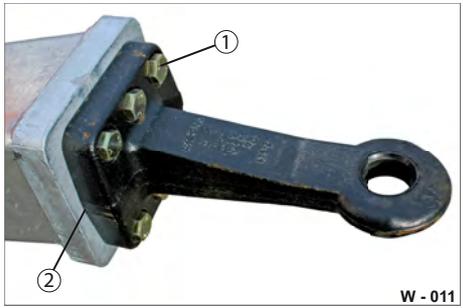


Fig. 14 Towing eye connection

- 1 Bolt (M16)
- 2 Flange / contact surfaces



The towing eye bolt connection must be retightened after approx. 2,000 km. The contact surface must not be treated!

Observe the information provided by the towing eye manufacturer.

- ▶ Retighten the bolts (Fig. 14/1) in crosswise sequence.
- ▶ Observe the torque:
 1. Tighten to 50 Nm
 2. Tighten to 100 Nm
 3. Tighten to 390 Nm

Rotatable towing eye

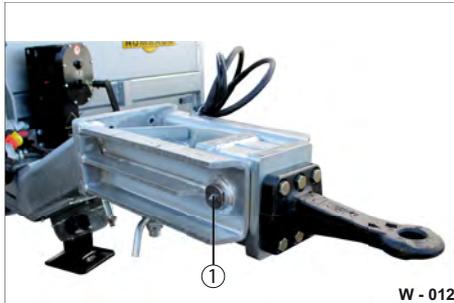


Fig. 15 Lubricating swivel axis

- 1 Lubrication nipple (with protective cap)

- ▶ Lubricate the swivel axis on the lubrication nipple (Fig. 15/1) with a grease gun until lubricant escapes.

- ▶ Turn the towing eye around a few times.

This distributes the grease in the swivel axis.

- ▶ Clean the escaping/excess lubricant with a cloth.

- ▶ Close the lubrication nipple with the protective cap.

Hydraulic cylinder bearing

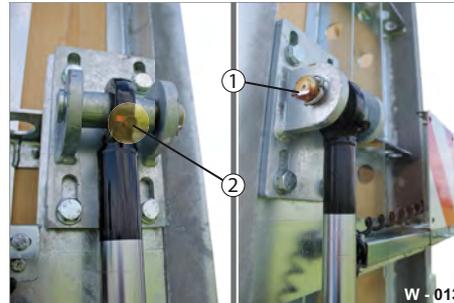


Fig. 16 Upper ramp bearing point, hydraulic cylinder

- 1 Bolt
- 2 Lubrication nipple (with protective cap)

- ▶ Lubricate the bearing on the lubrication nipple (Fig. 16/2) with a grease gun until lubricant escapes.

- ▶ Lubricate the bolt (Fig. 16/1) with machine grease.

- ▶ Clean the escaping/excess lubricant with a cloth.

- ▶ Close the lubrication nipple with the protective cap.

Suspended lifting gear bearing

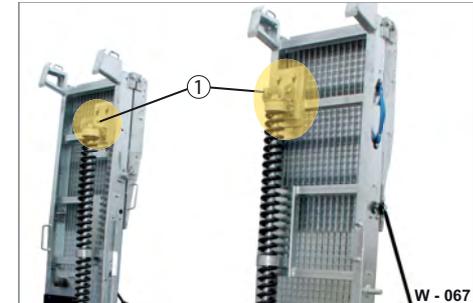


Fig. 17 Upper ramp bearing point, suspended lifting gear

- 1 Bolt

- ▶ Clean the bolt with a clean cloth.

- ▶ Lubricate the bolt (Fig. 17/1) with machine grease.

- ▶ Clean the escaping/excess lubricant with a cloth.

Ramps

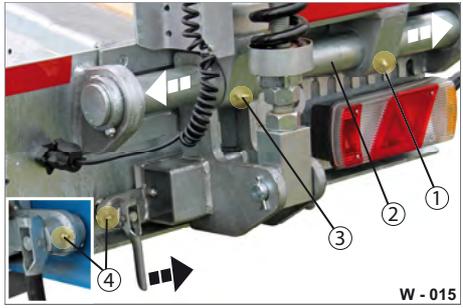


Fig. 18 Lubricating ramp bearing

- 1 Lubrication nipple
- 2 Bolt bearing points
- 3 Lubrication nipple
- 4 Lubrication nipple, lever

- ▶ Clean the lubrication nipple and bolt with a clean cloth.
- ▶ Lubricate the bearing on the lubrication nipple (Fig. 18/1,3,4) with a grease gun until lubricant escapes.
- ▶ Lubricate the bolt bearing points (Fig. 18/2) with machine grease.
- ▶ Move the ramps from side to side. Raise and lower the ramps. This distributes the grease.

Securing tensioner

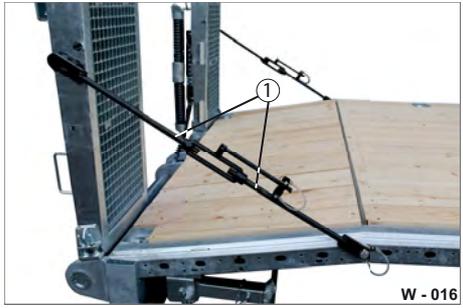


Fig. 19 Lubricating securing tensioner 1

- 1 Threaded linkage



Fig. 20 Lubricating securing tensioner 2

- 1 Threaded linkage

- ▶ Clean the threaded linkage with a clean cloth.
- ▶ Lubricate the threaded linkage (Fig. 19/1 and Fig. 20/1) with machine grease.
- ▶ Tension and release the securing tensioner several times. This distributes the grease.
- ▶ Clean the escaping/excess lubricant with a cloth.

Platform gate hinges



Fig. 21 Side platform gates

- 1 Hinges, bolted

- ▶ Disassemble the side platform gates.
- ▶ Clean the hinges (Fig. 21/1) with a clean, dry cloth.
- ▶ Grease the running surfaces of the hinges.
- ▶ Assemble the side platform gates.

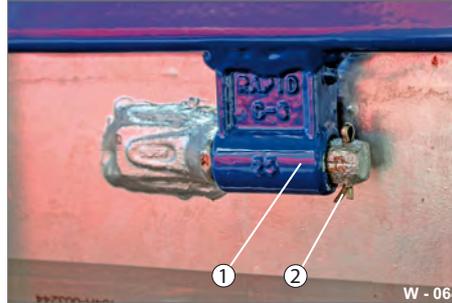


Fig. 22 Platform gate hinge, secured

- 1 Hinges, welded
- 2 Safety split pin

- ▶ If necessary, replace the safety split pin.

Container locking point

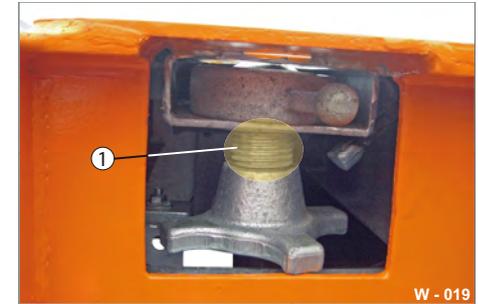


Fig. 23 Lubricating thread

- 1 Threaded bolt

- ▶ Clean the threaded bolt with a clean cloth.
- ▶ Lubricate the thread (Fig. 23/1) with machine grease.
- ▶ Screw the locking point in and out several times.
This distributes the grease.
- ▶ Clean the excess lubricant with a cloth.

Cable winch

Lubricate clutch

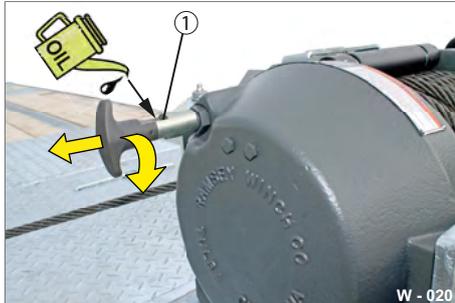


Fig. 24 Example: Disengage the cable drum

- 1 Clutch lever, disengaged

- ▶ Pull and turn the clutch lever at the same time (Fig. 24/1).
- ▶ Drip a little oil onto the shaft of the clutch lever.
- ▶ Operate the clutch lever repeatedly. The oil spreads out into assembly.
- ▶ Pull the clutch lever out. The cable drum is disengaged.

Clean / lubricate cable

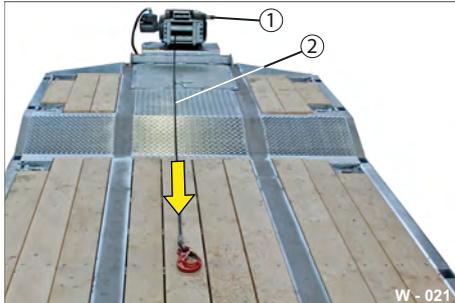


Fig. 25 Example: Pull the cable out manually

- 1 Clutch lever pulled out
- 2 Cable

The cable can be unwound manually when the cable drum is disengaged to perform maintenance / repair work.

- ▶ Pull the cable out.



Wear

- ▶ Check the cable for damage.
- ▶ Clean the cable with a rag.
- ▶ Lubricate the entire length of the cable with grease.

Lubricate guide pulleys



Fig. 26 Example: Lubricate guide pulleys

- 1 Lubrication nipple

- ▶ Clean the lubrication nipple with a clean cloth.
- ▶ Using a grease gun, grease the guide pulleys on the lubrication nipples (Fig. 26/1) until grease emerges.
- ▶ Remove excess grease.

General

Trailers with hydraulic systems require special maintenance.



Maintenance/repair work on hydraulic systems may only be performed 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.



- ▶ Wear

Hydraulic cylinders



Fig. 27 Checking/maintaining cylinders

- 1 Cylinder, vertical
 - 2 Hoses/distribution
- ▶ Check the cylinders (Fig. 27/1) 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. 27/2) for crack formations/deformation.
 - ▶ Replace the hoses after about 6 years.

Electro-hydraulic unit

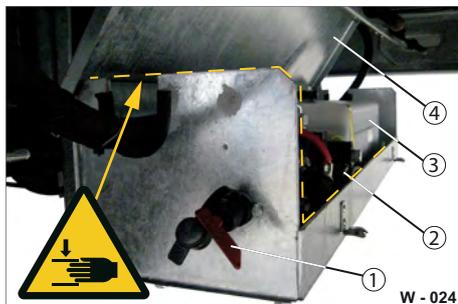


Fig. 28 Electro-hydraulic unit, open

- 1 Main switch
- 2 Electric pump
- 3 Hydraulic fluid tank
- 4 Cover



Maintenance / servicing work on the electro-hydraulic unit may only be performed by qualified specialists in a specialist workshop!



WARNING



Risk of hitting head

You could hit your head when carrying out maintenance work under the chassis.

- ▶ Carry out maintenance work under the chassis with particular care.
- ▶ Make sure there is sufficient clearance; if necessary, prop up the trailer higher.



- ▶ Wear



WARNING



Danger of crushing injuries

Fingers and hand may be crushed between the lower section of the box and the cover when the cover is opened and closed.

- ▶ Open and close the cover carefully.
- ▶ Secure the cover in the open position.



- ▶ Wear

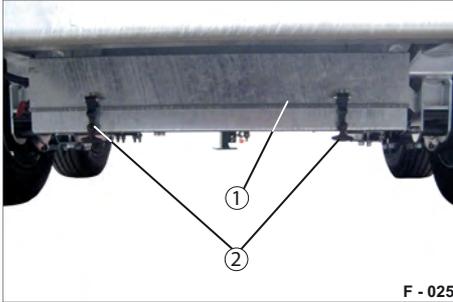


Fig. 29 Electro-hydraulic unit, closed

- 1 Cover
- 2 Fasteners

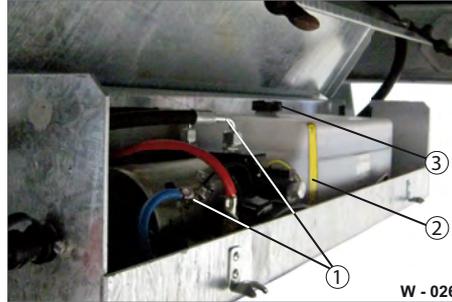


Fig. 30 Checking the oil fill quantity

- 1 Hydraulic lines / electrical hoses
- 2 Check bar for oil level (Min. / Max.)
- 3 Filler connection

- ▶ Open the fasteners (Fig. 29/2).
- ▶ Fold the cover (Fig. 29/1) upwards.
- ▶ Use auxiliary equipment to secure the cover against folding down.

- ▶ Check the fluid level in the hydraulic fluid tank (Fig. 30/1).
- ▶ Change used/fouled hydraulic fluid - use only fluid from the same manufacturer.
- ▶ Check all the hydraulic lines and electrical hoses for wear, stone impact and signs of ageing. Replace defective lines/hoses immediately.
- ▶ After completing maintenance work, close and secure the electro-hydraulic unit with the cover.

Battery charging



Pay particular attention to the battery manufacturer's warnings when carrying out care and cleaning work on the electro-hydraulic system.



WARNING



Battery is live

The battery is live when the trailer is coupled or connected - risk of shorting.



- ▶ Disconnect the power supply before care and cleaning work.
- ▶ Turn the power switch to OFF and attach the cap.



WARNING



Risk of burning

Accidentally bridged batteries are hot.

- ▶ Let the battery cool down before starting the service and maintenance work.



WARNING



Danger when handling batteries

The battery may explode as a result of sparking or short-circuiting.



- ▶ Do not smoke or allow any naked flames in the vicinity.
- ▶ Avoid short-circuiting and sparking.
- ▶ Do not place any tools on the battery.



- ▶ Never clean the battery with a damp or wet cloth. Do not under any circumstances spray water into the battery box.
- ▶ Dry the battery surface and terminals with a dry, clean cloth.
- ▶ Protect the terminals against corrosion with terminal grease.



- ▶ Wear , .

NOTICE

Battery discharging

Fouled battery terminals as a result of environmental influences such as dirt and moisture may give rise to leakage currents - corroding terminals.

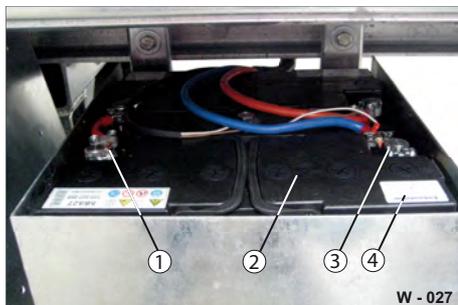


Fig. 31 Power supply

- 1 + terminal
- 2 Battery (12 V) for electric pump
- 3 - terminal
- 4 Installation date

The battery can be directly connected with a suitable vehicle charger to the terminals or conveniently charged by means of a charging plug.

The installation date indicates the age of the battery.

- ▶ Replace a defective or old battery.
- ▶ Prevent possible battery damage, e.g. insufficient charge, exhaustive discharge.



Fig. 32 Charging plug for charger

- 1 Plug front section (with contacts)
- 2 Rubber sealing ring
- 3 Plug rear section
- 4 + lead no. 15/30; - lead no. 31
- 5 Pin terminal no. 82 (free)
- 6 Contacts
- 7 Charging cable, connected

Preparing the charging plug

- ▶ Screw on the charging plug (see step 1).
- ▶ Remove the rubber sealing ring (Fig. 32/2).
- ▶ Pull the plug rear section (Fig. 32/3) onto the charging cable.
- ▶ Open the plug front section (Fig. 32/1).
- ▶ Connect the + lead to terminal no. 15/30 and the - lead to terminal no. 31.
- ▶ Close the plug front section and push on the rubber sealing ring.
- ▶ Screw the plug front and rear sections together (see step 3).

The charger can be connected via the socket using the charging plug.

Suspended lifting gear



Fig. 33 Suspended lifting gear for ramps

- 1 Springs



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.

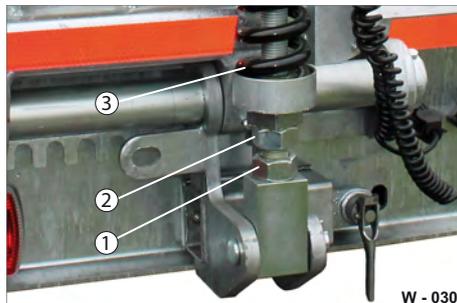


Fig. 34 Spring, factory setting

- 1 Adjusting screw
2 Lock nut
3 Spring

Tightening springs

- ▶ Tighten both springs if the tensioning force subsides.
- ▶ Release the lock nuts (SW 56) (Fig. 34/2).
- ▶ Screw the adjusting screw (Fig. 34/1) anti-clockwise. The spring is tightened.
- ▶ Tighten the lock nut.

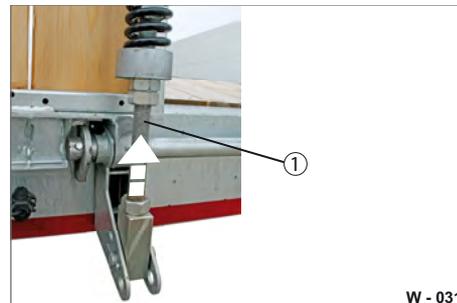


Fig. 35 Spring, tightened

- 1 Adjusting screw

- ▶ 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

Type	Load bearing capacity (index)	Tyre equipment	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)
205/65 R17.5	127	Single	2820	2910	3000	3080	3170	3250	3330	3420	3500		
	125	Twin	5320	5490	5650	5810	5970	6130	6290	6440	6600		
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

Tab. 5 Tyre pressure/max. load

Tyres/wheels:

Tyre pressure/tread



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.

- ▶ Regularly check the tyre pressure (see page **250**) on all the wheels. Tyre pressures should be checked when the tyres are cold (before starting a journey or after a lengthy break from driving).
- ▶ Refer to the tyre type table for your trailer's tyre equipment (see page **269**) for the correct tyre pressure. If the tyre type used is not listed, please contact the tyre manufacturer directly.
- ▶ 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 may 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 prescribed tightening torques of the axle manufacturers (see page **253**).

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 your location on the road.
- ▶ Erect a warning triangle.



- ▶ Wear



- ▶ Wear

WARNING

Unsecured wheels

Unsecured wheel can roll away - risk of accidents!

Persons may be struck or become trapped.

- ▶ 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.

Tyres/wheels:

When performing a wheel change always observe:



Fig. 36 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
- Replace damaged wheel bolts
- Re-tighten wheel nuts (see page **252 & 270**)

272 Inspection, care and maintenance

Securing trailer



Fig. 37 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. 37/1).

Putting lifting device into position



Fig. 38 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. 38/2) under the axle tube (Fig. 38/1).



- ▶ If necessary, refer to the relevant axle manufacturer's operating and maintenance manual for the exact lifting points.

Replacing a defective wheel

- ▶ Get the spare wheel.
- ▶ Unscrew the nuts of the defective wheel.
- ▶ Carefully pull the wheel off the axle.
- ▶ Carefully set the spare wheel 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 the defective wheel on the loading platform.
 - or
- ▶ Put the defective wheel in the spare wheel holder.
- ▶ Carefully stow away any tools/lifting equipment used.

Spare wheel storage



Fig. 39 Spare wheel on the front wall

1 Spare wheel

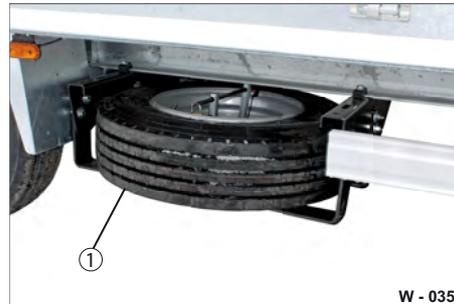


Fig. 40 Spare wheel under the chassis

1 Spare wheel

The spare wheel can be mounted on the front wall (Fig. 39/1) or under the chassis (Fig. 40/1).

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



- ▶ Wheel are heavy - Work in pairs.
- ▶ Remove the spare wheel from the front wall, see page 110.
- ▶ Remove the spare wheel under the chassis, see page 111.

Aluminium disc wheels

Lubricants for the hubs



Aluminium disc 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 wheel.

Mountings, lines, cable clips

- ▶ Thoroughly clean the dirty trailer.
- ▶ Remove rust from mountings.
- ▶ Check the plug-in contacts of the charging cables - spray them with contact spray if necessary.
- ▶ Replace damaged cables and cable clips.
- ▶ Replace the hydraulic hoses every 6 years.



Brakes are safety components!

- Adhere to the motor vehicle construction and use regulations (StVZO in Germany).
- Main inspections may only be conducted by accredited workshops.
- Have the brake 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 brake 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.

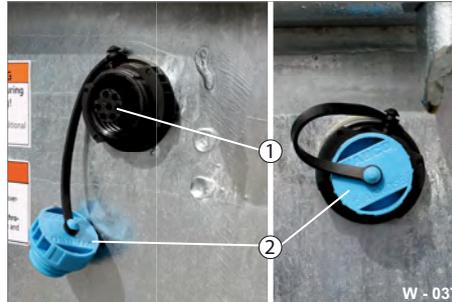


Fig. 41 Diagnosis for EBS / ABS brakes

- 1 Plug connection
- 2 Cap, screw-on

The brake system is set at the factory via the diagnosis connection.

Changes to the settings may only be carried out by qualified personnel!

The technical specs are set out on the brake nameplate (Fig. 42 & Fig. 43) of the brake manufacturer.

WABCO			
Automatisch lastabhängiger Bremskraftgeber (ABS) für Fahrzeug-Typ: Last sensung yabus (L.S.V) for vehicle type: HBT 106124 TA-BS BBR: WDE 92933Z			
Vorderachse(n)	Front axle(s)	Hinterachse(n)	Rear axle(s)
Eingangsdruck Input pressure 10 ⁵ kPa		Eingangsdruck Input pressure 6,5 10 ⁵ kPa	
Wartung Nr. Values No.	3 3	Wartung Nr. Values No.	475 713 500 0
Hebelstange l Lever length l	mm	Hebelstange l Lever length l	156 mm
Achslast Axle load kg	Federweg s Spring def. s mm	Ausgangsdruck Output pressure 10 ⁵ kPa	Achslast Axle load kg
			Federweg s Spring def. s mm
			Ausgangsdruck Output pressure 10 ⁵ kPa
		3300	28,2
		10900	0
			2,7
			6,5

Fig. 42 "WABCO" brake nameplate

TEB 01 E 2020		E 2020		Klein-TSPM	
Stützdruck Support pressure kPa		Zentraldruck Central pressure kPa		Klein-TSPM Klein-TSPM kPa	
20000	774	90	JA	1	1500
20000	774	90	JA	2	1500
20000	774	90	JA	3	1500
20000	774	90	JA	4	1500
20000	774	90	JA	5	1500
20000	774	90	JA	6	1500
20000	774	90	JA	7	1500
20000	774	90	JA	8	1500
20000	774	90	JA	9	1500
20000	774	90	JA	10	1500
20000	774	90	JA	11	1500
20000	774	90	JA	12	1500
20000	774	90	JA	13	1500
20000	774	90	JA	14	1500
20000	774	90	JA	15	1500
20000	774	90	JA	16	1500
20000	774	90	JA	17	1500
20000	774	90	JA	18	1500
20000	774	90	JA	19	1500
20000	774	90	JA	20	1500
20000	774	90	JA	21	1500
20000	774	90	JA	22	1500
20000	774	90	JA	23	1500
20000	774	90	JA	24	1500
20000	774	90	JA	25	1500
20000	774	90	JA	26	1500
20000	774	90	JA	27	1500
20000	774	90	JA	28	1500
20000	774	90	JA	29	1500
20000	774	90	JA	30	1500
20000	774	90	JA	31	1500
20000	774	90	JA	32	1500
20000	774	90	JA	33	1500
20000	774	90	JA	34	1500
20000	774	90	JA	35	1500
20000	774	90	JA	36	1500
20000	774	90	JA	37	1500
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20000	774	90	JA	39	1500
20000	774	90	JA	40	1500
20000	774	90	JA	41	1500
20000	774	90	JA	42	1500
20000	774	90	JA	43	1500
20000	774	90	JA	44	1500
20000	774	90	JA	45	1500
20000	774	90	JA	46	1500
20000	774	90	JA	47	1500
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20000	774	90	JA	56	1500
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20000	774	90	JA	64	1500
20000	774	90	JA	65	1500
20000	774	90	JA	66	1500
20000	774	90	JA	67	1500
20000	774	90	JA	68	1500
20000	774	90	JA	69	1500
20000	774	90	JA	70	1500
20000	774	90	JA	71	1500
20000	774	90	JA	72	1500
20000	774	90	JA	73	1500
20000	774	90	JA	74	1500
20000	774	90	JA	75	1500
20000	774	90	JA	76	1500
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20000	774	90	JA	81	1500
20000	774	90	JA	82	1500
20000	774	90	JA	83	1500
20000	774	90	JA	84	1500
20000	774	90	JA	85	1500
20000	774	90	JA	86	1500
20000	774	90	JA	87	1500
20000	774	90	JA	88	1500
20000	774	90	JA	89	1500
20000	774	90	JA	90	1500
20000	774	90	JA	91	1500
20000	774	90	JA	92	1500
20000	774	90	JA	93	1500
20000	774	90	JA	94	1500
20000	774	90	JA	95	1500
20000	774	90	JA	96	1500
20000	774	90	JA	97	1500
20000	774	90	JA	98	1500
20000	774	90	JA	99	1500
20000	774	90	JA	100	1500

Fig. 43 "KNORR" brake nameplate

Wheel brake



W - 036

Fig. 44 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 invalidated.

Compressed-air system



Condensate in the compressed-air system

The brake system can be destroyed or fall out.

- ▶ Regularly drain the compressed-air system.



Escaping pressurised air

Actuating the drain valve causes a lot of noise.

This can cause tinnitus and hearing damage.



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



W - 040

Fig. 45 Chassis underside

- 1 Screw fittings, hose/pipes
- 2 Holders
- 3 Operating pin



On trailers fitted with manual drain valves, the tanks must be regularly drained and leaking drain valves must be replaced (see page 83).

- ▶ Check that the screw fittings (Fig. 45/1) are secure.
- ▶ Tighten non-tight screw fittings or replace them.
- ▶ Replace damaged hoses and pipes (Fig. 45/2).

Cleaning coupling heads

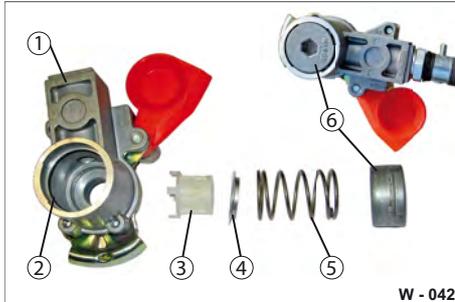


Fig. 46 Coupling head disassembled

- 1 Housing
- 2 Seal
- 3 Filter
- 4 Metal ring
- 5 Spring
- 6 Cap



The coupling heads for “supply, brake” with filter element must be regularly cleaned (see table on page 250).

Disassembling

- ▶ Press in the cover (Fig. 46/6) with a hexagon socket up to the limit position in the housing (Fig. 46/1). Turn the hexagon socket key by 90°. The cover opens.
- ▶ Remove the spring (Fig. 46/5), the metal ring (Fig. 46/4) and the filter (Fig. 46/3) 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. 46/2) 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

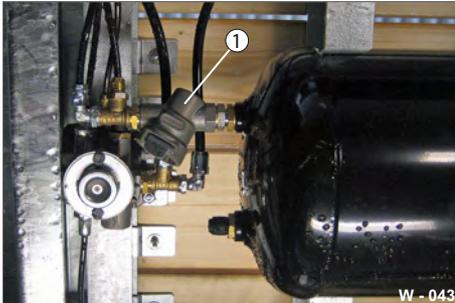


Fig. 47 Line filter for compressed-air system

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.

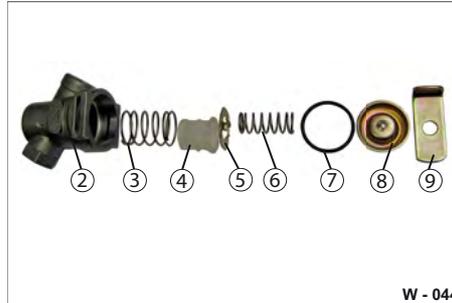


Fig. 48 Line filter disassembled

- 2 Filter housing
- 3 Large spring
- 4 Filter
- 5 Intermediate plate
- 6 Small spring
- 7 Seal
- 8 Cap
- 9 Angle



The line filters for “supply, brake” must be regularly cleaned (see table on page 250).

Disassembling

- Press the cap (Fig. 48/8) downwards with a screwdriver and pull out the angle (Fig. 48/9).
- Remove both springs (Fig. 48/3 & Fig. 48/6), the seal (Fig. 48/7), the intermediate plate (Fig. 48/5) and the filter (Fig. 48/4).
- Clean the filter housing (Fig. 48/2) with a clean, dry cloth.
- Clean the filter (Fig. 48/4).
Replace the filter in the event of major contamination or damage.
- Check if the seal (Fig. 48/7) is present or damaged.
Replace damaged seals.
- Lubricate the seal with a bit of grease.

Assembling

- ▶ Insert the intermediate plate into the filter housing with the latches pointing upwards.
- ▶ Set the small springs (Fig. 48/6) on the latches of the intermediate plate.
- ▶ Set the cover (Fig. 48/8) on top.
- ▶ Press the cap into the filter housing and slide the angle through the elongated holes in the filter housing. The Duo-Matic coupling is ready for use.

Cleaning the Duo-Matic coupling

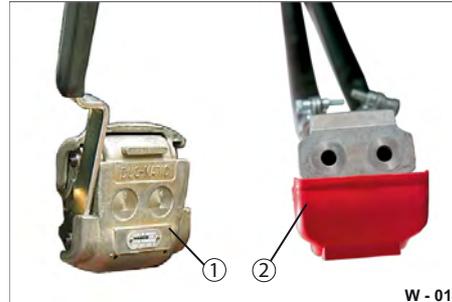


Fig. 49 Coupling head disassembled

- 1 Coupling mating piece, vehicle
- 2 Coupling head, trailer



The Duo-Matic coupling for “supply, brake” must be regularly cleaned (see table, page **250**).

- ▶ Clean the sealing surfaces of the coupling head (Fig. 49/2) and the coupling mating piece (Fig. 49/1) on the towing vehicle with a clean, dry cloth.
- ▶ Replace the coupling head if damaged.

Spring-loaded parking brake emergency release device

In the event of a pressure failure, the pre-tensioned spring is released and this initiates automatic braking.

For repair purposes, the spring-loaded diaphragm cylinders can be released manually (emergency release device).



WARNING



Activated emergency release device

When the emergency release device is activated, the trailer brake system is put out of operation.

Persons can be hit or run over by the trailer.

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



WARNING



Unbraked trailer

If the emergency release 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 diaphragm cylinder, the pre-tensioned spring can be ejected - risk of striking!

- ▶ Have the repairs to the spring-loaded diaphragm cylinder carried out by Humbaур GmbH or an authorised workshop only.

Emergency release device (variant 1)

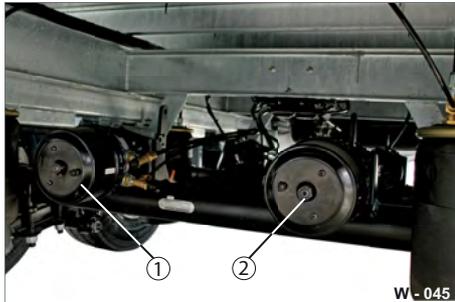


Fig. 50 Chassis underframe / rear axle

- 1 Spring-loaded diaphragm cylinder
- 2 Release bolt

When the pressure in the system falls below 5.2 bar, you can manually release the parking brake individually for each wheel.

The release bolt (Fig. 50/2) is firmly integrated in the diaphragm cylinder.

A suitable tool for operating the emergency release device (Fig. 50/2) must be carried in the toolbox in the towing vehicle.

Releasing parking brake

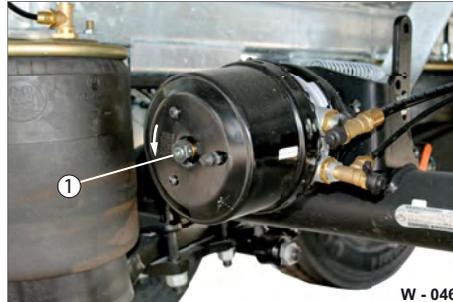


Fig. 51 Releasing parking brake

- 1 Release bolt

- ▶ Unscrew the release bolt (Fig. 51/1). The release bolt unscrews itself - the spring is tightened.
- ▶ Release the parking brake, see spring-loaded diaphragm cylinder.

Deactivating emergency release function



Fig. 52 Releasing spring tension

- ! Before restoring pressure to the brake system (before departing), you must release the spring-loaded cylinders.
- ▶ Screw on the release bolt (Fig. 51/1). The release bolt screws itself in - the spring is relaxed.
- ▶ Deactivate the emergency release function for all spring-loaded diaphragm cylinders. The trailer can be braked with the spring-loaded parking brake.

Spring-loaded parking brake emergency release device

Emergency release device (variant 2)

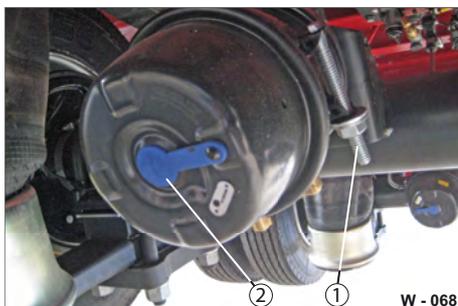


Fig. 53 Spring-loaded diaphragm cylinder

- 1 Release bolt
- 2 End cap (bore hole)

When the trailer is ready to be driven, the release bolt (Fig. 53/1) must be fixed in place in a location provided for the purpose.

The end cap (Fig. 53/2) covers the hole in the cover of the spring-loaded diaphragm cylinder.

Releasing the parking brake

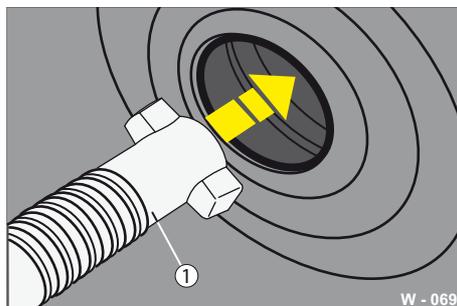


Fig. 54 "Keyhole" aperture

- 1 Release bolt

- ▶ Insert the release bolt (Fig. 54/1) through the hole in rear cover into the "keyhole" aperture.
- ▶ Turn the release bolt through 90°.
- ▶ Slide on the washer (Fig. 55/1).
- ▶ Screw the hexagon nut (Fig. 55/2) onto the release bolt (Fig. 55/3).
- ▶ Continue to turn this so that the release bolt is drawn out.

Deactivating the emergency release function

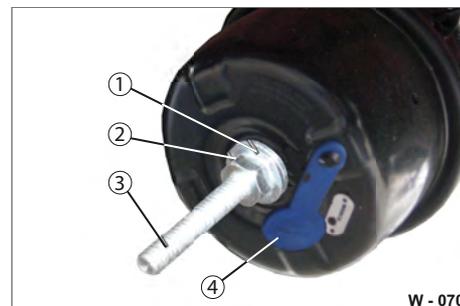


Fig. 55 Releasing spring tension

- 1 Washer
 - 2 Hexagon nut
 - 3 Release bolt
 - 4 End cap
- ▶ Unscrew the hexagon nut (Fig. 55/2).
 - ▶ Pull off the washer (Fig. 55/1).
 - ▶ Turn the release bolt (Fig. 55/3) through 90° and remove it.
 - ▶ Fix the release bolt to the diaphragm cylinder in the location provided (see Fig. 53).
 - ▶ Close the hole with the end cap (see Fig. 53/2).

**CAUTION****Short circuit in the electrical system**

Persons may suffer burn injuries.

Short circuits could set the trailer on fire.

Before working on the electrical system always:

- ▶ Disconnect all plug connections to the towing vehicle.



- ▶ Disconnect all connections to external power supplies.
 - ▶ Switch all consumers off.
 - ▶ Disconnect the negative terminal (-) on the battery.
Use insulated tools.
 - ▶ Work on electrical systems may only be performed by qualified personnel.
-

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. License/number plate lights
 3. Side marker lights
 4. Clearance lights
 - ▶ Replace faulty bulbs.
Use bulbs of the type and power rating listed in the tables below.
-

Lights

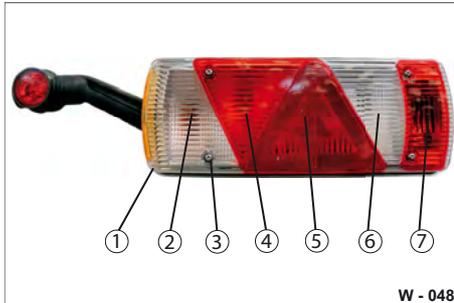
Function	DIN / type	Cap type	Power output (W)
Side marker lights/rear reflector light (orange)		LED	12 V = 0.5 / 24 V = 1.1
Clearance light (white)		LED	12 V = 0.6 / 24 V = 1.3
Tail lights "24 V - standard"			
Indicator	P21W	Ba15s	21
Brake light	P21W	Ba15s	21
2 x tail light	R10W	Ba15s	10
Reversing light	P21W	Ba15s	21
Rear fog light	P21W	Ba15s	21
Peripheral light/outline marker (red/white/yellow)	R5W	Ba9s	5
Tail lights "LED"			
Fog and reversing lights		LED	
Tail light with reflector, brake light and indicator		LED	
Peripheral light / outline marker		LED	12 V = 0.6 / 24 V = 1.2
License/number plate light "LED"	W 52	LED	12 V = 0.4 / 24 V = 0.7
License/number plate light "Standard"	Festoon		5

Tab. 6 Lamp type



Replacing bulbs

Tail light "24 V - standard"



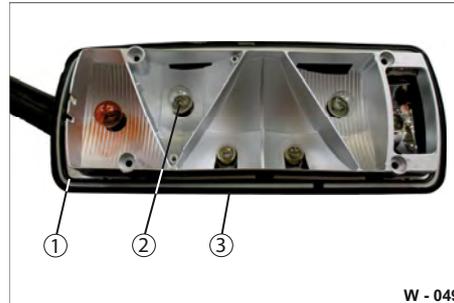
W - 048

Fig. 56 Tail light components

- 1 Outer lens
- 2 Rear fog light
- 3 4x fixing screws
- 4 Reversing light
- 5 Tail light with reflector
- 6 Brake light
- 7 Indicator



The electrical system must be switched off before beginning work.



W - 049

Fig. 57 Tail light open

- 1 Seal
- 2 Bulb
- 3 Housing



W - 050

Fig. 58 Tail light bracket

- 1 Connection / cable

- ▶ Unscrew the 4 fixing screws (Fig. 56/3).
- ▶ Remove the outer light lens (Fig. 56/1). 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. 57/3).
- ▶ Ensure that the seal is correctly seated (Fig. 57/1). Replace damaged/ripped seals.
- ▶ Screw on the fixing screws (Fig. 57/3). Tighten the screw connections with max. 1.5 Nm tightening torque. Cracked light lenses must be replaced.
- ▶ Check the connections/cable connections (Fig. 58/1).

Peripheral light

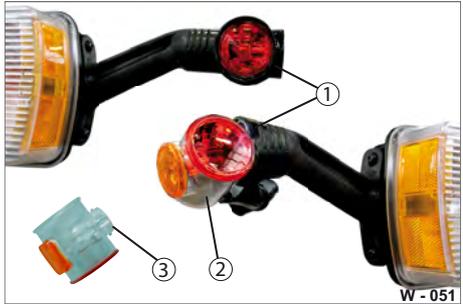


Fig. 59 Removing the rubber arm

- 1 Rubber arm covering
- 2 Light body
- 3 Screw fitting

- ▶ Spray plenty of silicon spray on the rubber arm covering (Fig. 59/1) - this makes turning up and down easier.
- ▶ Remove the rubber arm covering (Fig. 59/1) from the light body (Fig. 59/2) using a slotted screwdriver.
- ▶ Release the screw connection (Fig. 59/3) and remove the light body (Fig. 59/2).

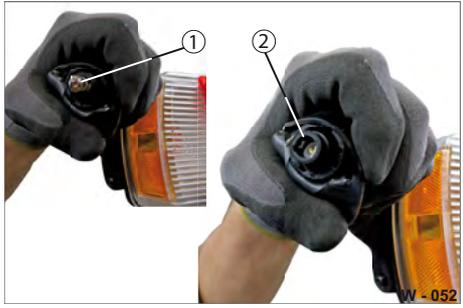


Fig. 60 Replacing the lamp

- 1 Lamp
- 2 Socket

- ▶ Unscrew the defective lamp (Fig. 60/1).
- ▶ Screw in the new lamp.

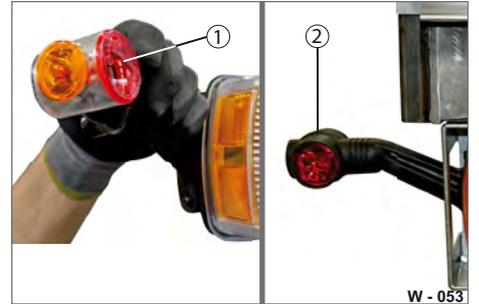


Fig. 61 Turning up rubber arm

- 1 Light body
- 2 Rubber arm covering

- ▶ Screw on the light body (Fig. 61/1) with the screw fitting (Fig. 59/3). Ensure that the seal is fitted correctly.
- ▶ Put the rubber arm (Fig. 61/2) over the light body.
- ▶ Check the peripheral light for damage. Damaged peripheral lights must be replaced completely.

“LED” tail light

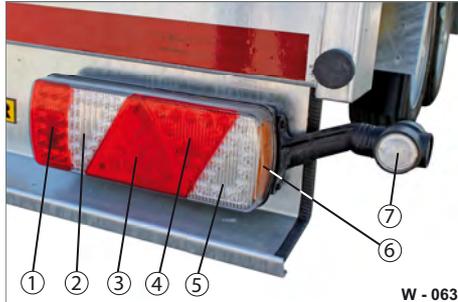


Fig. 62 Tail lighting “LED” 24 V

- 1 Outer lens
- 2 Rear fog light
- 3 Reversing light
- 4 Tail light with reflectors
- 5 Brake light
- 6 Indicator
- 7 Extension with peripheral light

The LED light bodies must be replaced completely if defective.

- ▶ Replace the tail lights with the manufacturer's original replacement parts only.
The type is marked on the lights.

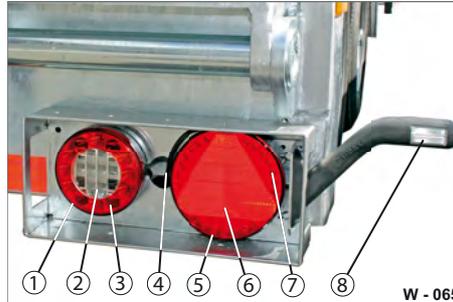


Fig. 63 Tail lighting “LED” 12 V

- 1 Inner light body
- 2 Reversing light
- 3 Rear fog light
- 4 Connection cable
- 5 Outer light body
- 6 Tail light with reflector
- 7 Brake light and indicator
- 8 Extension with peripheral light

The LED light bodies must be replaced completely if defective.

- ▶ Replace the tail lights with the manufacturer's original replacement parts only.
The type is marked on the lights.

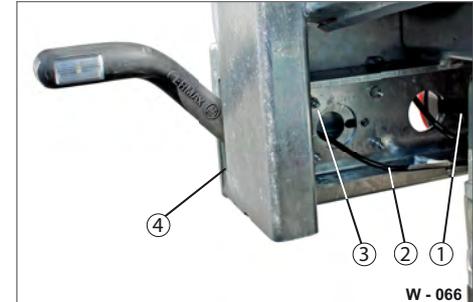


Fig. 64 Tail lighting, mounting

- 1 Screw connection, inner light body
- 2 Connection cable
- 3 Screw connection, outer light body
- 4 Screw connection, extension

- ▶ Disconnect the corresponding screw connection (Fig. 64/1, 3, 4).
- ▶ Disconnect the corresponding connection cable (Fig. 64/2).
- ▶ Insert the new LED light body.
- ▶ Connect the connection cable.
- ▶ Tighten down the screw connection.
- ▶ Check the function of the LED lighting.

License/number plate light "LED"

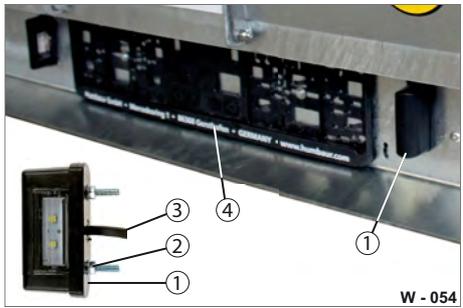


Fig. 65 License/number plate lighting

- 1 LED light
- 2 Fixing screw / nut
- 3 Connection cable with plug connection
- 4 License/number plate holder

A defective LED light must be replaced completely.

- ▶ Release the screw connections (Fig. 65/2).
- ▶ Disconnect the connection cable with plug connection (Fig. 65/3).
- ▶ Replace the complete LED light (Fig. 65/1).
- ▶ Screw on the new LED light with fixing screws/nuts.
- ▶ Connect the connection cable.

License/number plate light "Standard"

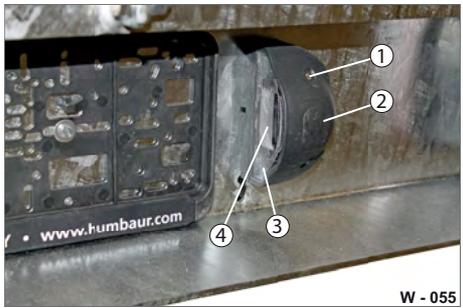


Fig. 66 License/number plate lighting 24 V

- 1 Fixing screw
- 2 Light body
- 3 Lens
- 4 Light

- ▶ Release the fixing screws (Fig. 66/1).
- ▶ Carefully open the light body (Fig. 66/2).
- ▶ Remove the lens (Fig. 66/3).
- ▶ Replace the light (Fig. 66/4).
- ▶ Insert the lens.
- ▶ Close the light body.
- ▶ Screw on the fixing screws.

Side marker lights

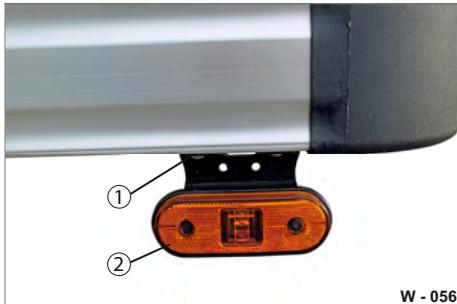


Fig. 67 "LED" side marker light

- 1 Fixing screw
- 2 LED light body (orange)

A defective LED light must be replaced completely.

- ▶ Release the fixing screws (Fig. 67/1).
- ▶ Remove the LED light (Fig. 67/2) - remove connection.
- ▶ Insert the new LED light.
- ▶ Screw in the fixing bolts securely, but not too tightly.

Clearance lights

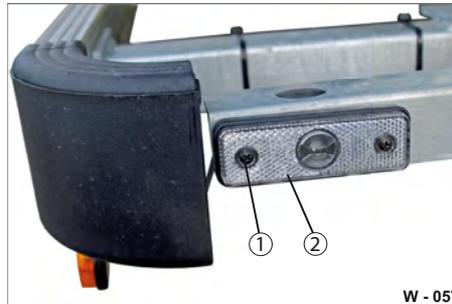


Fig. 68 Clearance light, front wall

- 1 Fixing screw
- 2 LED light (white)

A defective LED light must be replaced completely.

- ▶ Release the fixing screws (Fig. 68/1).
- ▶ Remove the LED light (Fig. 68/2) - remove connection.
- ▶ Insert the new LED light.
- ▶ Screw in the fixing bolts securely, but not too tightly.

Working lights

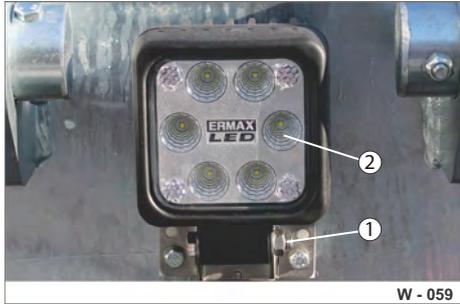


Fig. 69 Outer working light at rear

- 1 Fixing screw
- 2 LED light (white)

- ▶ Release the fixing screw (Fig. 69/1).
- ▶ Remove the LED light (Fig. 69/2).
- ▶ Insert the new LED light.
- ▶ Screw on the fixing screw.

Humbaur trailers and attachments are partially painted with air-drying 2C 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

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 processing guidelines and remarks are not intended for specific materials, but apply in general.

Necessity



The lifetime and functionality of the trailer depend 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 the trailer are essential to ensuring driving safety, value retention and preservation of warranty claims.

To prevent accidents and avoid personal injury and property damage, it is important to clean and maintain the trailer on a regular basis.

The intervals for cleaning and care depend on the operational environment and degree of contamination.



WARNING



Cleaning and care products can be toxic

There is a danger of injury or 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.



- ▶ Wear/use  , .



- ▶  after working with cleaning/care 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.



- ▶ Wear  , .
- ▶ Never enter unsecured trailers.
- ▶ Do not go under an unsecured loading platform.

NOTICE**Use of aggressive cleaning agents**

The surfaces/materials can be attacked by chemicals, salts, acids and alkaline solutions and every destroyed.



▶ Wear



- ▶ 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 fluid and lubricants can get into the groundwater.

- ▶ Clean/care for your trailer only in suitable washing areas.
- ▶ Observe the local environmental protection regulations.

High-pressure cleaners

NOTICE

Cleaning with high-pressure cleaners

Components and surfaces which are sprayed directly at excessive pressure at a short distance or with very hot water can be damaged/destroyed.

► Do not point the jet directly at:

- Nameplate
- EBS/ABS system plate
- Seals
- Electrical components
- Plug connections
- Seals or cables
- Piston areas of hydraulic cylinders
- Oil/fuel tank closures
- Brake or hydraulic hoses
- Batteries
- Cable winch

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.
- Keep a 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 curtains.

Cleaning aluminium disc wheels

- Wash the aluminium disc wheels regularly, especially after uses such as:
 - Transporting alkaline materials
 - Driving in winter when roads have been treated with salt

Aluminium disc wheels do not require any particular maintenance apart from occasional polishing.

Trailer materials



Fig. 70 Materials/surfaces

- 1 Rubber (hoses)
- 2 Steel, galvanised
- 3 Steel, painted/coated
- 4 Aluminium, anodised
- 5 Plastic

The trailers are made of different materials.

Observe the special instructions for caring for the materials/surfaces.

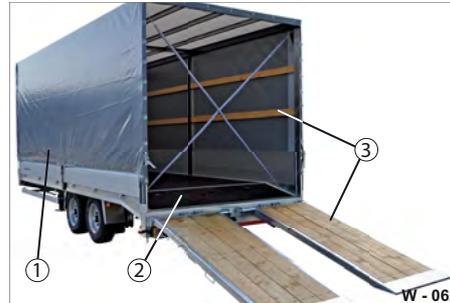


Fig. 71 Materials/surfaces

- 1 PVC/synthetic fabric
- 2 Wood floor, laminated
- 3 Wood, untreated

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. platform gates, spindle support) 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.

Wood components

Wood floors/loading platforms consist of robust, waterproof-glued laminated wood panels and are sealed with an anti-slip phenolic resin coating.

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 (hairline 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 and damage caused by loads on the wooden surface with wood treatment – this prevents dampness from entering the wood panel.

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 operating fluids / consumables



The perfect functioning, operational safety and working life of a trailer depend largely on the quality and correct selection of the operating fluids/ consumables used.

Therefore for your trailer and its equipment you should use only those operating fluids/consumables approved by Humbaar GmbH and the individual equipment manufacturers.



Follow the rules and instructions of the individual manufacturers on approved and recommended operating fluids/consumables.

Operating fluids/consumables are:

- Fuels (petrol, diesel, gas)
- Coolant/antifreeze
- Refrigerant
- Lubricants, e.g.:
engine oils, hydraulic fluids, greases
- Batteries, rechargeable batteries



WARNING



Flammable / toxic operating fluids / consumables

Fuel/refrigerants and their vapours are highly flammable and pose a health hazard - danger of poisoning!



- ▶ Do not smoke or allow any naked flames in the vicinity.
- ▶ Avoid sparking.



- ▶ Do not inhale the vapours.
- ▶ Immediately take care of escaping/ spilling consumables.



- ▶ Wear personal protective equipment.



WARNING



Explosive operating fluids / consumables

The battery may explode as a result of sparking or short circuits.

- ▶ Cover the battery terminals before starting work.



- ▶ Do not smoke or allow any naked flames in the vicinity.
- ▶ Avoid short circuiting and sparking.
- ▶ Do not place any tools on the battery.



- ▶ Observe the manufacturer's safety instructions.

Operating fluids / consumables disposal



Used oil, lubricating grease, cooling and refrigeration fluids, fuels and batteries and rechargeable batteries are waste that requires monitoring.

DANGER of polluting the environment.



- ▶ 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 guideline 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. remove towing eye, secure power supply against 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 fluids/consumables/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 faults

This section contains information relating to possible trailer faults.

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 Humbaaur service partner.

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 contact **Humbaaur Service** (see contact addresses listed below).

WARNING

Improper troubleshooting

Improper troubleshooting can lead to the failure of components - risk of accident!

- ▶ 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 asphyxiation!

- ▶ When trying to extinguish a fire, keep a safe distance from the flames.
- ▶ Do not inhale any toxic gases.

Humbaur Service

Any attempt to repair or dismantle trailer components or sub-assemblies will invalidate your warranty.

Technical Customer Service

Tel.: +49 821 24929 0

fax.: +49 821 24929 540

Email: service@humbaur.com

Humbaur Service partners

can be found at www.humbaur.com
under Dealers/Service/Repairs

Manufacturer's address:

Humbaur GmbH

Mercedesring 1

86368 Gersthofen (Germany)

Tel.: +49 821 24929 0

fax.: +49 821 24929 100

www.humbaur.com

info@humbaur.com

Replacement parts



Use only original Humbaur replacement parts.

Replacement parts can be purchased as follows quoting the vehicle identification number (**VIN**) and part designation:

- Online, by e-mail, by telephone

Parts logistics contact details

Tel.: +49 821 24929 0

fax.: +49 821 24929 200

Email: 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 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.
	- A toolbox/storage compartment is not correctly closed.	Close the toolbox/storage compartment properly.
	- The top parts of the drive-up ramps are not closed and secured.	Close and secure the two-piece drive-up ramps properly.
	- The curtain is not correctly closed.	Close the curtain 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. - The brake has seized on to the drum. 	Release the parking brake. 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.	Crank the support foot upwards.
	- 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 rotates with difficulty.	- The bearing of the rotatable towing eye has seized up.	Re-lubricate the towing eye bearing points.



Fault	Possible causes	Rectification
Drive-up ramps cannot be raised/ lowered.	- Spring of the suspended lifting gear broken.	Have the suspended lifting gear replaced in an approved workshop.
	- Spring of the suspended lifting gear not correctly set.	Re-tighten the spring at the adjusting screw.
	- Bearing of the suspended lifting gear insufficiently lubricated/not lubricated at all.	Lubricate the bearing of the suspended lifting gear.
	- Gas pressure spring faulty.	Have the gas pressure spring checked and if necessary replaced in an approved workshop.
Drive-up ramps cannot be moved laterally.	- Bearing insufficiently lubricated/not lubricated at all.	Lubricate the lateral movement bearing.
	- Dirt blocks the movement.	Clean the bearing and relubricate it.

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.
Drive-up ramps cannot be moved/raised/ lowered.	- Changeover lever of electric pump not switched to hydraulic by the towing vehicle.	Switch the lever accordingly to hydraulic supply by the electric pump or towing vehicle.
	- The battery is flat or faulty.	Charge the battery, replace a faulty/old battery
	- The electric pump main switch is not turned on	Turn the main switch to ON.

Fault	Possible causes	Rectification
The cable winch is running too slow.	<ul style="list-style-type: none"> - Insufficient hydraulic feed rate. - The hydraulic motor is used up. 	<p>Check the hydraulic feed rate.</p> <hr/> <p>Replace the hydraulic motor in a workshop.</p>
The cable drum does not turn - with load.	<ul style="list-style-type: none"> - The maximum load capacity is exceeded. - The hydraulic pressure is too low. 	<p>Check to ensure that the nominal cable tension force is not exceeded.</p> <hr/> <p>Check the hydraulic pressure.</p>
The cable drum does not turn - without load.	<ul style="list-style-type: none"> - The gears are damaged. 	<p>Have the cable winch repaired in an approved workshop.</p>
The cable drum does not turn freely.	<ul style="list-style-type: none"> - Clutch lever not disengaged. 	<p>Disengage the clutch lever.</p>
The cable tangles when the clutch is disengaged.	<ul style="list-style-type: none"> - Incorrect resistance screw setting. 	<p>Have the nylon resistance screw re-adjusted at a speciality shop.</p>
The cable winch makes loud noises.	<ul style="list-style-type: none"> - The hydraulic feed rate is too high. 	<p>Check the hydraulic feed rate.</p>
The cable winch loses oil from the breather (below the motor end bearing).	<ul style="list-style-type: none"> - The O-rings of the brake, support rings or sealing surfaces are damaged. 	<p>Have the brake removed and repaired in an approved workshop.</p>

The cable winch does not respond to the radio remote control. - The receiver is damaged.

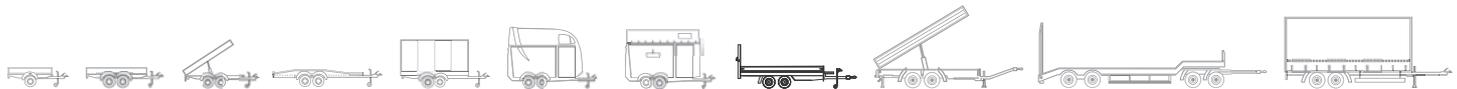
Have the receiver repaired in an approved workshop.



MAKES IT HAPPEN



MAKES IT HAPPEN



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