

Operating Instructions

Construction transporter
HTK three-way tipper (10 t - 18 t)

en



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

Humbaar GmbH accepts no liability for any damage, injuries or malfunctions resulting from a failure to do this.



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

Please note that the figures are to be considered sample figures and may deviate from the actual appearance / equipment.



Also read and observe the operating manuals for components such as axles, landing gear, etc.

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

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

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

Humbaar GmbH
Mercedesring 1
89368 Gersthofen (Germany)

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

Obligations of the operating company

Only operate the trailer when it is in perfect condition.

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

Use only trained and instructed personnel.



Ensure compliance with the operating manual throughout the life of the trailer and that the correct protective clothing (See "Personal protective equipment/ rules and prohibited activities" on page 21) is worn.

Provide the required consumables and working and other materials.

Contents of this operating manual

Identification

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

Vehicle type	Version	<input type="checkbox"/>
Three-way tipper, tandem (total weight 10.5 t)	HTK 104522	
Three-way tipper, tandem (total weight 10.5 t)	HTK 105024	
Three-way tipper, tandem (total weight 10.5 t)	HTK 105524	
Three-way tipper, tandem (total weight 11.9 t)	HTK 104522	
Three-way tipper, tandem (total weight 11.9 t)	HTK 105024	
Three-way tipper, tandem (total weight 11.9 t)	HTK 105524	
Three-way tipper, tandem (total weight 13.6 t)	HTK 135024	
Three-way tipper, tandem (total weight 13.6 t)	HTK 135524	
Three-way tipper, tandem (total weight 18.0 t)	HTK 185024	
Three-way tipper, tandem (total weight 18.0 t)	HTK 185524	



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

Keyword index

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

1 Safety

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

Read this chapter before driving for the first time.

2 General Information

The chapter entitled "General information", starting on page **23**, provides information on vehicle identification.

3 Operation

The chapter "Operation", starting on page **41**, provides information on loading and unloading, correct load distribution, and coupling and uncoupling the trailer.

4 Operation of the chassis

The chapter entitled "Operation of the chassis", starting on page **77**, provides everything you need to know about the controls of the chassis such as the raising/lowering system, landing gear as well as information on safe loading and unloading.

5 Body

In the chapter "Body", starting on page **125**, you can see how you operate the vehicle body properly, for example, folding down platform gates, securing ramp planks or which devices you can use for securing the load.

6 Electrical system

In the chapter "Electrical system", starting on page **237**, you will find information on the "Connectors and assignments" lamps.

7 Inspection, care and maintenance

In the chapter "Inspection, care and maintenance", starting on page **257**, you will be informed of the activities required for maintaining operational safety and the value of your vehicle.

8 Troubleshooting

The chapter entitled "Troubleshooting" starting on page **317**, tells you what to do in the event of problems or malfunctions and provides contact details for service team.

A

ABS **79**Access aids **229**

Address

Manufacturer **1**Replacement parts **319**Service **319**Aluminium surfaces **311**Approved consumables **314**

B

Batteries

Disposal **315**Brake nameplate **289**

C

Cable clips **288**Care **257**Central lubrication **264**

Chapter

Electrical system **237**General Information **23**Inspection, care and maintenance **257**Operation **41**Operation body **125**Operation of the chassis **77**Safety **9**Troubleshooting **317**Check when parking **73**Clean Duo-Matic coupling **293**

Cleaning

Cleaning alloy wheels **308**Cleaning coupling heads **291**Cleaning line filter **292**Coefficient of friction matching **219**Compressed air tank **90**Connecting electrical system **241**Connection element **55**

Connector

13-pin (ISO 11446-12V) **247**15-pin (ISO 12098-24V) **245**7-pin (ISO 1185-24V) **249**7-pin (ISO 1724-12V) **246**7-pin (ISO 3731-24V) **249, 250**7-pin (ISO 7638 - EBS) **248**ABS/EBS **79**

Consumables

Disposal **315**Lubricating grease **264**

Contact

Humbaur Service Partners **319**Parts logistics **319**Technical customer service **319**Coupling **66**Hydraulic line **100**

Coupling heads

Red (supply line) **81**Yellow (brake) **81**

D

Danger of toppling **43**Defective tyre **287**Departure check **72**Diagnosis connection for EBS/ABS **289**

Disposal

Batteries **315**Tyres **315**Used oil/lubricants **315**Disposing of consumables **315**Disposing of tyres **315**Disposing of used oil/lubricants **315**

Documentation

Axle/wheel maintenance **259**
Certificate of general inspection/safety assessment **259**
Support equipment maintenance **259**
Draining the compressed air tank **91**
Driving off **17**
Driving on ramp planks **214**

E
EBS **79**
EBS connector
7-pin (ISO 7638) **248**
EC Declaration of Conformity **40**
Electrical system **237**
Maintaining **297**
Troubleshooting **321**
Emergency trigger device
Brake **294**
deactivation **295**
Parking brake **295**
Environmental pollution
Poison **315**
Environmental protection regulations **307**

F
Fixings **288**
Fixings, cable clips **288**
Folding support **105**
Form-fit load securing **226**
Friction-lock load securing **222**
Front platform gate **131, 132**

G
Galvanised steel surfaces **310**
General Information **23**

H
Handling plugs **241**
High-pressure cleaners **308**
Hydraulic connections **276**
Hydraulic cylinder **277**

I
Identification **2**
Index **5**
Intended use **10**

L

Lashing points **224**
Lettering **305**
Lettering work **305**
Licence plate light **254**
Lighting
Filament lamps **298**
Limit light **298**
Maintenance **297**
Marking light **298**
Peripheral light **298**
Terminal diagram **297**
Lighting system **238**
Lighting terminal diagram **297**
Lights **298**
Limit light **298**
Limit lights **253, 303**
Load centre **51**
Load definition **51**
Loading **46**
Loading notes **46**
Lubricating **264**
Lubricating grease **264**
Lubrication
Cleaning alloy wheels **288**

Draw pipe height adjustment system **265**
Front platform gate locks **272**
Front side central locking system **274**
Pivot hinge **272**
Rear side central locking system **273, 274**
Rotatable towing eye **271**
Spindle parking brake **268**
Spindle support **267**
Telescope cylinder **277**
Tilt feet **266**
Tilting bearing **275**
Towing eye **269**

M

Maintaining compressed air system **290**
Maintaining hydraulic system **276**
Maintaining mechanics **280**
Maintaining wheel brake **290**
Maintenance **257**
"24 V - standard" rear light **299**
"LED" licence plate light **302**
Cleaning coupling heads **291**
Cleaning line filter **292**
Compressed air system **290**

Compressed air tank **290**
Draw pipe height adjustment system **265**
Electrical system **297**
Licence plate light "standard" **302**
Lighting **297**
Limit lights **303**
Mechanical components **280**
Peripheral light standard 24 V **300**
Replacing "LED" rear light **301**
Service brake system **289**
Side marking lights **303**
Wheel brake **290**
Maintenance intervals
One-time maintenance work **260**
Regular maintenance work **261**
Maintenance regulations **260**
Manufacturer **1**
Marking lights **253**
Multi-voltage version 12 V - 24 V **243**

N

Notes
Conventions in the operating manual **19**
Operating manual **1**

O

Operating manual instructions **1**
Operating platform gate attachments **169**
Operating platform gates **129**
Operating ramp planks
203
Operating service brake
82
Operation **41**

P

Painted or powder-coated steel surfaces
310
Painting **305**
Parking brake, spring-loaded **86**
Parking plug **242**
Parking warning panels **122**
Pendulum mode **144, 147**
Peripheral light **298, 300**
Permissible weights **51**
Personal protective equipment **21**
Personnel qualifications **16**
Physical fundamentals
Friction force **219**

Pin couplings **64**
Plug connections (standard) **239**
Plug connections 2x7-pin (optional) **240**
Pressure level **90**
Prohibition signs **22**
Putting lifting device into position **286**

Q

Quick-release coupling
Duo-Matic **88**

R

Ramp planks
Positioning **208**
Setting track width **213**
Rear platform gate **141**
Folding mode **142**
Pendulum mode **144, 147**
Replacement parts address **319**
Replacing lights **299**
Rollover resistance **43**
Rubber/seals **311**

S

Safety **9**
Safety instructions **19**
Screw parking brake **84**
Securing loading platform
Tilting bearing **101**
Securing the load **218**
Covering net **233**
Fundamentals **218**
Types **221**
Service address **319**
Service brake
Activating **83, 86**
deactivation **83**
Service brake system **79**
Maintaining **289**
Service support **277**
Side platform gates **133**
Signal words **19**
Sockets
Standard **239**
Sources of danger **16, 17**
Spare wheel holder **114**
Spare wheel storage **114**
Maintaining **287**

Spare wheel transport **115, 116**
Spindle support identification **39**
Spring-loaded parking brake **86**
Emergency release **294**
Stability **43**
Stanchions (load securing) **233**
Steam cleaners **308**
Stowing ramp planks
215
Supplying spare wheel **287**
Support equipment
Spindle support optional **109**
Switch-off/safeguard mechanism
Lift limitation **280**

T
Tail light
LED with peripheral light **252**
Replacing "LED" **301**
Standard with peripheral light 24 V **251**
Testing **257**
Tightening torques **263**
For screw connections **262**

Toolbox **120**
Track width **46**
Traction test **12**
Trailer
Disposal **316**
Securing **286**
Taking out of operation **316**
Trailer materials **309**
Troubleshooting **317**
Axles **323**
Brake system **321**
Electrical system **321, 322**
Hydraulics/electro-hydraulic unit **325**
Loading/driving performance **320**
Towing eye/tongue **324**
Tyre pressure/tread **284**
Tyre types **282**

U

Uncoupling
Duo-Matic **89**
Uncoupling lines
Manual **81**
Underrun guard **113**

Unloading **46**
Use
Proper **10**
Reasonably foreseeable misuse **11**
Using steel grate attachments **198**
Using support frame **196**

V

Vehicle identification numbers **38**
versions of towing eye **56**
VIN **38**

W

Warning signs **20**
warranty **14**
What to do
In the event of faults **318**
In the event of fire **318**
What to do in the event of fire **318**
Wheel bolts **284**
Wheel changing **285**
Wheel chocks **118**
Wheel nuts **284**
Working light **255**
Changing **304**

Changing **304**



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.

Should you be planning subsequent modifications to your HUMBAUR vehicle or vehicle body, enquire in good time at a Humbaure GmbH factory or at an approved HUMBAUR workshop.

Always check with HUMBAUR GmbH or 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
- 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 vehicle identification number (VIN)- see page 38. Always quote this number without fail when making enquiries or ordering parts.

Improper use that can reasonably be foreseen

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

- Transport of people/animals
- Transport of goods subject to special regulations and/or for which special vehicle versions are 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 tilted loading platform
- 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 licence plate, lighting, markings are not visible or not clearly visible
- Driving with open structures (e.g. platform gates, support frame, steel grate attachment, platform gate attachment, toolbox, side guards, ramp planks, landing gear, etc.)
- Unauthorised maintenance/repair of safety-relevant components which must only be maintained or repaired by specialists
- Driving with excessive/inappropriate speed in poor weather conditions and/or on bad roads
- Parking trailer without taking sufficient safety precautions to prevent the trailer from rolling away
- Operating the trailer in a damaged condition and visible part wear or with broken safety-relevant components
- Operating a trailer without valid brake matching with the towing vehicle
- Operating the ramp planks when a person is in the danger area
- Transport of vehicles/loading goods which protrude over the total width of the trailer
- Standing under raised and unsecured loading bridges

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

Humbaur GmbH
Mercedesring 1
86368 Gersthofen (Germany)

The user shall bear sole responsibility for any such risk.

Traction test

A traction test must be completed to ensure correct usage.

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

This overload can mean that the brakes of the towing vehicle or trailer overheat. Reduced braking force, greater brake lining and/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.

Disclaimer

Any liability of the manufacturer is invalidated if:

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

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

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

The warranty 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 no 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 as well.

It must also be noted that rubber parts 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 also not 100% watertight. 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.
technical modifications are made to the trailer.

If structures and accessories that are not approved by Humbaar 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 Humbaar-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

Expenses 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 road traffic regulations (StVO in Germany) and road traffic licensing 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.
- Freight transport

Sources of danger

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

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

Check, adjust and secure before every journey

In the chassis frame area

Important general information:

- Connect the supply lines
- Establish the electrical connections
- Put the side guard (SG) in the position for driving and secure them, if present.
- Retract the landing gear and secure it
- Check the tyres and rims for damage
- Check the tyre pressure, including the spare wheel
- Check the tightening torque of the wheel nuts
- With a new trailer, tighten the wheel nuts after 50 km and after its first journey carrying a load
- Secure:
Spare wheel/spare wheel holder, wheel chocks
- Check the trailer's lights, and repair any faulty lights
- Observe the permissible total weight
- Release the brakes and start to move off only when the operating brake pressure has been reached

- Drain the compressed air tanks
- Check the licence plate and signs
- Check that the central draw pipe and trailer coupling are in perfect condition
- Interlock the trailer coupling properly
- Check that the loading bridge is secured in the tilting bearings before departing

Around the vehicle body

Close and secure all vehicle body components, such as:

- Ramp planks / bays
- Platform gates
- Platform gate attachments
- Steel grate attachments
- Support frame
- Toolbox
- Load securing equipment, e.g. covering net, covering sheet
- Access aids
- Fix and secure the load
- Fix and secure the side posts
- Ensure that the load distribution is balanced

Signal words



DANGER

Indicates an immediate danger

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



WARNING

Indicates a possibly dangerous situation

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



CAUTION

Indicates a possibly dangerous situation

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

NOTICE

Indicates a possibly dangerous situation

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



General mandatory sign.

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

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

Text emphasis

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

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

Safety instructions

Warning signs used

The following warning signs can be used 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 materials.

Personal protective equipment

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

It includes the following:



Safety boots, sturdy shoes



Protective gloves



Safety helmet



Safety glasses



Fluorescent clothing



Protective mask, breathing protection



Hearing protection



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.



Instructions required from another person

Personal protective equipment/rules and prohibited activities

Prohibition signs

Heed these prohibited activities.



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,
do not dispose of in the
environment.



Immediately wash your eyes out
with plenty of water.



See a doctor.



General Information

1

2

3

4

5

6

7

8

HTK 10.5 t

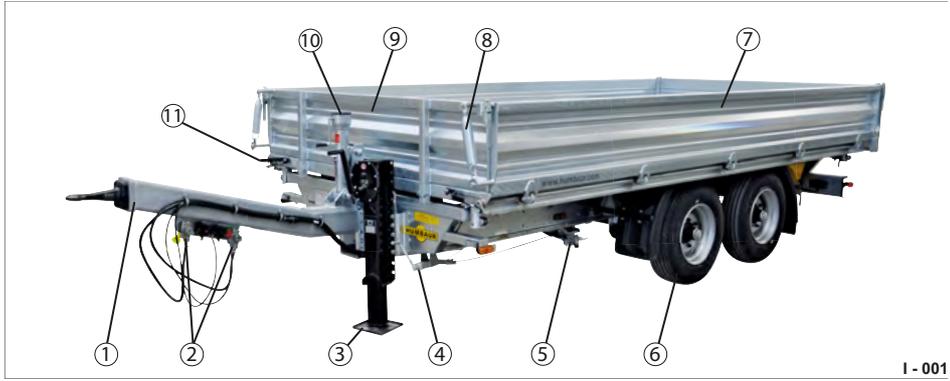


Fig. 1 Side view



Fig. 2 Loading platform, tilted

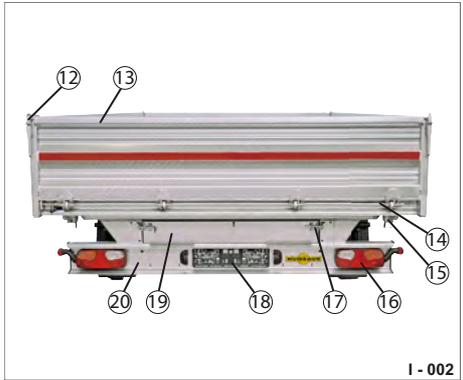


Fig. 3 Rear view

- 1 Tube drawbar with towing eye
- 2 Compressed air connect.: Supply, brake
- 3 Spindle support
- 4 Screw parking brake, manual
- 5 Service brake release valve
- 6 Axles/wheels
- 7 Side platform gates
- 8 Platform gate lifting spring
- 9 Front platform gate
- 10 Height setting device
- 11 Central locking system
- 12 Front platform gate locks
- 13 Rear platform gate
- 14 Transfer rod
- 15 Tilting bearing
- 16 Rear lights
- 17 Plank bay lock
- 18 Licence plate holder
- 19 Plank bay
- 20 Underrun guard
- 21 Compressed air container
- 22 Ramp planks, retracted
- 23 Telescope cylinder, hydraulic
- 24 Loading bridge
- 25 Tilting bearing
- 26 Arrestor cable
- 27 Wheel chock
- 28 Folding support
- 29 Toolbox
- 30 Hydraulic connection
- 31 Lashing points

HTK 13.6 t

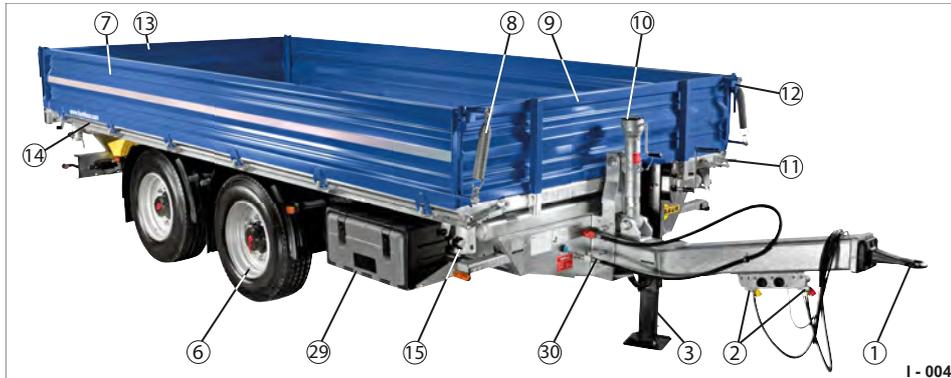


Fig. 4 Side view

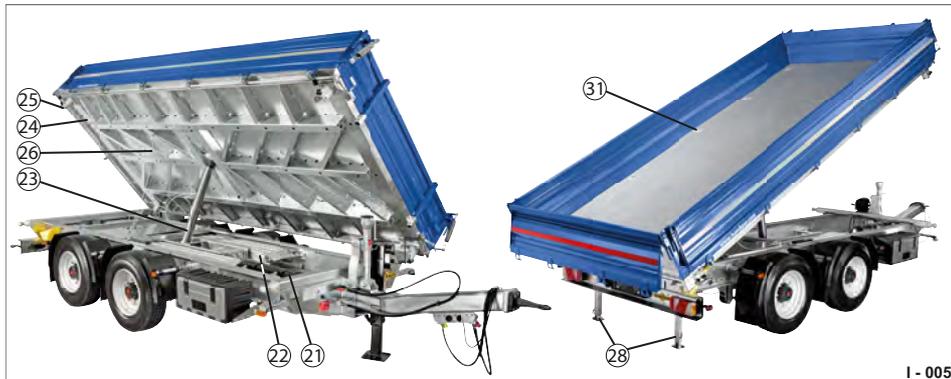


Fig. 5 tilted: to the side and rear



HTK 18 t

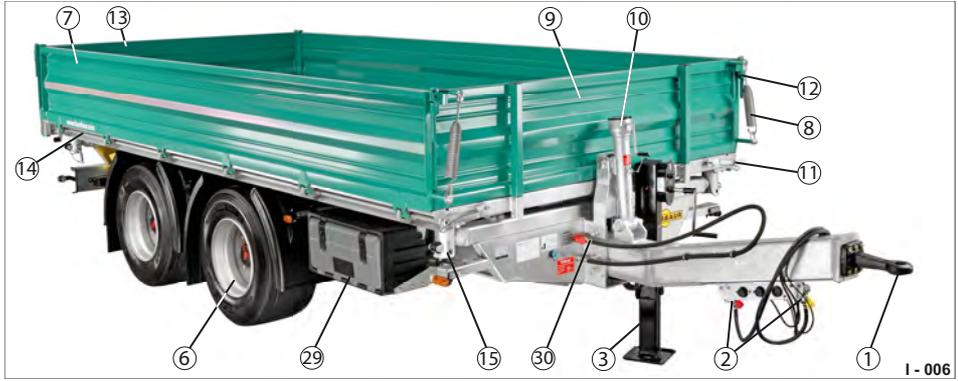


Fig. 6 Front view



Fig. 7 tilted: to the side and rear

Specifications of HTK three-way tipper

The HTK is a construction transporter with a height-adjustable tube drawbar.

The tube drawbar is supported in the front with a reinforced spindle support for up to 12 t.

The HTK three-way tipper has a very wide range of use with a payload of 7400 kg to 14100 kg.

HTK as a tandem trailer is equipped with maintenance-free parabolic springs.

In the HTK, version 185024, the axles have pneumatic suspension and shock absorbers. In addition, the raising/lowering system has a function for quick lowering for tilting stability.

The welded and galvanized vehicle frame guarantees a long lifetime.

The ramp plank bays in the vehicle frame make it possible to transport the ramp planks.

The 4- or 5-level hard chrome-plated telescope cylinder can tilt the loading platform backwards 40° or 45°, and 45° or 48° to either side.

The folding supports in the rear area protect the vehicle during loading/unloading of construction vehicles.

The platform walls to the side and the rear feature a central locking system for the pendulum mode.

The HTK can be provided as a multi-voltage vehicle with LED lighting in 12 V - 24 V as an option.

The hydraulics are supplied by the towing vehicle.

An electro-hydraulic unit can be integrated in the chassis as an option.

A variety of accessories such as: Spare wheel, support blocks, toolbox, platform gate attachments, steel grate attachment, stanchions, covering net, roller curtains, etc. improve comfort and safety during operation.

HTK, special design

The HTK three-way tipper can be delivered with various structures on request. Here are a few examples:



Fig. 8 HTK with stationary ramps

- 1 Ramps, split

I-048

HTK as a agricultural trailer
e.g. for silo transport



Fig. 9 HTK with steel grate body and roller curtains

- 1 Roller curtains
- 2 Steel grate body
- 3 Access platform

Ramp planks, retracted



Fig. 10 Ramp plank bays in chassis

Shut-off cable for loading bridge



Fig. 12 Loading bridge tilted to the side

Rotatable towing eye



Fig. 14 D=40 mm or D=50 mm

Platform gate lifting springs



Fig. 11 Tension springs for side platform gates

Ramp plank safety device



Fig. 13 Patented locking mechanism

Covering net safety device



Fig. 15 Round buttons on platform gates

Covering net



Fig. 16 Loading platform with covering net

Steel grate attachment, low



Fig. 18 With dual lifting springs

Dosing slider with pipe outlet



Fig. 20 Rear side
Arrangement: Centre or right/left

Support frame



Fig. 17 Support frame on front platform gate, e.g. for wheel loader/excavator shovel

Steel grate attachment, 1 m high



Fig. 19 Set on the base platform gates

Dosing slider



Fig. 21 Rear side
Arrangement: Centre or right/left

Platform gate attachment



Fig. 22 Steel

Front wall attachment



Fig. 24 Steel

Spindle support

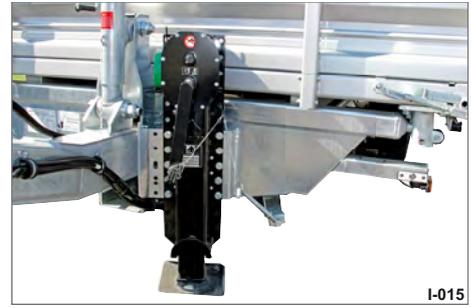


Fig. 26 Support equipment, front side

Platform gate attachment



Fig. 23 Aluminium

Steel grate front wall attachment



Fig. 25 With/without connection option for loading goods

Support foot, hydraulic



Fig. 27 Hydraulic support equipment

Swivel support



Fig. 28 Swivelable support equipment for through-load option

Spare wheel



Fig. 30 Spare wheel holder on the front wall

Spare wheel



Fig. 32 Loose spare wheel on the loading platform

Access ladder



Fig. 29 Front side, foldable

Raise/lower system



Fig. 31 KNORR product

Raise/lower system



Fig. 33 WABCO product

Securing the load



Fig. 34 Lashing ring, can retract in pocket

Swinging doors



Fig. 36 Rear platform gate as swinging door

Toolbox



Fig. 38 On the side, under chassis

Securing the load



Fig. 35 Tensioning strap winch (4x), attached below the loading bridge

Securing the load



Fig. 37 Blade lashing ring, retractable

Toolbox



Fig. 39 On the front platform gate

Safety chain



Fig. 40 On rear platform gate

Service support



Fig. 42 Under loading bridge

Front platform wall, foldable



Fig. 44 Through-load option

Platform gate door stay



Fig. 41 Guard lock of the side platform gates

Side posts on loading platform



Fig. 43 Connectible side posts

Draw pipe height adjustment



Fig. 45 Arranged horizontally

Folding support

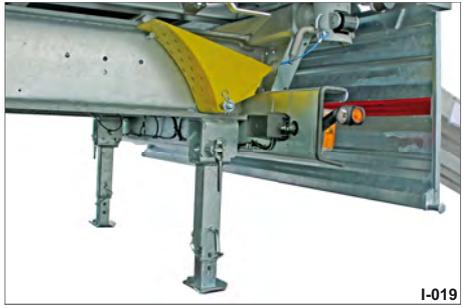


Fig. 46 At rear, manual

Working light



Fig. 48 Rear side, single, double

Roller curtains



Fig. 50 Roller curtains on steel grate body

Rotating light



Fig. 47 Held by magnets

LED lights



Fig. 49 Multi-voltage 12 V / 24 V

Dual lifting springs



Fig. 51 For folding mode with platform gate attachment

Pedestal with ladder



Fig. 52 On the front platform gate

Lashing pocket cover



Fig. 53 Lashing pockets covered

2 Vehicle identification numbers

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

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

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

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

Tab. 1 Example - VIN number



Fig. 54 Vehicle front

- 1 Vehicle identification numbers (VIN)
- 2 Nameplate
- 3 Front side, rack

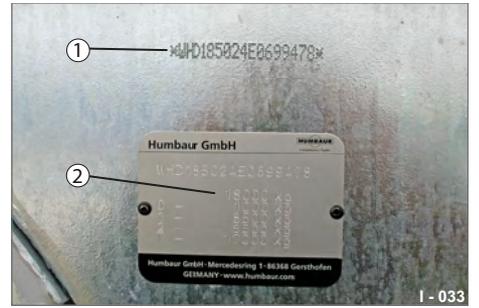


Fig. 55 VIN / nameplate

- 1 VIN - engraved
- 2 Nameplate/weight specifications

Spindle support

For A nameplate is attached to the spindle support to identify it.



If you have any questions about the spindle support, specify the factory no. / type and the year of construction..



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

Manufacturer of the spindle support:
 haacon hebetchnik gmbh
 Josef- Haamann-Strasse 6
 D-97896 Freudenberg

Tel. 09375-84-0

Fax: 09375-84-66

www.haacon.de

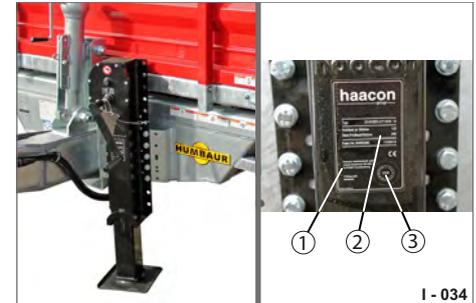


Fig. 56 Spindle support (example)

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



Humbaur GmbH
hereby confirms compliance with all relevant EC guidelines for the certification and safe operation of HTK trailers.
You can separately request an EC Declaration of Conformity from us.

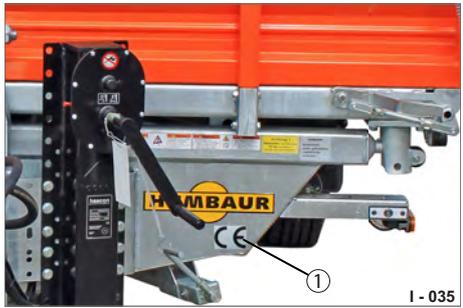


Fig. 57 EC declaration of conformity

- 1 CE label





Operation

NOTICE**Exceeding the permissible tilt angle**

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

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

Connections could be crushed or broken.

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



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

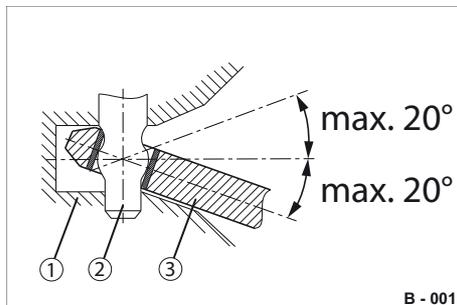


Fig. 1 Inclination angle of vertical transverse axis

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

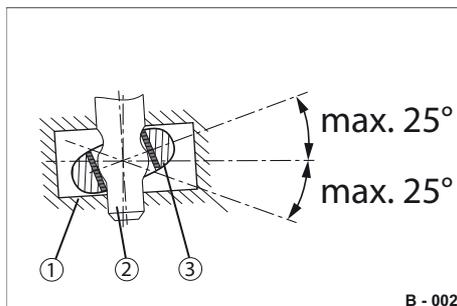


Fig. 2 Inclination angle of axial longitudinal axis

- 1 Pin coupling (catcher)
- 2 Vertical pin

3 Towing eye

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 rear folding supports are lowered and locked - they stabilise the trailer and relieve the axle.

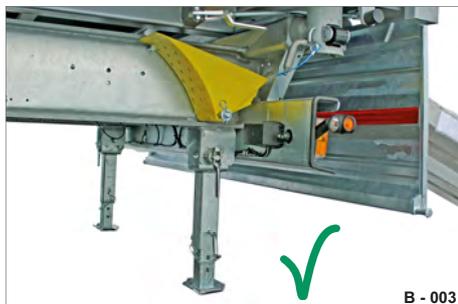


Fig. 3 Folding support folded down

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

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

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



B - 004

Fig. 4 Driving the trailer

 **WARNING**



Overloading ramp planks

The ramp planks can get deformed.

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

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



B - 036

Fig. 5 Ramp plank warning panel



The warning panels on the ramp planks must be observed and adhered to!



B - 037

Fig. 6 Ramp planks with securing hooks



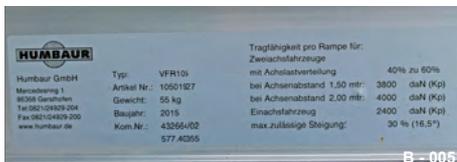
B - 037

Fig. 8 Ramp planks with securing hooks



B - 038

Fig. 10 Ramp planks with retaining pin



B - 005

Fig. 7 Ramp plank warning panel VFR105

Max. values/load bearing capacity

Max. ramp angle	30% (16.5°)
Single-axle vehicles	2400 daN (Kp)

Dual-axle vehicles:

Axle load distribution	40% to 60%
Distance between axles 1.5 m	3800 daN (Kp)
Distance between axles 2 m	4000 daN (Kp)



B - 057

Fig. 9 Ramp plank warning panel VFR120

Max. values/load bearing capacity

Max. ramp angle	30% (16.5°)
Single-axle vehicles	3200 daN (Kp)

Dual-axle vehicles:

Axle load distribution	40% to 60%
Distance between axles 1.5 m	4600 daN (Kp)
Distance between axles 2 m	5000 daN (Kp)



B - 035

Fig. 11 Ramp plank warning panel VFR-SO

Max. values/load bearing capacity

Max. ramp angle	30% (16.5°)
Single-axle vehicles	3830 daN (Kp)

Dual-axle vehicles:

Axle load distribution	40% to 60%
Distance between axles 1.5 m	5655 daN (Kp)
Distance between axles 2 m	6505 daN (Kp)

Loading and unloading vehicles



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

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

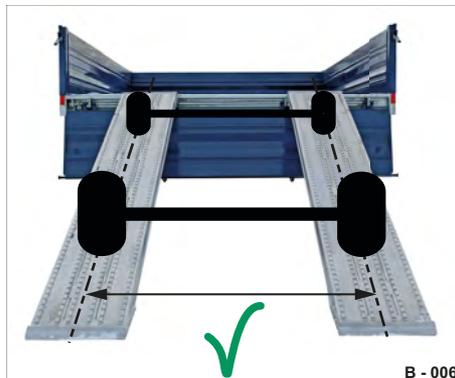


Fig. 12 Setting track width



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.

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.
- ▶ Lower the rear folding supports.
- ▶ Position the ramp planks to the necessary track width.
- ▶ Check that the ramp planks are secured.
- ▶ Slowly move the ramp planks.
- ▶ Drive the trailer straight ahead - not at an angle from the side.

Loading and unloading



Fig. 13 Entering loading platform

WARNING



Dirty/wet loading platform

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

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

WARNING



Entering loading platform

There is a risk of falling when climbing on/off the loading platform/the chassis, over mud guards, side guards, tube drawbar, chassis and toolboxes and ramp planks.



- ▶ Use .
- ▶ Only enter the loading platform through the areas provided for this purpose.
- ▶ Never walk on a tilted loading platform.
- ▶ Do not jump on or off the loading platform.
- ▶ Use a secure ladder to climb on and off the platform.

WARNING

Shifted loading goods

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

This can result in cutting and crushing injuries.



use.

WARNING



Loading/unloading with a crane

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



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



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

3 Loading and unloading

WARNING



Loading/load-securing elements on the loading platform

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

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

WARNING



Loading bulk material

Bulk material can press against the platform gates when loading. Unsecured platform gates can snap open - risk of striking/crushing!

- ▶ Check that all platform gates/structures are closed and secured before loading bulk material.



Fig. 14 Unloading trailer



Fig. 15 Loading trailer

WARNING



Unloading bulk material

The loading goods can press against the platform gates. The platform gates can snap open after the locks have been unlocked due to compression force - risk of striking!

- ▶ When unlocking the platform gates, stand to the side, not directly in front.
- ▶ If necessary, remove the pressing bulk material from the platform gate to be opened.

WARNING



Tilting while driving

The loading goods slide uncontrollably from the loading platform - risk of striking/crushing!

- ▶ Only execute tilting procedures when the trailer is at a standstill.



Fig. 16 Tilting loading platform/danger areas

Procedure:

- ▶ Also make sure that traffic is not blocked.
- ▶ If necessary, secure the surroundings.
- ▶ Before executing tilting procedures, check that the trailer is coupled (fixed) and connected to the hydraulics.
- ▶ Distribute the loading goods uniformly during the loading process.
- ▶ Never stand in the danger area of the bulk material when loading/unloading.
- ▶ Keep personnel away from the danger zone.
- ▶ Check that the tilting bearings are correctly set before the tilting process.
- ▶ Tilt the loading goods in a controlled manner.
- ▶ Never walk on the loading platform or chassis during the tilting process.



Observe the warning panel on trailer.

After loading and unloading



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

The load must be properly lashed/secured.

DANGER

Driving with tilted loading platform

The maximum permissible height of the vehicle can be exceeded - risk of collisions with underpasses/tunnels/power lines - risk of accident!

The trailer can be overloaded due to dynamic force impacts on the chassis - risk of breaking/accidents!

- ▶ Check that the loading platform is tilted back and lies flat on the chassis (tilting bearings) before departing.

WARNING

Driving with unsecured ramp planks/ open platform gates, flaps

This can result in injury.

- ▶ Check that the ramp planks are slowed in the plank bays and secured before departing.
- ▶ Check that all platform gates/flaps/toolboxes are closed and secured before departing.
- ▶ Check that the side guards are up and secured before departing.

WARNING

Driving with ramps not folded up and unsecured support equipment

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

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



Prerequisites for safe driving with trailer:

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

Permissible weights and load distribution

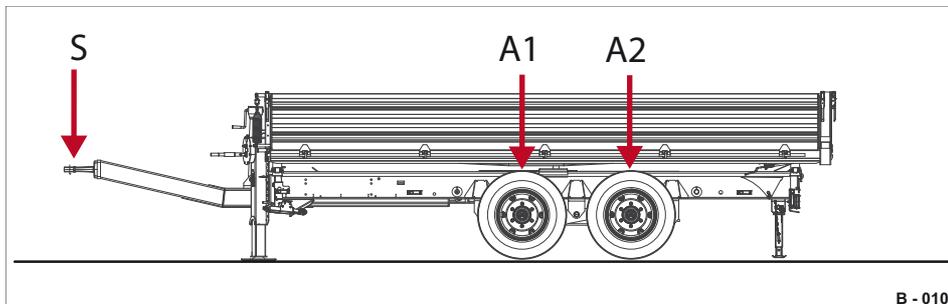


Fig. 17 Load definition

- 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 surface by distributing the load appropriately to the permissible extent.

Note the actual weight specifications on the nameplate (Fig. 18 - example: Loaded trailer at 11.9 t) on the trailer.



Fig. 18 Nameplate/weight specifications

- Total weight
- 0** Drawbar load (S)
- 1** Axle load - 1st axle
- 2** Axle load - 2nd axle
- T** Payload

3 Load distribution/max. weight

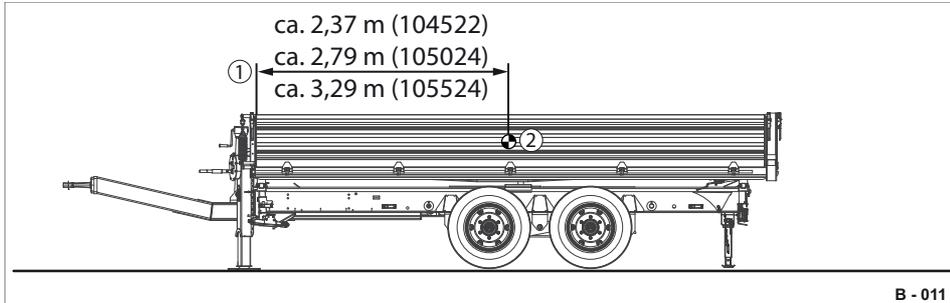


Fig. 19 Example 10 t - Load distribution plan

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

Loads	Max. weight
Permissible total weight	10,500 kg
Axle 1 (A1)	5,500 kg
Axle 2 (A2)	5,000 kg
Drawbar load (S)	500 kg
Unladen weight	3,000 kg
Payload	7,500 kg

 Observe vehicle documents/ nameplate!

Tab. 1 Example - HTK 10 t (104522)

Loads	Max. weight
Permissible total weight	10,500 kg
Axle 1 (A1)	5,500 kg
Axle 2 (A2)	5,000 kg
Drawbar load (S)	500 kg
Unladen weight	3,350 kg
Payload	7,150 kg

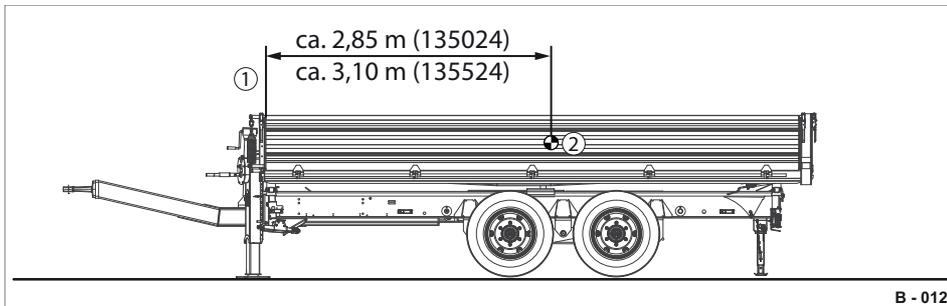
 Observe vehicle documents/ nameplate!

Tab. 2 Example - HTK 10 t (105024)

Loads	Max. weight
Permissible total weight	10,500 kg
Axle 1 (A1)	5,500 kg
Axle 2 (A2)	5,000 kg
Drawbar load (S)	500 kg
Unladen weight	3,400 kg
Payload	7,100 kg

 Observe vehicle documents/ nameplate!

Tab. 3 Example - HTK 10 t (105524)



B - 012

Fig. 20 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. weight
Permissible total weight	13,600 kg
Axle 1 (A1)	6,900 kg
Axle 2 (A2)	6,700 kg
Drawbar load (S)	1,000 kg
Unladen weight	4,000 kg
Payload	9,600 kg



Observe vehicle documents/
nameplate!

Loads	Max. weight
Permissible total weight	13,600 kg
Axle 1 (A1)	6,900 kg
Axle 2 (A2)	6,700 kg
Drawbar load (S)	1,000 kg
Unladen weight	4,150 kg
Payload	9,450 kg

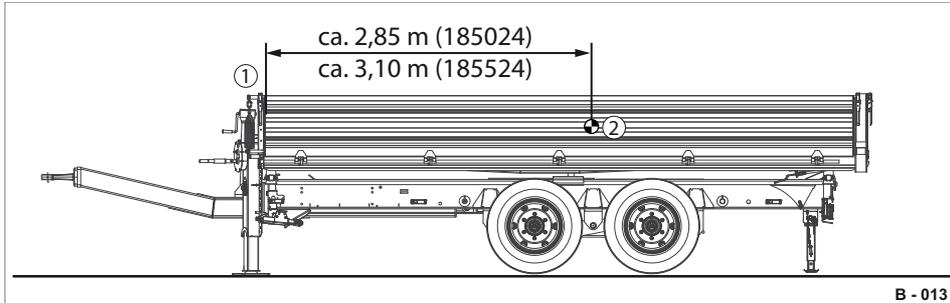


Observe vehicle documents/
nameplate!

Tab. 4 Example - HTK 13 t (135024)

Tab. 5 Example - HTK 13 t (135524)

3 Load distribution/max. weight



B - 013

Fig. 21 Example 18 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. weight
Permissible total weight	18,000 kg
Axle 1 (A1)	9,000 kg
Axle 2 (A2)	9,000 kg
Drawbar load(S)	1,000 kg
Unladen weight	4,300 (4,500) kg
Payload	13,700 (13,500) kg

 Observe vehicle documents/
nameplate!

Tab. 6 Example - HTK 18 t (185024) with pneumatic suspension & (parabolic springs)

Loads	Max. weight
Permissible total weight	18,000 kg
Axle 1 (A1)	9,000 kg
Axle 2 (A2)	9,000 kg
Drawbar load(S)	1,000 kg
Unladen weight	4,600 (4,750) kg
Payload	13,400 (13,250) kg

 Observe vehicle documents/
nameplate!

Tab. 7 Example - HTK 18 t (185524) with pneumatic suspension & (parabolic springs)

General

In order to connect the trailer to a towing machine, a towing eye is attached to the tube drawbar.

DANGER

Damaged connection element

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

- ▶ Check that the connection element is undamaged before departing.
- ▶ Have defective/damaged/deformed/worn connection elements repaired or replaced immediately.
- ▶ Monitor the connection elements regularly (see Maintenance section on page 269).

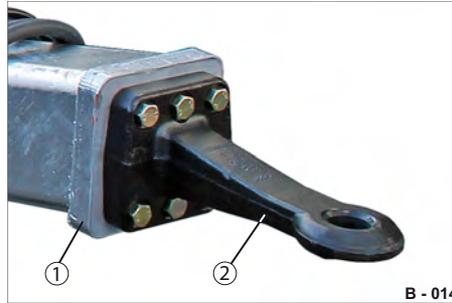


Fig. 22 Connection element

- 1 Tube drawbar
- 2 Towing eye

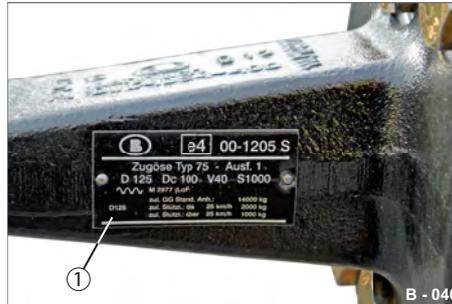


Fig. 23 Connection element

- 1 Nameplate

Possible Versions of towing eye

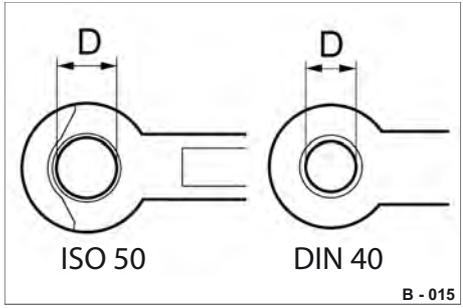


Fig. 24 Inner diameter of bushing

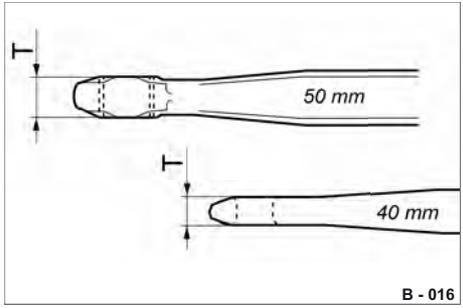


Fig. 25 Thickness of towing eye

- ▶ Do regular visual inspections of the towing eye (see page 269).
- ▶ Only allow a qualified specialist to carry out repair work on the towing eye.
- ▶ Never do welding or adjustment work yourself on the towing eye.
- ▶ Only replace a worn/deformed towing eye with an original spare part - see label (Fig. 26/2) on the towing eye.

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

Tab. 8 Towing eye dimensions

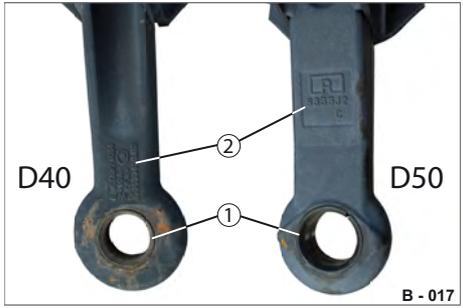


Fig. 26 Towing eyes with wear bushings
 1 Bushing (inter diameter D40 / D50)
 2 Towing eye identification

Rotatable towing eye (option)

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

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

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

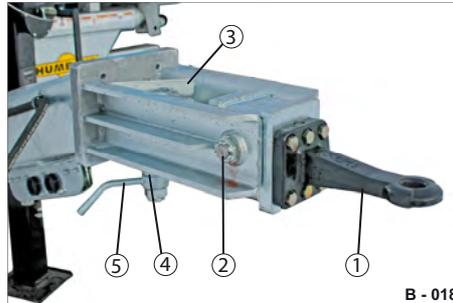


Fig. 27 Rotatable towing eye

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

WARNING

Towing eye secured incorrectly

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

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



Fig. 28 Turning the towing eye

WARNING

Using incorrect towing eye

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

- ▶ 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.



CAUTION



Swivelling towing eye

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



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

3 Connection element: Towing eye

Releasing

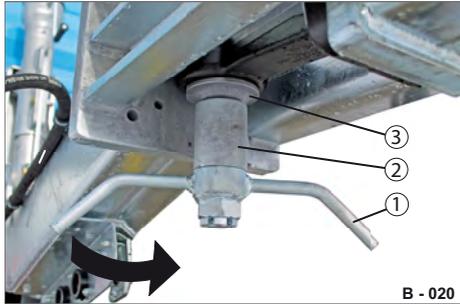


Fig. 29 Towing eye locked at bottom

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

- ▶ Unscrew the wing nut (Fig. 29/1) completely.
- ▶ Remove the spacer sleeve (Fig. 29/2) and the shield rest (Fig. 29/3).

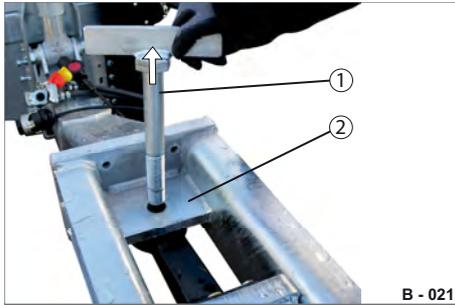


Fig. 30 Removing fastening bolt

- 1 Fastening bolt
- 2 Bracket

- ▶ Pull out the fastening bolt (Fig. 30/1).
- ▶ Remove the fastening elements.

Rotating

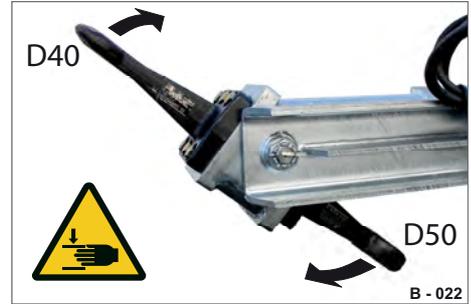


Fig. 31 Rotating the towing eye

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

Securing

Securing towing eye (D50)

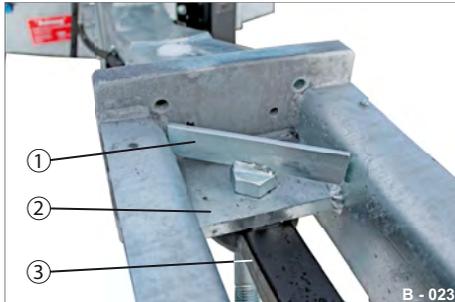


Fig. 32 Towing eye D50 locked at bottom

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

► Insert the fastening bolt (Fig. 32/1) from above through the bracket (Fig. 32/2) and the towing eye (Fig. 32/3).

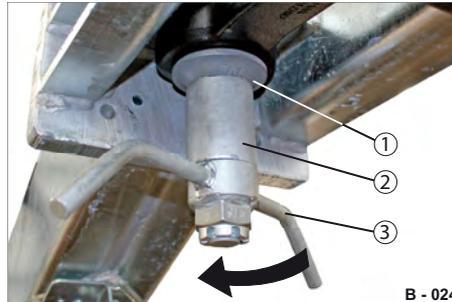


Fig. 33 Securing the towing eye D50 at bottom

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

► Engage the shim rest (Fig. 33/1) and the spacer (Fig. 33/2) from below on the fastening bolt of the towing eye (Fig. 32/3).

► Screw the wing nut (Fig. 33/3) onto the fastening bolt.

► Firmly tighten down the connection. The towing eye is friction-locked.



Fig. 34 Towing eye D50 secured



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

Securing towing eye (D40)

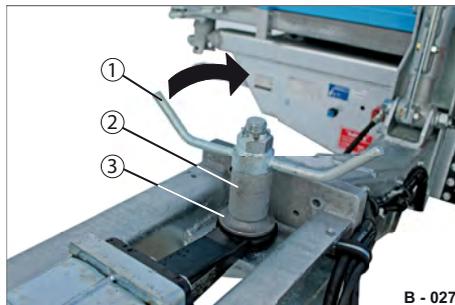


B - 026

Fig. 35 Towing eye D40 locked at top

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

► Insert the fastening bolt (Fig. 35/1) from below through the bracket (Fig. 35/2) and the towing eye (Fig. 35/3).



B - 027

Fig. 36 Securing towing eye (D40)

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

- Engage the shim rest (Fig. 36/3) and the spacer (Fig. 36/2) from above on the fastening bolt of the towing eye (Fig. 35/3).
- Screw the wing nut (Fig. 36/1) onto the fastening bolt.
- Firmly tighten down the connection. The towing eye is friction-locked.



B - 028

Fig. 37 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. 39 Incorrectly secured - view, bottom

- 1 Towing eye bushing
- 2 Fastening bolt/wing

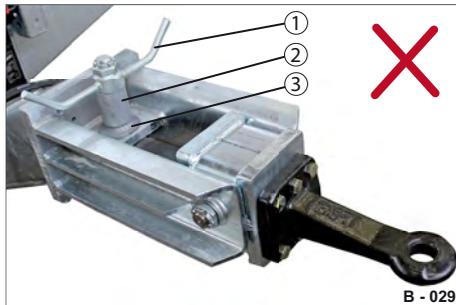


Fig. 38 Incorrectly secured - view, top

- 1 Wing nut
- 2 Spacer
- 3 Shim rest

The shim rest (Fig. 38/3) was not used as a rest for the towing eye, but only as a height compensator.

The towing eye bushing (Fig. 39/1) is pressed in by the tightening force. The fastening bolt (Fig. 39/2) 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 machine to the trailer and detaching the trailer from the towing vehicle are two of the most dangerous procedures when operating the trailer.

These procedures require particular caution and attention of the operator.



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



WARNING



Rolling towing vehicle

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



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



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



WARNING



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.

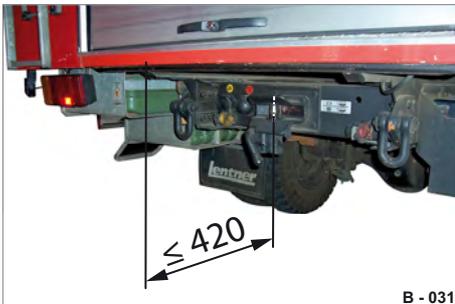
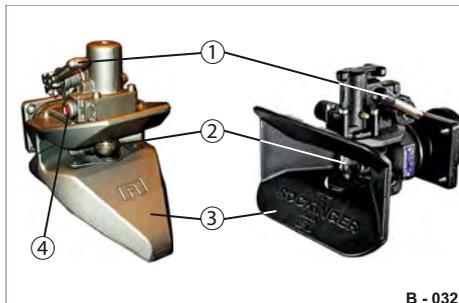


Fig. 40 Max. rear distance

Available versions of Pin couplings



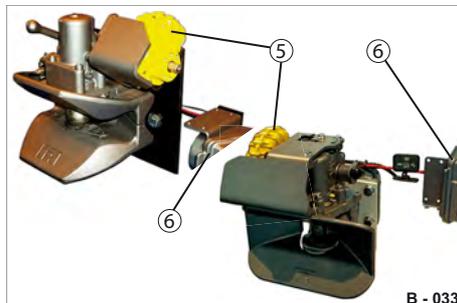
B - 032

Fig. 41 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 - 033

Fig. 42 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 - 034

Fig. 43 Pneumatic



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

Preparation



Fig. 44 Coupling 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 machine?

- Does the position of the drawgear on the trailer and the height of the pin coupling match so that the towing eye is horizontal on flat surfaces in the coupled state?

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

Coupling

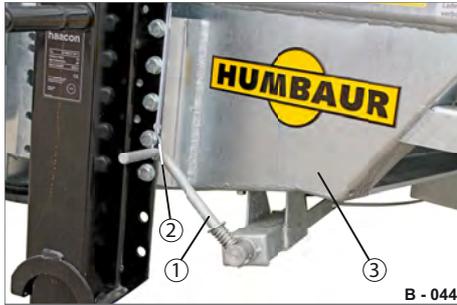


Fig. 45 Screw parking brake, manual

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

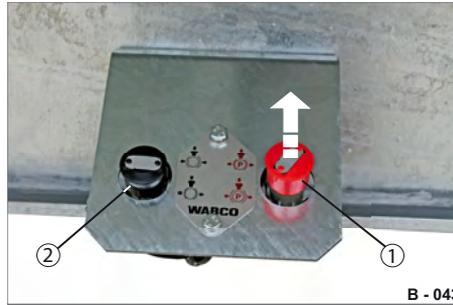


Fig. 46 Parking brake, pneumatic

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

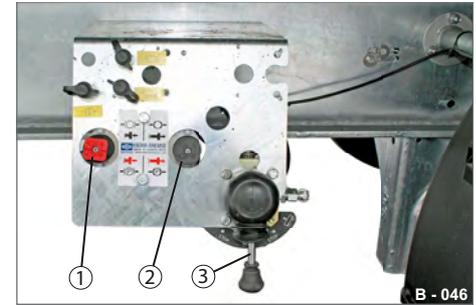


Fig. 47 Parking brake, raising/lowering system

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

Variant 1: Manually

- ▶ Release the hook (Fig. 45/2) from the crank (Fig. 45/1).
- ▶ Turn the crank anti-clockwise until the brake is applied.
This brakes the trailer.

Variant 2: Pneumatically

- ▶ Engage the spring-loaded parking brake (Fig. 46/1).
This brakes the trailer.

Variant 3: Pneumatically with raising/lowering system

- ▶ Check that the turning lever pneumatic suspension (Fig. 47/3) is in the neutral position.
The trailer is not raised or lowered.
- ▶ Engage the spring-loaded parking brake (Fig. 47/1).
This brakes the trailer.



Fig. 48 Wheel chocks positioned

- 1 Wheel chock

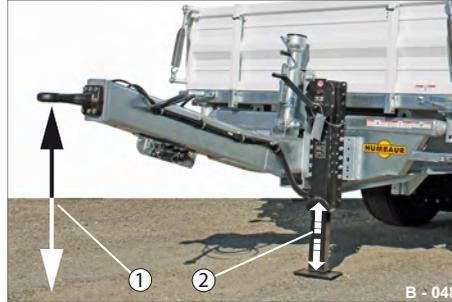


Fig. 49 Height equalisation/alignment

- 1 Tube drawbar - height
- 2 Spindle support

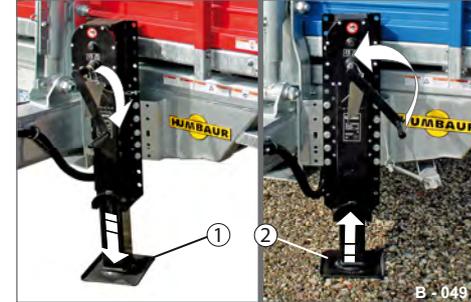


Fig. 50 Height equalisation/alignment

- 1 Spindle support base, cranking down
- 2 Spindle support base, cranking up

- ▶ If necessary, place the wheel chocks (Fig. 48/1) under the wheels of the fixed axle.

The trailer has an additional safeguard against rolling away.

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

- ▶ If necessary, correct the position of the tube drawbar (Fig. 49/1) using the spindle support (Fig. 49/2).

- ▶ Crank the base of the spindle support (Fig. 50/1) up or down (Fig. 50/2).
- ▶ The trailer should be as horizontal as possible.
See page **109** for spindle support operation.

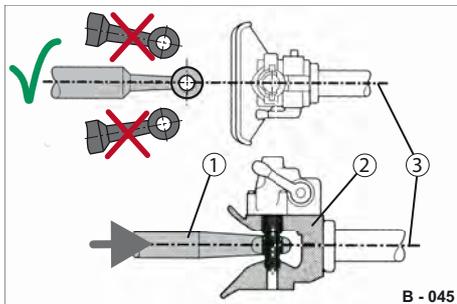


Fig. 51 Driving up

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

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

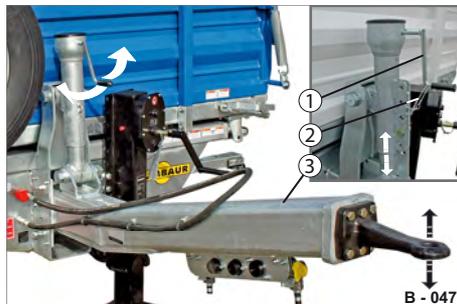


Fig. 52 Height adjustment of the draw pipe

- 1 Crank
- 2 Securing cable
- 3 Draw pipe

- ▶ Unclamp the securing cable (Fig. 52/2).
- ▶ Rotate the crank (Fig. 52/1) to the left or right and adjust the height of the draw pipe (Fig. 52/3) of the pin coupling (Fig. 54/2) to the towing vehicle.
- ▶ Position the crank downwards.
- ▶ Connect the securing cable.

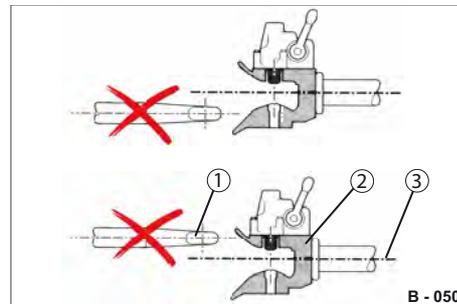
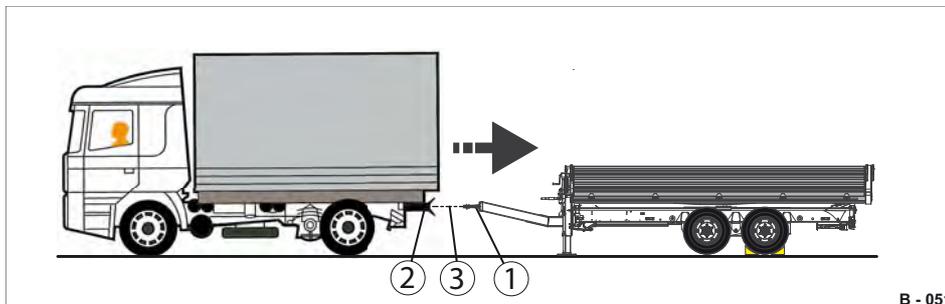


Fig. 53 Height adjustment false

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

- ▶ Set the height of the drawbar so that the towing eye meets at the middle axis (Fig. 53/3) or slightly on the lower flaps of the catcher.

Coupling process



B - 051

Fig. 54 Coupling

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

- ▶ Open the pin coupling (Fig. 54/2).
- ▶ Leave the danger area between the towing vehicle and trailer.
- ▶ Set the towing vehicle back so that the towing eye (Fig. 54/1) engages in the pin coupling.

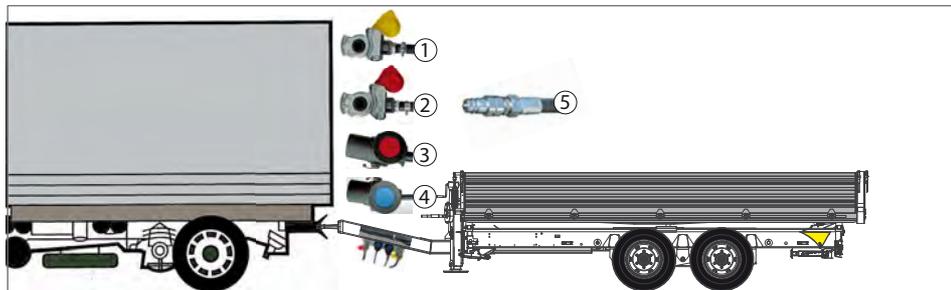
If the pin coupling does not engage:
You can correct the height using the height setting device.

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

If the coupling is not properly locked:

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

After coupling



B - 052

Fig. 55 Create connection

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

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

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

(see "Coupling" on page 81)

- If applicable, connect the hydraulic line to the towing vehicle.
- Raise the support equipment.
- Put the wheel chocks in their holders and secure them in position.
- Release the trailer parking brake.
- Do a departure check (see page 72).

Uncoupling

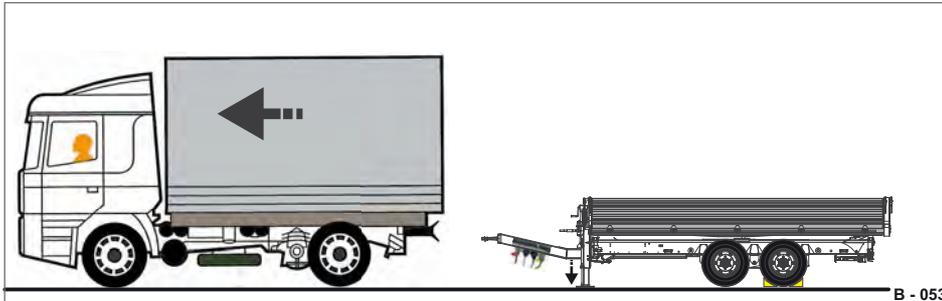
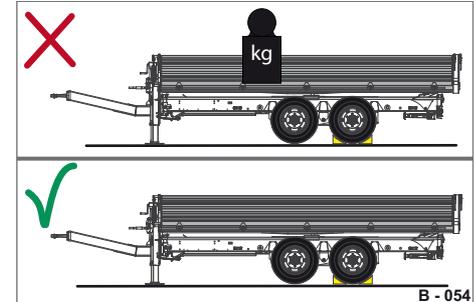


Fig. 56 Correctly coupling trailer



Procedure:

- ▶ Apply the trailer parking brake and the towing vehicle parking brake.
- ▶ Use wheel chocks to prevent the trailer from rolling.
- ▶ Extend the support foot of the spindle support to the ground or until the trailer is roughly level and the towing eye is slightly lifted from the towing coupling.
- ▶ Disconnect the lines from the towing vehicle, in this order:
 1. Supply line (red)
 2. Brake line (yellow)
 3. Lighting cable
 4. EBS/ABS cable
 5. If necessary, hydraulic line

(see "Coupling" on page 81)
- ▶ Plug the line heads into the respective parking socket or place the lines securely on the tube drawbar.
- ▶ Unlock and open the pin coupling on the towing vehicle (see page 64).
- ▶ Only drive the towing vehicle forward carefully once there is nobody in the danger area.
- ▶ Close the pin coupling.
- ▶ Do a check when parking (see page 73).

Departure check

- The trailer is properly coupled.
- Braking and supply line are connected.
- Electrical lines and & EBS cable are connected.
- Air suspension unit is located at driving level - with raising/lowering system.
- Working lights are switched off - if present.
- The loading platform is tilted back and secured in the tilting bearings.
- Hydraulic lines are disconnected from the towing vehicle and parked.
- Parking brake is released.
- Landing gear is up and secured.
- Folding supports at the rear are folded up and secured.
- Side guards are down and secured, if present.
- Platform gates/attachments/flaps/ ramp plank bays are closed and secured.
- The toolbox is closed and secured.
- Ramp planks are stowed and secured.
- Wheel chocks are secured in the holders.
- Night parking warning panels are closed.
- Ladders are folded up and secured - if present.
- Unused posts/lashing equipment are stowed away.
- Roller curtains, covering net, covering sheet are attached and secured - if present.
- Platform gate lifting springs are hung up and secured.
- Central locks are fastened.

Check when parking

- The trailer is properly uncoupled.
- Parking brake is activated.
- Wheel chocks are under the wheels.
- Landing gear is extended and secured.
- Brake and supply lines are disconnected and parked.
- Electrical lines and & EBS cable are disconnected and parked.
- The loading platform is tilted back and secured in the tilting bearings.
- Hydraulic line is disconnected and parked.
- Platform gates, attachments, flaps, are closed.
- Side posts/lashing equipment are stowed away.
- Toolbox is locked.
- Ramp planks are stowed and secured.
- Ramp plank bays are locked.
- Night parking warning panels are folded out, if necessary.

Circling and cornering



B - 055

Fig. 57 HTK while driving

Pay special attention to:

- Length of the vehicle team
- Speed
- Bending of the trailer to the towing vehicle when driving around tight curves (max. 90° possible)

Observe maximum height



B - 056

Fig. 58 Total height of the loaded trailer

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



Operation of the chassis

1

2

3

4

5

6

7

8



F - 001

Fig. 1 Operation of the chassis

- 1 Support equipment/spindle support
- 2 Screw parking brake, manual
- 3 Service brake with release valve
- 4 Underrun guard
- 5 Folding supports (at rear)
- 6 Wheel chocks
- 7 Door stay
- 8 Operating console:
Parking brake, pneumatic
Service brake release valve
- 9 Toolbox
- 10 Operating console:
Parking brake, pneumatic
Service brake release valve
Raising/lowering system
Test connections



F - 002

78 Operation of the chassis



General

The Humbaar GmbH braking system is an electronic braking system (EBS) and complies with 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 connector, 7-pin, 24 V, to ISO 7638-1996
- ABS/EBS connector, 5-pin, 24 V, to ISO 7638-1985

In addition, it is a requirement that the brake system be designed as a dual-line system with non-interchangeable compressed air connections.

The non-interchangeable coupling heads prevent incorrect connection of the brake and the supply lines.



Fig. 2 Plug-in connections, standard 24 V

- 1 7-pin EBS/ABS plug (ISO 7638)
- 2 15-pin electrical plug (ISO 12098)

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



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

⚠ WARNING

EBS connection cable not connected

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

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

► Connect the towing vehicle and the trailer using the EBS connection cable.

► Observe the label on trailer.

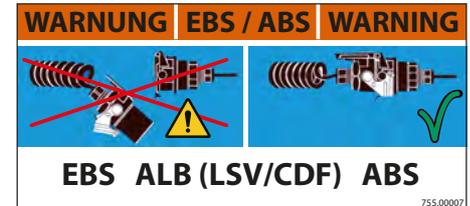


Fig. 3 Label on trailer - example



Observe the operating instructions of your towing vehicle.



DANGER



Incorrect order during coupling/uncoupling the lines

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

This releases the brake.

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

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



CAUTION



Coupling/uncoupling lines

You can crush your fingers in the connection points.

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



Fig. 4 Brake/supply line disconnected

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



Fig. 5 Duo-Matic quick-release coupling system

- 1 Coupling head with supply and brake

Duo-Matic quick-release coupling system as an option

Coupling/uncoupling lines

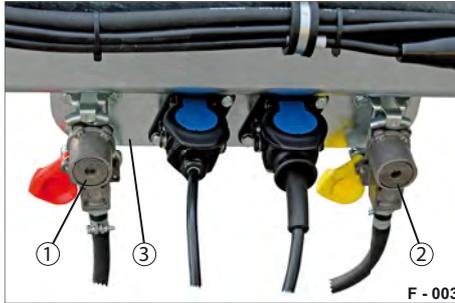


Fig. 6 Connections parked

- 1 Supply line (red)
 - 2 Brake line (yellow)
 - 3 Park console for lines
- ▶ Unscrew the coupling heads out of the park holders of the park console (Fig. 6/3).

Coupling



Fig. 7 Coupling

- 1 "Brake" coupling head (yellow)
 - 2 "Supply" coupling head (red)
- ▶ Before coupling, check that the connections and coupling heads are clean and undamaged.
 - ▶ Connect the "Brake" coupling head (Fig. 7/1).
 - ▶ Couple the "supply line" coupling head (Fig. 7/2).
 - ▶ Release the screw parking brake (see page xxx) or the spring-loaded parking brake (see page xxx).

Uncoupling

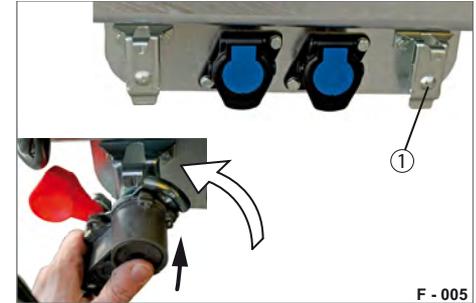


Fig. 8 Uncoupling

- 1 Parking sockets for coupling heads
- ▶ Disconnect "Supply" coupling head (Fig. 7/2).
 - ▶ Disconnect the "Brake" coupling head (Fig. 7/1).
The trailer is automatically braked with the service brake by venting the supply line during the uncoupling process.
 - ▶ Screw the coupling heads on the park holders (see Fig. 6).
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



Deactivating 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



Closing release valve when 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 if the compressed air tank is empty.



WARNING



Parking 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.

Service brake deactivation

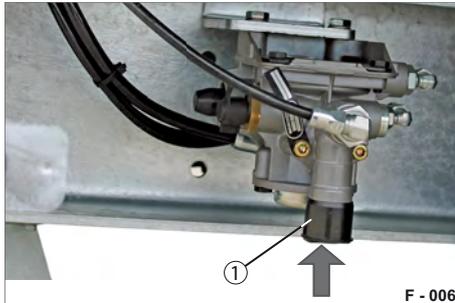


Fig. 9 Releasing service brake

- 1 Release valve, pressed in

- ▶ Press the release valve (Fig. 9/1).
The service brake releases.
Trailer is unbraked.
You can manoeuvre with the trailer.

Service brake activation

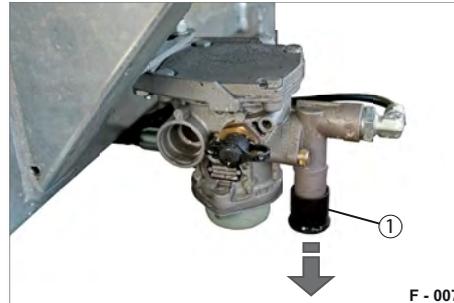


Fig. 10 Service brake in drive position

- 1 Release valve pulled out

- ▶ Pull the release valve (Fig. 10/1).
The service brake engages.
Trailer is braked.

Service brake (optional)

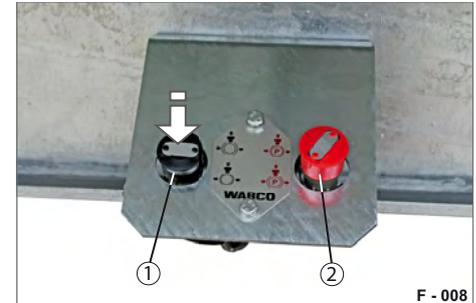


Fig. 11 Operating console

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

- ▶ Press the release valve (Fig. 11/1).
The service brake releases.
Trailer is unbraked.
You can manoeuvre with the trailer.
- ▶ Pull the release valve (Fig. 11/1).
The service brake engages.
When the supply line is coupled up again, the release valve is automatically reset to the operating position.

Operating the screw parking brake

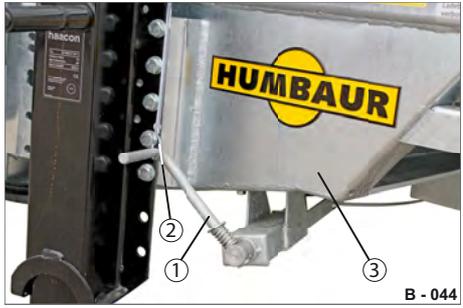


Fig. 12 Screw parking brake secured in drive position

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

The screw parking brake is operated 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!

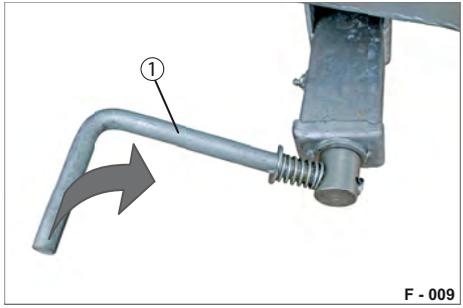


Fig. 13 Applying the screw parking brake

- 1 Crank

Application

- ▶ Release the hook (Fig. 12/2) from the crank (Fig. 13/1).
- ▶ Turn the crank anti-clockwise until the brake is applied.
This brakes the trailer.

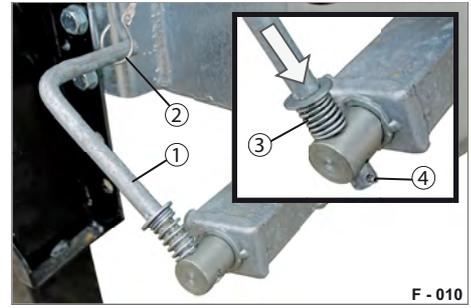


Fig. 14 Screw parking brake secured

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

Securing in park position

- ▶ Press the crank (Fig. 14/1) against the compression spring (Fig. 14/3).
- ▶ Turn the crank (Fig. 14/1) at the same time so 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.



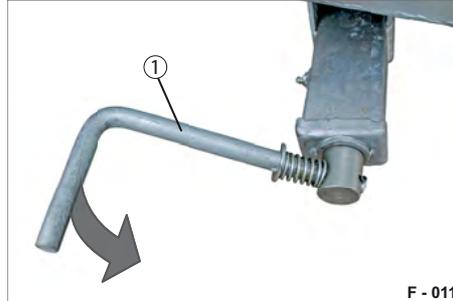


Fig. 15 Releasing the screw parking brake

1 Crank

Releasing

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

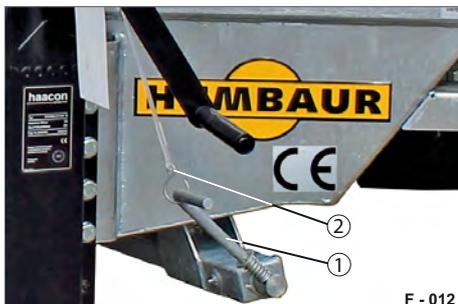


Fig. 16 Screw parking brake secured

- 1 Crank
- 2 Securing cable with hook

Securing in drive position

- ▶ Fit the hook of the securing cable (Fig. 16/2) over the crank.

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 (optional)

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

If spring-loaded parking brake is engaged and released several times, the pressure in the system sinks.

If the pressure falls under 5.2 bar, the spring-loaded parking brake can no longer be released using the operating element.

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



For information on the emergency release device, refer to the Maintenance section from page 295.

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.

"WABCO" System

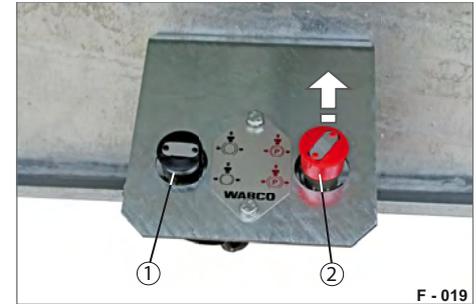


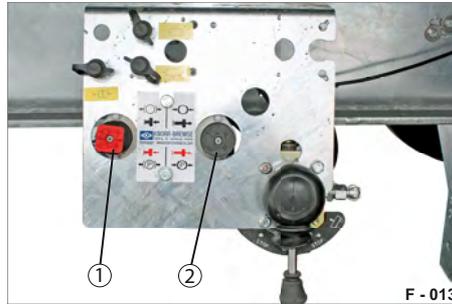
Fig. 18 Operating console without raising/lowering system

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

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

Releasing

- ▶ Engage the spring-loaded parking brake (Fig. 18/2).
The trailer is unbraked.

"KNORR" System**Fig. 19** Operating console

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

- ▶ Engage the spring-loaded parking brake (Fig. 19/1).
This brakes the trailer.

Releasing

- ▶ Engage the spring-loaded parking brake (Fig. 19/1).
The trailer is unbraked.

"WABCO" System

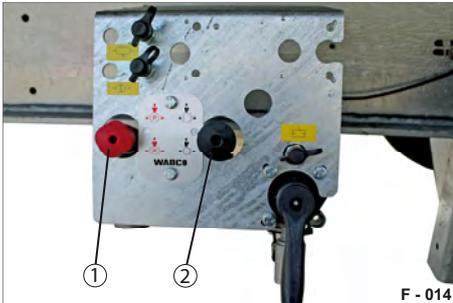


Fig. 20 Operating console

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

- ▶ Engage the spring-loaded parking brake (Fig. 20/1).
This brakes the trailer.

Releasing

- ▶ Engage the spring-loaded parking brake (Fig. 20/1).
The trailer is unbraked.

Operating quick-release coupling

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

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

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

Removing

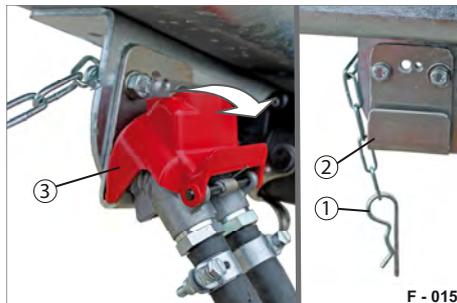


Fig. 21 Duo-Matic on park console

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

- ▶ Pull the spring pin (Fig. 21/1) out of the park console (Fig. 21/2).
- ▶ Press off the end cap (Fig. 21/3) and remove the Duo-Matic coupling from the park console.

Coupling

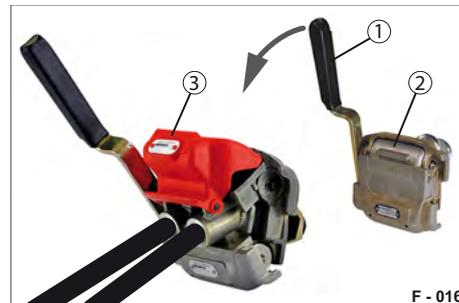


Fig. 22 Duo-Matic, coupled

- 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. 22/1) of the Duo-Matic quick-release coupling socket downwards and slide the Duo-Matic coupling head (Fig. 22/3) under the opened protective cover.
- ▶ Release the handle.
The connection is made.

Uncoupling

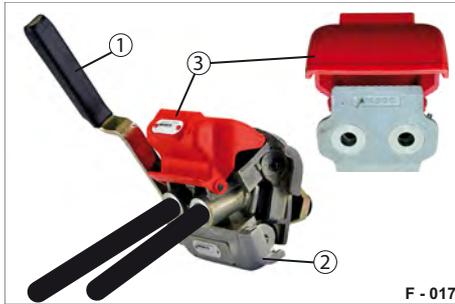


Fig. 23 Duo-Matic, uncoupled

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

- ▶ Pull the handle (Fig. 23/1) of the Duo-Matic quick-release coupling socket upwards and pull out the Duo-Matic coupling head (Fig. 23/3) 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

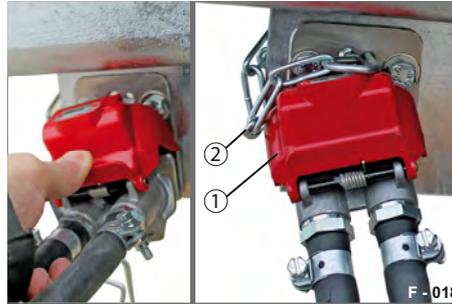


Fig. 24 Duo-Matic, parked

- 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. 24/2) 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.

WARNING



Activated emergency trigger device

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

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

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

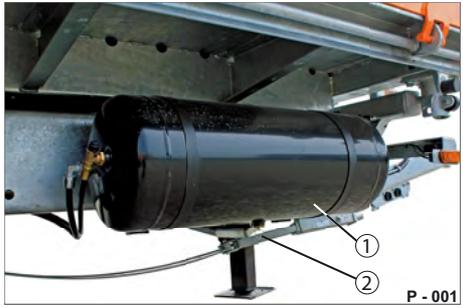


Fig. 25 Compressed air tank, side
1 Compressed air tank, front side
2 Drain valve

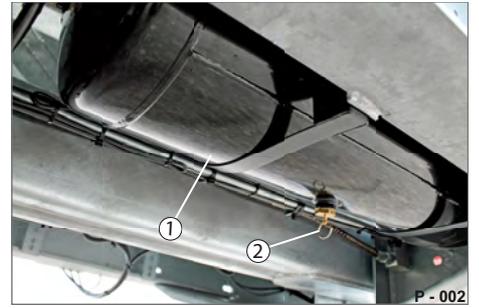


Fig. 26 Compressed air tank below frame
1 Compressed air tank, front centre
2 Drain valve

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.

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

In the 18 t version, two compressed air tanks are arranged next to each other.

Draining the compressed air tank

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

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

WARNING

Condensate in the compressed air system

The brake system can be destroyed or fall out.

- ▶ Regularly drain the compressed air system.

CAUTION

Escaping pressurised air

Actuating the drain valve causes a lot of noise.

This can cause tinnitus and hearing damage.

- ▶ Use .

CAUTION



Working under the trailer

You could hit your head.

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

- ▶ Use .

NOTICE

Compressed air system/valve freezing

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

- ▶ Use antifreeze.



P - 003

Fig. 27 Compressed air tank

1 Operating pin

- ▶ Push in the operating pin (Fig. 27/1) or push it to the side. Accumulated condensate is forced out of the tank by the pressure.
- ▶ Release the operating pin (Fig. 27/1) when no more condensate comes out. The drain valve closes automatically.
- ▶ Repeat the work steps for all drainage valves.

General

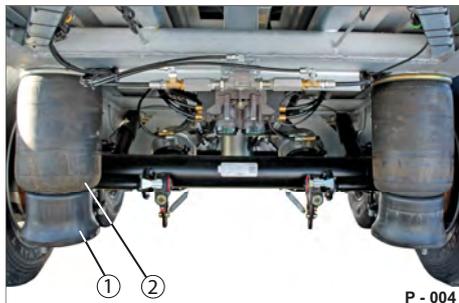


Fig. 28 Pneumatic suspension

- 1 Air bellows
- 2 Air bellows

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

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

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

94 Operation of the chassis

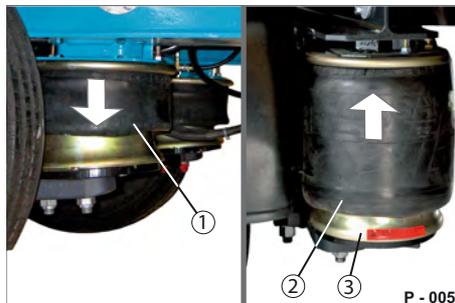


Fig. 29 Air bellows filled/vented

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



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

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



WARNING



Actuating the raising/lowering valve of a braked trailer

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



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



Fig. 30 Chassis in drive position



Fig. 31 Chassis, lowered



Fig. 32 Chassis, raised

"WABCO" raising/lowering valve

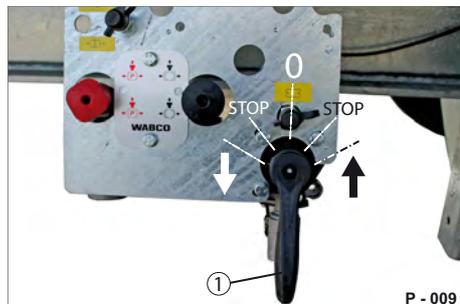


Fig. 33 Operating console

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

The raising/lowering valve works semi-automatically.

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

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

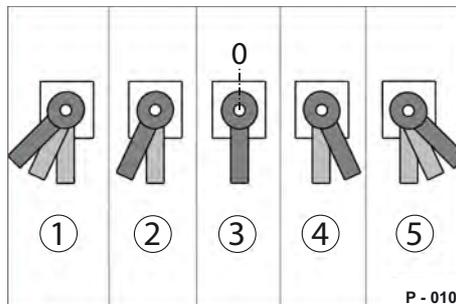


Fig. 34 Valve lever positions

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



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

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



WARNING

Impermissible vehicle height

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

This negatively affects the driving performance.

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

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

NOTICE

Impermissible vehicle height

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

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

Lifting trailer

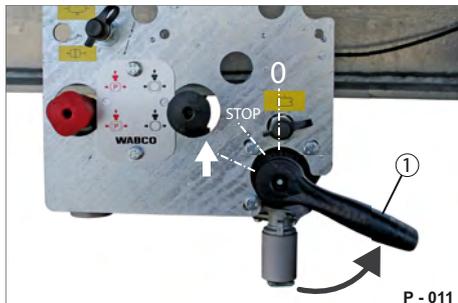


Fig. 35 Lifting trailer

1 Valve lever

- ▶ Turn the valve lever (Fig. 34/5) anti-clockwise two levels.
- ▶ When the height has been achieved, turn the valve lever back one stage, into the "Stop" position (Fig. 34/4).

Lowering the trailer

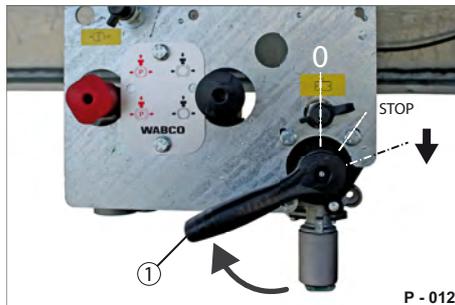


Fig. 36 Lowering the trailer (on block)

1 Valve lever

- ▶ Turn the valve lever clockwise (Fig. 34/1).
- ▶ When the height has been achieved, turn the valve lever back one stage, into the "Stop" position (Fig. 34/2).
- ▶ Check that the air bellows have rolled carefully over the piston.
If necessary, raise and lower the trailer again.

"KNORR" raising/lowering valve

Raising/lowering system for height equalisation

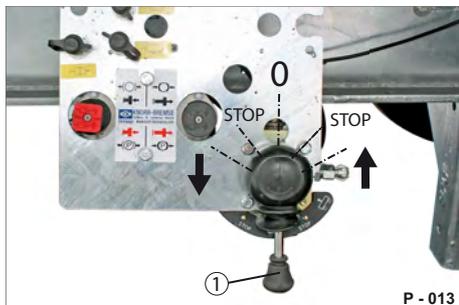


Fig. 37 Operating console

- 1 KNORR raising/lowering valve, valve lever

The raising/lowering valve works semi-automatically.

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

The KNORR system works by pulling the valve lever downwards out of drive position (0). The valve lever is released for actuation (see Fig. 39).

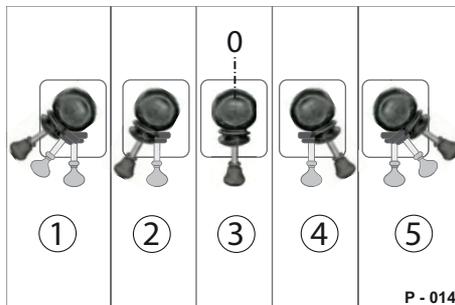


Fig. 38 Valve lever positions

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

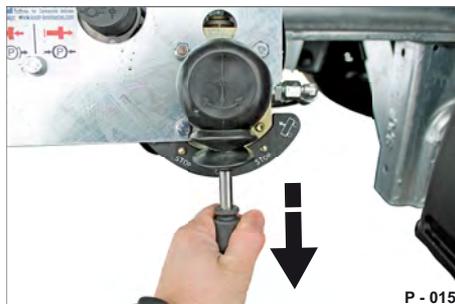


Fig. 39 Unlocking valve lever

WARNING

Impermissible vehicle height

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

This negatively affects the driving performance.

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

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

NOTICE

Impermissible vehicle height

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

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

Lifting trailer

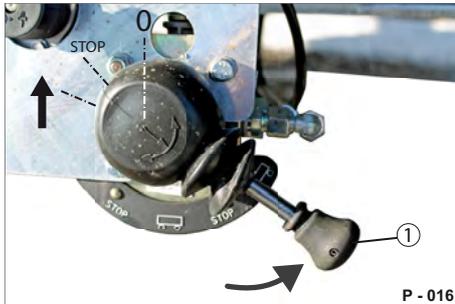


Fig. 40 Lifting trailer

- 1 Valve lever

- ▶ Turn the valve lever (Fig. 38/5) anti-clockwise two levels.
- ▶ When the height has been achieved, turn the valve lever back one stage, into the "Stop" position (Fig. 38/4).

Lowering the trailer

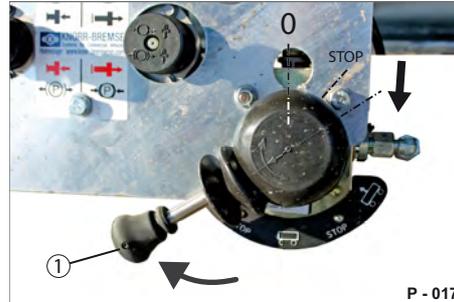


Fig. 41 Lowering the trailer (on block)

- 1 Valve lever

- ▶ Turn the valve lever clockwise (Fig. 38/1).
- ▶ When the height has been achieved, turn the valve lever back one stage, into the "Stop" position (Fig. 38/2).
- ▶ Check that the air bellows have rolled carefully over the piston.
If necessary, raise and lower the trailer again.

Trailer in drive position

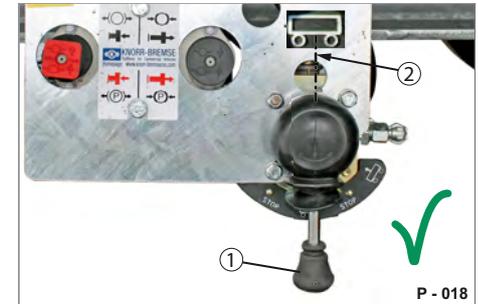


Fig. 42 Trailer in drive position

- 1 Valve lever pulled in
- 2 Drive position (centre position)

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

If the valve lever (Fig. 42/1) is in drive position (Fig. 42/2), it is pulled in and cannot be turned.

Hydraulic system

The trailer telescope cylinder for tilting the loading platform is hydraulically actuated.

By default, the hydraulic system is built as a 1-circuit system.

Optionally, the hydraulic system can be built as a 2-circuit system.

The hydraulic line through the towing vehicle supplies the trailer with the necessary pressure by default.

DANGER

Excessive operating pressure

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

Escaping oil can cause injury - risk of accident!

- ▶ Observe the maximum specifications for oil pressure and quantity - see sticker on 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 decoupling.

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

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



▶ Use

NOTICE

Using wrong/old hydraulic fluid

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

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

Teleskop-Zylinder / Hydraulik

Max. Nennlast (Zuladung)

Rated load = 16.000 kg

(= max. 200 bar)

= 17,0 l (dm³)

= -30 ... + 100 °C



620.00524

Fig. 43 Label on trailer

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



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 required oil quantity and must not exceed the maximum permissible operating pressure.

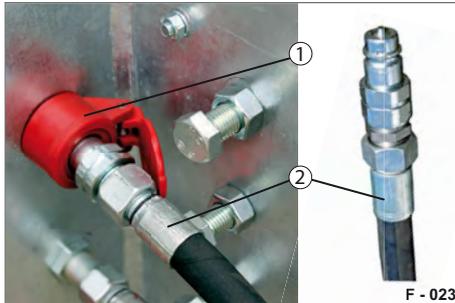


Fig. 44 Hydraulic line for towing vehicle

- 1 Parking socket
- 2 Line connection (SVK BG3)



Fig. 46 Hydraulics as 2-circuit system

- 1 "PRESSURE" hydraulic line
- 2 "RETURN" hydraulic line

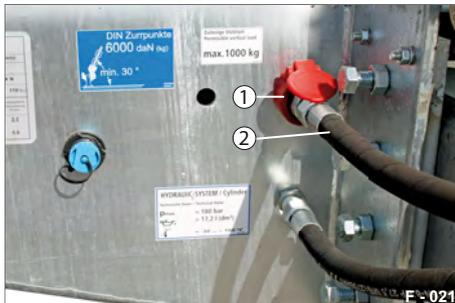


Fig. 45 Hydraulics as 1-circuit system

- 1 Parking socket
- 2 Line connection (SVK BG3)

Coupling

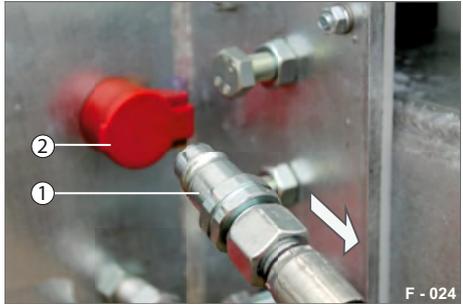


Fig. 47 Connecting hydraulic system

- 1 Line connection
- 2 Parking socket

- ▶ Make sure that hydraulic line connection is clean (Fig. 47/1).
- ▶ Clean it with a clean cloth, if necessary.
- ▶ If necessary, check the hydraulic fluid level of the towing vehicle.
- ▶ Attach the line connection to the connection socket of the towing vehicle.
Starting the towing vehicle builds up the pressure.

Tilting loading platform

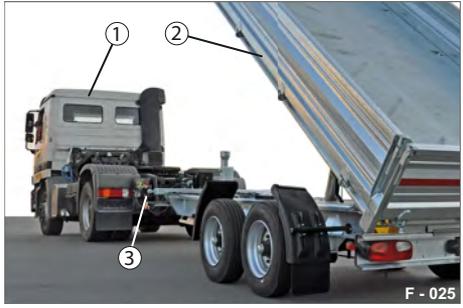


Fig. 48 Tilted loading platform

- 1 Towing vehicle
- 2 Loading platform
- 3 Hydraulic connection

- The loading platform is controlled from the operating point on the towing vehicle.
- ▶ Before tilting the loading platform, check that the trailer is coupled to the towing vehicle or secured against rolling away.
 - ▶ Make sure the tilting bearings are attached correctly/in the desired position and secured.

Uncoupling



Fig. 49 Parking hydraulic line

- ! The line must not be under pressure when uncoupling.
- ▶ Remove the line connection from the connection socket of the towing vehicle.
- ▶ Park the line connection in the parking socket on the front wall.

Securing loading platform

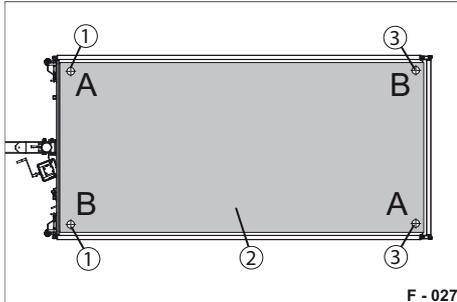


Fig. 50 Loading platform tilting bearing

- 1 Tilting bearing, front (rocking ball bearing)
- 2 Loading platform
- 3 Tilting bearing, rear (rocking ball bearing)

The loading platform is mounted on 4 corner points.

The corresponding tilting bearings must be operated to tilt the loading platform.

The loading platform can be tilted backwards, forwards or to either side (left or right).



The loading platform must lay flat on the vehicle chassis before repositioning the tilting bearings!

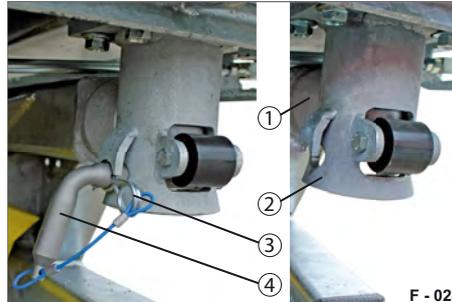


Fig. 51 Tilting bearing

- 1 Ball bearing, on chassis
- 2 Tilting bearing, released
- 3 Spring pin
- 4 Tilting bearing, secured with socket pin

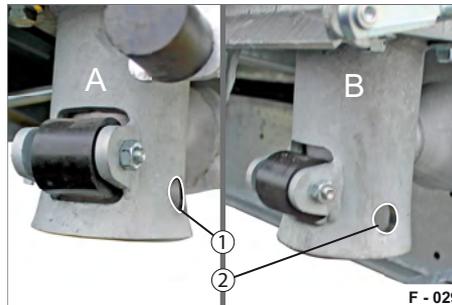


Fig. 52 Tilting bearing, variants A & B

- 1 Tilting bearing A (normal bore hole)
- 2 Tilting bearing B (smaller bore hole)

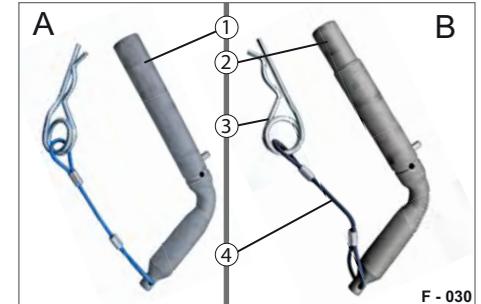


Fig. 53 Socket pin version

- 1 Socket pin variant A
- 2 Socket pin variant B, with indent
- 3 Spring pin
- 4 Securing cable (blue/black)



The loading platform must never be secured diagonally in tilting bearings!

Only original socket pins may be used for securing purposes.

The socket pins are available in two different versions. The tilting bearings have two different bore holes (tilting

Operating loading platform (tilting forward/back)

bearings A & B).

This rules out diagonal securing of the loading platform.

Securing tilting bearings

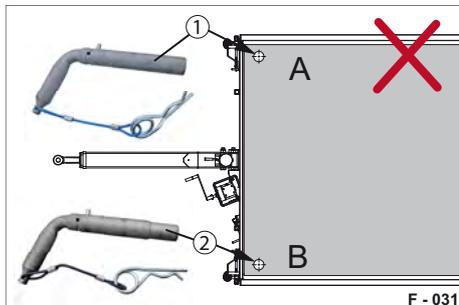


Fig. 54 Socket pins only inserted in front

- 1 Socket pin variant A
- 2 Socket pin variant B, with indent

! WARNING



Tilting loading platform forwards

The load slides forwards. The loading platform/platform gate/ chassis deform - risk of striking/ crushing!

- ▶ Do not tilt the loading platform forwards - both socket pins must not be attached in the front.

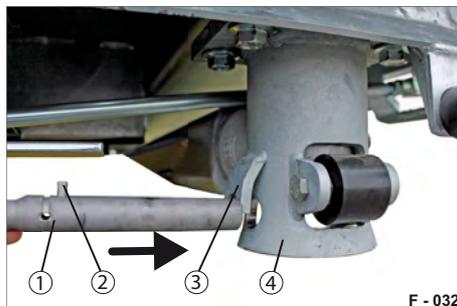


Fig. 55 Inserting socket pins

- 1 Socket pin

- 2 Pin
- 3 Safety latch
- 4 Tilting bearing shell
- 5 Spring pin

Inserting

- ▶ Insert the socket pin (Fig. 55/1) up to the limit position.
- ▶ Turn and insert the socket pin until the pin (Fig. 55/2) engages behind the safety latch (Fig. 56/3).

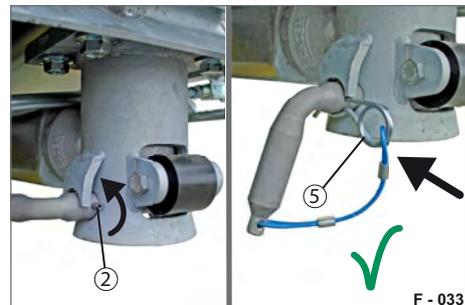


Fig. 56 Socket pin secured

Securing

- ▶ Stick the spring pin (Fig. 56/5) through the bore hole in the socket pin.
The socket pin is secured against falling.

Unlocking

- ▶ Remove the spring pin (Fig. 56/5).
- ▶ Turn the socket pin (Fig. 55/1) so that the pin (Fig. 55/2) comes out of the safety latch (Fig. 56/3).
- ▶ Completely remove the socket pin.

Operating loading platform (tilting forward/back)

Marking out for tilting backwards

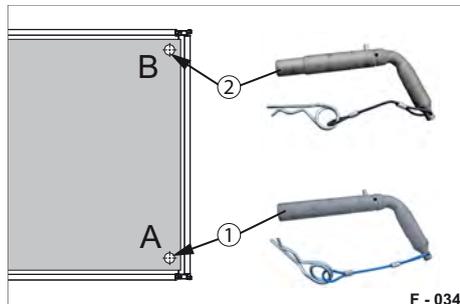


Fig. 57 Socket pin at rear inserted

- 1 Socket pin A
- 2 Socket pin B, with indent



Fig. 58 Tilting loading platform backwards

- 1 Socket pin A, inserted
- 2 Socket pin B, inserted
- 3 Loading bridge raised



Fig. 59 Loading platform completely tilted

- 1 Loading platform completely raised
- 2 Rear platform gate, swinging

- ▶ Insert and secure the socket pin (Fig. 57/1 & Fig. 57/2) in the rear tilting bearings.

The front tilting bearings are released.



Observe and take all safety precautions for loading and unloading the trailer.

See Operation section from page 47.

- ▶ The loading platform (Fig. 59/1) can be tipped backwards using the hydraulic system (see page 100).

- ▶ Unlock or open the rear platform gate (Fig. 59/2).

Marking out for tilting sideways



Fig. 60 Socket pins inserted in left direction of travel

- 1 Socket pin A
- 2 Socket pin B, with indent

► Insert and secure the socket pin (Fig. 60/1 & Fig. 60/2) on the left side of the trailer.

The tilting bearings on the right side of the trailer are released.



Fig. 61 Loading platform tilted to the side

- 1 Socket pin A, inserted
- 2 Socket pin B, inserted
- 3 Loading bridge raised



Observe and take all safety precautions for loading and unloading the trailer.

See Operation section from page 47.

- Fold down the respective side platform gate.
- The loading platform can be tipped to the side using the hydraulic system (see page 100).



Fig. 62 Socket pins inserted in right direction of travel

- 1 Socket pin A
- 2 Socket pin B, with indent

► Insert and secure the socket pin (Fig. 62/1 & Fig. 62/2) on the right side of the trailer.

The tilting bearings on the left side of the trailer are released.

Operating folding supports

 **WARNING**

 **Sinking support feet**
 The support legs can sink into soft /sagging ground.
 The trailer can tip over - risk of crushing!

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

 **WARNING**

 **Driving with retracted folding supports**

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

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

 **WARNING**

 **Loading/unloading without folding supports retracted**
 Loading/unloading without folded down support feet can lead to loss of stability.
 The trailer can tip over - risk of crushing!

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

 **CAUTION**

 **Working under the trailer**
 You could hit your head.

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

 **CAUTION**

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

- ▶ Use the folding supports carefully and in a controller manner - do not let them fall.
- ▶ Use  .
- ▶  Keep your feet out of the crushing zone when folding down the folding supports.
- ▶ Only operate the folding supports when the trailer is at a standstill.

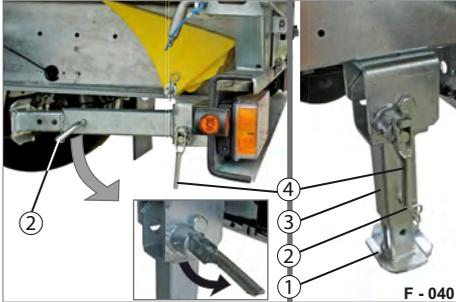


Fig. 63 Folding support folded out

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

► Pull the spring bar (Fig. 63/4) into a horizontal position.

The folding support (Fig. 63/3) is unlocked and folds out.

► Release the spring bar (Fig. 63/4).

The spring bar locks automatically when the folding support is completely folded out.

► Check whether locking was successful.

Adjusting

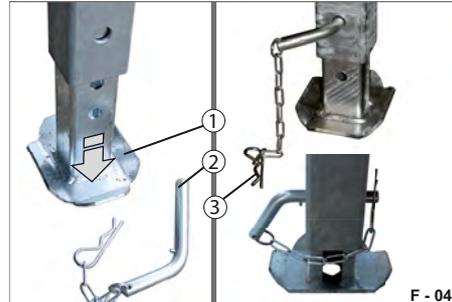


Fig. 64 Adjusting levelling foot

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

► Remove the spring pin (Fig. 64/3) from the socket pin (Fig. 64/2).

► Remove the socket pin (Fig. 64/2).

► Adjust the levelling foot (Fig. 64/1) downwards until it can lock into another bore hole.

► Insert the socket pin through the hole.

► Secure the socket pin with the spring pin.

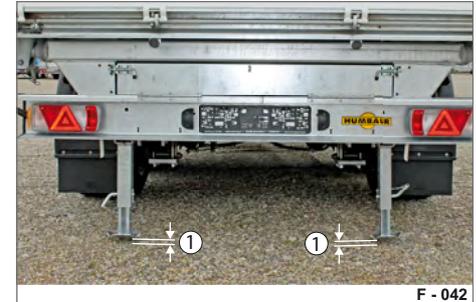


Fig. 65 Folding support folded down

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

► After folding down and, if necessary, adjusting the folding supports, check whether there is still an air gap (Fig. 65/1) between the ground and the levelling foot plate.

When loading/unloading the vehicle, the chassis will compress via the axle suspension and set the folding supports on the ground.

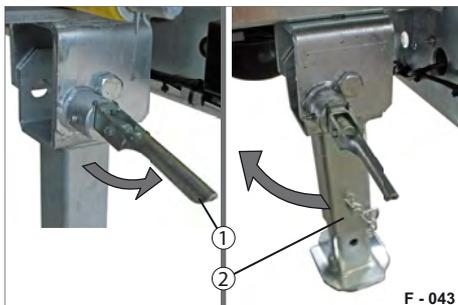


Fig. 66 Folding in folding support

- 1 Spring bars
- 2 Folding support

- ▶ Tilt the levelling foot (Fig. 64/1) up and secure it with the socket pin (Fig. 64/2) and spring pin (Fig. 64/3).
- ▶ Pull the spring bar (Fig. 66/1) into a horizontal position.
- ▶ Fold up the folding support (Fig. 66/2) (horizontally) and lock it with the spring bar (Fig. 66/1).
The spring bar snaps into place.

Checking position

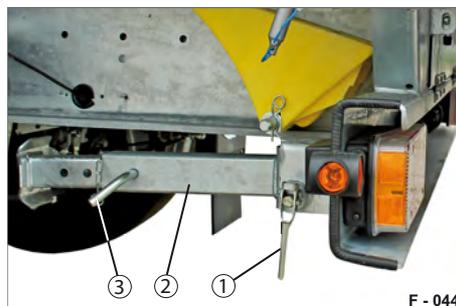


Fig. 67 Drive position

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

- ▶ Check that both folding supports are in drive position before departing (see Fig. 67).

In general, note that:

- The support equipment may only be operated with the crank handle.
- The support feet of the support equipment must be moved downwards until they touch the ground.
- When cleaning with a high-pressure cleaner, avoid spraying water directly on the transmission of the support equipment.



Read the operating instructions provided by the manufacturer.



WARNING



Lowering the support equipment

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



Keep the danger area around the support equipment free.



Fig. 68 Support foot stabilised

1 Stable/firm ground



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. 69 Driving with lowered support foot

1 Support foot down



WARNING

Driving with lowered support feet

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

- ▶ Check that the support equipment is completely raised before departing.
- ▶ Check before driving that the crank handle is secured with the securing cable.

Operating spindle support

Lowering

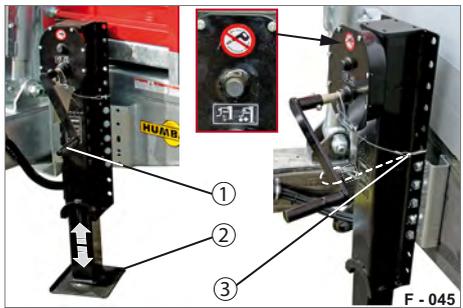


Fig. 70 Support foot extended

- 1 Crank handle
- 2 Support foot
- 3 Securing cable

- ▶ Release the securing cable (Fig. 70/3) from the crank handle (Fig. 70/1).
- ▶ Crank the support foot (Fig. 70/2) with the hand crank - in override - until it nearly makes contact with the ground.

Activating low gear

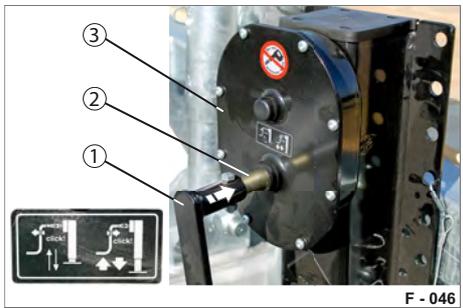


Fig. 71 Switching on low gear

- 1 Crank handle
- 2 Crankshaft
- 3 Transmission

- ▶ Push in the hand crank so that the gear detent engages in the transmission.
- ▶ Crank the support foot (Fig. 70/2) down to the ground.
- ▶ If necessary, even out uneven ground, e.g. by using a firm underlay.
- ▶ Leave the crankshaft (Fig. 71/2) in low gear (pressed in).

▶ Secure the crank handle with the securing cable (Fig. 72/3).

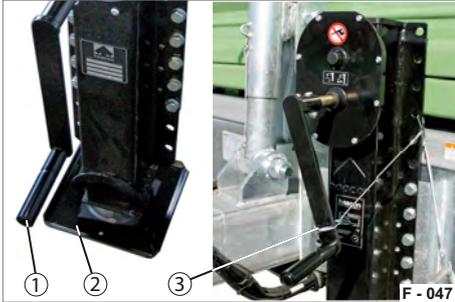


Fig. 72 Support foot retracted

- 1 Crank handle
- 2 Support foot
- 3 Securing cable

- ▶ Crank the support foot (Fig. 72/2) to the top in overdrive.
- ▶ Press the crankshaft (Fig. 71/2) into low gear.
- ▶ Wrap the securing cable (Fig. 72/3) around the crank handle and secure it with the hook.

The crank handle is secured against turning of its own accord while driving.

Operating hydraulic support

Optionally, the HTK three-way tipper can be equipped with a hydraulically-operated support.

The support is supplied with hydraulics by the towing vehicle.

WARNING



Operating support hydraulically

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



► Keep the danger area around the support equipment free.

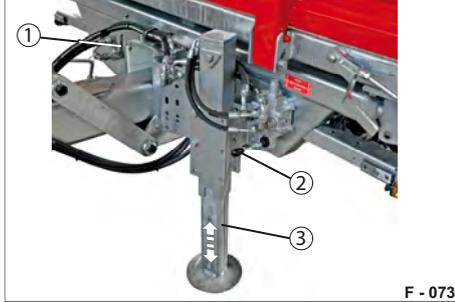


Fig. 73 Support extended

- 1 Switch lever
- 2 Operating lever
- 3 Support foot

Switching over hydraulic supply

► Shift the switch lever (Fig. 73/1 & Fig. 74/1) to the hydraulic supply of the support.

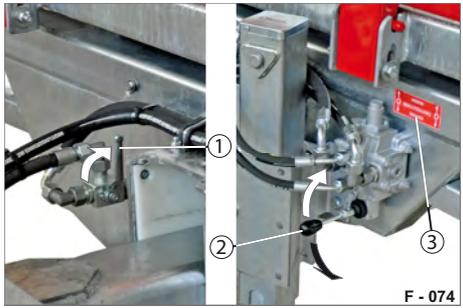


Fig. 74 Operating support

- 1 Switch lever
- 2 Operating lever
- 3 Sticker for operation

Operating support

► Turn the operating lever (Fig. 74/2) in the corresponding direction to extend or retract the support.

► Observe the sticker for operation (Fig. 74/3) on the front side.

Operating swivel support

Unlocking



Fig. 75 Swivel support/drive position

- 1 Locking lever, engaged

- ▶ Pull the locking lever (Fig. 75/1) towards yourself. The pin comes out of the lock bore hole.

The swivel support is released.

Rotating

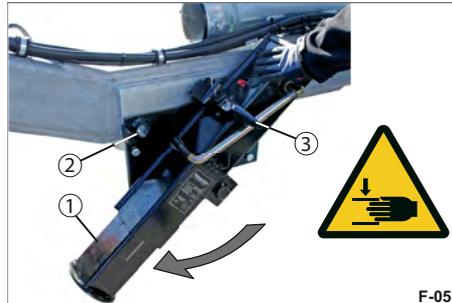


Fig. 76 Rotating swivel support

- 1 Swivel support
- 2 Lock bore hole
- 3 Locking lever, unlocked

- ▶ Turn the swivel support (Fig. 76/1) to the vertical support position.
- ▶ Rotate the locking lever (Fig. 76/3) downwards. The pin engages in the lock bore hole (Fig. 76/2). The swivel support is secured.

Unlocking crank handle



Fig. 77 Swivel support - support position

- 1 Retaining plate
- 2 Crank handle
- 3 Compression spring

- ▶ Pull the crank handle (Fig. 77/2) out of the retaining plate (Fig. 77/1).
- ▶ Press against the compression spring (Fig. 77/3) and rotate the crank handle so the grip faces forward. The crank handle is unlocked.

4 Swivel support (optional)

Lowering

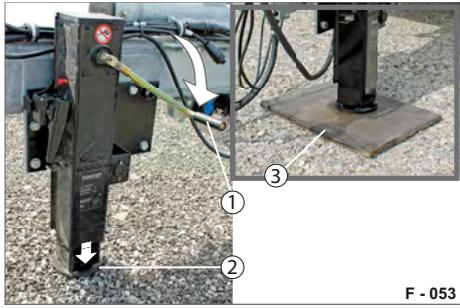


Fig. 78 Swivel support/support position

- 1 Crank handle
- 2 Support foot
- 3 Stable/firm ground

- ▶ Use the crank handle (Fig. 78/1) to crank the support foot (Fig. 78/2) all the way to the ground.
- ▶ Compensate for uneven ground, if applicable, so that the trailer is in a horizontal position. If necessary, use a stable underlay (Fig. 78/3).

Retracting/securing crank handle

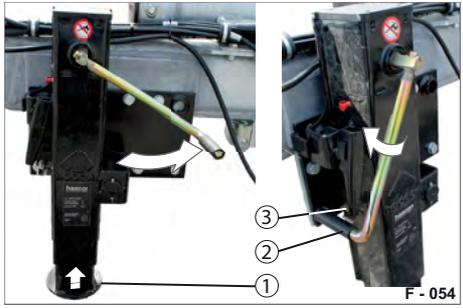


Fig. 79 Support foot retracted

- 1 Support foot
- 2 Crank handle
- 3 Retaining plate

- ▶ Use the crank handle (Fig. 79/2) to crank the support foot (Fig. 79/1), - not until the trailer has been coupled - all the way up.
- ▶ Press against the compression spring (Fig. 78/3) and rotate the crank handle so the grip faces the retaining plate (Fig. 79/3). The crank handle is secured.

Securing swivel support

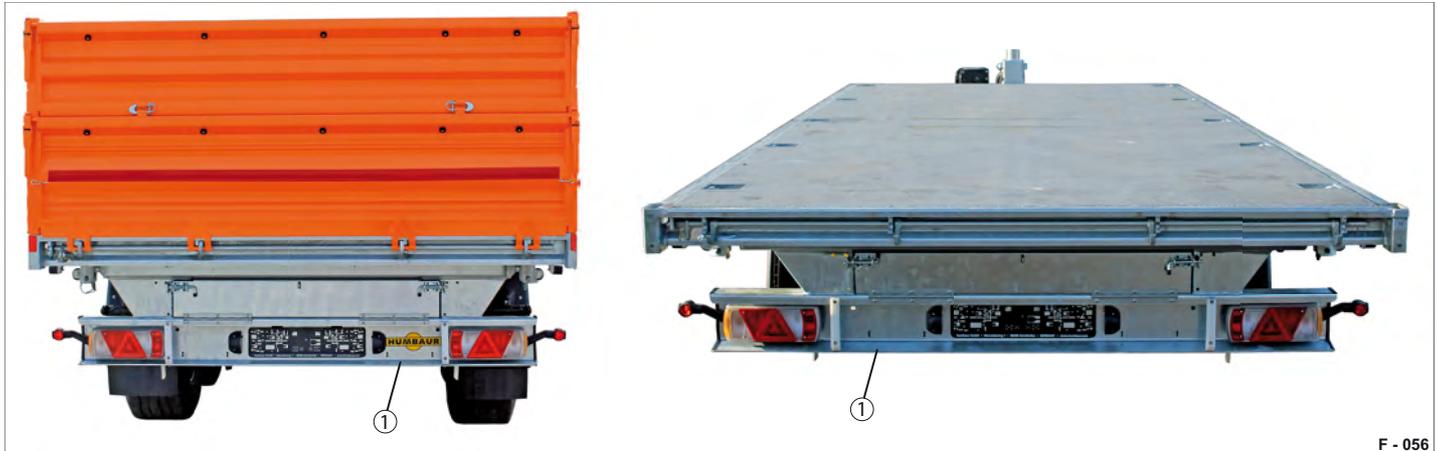


Fig. 80 Securing swivel support

- 1 Locking lever, disengaged
- 2 Swivel support

- ▶ Pull on the locking lever (Fig. 80/1). The pin comes out of the lock bore hole. The swivel support is released.
- ▶ Turn the swivel support to the horizontal drive position (see Fig. 75).
- ▶ Lock the swivel support in the lock bore hole (see Fig. 75) with the locking lever.

Underrun guard



F - 056

Fig. 81 Rear of the trailer**1** Underrun guard

The underrun guard (Fig. 81/1), a safety component, prevents vehicles from being pulled under the chassis in the event of an accident.



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

Using spare wheel



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

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

WARNING

Unsecured spare wheel

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

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

WARNING



Loading/removing spare wheel

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

- ▶ Use  ,  ,  .

- ▶  Wheels are heavy. Work in pairs.

WARNING



Working under the trailer

This can result in striking and crushing injuries.

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

- ▶  ,  ,  use.

- ▶ Avoid jerky movements.

**WARNING****Spare wheel on the loading platform**

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

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



- ▶ Wheels are heavy.
Work in pairs

Spare wheel transport on the front wall

The spare wheels can be transported as follows:

- On the loading platform, lashed down
- On the counterweights in the holder



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

Regularly check the air pressure of the spare wheel and whether it is secure (see Maintenance section from page **284**).



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

NOTICE**Over-tightening spare wheel nuts**

The wheel rim can get deformed.

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



Fig. 82 Spare wheel on the front wall

- 1 Spare wheel
- 2 Spare wheel holder
- 3 Spare wheel nuts



Fig. 83 Spare wheel on the front wall

Removing

- ▶ Unscrew all 4 spare wheel nuts (Fig. 82/3). Hold the spare wheel firmly in the process.
- ▶ With a second person helping, remove the spare wheel from the bracket (Fig. 82/2). If necessary, use an auxiliary aid for this purpose.
- ▶ Screw the 4 spare wheel nuts onto the bracket.

Fitting

- ▶ With a second person helping, place the spare wheel (Fig. 82/1) onto the bracket bolts (Fig. 82/2).
- ▶ Firmly screw on the spare wheel with 4 spare wheel nuts (Fig. 82/3) (max. 80 Nm).

Spare wheel transport on the loading platform

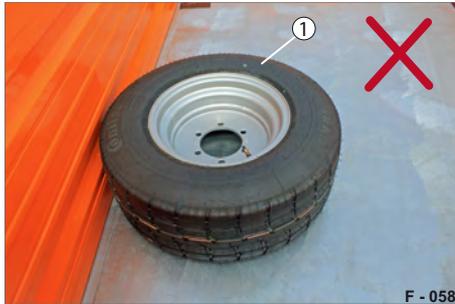


Fig. 84 Spare wheel, unsecured

- 1 Spare wheel. loose

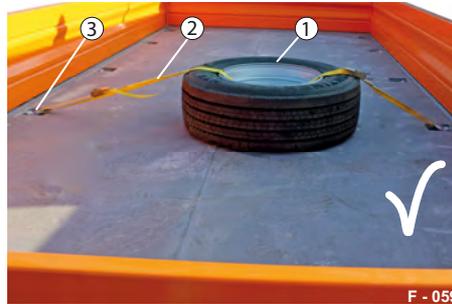


Fig. 85 Spare wheel secured

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



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

- ▶ Fasten the spare wheel (Fig. 85/1) on the loading platform to the lashing points (Fig. 85/3) with suitable lashing equipment (Fig. 85/2).

General

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

With the HTK three-way tipper, wheel chocks are attached at the rear of the trailer below the chassis by default.



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.



Wheel chocks must always be available.

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 accident!

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



WARNING

Unsecured wheel chocks

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

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



CAUTION



Operating wheel chocks under the chassis

You could hit your head on the chassis.

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

Using wheel chocks

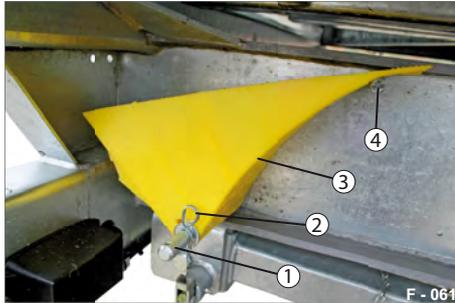


Fig. 86 Wheel chock, parked

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

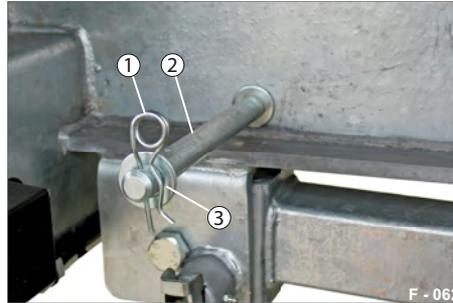


Fig. 87 Wheel chock holder

- 1 Spring pin
- 2 Retaining bolt
- 3 Washer



Fig. 88 Wheel chocks in place

- 1 Wheel chock

Removing the wheel chock

- ▶ Remove the spring pin (Fig. 86/2). Remove the washer.
- ▶ Remove the wheel chock (Fig. 86/2).

Securing safety elements

- ▶ Place the washer (Fig. 87/3) on the retaining bolt (Fig. 87/2).
- ▶ Stick the spring pin (Fig. 87/1) into the bore hole of the retaining bolt. The safety elements are secured against loss.

Underlying wheel chocks

- ▶ Lay the wheel chocks (Fig. 88/1) flat under the tyre. Note the direction of slope of the trailer, e.g. on a hillside.

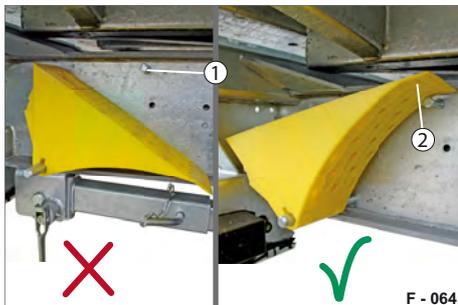


Fig. 89 Inserting wheel chock

- 1 Support screw
- 2 Wheel chock tip

Inserting wheel chock

- ▶ Fit the wheel chock onto the retaining bolt (Fig. 90/1).
- ▶ Lay the tip (Fig. 89/2) of the wheel chock on the support screw (Fig. 89/1).
The wheel chock is correctly positioned.



Fig. 90 Wheel chock, secured

- 1 Retaining bolt
- 2 Washer
- 3 Spring pin

Securing wheel chock

- ▶ Place the washer (Fig. 90/2) on the retaining bolt (Fig. 90/1).
- ▶ Stick the spring pin (Fig. 90/3) into the bore hole of the retaining bolt so the wheel chock sits firmly in place.
The wheel chock is protected against rotating and falling out

General



Fig. 91 Toolbox on the front wall

- 1 Bracket
- 2 Toolbox

A closable toolbox is available as an option.

The location depends on the other equipment on the trailer.

The toolbox can be attached to the left or right side of the chassis.

The toolbox is used as a replacement for the side guard if it is attached on the side.

The toolbox is not waterproof.

Operating toolbox

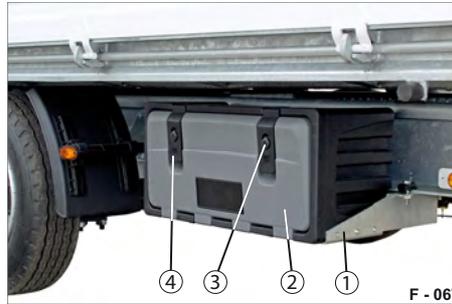


Fig. 92 Toolbox on chassis

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



Note the specified surface loading (see the manufacturer's specifications inside the lid, approx. 30 kg).

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



WARNING

Unlocked toolbox

Objects could fall during the journey. The lid can be torn off - risk of accident!

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

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

Setting up toolbox



Fig. 93 Setting up toolbox

- 1 Intermediate base plate
- 2 Lid

► If necessary, insert the intermediate base at the required height

Opening

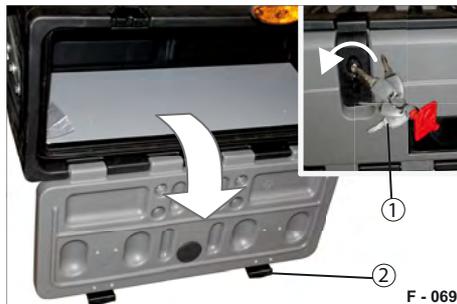


Fig. 94 Toolbox open

- 1 Key
- 2 Locks

- Remove the covers (Fig. 92/2) from the lock cylinders and close the lid (Fig. 92/1) with the key (Fig. 94/1).
- Pull out the locks (Fig. 94/2) from below and twist them downwards.
- Carefully swing the lid down.

Closing

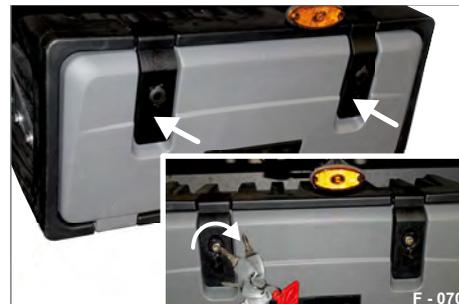


Fig. 95 Toolbox closed

- Swing the lid up.
- Clasp the locks (Fig. 94/2) from above and press them downwards. This lid is locked.
- Lock with the key (Fig. 94/1) and fasten the cover over the key cylinder (Fig. 92/2). The toolbox is closed and secured.

Parking warning panels

The parking warning panels can be installed at the front and rear of trailer in the direction of travel. These make it easier to see/identify the parked trailer.

WARNING

Driving with parking warning panels extended

Extended parking warning panels can cover the rear lights - risk of accident!

- ▶ Check that the parking warning panels are retracted before departing.

WARNING

Dirty parking warning panels

Parked trailers can only be seen poorly/ too late by other drivers - risk of accident!

- ▶ Clean the parking warning panels if they are very dirty.

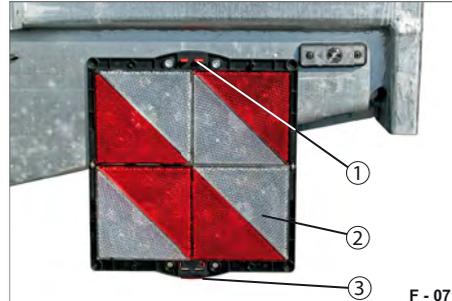


Fig. 96 Parking warning panel, plastic

- 1 Locking mechanism
- 2 Warning panel (lower half)
- 3 Pressure protection

NOTICE

Driving with parking warning panels extended

The parking warning panels clap while driving and could break off.

- ▶ Check that the parking warning panels are retracted and the locks are not damaged before departing.

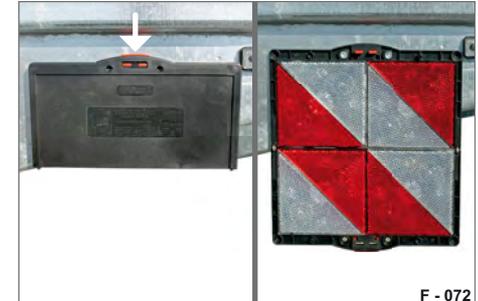


Fig. 97 Folded up/down

Folding down

- ▶ Press in the pressure protection (Fig. 96/3).
- ▶ Fold down the lower halves (Fig. 96/2) of the warning panels.

Folding up

- ▶ Fold up the lowered halves of the warning panels.

4 Warning panel (optional)

The pressure protection (Fig. 96/3) automatically engages in the locking mechanism (Fig. 96/1).

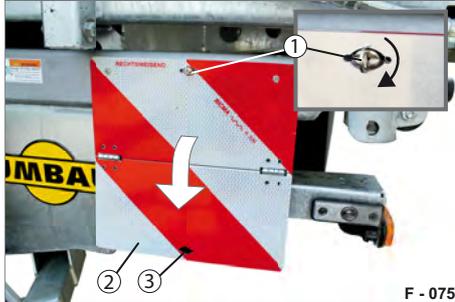


Fig. 98 Parking warning panel, aluminium plate

- 1 Screw cap
- 2 Warning panel (lower half)
- 3 Lock opening

Folding down

- ▶ Turn the screw cap (Fig. 98/1) into a horizontal position.
- ▶ Fold down the lower halves (Fig. 98/2) of the warning panels.

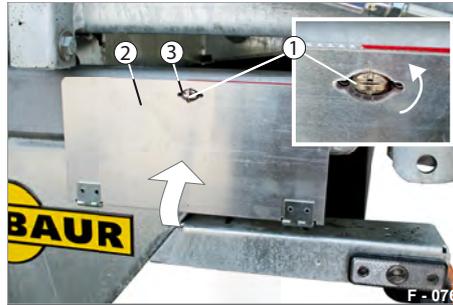


Fig. 99 Parking warning panel, aluminium plate

- 1 Screw cap, CLOSED
- 2 Warning panel (lower half)
- 3 Lock opening

Folding up

- ▶ Fold up the lowered halves (Fig. 99/2) of the warning panels.
- ▶ Turn the screw cap (Fig. 99/1) into a vertical position.

The parking warning panel is secured (in drive position).



Operation: body

1

2

3

4

5

6

7

8

The construction mainly consists of:

- Side platform gates
- Rear platform gate
- Front platform gate
- Ramp planks
- Lashing rings
- Platform gate attachment (optional)
- Steel grate attachment (optional)
- Support frame (optional)
- Steel grate wall (optional)
- Special structures (e.g. roller curtains)



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.



Fig. 1 Loading platform with snow/ice on top



WARNING



Objects on the body

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

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



WARNING



Unsecured/shifted loading

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

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

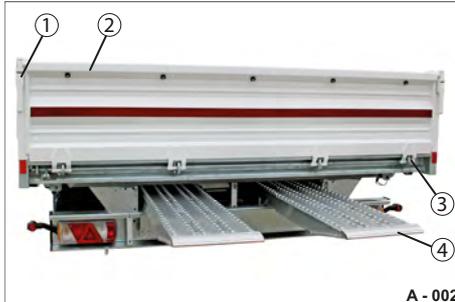


Fig. 2 Body - components

- 1 Locks
- 2 Rear platform gate, swinging / folding
- 3 Pendulum locks
- 4 Ramp planks, in plank bay

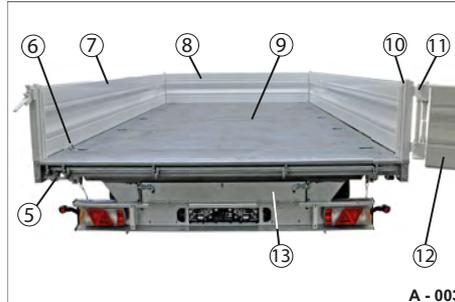


Fig. 3 Body - components

- 5 Central locking system
- 6 Lashing rings, retractable
- 7 Platform gate, r+l side, foldable
- 8 Platform gate, front side, fixed
- 9 Loading platform/loading floor, steel
- 10 Side post
- 11 Side gate
- 12 Rear platform gate as revolving door
- 13 Plank bay

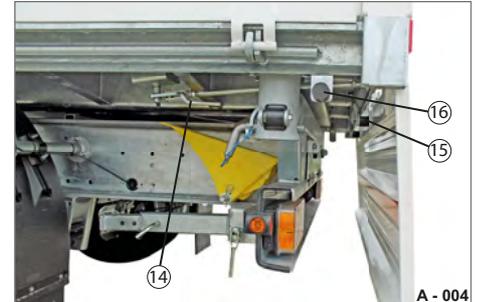


Fig. 4 Body - components

- 14 Pendulum lock for rear platform gate
- 15 Rubber limit position, for rear platform gate
- 16 Rubber limit position, for side platform gate

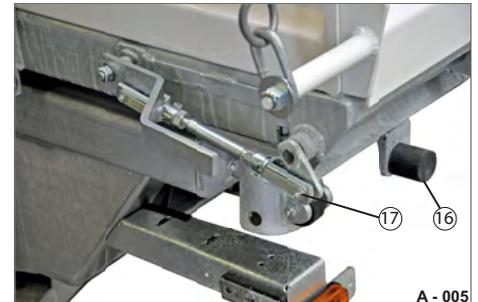


Fig. 5 Body - components

- 17 Central locking system, side platform gate

The optional structures are mainly used to secure the load.

These enable safe transport of loading goods as well as form-fit load securing.



Fig. 7 Body accessories
1 Support frame



Fig. 9 Body accessories
1 Steel grate attachment



Fig. 6 Body accessories
1 Front platform wall, foldable



Fig. 8 Body accessories
1 Steel grate wall



Fig. 10 Body accessories
1 Platform gate attachment

Operating platform gates

The platform gates make form-fit load securing possible.



Driving with unlocked or partially disassembled platform gates is illegal.



Platform gates are heavy!

The assembly/disassembly of platform gates must be done in pairs or with the help of a crane/forklift.



DANGER

Driving with platform gates open

This can result in injury.

The load can fall out - risk of accident!

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



WARNING

Driving with partially disassembled platform gates

The platform gates cannot be secured - risk of accident!

- ▶ Drive only with all platform gates attached or completely disassembled.



CAUTION



Operating platform gates

Fingers/hands can get crushed between the chassis/posts and in the area of the closing edges of the platform gates when opening/closing the platform gates.



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

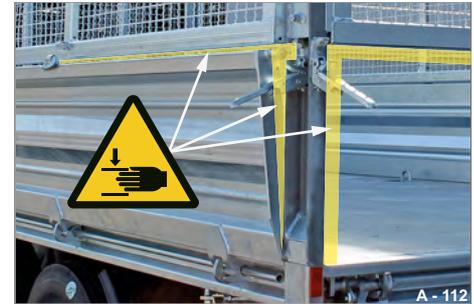


Fig. 11 Crushing points/closing edges



Fig. 12 Operating locks

CAUTION



Operating locks
Fingers/hands can get crushed when opening/closing locks.



- ▶ Use .
- ▶ Fully grip the locks if possible.
- ▶ Press the locks with your hand flat.

CAUTION



Platform gates under loading pressure
The platform gates can shoot up when opening - risk of striking!

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

CAUTION



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/unloading.
- ▶ Place the platform gates lengthwise - do not place them upright.

Front platform gate

The front platform gate enables form-fitting securing of the loading goods.

The side platform gates are secured on the front platform gate.

The front platform gate (Fig. 13/1) is fixed down on the chassis.

The front platform gate is plugged into two side posts (Fig. 13/2) and secured with a bolt connection (Fig. 13/3).



The front platform gate is heavy!

The front platform gate must be assembled/disassembled in pairs.

WARNING

Driving without front platform gate

The side platform gates cannot be secured. The loading goods can slide forward and off the loading platform - risk of accident!

- ▶ Do not drive without the front platform gate.
- ▶ Disassemble all platform gates.

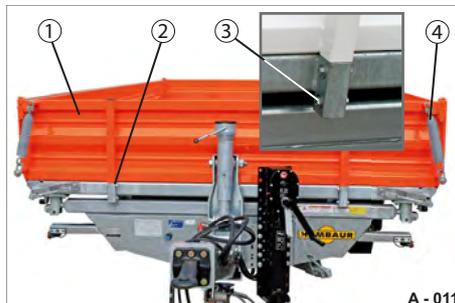


Fig. 13 Front platform gate mounted

- 1 Front platform gate
- 2 Post on chassis
- 3 Bolt connection
- 4 Platform gate lifting spring

Disassembly

- ▶ Release the bolt connections (Fig. 13/3) on the posts (Fig. 13/2).
- ▶ Loosen the platform gate lifting springs (Fig. 13/4).
- ▶ Unlock the locks of the side platform gate and fold them down.
- ▶ Lift the front platform gate (Fig. 13/1) out of the side posts.

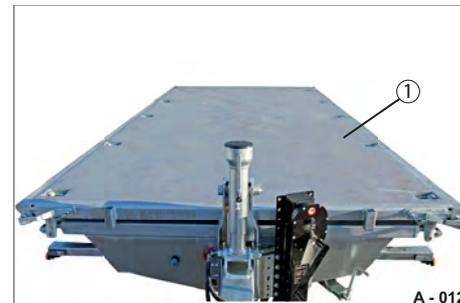


Fig. 14 Platform gates disassembled

- 1 Loading platform

Installation

- ▶ Insert the front platform gate (Fig. 13/1) into the posts (Fig. 13/2).
- ▶ Secure the front platform gate with the bolt connections (Fig. 13/3).
- ▶ Close the side platform gates with the locks.
- ▶ Attach the platform gate lifting springs (Fig. 13/4) and secure them with the safety splint pins.

Front platform wall, foldable

The front platform gate can come in a foldable version as an option.

The function can be used to through-load the loaded goods.

The height adjustment setting is attached horizontally on the central tube.

The front platform gate (Fig. 15/1) can be moved on the chassis.



The front platform gate is heavy!
The front platform gate must be operated in pairs.

WARNING

Driving with front platform gate folded down

The side platform gates cannot be secured. The loading goods can slide forward and off the loading platform! The swivel radius for the towing vehicle is limited - risk of accident!

- ▶ Do not drive with the front platform gate folded down.
- ▶ Check that the front platform gate is secured before departing.

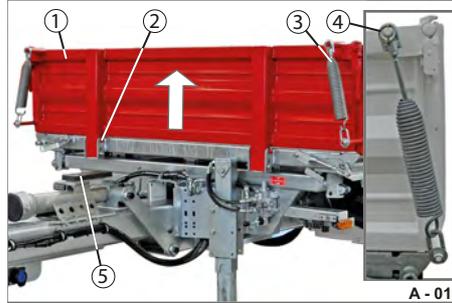


Fig. 15 Front platform gate, secured

- 1 Front platform gate
- 2 Side post on chassis as hinge
- 3 Platform gate lifting spring
- 4 Safety splint pin
- 5 Rest

Folding down

- ▶ Remove the safety splint pin (Fig. 15/4) and pull the platform gate lifting spring (Fig. 15/3) from the upper pin.
- ▶ Unfasten the locks of the side platform gate and fold them down.
- ▶ Lift the front platform gate (Fig. 15/1) into the posts (Fig. 15/2) and carefully fold them up to the front.

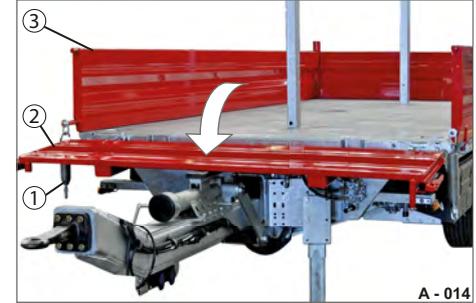


Fig. 16 Front platform gate folded down

- 1 Platform gate lifting spring, unhooked
- 2 Front platform gate, folded down
- 3 Side platform gates

Folding up/securing

- ▶ Turn the front platform gate (Fig. 16/2) into a vertical position and lift it up so the front platform gate engages in the posts (Fig. 15/2).
- ▶ Close the side platform gates (Fig. 16/3).
- ▶ Attach the platform gate lifting springs (Fig. 15/3) and secure them with the safety splint pins.

Side platform gates



Fig. 17 Side platform gate

- 1 Lock
- 2 Platform gate, steel
- 3 Pendulum locking points
- 4 Self-aligning bearings
- 5 Platform gate lifting spring
- 6 Central locking system

The side platform gates (Fig. 17/2) can be folded down or swung open.

The platform gates are secured at the top right and left with locks (Fig. 17/1).

Underneath, the platform gates are secured with the pendulum locking points (Fig. 17/3) via the central locking system (Fig. 17/6).

The platform gate lifting springs (Fig. 17/5) assist you in operating the platform gates.

- ▶ Only operate the side platform gates when the loading platform is horizontal.
- ▶ Unfasten the locks one after another.
- ▶ Hold the platform gate firmly in the process.

**WARNING****Completely unlocking platform gates**

If the upper locks and the central locking system were unlocked at the same time, the platform gate would fall - risk of striking/ crushing!

- ▶ Only unlock the upper locks or the lower central locking system - never unlock both systems!

Folding mode of side platform gates

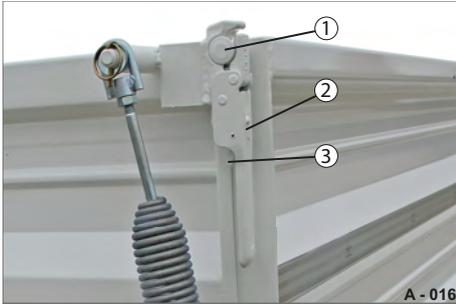


Fig. 18 Lock secured

- 1 Bearing pin
- 2 Lock lever
- 3 Lock safeguard

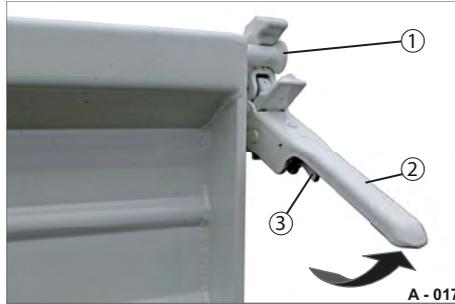


Fig. 19 Lock unfastened

- 1 Bearing pin
- 2 Lock lever
- 3 Lock safeguard

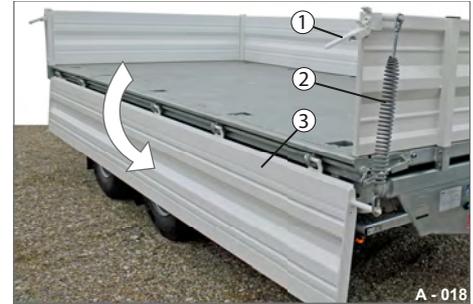


Fig. 20 Platform gate folded down

- 1 Locks, open
- 2 Platform gate lifting spring, tightened
- 3 Platform gate, lower

Unfastening locks



The locks are to be operated left and right, one after another.

The platform gate must be held down.

- ▶ Press in the lock safeguard (Fig. 18/3 & Fig. 19/3) and
- ▶ pull on the lock lever (Fig. 18/2 & Fig. 19/2).

The bearing pin (Fig. 19/1) is released.

The rear platform gate is unlocked at top and can be folded down.

Folding out platform gate

- ▶ Fold down the platform gate in a controlled manner - do not let it fall. The loading platform can get tilted. The loaded goods can be loaded/unloaded.



Fig. 21 Loading platform, tilted to the side

- 1 Loading platform
- 2 Danger area

- ▶ Exit the danger area (Fig. 21/2).
- ▶ Keep people away.



Fig. 22 Fold up platform gate



- 1 Lock, open
- 2 Platform gate, folded down

Closing the platform gate

- ▶ Check that the locks (Fig. 22/1) are open before folding up.
- ▶ Fold up the platform gate (Fig. 22/2). Grab the platform gate in the rear area. The platform gate lifting spring assists in the process at the front.

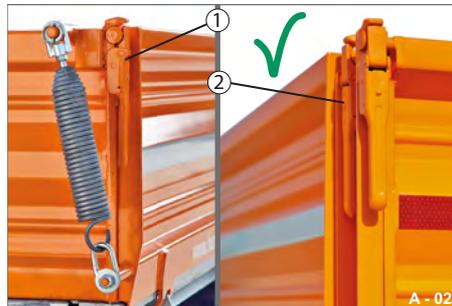


Fig. 23 Platform gate, secured

- 1 Front lock, secured
- 2 Rear lock, secured

Securing platform gate

- ▶ Close the locks (Fig. 23/ 1 & Fig. 23/2) one after another. Hold the platform gate firmly.
- ▶ Press the lock lever (Fig. 18/2) shut with your hand flat. The lock safeguard (Fig. 18/3) snaps shut. The bearing pin (Fig. 18/1) is locked. The platform gate is secured at top with both locks.

Platform gate door stay

The side platform gates can be equipped with a door stay as an option.

The door stay is positioned at the front right and left sides.

The door stay is used to secure the side platform gates when folded down.

You can drive with side platform gates folded down and secured with the door stay.

 The maximum legal vehicle width must not be exceeded!

 **WARNING**

 **Tipping loading platform with secured platform gates**

If the loading platform is tipped to the side, the tyres/components are deformed by the side platform gate. When driving with tilted loading platform, the tyres could burst - risk of striking/crushing!

- ▶ Check that the side platform gates are released before tipping.

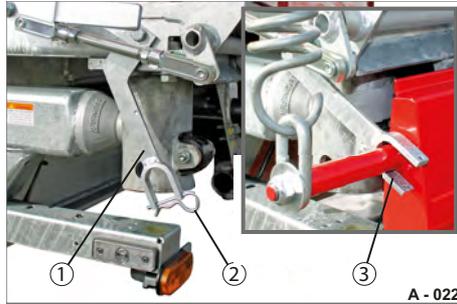


Fig. 24 Platform gate door stay

- 1 Spring pin
- 2 Door stay
- 3 Fork head

Preparing door stay

- ▶ Remove the spring pin (Fig. 24/1) from the fork head (Fig. 24/3).
- ▶ Swing the door stay (Fig. 24/2) out to the side.

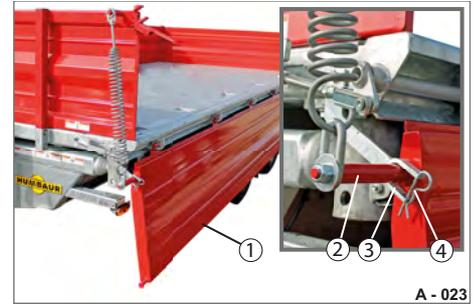


Fig. 25 Platform gate, secured

- 1 Platform gate, folded down
- 2 Retaining bolt
- 3 Fork head
- 4 Spring pin

Securing platform gate

- ▶ Fold down the platform gate (Fig. 25/1).
- ▶ Insert the fork head (Fig. 25/3) into the retaining bolt (Fig. 25/2).
- ▶ Secure the fork head using the spring pin (Fig. 25/4).

The platform gate is secured in the folded-down state and protected against swinging while driving.

Pendulum mode of side platform gates



Fig. 26 Platform gate in pendulum mode

- 1 Side platform gate, swinging
- 2 Central locking system, unlocked

The side platform gates can be swung open (Fig. 26/1) for the side tipping process.

The side platform gate is unlocked in a process by a central locking system attached to the front (Fig. 26/2).

This process facilitates the unloading of bulk material and ensures safety, since the operator does not have to enter the danger zone.



WARNING



Unlocking platform gate with tilted loading platform

The loading goods can press against the platform gates. The platform gates can snap open after unlocking due to compression force of the load - risk of striking!

- ▶ Only unlock the central unlocking system if the loading platform is horizontal - not tilted.



Fig. 27 Central locking system unlocked

- 1 Pendulum locking points
- 2 Transfer rod



CAUTION



Operating central locking system

Fingers/hands can get crushed.

- ▶ Operate the central locking lever slowly and carefully.
- ▶ Before locking, make sure there are no hands/fingers in the locking points.

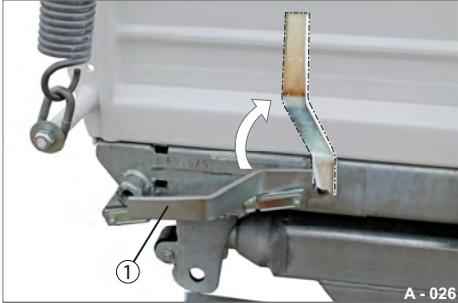


Fig. 28 Unlock central locking system
1 Lever

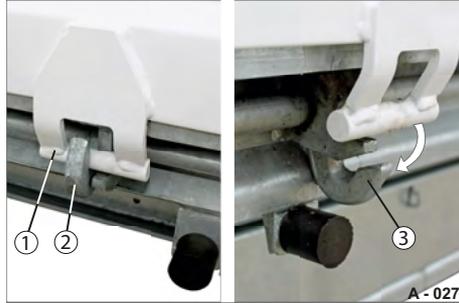


Fig. 29 Platform gate unlocked
1 Lock lugs
2 Lock hook, CLOSED
3 Lock hook, OPEN



Fig. 30 Lock central locking system
1 Lever

Unlocking



The side platform gate must be closed and secured at the top with locks.

- ▶ Grip the lever (Fig. 28/1) and swing it all the way up.

The locking points release the side platform gate for pendulum mode.

- ▶ Visually check that all locking points are unlocked.

Locking

- ▶ Grip the lever (Fig. 30/1) and swing it to the limit position.
- ▶ After locking, check that all locking lugs (Fig. 30/1) are locked with the locking hook (Fig. 30/2).

Disassembling side platform gates

The side platform gates are secured with locks in the upper area, in the front on the front platform gate and on the side posts.

The side platform gates are held with the central locking system in the lower area.



Side platform gates are heavy!

The platform gates must be assembled/disassembled in pairs or with the help of auxiliary aids such as a forklift or crane/lifting gear.

WARNING

Driving without side platform gates

The loading goods can slide to the side and off the loading platform - risk of accident!

- ▶ Securely lash the loaded goods/load unit at the lashing points.
- ▶ Do not transport loose bulk material or unsecured loads.

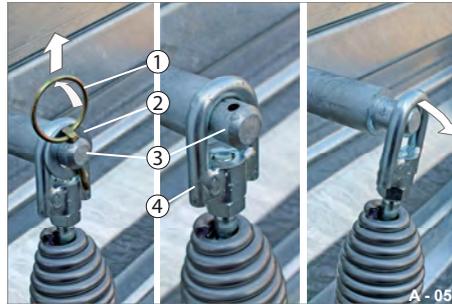


Fig. 31 Platform gate lifting spring released

- 1 Locking pin
- 2 Washer
- 3 Bolt
- 4 Towing eye

Releasing platform gate lifting spring

- ▶ Fold the ring of the locking pin (Fig. 31/1) up and pull it out of the bolt (Fig. 31/3).
- ▶ Remove the washer (Fig. 31/2).
- ▶ Pull the platform gate lifting spring down from the bolt.
The platform gate lifting spring is loose and hangs on the side platform gate..
- ▶ Note that the platform gate is hard to operate without the platform gate lifting spring.

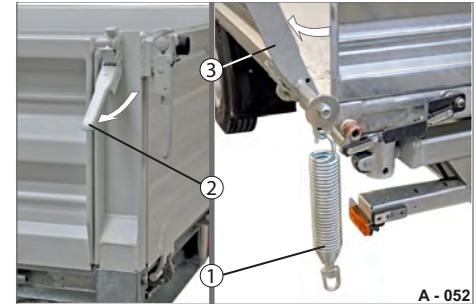


Fig. 32 Platform gate lifting spring released

- 1 Platform gate lifting spring, loose
- 2 Lock, top
- 3 Platform gate

Releasing platform gate

- ▶ Open the upper locks (Fig. 32/2) on both sides of the side platform gate.
- ▶ Fold down the platform gate (Fig. 32/3) in pairs.

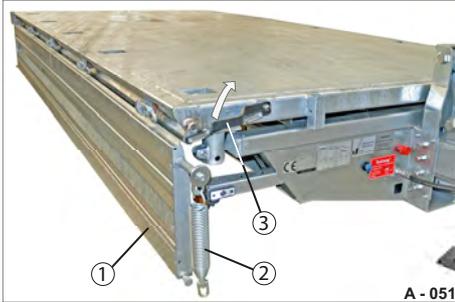


Fig. 33 Disassembling platform gate

- 1 Platform gate folded down
- 2 Platform gate lifting spring, loose
- 3 Pendulum central locking system

Disassembling platform gate

- ▶ Hold the platform gate firmly (use auxiliary aid if necessary) and open the central locking system (Fig. 33/3). The lower pendulum central locking system releases the platform gate.
- ▶ Carefully remove the platform gate.

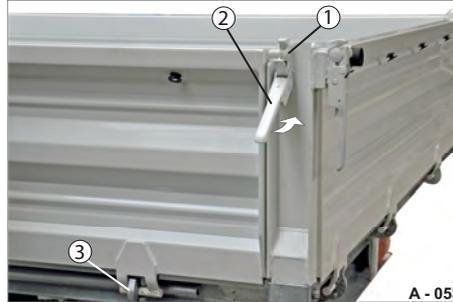


Fig. 34 Disassembling platform gate

- 1 Bearing point side post
- 2 Lock, top
- 3 Pendulum central locking system

Mounting platform gate



The front and rear platform gate must be attached and secured.

- ▶ Insert the platform gate in the bearing points of the posts (Fig. 34/1).
- ▶ Close the upper locks (Fig. 34/2).
- ▶ Lock the lower platform gate with the pendulum central locking system (Fig. 34/3).

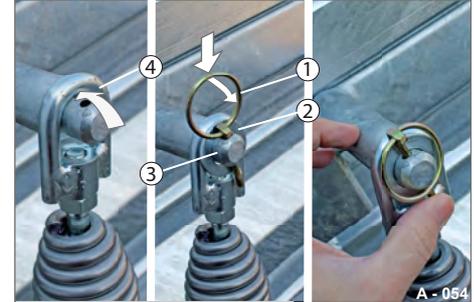


Fig. 35 Platform gate lifting spring secured

- 1 Locking pin
- 2 Washer
- 3 Bolt
- 4 Towing eye

Securing platform gate lifting spring

- ▶ Pull the towing eye (Fig. 35/4) of the platform gate lifting spring onto the bolt (Fig. 35/3).
- ▶ Insert the washer (Fig. 35/2).
- ▶ Press the locking pin (Fig. 35/1) into the bore hole from above so that it lies on the washer.
- ▶ Fold the ring down. The platform gate lifting spring is secured.

Rear platform gate



Fig. 36 Rear platform gate

- 1 Lock
- 2 Rear platform gate, steel
- 3 Pendulum locking points
- 4 Central locking system
- 5 Bearing pin

The rear platform gate can be folded down or opened with a swinging motion with the central locking system.

The rear platform gate can tip out the bulk material in pendulum mode.

**WARNING****Opening rear platform gate with tilted loading platform**

The rear platform gate can shoot up due to load pressure - risk of striking/accident!

- ▶ Before tilting the loading platform, unlock the rear platform gate.

**WARNING****Completely unlocking platform gates**

If the upper locks and the central locking system were unlocked at the same time, the platform gate would fall - risk of striking/ crushing!

- ▶ Only unlock the upper locks or the lower central locking system - never unlock both systems!

Folding mode of rear platform gate

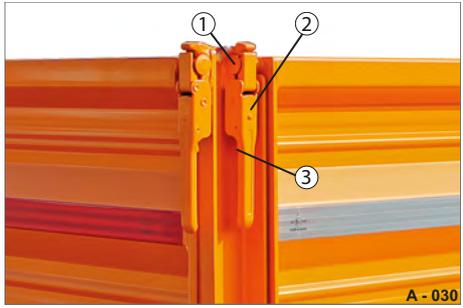


Fig. 37 Lock secured

- 1 Bearing pin
- 2 Lock lever
- 3 Lock safeguard

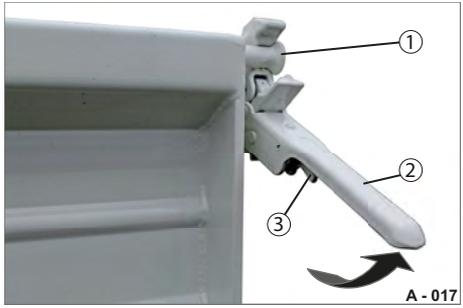


Fig. 38 Lock unfastened

- 1 Bearing pin
- 2 Lock lever
- 3 Lock safeguard



Fig. 39 Rear platform gate, folded down

- 1 Locks, open
- 2 Rear platform gate, bottom

Unfastening locks



The locks are to be operated left and right, one after another.

The platform gate must be held down.

- ▶ Press the lock safeguard (Fig. 37/3).
- ▶ Pull on the lock lever (Fig. 37/2 & Fig. 37/2).

The bearing pin (Fig. 37/1) is released.

The rear platform gate can be folded down.

Folding down rear platform gate

- ▶ Fold down the platform gate in a controlled manner - do not let it fall. The loading platform can get tilted.



Fig. 40 Loading platform, tilted backwards

- 1 Loading platform
- 2 Danger area

- ▶ Exit the danger area (Fig. 40/2).
- ▶ Keep people away.



Fig. 41 Fold up rear platform gate

- 1 Lock, open
- 2 Rear platform gate, folded down

Closing rear platform gate

- ▶ Check that the locks (Fig. 41/1) are open before folding up.
- ▶ Fold up the platform gate (Fig. 41/2).

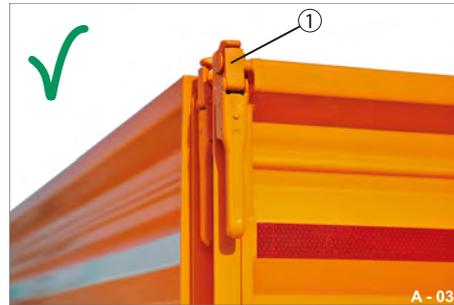


Fig. 42 Rear platform gate secured

- 1 Rear lock, secured

Securing rear platform gate

- ▶ Close the locks (Fig. 42/1) one after another.
Hold the platform gate firmly.
- ▶ Press the lock lever (Fig. 37/2) shut with your hand flat.

The lock safeguard (Fig. 37/3) snaps shut.

The bearing pin (Fig. 37/1) is locked.

The platform gate is secured at top with both locks.

Pendulum mode of rear platform gate



Fig. 43 Rear platform gate in pendulum mode

- 1 Rear platform gate, swinging
- 2 Central locking system, unlocked

The rear platform gate can be swung open for the tipping process (Fig. 43/1).

The rear platform gate is unlocked in a process by a central locking system attached to the side rear (Fig. 43/2).

This process facilitates the unloading of bulk material and ensures safety, since the operator does not have to enter the danger zone.

 **WARNING**



Unlocking platform gate with tilted loading platform

The loading goods can press against the platform gates. The platform gates can snap open after unlocking due to compression force of the load - risk of striking!

- ▶ Only unlock the central unlocking system if the loading platform is horizontal - not tilted.



Fig. 44 Central locking system unlocked

- 1 Pendulum locking points
- 2 Transfer rod

 **CAUTION**



Operating central locking system

Fingers/hands can get crushed.

- ▶ Operate the central locking lever slowly and carefully.
- ▶ Before locking, make sure there are no hands/fingers in the locking points.

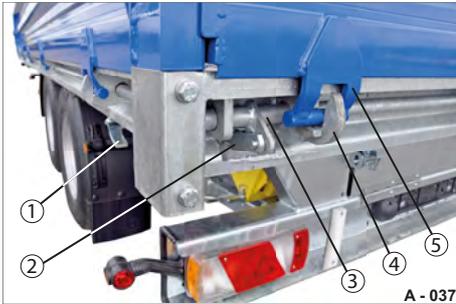


Fig. 45 Central locking system

- 1 Lever
- 2 Transfer rod
- 3 Torsion bars
- 4 Lock hook
- 5 Lock lugs

The central locking system for pendulum mode of the rear platform gate is located at the rear (direction of travel left) of the trailer.

- ▶ Check that the upper locks are closed and secured before unlocking the rear platform gate.

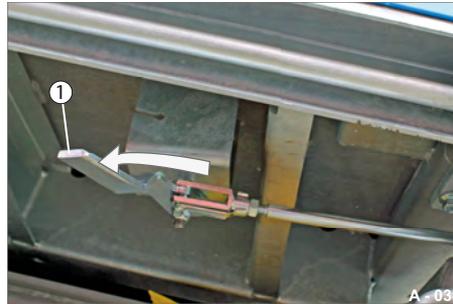


Fig. 46 Central locking system unlocked

- 1 Lever, open

Unlocking rear platform gate

- ▶ Turn the lever (Fig. 46/1) about 90°.

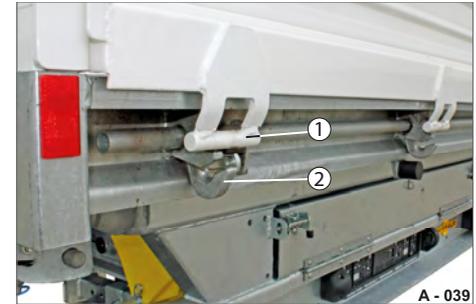


Fig. 47 Rear platform gate unlocked

- 1 Lock lugs
- 2 Lock hook

The lock hooks (Fig. 47/2) slide out of the lock lugs (Fig. 47/1).

The rear platform gate is released for pendulum mode.



Fig. 48 Pendulum mode

- 1 Rear platform gate, pendulum mounted on top
- 2 Lever, in open position

After the loading platform is tilted, the rear platform gate swings.

The bulk material can be tipped.

- ▶ Exit the danger area.
- ▶ Keep people away.



Fig. 49 Rear platform gate closed

- 1 Rear platform gate, folded down
- 2 Lock hook, open

Closing rear platform gate

- ▶ Tilt the loading platform back.
- ▶ Clean dirt from the closing edge/ pendulum lock/lock lugs in rear area.

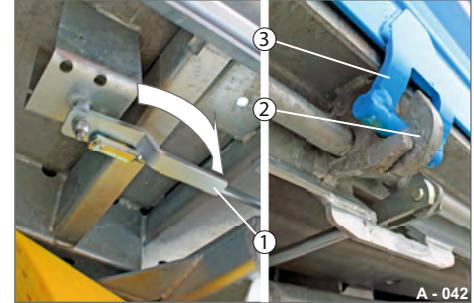


Fig. 50 Central locking system, locked

- 1 Lever, closed
- 2 Lock hook, retracted
- 3 Lock lugs

Locking rear platform gate

- ▶ Press the lever (Fig. 50/1) up to the limit position.
All lock hooks (Fig. 50/2) grip in the lock lugs (Fig. 50/3) and press the rear platform gate closed.
The rear platform gate is locked.
- ▶ Check that the rear platform gate is secured via the central locking system before departing.

Central locking system with semi-automatic unlocking

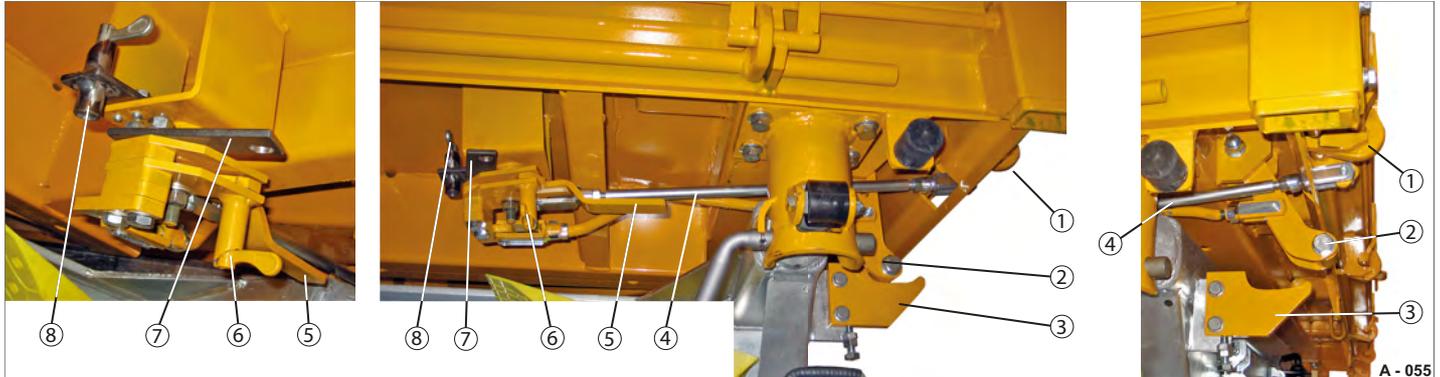


Fig. 51 Central locking system with semi-automatic unlocking for pendulum mode

- 1 Lock hook
- 2 Release lever
- 3 Lock plate
- 4 Transfer rod
- 5 Lever
- 6 Locking pin 1
(for pendulum mode)
- 7 Retainer plate
- 8 Locking pin 2
(for folding mode)

Optionally, the HTK three-way tipper can be equipped with a central locking system and "semi-automatic unlocking" system of the rear platform gate.

The advantage is the semi-automatic unlocking system of the rear platform gate in pendulum mode.

You, the driver, can unlock the rear platform gate - before the tipping process - in a safe environment and approach the unloading area.

The rear platform gate would stay locked until the loading platform is tipped and the rear platform gate opens automatically in pendulum mode.

This process facilitates the unloading of bulk material and ensures safety, since the operator does not have to enter the danger zone.



WARNING



Driving with semi-automatic unlocking system open

The loading goods can press against the rear platform gate. The rear platform gate can snap open due to the compression force of the load - risk of accident!

- ▶ Check that the semi-automatic unlocking system is secured before departing.



CAUTION



Operating semi-automatic locking system

Fingers/hands can get crushed.

- ▶ Operate the semi-automatic locking system lever slowly and carefully.
- ▶ Before locking, make sure there are no hands/fingers in the locking points.



WARNING



Soiled components of the semi-automatic locking system

The semi-automatic locking system does not close properly if foreign objects get into the locking points. The rear platform gate can snap open due to the compression force of the load - risk of accident!

- ▶ Before closing and locking the rear platform gate, remove foreign objects out of locking points/release lever and lock plate.
- ▶ Check that all locking points are locked before departing.

Procedure for tipping process

The loading platform tipping process can be done in:

- Pendulum mode
 - Folding mode
- of the rear platform gate.

For pendulum mode:

- ▶ Release the semi-automatic unlocking system.
- ▶ Open the central locking system.

For folding mode:

- ▶ Fasten the semi-automatic unlocking system.
- ▶ Leave the central locking system closed.

Pendulum mode with semi-automatic unlocking system

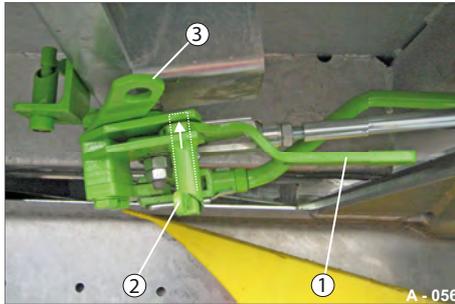


Fig. 52 Drive position- unlocking fixed

- 1 Lever, closed
- 2 Locking pin 1, extended
- 3 Retainer plate, movable

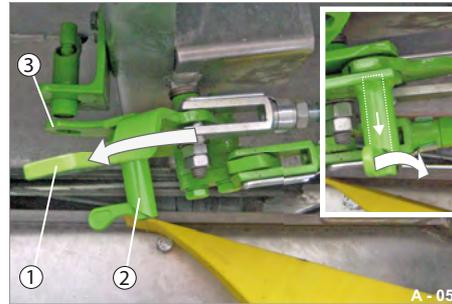


Fig. 53 Position for pendulum mode:

- 1 Lever, open
- 2 Locking pin 1, retracted
- 3 Retainer plate, movable



Fig. 54 Rear platform gate unlocked

- 1 Release lever, extended
- 2 Lock plate
- 3 Lock hook

Unlocking in drive position

- ▶ Check that the semi-automatic unlocking system is in drive position before departing (see Fig. 52).

Unlocking for pendulum mode:

- ▶ Turn the lever of the locking pin (Fig. 53/2) so the lever (Fig. 53/1) of the central locking system is released.
- ▶ Turn the lever about 90°.

The release lever (Fig. 54/1) extends. The rear platform gate is released for pendulum mode.

During the tipping process, the release lever moves towards the lock plate (Fig. 54/2), thereby unlocking the locking hook (Fig. 54/3) of the rear platform gate.

The rear platform gate swings during the tipping process.



Fig. 55 Rear platform gate closed
1 Rear platform gate, folded down
2 Lock hook, open



Fig. 56 Closing central locking system
1 Lever, closed
2 Locking pin 1, retracted



Fig. 57 Central locking system secured
1 Locking pin 1, extended

Closing rear platform gate

- ▶ Tilt the loading platform back.
- ▶ Clean dirt from the closing edge/locking points/release lever with lock plate in rear area.

Locking rear platform gate

- ▶ Press the lever (Fig. 56/1) up to the limit position.
All lock hooks (Fig. 50/2) grip in the lock lugs (Fig. 50/3) and press the rear platform gate closed.
The rear platform gate is locked.
- ▶ Check that the rear platform gate is secured via the central locking system before departing.

Securing central locking system

- ▶ Turn the lever of the locking pin (Fig. 57/1) so the lever (Fig. 56/1) of the central locking system is secured. The lever (Fig. 56/1) is locked with the locking pin (Fig. 57/1).
The central locking system with semi-automatic locking system is secured - in drive position.

Folding mode with semi-automatic unlocking system

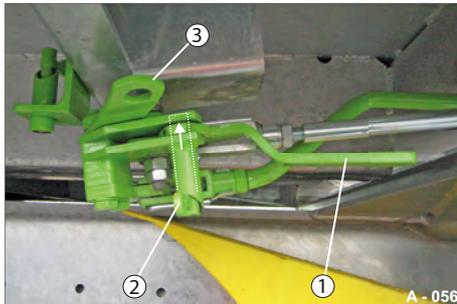


Fig. 58 Central locking system in drive position

- 1 Lever, closed
- 2 Locking pin 1, extended
- 3 Retainer plate, movable

Tilting with rear platform gate folded down

Prerequisites:

- Central locking system is closed (drive position)
 - Semi-automatic locking system is fixed
 - Rear platform gate is folded down
- Check that all prerequisites are satisfied before tipping the loading platform.

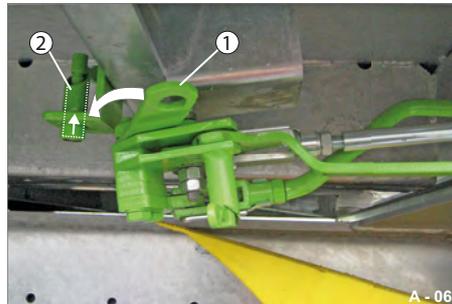


Fig. 59 Fastening unlocking system

- 1 Retainer plate
- 2 Locking pin 2, retracted

Fastening semi-automatic unlocking system

The lever (Fig. 58/1) of the central locking system must be closed.

- Rotate the retainer plate (Fig. 59/1) to locking pin 2 (Fig. 59/2).
- Turn the lever of locking pin 2 (Fig. 60/2) so the retainer plate (Fig. 60/1) is secured.



Fig. 60 Fixed position

- 1 Retainer plate, fixed
- 2 Locking pin 2, extended

The semi-automatic locking system is rendered inoperable (fixed).

The rear platform gate can be folded down (see page 142).

The loading platform can be folded down.

Unlocking

- Release the locking plate (Fig. 60/1).
- Set the central locking system to the drive position (see Fig. 58).

Rear platform gate as swinging gate, one-piece

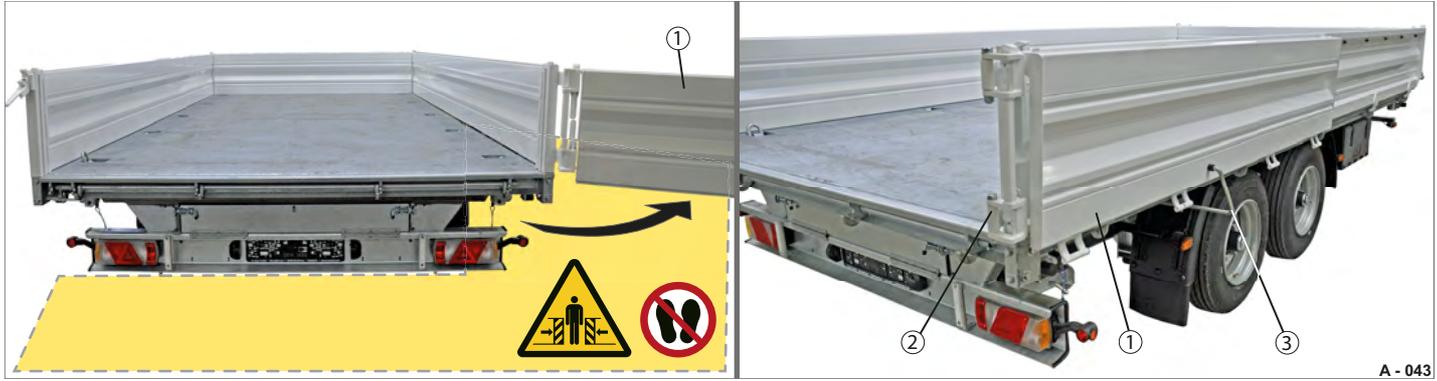


Fig. 61 Rear platform gate as swinging gate

- 1 Swinging gate open
- 2 Hinge
- 3 Door stay

The rear platform gate can be equipped as a swinging gate (Fig. 61/1) as an option.

The swinging gate is opened completely to the side platform gate and secured with a door stay (Fig. 61/3).

This process facilitates loading and unloading vehicles using the ramp planks. The ramp planks can be laid down directly after opening the swinging gate.

152 Operation: body

WARNING



Tipping loading platform with opened swinging gate

The door stay would not be able to hold the swinging gate. The swinging gate would swing downwards uncontrollably - risk of striking/crushing!

- ▶ Never tilt the loading platform with opened swinging gate.
- ▶ Check that the rear platform gate is in folding/pendulum mode before the tipping process.

CAUTION



Opening/closing swinging gate

Fingers/hands can get crushed. People can be hit by it.

- ▶ Hold the swinging gate tightly when moving - do not let it slam shut.
- ▶ Fasten the swinging gate with the door stay after opening.

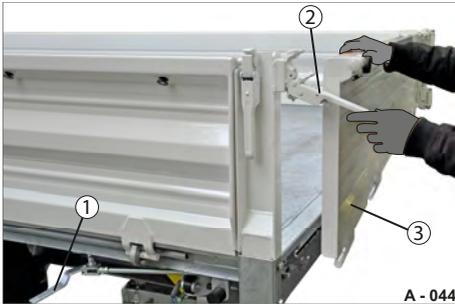


Fig. 62 Swinging gate unlocked

- 1 Central locking system, bottom
- 2 Lock, top
- 3 Swinging gate

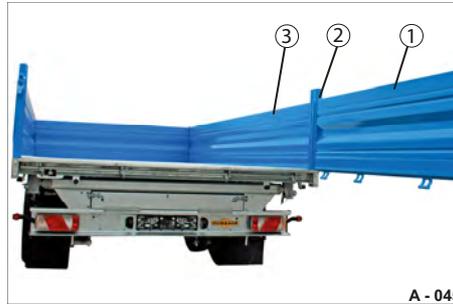


Fig. 63 Moving swinging gate

- 1 Swinging gate
- 2 Hinge side

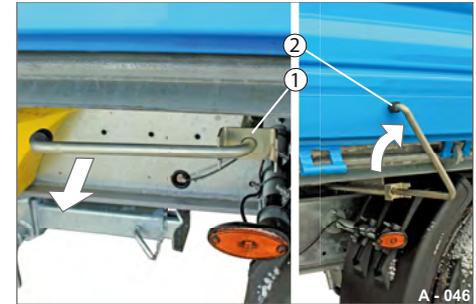


Fig. 64 Swinging gate secured

- 1 Holder
- 2 Door stay

Unlocking swinging gate



The lock on the hinge side of the swinging gate must be closed.

- ▶ Unlock the central locking system (Fig. 62/1) for pendulum mode.
- ▶ Unlock the upper lock (Fig. 62/2) on the opening side.
The swinging gate is released.
- ▶ Hold the swinging gate firmly.

Opening swinging gate

- ▶ Swing the swinging gate carefully to the side platform gate.

Securing swinging gate

- ▶ Pull the door stay (Fig. 64/2) out of the holder (Fig. 64/1).
- ▶ Rotate the door stay upwards about 90° and fasten the swinging gate.
The swinging gate is secured against closing on its own.



Fig. 65 Ramp planks positioned

- 1 Swinging gate open/secured
- 2 Ramp plank



Fig. 66 Close swinging gate

- 1 Door stay, parked
- 2 Lock, open
- 3 Swinging gate
- 4 Central locking, unlocked

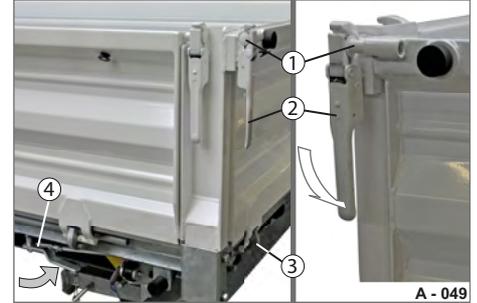


Fig. 67 Swinging gate secured

- 1 Bearing pin
- 2 Lock lever, closed
- 3 Lock hook, retracted
- 4 Central locking system lever, closed

Positioning ramp planks



Operation of ramp planks - see page **205**.

- ▶ Remove the ramp planks (Fig. 65/2) from the plank bay.
- ▶ Position and secure the ramp planks on the loading platform edge.
- ▶ The vehicle can be loaded/unloaded.
- ▶ Stow the ramp planks away after the loading/unloading process.

Closing swinging gate

- ▶ Pull on the door stay (Fig. 66/1) and lock it in the holder (Fig. 64/1).
- ▶ Carefully close the swinging gate (Fig. 66/3). When doing so, make sure the upper lock (Fig. 66/2) and lower central locking system (Fig. 66/4) are open.

Securing swinging gate

- ▶ Press the lock lever (Fig. 67/2) shut with your hand flat. The bearing pin (Fig. 67/1) is locked.
- ▶ Press the lever of the central locking position (Fig. 67/4) shut. The lock hooks (Fig. 67/3) lock the swinging gate from below.
- ▶ Check that the locks on the hinge side are closed before departing.

Swinging gate, one-piece, in pendulum mode



Fig. 68 Swinging gate in pendulum mode

- 1 Central locking, unlocked
- 2 Pendulum locking points, OPEN
- 3 Upper locks, CLOSED
- 4 Lower right lock, OPEN

The rear platform gate (one-piece swinging gate version) can be opened in pendulum mode.



Operation of the central locking system, from page 144.

Unlocking rear platform gate

- ▶ Unlock the lower right lock (Fig. 68/4).
 - ▶ Unlock the central locking system (Fig. 68/1).
- The rear platform wall is released below on the pendulum locking points (Fig. 68/2).

Locking rear platform gate

- ▶ Close the central locking system (Fig. 68/1).
- The rear platform wall is locked below on the pendulum locking points (Fig. 68/2).
- ▶ Lock the lower right lock (Fig. 68/4).
- The swinging gate is completely locked.

Swinging gate, one-piece, in folding mode



A - 095

Fig. 69 Swinging gate in folding mode

- 1 Lock, top, right/left
- 2 Lower right lock, locked
- 3 Pendulum locking points, closed

The rear platform gate (one-piece swinging gate version) can be opened in folding mode.



For important information for operating the rear platform gate in folding mode, see page 142.

Unlocking rear platform gate

- ▶ Unlock the upper right and left lock (Fig. 69/1).
- ▶ Unlock the lower right lock (Fig. 69/2). The rear platform wall is held below on the pendulum locking points (Fig. 69/3).
- ▶ Carefully fold the swinging gate down.

Locking rear platform gate

- ▶ Fold up the swinging gate - the locks must be open.
- ▶ Lock the locks on the right side, at the top (Fig. 69/1) and bottom (Fig. 69/2).
- ▶ Lock the lock on the left side (Fig. 69/1). The swinging gate is completely locked.

Rear platform gate as swinging gate, two-piece

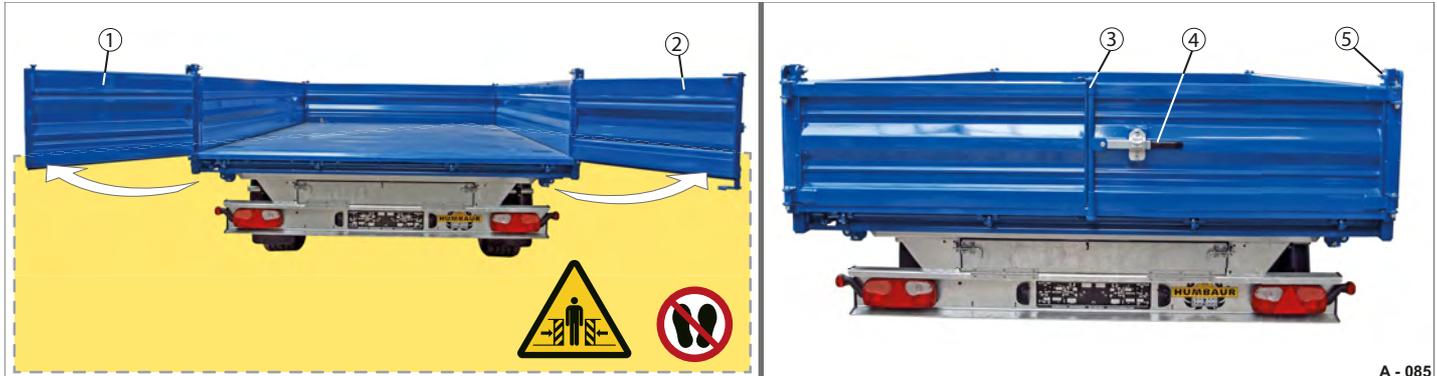


Fig. 70 Rear platform gate as swinging gate, two-piece

- 1 Left swinging gate, open
- 2 Right swinging gate, open
- 3 Centre locking mechanism
- 4 Locking lever
- 5 Hinge

The rear platform gate can be equipped as a two-piece swinging gate (Fig. 70/1 & Fig. 70/2) as an option.

The two swinging gates are locked to each other in the centre (Fig. 70/3).

The swinging gates are fastened with a door stay when open.

Folding mode is not possible with the two-piece swinging gate version.

**CAUTION****Opening/closing swinging gate**

Fingers/hands can get crushed.
People can be hit by it.

- ▶ Hold the swinging gate tightly when moving - do not let it slam shut.
- ▶ Fasten the swinging gate with the door stay after opening.

**WARNING****Tipping loading platform with opened swinging gates**

The door stays would not be able to hold the swinging gates. The swinging gates would swing downwards uncontrollably - risk of striking/crushing!

- ▶ Never tilt the loading platform with opened swinging gates.
- ▶ Check that the rear platform gate is locked in the centre and in pendulum mode before the tipping process.



Fig. 71 Locking lever secured

- 1 Locking plate
- 2 Locking lever
- 3 Retaining plate

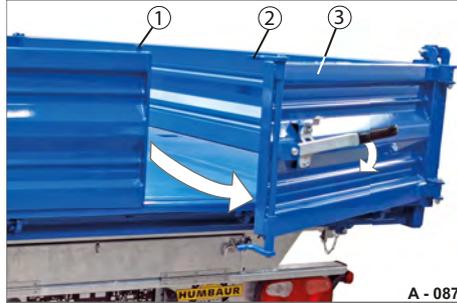


Fig. 72 Swinging gate unlocked

- 1 Lock pin
- 2 Lock hook
- 3 Swinging gate, right

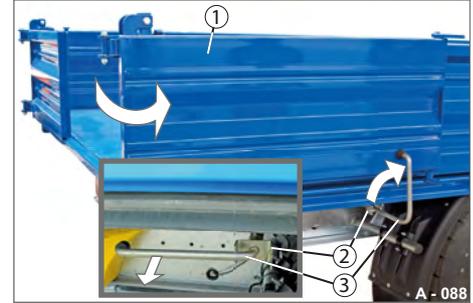


Fig. 73 Swinging gate secured

- 1 Swinging gate
- 2 Holder
- 3 Door stay

Unlocking locking lever



The central locking system of the rear platform gate must be closed.

- ▶ Turn the locking plate (Fig. 71/1) upwards about 180°.
- ▶ Lift the locking lever (Fig. 71/2) somewhat and pull it out of the retaining plate (Fig. 71/3).
The locking lever is released.

Unlocking swinging gate

- ▶ Turn the locking lever (Fig. 71/2) about 90° away from the swinging gate (towards yourself).
The lock hooks (Fig. 71/2) release the lock pin (Fig. 71/1).
The right and left swinging gates are unlocked.
- ▶ Move the right swinging gate down a bit.
- ▶ Press the locking lever into the retaining plate (Fig. 71/3).

Opening/securing swinging gate

- ▶ Swing the right swinging gate carefully to the side platform gate.
- ▶ Pull the door stay (Fig. 73/3) out of the holder (Fig. 73/2).
- ▶ Rotate the door stay upwards about 90° and fasten the swinging gate (Fig. 73/1).
The swinging gate is secured against closing on its own.
- ▶ Open and secure the left swinging gate with the door stay after opening.

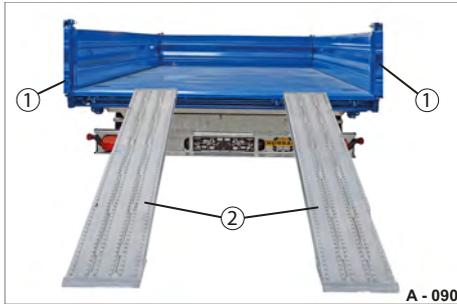


Fig. 74 Ramp planks positioned

- 1 Swinging gate open/secured
- 2 Ramp planks positioned



Fig. 75 Closing swinging gate

- 1 Swinging gate, left
- 2 Swinging gate, right
- 3 Door stay, parked



Fig. 76 Swinging gate secured

- 1 Upper lock hook
- 2 Lower lock hook
- 3 Locking plate
- 4 Locking lever
- 5 Retaining plate

Positioning ramp planks



Operation of ramp planks - see page 205.

- ▶ Remove the ramp planks (Fig. 74/2) from the plank bay.
- ▶ Position and secure the ramp planks on the loading platform edge.
- ▶ The vehicle can be loaded/unloaded.
- ▶ Stow the ramp planks away after the loading/unloading process.

Closing swinging gate

- ▶ Pull on the door stay (Fig. 73/3) and lock it in the holder (Fig. 75/3).
- ▶ Carefully close the left swinging gate (Fig. 75/1).
- ▶ Carefully close the right swinging gate (Fig. 75/2).
Ensure that the centre lock is open.

Securing swinging gate

- ▶ Press the locking lever (Fig. 76/4) to the rear platform gate.
The lock hooks (Fig. 76/1 & Fig. 76/2) grip in the lock lugs of the left swinging gate.
- ▶ Press the locking lever (Fig. 76/4) into the retaining plate (Fig. 76/5).
- ▶ Rotate the locking plate (Fig. 76/3) over the locking lever.

Swinging gate, two-piece, in pendulum mode



Fig. 77 Central locking system for pendulum mode:

- 1 Central locking system lever
- 2 Pendulum locking points
- 3 Centre locking mechanism (swinging gate)
- 4 Hinge, top

The rear platform gate (two-piece swinging gate version) can be opened in pendulum mode.

 **CAUTION**



Swinging gate not locked in pendulum mode

The two swinging gates would swing uncontrollably when the loading platform is tipped - risk of crushing/striking!

- ▶ Check that both swinging gates are locked together before releasing the central locking system.

▶ See page 144 for opening and closing the rear platform gate.

Rear platform gate secured with safety chains

The rear platform gate can be equipped with 2 safety chains as an option.

The safety chains hold the open rear platform gate in a horizontal position.

This makes it possible to drive with the rear platform gate open.

Long loaded goods can be transported via the rear platform gate.



If the load is transported over the platform gates, it must be additionally secured and labelled.



WARNING



Driving with unsecured rear platform gate

The rear platform gate can fall during the journey - risk of striking/injury!

- ▶ Check that the rear platform gate is properly secured with 2 safety chains before departing.
- ▶ Check that the central locking system is properly engaged.



Fig. 78 Safety chain, variant 1

- 1 Rear platform gate secured
- 2 Safety chain
- 3 Side post
- 4 Eyelet, welded on

Securing option 1 is one way to secure the rear platform gate which is built in by default.

The rear platform gate can be locked down with attached safety chains.



Fig. 79 Safety chain, variant 2

- 1 Rear platform gate secured
- 2 Safety chain
- 3 Side post
- 4 Bearing pin

Securing option 2 is a way to secure the rear platform gate which is attached later.



The safety chains must be removed to close the rear platform gate.

Using securing option 1

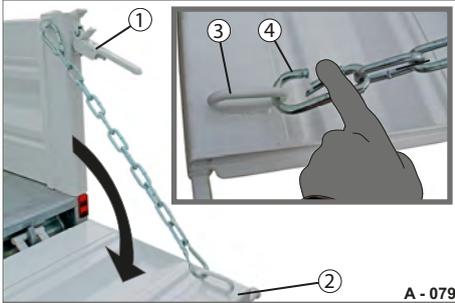


Fig. 80 Rear platform gate, open

- 1 Lock
- 2 Rear platform gate
- 3 Eyelet
- 4 Carabiner hook

Opening rear platform gate

- ▶ Unfasten the locks of the (Fig. 80/1) rear platform gate (Fig. 80/2).
- ▶ Hold the rear platform tightly and lead the carabiner hook (Fig. 80/4) into the eyelets (Fig. 80/3).



Fig. 81 Rear platform gate secured

- 1 Carabiner hook on post
- 2 Eyelet on post
- 3 Eyelet on rear platform gate
- 4 Carabiner hook on rear platform gate

Attaching safety chain

- ▶ Check that the carabiner hook (Fig. 81/1) is engaged and locked in the eyelets (Fig. 81/2) at the top on the posts.
- ▶ Check that the carabiner hook (Fig. 81/4) is engaged and locked in the eyelets (Fig. 81/3) on the rear platform gate.
The rear platform gate is secured in a horizontal position.

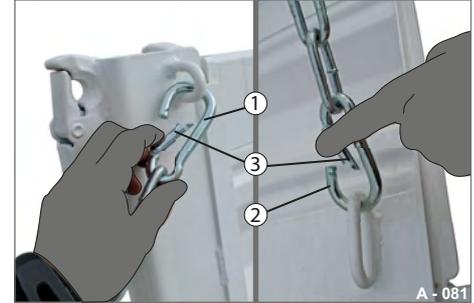


Fig. 82 Removing safety chain

- 1 Carabiner hook on post
- 2 Carabiner hook on rear platform gate
- 3 Catches

Removing safety chain



The safety chains must be disassembled for folding mode of the rear platform gate.

- ▶ Hold the rear platform gate firmly.
- ▶ Press in the safety guard (Fig. 82/3) of the carabiner hook (Fig. 82/1 & Fig. 82/2) and remove the hook from the eyelet.
The rear platform gate is unlocked.
- ▶ Keep the safety chains in a safe place.

Using securing option 2

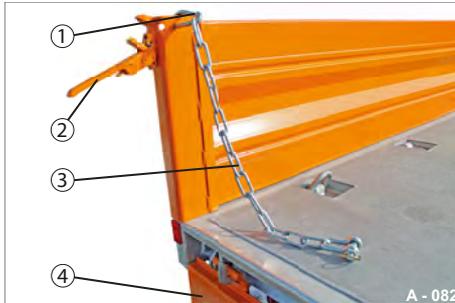


Fig. 83 Rear platform gate, open

- 1 Carabiner hook
- 2 Lock
- 3 Safety chain
- 4 Rear platform gate

Opening rear platform gate

- ▶ Unfasten the locks of the (Fig. 83/2) rear platform gate (Fig. 83/4).
- ▶ Fold down the rear platform gate.

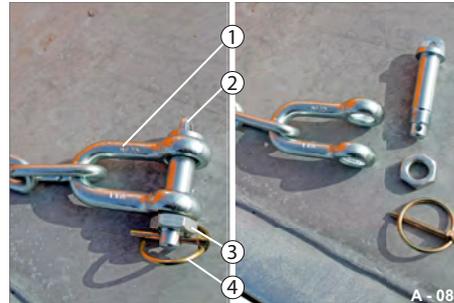


Fig. 84 U-bracket lock released

- 1 U-bracket
- 2 Threaded bolt
- 3 Nut
- 4 Splint with locking ring

Preparing U-bracket lock

- ▶ Release the locking ring (Fig. 84/4) and pull out the splint.
- ▶ Unscrew the nut (Fig. 84/3) and the threaded bolt (Fig. 84/2).
The U-bracket (Fig. 84/1) is prepared for securing the rear platform gate.

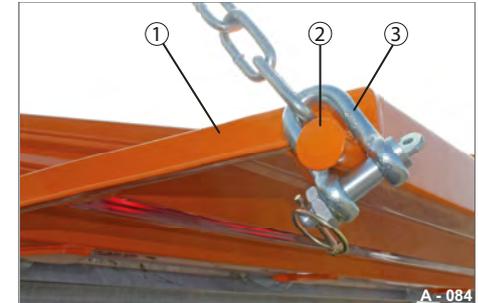


Fig. 85 Rear platform gate secured

- 1 Rear platform gate
- 2 Bearing pin
- 3 U-bracket, secured

Attaching safety chain



The rear platform gate must be secured in pairs!

- ▶ Raise the rear platform gate (Fig. 85/1) in a horizontal position.
- ▶ Place the U-bracket (Fig. 85/3) on the bearing pin (Fig. 85/2).
- ▶ Secure the U-bracket with the threaded bolt (Fig. 84/2), nut (Fig. 84/3) and splint with the locking ring (Fig. 84/4).

Dosing slider

The rear platform gate can be equipped with one or two dosing sliders.

The dosing sliders can be attached to the left/right side or centre.

A dosing slider can be manufactured with a pipe outlet as an option (see Fig. 89).

The loaded goods, e.g. gravel or grain, can be unloaded via the dosing slider with the rear platform gate closed.

The sliding flap of the dosing slider can be opened and fixed in a controlled manner.

WARNING

Driving with open/unsecured dosing slider

The loaded goods can escape via the dosing slider during the journey - risk of injury!

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

WARNING

Driving with unsecured operating lever

The unsecured operating lever with dual dosing slider can fall during the journey - risk of injury!

- ▶ Check that the operating lever is inserted and secure before departure.

CAUTION



Opening dosing slider

You could be hit by pressing loaded goods - risk of striking/crushing!

- ▶ Before tilting the loading platform, open the dosing slider.
- ▶ Before opening, stand to the side of the dosing slider.

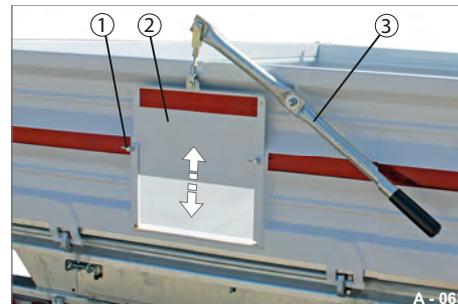


Fig. 86 Single dosing slider

- 1 Wing bolt
- 2 Sliding flap
- 3 Operating lever

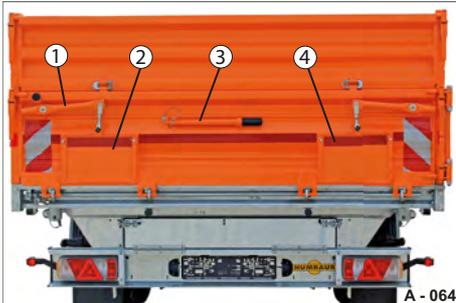


Fig. 87 Dual dosing slider

- 1 Transfer rod
- 2 Sliding flap, left
- 3 Operating lever, loose
- 4 Sliding flap, right
- 5 Wing bolt

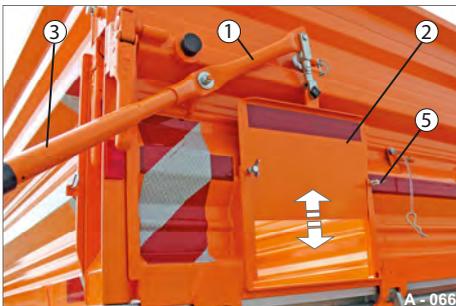


Fig. 88 Dosing slider, attached at side

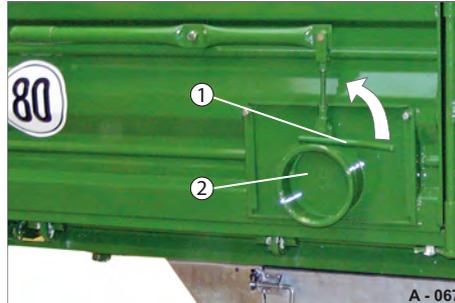


Fig. 89 Dosing slider with pipe outlet

- 1 Lever
- 2 Pipe outlet flap, closed

The pipe outlet flap is used to unload loaded goods in a controlled manner via a hose connection.



The pipe outlet flap is opened and closed separately.
The dosing slider must be closed and secured.

Operating single dosing slider

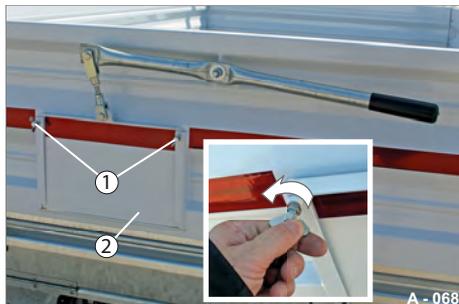


Fig. 90 Unlocking dosing slider

- 1 Wing bolt
- 2 Sliding flap

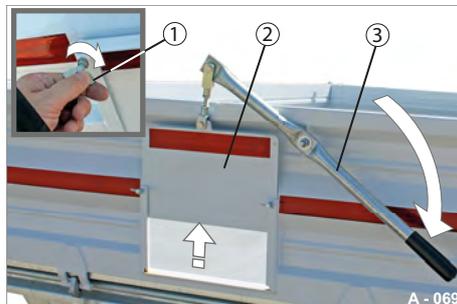


Fig. 91 Dosing slider, open

- 1 Wing bolt
- 2 Sliding flap
- 3 Operating lever

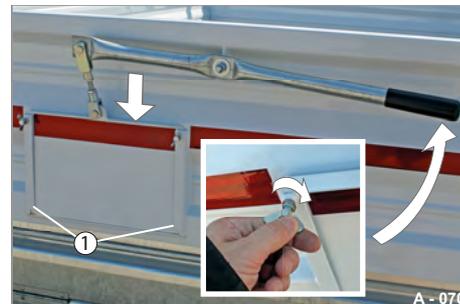


Fig. 92 Closing dosing slider

- 1 Drive slot

Unlocking

- ▶ Unscrew both wing bolts (Fig. 90/1) - but not completely.
The sliding flap can now be moved.

Opening and securing

- ▶ Press the operating lever (Fig. 91/3) downwards.
The sliding flap moves upwards.
- ▶ Fasten the sliding flap (Fig. 91/2) open with the wing bolts (Fig. 91/1).
The dosing slider is open and secured.

The loading platform can be folded down.

Closing and locking

- ▶ Clean any dirt off the drive slot (Fig. 92/1) of the sliding flap.
- ▶ Press the operating lever (Fig. 91/3) upwards until the sliding flap is completely closed.
- ▶ Fasten the sliding flap (Fig. 91/2) closed with the wing bolts (Fig. 91/1).
The dosing slider is closed and secured.

Operating dual dosing slider

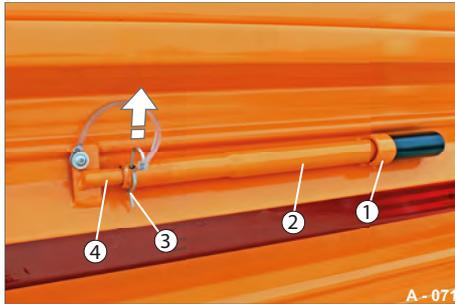


Fig. 93 Operating lever, secured

- 1 Holder
- 2 Operating lever
- 3 Spring pin
- 4 Retaining bolt

Unlocking operating lever

- ▶ Remove the spring pin (Fig. 93/3). The operating lever (Fig. 93/2) is unlocked.

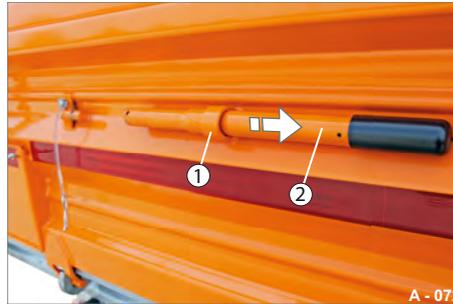


Fig. 94 Removing operating lever

- 1 Holder
- 2 Operating lever, loose

Removing operating lever

- ▶ Carefully pull the operating lever (Fig. 94/2) out of the holder (Fig. 94/1).
- ▶ Stick the spring pin (Fig. 93/3) into the bore hole of the retaining bolt (Fig. 93/4).

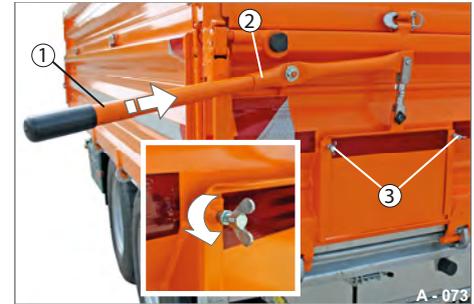


Fig. 95 Unlocking dosing slider

- 1 Operating lever, inserted
- 2 Transfer rod
- 3 Wing bolt

Unlocking

- ▶ Insert the operating lever (Fig. 95/1) into the transfer rod (Fig. 95/2).
- ▶ Unscrew both wing bolts (Fig. 95/3) - but not completely. The sliding flap can now be moved.

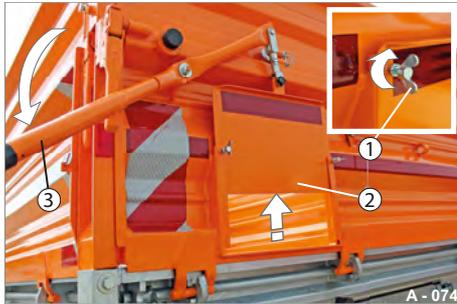


Fig. 96 Dosing slider, open

- 1 Wing bolt
- 2 Sliding flap
- 3 Operating lever

Opening and securing

- ▶ Press the operating lever (Fig. 96/3) downwards.
The sliding flap moves upwards.
- ▶ Fasten the sliding flap (Fig. 96/2) open with the wing bolts (Fig. 96/1).
The dosing slider is open and secured.
The loading platform can be folded down.

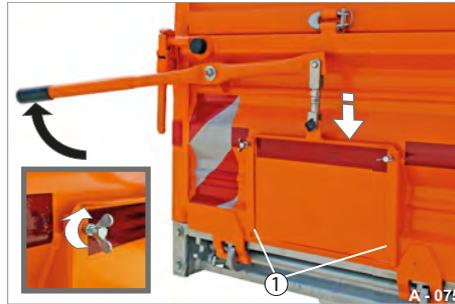


Fig. 97 Closing dosing slider

- 1 Drive slot

Closing and locking

- ▶ Clean any dirt off the drive slot (Fig. 97/1) of the sliding flap.
- ▶ Press the operating lever (Fig. 96/3) upwards until the sliding flap is completely closed.
- ▶ Fasten the sliding flap (Fig. 96/2) closed with the wing bolts (Fig. 96/1).
The dosing slider is closed and secured.



Fig. 98 Operating lever, secured

- 1 Transfer rod
- 2 Spring pin, inserted
- 3 Operating lever, secured

Securing operating lever

- ▶ Remove the operating lever (Fig. 98/3) from the transfer rod (Fig. 98/1).
- ▶ Press the operating lever through the holder (Fig. 94/1) onto the retaining bolt (Fig. 93/4).
- ▶ Stick the spring pin (Fig. 98/2) through the operating lever.
The operating lever is secured (see page 167 / Fig. 93).

Operating platform gate attachments

Platform gate attachments increase the loading volume of the trailer.

The platform gate attachment consists of 4 platform walls (400 mm or 500 mm high) and 2 corner post attachments in the rear area.

The platform gate attachments are set on the base platform gates and secured in corner posts with locks.

The function of the base platform walls (folding/pendulum mode) remains unchanged.

WARNING



Assembling/disassembling platform gate attachments

Platform gate attachments can fall - risk of striking/crushing!



- ▶ Work in pairs.



- ▶ Use , .

WARNING

Driving with inserted corner post attachments, without platform gate attachments

The corner post attachments could fall out - risk of striking/accidents!

- ▶ Remove the corner post attachments when disassembling the platform gate attachments.

CAUTION



Unlocking platform gate attachments

The platform gate attachments sit on the base platform gates. The platform gate attachments are freely suspended if the base platform gates are folded down.

- ▶ Only unlock the platform gate attachments when the base platform gates are closed.

CAUTION



Folding platform gate attachments up/down

Persons could crush their hands/fingers between posts/base platform wall.



- ▶ Use .



- ▶ Steel platform gate attachments are heavy! Working in pairs is recommended.
- ▶ Fold the platform gate attachments carefully and in a controlled manner.

NOTICE

Tipping load with closed base platform gate and platform gate attachment in pendulum mode

The base platform gate can bend/get deformed by the load.

- ▶ Fold the base platform gate before tipping the load.

DANGER

Driving with unlocked platform gate attachments

The platform gate attachments can swing and be ejected during the journey - risk of striking/accident!

- ▶ Check that the platform gate attachments (hinges/locks/bolts) are completely locked before departing.

CAUTION

Opening platform gate attachments when under the load pressure

The platform gate attachments can fly open. People can be hit/crushed by the load.

- ▶ Before releasing the platform gate attachments, check that the load is not pressing against them.
- ▶ If necessary, reposition the load before opening.

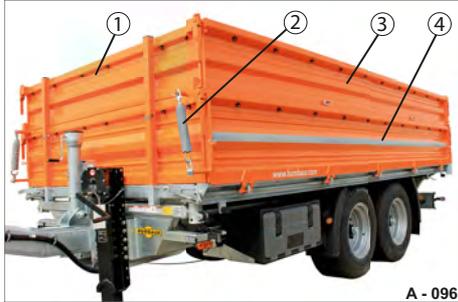


Fig. 99 Steel platform gate attachments

- 1 Front platform gate attachment
- 2 Lifting gear, single
- 3 Platform gate attachments, side
- 4 Base platform gate

The side platform gate attachments (Fig. 99/3) can be folded down combined with the base platform gate (Fig. 99/4).



The side platform gate attachment must be operated in pairs!

The front platform gate attachment is attached and secured in the side posts of the front wall.



Fig. 100 Steel platform gate attachments

- 1 Platform gate attachment with base platform gate, folded down
- 2 Lifting gear, dual
- 3 Base platform gate

The vehicle is equipped with dual lifting gear (Fig. 100/2).

The side platform gate attachment (Fig. 100/1) can be folded down combined with the base platform gate (Fig. 100/3).



The side platform gate attachment for folding mode combined with the base platform gate can be operated by one person.



Fig. 101 Swinging gate function

- 1 Base platform gate combined with platform gate attachment
- 2 Platform gate attachment
- 3 Hinges for swinging gate function

The rear base platform gate (Fig. 101/1) combined with the platform gate attachment (Fig. 101/2) can be opened as a swinging gate.



Fig. 102 3-part body

- 1 Base platform gate
- 2 Platform gate attachment
- 3 Steel grate attachment

The body can be designed according to the application.

The 3-part body consisting of: Base platform gate (Fig. 102/1), platform gate attachment (Fig. 102/2) and steel grate attachment (Fig. 102/3) combined can be used in pendulum mode.



Operation of the special body is not explained in the operating instructions.

Extensive user training concerning the operation of the body is required when approving the vehicle!



Fig. 103 Aluminium platform gate attachment

- 1 Corner post attachments, rear side
- 2 Rear platform gate attachment
- 3 Rear platform gate



The side platform gate attachments combined with the base platform gate cannot be folded down.

The rear platform gate attachment (Fig. 103/2) can be operated in pendulum mode with the rear base platform gate (Fig. 103/3).

Operating platform gate attachment hinges

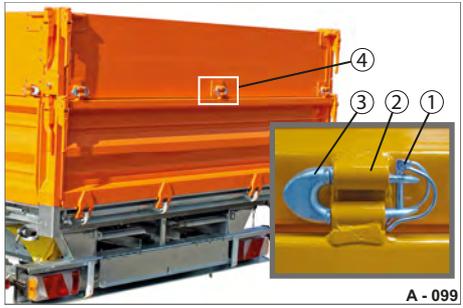


Fig. 104 Platform gate attachment hinges

- 1 Socket pin with spring clamp
- 2 Hinge bearing
- 3 U-bracket
- 4 Hinge

The platform gate attachments are connected to the base platform gates with several platform gate attachment hinges.

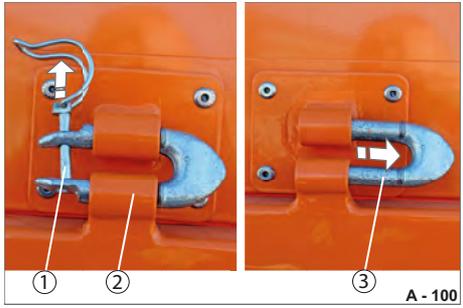


Fig. 105 Unfastening hinges

Unlocking/releasing

- ▶ Swing the spring clamp and pull out the socket pin (Fig. 105/1).
- ▶ Remove the U-bracket (Fig. 105/3) out of the hinge bearing (Fig. 105/2). If necessary, use a plastic hammer to knock out the U-bracket.

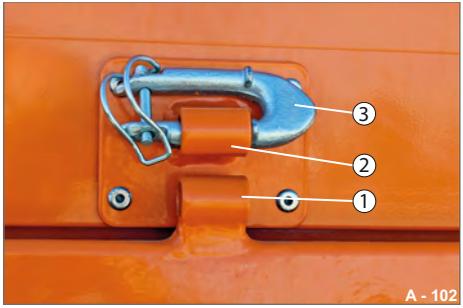


Fig. 106 U-bracket, parked

- 1 Base platform gate hinge bearing
- 2 Platform gate attachment hinge bearing
- 3 U-bracket, parked/secured

Parking

- ▶ Guide the U-bracket (Fig. 106/3) into the hinge bearing (Fig. 106/2) of the platform gate attachment.
- ▶ Secure this with the socket pin and spring clamp (Fig. 104/1). The U-bracket is secured from falling out.

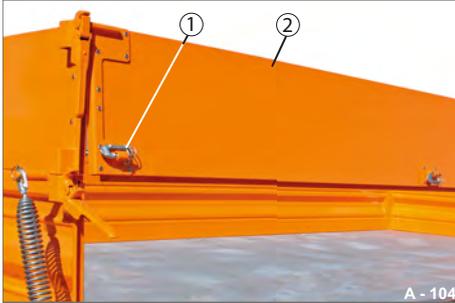


Fig. 107 U-bracket, parked

- 1 U-bracket on platform gate attachment
- 2 Platform gate attachment, swinging

- ▶ Park the U-bracket to the hinge bearings of the platform gate attachments.

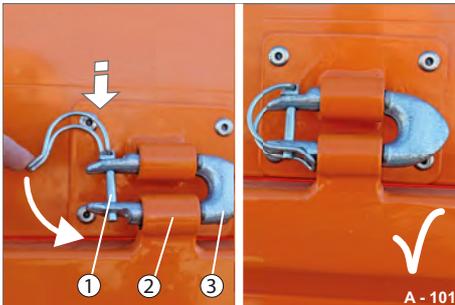


Fig. 108 Hinges, secured



- 1 Socket pin with spring clamp
- 2 Hinge bearing
- 3 U-bracket

Securing

- ▶ Stick the U-bracket (Fig. 108/3) into the hinge bearing (Fig. 108/2). If necessary, use a plastic hammer to drive in the U-bracket.
- ▶ Stick the socket pin (Fig. 108/1) from above into the bore holes of the U-bracket (Fig. 108/3).
- ▶ Swing the spring clamp (Fig. 108/1) downwards.

The platform gate attachment hinge is secured.



Fig. 109 Hinges, secured on all sides

- 1 Side hinges

- 2 Rear hinge

- ▶ Check that all hinges of the platform gate attachments (Fig. 109/1 & Fig. 109/2) are connected and secured to the base platform gates before departing.

Pendulum mode when combined (side)

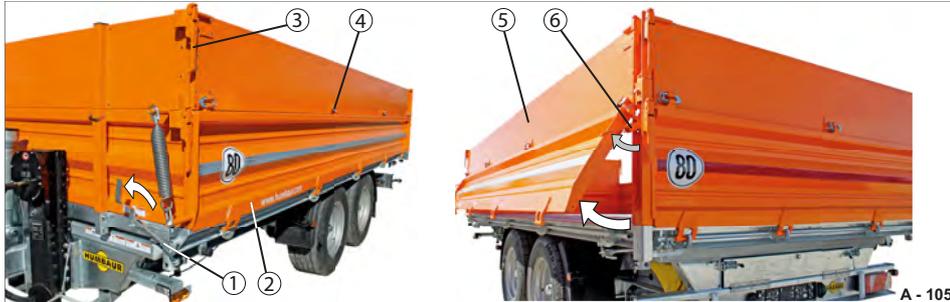


Fig. 110 Side platform gates swinging combined with platform gate attachment

- 1 Central locking system, open
- 2 Base platform gate, unlocked
- 3 Platform gate attachment locks, CLOSED
- 4 Hinges, secured
- 5 Platform gate attachment, swinging
- 6 Base platform gate locks, OPEN



The locks of the platform gate attachment (Fig. 110/3) must stay closed.
The hinges (Fig. 110/4) must be secured!



For operation of the locks, see page 134 and the central locking system, see page 137.

Opening

- ▶ Unfasten the locks of the base platform gate (Fig. 110/6).
- ▶ Unlock the central locking system (Fig. 110/1).
The base platform gate combined with platform gate attachment swings.
The loading platform can be folded down.

Closing

- ▶ Close the central locking system (Fig. 110/1).
- ▶ Fasten the locks of the base platform gate (Fig. 110/6).
The base platform gate with platform gate attachment is locked.

Pendulum mode when combined (rear)

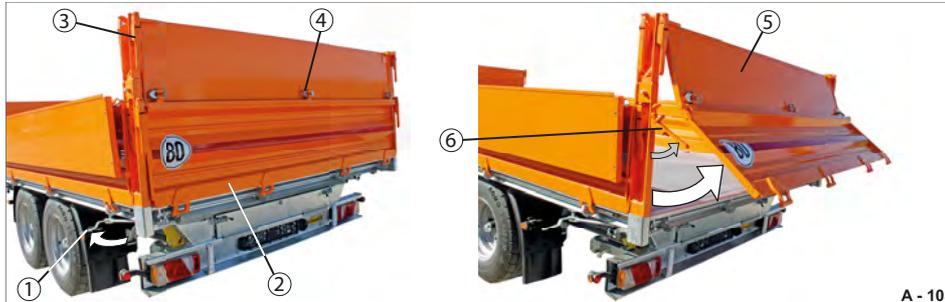


Fig. 111 Rear platform gates swinging combined with platform gate attachment

- 1 Central locking system, open
- 2 Rear platform gate unlocked
- 3 Platform gate attachment locks, CLOSED
- 4 Hinges, secured
- 5 Platform gate attachment, swinging
- 6 Rear platform gate locks, OPEN



The locks of the platform gate attachment (Fig. 111/3) must stay closed.

The hinges (Fig. 111/4) must be secured!



For operation of the locks, see page 134 and the central locking system, see page 137.

Opening

- ▶ Unfasten the locks of the rear platform gate (Fig. 111/6).
- ▶ Unlock the central locking system (Fig. 111/1).

The rear platform gate combined with platform gate attachment swings.

The loading platform can be folded down.

Closing

- ▶ Close the central locking system (Fig. 111/1).
- ▶ Fasten the locks of the base platform gate (Fig. 111/6).

The rear platform gate with platform gate attachment is locked.

Folding mode of the platform gate attachment (side)

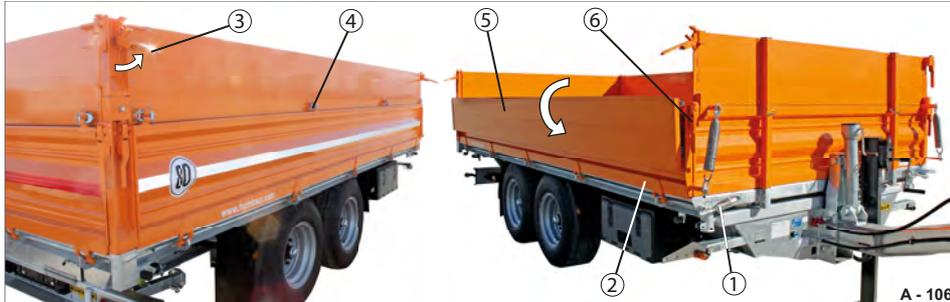


Fig. 112 Platform gate attachment folded to the side

- 1 Central locking system, CLOSED
- 2 Base platform gate, CLOSED
- 3 Platform gate attachment locks, OPEN
- 4 Hinges, secured
- 5 Platform gate attachment, folded down
- 6 Base platform gate locks, CLOSED



The locks of the base platform gate (Fig. 112/2) and the central locking system (Fig. 112/1) must be closed!

The hinges (Fig. 112/4) must be secured!



For operation of the lock, see page 134.

Opening

- ▶ Unfasten the locks of the platform gate attachment (Fig. 112/3).
 - ▶ Hold the platform gate attachment (Fig. 112/5) firmly and fold it down in a slow and controlled manner. The platform gate attachment hangs on the hinges.
- The loading platform can be loaded.

Closing

- ▶ Fold up the platform gate attachment (Fig. 112/5).
 - ▶ Fasten the locks of the platform gate attachment (Fig. 112/3).
- The platform gate attachment sits on the base platform gate and is locked.

Folding mode of the base platform gate (side)



Fig. 113 Base platform gate folded down/platform gate attachment swinging

- 1 Central locking system, CLOSED
- 2 Base platform gate, folded down
- 3 Platform gate attachment locks, CLOSED
- 4 Hinges, released/parked
- 5 Platform gate attachment, swinging
- 6 Base platform gate locks, OPEN



The locks of the platform gate attachment (Fig. 113/3) and the central locking system (Fig. 113/1) must be closed!

The hinges (Fig. 113/4) must be released!



For operation of the locks, see page 134 and the hinges, see page 172.

Opening

- ▶ Release the hinges of the platform gate attachment (Fig. 113/4).
- ▶ Unfasten the locks of the base platform gate (Fig. 113/6).
- ▶ Hold the base platform gate (Fig. 113/2) firmly and fold it down in a slow and controlled manner.
The base platform gate is folded down.

The platform gate attachment (Fig. 113/5) swings on the locks (Fig. 113/3).

Closing

- ▶ Fold up the base platform gate (Fig. 113/2).
- ▶ Fasten the locks (Fig. 113/6) of the base platform gate (Fig. 113/2).
- ▶ Fasten the hinges (Fig. 113/4) of the platform gate attachment.
The base platform gate and platform gate attachment are secured.

Folding mode of the platform gate attachment (rear)



Fig. 114 Rear platform gate attachment, folded down

- 1 Central locking system, CLOSED
- 2 Rear platform gate, CLOSED
- 3 Platform gate attachment locks, OPEN
- 4 Hinges, secured
- 5 Platform gate attachment, folded down
- 6 Rear platform gate locks, CLOSED



The locks of the rear platform gate (Fig. 114/2) and the central locking system (Fig. 114/1) must be closed!

The hinges (Fig. 114/4) must be secured!



For operation of the locks, see page 134.

Opening

- ▶ Unfasten the locks of the platform gate attachment (Fig. 114/3).
 - ▶ Hold the platform gate attachment (Fig. 114/5) firmly and fold it down in a slow and controlled manner. The platform gate attachment hangs on the hinges.
- The loading platform can be loaded.

Closing

- ▶ Fold up the platform gate attachment (Fig. 114/5).
 - ▶ Fasten the locks of the platform gate attachment (Fig. 114/3).
- The platform gate attachment sits on the base platform gate and is locked.

Folding mode of rear platform gate (rear)



Fig. 115 Rear platform gate/platform gate attachment swinging

- 1 Central locking system, CLOSED
- 2 Rear platform gate, folded down
- 3 Platform gate attachment locks, CLOSED
- 4 Hinges, released/parked
- 5 Platform gate attachment, swinging
- 6 Rear platform gate locks, OPEN



The locks of the platform gate attachment (Fig. 115/3) and the central locking system (Fig. 115/1) must be closed!
The hinges (Fig. 115/4) must be released!



For operation of the locks, see page 134 and the hinges, see page 172.

Opening

- ▶ Release the hinges of the platform gate attachment (Fig. 115/4).
- ▶ Unfasten the locks of the rear platform gate (Fig. 115/6).
- ▶ Hold the rear platform gate (Fig. 115/2) firmly and fold it down in a slow and controlled manner.
The rear platform gate is folded down.

The platform gate attachment (Fig. 115/5) swings on the locks (Fig. 115/3).

Closing

- ▶ Fold up the rear platform gate (Fig. 115/2).
- ▶ Fasten the locks (Fig. 115/6) of the rear platform gate (Fig. 115/2).
- ▶ Fasten the hinges (Fig. 115/4) of the platform gate attachment.
The rear platform gate and platform gate attachment are secured.

Disassembling platform gate attachment (rear)

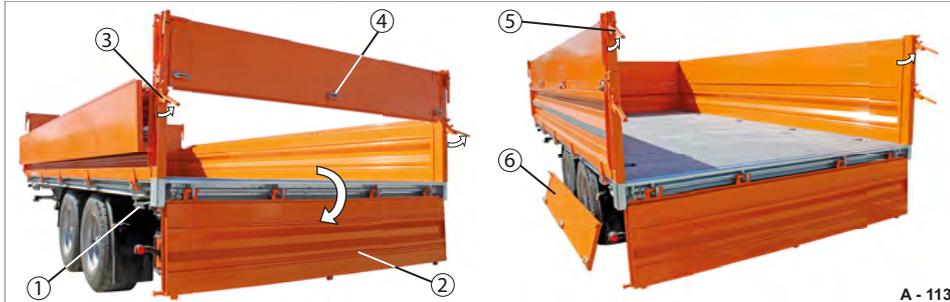


Fig. 116 Rear platform gate/platform gate attachment disassembled

- 1 Central locking system, CLOSED
- 2 Rear platform gate, folded down
- 3 Rear platform gate locks, OPEN
- 4 Hinges, released/parked
- 5 Platform gate attachment locks, OPEN
- 6 Platform gate attachment, disassembled



The locks of the platform gate attachment (Fig. 116/3) and the central locking system (Fig. 116/1) must be closed!
The hinges (Fig. 116/4) must be released!



For operation of the locks, see page 134 and the hinges, see page 172.

Opening

- ▶ Release the hinges of the platform gate attachment (Fig. 116/4).
- ▶ Unfasten the locks of the rear platform gate (Fig. 116/3).
- ▶ Hold the rear platform gate (Fig. 116/2) firmly and fold it down in a slow and controlled manner.
The rear platform gate is folded down.
The platform gate attach (Fig. 116/6) swings on the locks (Fig. 116/5).
- ▶ Unfasten the locks of the platform gate attachment (Fig. 116/5).
- ▶ Remove the platform gate attachment.

Closing

- ▶ Fold up the rear platform gate (Fig. 116/2).
- ▶ Fasten the locks (Fig. 116/3) of the rear platform gate.
- ▶ Insert the platform gate attachment into the open locks (Fig. 116/5).
- ▶ Close the locks of the platform gate attachment.
- ▶ Fasten the hinges (Fig. 116/4) of the platform gate attachment.
The rear platform gate and platform gate attachment are secured.

Operating swinging gate with platform gate attachment (rear)



Fig. 117 Rear platform gate as swinging gate

- 1 Platform gate attachment swinging gate, open
- 2 Base platform gate swinging gate, open
- 3 Hinges
- 4 Door stay

The swinging gate combination is opened completely to the side platform gate and secured with a door stay (Fig. 117/4).

This process facilitates loading and unloading vehicles using the ramp planks. The ramp planks can be laid down directly after opening the swinging gate.

WARNING



Tipping loading platform with opened swinging gate

The door stay would not be able to hold the swinging gate.

The swinging gate would swing downwards uncontrollably - risk of striking/crushing!

- ▶ Never tilt the loading platform with opened swinging gate.
- ▶ Check that the rear platform gate is in folding/pendulum mode before the tipping process.

CAUTION



Opening/closing swinging gate

Fingers/hands can get crushed. People can be hit by it.

- ▶ Hold the swinging gate tightly when moving - do not let it slam shut.
- ▶ Fasten the swinging gate with the door stay after opening.



Fig. 118 Opening rear platform gate with platform gate attachment as swinging gate

- 1 Central locking system, OPEN
- 2 Base platform gate, OPEN
- 3 Platform gate attachment, OPEN
- 4 Locking bolt, secured
- 5 Hinges, secured
- 6 Hinge side locks, CLOSED
- 7 Door stay



The hinge side locks (Fig. 118/6), hinges (Fig. 118/5), locking bolts (Fig. 118/4) must remain closed!



For operation of the locks, see page **134**, central locking system, see page **144**, door stay, see page **152**.

- ▶ Keep personnel away from the swinging range of the swinging gate.

Opening

- ▶ Unlock the central locking system (Fig. 118/1).
- ▶ Unfasten the locks (Fig. 118/2 & Fig. 118/3) on the opening side.
The swinging gate is released.
- ▶ Swing the swinging gate carefully to the side platform gate.
- ▶ Pull the door stay (Fig. 118/7) out of the holder.
- ▶ Rotate the door stay upwards about 90 ° and fasten the swinging gate.
The swinging gate is secured against closing on its own.

Closing

- ▶ Pull on the door stay (Fig. 118/8) and lock it in the holder.
- ▶ Carefully close the swinging gate. When doing so, make sure the locks (Fig. 118/2 & Fig. 118/3) and the central locking system (Fig. 118/1) are open.
- ▶ Close the central locking system.
- ▶ Close the locks.
- ▶ Check that the locks on the hinge side are closed before departing.

Swinging gate combination in pendulum mode

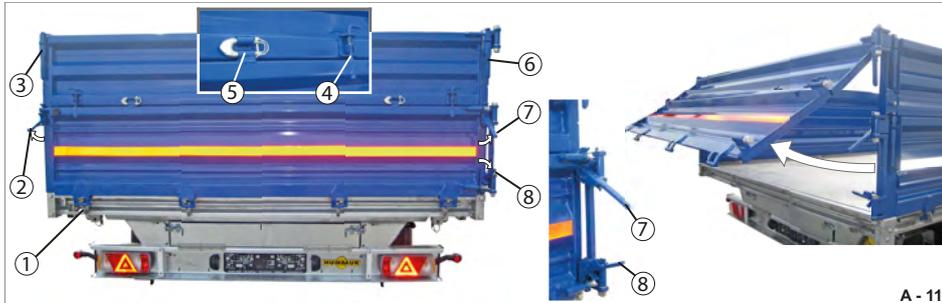


Fig. 119 Swinging gate combination in pendulum mode

- 1 Central locking system, OPEN
- 2 Base platform gate locks, OPEN
- 3 Right platform gate attachment lock, CLOSED
- 4 Locking bolt, CLOSED
- 5 Hinges, secured
- 6 Left platform gate attachment lock, CLOSED
- 7 Upper right base platform gate, OPEN
- 8 Lower right base platform gate lock, OPEN



The platform gate attachment locks (Fig. 119/3 & Fig. 119/6), hinges (Fig. 119/5), locking bolts (Fig. 119/4) must remain closed!

Unlocking swinging gate combination

- ▶ Unlock the lower right lock of the base platform gate (Fig. 119/4).
- ▶ Unlock the central locking system (Fig. 119/1).
- ▶ Unlock the upper locks of the base platform gate (Fig. 119/2 & Fig. 119/7).

The base platform gate is connected to the platform gate attachment with hinges (Fig. 119/5).

The swinging gate combination is in pendulum mode.

Locking swinging gate combination

- ▶ Close the central locking system (Fig. 119/1).
The base platform gate is locked at the bottom.
- ▶ Lock the lower right lock of the base platform gate (Fig. 119/8).
- ▶ Fasten the upper locks of the base platform gate (Fig. 119/2 & Fig. 119/7).
The swinging gate combination is completely locked.

Folding mode of rear platform gate (rear) as swinging gate

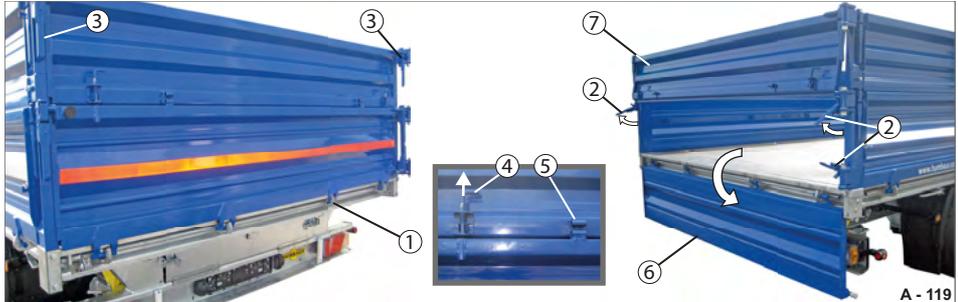


Fig. 120 Rear platform gate/platform gate attachment swinging

- 1 Central locking system, CLOSED
- 2 Rear platform gate locks, OPEN
- 3 Platform gate attachment locks, CLOSED
- 4 Locking bolt, OPEN
- 5 Hinges, released
- 6 Rear platform gate, folded down
- 7 Platform gate attachment, swinging

Opening

- ▶ Release the hinges of the platform gate attachment (Fig. 120/5).
- ▶ Pull both locking bolts (Fig. 120/4) out and lock them.
- ▶ Unfasten the locks of the rear platform gate (Fig. 120/2).
- ▶ Hold the rear platform gate (Fig. 120/6) firmly and fold it down in a slow and controlled manner. The rear platform gate is folded down.

The platform gate attachment (Fig. 115/7) swings on the locks (Fig. 120/3).

Closing

- ▶ Fold up the rear platform gate (Fig. 120/6).
- ▶ Fasten the locks (Fig. 120/2) of the rear platform gate.
- ▶ Loosen the two locking bolts (Fig. 120/4).
- ▶ Fasten the hinges (Fig. 120/5) of the platform gate attachment. The rear platform gate and platform gate attachment are secured.



The locks of the platform gate attachment (Fig. 120/3) and the central locking system (Fig. 120/1) must be closed!



For operation of the locks, see page 134 and the hinges, see page 172.

Platform gate attachment with dual lifting gear (variant 1)



Fig. 121 Lifting springs, suspended

- 1 Clamping bolt, tensioned
- 2 Dual tension springs, tensioned
- 3 Fork head, fixed
- 4 Socket pin, secured
- 5 Holder

The dual lifting gear is necessary with steel platform gate attachment for easy operation by 1 person.



The lifting gear must be unhooked for pendulum mode when combined.

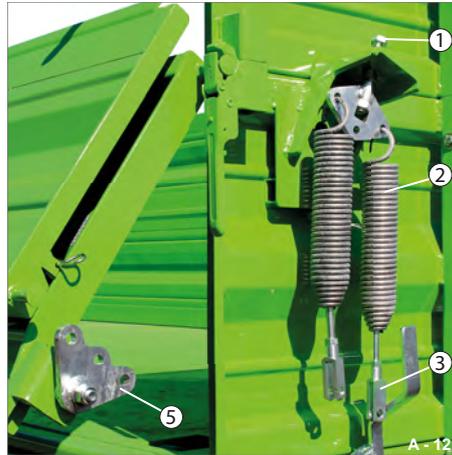


Fig. 122 Lifting springs, unhooked

- 1 Clamping bolt, released
- 2 Dual tension springs, slackened
- 3 Fork head, released
- 4 Socket pin, removed
- 5 Holder

Unhooking

- ▶ Loosen the clamping bolt (Fig. 122/1) with the hexagon key. The dual tension springs slacken.
- ▶ Twist the socket pins (Fig. 122/4) out of the fork heads (Fig. 122/3) and the holder (Fig. 122/5).
- ▶ Keep the socket pins in a safe place. The lifting springs are unhooked.

Suspending

- ▶ Position the holder (Fig. 122/5) in the fork heads (Fig. 122/3) - in the outer bore holes.
- ▶ Stick the socket pins (Fig. 122/4) through the fork heads and holder and tighten them.
- ▶ Tighten the clamping bolt (Fig. 122/1). The lifting springs are tensioned.

Platform gate attachment with dual lifting gear

Platform gate attachment with dual lifting gear (variant 2)

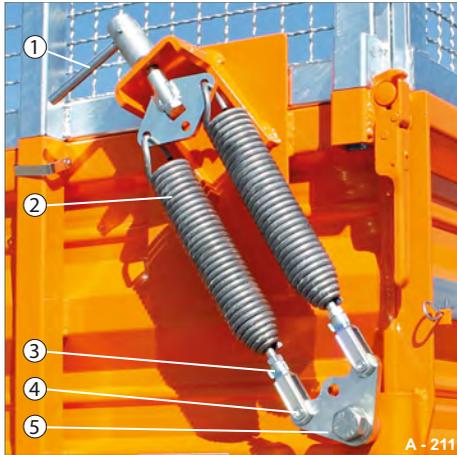


Fig. 123 Lifting springs, suspended

- 1 Clamping bolt with lever, tensioned
- 2 Dual tension springs, tensioned
- 3 Fork head, fixed
- 4 Socket pin, secured
- 5 Holder

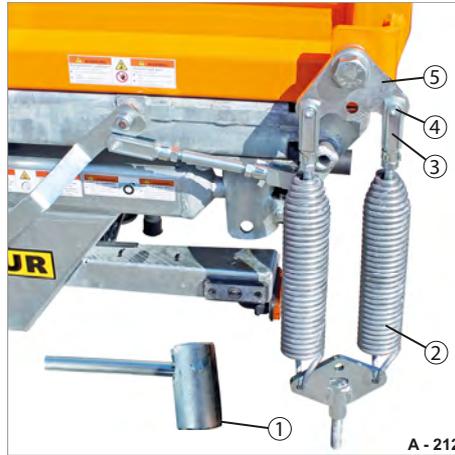


Fig. 124 Lifting springs, unhooked

- 1 Clamping bolt with lever, released
- 2 Dual tension springs, slackened
- 3 Fork head, secured
- 4 Socket pin, inside
- 5 Holder, suspended on platform gate

The dual lifting gear is necessary with steel platform gate attachment for easy operation by 1 person.



The lifting gear must be unhooked for pendulum mode when combined.

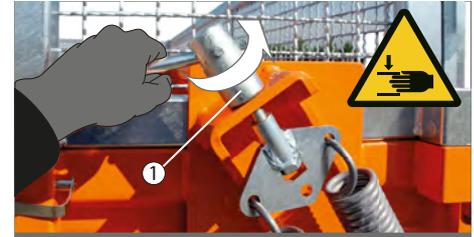


Fig. 125 Releasing lifting springs

- 1 Clamping bolt with lever
- 2 Holder, fixed on front platform gate
- 3 Threaded bolt

Unhooking

- ▶ Open the clamping bolt completely (Fig. 125/1) with the lever. The lever is swivel-mounted.
- ▶ Remove the clamping bolts. Keep them in a safe place.

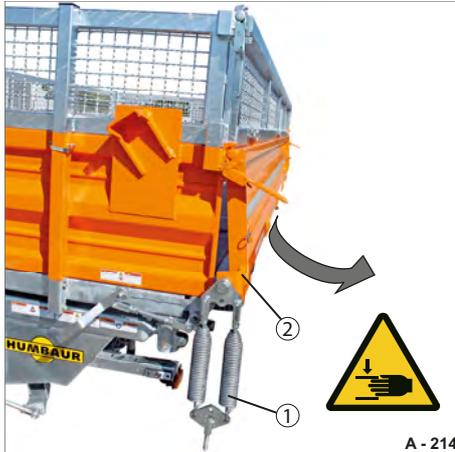


Fig. 126 Lifting springs freely suspended

- 1 Lifting gear, suspended on platform gate
- 2 Platform gate swinging combined with steel grate attachment, unlocked

- ▶ Lead the lifting gear with threaded bolts (Fig. 125/3) out of the holder (Fig. 125/2).

Carefully rotate the lifting gear (Fig. 126/1) downwards.

- ▶ Unlock the platform gate. The platform gate is in pendulum mode with the steel grate attachment.

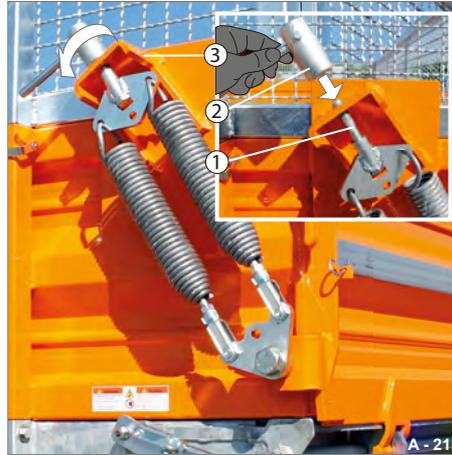


Fig. 127 Suspending/securing lifting springs

- 1 Threaded bolt
- 2 Clamping bolt with lever
- 3 Holder, fixed on front platform gate

Suspending

- ▶ Close the platform gate.
- ▶ Lead the threaded bolts (Fig. 127/1) through the holder (Fig. 127/3).

- ▶ Screw on the clamping bolt (Fig. 127/2) and tighten the lifting springs. The lifting springs are suspended and secured.

Folding mode of the platform gate attachment (side)



Fig. 128 Platform gate attachment folded to the side

- 1 Central locking system, CLOSED
- 2 Lifting springs, suspended
- 3 Platform gate attachment locks, OPEN
- 4 Hinges, secured
- 5 Spring pin, pulled out
- 6 Platform gate attachment, folded down
- 7 Spring pin, inserted
- 8 Base platform gate locks, CLOSED



The locks of the base platform gate (Fig. 128/8) and the central locking system (Fig. 128/1) must be closed!

The hinges (Fig. 128/4) must be secured!



For operation of the locks, see page 134.

Opening

- ▶ Unfasten the locks of the platform gate attachment (Fig. 128/3).
- ▶ Hold the platform gate attachment (Fig. 128/6) firmly and fold it down in a slow and controlled manner.
- ▶ Secure the platform gate attachment on both sides with the spring pin (Fig. 128/7).

The platform gate attachment hangs on the hinges (Fig. 128/4).

The loading platform can be loaded.

Closing

- ▶ Pull out both spring pins (Fig. 128/7).
- ▶ Fold up the platform gate attachment (Fig. 128/6).
- ▶ Fasten the locks of the platform gate attachment (Fig. 128/3).
- ▶ Insert the spring pin in the latch of the base platform gate (Fig. 128/5).

The platform gate attachment sits on the base platform gate and is locked.

Folding mode of the platform gate attachment combined with base platform gate (side)

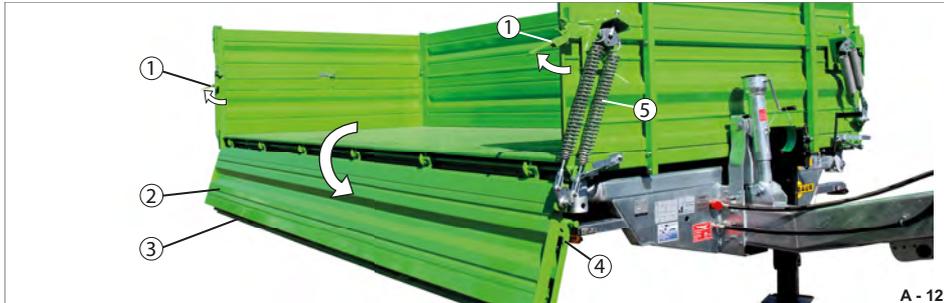


Fig. 129 Base platform gate combined with platform gate attachment folded down

- 1 Base platform gate locks, OPEN
- 2 Base platform gate, folded down
- 3 Platform gate attachment, folded down
- 4 Spring pin, inserted
- 5 Lifting springs, tensioned



The central locking system (Fig. 128/1) must remain closed!
The hinges (Fig. 128/4) must be secured!
The spring pins (Fig. 128/7) must be inserted.

- ▶ Fold down the platform gate attachment and secure it to the base platform gate - see page **188**.

Opening

- ▶ Unfasten the locks of the base platform gate (Fig. 129/1).
- ▶ Hold the base platform gate and platform gate attachment combination (Fig. 129/2 & Fig. 129/3) firmly and fold it down in a slow and controlled manner.

The base platform gate with platform gate attachment hangs on the locking points of the central locking system.

The lifting springs are tensioned.

The loading platform can be loaded or tipped.

Closing

- ▶ Fold up the platform gate attachment with base platform gate combination. The lifting springs assist you.
- ▶ Fasten the locks of the base platform gate (Fig. 129/1).
- ▶ Pull out both spring pins (Fig. 128/7).
- ▶ Fold up the platform gate attachment and secure it with locks (Fig. 128/3) - see page **188**.

The base platform gate and platform gate attachment are locked.

Folding mode of the base platform gate, platform gate attachment swinging (side)

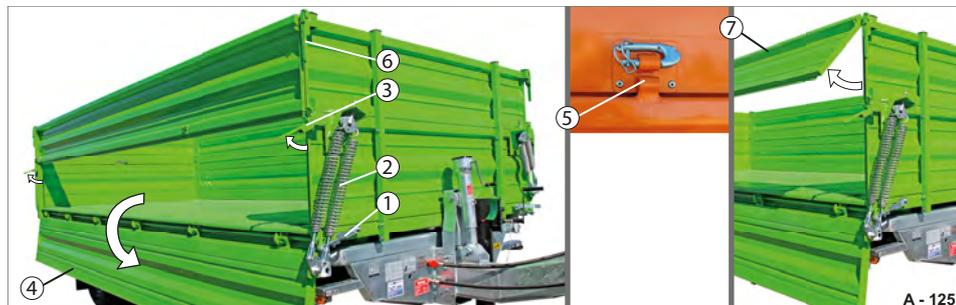


Fig. 130 Base platform gate combined with platform gate attachment folded down

- 1 Central locking system, CLOSED
- 2 Lifting springs, suspended
- 3 Base platform gate locks, OPEN
- 4 Base platform gate, folded down
- 5 Hinges, unfastened, parked
- 6 Platform gate attachment locks, CLOSED
- 7 Platform gate attachment, swinging



The central locking system (Fig. 130/1) and the locks of the platform gate attachment (Fig. 130/6) must remain closed!



For operation of the locks, see page **134** and the hinges, see page **172**.

Opening

- ▶ Release the hinges (Fig. 130/5).
- ▶ Unfasten the locks (Fig. 130/3) of the base platform gate.
- ▶ Hold the base platform gate (Fig. 130/4) firmly and fold it down in a slow and controlled manner. The base platform gate hangs on the locking points of the central locking system.

The platform gate attachment swings in the bearing points of the locks.

The lifting springs are tensioned.

Closing

- ▶ Fold up the base platform gate (Fig. 130/4). The lifting springs assist you.
- ▶ Fasten the locks of the base platform gate (Fig. 130/3).
- ▶ Secure the hinges (Fig. 128/5) - see page **172**. The base platform gate and platform gate attachment are locked.

Swinging mode of the base platform gate with folded down platform gate attachment (side)



Fig. 131 Base platform gate with folded down platform gate attachment swinging

- 1 Base platform gate locks, CLOSED
- 2 Lifting springs, unhooked
- 3 Spring pin, inserted
- 4 Central locking system, OPEN



The locks of the base platform gate (Fig. 131/1) must remain closed.

The hinges (Fig. 128/4) must be secured!

The spring pins (Fig. 128/7) must be inserted.

- ▶ Fold down the platform gate attachment and secure it to the base platform gate - see page 188.
- ▶ Unhook the lifting springs - see page 185.

Opening

- ▶ Unlock the central locking system (Fig. 131/4).

The base platform gate with platform gate attachment swings in the locking pins of the base platform gate.

The loading platform can be folded down.

Closing

- ▶ Lock the base platform gate (Fig. 131/1) with the central locking system (Fig. 131/4).
- ▶ Fasten the locks of the base platform gate (Fig. 130/3).
- ▶ Hang up the lifting springs - see page 185.
- ▶ Pull out both spring pins (Fig. 131/3).
- ▶ Fold up the platform gate attachment and secure it with locks (Fig. 128/3) - see page 188.

The base platform gate and platform gate attachment are locked.

Swinging mode of the base platform gate combined with platform gate attachment (side)



Fig. 132 Base platform gate with folded down platform gate attachment swinging

- 1 Central locking system, OPEN
- 2 Lifting springs, unhooked
- 3 Base platform gate locks, OPEN
- 4 Hinges, secured
- 5 Platform gate attachment locks, CLOSED
- 6 Base platform gate with platform gate attachment, swinging



The locks of the platform gate attachment (Fig. 132/5) must stay closed.

The hinges (Fig. 132/4) must be secured!

- ▶ Unhook the lifting springs - see page 185.

Opening

- ▶ Unlock the central locking system (Fig. 132/1).
- ▶ Unfasten the locks (Fig. 132/3) of the base platform gate.

The base platform gate with platform gate attachment swings in the locking pins of the platform gate attachment.

The loading platform can be folded down.

Closing

- ▶ Lock the base platform gate with the central locking system (Fig. 132/1).
- ▶ Fasten the locks of the base platform gate (Fig. 132/3).
- ▶ Hang up the lifting springs - see page 185.

The base platform gate and platform gate attachment are locked.

Front platform gate attachments

The front platform gate attachments can optionally be put on the front platform gate.

The front platform gate attachments can get deformed if they are not in use.

The front platform gate attachments are used to secure the load.

The front platform gate attachments can come as follows:

- As a steel platform gate
- As a steel grate wall
- As an aluminium platform gate



WARNING



Driving with unsecured front platform gate attachment

The front platform gate attachment can be ejected during the journey - risk of striking/injury!

- ▶ Check that the front platform gate attachment is secured in the side posts before departing.

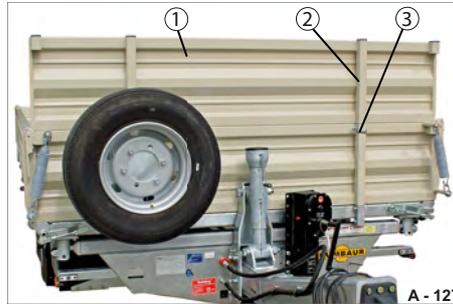


Fig. 133 Front platform gate attachment

- 1 Steel platform gate attachment
- 2 Side post
- 3 Spring cotter stud



Front platform gate attachments are heavy!

The front platform gate attachments must be assembled/disassembled in pairs.

The assembly/disassembly of front platform gate attachments made of steel, aluminium or steel grate is the same.

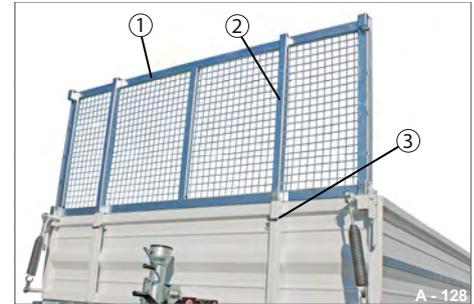


Fig. 134 Front platform gate attachment

- 1 Steel grate attachment
- 2 Side post
- 3 Spring cotter stud

5 Front platform gate attachments

Mounting/securing front platform gate attachment

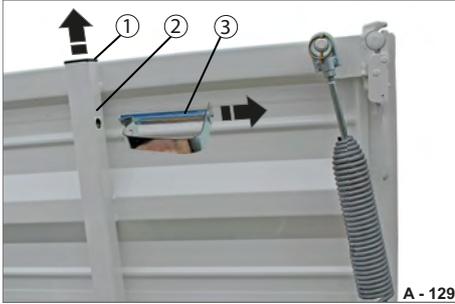


Fig. 135 Preparing installation

- 1 Cap
- 2 Base platform gate side post
- 3 Spring cotter stud, removed

- ▶ Remove the caps (Fig. 135/1) from the posts (Fig. 135/2).
- ▶ Remove the spring cotter stud (Fig. 135/3) if necessary.

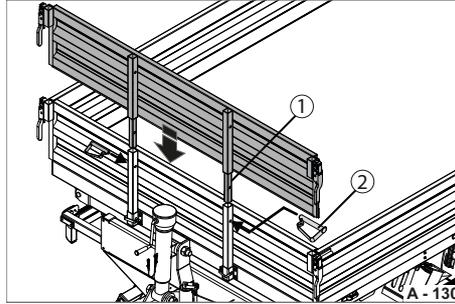


Fig. 136 Installing front platform gate attachment

- 1 Platform gate attachment side post
- 2 Spring cotter stud

- ▶ Insert the front platform gate attachment (Fig. 133/1 & Fig. 134/1) into the posts of the base platform gate (Fig. 135/2).
- ▶ Insert the spring cotter stud (Fig. 136/2) through the bore holes in the posts.

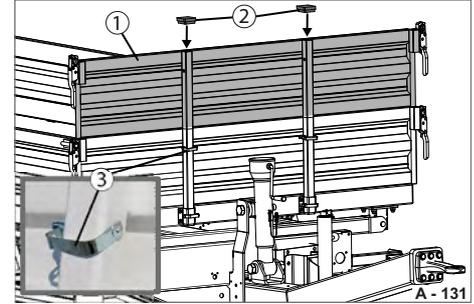


Fig. 137 Front platform gate attachment secured

- 1 Platform gate attachment, inserted
- 2 Caps
- 3 Spring cotter stud, inserted

- ▶ Check that the front platform gate attachment is secured before departing.
- ▶ Insert the caps (Fig. 137/2) into the side posts (Fig. 135/2) of the front platform gate attachment. The front platform gate attachment is secured.

Disassembling front platform gate attachment

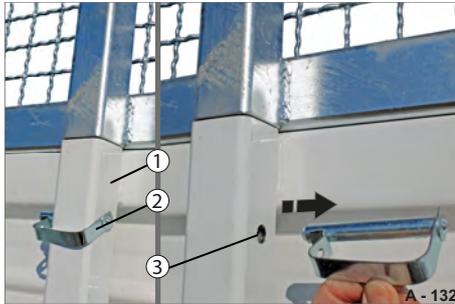


Fig. 138 Unlocking

- 1 Base platform gate side post
- 2 Spring cotted stud
- 3 Bore hole

- ▶ Pull on the spring clamp of the spring cotted stud (Fig. 138/2) and pull the spring cotted stud out of the bore hole (Fig. 138/3).
The front platform gate attachment is released.

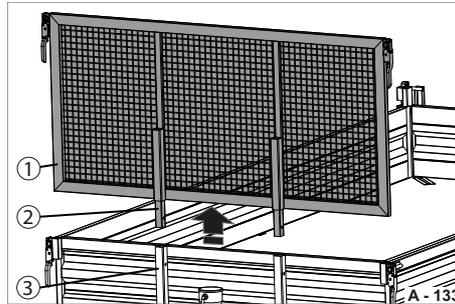


Fig. 139 Disassembling steel grate attachment

- 1 Steel grate attachment
- 2 Steel grate attachment post
- 3 Base platform gate side post

- ▶ Pull the steel grate attachment (Fig. 139/1) out of the posts of the base platform gate (Fig. 139/3).
- ▶ Place the steel grate attachment safely away to protect it from damage.

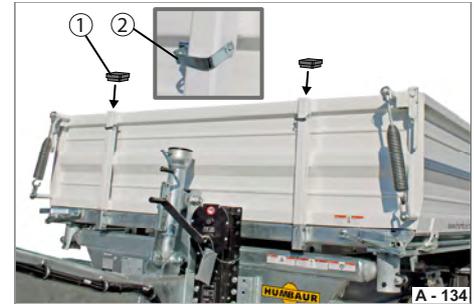


Fig. 140 Base platform gate without front platform gate attachment

- 1 Caps
- 2 Spring cotted stud

- ▶ Insert the caps (Fig. 140/1) into the side posts (Fig. 139/3) of the base platform gate.
- ▶ Insert the spring cotted stud (Fig. 140/2) into the bore holes of the base platform gate (Fig. 138/3).

Support frame

The support frame can optionally be put on the front platform gate.

It is used to accommodate, for example, a dredging shovel or a wheel loader.

It can be disassembled if it is not needed.

⚠ 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.

⚠ CAUTION

Standing on the support frame
Persons may slip and fall off.

- ▶ Do not climb on the support frame.

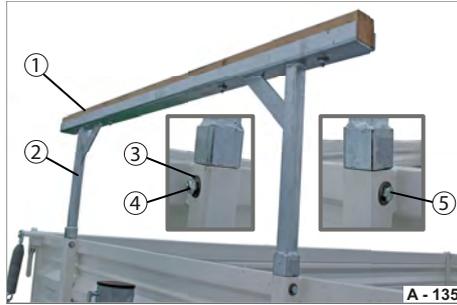


Fig. 141 Support frame tightly bolted

- 1 Wood support
- 2 Support frame mount
- 3 Washer
- 4 Nut
- 5 Hexagon screw

The securely bolted support frame is not designed to be disassembled often.

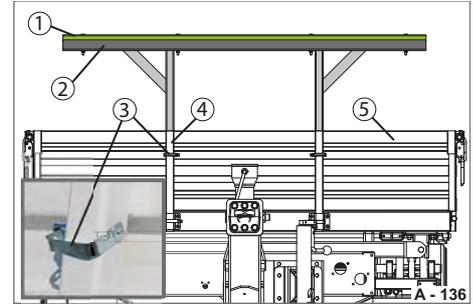


Fig. 142 Support frame, secured

- 1 Wood support
- 2 Support frame mount
- 3 Spring cotter stud
- 4 Side post
- 5 Front platform gate

The support frame secured with spring cotter stud can be assembled/ disassembled if needed.

Mounting/securing



Fig. 143 Preparing support frame installation

- 1 Cap
- 2 Side post

- ▶ Remove the caps (Fig. 143/1) from the posts (Fig. 143/2).

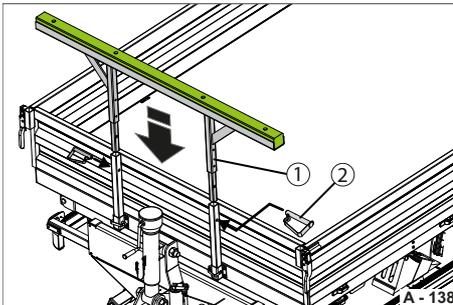


Fig. 144 Installing support frame

- 1 Support frame mount
- 2 Spring cotter stud

- ▶ Insert the support frame mount (Fig. 144/1) into the posts (Fig. 143/2).
- ▶ Insert the spring cotter stud (Fig. 144/2) through the bore holes in the posts.

The support frame is secured.

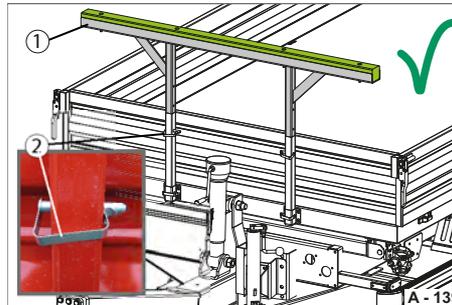


Fig. 145 Support frame, secured

- 1 Support frame mount, inserted
- 2 Spring cotter stud, inserted

- ▶ Check that the support frame is secured before departing.

Steel grate attachments

Steel grate attachments (1000 mm high) increase the loading volume of the trailer.

The steel grate attachment consists of 4 steel grate walls and 2 corner post attachments in the rear area.

The steel grate attachments are set on the base platform gates and secured with locks.

The front steel grate attachment is secured with spring cotter studs in side posts.

The function of the base platform walls (folding/pendulum mode) remains unchanged.



Folding mode of the steel grate attachments is not possible.

The steel grate attachments may not be operated in pendulum mode!



CAUTION



Unlocking steel grate attachments

The steel grate attachments sit on the base platform gates. The platform gate attachments are freely suspended if the steel grate attachments are folded down. After the locks are unfastened, the steel grate attachments fall - risk of striking/crushing!

- ▶ Unfasten the locks of the steel grate attachments only if they are secured against falling with an auxiliary aid such as a crane.

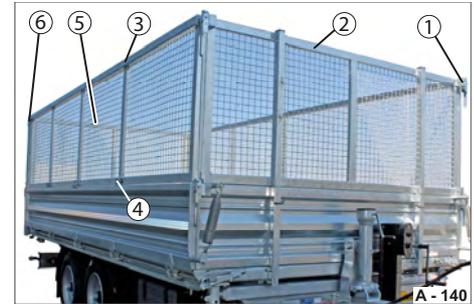


Fig. 146 Steel grate attachments, 4-sided

- 1 Locks
- 2 Front steel grate attachment
- 3 Side steel grate attachments
- 4 Hinges
- 5 Rear steel grate attachment
- 6 Corner post attachments, rear side

Folding mode of the base platform gate, steel grate attachment swinging (side and at rear)

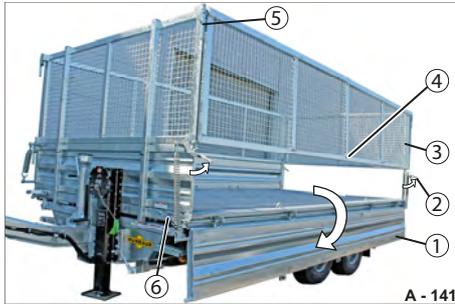


Fig. 147 Base platform gate folded down at the side, steel grate attachment swinging

- 1 Base platform gate, folded down
- 2 Base platform gate locks, OPEN
- 3 Steel grate attachment, swinging
- 4 Hinges, unfastened/parked
- 5 Steel plate attachment locks, CLOSED
- 6 Central locking system, CLOSED



The central locking system (Fig. 147/6) and the locks of the steel grate attachment (Fig. 147/5) must remain closed!



For operation of the locks, see page **134** and the hinges, see page **172**.

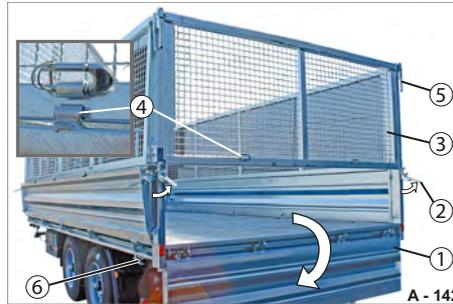


Fig. 148 Base platform gate folded down at the rear, steel grate attachment swinging

- 1 Base platform gate, folded down
- 2 Base platform gate locks, open
- 3 Steel grate attachment, swinging
- 4 Hinges, unfastened/parked
- 5 Steel plate attachment locks, CLOSED
- 6 Central locking system, CLOSED

Opening

- ▶ Release the hinges (Fig. 147/4).
- ▶ Unfasten the locks (Fig. 147/2) of the base platform gate.
- ▶ Hold the base platform gate (Fig. 147/1) firmly and fold it down in a slow and controlled manner. The base platform gate hangs on the locking points of the central locking system.

The steel grate attachment swings in the bearing points of the locks.

Closing

- ▶ Fold up the base platform gate (Fig. 147/1).
- ▶ Fasten the locks of the base platform gate (Fig. 147/2).
- ▶ Secure the hinges (Fig. 147/4) - see page **172**.

The base platform gate and steel grate attachment are locked.

5 Steel grate attachment

Swinging mode of the steel grate attachment combined with platform gate attachment (side and at rear)



Fig. 149 Base platform gate with side steel grate attachment, swinging

- 1 Central locking system, OPEN
- 2 Lifting springs, unhooked
- 3 Base platform gate locks, open
- 4 Hinges, secured
- 5 Base platform gate with steel grate attachment, swinging
- 6 Steel plate attachment locks, CLOSED



The locks of the steel grate attachment (Fig. 149/6) must stay closed.
The hinges (Fig. 149/4) must be secured!

- ▶ Unhook the lifting springs - see page 185.

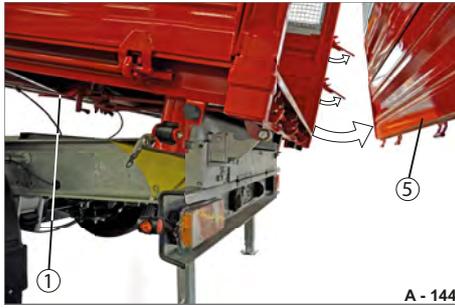


Fig. 150 Base platform gate with rear steel grate attachment, swinging

Opening

- ▶ Unlock the central locking system (Fig. 149/1).
- ▶ Unfasten the locks (Fig. 149/3) of the base platform gate.
The base platform gate with steel grate attachment swings in the locking pins of the steel grate attachment.
The loading platform can be folded down.

Closing

- ▶ Lock the base platform gate with the central locking system (Fig. 149/1).
- ▶ Fasten the locks of the base platform gate (Fig. 149/3).
- ▶ Hang up the lifting springs (with side platform gates) - see page 185.
The base platform gate and steel grate attachment are locked.

Assembling/disassembling steel grate attachments

The steel grate attachments can get deformed if they are not in use.



When disassembling the steel grate attachments, the corner posts at the rear must also be disassembled!



WARNING



Assembling/disassembling steel grate attachments

Steel grate attachments can fall - risk of crushing!



- ▶ Work in pairs.



- ▶ Use , .

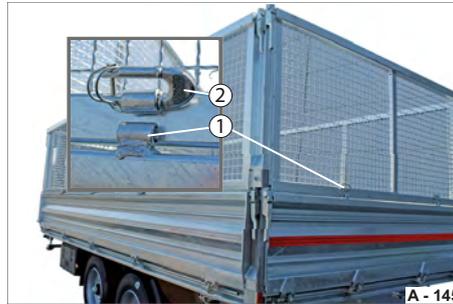


Fig. 151 Hinges, unfastened

- 1 Hinge
- 2 U-bracket

Unfastening hinges

- ▶ Release all hinges (Fig. 151/1) of the steel grate attachment.
- ▶ Park the U-bracket (Fig. 151/2) so it is secured from falling out.

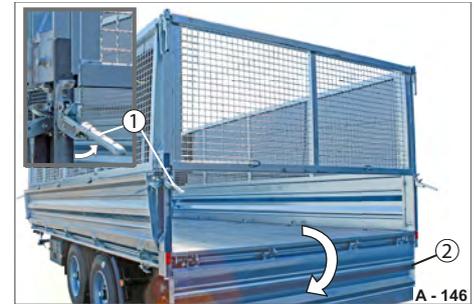


Fig. 152 Hinges, unfastened

- 1 Lock, base platform gate
- 2 Base platform gate, folded down

Folding down base platform gate

- ▶ Open the locks (Fig. 152/1) of the base platform gate.
- ▶ Carefully fold down the base platform gate (Fig. 152/2).



Fig. 153 Locks, released

- 1 Steel grate attachment
- 2 Lock, steel grate attachment

Unlocking steel grate attachment



After unfastening the locks, the steel grate attachment is loose!

- ▶ Open the locks (Fig. 153/2) of the steel grate attachment. Hold the steel grate attachment firmly - use auxiliary aids such as a crane if necessary.
- ▶ Remove the steel grate attachment (Fig. 153/1). Keep the steel grate attachment in a safe place to protect them from damage.
- ▶ Fold up the base platform gates.

202 Operation: body

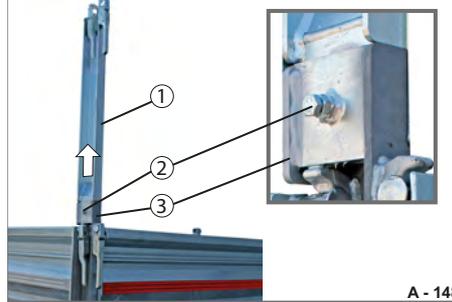


Fig. 154 Disassemble corner posts

- 1 Corner posts, steel grate attachment
- 2 Hexagon screw with lock nut
- 3 Corner posts, base platform gate

Disassembling corner posts

- ▶ Unscrew the hexagon screw (Fig. 154/2).
- ▶ Pull the corner post (Fig. 154/1) of the steel grate body out of the corner post (Fig. 154/3) of the base platform gate.
- ▶ Screw the hexagon screw into the corner post so it is secured from falling out. Keep the corner posts in a safe place to protect them from damage.

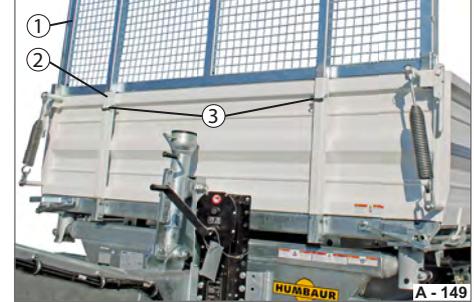


Fig. 155 Steel grate attachment, front side

- 1 Steel grate attachment
- 2 Front wall side posts
- 3 Spring cotter stud

Disassembling steel grate attachment



Driving with unsecured steel grate attachment is not allowed. It can be disassembled if it is not in use.

- ▶ Disassemble the steel grate attachment when not in use - see page **195**.
- ▶ Keep the steel grate attachment in a safe place to protect it from damage.

Ramp planks



Fig. 156 Ramp planks

- 1 Ramp plank
- 2 Ramp plank bay

The ramp planks are intended for loading/unloading construction vehicles onto the loading platform.

They are kept in the ramp plank bay of the chassis.

The ramp planks are made of aluminium with a ribbed surface, which increases grip/safety.

There are three types of ramp planks for the HTK trailers:

- VFR 105 (max. 8000 dAN (kg))
- VFR 120 (max. 10,000 dAN (kg))
- VFR-SO (max. 13,000 dAN (kg))

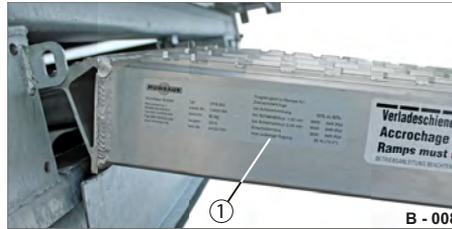


Fig. 157 Ramp plank nameplate

- 1 Nameplate



The max. load bearing capacity of the ramp planks and the permissible ramp angle must be observed!



When driving on the ramp planks, the maximum permissible weight of the trailer must not be exceeded!

Technical data

Type	VFR 105
Ramp angle	approx. 15°
Weight per piece	55 kg
Length	approx. 3570 mm
Width	approx. 400 mm

Technical data

Type	VFR 120
Ramp angle	approx. 15°
Weight per piece	62 kg
Length	approx. 3570 mm
Width	approx. 400 mm

Technical data

Type	VFR-SO
Ramp angle	approx. 15°
Weight per piece	80 kg
Length	approx. 3570 mm
Width	approx. 400 mm



Fig. 158 Warning label

WARNING



Driving on unsecured ramp planks

The ramp planks can slide off the loading platform edge. The vehicle can fall / tip over - risk of striking/crushing!

- ▶ Check before driving on that ramp planks that they are secured from sliding.
- ▶ Observe the warning panel on ramp planks.

WARNING



Positioning ramp planks

They can crush fingers/hands/ feet.



- ▶ Use
- ▶ Grip the ramp planks with both plans.
- ▶ Ramp planks are heavy! Working in pairs is recommended.

WARNING



Overloading ramp planks

The ramp planks can get deformed. The vehicle can fall / tip over - risk of striking/crushing!

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



Fig. 159 Walking on ramp planks

CAUTION



Walking on ramp planks

Ramp planks may be dirty and wet.

You could slip - risk of falling!



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

Removing ramp planks

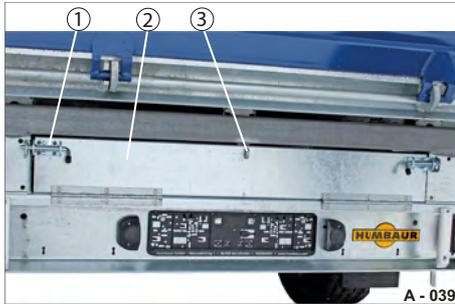


Fig. 160 Ramp plank bay, CLOSED

- 1 Spring bars
- 2 Flap
- 3 Attachment for padlock

► If necessary, close the padlock in the attachment (Fig. 160/3).

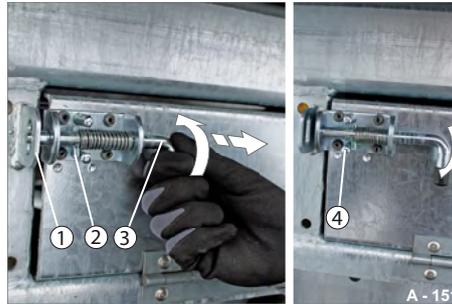


Fig. 161 Ramp plank bay, opening

- 1 Locking lever attachment
- 2 Pin
- 3 Pin arm
- 4 Retaining bolt

- Turn and pull out the pin (Fig. 161/3).
- Turn the pin downwards until the stick (Fig. 161/2) engages behind the retaining bolt (Fig. 161/4).
The spring bar is unlocked and secured.
- Unlock the second spring bar.

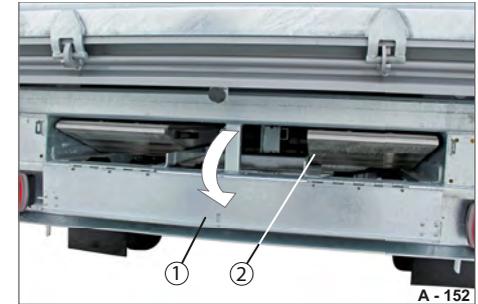


Fig. 162 Ramp plank bay, OPEN

- 1 Flap
- 2 Ramp plank

- Swing the flap (Fig. 162/1) of the ramp plank bay down.
- Grab the handle (Fig. 162/1) and pull both ramp planks (Fig. 161/2) out a bit.

5 Ramp planks

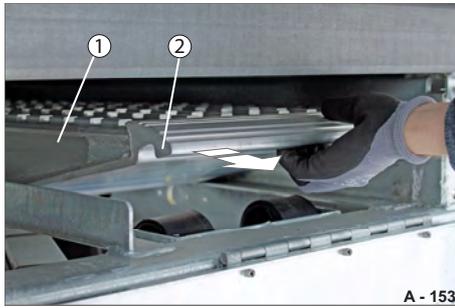


Fig. 163 Pulling out ramp planks

- 1 Ramp plank for 10 t / 13 t
- 2 Groove

- ▶ Grab below the groove (Fig. 163/2) and pull the ramp planks (Fig. 163/1) out a bit.

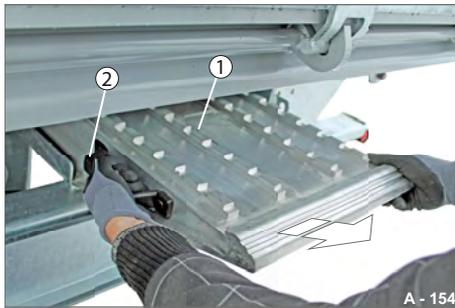


Fig. 164 Pulling out ramp planks

206 Operation: body

- 1 Ramp plank for 18 t
- 2 Handle

- ▶ Grab the handle (Fig. 164/2) and pull the ramp plank (Fig. 164/1) out a bit.
- ▶ Pull the ramps planks out with both hands, one after another, from the ramp plank bay to the limit position - not completely.



Fig. 165 Lifting out ramp planks

- ▶ 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.

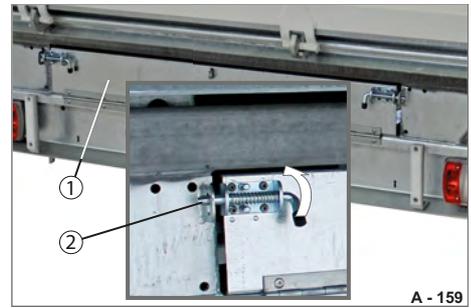


Fig. 166 Closing ramp plank bay

- 1 Flap
- 2 Spring bar, snapped in

- ▶ Close the flap (Fig. 166/1) of the ramp plank bay.
- ▶ Turn the two spring bars (Fig. 166/2) into the horizontal position. The spring bar automatically snaps into place (by spring force). The flap of the ramp plank bay is locked.



Fig. 167 Ramp planks removed

- 1 Rear platform gate, folded down
- 2 Ramp planks, set down

- ▶ Carefully unlock and fold down the rear platform gate (Fig. 167/1).

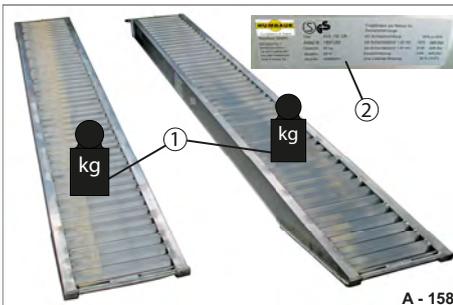


Fig. 168 Checking ramp planks

- 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. 168/1) of the ramp planks.
- ▶ Compare the max. values on the nameplate (Fig. 168/2) of the ramp planks.
Observe the axle load distribution.

Positioning ramp planks

Ramp planks come in one of two safeguard versions.

- With securing hooks
- With retaining pins

The loading platform edge has holes or not, depending on the version.

Ramp planks with securing hooks (see Fig. 170) can be positioned freely along the loading platform edge.

Ramp planks with retaining pins (see Fig. 172) can be positioned according to the hole spacing.



Fig. 169 Chassis loading platform edge

- 1 Loading platform edge, without hole
- 2 Cover plate

For securing ramp planks with securing hooks.



Fig. 170 Ramp planks with securing hooks

For securing ramp planks with retaining pins.



Fig. 172 Ramp planks with retaining pin

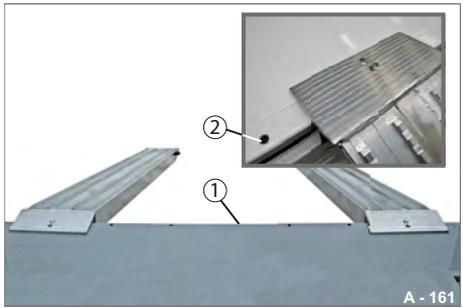


Fig. 171 Chassis loading platform edge

- 1 Loading platform edge, with hole
- 2 Perforation

Positioning ramp planks with securing hooks



Fig. 173 Opening the locking lever

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

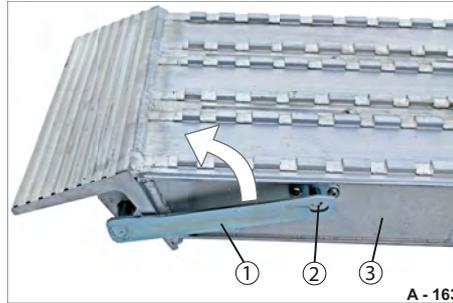


Fig. 174 Locking lever unsecured

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

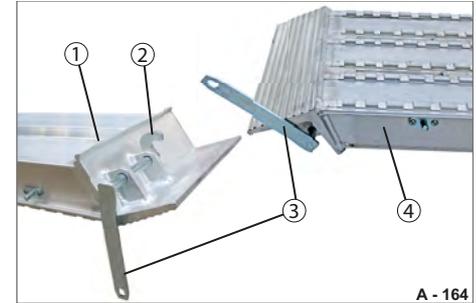


Fig. 175 Locking lever opened

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

- ▶ Remove the spring pin (Fig. 173/3) from the retaining bolt (Fig. 173/2). The locking lever is released.

- ▶ Swing the locking lever (Fig. 174/1) upwards.

The securing hook opens.

- ▶ Check that the locking lever (Fig. 175/3) and securing hook (Fig. 175/2) are not deformed.

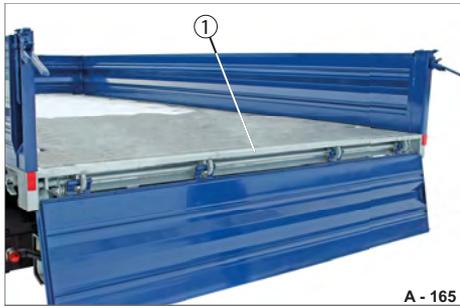


Fig. 176 Chassis loading platform edge
1 Loading platform edge

► If necessary, clean the loading platform edge (Fig. 176/1) and securing hook (Fig. 1752) to remove all dirt.

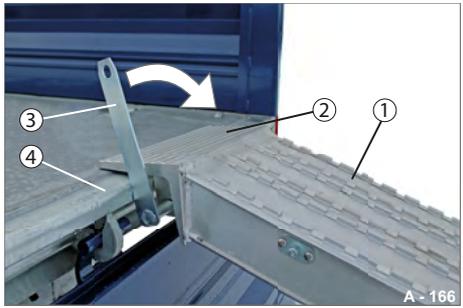


Fig. 177 Locking lever opened
1 Ramp plank
2 Run-on plate
3 Locking lever
4 Loading platform edge

► Lay the run-on plate (Fig. 177/2) on the loading platform edge (Fig. 177/4).
► Pull the locking lever (Fig. 177/3) down.

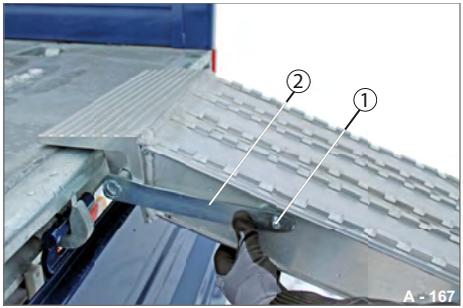


Fig. 178 Repositioning the locking lever
1 Retaining bolt
2 Locking lever

► Press the locking lever (Fig. 178/2) onto the retaining bolt (Fig. 178/1).



Fig. 179 Securing the locking lever

- 1 Spring pin
- 2 Locking lever

- ▶ Insert the spring pin (Fig. 179/1) into the retaining bolt (Fig. 179/1).
The locking lever is secured against unlocking of its own accord.

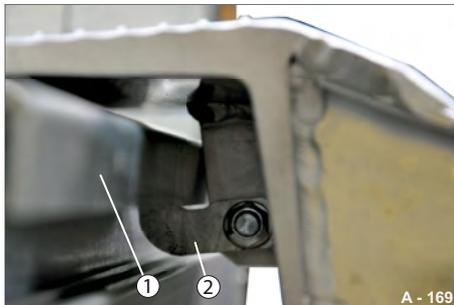


Fig. 180 Securing hook secured

- 1 Cover plate, loading platform edge
- 2 Securing hook

- ▶ Check that the securing hook (Fig. 180/2) engages in the cover plate of the loading platform edge (Fig. 180/1).

Positioning the ramp planks with retaining bolts

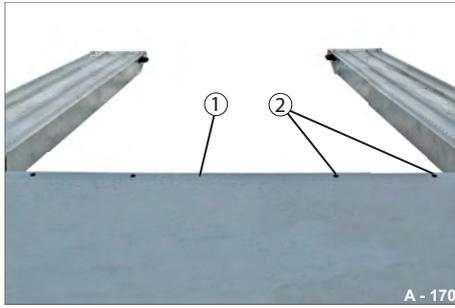


Fig. 181 Chassis loading platform edge

- 1 Loading platform edge
- 2 Perforation

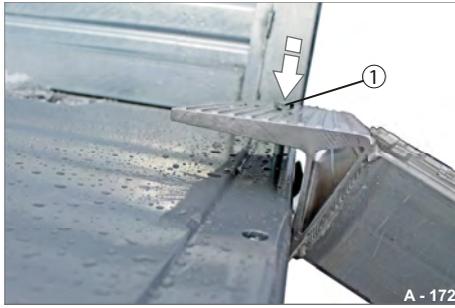


Fig. 182 Setting up ramp planks

- 1 Retaining pin

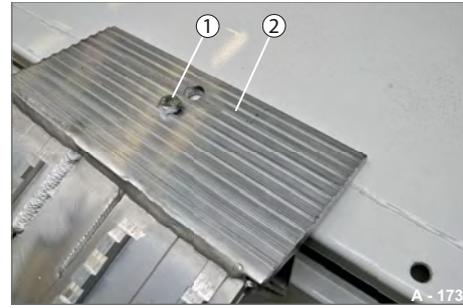


Fig. 183 Setting up ramp planks

- 1 Retaining pin in hole
- 2 Run-on plate

There are 6 holes (Fig. 181/2) along the loading platform edge (Fig. 181/1) used to secure the ramp planks from slipping.

The ramp planks can be positioned in 3 track widths.

- ▶ Check which track width the vehicle to be loaded has.

The tyres of the vehicle to be loaded must drive in the centre of the ramp planks.



The ramp planks are heavy. If necessary, carry the ramp planks in pairs.

- ▶ If necessary, clean all dirt off the holes and loading platform edge.
- ▶ Position the ramp planks so the retaining pin (Fig. 182/1) slides into the respective hole (Fig. 181/2).
- ▶ If necessary, lift the ramp planks somewhat.



The ramp planks/the run-on plate must lay completely on the loading platform and secured in the hole.

- ▶ Check before driving on that ramp planks that they are completely secured from sliding.

Setting track width



Fig. 184 Ramp planks positioned at an angle



Fig. 185 Positioning ramp planks

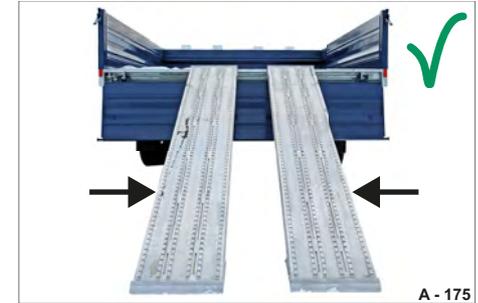


Fig. 186 Positioning ramp planks


WARNING
Ramp planks positioned to incorrect track width/at an angle

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.
- ▶ Check that the ramp planks are secured parallel to one another and to the side platform gates.



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

- ▶ Check which track width the vehicle to be loaded has.
- ▶ Position the ramp planks to the correct track width.
- ▶ Check that the ramp planks are both centred on the loading platform.

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, do so only with the supervision of a banksman.



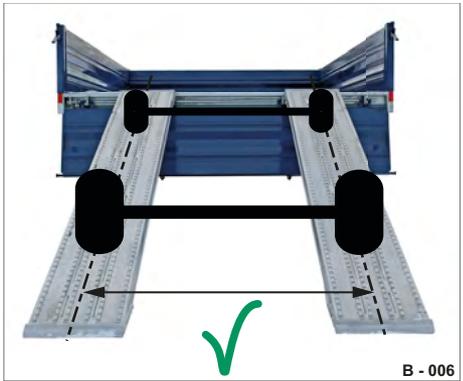
Avoid sudden stopping and restarting when driving on the ramp planks!

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



A - 177

Fig. 187 Example: Driving on ramp planks with caterpillars



B - 006

Fig. 188 Driving on ramp planks

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

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

- ▶ Drive straight ahead on the ramp planks - 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 amp 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).

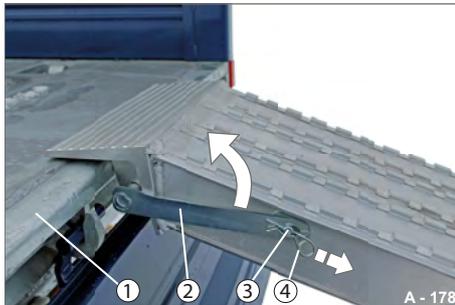


Fig. 189 Setting ramp planks down

- 1 Loading platform edge

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

Closing the securing hook

- ▶ Remove the spring pins (Fig. 189/4) from the retaining bolt (Fig. 189/3).
- ▶ Rotate the locking lever (Fig. 189/2) downwards.
- ▶ Lift the ramp plank onto the loading platform edge (Fig. 189/1).

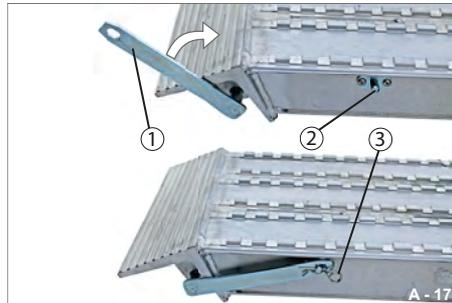


Fig. 190 Closing the securing hook

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

- ▶ Swing the locking lever (Fig. 190/1) towards the retaining bolt (Fig. 190/2) and attach it to the retaining bolt.
- ▶ Feed the spring pin (Fig. 190/3) through the bore hole in the retaining bolt. The locking lever is closed and secured.



Fig. 191 Setting ramp planks down

- 1 Ramp plank
- 2 Retaining pin

Unlocking retaining pin

- ▶ Lift the ramp plank (Fig. 191/1) onto the loading platform so the retaining pin (Fig. 191/2) comes out of the hole.



Fig. 192 Closing rear platform gate

- 1 Rear platform gate
- 2 Ramp planks

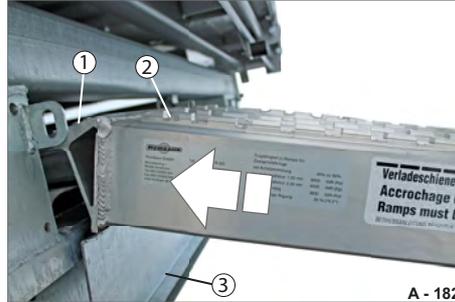


Fig. 193 Sliding in the ramp planks

- 1 Run-on plate
- 2 Ramp plank
- 3 Flap



Fig. 194 Sliding in ramp planks

Setting ramp planks down

- ▶ Set the ramp planks (Fig. 192/2) down on the ground slowly and safely - do not drop them.
- ▶ Close the rear platform gate (Fig. 192/1).

Sliding in ramp planks

- ▶ Open the flap (Fig. 193/3) of the ramp plank bay - see page 205.
- ▶ Set an end of the ramp plank with into the ramp plank bay with the run-on plate (Fig. 193/1) in front.

- ▶ Slide the ramp planks completely into the ramp plank bay from behind.

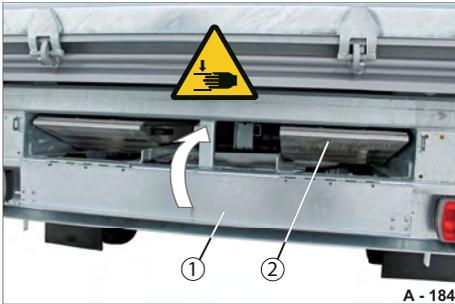


Fig. 195 Securing ramp planks

- 1 Flap
- 2 Ramp planks, completely retracted

- 1 Flap, closed
- 2 Spring bars, locked
- 3 Padlock

- ▶ Lock the flap (Fig. 196/1) with the spring bar (Fig. 196/2).
- ▶ If necessary, close the flap with a combination lock (Fig. 196/3) as theft protection.

The ramp planks are secured.

- ▶ Close the flap (Fig. 195/1) of the ramp plank bay.

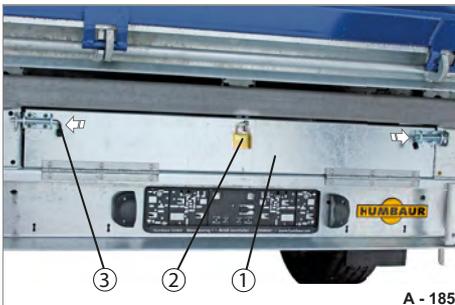


Fig. 196 Ramp planks / bays secured

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 loading 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.

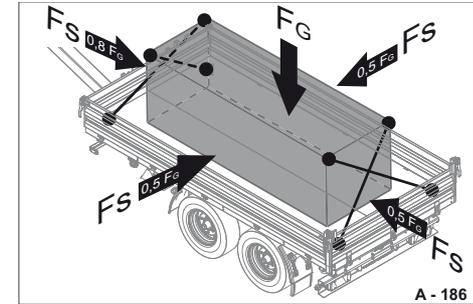


Fig. 197 Maximum inertial forces
Resulting from the driving dynamic in street traffic
F_S Load securing force,
F_G Load inertia

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: $F_G \text{ forward} = 20,000 \text{ daN} \times 0.8 \text{ g} = 16,000 \text{ daN (kg)}$

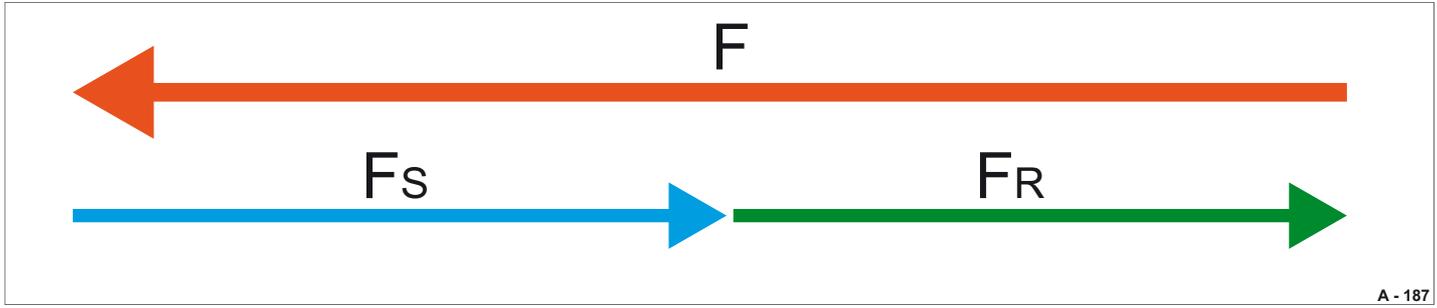
The actual necessary load securing force F_S is reduced for tip-stable loading goods by the amount of the frictional force F_R (between the load and vehicle floor).

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

Tab. 2 Load securing force (F_S)

Inertia F
Force which counters any change in the state of movement



A - 187

Load securing force F_S : Force which must be absorbed by the lashing method or by the vehicle body

Friction F_R : Coefficient of friction x weight

Formula: $F_S = F - F_R$

Example:

- Forward inertia F_G : 16,000 daN
- Coefficient of friction $\mu_o = 0.3$ (screen printed mat/pallet)
- Friction force, $F_R = 0.3 \times 20,000 \text{ daN} = 6,000 \text{ daN}$

Actual load securing force F_S : = 16,000 daN – 6,000 daN = 10,000 daN (kg).

Types of load securing

Form-fit load securing

Supporting the load in stacks one on top of the other as well as body components such as the front platform gates or on posts, barrier beams or wooden fixing is called "form-fit load securing".

Provided:

The measurements of the goods and bodies fit together.

Otherwise the gaps must be filled with pallets or airbags, for example.



In the case of multiple different goods types, it is not possible to use form-fitting loading for transporting.

These loads are to be secured, in addition to the specifications of DIN EN 12640, by several lashing points as specified in DIN EN 12195 and the VDI Guidelines, in line with practice.

Friction-lock load securing

Direct anchoring and tying down the load with lashing equipment is called "friction-lock load securing."

Direct anchoring as "angular or diagonal lashing", due to the considerably higher lashing forces achievable than with tying down, is counted as a form-fit safety process.

Pre-condition:

Lashing points are available on the required points on the load and on the vehicle.

Tying down is the most common type of load securing.

The necessary securing force is reached alone by the increase in friction.

The load is "pressed" onto the loading platform with the help of lashing equipment (e.g. tie-down straps).

NOTICE

Exceeding lashing forces/ exceeding the lashing angle

Lashing points can break.

- ▶ Observe the label on the lashing points.
- ▶ Comply with the following specifications:

-Maximum tension load on the lashing points on the loading platform:
6,000 daN (kg) per lashing ring.
3,000 daN (kg) per blade lashing shackle.

- ▶ Only use suitable/tested lashing equipment.

Friction-lock load securing

Force specifications



Fig. 198 Sign for blade lashing shackle



Fig. 199 Sign for lashing ring

WARNING



**Impermissible tensile loads/
lashing angles**

Lashing equipment break/tear.
The load is not sufficiently
secured - risk of accident!

- ▶ Comply with the maximum values for force specifications.
- ▶ Use suitable lashing equipment. The maximum possible tension is specified on the lashing equipment.
- ▶ Do not lash the clamping devices under a 30° angle. Situate the fixing point on the load as high as possible.



Fig. 200 Lashing points

- 1 Loading platform
- 2 Lashing points, sunk in pockets

The lashing points on the trailer are suited for all common and standardised lashing equipment.

The lashing equipment can be fastened from inside or outside.

Lashing point arrangement

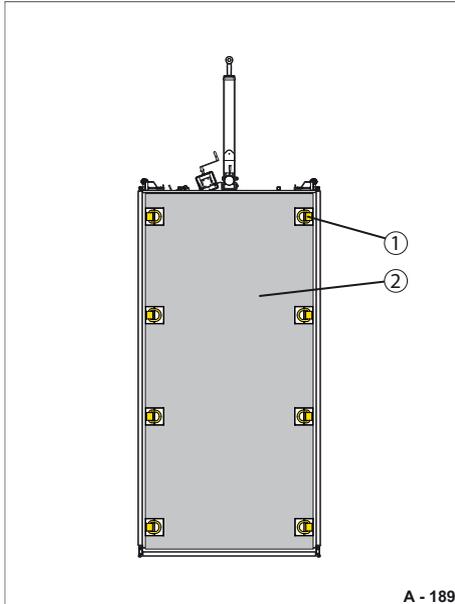


Fig. 201 Example: HTK xx4522

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

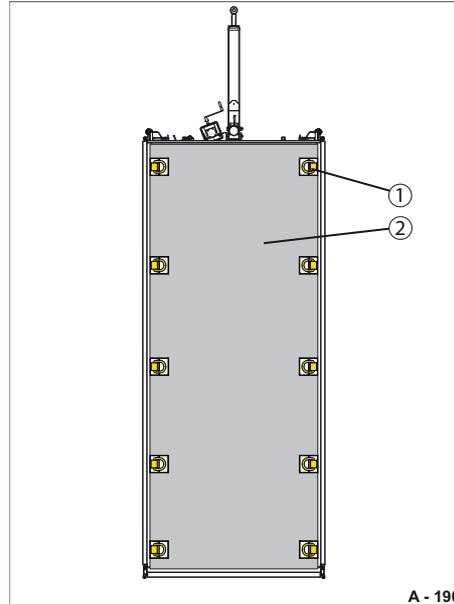


Fig. 202 Example: HTK xx5024

- 1 Lashing ring 6 t (right 5x, left 5x)
- 2 Loading platform

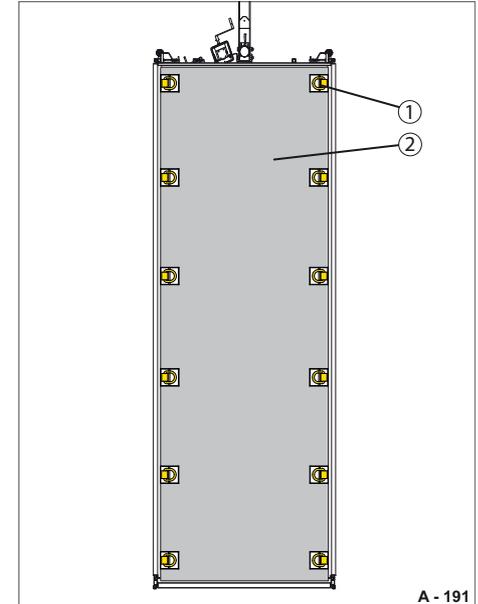


Fig. 203 Example: HTK xx5524

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

Using lashing ring



Fig. 204 Lashing ring folded in

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



Fig. 205 Lashing ring folded out

- ▶ Raise the lashing ring (Fig. 204/2).
- ▶ Fasten the sling on the lashing ring.

Using blade lashing shackle

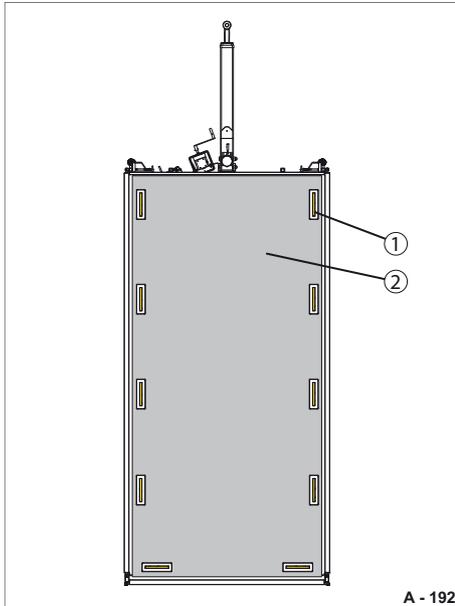


Fig. 206 Example: HTK xx4522

- 1 Blade lashing shackle (right 5x, left 5x)
- 2 Loading platform

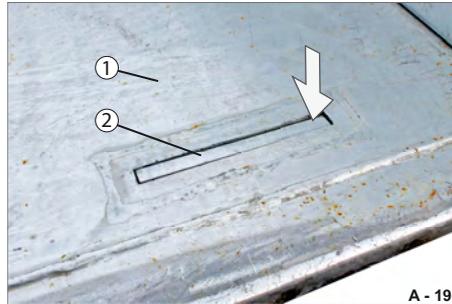


Fig. 207 Blade lashing shackle sunk

- 1 Loading platform
- 2 Blade lashing shackle sunk
- 3 Blade lashing shackle folded up

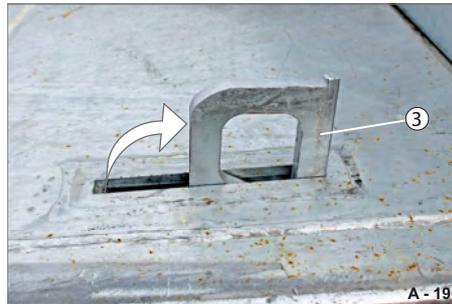


Fig. 208 Blade lashing shackle folded up

- ▶ Press the blade lashing shackle (Fig. 207/2) down from the corner and pull it out from the other side. The blade lashing shackle stays vertical.
- ▶ Lower the unneeded lashing points in the loading platform or fold them in.

Form-fit load securing

The HTK trailer with the closed box form with platform gates can be used for form-fit load securing by arranging the loaded goods in a certain way.

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

- Platform gates
- Platform gate attachments
- Steel grate attachments
- Support frame, front side
- Stanchions

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.

Covering net



Fig. 209 Loading platform with taut covering net

1 Covering net

The covering net is pulled over the loading platforms and secured to the round buttons with an expander cord.

The covering net is securing the load of loose loaded goods such as: light garden waste, leaves, branches, wood shaving, grass, paper, cardboard, etc. which needs to be secured to prevent it from flying off the loading platform.



The covering net may only be used if the platform gates are closed.

The covering net is not intended to secure the platform gates themselves.

The covering net / expanded rope must not have any cracks.



CAUTION

Unsecured / not completely attached covering net

The covering net can loosen during the journey and flap around. The load can fly around / fall out - risk of accident!

- ▶ Check that the covering net completely surrounds the platform gates and is secured before departing.

Attaching covering net



Fig. 210 Affixing round buttons

- 1 Round button
- 2 Platform gate

The round buttons must be riveted to the platform gates on the side, front and rear.

- ▶ Have the round buttons (Fig. 210/1) around the trailer attached in a workshop.

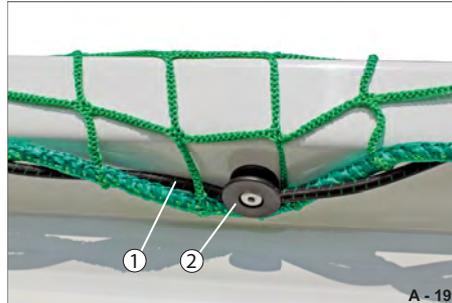


Fig. 211 Stretching out covering net

- 1 Expander cord
- 2 Round button

- ▶ Lay the covering net on the loading platform.
- ▶ Stretch the expander cord (Fig. 211/1) around the round buttons (Fig. 211/2) one after another.

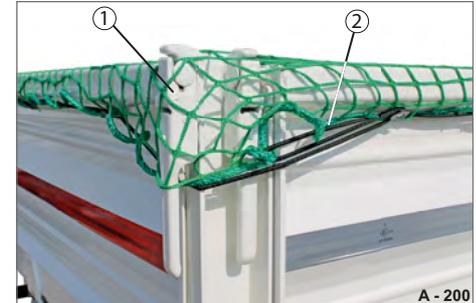


Fig. 212 Covering net at corner posts

- 1 Lock/corner post
- 2 Expander cord

- ▶ Thread the expander cord (Fig. 212/2) around the corner posts (Fig. 212/1) at the locks.
- ▶ Check that the covering net is stretched all around the trailer before departing.

Removing covering net

- ▶ Remove the expander cord from all round buttons, one after another.
- ▶ Fold the covering net together and stow it away safely, e.g. in the toolbox.

Access aids

The rear platform gate can be equipped with a folding step as an option.

You can step on the folding step and leave the loading platform.

The folding step is located on the inner side of the rear platform gate near the corner post.

As an option, a fixed ladder can be positioned on the front side.



Fig. 213 Example: Climbing option

- 1 Folding step
- 2 Rear platform gate, folded down



Fig. 214 Example: Climbing option

- 1 Ladder, one- or two-piece



WARNING



Entering/exiting loading platform via folding step

You could lose your balance - risk of falling!

- ▶ Use the folding step to enter/exit the loading platform.
- ▶ Use the full surface area of the step to stand on.
- ▶ Use the corner post to steady yourself when going up or down the step.



WARNING



Entering/exiting loading platform via ladder

You could lose your balance - risk of falling!

- ▶ Use the ladder to enter/exit the loading platform.
- ▶ Use the full surface area of the steps to stand on.
- ▶ Hold yourself steady on the sides of the ladder.

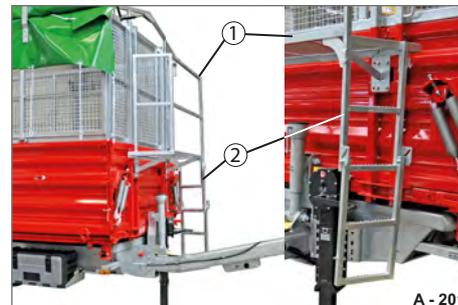


Fig. 215 Example: Climbing option with platform

- 1 Platform
- 2 Ladder, folded out

Operating folding step

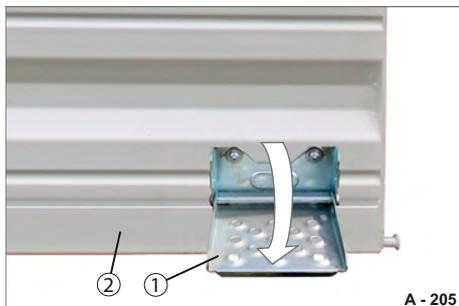


Fig. 216 Folding step, folded out

- 1 Folding step
- 2 Rear platform gate

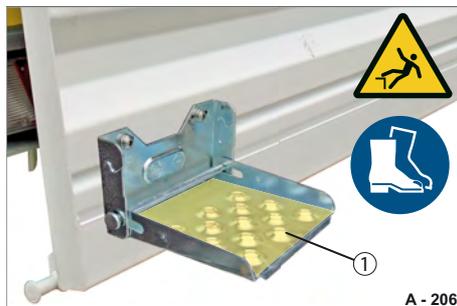


Fig. 217 Folding step, folded down

- 1 Folding step

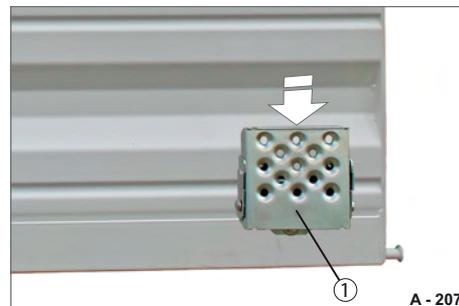


Fig. 218 Folding step, folded down

- 1 Folding step, secured

Folding down folding step

- ▶ Carefully unlock and fold down the rear platform gate (Fig. 216/2).
- ▶ Pull the folding step (Fig. 216/1) upwards and fold it down. The folding step locks in a horizontal position.

Walking on folding step

- ▶ Where possible, use the full surface area of the step to stand on.
- ▶ Steady yourself on the corner post.

Folding up folding step

- ▶ Fold the folding step (Fig. 218/1) upwards and push it downwards. The folding step locks in a vertical position.
- ▶ Fold up the rear platform gate.

Operating the access ladder

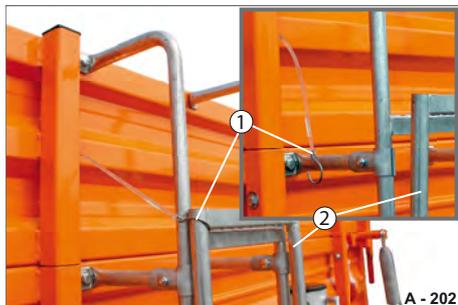


Fig. 219 Unlocking ladder

- 1 Securing hook
- 2 Foldable part of the ladder

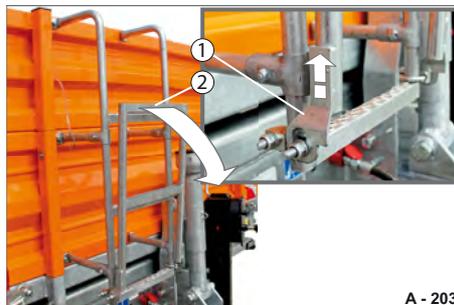


Fig. 220 Folding out ladder

- 1 Bracket with slot
- 2 Foldable part of the ladder



Fig. 221 Access ladder folded out

- 1 Fixed part of the ladder
- 2 Foldable part of the ladder

Folding out ladder

- ▶ Remove the securing hook (Fig. 219/1) from the foldable part of the ladder (Fig. 219/2).
- ▶ Raise the foldable part (Fig. 219/2) upwards somewhat and carefully fold it down.

- ▶ Raise the foldable part (Fig. 220/2) upwards somewhat and carefully fold it down. The foldable part engages when folded out.

- ▶ Where possible, use the full surface area of the step to stand on.
- ▶ Hold yourself steady on the sides of the ladder.



Fig. 222 Folding up ladder

- 1 Foldable part of the ladder

Folding up ladder

- Fold up the foldable part (Fig. 222/1).

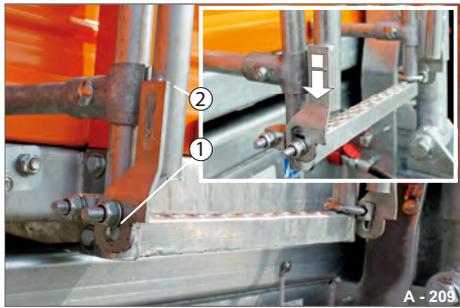


Fig. 223 Locking access ladder

- 1 Bracket with slot

2 Foldable part of the ladder

- Slide the foldable part (Fig. 223/2) downwards to a vertical position. The foldable part engages in the slot (Fig. 223/1).

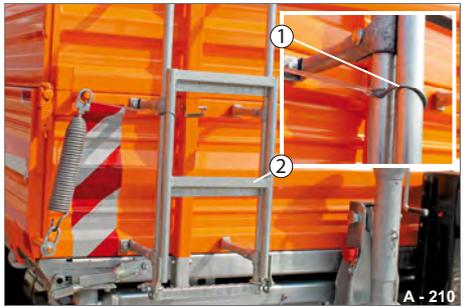


Fig. 224 Securing the access ladder

- 1 Securing hook
- 2 Foldable part of the ladder

- Hook the securing hook (Fig. 224/1) around the foldable part (Fig. 224/2). The foldable part is secured.

Stanchions

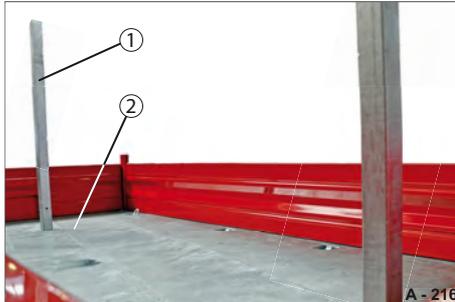


Fig. 225 Example: Stanchions

- 1 Stanchion
- 2 Loading platform

The stanchions can be positioned on the loading platform.

The stanchions secure the loaded goods in a form-fitting manner.



WARNING

Lashing the stanchions

Lashing the stanchions can result in deformation and loosening of the stanchions while driving - risk of accident!

- ▶ Securely lash the loaded goods at the provided lashing points.



CAUTION



Using stanchions

The stanchions are heavy.
They can crush fingers/hands/feet.
They can fall from the loading platform when moved.



- ▶ Use  , .
- ▶ When moving the stanchions, make sure that your hands/feet are not under the stanchions.
- ▶ Carefully insert the stanchions - do not let them fall.
- ▶  Handle the stanchions in pairs.

Using stanchions

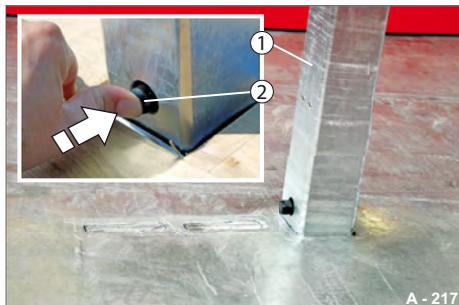


Fig. 226 Releasing stanchion

- 1 Stanchion
- 2 Lock button

- ▶ Press the lock button (Fig. 226/2).
The stanchion (Fig. 226/1) is released.

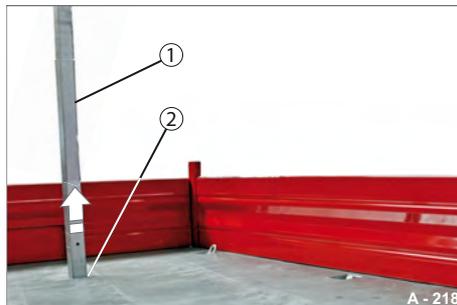


Fig. 227 Removing stanchion

- 1 Stanchion
- 2 Side post pocket

- ▶ Pull the stanchion (Fig. 227/1) out of the side post pocket (Fig. 227/2).
- ▶ Carefully place the stanchion safely away to protect it from damage.

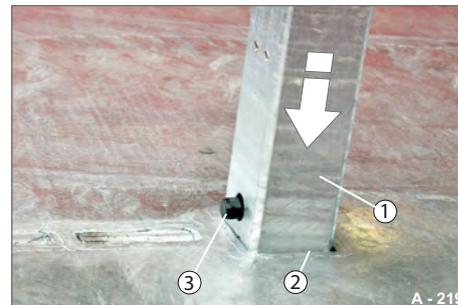


Fig. 228 Inserting stanchion

- 1 Stanchion
- 2 Side post pocket
- 3 Lock button, extended

- ▶ Insert the stanchion (Fig. 228/1) completely into the post pocket (Fig. 228/2).
The stanchion automatically engages in the post pocket and is secured with the integrated lock button (Fig. 228/32).

Tensioning strap ratchet (optional)

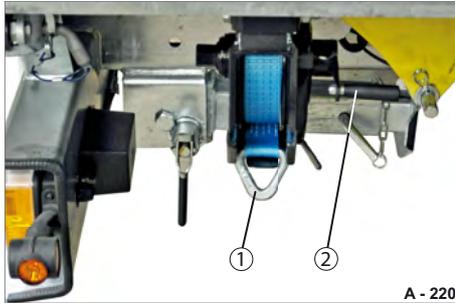


Fig. 229 Example: Tensioning strap ratchet

- 1 Tensioning belt with lashing ring, wound up
- 2 Operating lever

The tensioning strap ratchet (make e.g.: Autonordic 801) can be attached to 4 corner points of the trailer as an option.

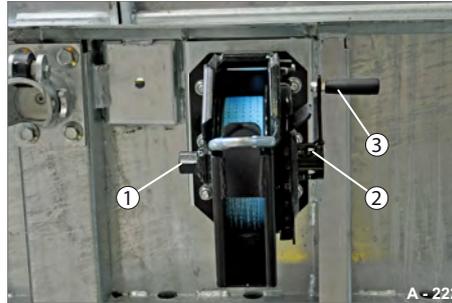


Fig. 230 Under the loading platform

- 1 Square neck bolt for torque wrench
- 2 Perforation for tommy bar
- 3 Operating lever



You can find the manufacturer documents in the operating instructions of the tensioning strap ratchet.

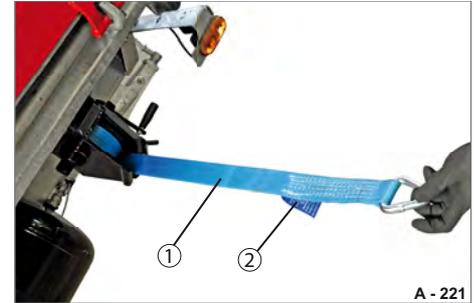


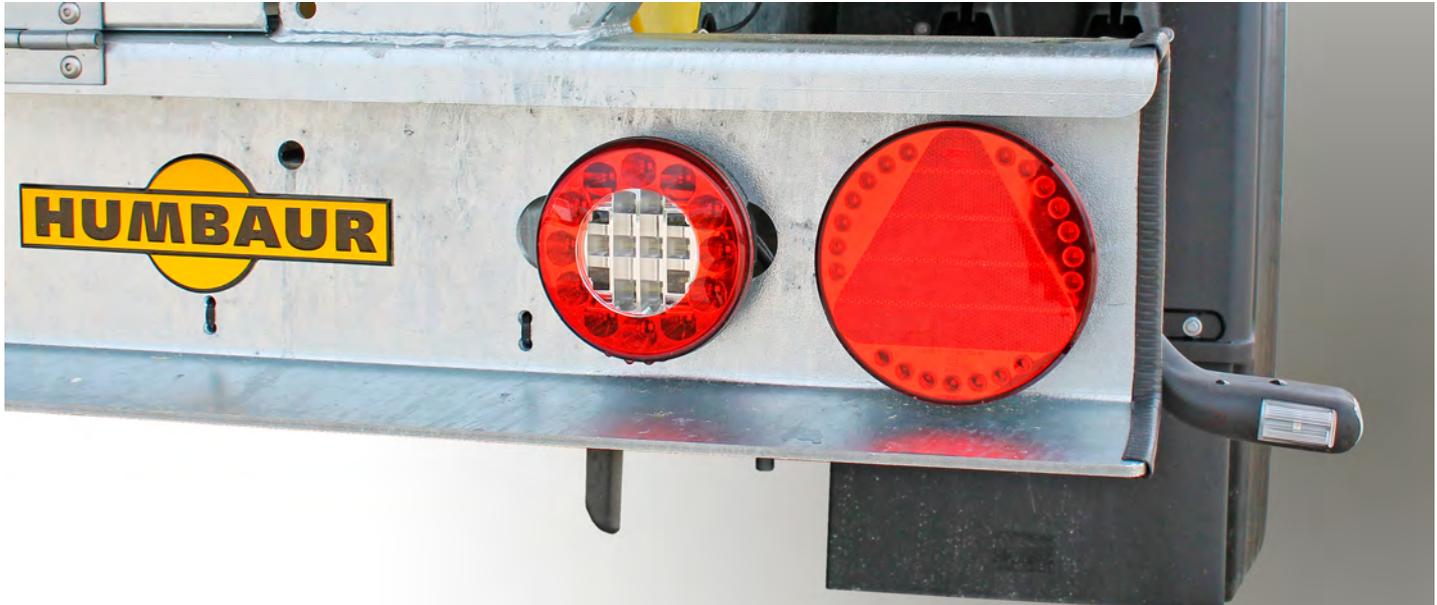
Fig. 231 Winding up tensioning strap

- 1 Tensioning strap
- 2 Label with force specifications



The maximum permissible force specifications of the tensioning belt (Fig. 231/1) must be observed!

The information on the label (Fig. 231/2) must be observed.



Electrical system

1

2

3

4

5

6

7

8

Lighting system/brake module



Fig. 1 Brake module, programmable

1 Brake module (EBS)

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 the braking distance can worsen - 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

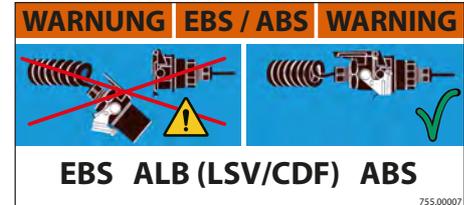


Fig. 2 Label on trailer - example



EBS/ABS plug must be inserted in the towing machine before departure.

- ▶ Check that all EBS/ABS plugs are established before departing.
- ▶ Check that the plug is secure.

Plug connections (standard)

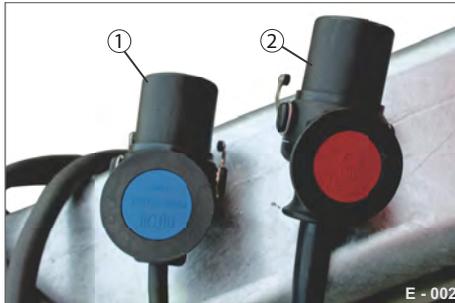


Fig. 3 Connection cable Standard

- 1 7-pin EBS/ABS plug (ISO 7638)
- 2 15-pin electrical plug (ISO 12098)

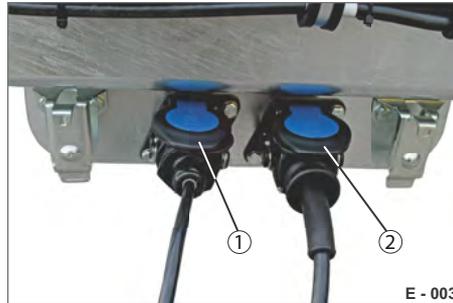


Fig. 4 Park position on tongue

- 1 EBS/ABS plug parking socket (7P)
- 2 Electrical plug parking socket (15P)



Fig. 5 7-pin to 13-pin adapter

- 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 uncoupled trailer, connect the sockets 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-N (ISO 1185)

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
24 V-S acc. to ISO 3731.

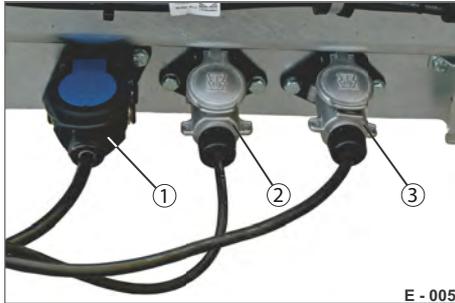


Fig. 7 Park position on tongue

- 1 EBS/ABS plug parking socket
- 2 24 V-N plug parking socket
- 3 24 V-S plug parking socket

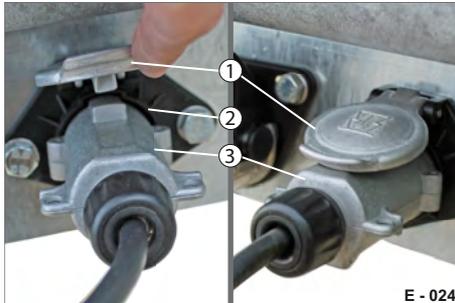


Fig. 8 Plug, parked

- 1 Lid
- 2 Parking socket

3 Plug, 7-pin

- ▶ Open the cover (Fig. 8/1).
 - ▶ Pull the plug (Fig. 8/3) out of 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.
 - ▶ Connect the socket into the respective parking socket after uncoupling the trailer.
- The cover secures the plug.

Connecting electrical system/ Handling plugs



Driving with damaged/dirty plug connections is illegal.

3 Securing pin

CAUTION



Coupling/uncoupling cables
You can crush your fingers in the connection points.

- ▶ Pull on the cliplock (Fig. 9/2).
- ▶ The clip lock twists out of the locking nubs.
- ▶ Pull the plug (Fig. 9/3) out of the parking socket (Fig. 10/3) - do not pull on the cable.

- ▶ Carefully twist the cliplock onto/off the locking nubs.
- ▶ Pull at the connector – not at the cable.

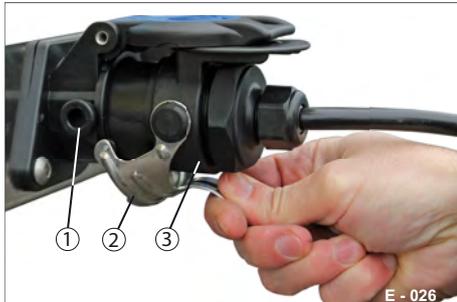


Fig. 9 Unlocking the plug

- 1 Locking nubs
- 2 Cliplock

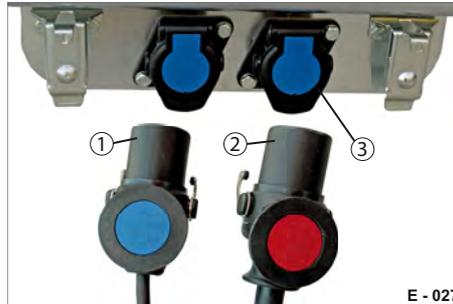


Fig. 10 Park position on tube drawbar

- 1 EBS/ABS plug (7-pin)
- 2 Electrical system plug (15-pin)
- 3 Parking socket, cover closed

- ▶ Connect the electrical system plug (Fig. 10/2) to the towing vehicle.
- ▶ Check that the plug is secure.

Parking plug



Fig. 11 Securing the plug

- 1 Locking nubs
- 2 Cliplock
- 3 Securing pin

- ▶ 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.

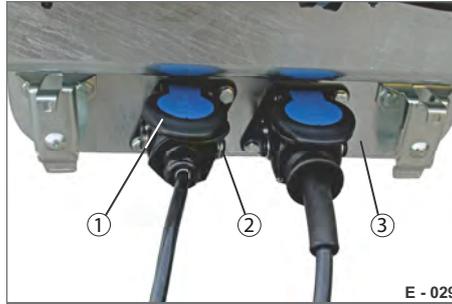


Fig. 12 Plug, parked

- 1 Parking socket/cover
- 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 a workshop.

Multi-voltage version 12 V - 24 V

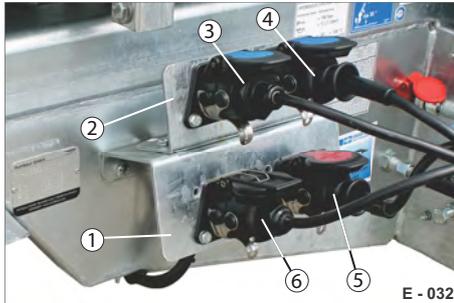


Fig. 13 Plug console 12 V - 24 V

- 1 Console, connected
- 2 Empty socket console
- 3 EBS/ABS plug, for 12 V
- 4 Electrical system plug, for 12 V
- 5 Electrical system plug, for 24 V
- 6 EBS/ABS plug, for 24 V

WARNING

Incorrect plug assignment 12 V - 24 V multi-voltage

Electrical system not working.

- ▶ Check that the electrical system works before departing.
- ▶ Check that the plugs are correctly assigned in the console.

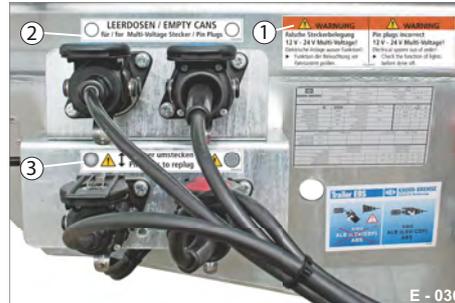


Fig. 14 Multi-voltage label

- 1 Warning label
- 2 Label: Empty sockets
- 3 Label: Electrically connected sockets



The required supply of the trailer with 12 V or 24 V for the brake or lighting system must be checked during every change of towing vehicle and be replugged as necessary.



Fig. 15 Empty socket open

- 1 Empty socket console
- 2 Empty socket for plug 12 V or 24 V

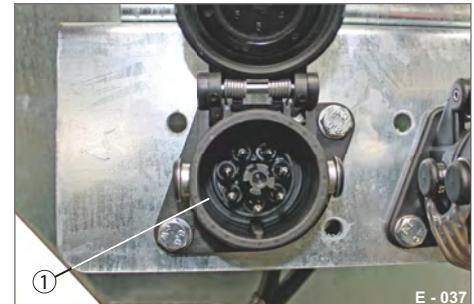


Fig. 16 EBS/ABS socket lower left

- 1 Multi-voltage socket for brakes, 7-pin

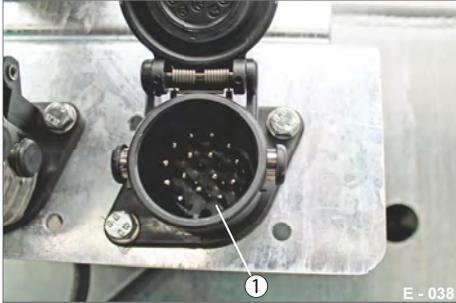


Fig. 17 Electrical system plug lower right

- 1 Multi-voltage socket for lighting system, 15-pin

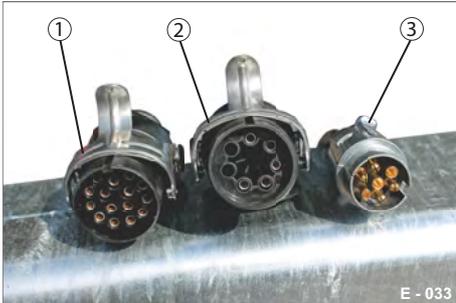


Fig. 18 12 V - 24 V plug

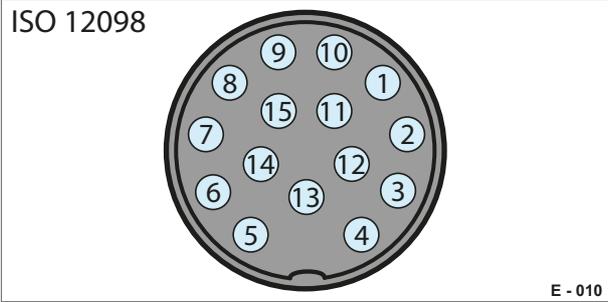
- 1 Electrical system (15P) - ISO 12098 (24 V)
- 2 Brakes (7P) - ISO 7638-1/2 (12 / 24 V)

- 3 Electrical system (7P) - DIN ISO 1724 (12 V)

Create connection

- ▶ Plug the required 12 V or 24 V plug in the lower multi-voltage socket (Fig. 16/1 & Fig. 17/1) on the console.
- ▶ Insert the unneeded plug in the empty socket (Fig. 15/2).
- ▶ Connect the electrical system plug (Fig. 18/1 or 3) and the corresponding EBS plug (Fig. 18/2) for 12 V or 24 V to the towing vehicle.

15-pin connector ISO 12098 - 24 V

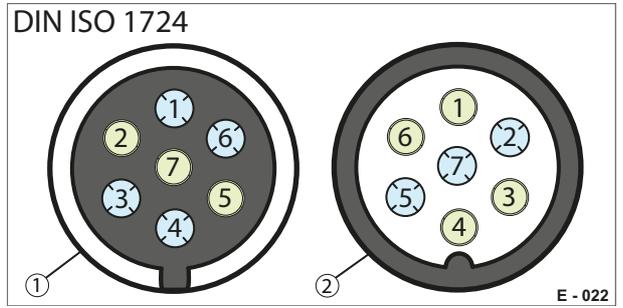
Pin	Function	Cross section	Colour	Image/arrangement
1	Turn indicator, left	1.5 mm ²	Yellow	 <p>ISO 12098</p> <p>E - 010</p>
2	Turn indicator, right	1.5 mm ²	Green	
3	Rear fog lights	1.5 mm ²	Blue	
4	Earth	2.5 mm ²	White	
5	Tail light left	1.5 mm ²	Black	
6	Tail light right	1.5 mm ²	Brown	
7	Brake lights	1.5 mm ²	Red	
8	Reversing light	1.5 mm ²	Grey	
9	Continuous positive power supply 24 V	2.5 mm ²	Brown/blue	
10	Steering axle, sensor brake lining wear	1.5 mm ²	Brown/red	
11	Approach aid, pressure sensor spring-loaded brake	1.5 mm ²	Yellow/black	
12	Lift axle	1.5 mm ²	Pink	
13	CAN bus earth	2.5 mm ²	White/black	
14	CAN bus high	1.5 mm ²	Violet	
15	CAN bus low	1.5 mm ²	Orange	



7-pin 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/sidemark light (58R)	1.5 mm ²	Brown
6	Brake lights (54)	1.5 mm ²	Red
7	Left tail light/sidemark light (58L)	1.5 mm ²	Black

Image/arrangement



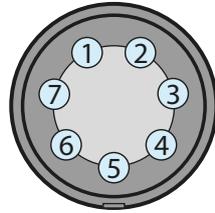
Tab. 1 pos. 1) plug / pos. 2) socket

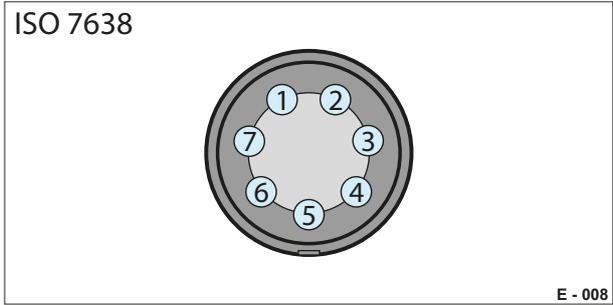
13-pin connector DIN 72570, ISO 11446 - 12 V

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 - 006</p>
2	Fog light (54g)	1.5 mm ²	Blue	
3	Earth (31) for contacts no. 1-8	2.5 mm ²	White	
4	Turn indicator, right (R)	1.5 mm ²	Green	
5	Right tail light/sidemarket 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 power (4)	2.5 mm ²	Brown/blue/orange	
10	Charging line (6)	2.5 mm ²	Brown/red	
11	Earth (3) for circuit no. 10 (charging line)	2.5 mm ²	White/black/blue	
12	Trailer detection (empty)	- mm ²	-	
13	Earth for circuit no. 9 (empty)	2.5 mm ²	White/red	
				<p>DIN 72570, ISO 11446</p> <p>E - 007</p>

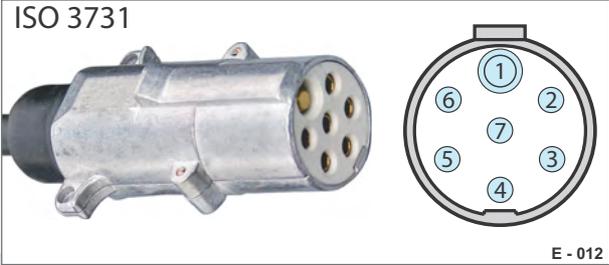
Tab. 2 pos. 1) socket / pos. 2) plug

7-pole EBS plug connection ISO 7638 (brakes)

Pin	Function	Cross section	Colour	Image/arrangement
1	Positive solenoid valve (KL30)	4 or 6 mm ²	Red	 <p>The diagram shows a circular 7-pin connector with pins numbered 1 through 7 in a clockwise direction starting from the top. Pin 1 is at the top, 2 is top-right, 3 is right, 4 is bottom-right, 5 is bottom, 6 is bottom-left, and 7 is left.</p>
2	Positive (KL15)	1.5 mm ²	White/red	
3	Minus electronics (KL31b)	1.5 mm ²	Brown/blue	
4	Minus solenoid valve (KL31)	4 or 6 mm ²	Brown	
5	Warning device	1.5 mm ²	Yellow/blue	
6	Not assigned			
7	Not assigned			



7-pin plug connection ISO 3731 (White) - 24 V

Pin	Function	Cross section	Colour	Image/arrangement
1	Earth (31)	2.5 mm ²	White/black	 <p>ISO 3731</p> <p>E - 012</p>
2	Not assigned (58L)	1.5 mm ²	Violet	
3	Reversing light (L)	1.5 mm ²	Grey	
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	

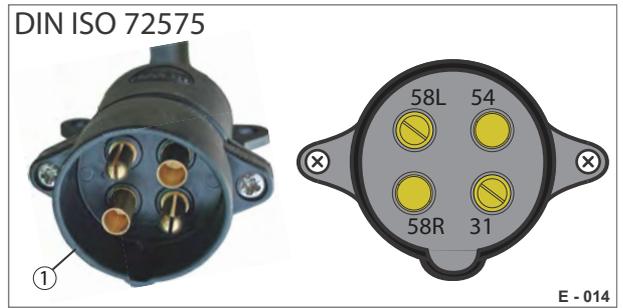
7-pin connector ISO 1185 (Black) - 24 V

Pin	Function	Cross section	Colour	Image/arrangement
1	Earth (31)	2.5 mm ²	White	 <p>ISO 1185</p> <p>E - 013</p>
2	Left tail light/sidemarkers light/licence plate light (58L)	1.5 mm ²	Black	
3	Turn indicator, left (L)	1.5 mm ²	Yellow	
4	Brake lights (54)	1.5 mm ²	Red	
5	Turn indicator, right (R)	1.5 mm ²	Green	
6	Right tail light/sidemarkers light/licence plate light (58R)	2.5 mm ²	Brown	
7	Trailer braking control (54G)	1.5 mm ²	Black/yellow	

4-pin plug connection DIN ISO 72575 (6 - 24 V)

Pin	Function	Cross section	Colour
1	Earth (31)	2.5 mm ²	White/black
2	Fog light (58R)	1.5 mm ²	Blue
3	Reversing light (54)	1.5 mm ²	Grey
4	Not assigned (58L)		

Image/arrangement



Tab. 3 pos. 1) plug / pos. 2) socket

Tail light with peripheral light 24 V

The rear multi-functional light are equipped with a peripheral light.

The multi-functional tail light is equipped with the following functions:

- Fog light
- Reversing light
- Tail lights with reflectors
- Brake light
- Indicator

The peripheral light labels the vehicle with the following colours:

- Red, to the rear
- Orange, side
- White, forwards

The lighting system can optionally be converted at the factory to operate at 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.

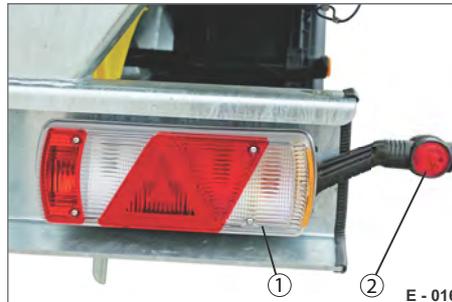


Fig. 19 Rear lighting 24 V

- 1** Tail light complete with:
Fog light,
Reversing light,
Tail lights with reflectors,
Brake light,
Indicator
- 2** Peripheral light

6 Tail light with peripheral light

LED tail light with peripheral light

The rear LED light are equipped with a the following functions

- Fog and reversing light
- Tail lights with reflectors, 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.

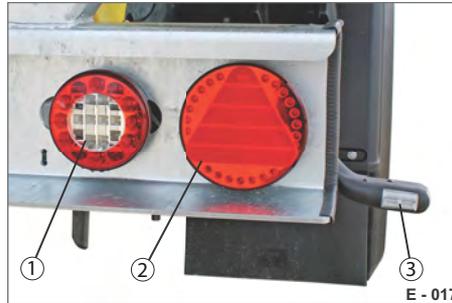


Fig. 20 "LED" tail light
Multi-voltage 12 V / 24 V

- 1 Lamp with:
Fog/reversing light
- 2 Lamp with:
Tail lights with reflectors, brake light and indicator
- 3 Peripheral light



Fig. 21 "LED" 24 V rear lighting

- 1 Tail light complete with:
Fog light,
Reversing light,
Tail lights with reflectors,
Brake light,
Indicator
- 2 Peripheral light

Marking/ Limit lights

The limit lights, white, are installed on the front side of the chassis.

The marking lights, orange, are installed on the side of the chassis.

The marking/limit lights are LED lights supplied by the electrical system.

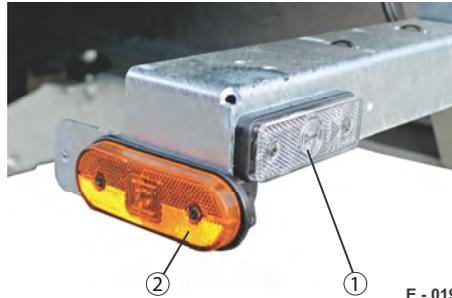


Fig. 22 Marking lights

- 1 Limit light, front side
- 2 Side marking lights

WARNING

Non-functioning marking/limit lights

The road users cannot correctly gauge/ identify the vehicle - risk of injury!

- ▶ Check that the marking and limit lights are secured before departing.



Maintenance of marking/limit lights, see page **303**.

Licence plate light

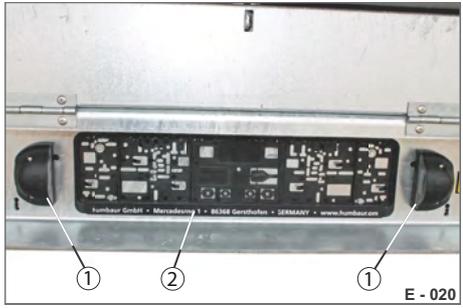


Fig. 23 Licence plate light, 24 V standard

- 1 lamps, 24 V lights
- 2 Licence plate holder

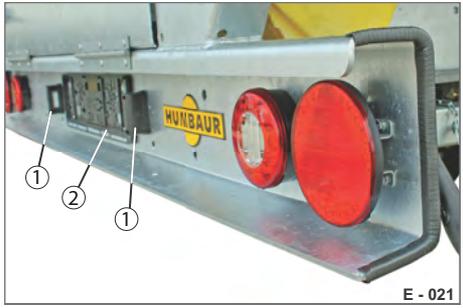


Fig. 24 "LED" licence plate lights

- 1 "LED" lamps
- 2 Licence plate holder



It is required by law that the licence plate be illuminated.

The licence plate lights are attached separately to the left and right of the licence plate holder.



Maintenance of the licence plates, see page **302**.

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 device can be adjusted separately.

The LED working lights are swivel-mounted.



Maintenance of the working lights, see page 302.



Fig. 25 Working lights at rear;
right & left, exterior

- 1 Working light, LED
- 2 Underrun guard

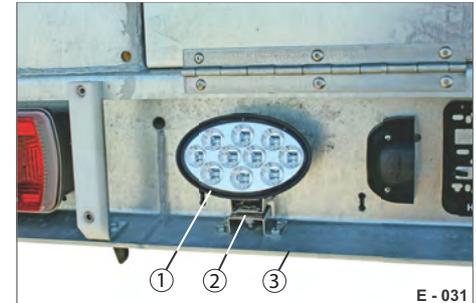


Fig. 26 Working light at rear;
at centre in underrun guard

- 1 Working light, LED
- 2 Console, rotatable mounting
- 3 Underrun guard

Rotating light

The rotating light is placed at the rear magnetically on the rear platform gate.

The electrical plug connection is located on the underrun guard.



WARNING

Non-functioning rotating light

The road users cannot correctly gauge/ identify the wide-load vehicle - risk of accident!

- ▶ Check that the rotating light is securely fastened before departing if driving with a wide load.

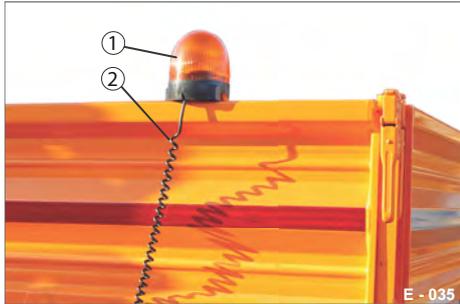


Fig. 27 Rotating light on rear

- 1 Lamps, magnetic base

- 2 Connection cable

If not used, the rotating light can be unplugged and disassembled.

The rotating light must be transported so it is protected from damage, e.g. in a toolbox.

- ▶ Open the cover of the socket (Fig. 28/1) and insert the plug (Fig. 28/3).
- ▶ Secure the plug with the cover of the socket.

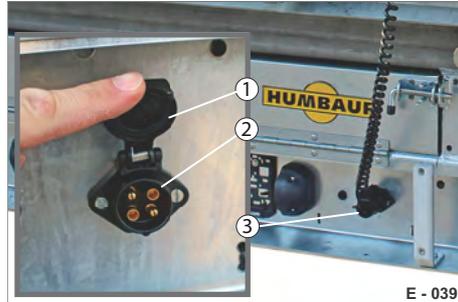


Fig. 28 Inserting rotating light

- 1 Lid
- 2 Socket, 4-pin DIN ISO 72575
- 3 Plug, inserted

Inserting



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
- Clamping device
e.g. tensioning strap ratchet.

For safety reasons, all important mechanical components must be tested and serviced at regular intervals.

These include:

- Axles
- Brakes
- Screws
- Tube connections
- Attachments
- Telescope cylinder
- Switch-off and safeguard mechanism
- Electrical system

You can find the regular intervals on page **260** "Maintenance intervals".



- Always observe the accident prevention regulations when performing maintenance work.
- Observe environmental conservation guidelines.
- Switch off the engine before starting all maintenance work.
- Damaged 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 GmbH replacement parts.

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 tyre change)		X				
Brake system: Perform traction test/lubrication			X			
Screw connections of spring leaks, shock absorber and axle connections: Visual inspection			X		X	
Draw pipe height adjustment system Lubricating				X		
Tighten towing eye-bolt connection			X			
Check and set brake adjustment				X		
Hydraulic lines/components: Check for leaks and replace if necessary						X
Telescope cylinder/extensions, stripping: Check for leaks						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 absorber/telescope cylinder Check for leaks, oil leaks					X	
Towing eye/draw pipe/tilting bearing: Check for wear and if they are secure					X	
Electro-hydraulic unit: Check for oil loss/battery					X	
Line filter of the pressure system/tilting bearing: 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 General tightening torques

Tightening torques for special attachments

Name	Thread	Strength class	Tightening torque
Valve clamp (pneumatic control stage)	M 12	10.9	73 Nm
Mud guard clamp	M 8	8.8	10 Nm
Mud guard pipe	M 16	8.8	85 Nm
Side guard	M 12	10.9	73 Nm
Spare wheel holder, cage	M 12	10.9	73 Nm
Spare wheel holder, front platform gate	M 12	10.9	73 Nm
Support foot of gear-supported jack	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

The bearing can get dirty and cause increased wear.

Lubrication nipple and bearing points can get damaged.

- ▶ Clean the lubrication nipples carefully before lubricating.



CAUTION

Contact with lubricants

Lubricants can cause skin reactions.

- ▶ Only use approved lubricants.
- ▶ Clean lubrication nipples carefully before lubricating.



Use



after working with lubricants.

Lubricating grease

Lubrication point	Lubricant
– Towing eye	Multi-purpose grease in acc. with ISO-L-XCCHB3 or DIN 51825-Typ K with application range -30 °C to +120 °C
– Folding support	
– Spindle support	Multi-purpose grease in acc. with ISO-L-XCCHB3 or DIN 51825-Typ K with application range -30 °C to +120 °C
– Draw pipe height adjustment system	
– Spindle parking brake	
– Locks	

Draw pipe height adjustment system

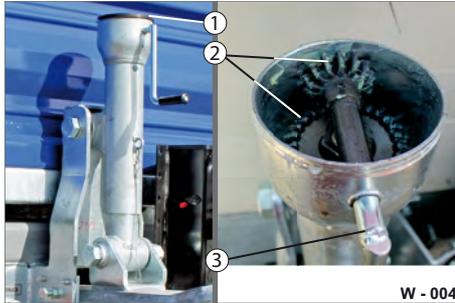


Fig. 4 Lubricating draw pipe height adjustment system

- 1 Lid
- 2 Gear wheels
- 3 Crank

- ▶ Remove the cover (Fig. 4/1).
- ▶ Clean the gear wheels with a clean, dry cloth, if necessary.
- ▶ Remove dirt and old, hardened grease.
- ▶ Lubricate the gear wheels (Fig. 4/2) with grease.

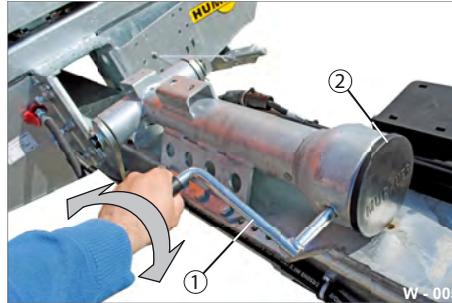


Fig. 5 Distribute grease

- 1 Crank
- 2 Lid

- ▶ Close the lid.
- ▶ Crank the height adjustment system up and down with the crank (Fig. 4/3) - this distributes the grease.

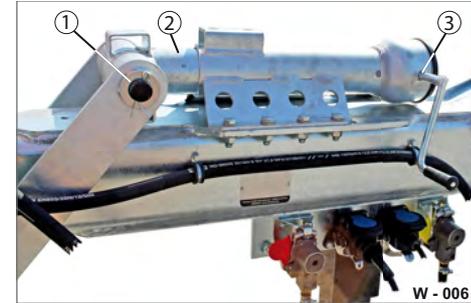


Fig. 6 Remove excess grease

- 1 Bearing bolts
- 2 Guide tube
- 3 Crank inlet

- ▶ If necessary, remove excess grease at different points (Fig. 6/1, 2, 3) - environmental pollution!

Tilt feet

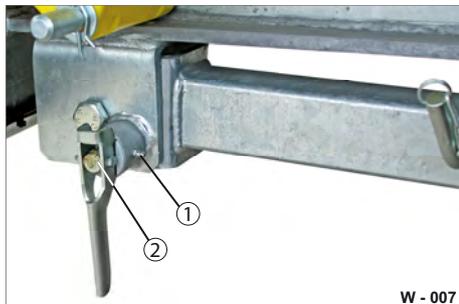


Fig. 7 Tilt feet lubrication points

- 1 Lubrication nipple
- 2 Locking handle bearing point

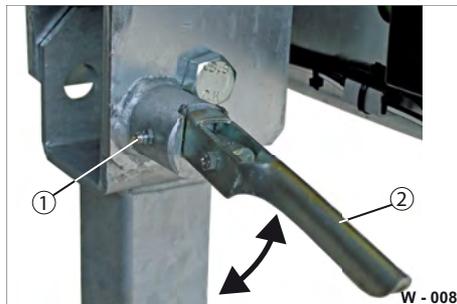


Fig. 8 Lubricating tilt feet

- 1 Lubrication nipple
- 2 Locking handle

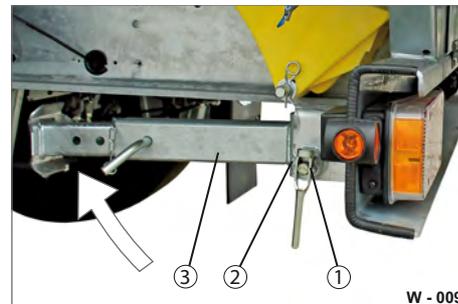


Fig. 9 Remove excess grease

- 1 Bearing point
- 2 Lubrication nipple
- 3 Folding foot, folded up

- ▶ Clean the grease nipple (Fig. 7/1) with a clean, dry cloth.
- ▶ Remove objects such as blades of grass, branches, etc. from the bearing positions (Fig. 7/2).

The locking handle must engage on its own.

- ▶ Grease the tilt feet using a grease gun on the lubrication nipple (Fig. 8/1).
- ▶ Pull on the locking handle (Fig. 8/2).
- ▶ Fold the tilt feet up and down several times.

- ▶ If necessary, remove excess grease at different points (Fig. 9/1, 2,) - environmental pollution!

Support winch



Fig. 10 Gear-supported jack on chassis

- 1 Lubrication nipple
- 2 Crank

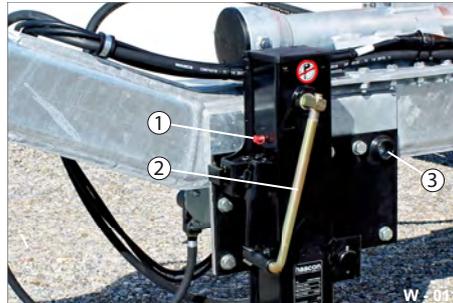


Fig. 11 Swivel support on tongue

- 1 Lubrication nipple
- 2 Crank
- 3 Bolt securing point, for horizontal position

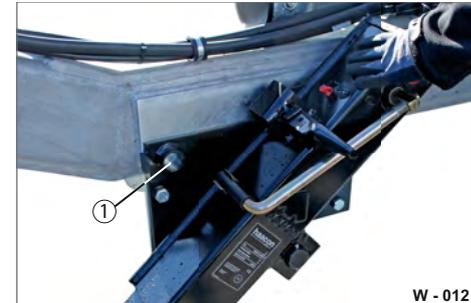


Fig. 12 Lubricating cable winch

- 1 Bolt securing point, for vertical position



Observe/adhere to the manufacturer's maintenance instructions/intervals.

- ▶ Extend the base of the support winch using the crank (Fig. 10/2; Fig. 11/2).
- ▶ Remove the lubrication nipple cap (Fig. 10/1; Fig. 11/1). Clean the grease nipple with a clean, dry cloth.
- ▶ Grease the support winch using a grease gun on the lubrication nipple.



When doing maintenance on the rotatable support winch, the trailer must be coupled on the towing vehicle or otherwise secured against falling forward.

- ▶ Turn the rotatable cable winch to the horizontal position.

- ▶ Lubricate the bolt securing points (Fig. 11/3 & Fig. 12/1) with a bit of grease.
- ▶ Slowly retract the foot of the gear-supported jack or the cable winch - this distributes the grease.

Spindle parking brake

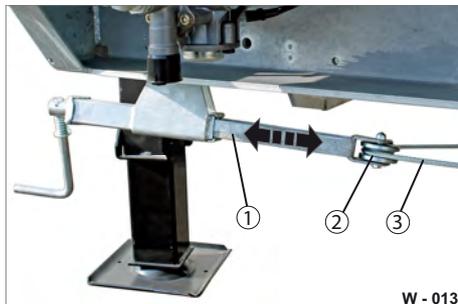


Fig. 13 Lubricating spindle parking brake

- 1 Stroke linkage
- 2 Guide pulley
- 3 Transfer cable

- ▶ Actuate the spindle parking brake several times and clean the lubrication points and the lubrication nipple carefully (Fig. 14/1) with a clean, dry cloth.
- ▶ Check the stroke linkage (Fig. 13/1), guide pulley (Fig. 13/2) and transfer cable (Fig. 13/3) for damage/ deformation/cracks.
- ▶ Lubricate the guide pulley (Fig. 13/2).

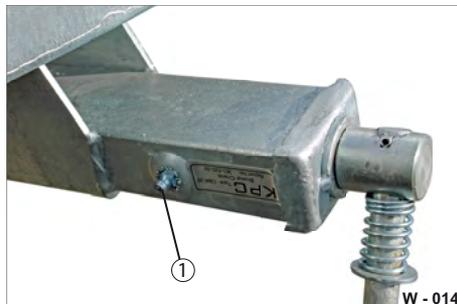


Fig. 14 Lubrication point

- 1 Lubrication nipple

- ▶ Grease the spindle parking brake using a grease gun on the lubrication nipple.
- ▶ Actuate the spindle parking brake several times.
The grease spreads out.
- ▶ Remove excess grease if necessary - environmental pollution!

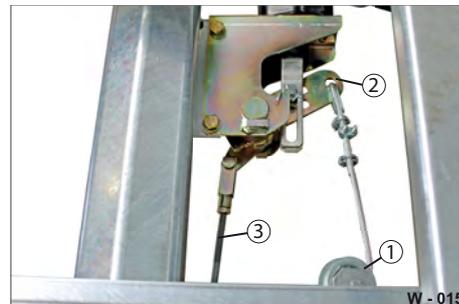


Fig. 15 Transfer mechanism

- 1 Guide pulley
- 2 Lever
- 3 Transfer rod

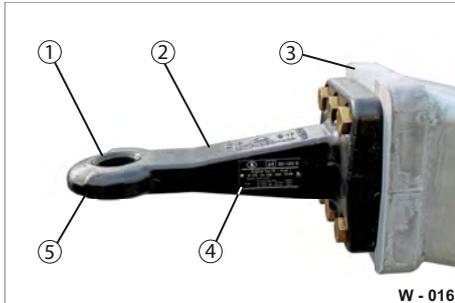
Setting the mechanical components



Maintenance/repair work on the brake systems must be done only by qualified specialists.

- ▶ Check the transfer mechanism for perfect function.
- ▶ If necessary, readjust it.
- ▶ Lubricate the guide pulley (Fig. 15/1) as well as friction and bearing points with grease.

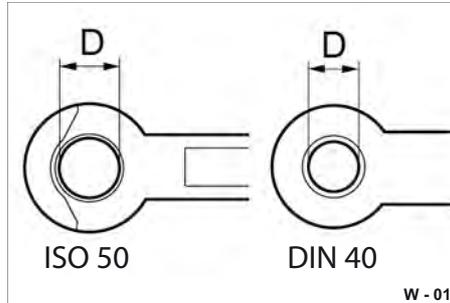
Towing eye



W - 016

Fig. 16 Lubricate towing eye

- 1 Wear bushing
- 2 Towing eye
- 3 Draw pipe
- 4 Manufacturer's nameplate/technical data
- 5 Rounded area of towing eye

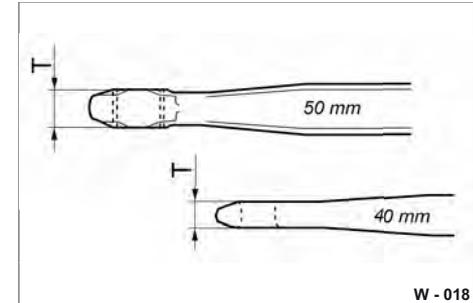


W - 017

Fig. 17 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



W - 018

Fig. 18 Thickness of towing eye

- ▶ Clean the wear bushing (Fig. 16/1) and the towing eye (Fig. 16/2) with a clean, dry cloth.
- ▶ Check the diameter of the wear bushing:
 - with D=40 mm, max. + 1,5 mm
 - with 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.

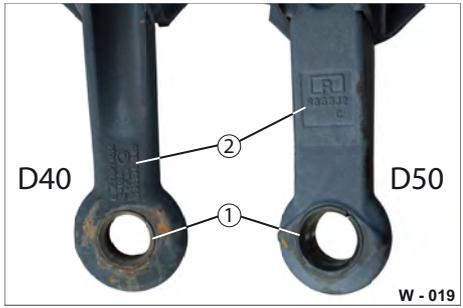


Fig. 19 Lubricating towing eyes/wear inspection

- 1 Wear bushing
- 2 Towing eye

- ▶ Check the towing eye for damage.
- ▶ Lubricate the wear bushing (Fig. 16/1) and the rounded area of the towing eye (Fig. 19/2) with long-term high pressure lubricant.

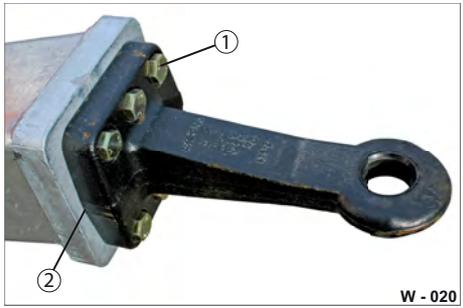


Fig. 20 Towing eye connection

- 1 Threaded bolt (M16)
- 2 Flange/contact surfaces

! The towing eye bolt connection must be re-tightened after approx. 2,000 km. The contact surface must not be treated!

Observe the information provided by the towing eye manufacturer.

- ▶ Re-tighten the bolts (Fig. 20/1) in crosswise sequence.
- ▶ Observe the torque:
 1. Acceleration with 50 Nm
 2. Acceleration with 100 Nm
 3. Acceleration with 390 Nm

Rotatable towing eye

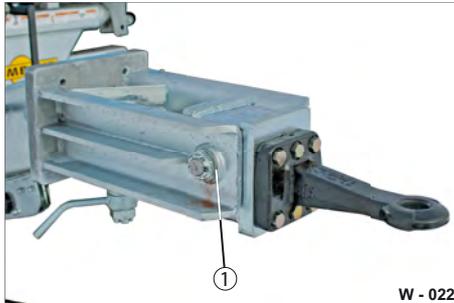


Fig. 21 Lubricating rotatable towing eye

- 1 Swivel axis

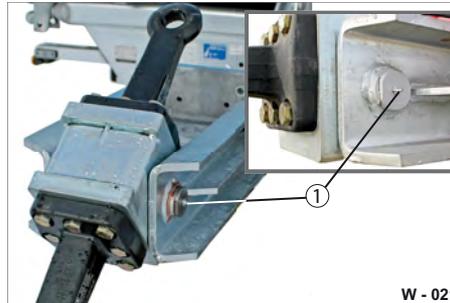


Fig. 22 Lubrication point

- 1 Lubrication nipple

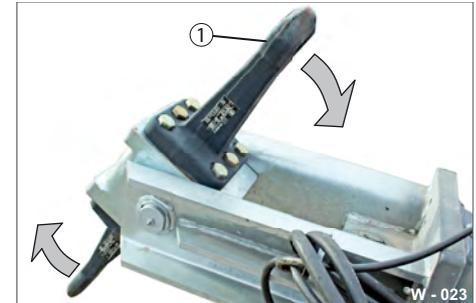


Fig. 23 Remove excess grease

- 1 Towing eye

- ▶ If necessary, remove grease from the lubrication nipple (Fig. 22/1). Clean the grease nipple with a clean, dry cloth.
- ▶ Lubricate the swivel axis (Fig. 21/1) on the lubrication nipple (Fig. 22/1) with a grease gun until lubricant escapes.

- ▶ Turn the towing eye around a few times. The grease spreads out into the swivel axis.

- ▶ Remove excess grease if necessary - environmental pollution!
- ▶ Close the lubrication nipple with the protective cap, if necessary.

Front platform gate locks/ Pivot hinge



Fig. 24 Lubrication points

- 1 Lubrication point locks
- 2 Lubrication point central locking system

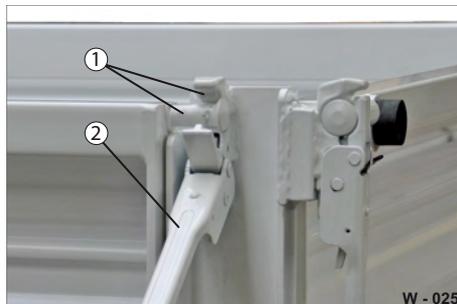


Fig. 25 Locks

- 1 Lubrication/bearing points
- 2 Lock

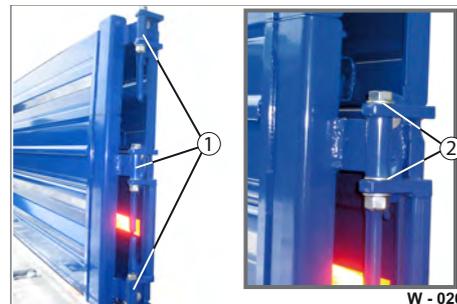


Fig. 26 Rear platform gate as revolving door

- 1 Hinge mounting
- 2 Lubrication points



The perfect, smooth function of the platform gates: Folding down/locking/swinging can only be guaranteed if the bearing points are regularly cleaned and regreased.

- ▶ After every use of the platform gates, check that the bearing and locking points are clean (without foreign objects such as blades of grass, sand, etc.).
- ▶ Clean them with a hand broom or cloth before locking the platform gates.
- ▶ Unfasten the locks (Fig. 25/2) of the respective platform gate.
- ▶ Carefully fold down the platform gate.
- ▶ Clean the lubrication/bearing points (Fig. 25/1) with a clean, dry cloth.
- ▶ Lubricate lubrication/bearing points.
- ▶ Fold up the platform gate and fasten it with the locks.

- ▶ Clean the hinge mounting (Fig. 26/1) with a clean, dry cloth.
- ▶ Lubricate the lubrication points of the hinge with a bit of lubricant.
- ▶ Remove excess/escaping lubricant.

Rear side central locking system

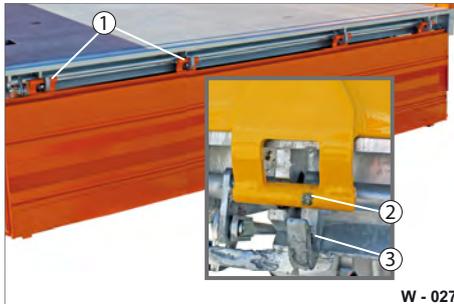


Fig. 27 Platform gate at rear

- 1 Hinges/lubrication points
- 2 Lock lugs
- 3 Lock hook

- ▶ Unlock the respective platform gate via the central locking system. The platform gate is in pendulum mode.
- ▶ Clean the lubrication/bearing points (Fig. 27/1) with a clean, dry cloth.
- ▶ Lubricate the lock lugs (Fig. 27/2) and lock hook (Fig. 27/3).

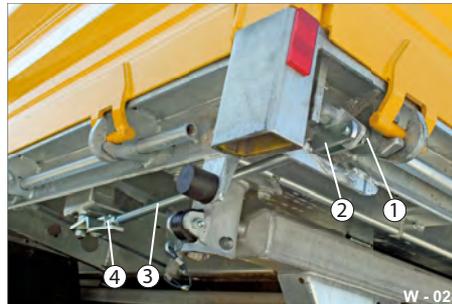


Fig. 28 Central locking system at rear

- 1 Lubrication/bearing points, torsion bars
- 2 Fork head on torsion bars
- 3 Transfer rod
- 4 Fork head on lever

Readjusting central locking system

- ▶ Unscrew both lock nuts (Fig. 29/3) on the transfer rod (Fig. 28/3).
- ▶ Turn the transfer rod clockwise or anti-clockwise. The transfer rod tightens or releases the central locking system mechanics.

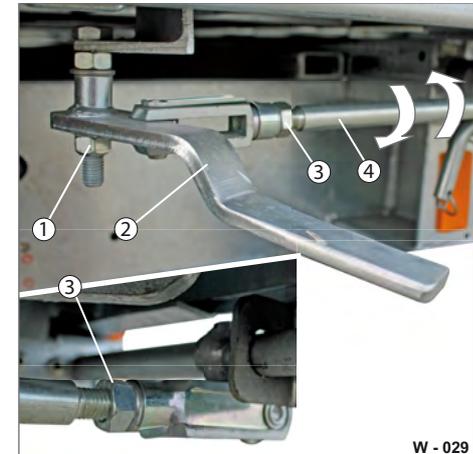


Fig. 29 Readjusting central locking system

- 1 Bearing point, lever
 - 2 Lever
 - 3 Fork head, lock nut
 - 4 Transfer rod
- ▶ Check the alignment by actuating the lever (Fig. 29/2).
 - ▶ Screw the lock nuts (Fig. 29/3) tightly.

Front side central locking system

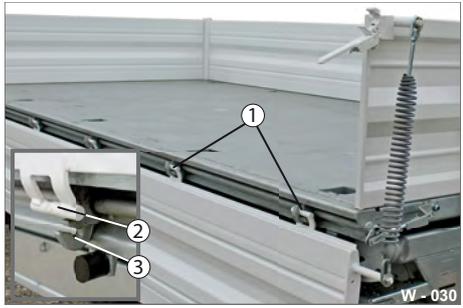


Fig. 30 Side platform gates

- 1 Hinges/lubrication points
- 2 Lock lugs
- 3 Lock hook

- ▶ Unlock the respective platform gate via the central locking system. The platform gate is in pendulum mode.
- ▶ Clean the lubrication/bearing points (Fig. 30/1) with a clean, dry cloth.
- ▶ Lubricate the lock lugs (Fig. 30/2) and lock hook (Fig. 30/3).

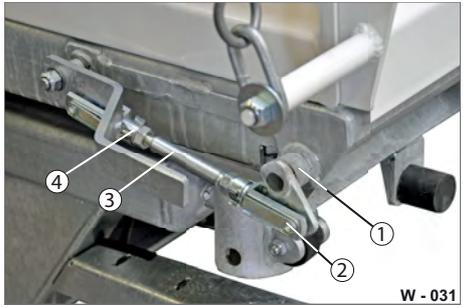


Fig. 31 Central locking system at rear

- 1 Lubrication/bearing points, torsion bars
- 2 Fork head on torsion bars
- 3 Transfer rod
- 4 Fork head on lever

Readjusting central locking system

- ▶ Unscrew both lock nuts (Fig. 32/3) on the transfer rod (Fig. 31/3).
- ▶ Turn the transfer rod clockwise or anti-clockwise. The transfer rod tightens or releases the central locking system mechanics.

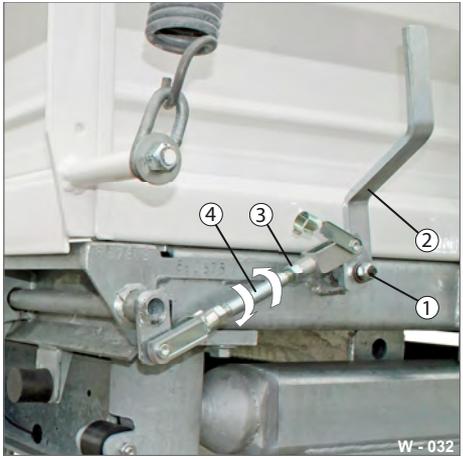


Fig. 32 Readjusting central locking system

- 1 Bearing point, lever
 - 2 Lever
 - 3 Fork head, lock nut
 - 4 Transfer rod
- ▶ Check the alignment by actuating the lever (Fig. 32/2).
 - ▶ Screw the lock nuts (Fig. 32/3) tightly.

Tilting bearing



Fig. 33 Tilting bearing ball

- 1 Tilting bearing ball, welded on

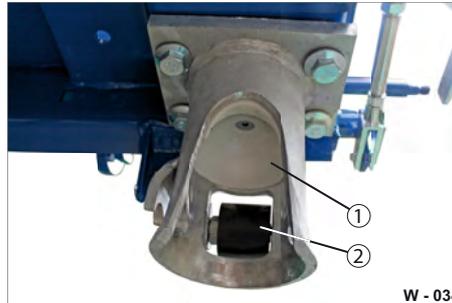


Fig. 34 Opening tilting bearing

- 1 Tilting bearing shell
2 Roller

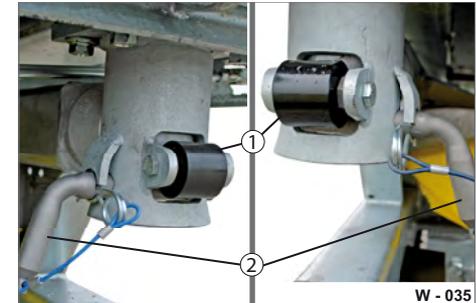


Fig. 35 Tilting bearing secured

- 1 Roller
2 Socket pin, inserted and secured

Depending of the intensity of use and area of application of the trailer, the tilting bearing must be checked for soiling and wear and lubricated.



A visual inspection of the tilting bearing is to be done every 6 months, and it must be cleaned if necessary.

Operation of the loading platform/tilting bearing, see page 103.

- ▶ Tilt the loading platform to the left and the right.
- ▶ Do a visual inspection.
- ▶ Remove all dirt particles, such as sand, branches, etc.
- ▶ Clean the tilting bearing ball (Fig. 33/1), the tilting bearing shell (Fig. 34/1) and the roller (Fig. 34/2) with a clean cloth.
- ▶ Check the rollers for cracks. Replace the roller if necessary.
- ▶ Lubricate the tilting bearing ball (Fig. 33/1) with grease.

- ▶ Apply some adherent grease to the roller (Fig. 35/1).
- ▶ Tilt the loading platform to the left and the right.
- ▶ Check if the tilting process functions perfectly.

Maintaining hydraulic system

Trailers with hydraulic systems require special maintenance.



Maintenance/repair work on hydraulic systems must be done only by qualified specialists.

Observe the national regulations, e.g. BGR 237 on handling/maintaining/repairing hydraulic components.

WARNING

Lines are under pressure

These are under pressure when decoupling the hydraulic lines.

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

- ▶ Before doing repair work on the hydraulics, check that the lines are depressurised and the towing vehicle is switched off.



▶ Use



WARNING



Working under loading bridge

The loading bridge can fall and crush persons.

- ▶ Check that the service support is properly secured before working under the loading bridge.
- ▶ Secure the loading bridge with an auxiliary aid, such as a crane when the service support is not present.

Hydraulic connections

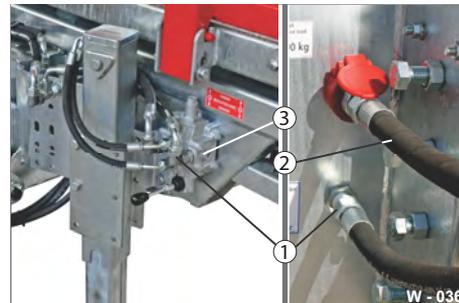


Fig. 36 Checking of connections

- 1 Connection points/screw fittings
 - 2 Hydraulic oil distributor/control
 - 3 Hoses
- ▶ Check all hydraulic connection points (Fig. 36/1) for leaks (oil loss) and tight fit.
 - ▶ If necessary, clean escaping oil from the hydraulic components.
 - ▶ Replace defective hydraulic components, e.g. distributor/control (Fig. 36/2) immediately.
 - ▶ Check the hoses (Fig. 36/3) for crack formations/deformation.
 - ▶ Replace the hoses after about 6 years.

Telescope cylinder

**CAUTION**

Standing under the loading bridge

You could hit your head.

- ▶ Move carefully under a raised loading bridge - do not make any quick or hasty movements.



The loading bridge must be secured with the service support before doing maintenance work.

The service support is mounted and secured under the loading bridge so that it is rotatable.

The service support is dependent on the vehicle design and differs in size and shape.

The operation is the same.

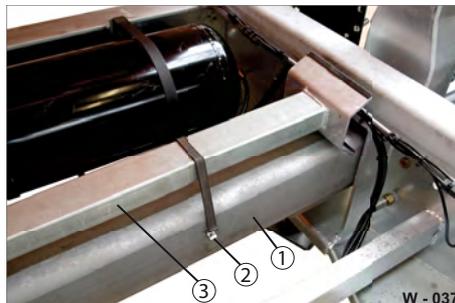


Fig. 37 Service support in drive position

- 1 Tube drawbar
- 2 Tension lock
- 3 Service support, parked

- ▶ Tilt the loading bridge backwards using the hydraulics.
- ▶ Release the tension lock (Fig. 37/2).
- ▶ Adjust the support (Fig. 38/2) to the required length and insert the screw (Fig. 38/1) into one of the bore holes.

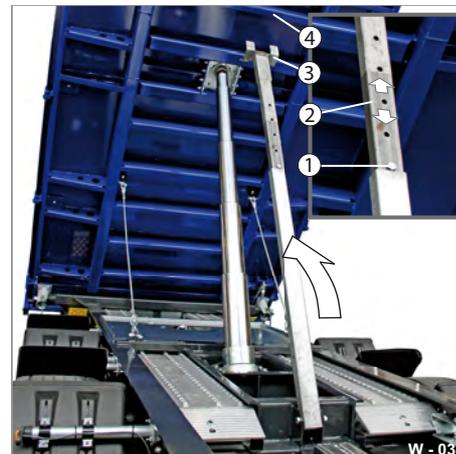


Fig. 38 Setting up service support

- 1 Screw
- 2 Support, adjustable
- 3 U-support arm
- 4 Cross brace, loading bridge

- ▶ Fold up the service support.
- ▶ Slowly tilt the loading bridge onto the U-support arm (Fig. 38/3).
The U-support arm must sit securely on the cross brace (Fig. 38/4).
The loading bridge is mechanically secured against falling.

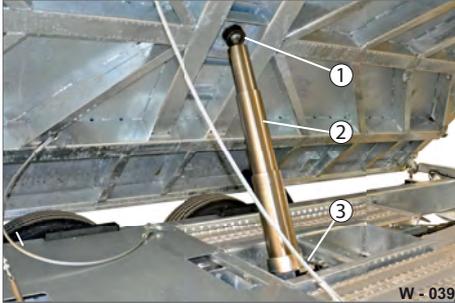


Fig. 39 Checking/maintenance of telescope cylinder

- 1 Top cylinder bearing, lubrication nipple
- 2 Cylinder, extended
- 3 Bottom cylinder bearing, bearing points

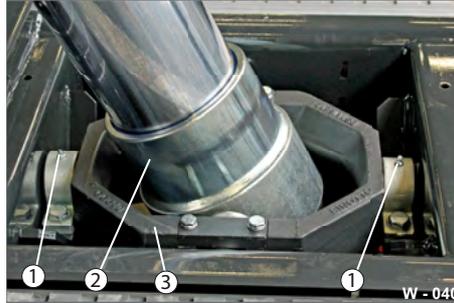


Fig. 40 Bottom bearing

- 1 Lubrication nipple, bearing block
- 2 Telescope cylinder
- 3 Slewing ring

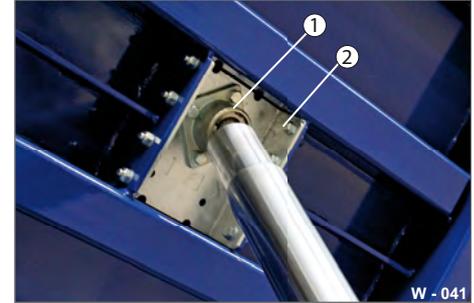


Fig. 41 Top bearing

- 1 Ball bearing
- 2 Console

- ▶ Check the cylinder (Fig. 39/2) for leaks (oil loss) and tight fit.
- ▶ If necessary, clean escaping oil from the hydraulic components.
- ▶ Check the hoses for crack formations/ deformation.
- ▶ Replace the hoses after about 6 years.

- ▶ Clean the bearing points/lubrication nipple at the bottom on the slewing ring (Fig. 40/3) with a clean cloth.
- ▶ Visually check the bearing for crack formations, deformation.
- ▶ Lubricate the bearing blocks on the lubrication nipple (Fig. 40/1).
- ▶ Wipe away excess grease.

- ▶ Clean the ball bearing (Fig. 41/1) with a clean cloth.
- ▶ Visually check the bearing for crack formations, deformation.
- ▶ Lubricate the bearings on the lubrication nipple if necessary.
- ▶ Wipe away excess grease.



Fig. 42 Folding down service support

- 1 Loading bridge
- 2 Service support

- ▶ Tilt the loading bridge upwards completely (Fig. 42/1) - up to the switch-off point.
The service support is released.
- ▶ Fold the service support (Fig. 42/2) down.
- ▶ Completely insert the service support.
- ▶ Secure the service support in the chassis - see page 277.
The loading bridge rim can get tilted back.



Fig. 43 Loading bridge, tilted to the side

- 1 Loading bridge
- 2 Telescope cylinder

- ▶ Tilt the loading bridge (Fig. 43/1) to the left and right.
- ▶ Check if the telescope cylinder (Fig. 43/2) and the bearing points function perfectly.

Switch-off/safeguard mechanism



Fig. 44 Loading bridge, tilted to the side

- 1 Arrestor/securing cable
- 2 Lift limitation cable
- 3 Cut-off lever/valve

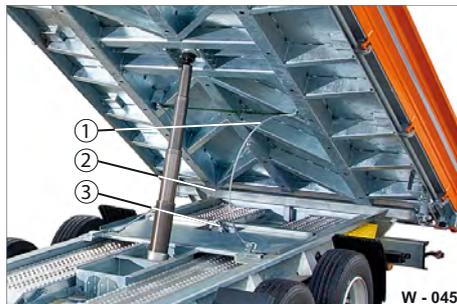


Fig. 45 Loading bridge, tilted to the rear

- 1 Arrestor/securing cable
- 2 Lift limitation cable
- 3 Cut-off lever/valve

The lift limitation system of the loading platform is maintenance-free.



The lift of the tilting loading bridge is set at the factory. Unauthorised adjustment of the lift limitation is not permitted!

Maintenance and repair to the cut-off and securing mechanisms may only be done by qualified specialists.



The loading bridge must be secured with service support before doing maintenance/repair work.

- ▶ Tilt the loading bridge to the left, right and rear.
- ▶ Check that the lift of the loading bridge can be switched off via the lift limitation cable (Fig. 45/2) and the cut-off lever (Fig. 45/3).

The lift of the loading bridge must not be limited by the arrestor/securing cable.

Tightening platform gate lifting springs

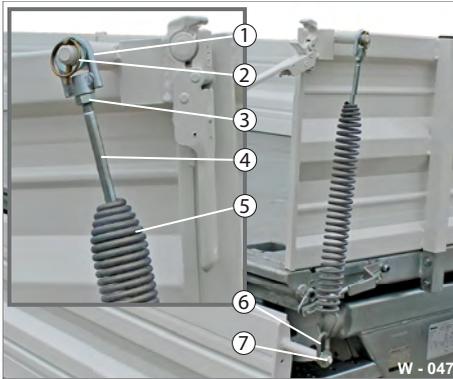


Fig. 46 Single lifting springs

- 1 Towing eye
- 2 Locking pin/washer
- 3 Lock nut
- 4 Rod, with threaded insert
- 5 Tension spring
- 6 Ring
- 7 Nut/washer



The traction and preload of the lifting springs must be set depending on the intensity of use of the side platform gates.

- ▶ Check that the platform gates can be easily lifted/closed.

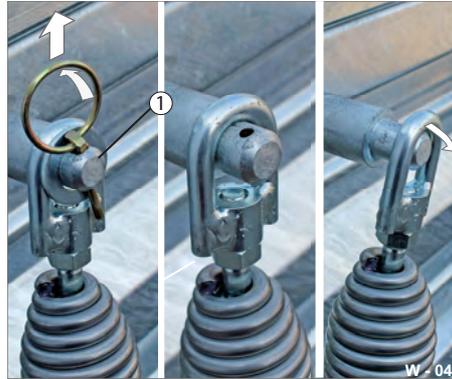


Fig. 47 Removing lifting spring

- 1 Upper bolt (front platform gate)

- ▶ Loosen the fastening on the upper bolt (Fig. 47/1).
- ▶ Unhook the lift spring.

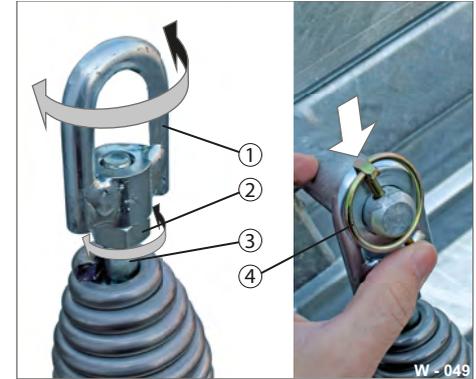


Fig. 48 Adjusting/installing lift spring

- 1 Towing eye
 - 2 Lock nut
 - 3 Rod
 - 4 Locking pin/washer
- ▶ Loosen the wing nuts (Fig. 48/2).
 - ▶ Screw the towing eye (Fig. 48/1) further into the rod (Fig. 48/3).
 - ▶ Tighten the lock nut.
 - ▶ Pull the towing eye onto the bolt.
 - ▶ Secure it with the washer and locking pin.

Tyre types

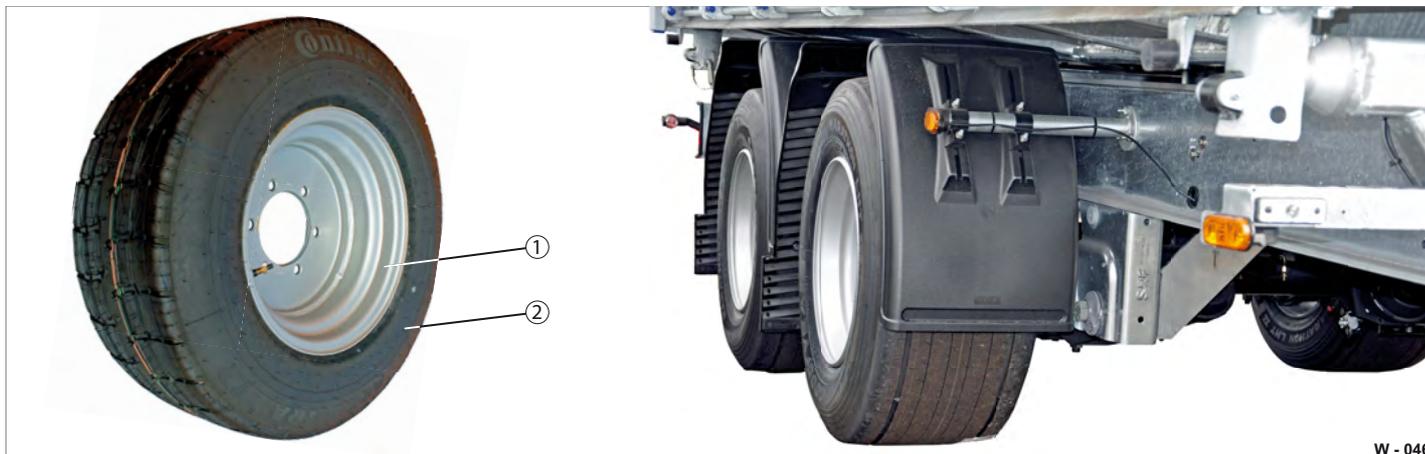


Fig. 49 Tyre - wheel combination

- 1 Steel rims
- 2 Tyres



Observe the maximum load of the tyre in the tyre pressure table.

The strain on the wheels depends on the size of the rim/tyre, the load index and the speed index.

The speed index should be at least 100 km/h (index J).

Depending on the trailer model and size, different wheel/tyre combinations can be installed.

			Tyre pressure in bar (psi) / maximum pressure (kg)										
Type	Load bearing capacity (index)	Tyre equip-ment	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	129	Single	2860	2940	3030	3120	3200	3290	3370	3460	3540	3620	3700
	127	Twin	5400	5570	5730	5890	6050	6220	6360	6530	6690	6850	7000
215/75 R17.5	135	Single	3520	3630	3730	3840	3940	4050	4150	4260	4360		
	133	Twin	6650	6860	7060	7260	7460	7660	7850	8050	8240		
235/75 R17.5	143	Single	4300	4430	4560	4690	4820	4950	5080	5200	5330	5450	
	141	Twin	8130	8370	8620	8670	9110	9350	9590	9830	10070	10300	
285/70 R19.5	150	Single	5170	5330	5480	5640	5800	5950	6100	6250	6410	6560	6700
	148	Twin	9720	10010	10310	10600	10890	11180	11470	11760	12040	12320	12600
305/70 R19.5	148	Single	5080	5240	5390	5550	5700	5850	6000	6150	6300		
	145	Twin	9360	9650	9930	10210	10495	10770	11050	11330	11600		
385/55 R19.5	156	Single	6165	6350	6540	6725	6910	7095	7280	7460	7640	7820	8000
435/50 R19.5	160	Single	6940	7150	7370	7580	7780	7990	8200	8400	8600	8800	9000
			1,6 (23)	2,0 (29)	2,5 (36)	3,0 (44)	3,5 (51)	4,0 (58)	4,5 (65)	5,0 (73)			
355/60 R18	142	Single	1030	1220	1460	1700	1930	2170	2410	2650			

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 accident!

- ▶ Do regular tyre checks.
- ▶ Check the tyre pressure, profile and overall condition of the tyres.

NOTICE

Driving with incorrect tyre pressure

The tyres wear excessively.

- ▶ Check that the tyres have the correct pressure before departing or at least every 14 days.

- ▶ Check the tyre pressure of all tyres regularly (see Page284).

Tyre pressures should be checked when the tyres are cold (before starting journey or after lengthy break from driving).

- ▶ See the tyre type table (starting from page **282**) for the tyre equipment of the trailer to find the correct tyre pressure.

If the tyre type used is not listed, please directly contact the tyre manufacturer.

- ▶ Inflate the spare wheel to highest tyre pressure used on the trailer.
- ▶ Check the tyre tread in the middle area of the tyre (a minimum of 1.6 mm is stipulated in Germany).
- ▶ Visually inspect the entire tyre. Note crack formations and foreign objects.
Recommendation:
The tyres should be changed after every 6 years of use.

Wheel nuts



WARNING



Wheel nuts loosen

Wheels can fall off during the journey - risk of accident!

Wheel nuts that are tightened to an excessive torque can break and result in loss of a wheel.

- ▶ Check that the wheel nuts are secure on a regular basis.
- ▶ Re-tighten the wheel nuts: after the first hour of service (50 km), after the first trip with a load (max. 500 km) and after the first 5,000 km, then after every 100 hours of service.
- ▶ When using new or freshly painted rims, always additionally re-tighten wheel nuts after 20 to 100 hours of service.
- ▶ Tighten the wheel nuts in opposite pairs.
- ▶ Note the required tightening torques of the axle manufacturer (see page **263**).

Wheel changing

DANGER

Carelessness on the road

You can hinder the flow of traffic when changing tyres - risk of accident!

Moving vehicles could hit you!

- ▶ Secure the location on the road.
- ▶ Set up a warning triangle.



▶ Use



▶ Use

WARNING

Unsecured wheels

Unsecured wheels can roll away - risk of accident!

This can result in injury.

- ▶ 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.

7 Tyres/wheels:

When performing a wheel change always observe:



Fig. 50 Tyres/wheels:

- 1 Technical specifications
- Only use the prescribed rims and tyre sizes.
- Observe the prescribed tyre carrying capacity and speed index.
- Observe the direction of rotation of the wheels.
- Dual tyre pairs should have the same tread.
- Check tyre pressure after changing the tyre.
- Replacing damaged wheel bolts.
- Tighten wheel nuts (see page **263 & 284**)

Securing trailer



Fig. 51 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. 51/1).

Putting lifting device into position

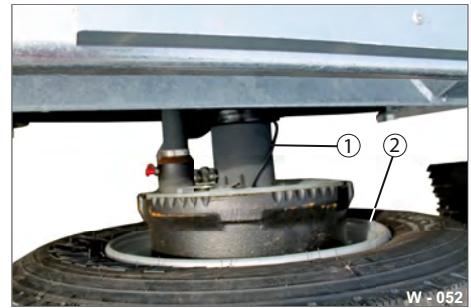


Fig. 52 Putting lifting device into position

- 1 Axle tube, area for lifting device
- 2 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. 52/2) under the axle tube (Fig. 52/1).
- ▶  You can find the exact lifting point in the operating/maintenance instructions of the respective axle unit manufacturer.

Replacing defective tyre

- ▶ Get the spare tyre.
- ▶ Unscrew the nuts of the defective tyre.
- ▶ Carefully pull the tyre off the axle.
- ▶ Carefully set the spare tyre on the axle - do not damage the wheel bolts - and screw them by hand with the same nuts.
- ▶ Screw the nuts on with a torque wrench, in a crosswise sequence if possible.
 - Observe the stipulated tightening torque.
- ▶ Carefully set down the trailer.
- ▶ Carefully stow away the defective tyre on the loading platform.
 - or
- ▶ Put the defective tyre in the spare tyre holder.
- ▶ Carefully stow away any tools/lifting equipment used.

Spare wheel storage



Fig. 53 Spare wheel on the front platform wall

1 Spare wheel

Adhere to the following regulations, safety rules and principles when maintaining and checking spare wheel holders:

- Road traffic regulations (StVO in Germany)
- Accident prevention regulations - vehicles (BGV 12)
- Technical: Principles for the testing of vehicles by driving personnel (BGG 915) and (ZH 1/282.1).

Supplying spare wheel



- ▶ Obtain help from another person - wheels are heavy!
- ▶ Remove spare wheel - see page 118.

Cleaning alloy wheels**Lubricants for the hubs**

Alloy wheels are only approved for hub centring.

Approved lubricant

- "Freylube"
- "Rocol MG"
- "Esso (Moly)" or
- similar lubricants

These lubricants prevent the wheel and hub from sticking together. The surfaces of the hub and wheel must be smooth, flat and clean.

No conical or spherical nuts may be used.

Only fit the supplied valves or those with nickel or chrome plating.

- ▶ Only lubricate the hubs with the approved lubricants when changing a tyre.

Fixings, lines, Cable clips

- ▶ Thoroughly clean the dirty trailer.
- ▶ Remove rust from fixings.
- ▶ Check the plug connections of the electrical connections.
- ▶ Replace damaged lines and cable clips.
- ▶ Replace the hydraulic hoses every 6 years.



Brakes are safety-critical components!

- Adhere to the road traffic licensing regulations (StVZO in Germany).
- Main inspections must only be conducted by accredited workshops.
- Have the braking system checked and serviced regularly.
- Work on the brake system may only be carried out by qualified specialists with the appropriate levels of knowledge and experience.
- Any faults found in the braking system must be repaired immediately by a brake service workshop.
- The settings made in the factory to the brake valves must not be modified.
- When replacing brake linings use only approved brake linings.

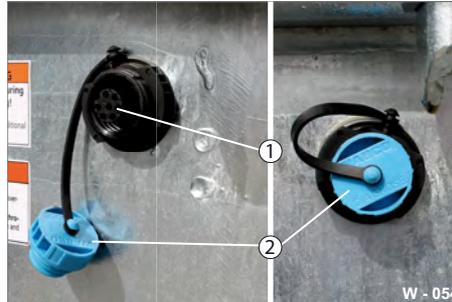


Fig. 54 Diagnose for EBS/ABS brakes

- 1 Plug connection
- 2 Cap, threaded

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. 55 & Fig. 56) of the brake manufacturer.

Vorderachse(n)		Front axle(s)	Hinterachse(n)		Rear axle(s)
Eingangsdruck Input pressure		10 ⁵ kPa	Eingangsdruck Input pressure		6,5 10 ⁵ kPa
Verteil No. Value No.		475 713 500 0			
Hebelstange l Lever length l		mm		Hebelstange l Lever length l	
Achslast Axle load		kg		Achslast Axle load	
Federweg s Spring defl. s		mm		Federweg s Spring defl. s	
Ausgangsdruck Output pressure		10 ⁵ kPa		Ausgangsdruck Output pressure	
		18000		13,5	
		0		2,1	
		6,3			

Fig. 55 "WABCO" brake nameplate with ABS anti-lock braking system

HUMBUR		HTK185524		GEO		Pin1		Pin3		Pin4	
WHD 185524-FP0705041		WDE88746Z		90		90		45/3M		X	
Autosysteme		MD									
p1 (bar)		6,5		p2 (bar)		0,6		2,0		6,5	
p3 (bar)		1,7		p4 (bar)		5,2		0,5		1,8	
p5 (bar)		0,4		p6 (bar)		0,5		1,8		0,8	
p7 (bar)		0		p8 (bar)		0		0		0	
p9 (bar)		0		p10 (bar)		0		0		0	
p11 (bar)		0		p12 (bar)		0		0		0	
p13 (bar)		0		p14 (bar)		0		0		0	
p15 (bar)		0		p16 (bar)		0		0		0	
p17 (bar)		0		p18 (bar)		0		0		0	
p19 (bar)		0		p20 (bar)		0		0		0	
p21 (bar)		0		p22 (bar)		0		0		0	
p23 (bar)		0		p24 (bar)		0		0		0	
p25 (bar)		0		p26 (bar)		0		0		0	
p27 (bar)		0		p28 (bar)		0		0		0	
p29 (bar)		0		p30 (bar)		0		0		0	
p31 (bar)		0		p32 (bar)		0		0		0	
p33 (bar)		0		p34 (bar)		0		0		0	
p35 (bar)		0		p36 (bar)		0		0		0	
p37 (bar)		0		p38 (bar)		0		0		0	
p39 (bar)		0		p40 (bar)		0		0		0	
p41 (bar)		0		p42 (bar)		0		0		0	
p43 (bar)		0		p44 (bar)		0		0		0	
p45 (bar)		0		p46 (bar)		0		0		0	
p47 (bar)		0		p48 (bar)		0		0		0	
p49 (bar)		0		p50 (bar)		0		0		0	
p51 (bar)		0		p52 (bar)		0		0		0	
p53 (bar)		0		p54 (bar)		0		0		0	
p55 (bar)		0		p56 (bar)		0		0		0	
p57 (bar)		0		p58 (bar)		0		0		0	
p59 (bar)		0		p60 (bar)		0		0		0	
p61 (bar)		0		p62 (bar)		0		0		0	
p63 (bar)		0		p64 (bar)		0		0		0	
p65 (bar)		0		p66 (bar)		0		0		0	
p67 (bar)		0		p68 (bar)		0		0		0	
p69 (bar)		0		p70 (bar)		0		0		0	
p71 (bar)		0		p72 (bar)		0		0		0	
p73 (bar)		0		p74 (bar)		0		0		0	
p75 (bar)		0		p76 (bar)		0		0		0	
p77 (bar)		0		p78 (bar)		0		0		0	
p79 (bar)		0		p80 (bar)		0		0		0	
p81 (bar)		0		p82 (bar)		0		0		0	
p83 (bar)		0		p84 (bar)		0		0		0	
p85 (bar)		0		p86 (bar)		0		0		0	
p87 (bar)		0		p88 (bar)		0		0		0	
p89 (bar)		0		p90 (bar)		0		0		0	
p91 (bar)		0		p92 (bar)		0		0		0	
p93 (bar)		0		p94 (bar)		0		0		0	
p95 (bar)		0		p96 (bar)		0		0		0	
p97 (bar)		0		p98 (bar)		0		0		0	
p99 (bar)		0		p100 (bar)		0		0		0	

Fig. 56 "WABCO" brake nameplate with ABS/EBS-E anti-lock and electronic brake system

Wheel brake



W - 057

Fig. 57 Brake system



The maintenance and repair work to be done on wheel brakes is described in the manufacturer's documentation for the relevant axle.

When changing the brake linings use only the same brake linings as fitted originally or those approved "Brake Linings" listed in the constructional description.

Using any other brake linings will invalidate the operating permit.

Warranty claims against the brake or trailer manufacturer will also be void.

Compressed air system



WARNING

Condensate in the compressed air system

The brake system can be destroyed or fall out.

- ▶ Regularly drain the compressed air system.



CAUTION

Escaping pressurised air

Actuating the drain valve causes a lot of noise.

This can cause tinnitus and hearing damage.

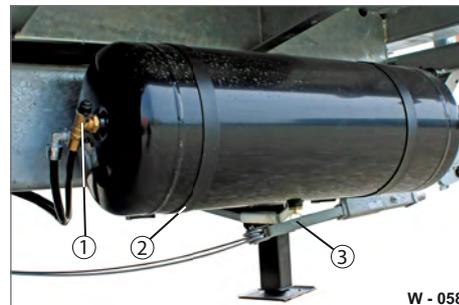


- ▶ Use

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 - 058

Fig. 58 Chassis underside

- 1 Screw fittings, hose/pipes
- 2 Holders
- 3 Operating pin



On trailers fitted with manual drainage valves, the tanks must be regularly drained and leaking drainage valves must be replaced (see page 92).

- ▶ Check that the screw fittings (Fig. 58/1) are secure.
- ▶ Tighten non-tight screw fittings or replace them.
- ▶ Replace damaged hoses and pipes (Fig. 58/1).

Cleaning coupling heads

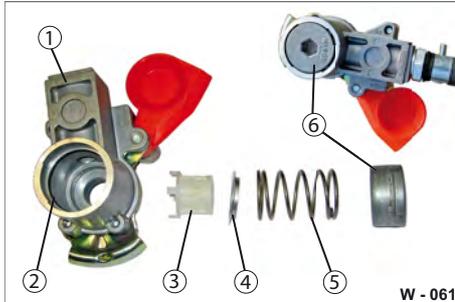


Fig. 59 Coupling head disassembled

- 1 Housing
- 2 Seal
- 3 Filter
- 4 Metal ring
- 5 Spring
- 6 Lid



The coupling heads for "supply, brake" with filter insert must be regularly cleaned (see page 261).

Disassembling

- ▶ Press in the cover (Fig. 59/6) with a hexagon socket up to the limit position in the housing (Fig. 59/1). Turn the hexagon socket key by 90°. The cover opens.
- ▶ Remove the spring (Fig. 59/5), the metal ring (Fig. 59/4) and the filter (Fig. 59/3) 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. 59/2) 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

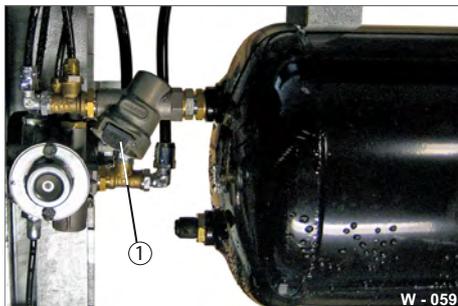


Fig. 60 Line filter for compressed air system

- 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.

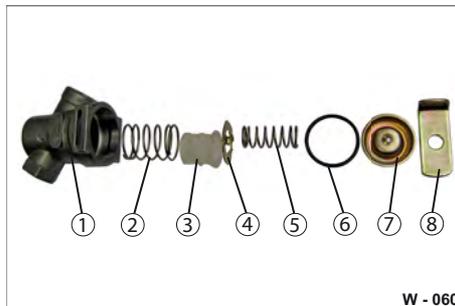


Fig. 61 Line filter disassembled

- 1 Filter housing
 2 Large spring
 3 Filter
 4 Intermediate plate
 5 Small spring
 6 Seal
 7 Lid
 8 Bracket

Disassembling

- ▶ Press the cover (Fig. 61/8) downwards with a screwdriver and pull out the bracket (Fig. 61/9).
- ▶ Remove both springs (Fig. 61/3 & Fig. 61/6), the seal (Fig. 61/7), the intermediate plate (Fig. 61/5) and the filter (Fig. 61/4).
- ▶ Clean the filter housing (Fig. 61/2) with a clean, dry cloth.
- ▶ Clean the filter (Fig. 61/4).
 Replace the filter in the event of major contamination or damage.
- ▶ Check if the seal (Fig. 61/7) is present or damaged.
 Replace damaged seals.
- ▶ Lubricate the seal with a bit of grease.

Assembly

- ▶ Insert the intermediate plate into the filter housing with the latches pointing upwards.
- ▶ Set the small springs (Fig. 61/6) on the latches of the intermediate plate.
- ▶ Set the cover (Fig. 61/8) on top.
- ▶ Press the cover into the filter housing and slide the bracket through the perforations in the filter housing.

Clean Duo-Matic coupling

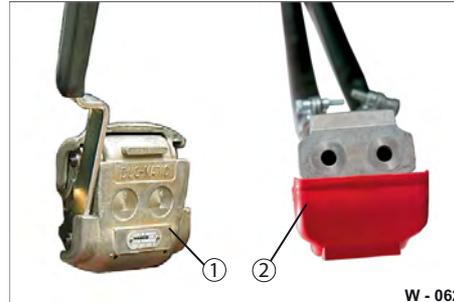


Fig. 62 Coupling head disassembled

- 1 Coupling (socket)
- 2 Coupling head (plug)



The Duo-Matic coupling for "supply, brake" must be regularly cleaned (see page **261**).

- ▶ Clean the sealing surfaces of the coupling head (Fig. 62/2) and the coupling socket (Fig. 62/1) 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 triggered manually (emergency trigger device).



WARNING



Activated emergency trigger device

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

Persons can be hit or run over by the trailer.

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



WARNING



Unbraked trailer

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

The towing vehicle brakes are insufficient for stopping the vehicle train.

- ▶ Drive the loaded trailer no faster than walking speed (4 km/h).



CAUTION

Pre-tensioned spring under pressure

When opening the spring-loaded membrane cylinder, the pre-tensioned spring can be ejected - risk of striking!

- ▶ Only allow repairs to the spring-loaded diaphragm cylinder to be carried out by Humbaur GmbH or an approved workshop.

Emergency trigger device (variety 1)

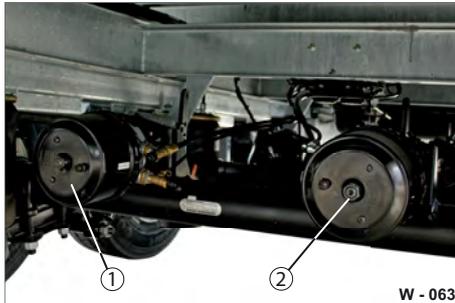


Fig. 63 Chassis underframe/rear axle

- 1 Spring-loaded diaphragm cylinder
- 2 Release screw

When the pressure in the system falls below 5.2 bar, you can manually release the parking brake individually for each wheel.

The release screw (Fig. 63/2) is firmly integrated in the membrane cylinder.

A suitable tool for operating the emergency release device (Fig. 63/2) must be carried in the toolbox in the towing vehicle.

Releasing parking brake

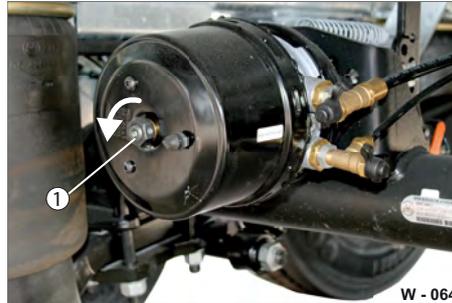


Fig. 64 Releasing parking brake

- 1 Release screw

- ▶ Unscrew the release screw (Fig. 64/1).
The release screw unscrews itself - the spring is tightened.
- ▶ Release the parking brake, see spring-loaded membrane cylinder.

Deactivating emergency release function



Fig. 65 Releasing spring tension

- ! Before restoring pressure to the brake system (before departing), you must release the spring-loaded cylinders.
- ▶ Screw on the release screw (Fig. 64/1).
The release screw screws itself in - the spring is relaxed.
- ▶ Deactivate the emergency release function for all spring-loaded membrane cylinders.
The trailer can be braked with the spring-loaded parking brake.

Spring-loaded parking brake emergency release device

Emergency trigger device (variety 2)



Fig. 66 Spring-loaded diaphragm cylinder

- 1 Release screw
- 2 End cap (bore hole)

When the trailer is ready to be driven, the release screw (Fig. 66/1) must be fixed in place in a location provided for the purpose.

The end cap (Fig. 66/2) covers the bore hole in the cover of the spring accumulator diaphragm cylinder.

Releasing parking brake

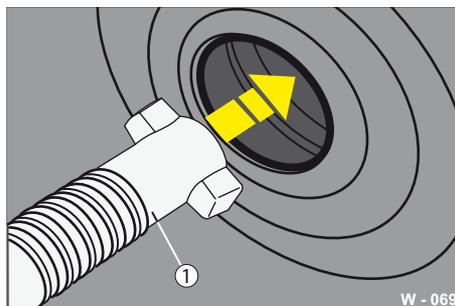


Fig. 67 "Keyhole" bore hole

- 1 Release screw

- ▶ Insert the release screw (Fig. 67/1) through the bore hole in the cover at the back into the "keyhole" aperture.
- ▶ Turn the release screw 90°.
- ▶ Slide on the washer (Fig. 68/1).
- ▶ Screw the hexagonal nut (Fig. 68/2) onto the release screw (Fig. 68/3).
- ▶ Continue to turn this so that the release screw is drawn out.

Deactivating emergency release function

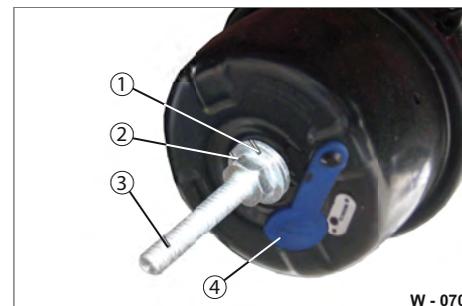


Fig. 68 Releasing spring tension

- 1 Washer
 - 2 Hexagonal nut
 - 3 Release screw
 - 4 End cap
- ▶ Unscrew the hexagonal nut (Fig. 68/2).
 - ▶ Remove the washer (Fig. 68/1).
 - ▶ Turn the release screw (Fig. 68/3) 90° and remove it.
 - ▶ Fix the release screw to the diaphragm cylinder in the location provided (see Fig. 66).
 - ▶ Close the bore hole with the end cap (Fig. 66/2).

**CAUTION****Short circuit in the electrical system**

People may suffer burns.
Short circuits could light the trailer on fire.

Before working on the electrical system always:

- ▶ Disconnect all plug-in connections to the towing vehicle.



- ▶ Unplug all connections to external power supplies.
- ▶ Switch all consumers off.
- ▶ Disconnect the negative terminal (-) on the battery.
Use insulated tools.
- ▶ Only allow qualified specialists to do work on electrical systems.

NOTICE**Contamination during installation**

Electrical elements, lights can become contaminated during installation when touched with bare fingers or a dirty work environment.

Contacts can malfunction..

- ▶ Only do electrical work in protected areas - protect equipment from water.



- ▶ Do not touch the new lamp with your bare fingers - this significantly reduces the lifetime of the lamp.
- ▶ Use clean gloves or a clean, dry cloth when handling lamps/lights, or use the lamp packaging.

Lighting terminal diagram**WARNING****Insufficient lighting**

Increased risk of accident due to failure of vehicle lighting.

- ▶ Before setting off, check the:

1. Tail lights
2. Number plate lights
3. Side marking lights
4. Limit lights

- ▶ Replace faulty lights.
Use lights of the type and power listed in the tables below.

Lights

Function	DIN / desc.	Cap type	Output (W)
Side marking lights/rear reflector light (orange)		LED	12 V = 0.5 / 24 V = 1.1
Limit light (white)		LED	12 V = 0.6 / 24 V = 1.3
Rear lights "24 V - standard"			
Indicator	P21W	Ba15s	21
Brake light	P21W	Ba15s	21
2 x tail lights	R10W	Ba15s	10
Reversing light	P21W	Ba15s	21
Rear fog lights	P21W	Ba15s	21
Peripheral light/outline marker (red/white/yellow)	R5W	Ba9s	5
Rear lights "LED"			
Fog and reversing light		LED	
Tail lights with reflectors, brake light and indicator		LED	
Peripheral/outline marker		LED	12 V = 0.6 / 24 V = 1.2
"LED" licence plate light	W 52	LED	12 V = 0.4 / 24 V = 0.7
Licence plate light "standard"	Festoon lighting		5

Tab. 6 Lamp type



Replacing lights

"24 V - standard" rear light

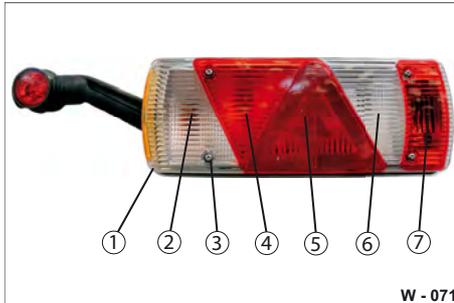


Fig. 69 Rear light components

- 1 Outer lens
- 2 Rear fog lights
- 3 4x fixing screws
- 4 Reversing light
- 5 Tail lights with reflectors
- 6 Brake light
- 7 Indicator

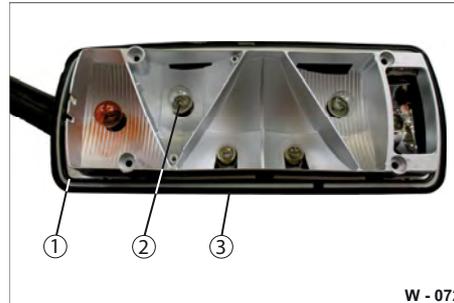


Fig. 70 Tail light open

- 1 Seal
- 2 Lamp
- 3 Housing



The electrical system must be switched off before beginning work.

- ▶ Unscrew the 4 fixing screws (Fig. 69/3).
- ▶ Remove the outer light lens (Fig. 69/1). 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. 70/3).
- ▶ Ensure that the seal is correctly seated (Fig. 70/1). Replace damaged/ripped seals.
- ▶ Screw on the fixing screws (Fig. 69/3). Tighten the screw connections with max. 1.5 Nm tightening torque. Cracked light lenses must be replaced.
- ▶ Monitor the connections/cable connections.

Peripheral light

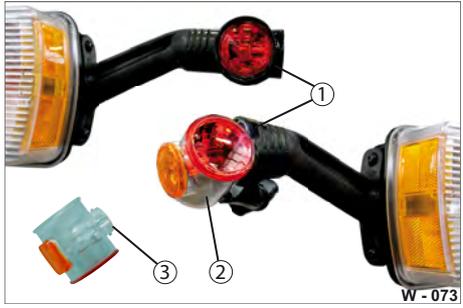


Fig. 71 Removing the rubber arm

- 1 Rubber arm cover
- 2 Lamp
- 3 Screw fitting

- ▶ Spray an ample amount of silicon spray on rubber arm coating (Fig. 71/1) - this makes turning up and down easier.
- ▶ Remove the rubber arm coating (Fig. 71/1) from the lamp (Fig. 71/2) using a slotted screwdriver.
- ▶ Loosen the screw connection (Fig. 71/3) and remove the lamp (Fig. 71/2).

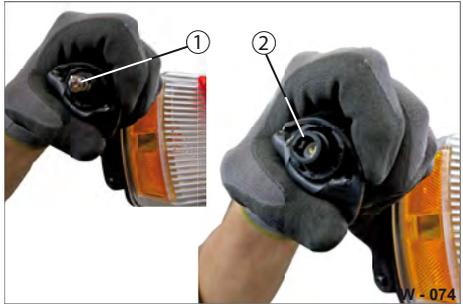


Fig. 72 Replacing lamp

- 1 Lamp
- 2 Socket

- ▶ Unscrew the defective lamp (Fig. 72/1).
- ▶ Screw in the new lamp.

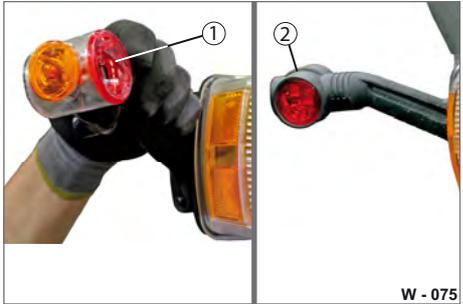


Fig. 73 Turning up rubber arm

- 1 Lamp
- 2 Rubber arm cover

- ▶ Screw on the lamp (Fig. 73/1) with the screw fitting (Fig. 71/3). Ensure that the seal is fitted correctly.
- ▶ Put the rubber arm (Fig. 73/2) over the lamp.
- ▶ Check the peripheral light for damage. Damaged peripheral lights must be completely replaced.

"LED" rear light

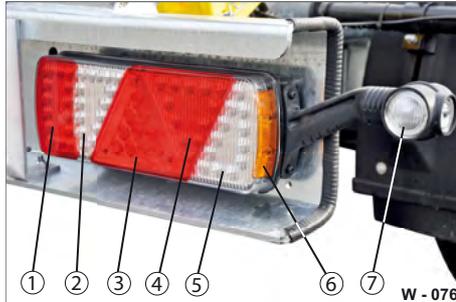


Fig. 74 "LED" 24 V rear lighting

- 1 Outer lens
- 2 Rear fog lights
- 3 Reversing light
- 4 Tail lights with reflectors
- 5 Brake light
- 6 Indicator
- 7 Nozzle with peripheral light

The LED lamps must be completely replaced in the event of defects.

- ▶ Replace the rear lights only with original manufacturer parts.
The type is marked on the lamps.

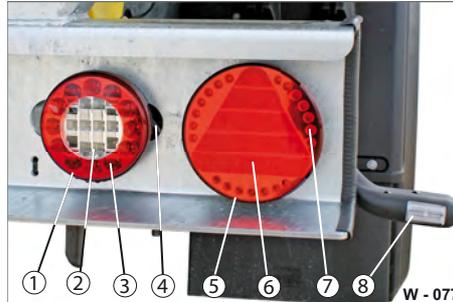


Fig. 75 "LED" 12 V rear lighting

- 1 Lamp, interior
- 2 Reversing lights
- 3 Rear fog lights
- 4 Connection cable
- 5 Lamp, exterior
- 6 Tail lights with reflectors
- 7 Brake light and indicator
- 8 Nozzle with peripheral light

The LED lamps must be completely replaced in the event of defects.

- ▶ Replace the rear lights only with original manufacturer parts.
The type is marked on the lamps.

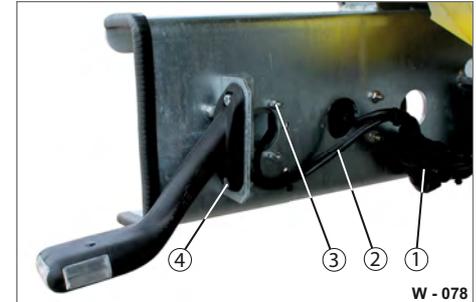


Fig. 76 Rear lighting, mounting

- 1 Bolt connection, interior lamp
- 2 Connection cable
- 3 Bolt connection, exterior lamp
- 4 Bolt connection, nozzle

- ▶ Release the respective bolt connection (Fig. 76/1, 3, 4).
- ▶ Disconnect the respective connection cable (Fig. 76/2).
- ▶ Insert the new LED lamps.
- ▶ Connect the connection cable.
- ▶ Screw in the bolt connection tightly.
- ▶ Check the LED lamp for function.

Licence plate light "LED"

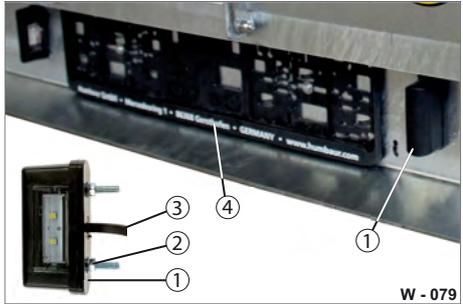


Fig. 77 Licence plate light

- 1 LED light
- 2 Fastening bolt / nut
- 3 Connection cable with plug connection
- 4 Licence plate holder

A defective LED light must be completely replaced.

- ▶ Loosen the screw connections (Fig. 77/2).
- ▶ Loosen the connection cable with plug connection (Fig. 77/3).
- ▶ Replace the complete LED lamp (Fig. 77/1).
- ▶ Screw on the new LED lamp with fixing screws/nuts.
- ▶ Connect the connection cable.

Licence plate light "Standard"

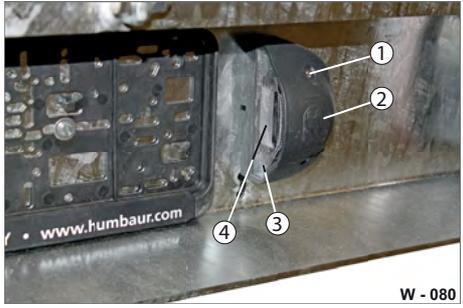


Fig. 78 Licence plate light 24 V

- 1 Fastening bolt
- 2 Lamps
- 3 Light lens
- 4 light

- ▶ Loosen the fixing screws (Fig. 78/1).
- ▶ Open the lamp carefully (Fig. 78/2).
- ▶ Remove the light lens (Fig. 78/3).
- ▶ Replace the lamp (Fig. 78/4).
- ▶ Insert the light lens.
- ▶ Close the folding lamp.
- ▶ Screw on the fixing screws.



Side marking lights



Fig. 79 Side marking light "LED"

- 1 Fastening bolt
- 2 LED lamp (orange)

A defective LED light must be completely replaced.

- ▶ Loosen the fixing screws (Fig. 79/1).
- ▶ Remove the LED light (Fig. 79/2) - remove connection.
- ▶ Insert the new LED light.
- ▶ Screw in the fixing bolts securely, but not too tightly.

Limit lights

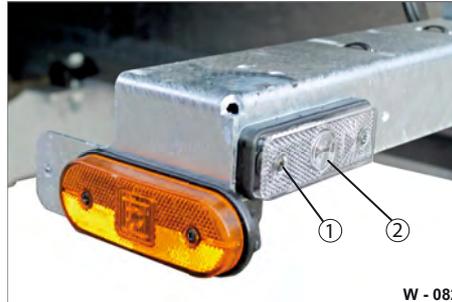


Fig. 80 Limit light, front side

- 1 Fastening bolt
- 2 LED light (white)

A defective LED light must be completely replaced.

- ▶ Loosen the fixing screws (Fig. 80/1).
- ▶ Remove the LED light (Fig. 80/2) - remove connection.
- ▶ Insert the new LED light.
- ▶ Screw in the fixing bolts securely, but not too tightly.

Working light

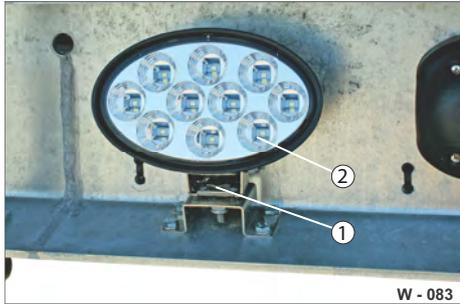


Fig. 81 Working light outside at rear

- 1 Fastening bolt
- 2 LED light (white)

- ▶ Unplug the plug connection.
- ▶ Loosen the fixing screw (Fig. 81/1).
- ▶ Remove the LED light (Fig. 81/2).
- ▶ Insert the new LED light.
- ▶ Screw on the fixing screw.



LED lights can only be replaced for original parts of the same type from the manufacturer. Observe the nameplate of the LED working light.

HUMBAUR trailers and attachments are partially painted with air-dried synthetic resin or 2-part acrylic paint.

The rate at which these paints dry out depends on the ambient temperature and can take several months at low temperatures.

The paints are not fully resistant during the curing period.



During this time, we recommend avoiding the use of high-pressure washing equipment or steam jets to clean the trailer.



Lettering work

To avoid damage to the paint during lettering work, please observe the following:

- Fresh paint must be allowed to dry for at least 48 hours at +20°C and to be hardened to such an extent that the ancillary foils and strips which will be removed subsequently do not leave any marks on the painted surface (do not use any aggressive adhesive foils which form a long-term adhesion to the painted surface).
- Trailers that have been exposed to dampness (snow, rain, fog) must be dried off in a temperature-controlled hall (20°C) for at least 24 hours before any kind of lettering work. In frosty conditions, the drying time must be extended until the trailer has reached the temperature of the hall.

These process guidelines and remarks are not intended for specific materials; they are generally applicable.

Necessity

The lifetime and functionality of the trailer depends on how often and how intensively you clean your trailer and how the different materials, surfaces and components are cared for.

Cleaning, maintenance and care of your trailer are important elements of driving safety and conservation of warranty claims.

To prevent accidents and avoid personal injury and property damage, it is important to regularly clean and maintain the trailer.

The intervals of cleaning and care depend on the operational environment and degree of contamination.



WARNING



Cleaning/maintenance products can be toxic

There is a danger of injury and poisoning if the products are swallowed or come into contact with the skin.

- ▶ Read the instructions for use of the maintenance products.
- ▶ Reseal the containers securely after use.



- ▶ Use



- ▶ after working with cleaning/maintenance products.



CAUTION



Entering trailer/loading platform when cleaning

There is a risk of slipping when cleaning the trailer with liquids (water, cleaning agents).

- ▶ Only enter the loading platform very carefully through the areas provided for this purpose.



- ▶ Use
- ▶ Never enter unsecured trailers.
- ▶ Do not go under an unsecured loading surface.

NOTICE**Use of aggressive cleaning agents**

The surfaces/materials can attack with chemicals, salts, acids and bases.



► Use



- In the first 3 months, wash only using cold water and do not use high-pressure cleaners or steam cleaners.
- Wash using plenty of clean water (not over 60° C), in order to avoid scratching the paintwork.
- Do not use any aggressive cleaning agents, acids or alkalis.
- Use only weak acid to weak alkaline cleaning agents having a pH value of 6-10.
- Use only soft, clean cloths or brushes.
- Repair any paintwork damage immediately.
- Carefully remove any greasy areas using pure petroleum ether (not petrol).
- Do not expose brake and hydraulic

hoses to petrol, benzene, petroleum or mineral oil.

Use only water to remove any stubborn dirt.

- Do not apply sprays or grease to the brake and hydraulic hoses.
- Do not clean seals using mineral oils, petrol or solvents.
- In salty conditions (winter/marine climate), external cleaning must be carried out more frequently (approx. every 3-4 weeks).
This also especially applies to the thorough cleaning of the brushed, bare stainless steel gantries.
- Only use appropriate cleaning agents when cleaning the curtains and walls.
- Do not let grease come into contact with sealing rings.

Environmental protection regulations**DANGER for the environment**

Cleaning agents, brake dust, hydraulic oil and lubricants can get into the groundwater.

- Clean/care for your trailer only in suitable washing areas.
- Observe the local environmental safety regulations.

High-pressure cleaners

NOTICE

Cleaning with high-pressure cleaners

Components/surfaces which are sprayed directly with too much pressure at a short distance or with very hot water can be damaged.

► Do not point the jet directly at:

- Nameplate
- EBS/ABS system plate,
- Seals,
- Electrical components/distributor,
- Plug connections,
- Cable screw connections/cables,
- Piston areas/extensions and stripping of telescope cylinder,
- Oil/fuel tank closures,
- Braking or hydraulic hoses,
- Batteries,
- Voltage transformer.

Proceed as follows when cleaning with high-pressure cleaner:



► Read the manufacturer's instructions.

► Lubricate all lubrication points until grease exudes before cleaning.



► , , use.

► During the cleaning process, always keep the water jet moving.

► Only use high-pressure cleaners with a maximum pressure of 50 bar and a maximum temperature of 80°C.

► 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 alloy wheels

- Wash the alloy wheels regularly, especially after uses such as:
- Transporting alkaline materials
 - Driving in winter when roads have been treated with salt

Alloy wheels do not require any particular maintenance apart from occasional polishing.

Trailer materials



Fig. 82 Materials/surfaces

- 1 Steel, painted/coated
- 2 Steel, galvanised
- 3 Aluminium, anodised
- 4 Plastic
- 5 Rubber (hoses)

The trailers are made of different materials.

Observe the special instructions for caring for the materials/surfaces.

Galvanised steel surfaces

Galvanised surfaces/components (e.g. chassis, drawbar, loading platform) 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. loading platform, platform gates) 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.

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.

Cleaning the chassis/loading bridge

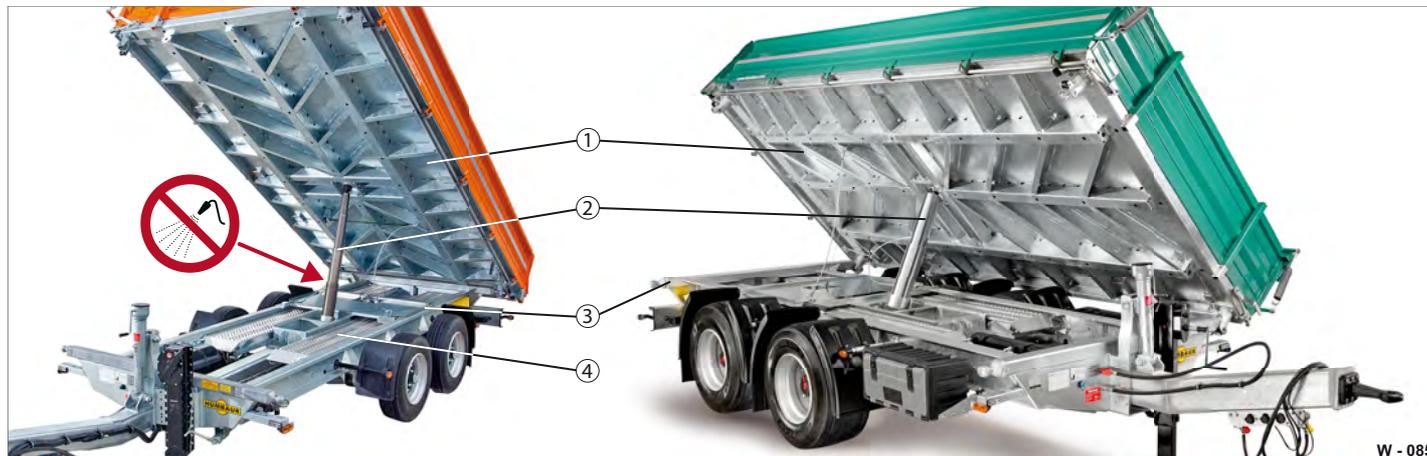


Fig. 83 Cleaning chassis/loading bridge

- 1 Loading bridge
- 2 Telescope cylinder
- 3 Chassis
- 4 Ramp planks

! When cleaning the chassis with a high-pressure cleaner, sensitive components, e.g.: electrical/hydraulic lines, sealing surfaces of the telescope cylinder, electronic components and brake components are to be protected from the direct spray.

- ▶ Take the ramp planks (Fig. 83/4) out of the chassis (Fig. 83/3). Clean the ramp planks.
- ▶ Tilt the loading bridge (Fig. 83/1) to the side and rear when cleaning.
- ▶ Do not point the jet directly at the telescope cylinder. Protect the extensions and stripping of the telescope cylinder (Fig. 83/2) from spray water.
- ▶ Let the loading bridge or chassis dry completely after cleaning work.

- ▶ Insert the ramp planks under the chassis.

Cleaning the body/loading platform



Fig. 84 Cleaning the body/loading platform

- 1 Loading platform
- 2 Pocket for lashing point
- 3 Perforation for draining water
- 4 Locking points/areas



The cleaning intervals of the body/loading platform depend on the intensity of use and the loaded goods transported!

- ▶ Clean the loading platform (Fig. 84/1) after every bulk goods transport.
Clean coarse contamination such as gravel, sand, branches from the loading platform with a broom.
- ▶ Clean the pockets of the lashing points (Fig. 84/2) with a hand broom, for example.
Clean them with water, if necessary.

- ▶ Free the locking points (Fig. 84/4) of the platform gates from contamination.
The platform gates or platform gate attachments must close and lock without any problems.
- ▶ Spray the loading platform with a high-pressure cleaner.
- ▶ Let the body dry completely after cleaning.

Approved consumables



The perfect functioning, operational safety and working life of a trailer depend largely on the quality and correct selection of the consumables used.

Only use consumables for your trailer and its assemblies that are approved by HUMBAUR GmbH and the relevant assembly manufacturers.



Follow the rules and instructions of the individual manufacturers on approved and recommended consumables.

Consumables are:

- Fuels (petrol, diesel, gas)
- Coolants/antifreeze
- Refrigeration fluid
- Lubricants, e.g.: engine oils, hydraulic oils, grease
- Batteries, rechargeable batteries



WARNING



Flammable/toxic consumables

Fuel/refrigerants and their vapours are highly flammable and pose a health hazard - danger of poisoning!



- ▶ Do not smoke or allow naked flames near.
- ▶ Avoid sparking.



- ▶ Do not inhale the vapours.
- ▶ Immediately take care of escaping/spilling consumables.



- ▶ Wear personal protective equipment.



WARNING



Explosive operating materials

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

- ▶ Cover the battery poles before starting work.



- ▶ Do not smoke or allow naked flames near.
- ▶ Avoid short circuits or sparking.
- ▶ Do not place any tools on the battery.
- ▶ Observe the manufacturer's safety instructions.

Disposing of operating materials



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. secure power supply from being switched on.
- ▶ Do not park the trailer on public streets, only on private property.
- ▶ Park the trailer so that it does not pose a risk to third parties, e.g.: Tipping over, rolling away.
- ▶ Secure the trailer with wheel chocks.
- ▶ Remove environmentally harmful operating materials/substances (oil, batteries, etc.) properly.

Disposing of trailer

- ▶ Bring the entire trailer to a vehicle recycling centre. The vehicle recycling centre specialists will properly dispose of the individual components.



Troubleshooting

Action in the event of a fault

This section contains information relating to possible faults of the trailer. The information is intended to help with the search for the cause of a fault and to resolve it to the extent that it is possible to go to the nearest Humbaur GmbH Service Station.

Any faults that can occur as a result of ignoring the operating instructions or insufficient maintenance are not covered.

Unfortunately, it is not possible here to cover all eventualities or problems that may occur.

In the event of more serious faults, please inform our **Humbaur Service** (see contact addresses listed below).



WARNING

Improper troubleshooting

Improper troubleshooting can lead to the failure of components - risk of accidents

- ▶ Have the faults rectified by qualified personnel at an approved workshop.

What to do in the event of fire



WARNING



A great deal of heat can be generated and toxic gases released by burning paint and plastic parts

Danger of burning and suffocation.

- ▶ When trying to extinguish a fire, keep a safe distance from the flames.
- ▶ Do not inhale any toxic gases.

Humbaur Service

Any attempt to repair or dismantle trailer components or sub-assemblies will result in voiding of the warranty cover.

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/Repair

Manufacturer 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 genuine Humbaur replacement parts!

Replacement parts can be purchased as follows quoting the vehicle identification number (**VIN**) and part designation:

- Online, e-mail, phone

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.

Fault	Possible causes	Rectification
Brake does not correctly disengage.	<ul style="list-style-type: none"> - Brake is not correctly adjusted. - Brake shoe return spring slackened. - Brake shaft sticking (drum brake). - Pressure/brake line kinked. - Fault in the compressed air system. 	The fault must be rectified by personnel at an approved workshop.
Brake locked.	<ul style="list-style-type: none"> - Too little operating pressure. 	Check the pneumatic connections. Check that the correct operating pressure is achieved.
	<ul style="list-style-type: none"> - Parking brake activated. 	Release the parking brake.
	<ul style="list-style-type: none"> - The brake has seized on to the drum. 	The fault must be rectified by personnel at an approved workshop.
Insufficient braking effort/ brakes pull to one side.	<ul style="list-style-type: none"> - Brake linings worn, contaminated with oil or glazed. - Brake not correctly adjusted. - Fault in the compressed air system. 	The fault must be rectified by personnel at an approved workshop.
Operating pressure is not reached.	<ul style="list-style-type: none"> - Pneumatic connections incorrectly connected. 	Check the pneumatic connections.
	<ul style="list-style-type: none"> - Pressure regulator or compressor faulty (towing vehicle). 	The fault must be rectified by personnel at an approved workshop.

Fault	Possible causes	Rectification
Wiring/switches.	- Terminals loose or contaminated.	Clean the connections.
	- Cable broken or terminal damaged.	The fault must be rectified by personnel at an approved workshop.
Lighting does not work.	- Lamp failure.	Replace the lamp.
	- Terminals loose or contaminated.	Clean the connections.
	- Short circuit or open circuit in the electrical circuit.	Replace faulty LED lights and lamps. The fault must be rectified by personnel at an approved workshop.
Multi-voltage lighting does not work	- Incorrect plug inserted.	Check the right plug connections were used - 12 V.

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.
	- Insufficient axle lubrication.	Lubricate the axles in line with the axle manufacturer's instructions.
	- 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. 	Replace the wheel bolts and nuts, as well as the rim if required. Tighten the wheel nuts with the torque specified by the axle manufacturer. The fault must be rectified by personnel at an approved workshop.

8 Towing eye/tongue

Fault	Possible causes	Rectification
The trailer is not horizontal after coupling.	- Coupling height is not correctly adjusted.	Set the coupling height correctly.
	- The support foot is not folded up.	Fold it up.

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.
Hydraulic support foot or the loading bridge does not operate	- Distributor switchover incorrect.	Check that the distributor is switched to the correct lines.

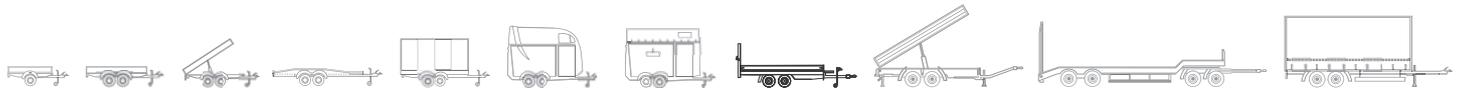




MAKES IT HAPPEN



MAKES IT HAPPEN



Humbaур GmbH • Mercedesring 1 • 86368 Gersthofen • Germany • Tel. +49 821 24929-0 • info@humbaур.com • www.humbaур.com

No liability is accepted for errors or printing errors.
All illustrations are representative.
Deviations and modifications are subject to the model type.
Subject to technical modifications.
Copying prohibited.
Printed in Germany.
Version: V06/2020