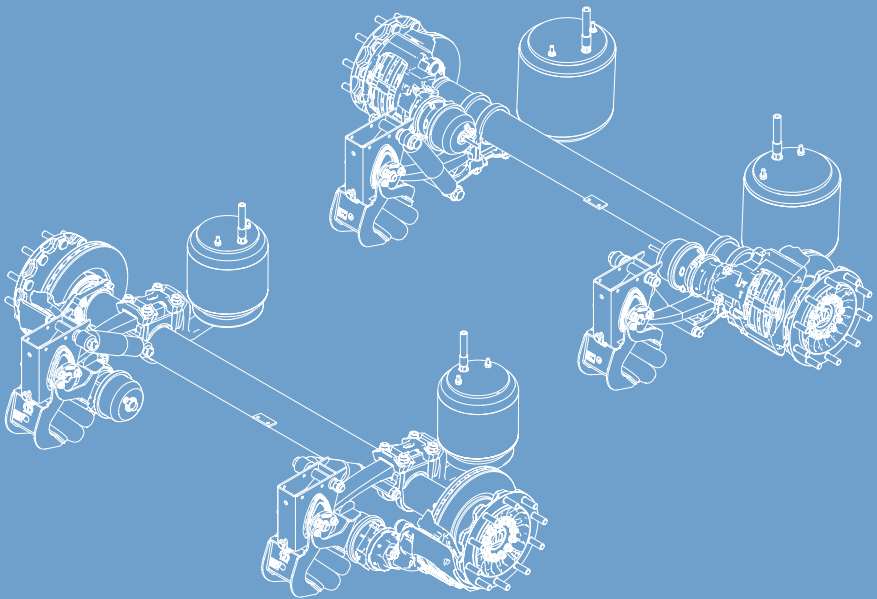




OPERATING INSTRUCTIONS

KRONE TRAILER AXLES

Disc brake



515104668-02 EN

Dear customer,

These are the operating instructions for the KRONE Trailer Axles.

These operating instructions contain important information for the proper use and safe operation of the axles.

If these operating instructions should become completely or partially useless for any reason, you can order replacement operating instructions using one of the numbers listed below for your axle.

Customer Service

Telephone: +49 (0) 59 51 / 209-320

Fax: +49 (0) 59 51 / 209-367

email: kd.nfz@krone.de

Spare Parts

Telephone: +49 (0) 59 51 / 209-302

Fax: +49 (0) 59 51 / 209-238

E-mail: Ersatzteile.nfz@krone.de



www.krone-trailer.com



www.krone-trailerparts.com

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1 Information about this document

1.1 Introduction

These operating instructions apply to the KRONE Trailer Axles with DOKTX1/DOKTX2/DNOKTX2 disc brakes with the "top air suspension link" and "bottom air suspension link" air suspension unit types. The relevant differences between the versions have been indicated in the corresponding text passages and illustrations. Otherwise, the illustrations are to be considered as examples.

These operating instructions are intended for the operator of the KRONE Trailer Axles with DOKTX1/DOKTX2/DNOKTX2 disc brakes and its personnel as well as the driver. For better readability, the axles will be referred to as the "KRONE Trailer Axle" in the following. The operating instructions are designed to help you to familiarise yourself with the Krone Trailer Axle and to use it within its intended scope of application.

The operating instructions contain important information on how to operate the KRONE Trailer Axle in a safe, proper, and economical manner. Compliance with the instructions assists in the prevention of accidents and in the reduction of repair cost and downtimes, as well as in enhancing the reliability and service life of the KRONE Trailer Axle. Read the operating instructions carefully and attentively. Fahrzeugwerk Bernard KRONE GmbH & Co. KG does not accept any liability for damage or malfunctions that result from failure to observe these operating instructions. The warranty conditions can be found in our general terms and conditions of business.

- ▶ These operating instructions should be supplemented by applicable national rules and regulations concerning accident prevention and environmental protection.

- ▶ Ensure that the operating instructions are always available where the KRONE Trailer Axle is being used.

The operating instructions must be read, understood and applied by every person who is authorised with the following work:

- Driving, parking and manoeuvring with the KRONE Trailer Axle,
 - Resolving any disruptions to the workflow,
 - Servicing the KRONE Trailer Axle (maintenance and care),
 - Repairing the KRONE Trailer Axle,
 - Disposing of working materials and auxiliary materials.
- ▶ In addition to the operating instructions, the following must be observed:
 - The binding regulations concerning accident prevention which exist in the country of use and the place of use,
 - The accepted technical rules for safe and proper working.
 - ▶ Pay special attention to the following:
 - The "safety" section (*see "2 Safety", pg. 8*).
 - The warnings found in the individual chapters/sub-chapters,
 - The operating instructions for the trailer,
 - The supplier documentation that is included with the delivery.

1.2 Other applicable documents

The repair and maintenance instructions for the components used represent an important part of the operating instructions for the KRONE Trailer Axle. Safe and reliable operation of the KRONE Trailer Axle is only possible with thorough knowledge of all individual components.

- ▶ Observe the operating instructions for the trailer.
- ▶ Observe the supplier's documentation, especially the safety instructions contained therein.

- ▶ Precise information about the type and number of the supplier's documentation can be found in the delivery note or the attached list of items.
- ▶ Become fully familiar with all the applicable documents.

If a reference document is missing, please contact us.

1.3 Product identification and type plate

The item number and serial number are engraved on the axle body next to the type plate. This is to identify the axle if the type plate is lost or is not sufficiently legible.

The type plate and the engraving for product identification of the KRONE Trailer Axle are attached at the following location:

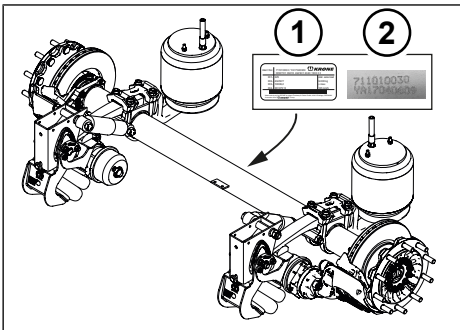


Fig. 1-1: Type plate position

- 1 Type plate
- 2 Engraving

The following information is presented on the type plate:

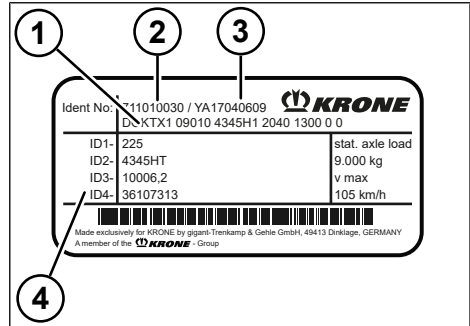


Fig. 1-2: Type plate example

- 1 Axle designation
- 2 Item number
- 3 Serial number
- 4 ID test log

1.4 Retention of documents

- ▶ Store these instructions and all other applicable documents in a safe place.
- ▶ Pass the complete documentation on to the next driver or owner.

1.5 Symbols used in these instructions

Various markings and symbols are used in the text in these instructions. These are explained below.

- Bullet list
 - Sub-list
- 1. Numbered list
- ☑ Prerequisite for action
- ▶ Action step
 - ⇒ Intermediate action result
- ✓ Result of the action


Visual inspection

Work step

Visual inspection and work steps

INFO

Additional information and tips.

 : Also observe the enclosed supplier documentation.

1.6 Copyright

These instructions represent an official document within the meaning of laws against unfair competition. They incorporate texts and drawings which, in their entirety or partly, without written consent of the manufacturer, are not to be

- copied (except attached copy originals),
- published, or
- made public by other means.

The copyright to these instructions remains with

Fahrzeugwerk Bernard KRONE
GmbH & Co. KG, D-49757 Werlte

Violations oblige compensation for damages.

2 Safety

This manual contains instructions for your safety and for safe operation.

The basic safety instructions include instructions that fundamentally apply to the safe use or the maintenance of the safe condition of the axles.

The action-related warnings warn you about residual hazards and are found before a dangerous action.

- ▶ Follow all the instructions to prevent personal injury, environmental or property damage.

2.1 Warnings

Design and structure

The action-related warnings are structured as follows:

⚠ WARNING
Type and source of the danger!
Explanation of the type and source of the danger.
▶ Measures to avert the danger.

Hazard level

The warnings are classified according to the severity of the danger. The following explains the danger levels with their associated signal words and warning symbols.

⚠ DANGER
Direct danger to life or serious injuries

⚠ WARNING
Possible danger to life or serious injuries

⚠ CAUTION
Possible slight injuries, environmental damage or property damage

NOTE
Possible environmental damage or property damage

2.2 Intended use

The KRONE Trailer Axle has been manufactured according to state-of-the-art technology and in compliance with all applicable safety-related laws, rules and regulations. Nevertheless, its use may result in danger to life and limb of the user or third parties or damage to the KRONE Trailer Axle and other property.

- ▶ Only use the KRONE Trailer Axle when it is in technically perfect condition.
- ▶ Only operate the KRONE Trailer Axle for its intended purpose, while aware of safety and risks and in accordance with the operating instructions.
- ▶ In particular, have any faults that could impair safety immediately repaired by an authorised specialist workshop.

The KRONE Trailer Axle is only to be used as intended within the manufacturer's specifications as prescribed by Fahrzeugwerk Bernard KRONE GmbH & Co. KG. and in compliance with mandatory statutory regulations.

The owner is responsible for complying with the intended use.

Intended use includes the observance of all operating and maintenance instructions supplied with the KRONE Trailer Axle as well as the observance of the maintenance intervals and conditions prescribed therein.

Any use going beyond proper usage is considered improper.

Improper use also includes exceeding the technically permitted weights, axle and drawbar loads as well as exceeding the permitted maximum speed.

Fahrzeugwerk Bernard KRONE GmbH & Co. KG is not liable for damage resulting from improper or unauthorised use. Risks deriving from such infractions are exclusively borne by the user.

Proper and authorised use also includes compliance with the service and maintenance instructions (see "7 Maintenance and repair", pg. 29).

Operational reliability of the KRONE Trailer Axle is guaranteed only if all applicable instructions, settings and performance limitations are fully complied with.

2.3 Personnel qualification and requirements

KRONE Trailer Axles may only be used and maintained by persons who are appropriately qualified and who have read and understood the operating instructions.

In the operating instructions, a distinction is made between:

- Operator,
- Driving staff, and
- Skilled craftsmen.

2.3.1 Operator

The operator is responsible for proper use of the KRONE Trailer Axle.

The operator must:

- Have reached a statutory minimum age of 21,
- Instruct the driving staff in the use of the KRONE Trailer Axle,
- Ensure that the KRONE Trailer Axle is checked and serviced regularly at an authorised specialist workshop.

2.3.2 Driving staff

The driving staff consists fundamentally of the vehicle driver, possibly including the passenger. The driving staff is responsible for the proper operation of the KRONE Trailer Axle and must:

- Have read and understood the operating instructions,
- Have reached the legal minimum age,
- Ensure that the KRONE Trailer Axle is regularly serviced by qualified staff.

2.3.3 Skilled craftsmen

The skilled craftsmen of a specialist workshop are authorised to perform the maintenance work (maintenance and repair). Authorised skilled craftsmen must have a

recognised qualification or have the relevant knowledge of their specialised area required to meet the relevant regulations, rules and guidelines.

2.4 Personal protective equipment

PPE is used to prevent injuries.

- ▶ Wear suitable protective gloves and safety shoes when operating and servicing the KRONE Trailer Axle.

2.5 Additional hazards

- ▶ Only used tested operating materials, special consumables and accessories.
- ▶ When combined with other products (e.g. tyres), note that this results in an enhanced axle system. This increases the potential risk.

2.6 Notes about legal regulations

The KRONE Trailer Axle is built according to the applicable regulations at the time of the delivery.

- ▶ Observe compliance with the nationally prescribed monitoring inspections and time intervals.
- ▶ Ensure compliance with the nationally prescribed permitted weights, axle and drawbar loads, which may be lower than those technically possible.

Changes to the KRONE Trailer Axle compared to the data provided in the registration documents result in the operating permit becoming invalid.

- ▶ Do not make any unauthorised changes or manipulations.
- ▶ Only use proper and approved tyres.
- ▶ Only use centred steel or aluminium rims with a size of 22.5 inches and an offset of 120 mm.
- ▶ Only used approved and suitable spare parts (see "9.1 Spare parts", pg. 43).

2.7 Warranty and liability

The "General terms and conditions of sale and delivery" from Fahrzeugwerk Bernard KRONE GmbH & Co. KG fundamentally apply.

Warranty and liability claims for personal and property damage are excluded if they are due to one of more of the following causes:

- Improper use (see "2.2 Intended use", pg. 8),
- Failure to observe the instructions, requirements and prohibitions of these operating instructions and the operating instructions for the accessories,
- Failure to follow the instructions, requirements and prohibitions of the maintenance instructions,
- Unauthorised structural changes to the KRONE Trailer Axle.
- Inadequate monitoring of wear parts,
- Improper maintenance or repairs not being carried out in good time,
- Use of non-approved and unsuitable spare parts (see "9.1 Spare parts", pg. 43).

You can find the warranty conditions at www.krone-trailer.com.

2.8 Limits of use

The KRONE Trailer Axle can carry a maximum axle load of 9,000 kg.

2.9 Environmental hazards

- ▶ Always observe environmental protection when operating.
- ▶ Avoid the release of operating materials into nature and the environment.
- ▶ Dispose of operating materials and other chemicals in accordance with the applicable national regulations.

3 KRUNE Trailer Axle overview

3.1 Assemblies

The KRUNE Trailer Axle is designed for installation on trailers. It is fitted with air suspension, brakes, brake cylinders, shock absorbers and, as an option, with a Twinlift.

Depending on the equipment, the last axle of the vehicle can be a self-steering axle.

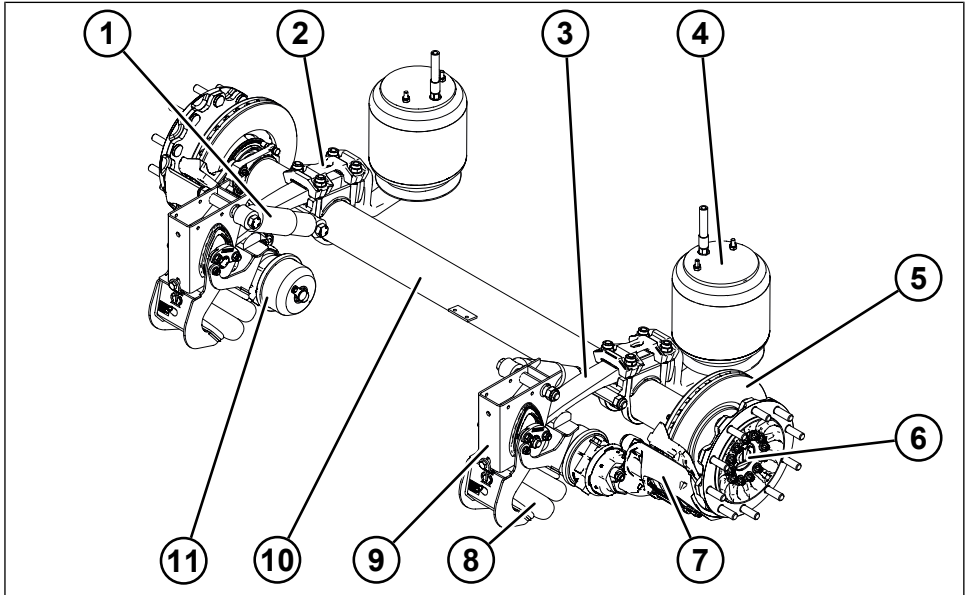


Fig. 3-1: KRUNE Trailer Axle assemblies (top air spring link)

- 1 Shock absorber
- 2 Integration
- 3 Air spring link
- 4 Air spring bellow
- 5 Brake discs
- 6 Wheel flange/wheel bearing unit
- 7 Brake calliper
- 8 Twinlift
- 9 Air spring bracket
- 10 Axle body
- 11 Brake cylinder

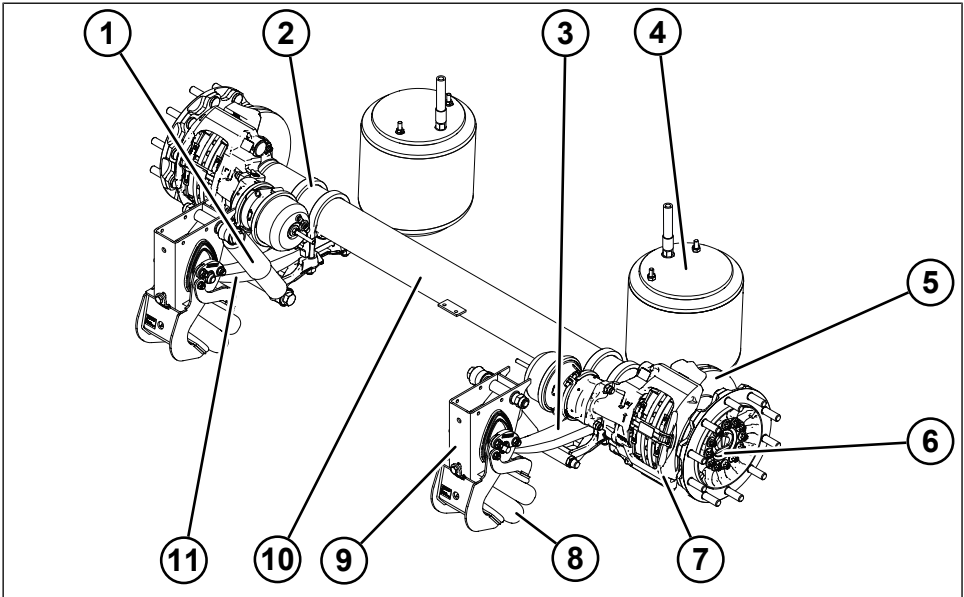


Fig. 3-2: KRONE Trailer Axle assemblies (bottom air spring link)

- 1 Shock absorber
- 2 Integration
- 3 Air spring link
- 4 Air spring bellow
- 5 Brake discs
- 6 Wheel flange/wheel bearing unit
- 7 Brake calliper
- 8 Twinlift
- 9 Air spring bracket
- 10 Axle body
- 11 Brake cylinder

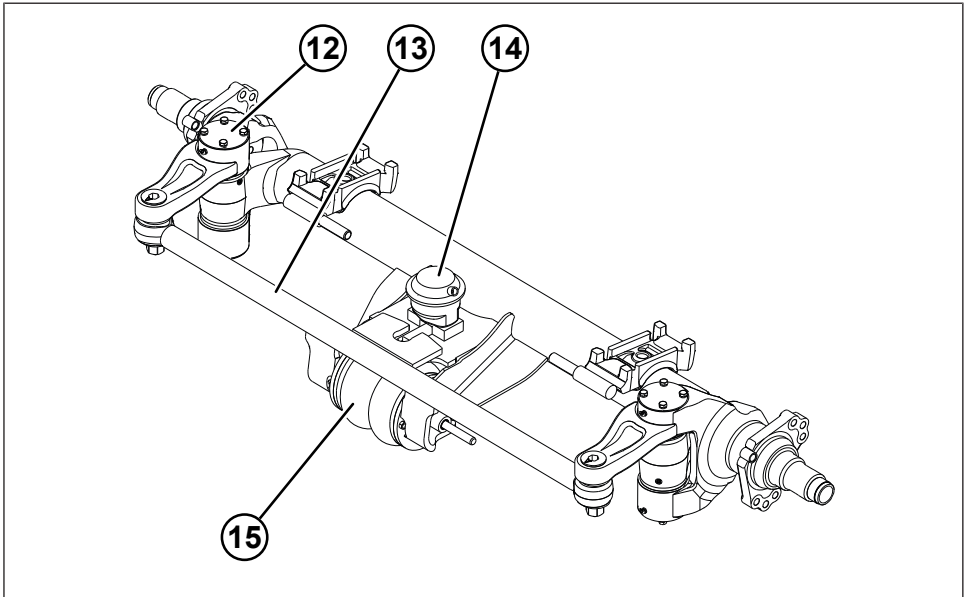


Fig. 3-3: Additional self-steering axle assemblies

- 12 Steering pin unit
- 13 Tie rod unit
- 14 Locking unit
- 15 Stabilisation unit

3.2 Components

3.2.1 Axle body

The KRONE Trailer Axle is fitted with an axle body. The axle body is used to transfer force and connects all other components of the KRONE Trailer Axle.

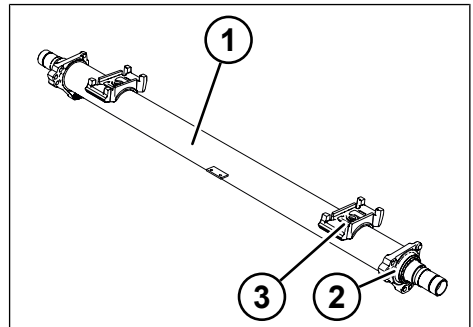


Fig. 3-4: Axle body components (top air spring link)

- 1 Axle body
- 2 Brake bracket
- 3 Axle plate

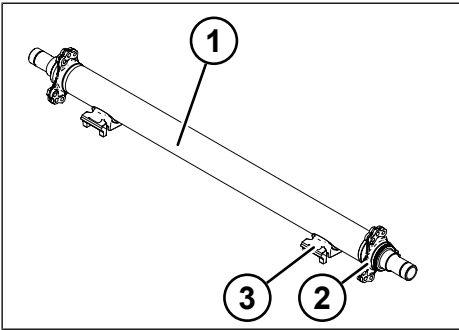


Fig. 3-5: Axle body components (bottom air spring link)

- 1 Axle body
- 2 Brake bracket
- 3 Axle plate

The self-steering axle is characterised by its axle body. On the self-steering axle, the middle axle body has two axle stubs, onto which the steering knuckle is fastened with a steering pin. In addition, the axle body of the self-steering axle is equipped with a tie rod, locking and stabilisation unit.

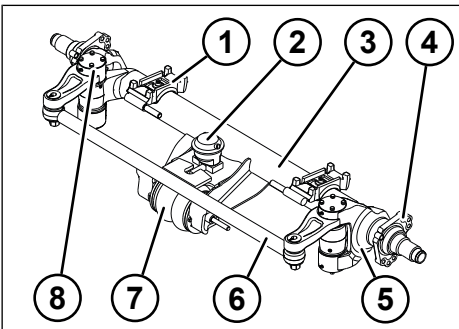


Fig. 3-6: Axle body components of the self-steering axle

- 1 Axle plate
- 2 Locking unit
- 3 Axle body with axle stubs
- 4 Brake bracket
- 5 Axle stub
- 6 Tie rod unit
- 7 Stabilisation unit
- 8 Steering pin unit

3.2.2 Integration

The KRONE Trailer Axle is fitted with an integration. The integration connects the axle body and the air suspension.

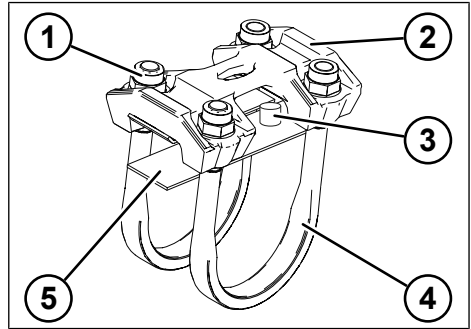


Fig. 3-7: Integration components (top air spring link)

- 1 Retainer nut/flat washer
- 2 Clamp plate
- 3 Heart stud
- 4 Spring clip
- 5 Shim

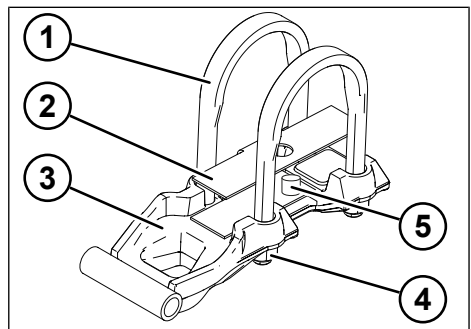


Fig. 3-8: Integration components (bottom air spring link)

- 1 Spring clip
- 2 Shim
- 3 Clamp plate
- 4 Retainer nut/flat washer
- 5 Heart stud

3.2.3 Air suspension

The KRONE Trailer Axle is fitted with air suspension.

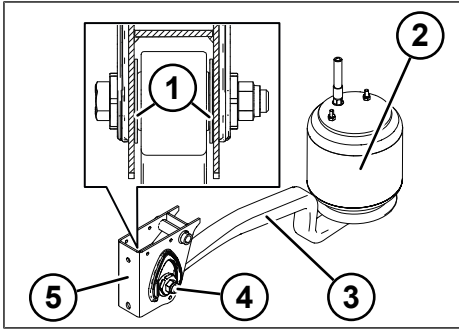


Fig. 3-9: Air suspension components

- 1 Thrust washers
- 2 Air spring bellow
- 3 Air spring link
- 4 Link fitting
- 5 Air spring bracket

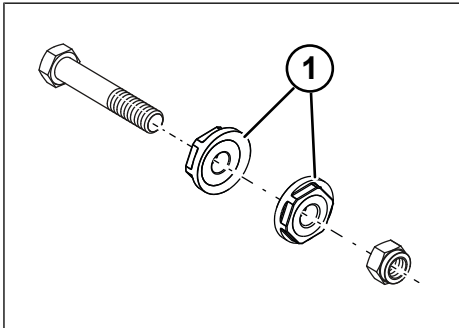


Fig. 3-10: Link fitting with eccentric nuts Generation 1

- 1 Eccentric nuts

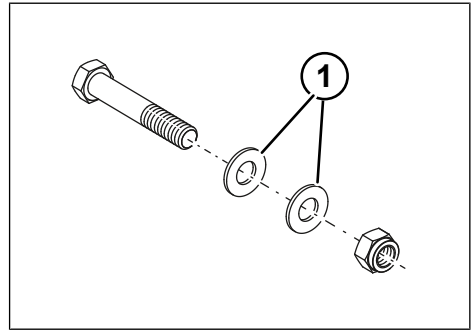


Fig. 3-11: Link fitting with washers Generation 2

- 1 Washers

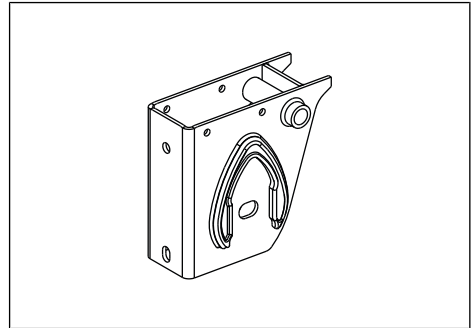


Fig. 3-12: Air spring bracket Generation 1

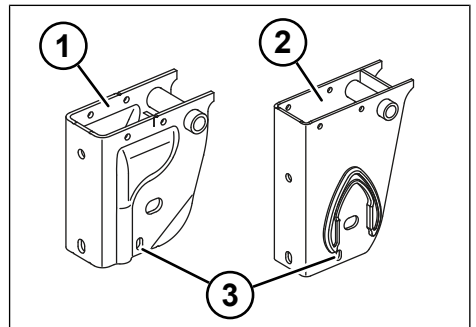


Fig. 3-13: Air spring bracket Generation 2

- 1 T-bracket
- 2 M-bracket/O-bracket
- 3 Slot for track setting

3.2.4 Shock absorber

The KRONE Trailer Axle is fitted with two shock absorbers.

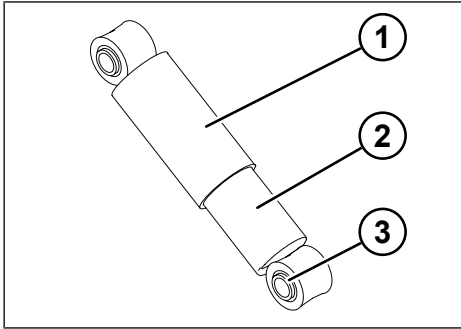


Fig. 3-14: Shock absorber components

- 1 Protective tube
- 2 Container
- 3 Silent block

3.2.5 Air spring bellow

The KRONE Trailer Axle is fitted with two air spring bellows. The air spring bellows are used to adjust the air suspension. The air spring bellow is split in two parts for rail loading.

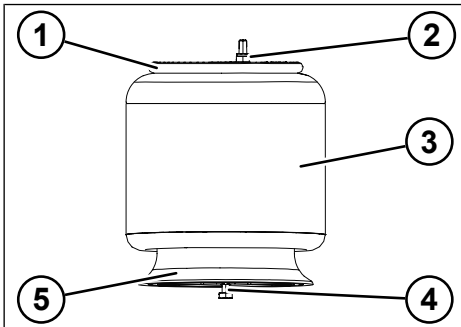


Fig. 3-15: Air spring bellow components

- 1 Crimped plate
- 2 Crimped plate retainer nut
- 3 Air spring bellow
- 4 Screwed fitting on the piston
- 5 Piston

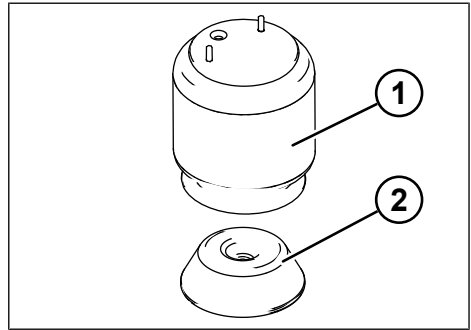


Fig. 3-16: Air spring bellow rail loading components

- 1 Air spring bellow
- 2 Cone

3.2.6 Brake

The KRONE Trailer Axle is equipped with a disc brake.

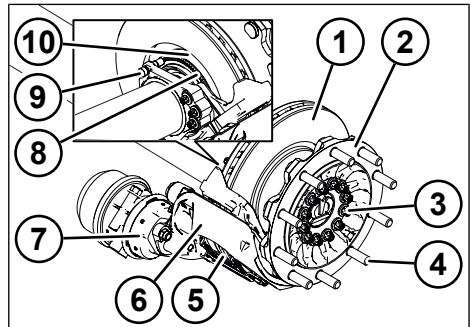


Fig. 3-17: Brake components

- 1 Brake disc
- 2 Wheel flange
- 3 Torx screws
- 4 Bolt
- 5 Brake pads
- 6 Brake calliper
- 7 Brake cylinder
- 8 ABS magnet wheel
- 9 ABS sensor
- 10 Wheel bearing unit

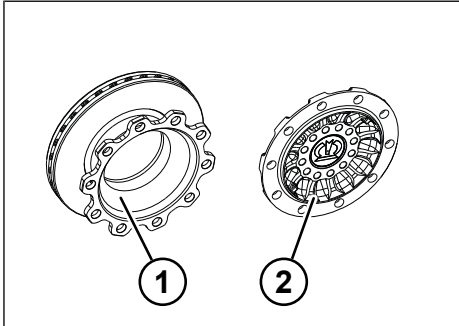


Fig. 3-18: Brake disc and wheel flange DOKTX1

- 1 Brake disc
- 2 Wheel flange

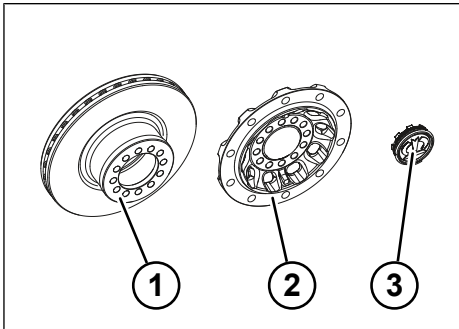


Fig. 3-19: Brake disc and wheel flange D(N)OKTX2

- 1 Brake disc
- 2 Wheel flange
- 3 Hub cap

3.2.7 Brake cylinder

The KRONE Trailer Axle is fitted with brake cylinders. The brake is operated using the brake cylinder.

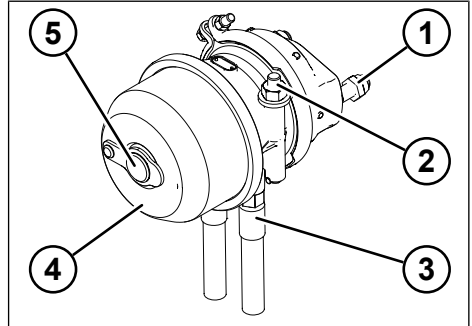


Fig. 3-20: Brake cylinder components

- 1 Retainer nuts
- 2 Bracket with emergency release screw
- 3 Compressed air line
- 4 Brake cylinder
- 5 Protective cap

3.2.8 Twinlift

As an option, the KRONE Trailer Axle is fitted with a Twinlift. The Twinlift helps with low loading of the axle.

Krone makes a distinction between two generations here. Generation 1 has a two-part mount on the steering pin with an anchor plate. Generation 2 has closed mounts on the steering pin.

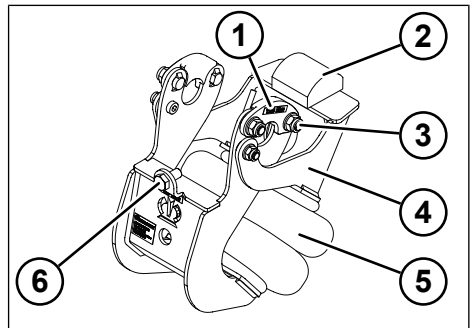


Fig. 3-21: Generation 1 Twinlift components

- 1 Anchor plate
- 2 Wear block
- 3 Anchor plate fitting

- 4 Lift lever
- 5 Two-fold bellow
- 6 Screw

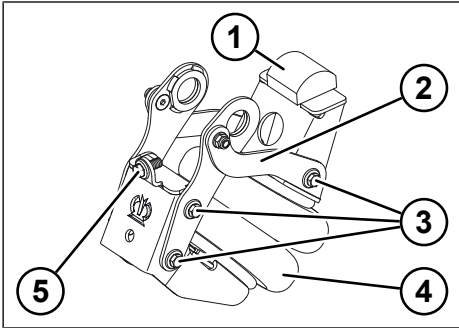


Fig. 3-22: Generation 2 Twinlift components

- 1 Wear block
- 2 Lift lever
- 3 Clamping screws
- 4 Two-fold bellow
- 5 Screw

3.2.9 Control device

The control device for the air suspension and the brake system is normally found behind the axle assembly on the left-hand side of the vehicle in the direction of travel on a common bracket.

4 Commissioning

4.1 Commissioning

4.2 Delivery and handover of the KRONE Trailer Axle

The pick up and handover takes place at a production site of Fahrzeugwerk Bernard KRONE GmbH & Co. KG.

- ▶ When the KRONE Trailer is handed over, check that the KRONE Trailer Axle is ready for operation and that the documentation provided is complete.
- ▶ Familiarise yourself with the KRONE Trailer Axle and the documents.
- ▶ Receive instruction from the personnel of Fahrzeugwerk Bernard KRONE GmbH & Co. KG and, if necessary, ask questions if anything is unclear.
- ▶ Make sure that the KRONE Trailer is picked up with a suitable and fitting tractor unit.

4.3 Commissioning before every journey

- ▶ Prior to starting each trip , perform a careful examination (departure check).
- ▶ Observe the information in the operating instructions for the trailer.

5 Operation

5.1 Brake system

⚠ WARNING

Possible risk of accidents when releasing the parking brake with the service brake released at the same time!

The trailer is not braked if the parking brake and the service brake are released at the same time. The trailer is not braked, it can roll away and cause an accident.

- ▶ Only release the service and parking brake at the same time when a towing or manoeuvring vehicle is connected to the trailer.
- ▶ Additionally secure the trailer with wheel chocks when parking or standing on slopes.

NOTE

Property damage by driving with the parking brake applied!

Driving with the parking brake applied will damage the trailer's brakes, tyres and axles after a short time.

- ▶ Disengage the parking brake before starting the trip.

The trailer's brake system consists of the service brake, the parking brake and an emergency release device. The service brake of the uncoupled trailer can be released to manoeuvre or to tow away.

The uncoupled trailer can be secured with the parking brake to prevent it rolling away. The spring storage of the brake system can be operated without compressed air using the emergency release device.

5.1.1 Service and parking brake

The service and parking brake are activated or released with the control knobs on the control device. When the supply and control connections are uncoupled, the trailer is automatically braked with the service brake.

INFO

Repeated operation of the service brake when the supply lines are uncoupled uses up compressed air from the air reservoir. The trailer is then only partially braked (depending on the air supply).

The parking brake has its own brake circuit and is operated via the spring storage membrane-type brake cylinder.

The parking brake does not automatically function in the event of pressure drop in the supply circuit. The parking brake must be actuated manually.

The parking brake does not release automatically. Prior to starting off it must be disengaged manually.

For towing or manoeuvring without compressed air, the parking brake is released with the emergency release device (see "5.1.2 Emergency release devices for the parking brake", pg. 21).

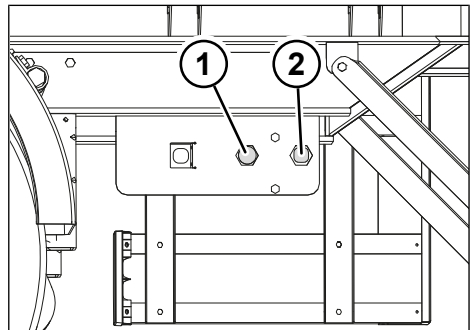


Fig. 5-1: Control device for service and parking brake

- 1 Control knob for the service brake
- 2 Control knob for the parking brake

Disengaging the service brake

- ▶ Press in the control knob for the service brake.
- ✓ The service brake is disengaged.

Operating the service brake

- ▶ Pull out the control knob for the service brake.
- ✓ The service brake is engaged.

Releasing the parking brake

- ▶ Press in the control knob for the parking brake.
- ✓ The parking brake is released.

Activating the parking brake

- ▶ Pull out the control knob for the parking brake.
- ✓ The parking brake is activated.

5.1.2 Emergency release devices for the parking brake

⚠ WARNING

Risk of accident due to rolling away!

When the emergency release device is activated, the parking brake does not function. When it is not braked, the trailer can roll away and cause serious injuries and material damage.

- ▶ Only release the service and parking brake when a towing or manoeuvring vehicle is connected to the trailer.
- ▶ Use wheel chocks to prevent the trailer from rolling away.
- ▶ Insert the emergency release screw in its holder before starting to drive.

⚠ WARNING

Risk of accidents when driving with the emergency release screw!

Driving with the emergency release screw fitted can make the brake system inoperative and result in accidents.

- ▶ Ensure that the emergency release screw has been returned to the parking position before driving off again.

If the compressed air for the parking brake's spring storage fails due to a defect, the braking effect can be cancelled via an emergency release device on the brake cylinders.

The spring storage of the brake system can be operated without compressed air using the emergency release device. When the emergency release device is activated, the spring storage is clamped on each wheel and the parking brake is opened. By doing so, the trailer can be towed or manoeuvred.

INFO

The shape of the spring storage can vary according to the model and differ from the figure shown.

Activating the emergency release device for the parking brake

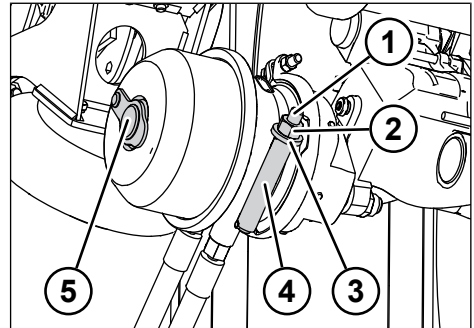


Fig. 5-2: Spring storage with emergency release device

- 1 Emergency release screw
- 2 Retainer nut
- 3 Flat washer
- 4 Bracket
- 5 Protective cap

- ▶ Use wheel chocks to prevent the trailer from rolling away. Observe the operating instructions for the trailer.
- ▶ Loosen the retainer nut and flat washer.
- ▶ Remove the emergency release screw from the holder.

- ▶ Open the cap.

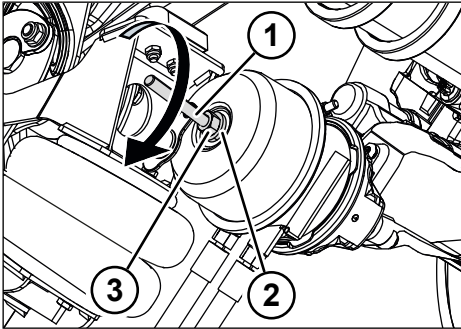


Fig. 5-3: Activating the emergency release screw

- 1 Emergency release screw
- 2 Flat washer
- 3 Retainer nut

- ▶ Insert the emergency release screw.
- ▶ Turn the emergency release screw clockwise (90°) until it engages.
- ▶ Screw the retainer nut and flat washer onto the emergency release screw.
- ▶ Tighten the retainer nut with the suitable spanner until the stop.
- ✓ The spring storage is mechanically tensioned and the brake cylinder has no more braking effect.
- ▶ Activate the emergency release device on all the spring storage devices.
- ✓ The emergency release device is activated and the service and parking brakes are without function.
- ✓ The trailer is not braked.

Deactivating the emergency release device for the parking brake

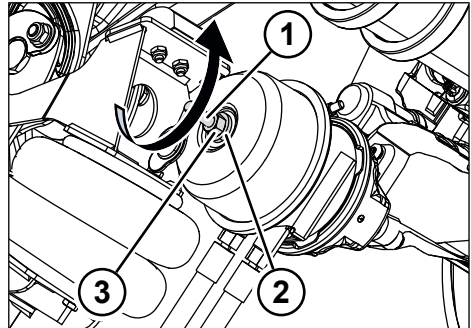


Fig. 5-4: Deactivating the emergency release screw

- 1 Emergency release screw
- 2 Flat washer
- 3 Retainer nut

- ▶ Unscrew the retainer nut and flat washer from the emergency release screw using a suitable spanner.
- ▶ Turn the emergency release screw key counter-clockwise (90°) and disengage it.
- ▶ Remove the emergency release screw.
- ▶ Insert the emergency release screw in its holder.
- ▶ Screw the retainer nut and flat washer onto the emergency release screw and tighten up to the stop with a suitable spanner.
- ▶ Close the cap.
- ✓ The spring storage is mechanically released and the brake is functional.
- ▶ Deactivate the emergency release device on all the spring storage devices.
- ✓ The emergency release device is deactivated and the service and parking brakes are functional.

5.2 Air suspension

⚠ WARNING

Risk of accident due to fully lowered or raised vehicle!

Failure to set the air suspension to the "Drive" position before starting off can result in a risk of accidents due to impaired driving characteristics or vehicle collisions in passageways.

- ▶ Always move the air suspension into driving position before driving off. The only exception is manoeuvring at walking speed.

⚠ CAUTION

Risk of injury due to crushing!

When lowering the trailer, the clearance under the trailer is reduced. Persons between the road and vehicle parts can be crushed and seriously injured.

- ▶ Avoid the danger areas.
- ▶ When operating the air suspension, avoid having persons underneath the trailer.

NOTE


Material damage due to grounding!

On vehicles with a large lifting height, the distance between the ground and suspension elements is reduced when reaching maximum lifting height. The spring elements on the axle could ground when manoeuvring and be damaged.

- ▶ For vehicles with large lifting heights, always put the air suspension in driving position.

KRONE trailers are equipped with an air suspension system. The vehicle height (e.g. to adjust it for a ramp) can be adjusted in two ways:

- Manually
- Electronically controlled

 Also observe the enclosed supplier documentation.

Depending on the make and design of the lifting and lowering valves, the following functions can be carried out using the air suspension's control lever:

Control lever position	Function
Drive*	The trailer is always kept at the same height, regardless of the load.
Raised	The trailer is raised, e.g. to adjust it for a ramp.
Raised and engaged	The trailer is raised to the maximum possible lifting height.
Lowered	The trailer is lowered, e.g. to adjust it for a ramp.
Lowered and engaged	The trailer is lowered down to its mechanical limit (air suspension bellows without overpressure)
Stop	The trailer height achieved via lifting or lowering is maintained.

* The driving position cannot be set manually on electronically controlled air suspension. Instead, the ride height is automatically set at a driving speed of > 15 km/h.

The operating instructions for the air suspension's control lever are shown as a pictogram on the control unit.

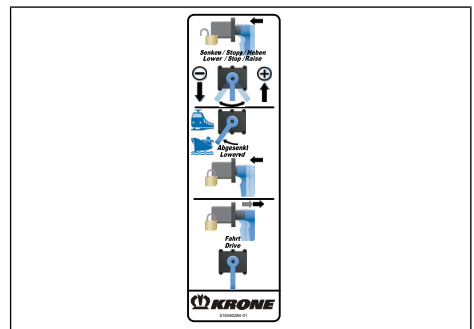


Fig. 5-5: Example pictogram of mechanically controlled air suspension

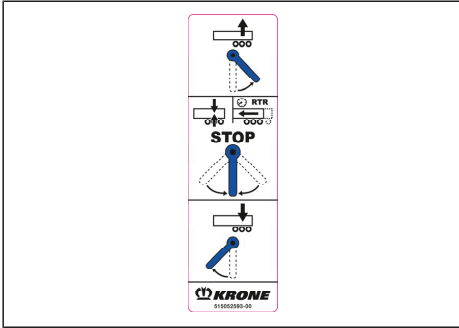


Fig. 5-6: Example pictogram of electronically controlled air suspension

To prevent chassis damage, the version with the lifting-lowering valve with automatic ride height resetting automatically sets the trailer back to the driving position when the vehicle speed exceeds 15 km/h.

NOTE

Driving with the wrong lifting height causes material damage!

Driving at the minimum or maximum lifting height on an electronically controlled air suspension can cause material damage to the trailer.

- ▶ Do not drive at the minimum or maximum lifting height.

Optionally, KRONE trailers can also be fitted with a system for electronically controlled air suspension, e.g. via Wabco's ECAS system. It electronically controls the vehicle's ride height if there is a power supply and an adequate compressed air supply.

KRONE trailers with electronically controlled air suspension can be optionally equipped with various electronic control devices (control box, SmartBoard, electronic buttons, etc.).

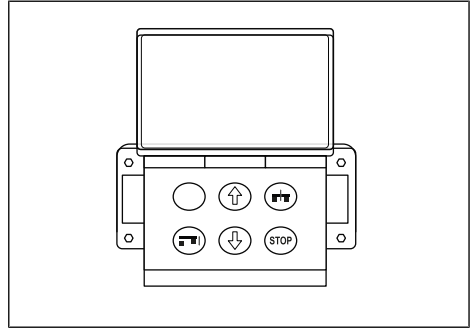


Fig. 5-7: Example of a control box (Wabco)

If there is sufficient air and power supply, the system can automatically regulate the ramp height. If there is no power supply, the ramp can also be adjusted via the electronically controlled air suspension with the control lever on the control unit.

Also observe the enclosed supplier documentation.

5.3 Self-steering axle

⚠ WARNING

Risk of accident due to incorrectly set air pressure!

Incorrectly set air pressure in the stabilisation unit has a negative effect on the driving characteristics and can cause accidents.

- ▶ Adjust the air pressure to the loading conditions.
- ▶ Ensure a pressure of approx. 1 bar when in an empty state.

⚠ CAUTION

Risk of injury due to crushing!

Working on the self-steering axle can cause crushing injuries.

- ▶ Before working on the self-steering axle, disconnect the compressed air connection.
- ▶ Perform functional tests with sufficient distance from the hazard area.

INFO

Emergency safety device in case of pressure loss of the locking unit!

In case of pressure loss or a defective supply line, the locking unit goes into the locking function. As a result, the self-steering axle is permanently locked in the straight ahead position.

NOTE**Material damage when driving in reverse with the self-steering axle unlocked!**

When reversing with an unlocked self-steering axle, the vehicle can run out of track. It is no longer possible to reset to a straight position, this can result in material damage.

- ▶ Activate the lock of the self-steering axle when driving in reverse.
- ▶ Make sure that the wheels are always set straight before locking.
- ▶ If the wheels are turned while reversing, cancel the operation and straighten and lock the wheels again.

When driving in reverse, the self-steering axle is locked:

- Automatically if the back-up spotlight is activated on the tractor unit or
- Manually (e.g. when manoeuvring without supply and control connections.)

 Observe the vehicle documentation.

6 Troubleshooting in the event of faults

⚠ WARNING

Risk of accident due to instability and rolling away!

Unintentional trailer movements can cause serious injury and property damage.

- ▶ Secure the trailer against rolling away by applying the parking brake.
- ▶ Use the wheel chocks to prevent the trailer from rolling away.
- ▶ Park the trailer on a solid surface to avoid sinking in or tipping.

⚠ WARNING

Risk of accident and material damage caused by improperly performed troubleshooting and repair work!

Improperly performed troubleshooting and repair work affect safety and may lead to serious injuries and property damage.

- ▶ Only have necessary repair work performed by an authorised specialist workshop.
- ▶ Only use original spare parts and spare parts authorised by KRONE.
- ▶ Observe the instructions concerning troubleshooting issued by the suppliers of the installed components.
- ▶ Verify functionality after installing/repairing components.

The following overview will help to determine possible faults and their causes and to perform measures to eliminate them. In case of faults that cannot be fixed:

- ▶ Visit an authorised specialist workshop.
- ▶ Contact the customer service department of Fahrzeugwerk Bernard KRONE GmbH & Co. KG (see "9.2 Customer service and support", pg. 43).

Troubleshooting overview

Fault	Cause	Solution
Electrical components are not working	Supply and control connections are interrupted	<ul style="list-style-type: none"> ▶ Check that the supply and control connections between the tractor unit and trailers are properly connected. ▶ In addition to the operating instructions for the KRONE Trailer Axle, also observe the operating instructions for the tractor unit and the trailer.
Pneumatic components are not working	Leaks on components	<ul style="list-style-type: none"> ▶ Check the components for damage and leaks. ▶ Have repairs/replacements performed by a specialist workshop. ▶ In addition to the operating instructions for the KRONE Trailer Axle, also observe the operating instructions for the tractor unit and the trailer.

Fault	Cause	Solution
Brake system fault	Leaks on the brake cylinder, leaks on the brake calliper	<ul style="list-style-type: none"> ▶ Check the brake cylinders for function and leaks. ▶ Check the brake callipers for function and leaks. ▶ Have repairs/replacements performed by a specialist workshop. ▶ In addition to the operating instructions for the KRONE Trailer Axle, also observe the operating instructions for the tractor unit and the trailer.
Braking abnormalities (trailer and tractor brake abnormality in the vehicle combination)	Failure to perform the brake power/train tuning	<ul style="list-style-type: none"> ▶ Perform a brake power/train tuning with the allocated tractor unit (see "6.1 Fixing braking abnormalities", pg. 27). ▶ In addition to the operating instructions for the KRONE Trailer Axle, also observe the operating instructions for the tractor unit and the trailer.
ABS/EBS error display	Fault in the controller	▶ Contact an authorised specialist workshop or customer service.
Self-steering axle		
The wheels are not turned or the locking unit is not released	Fault in the controller or in the compressed air supply	▶ Contact an authorised specialist workshop or customer service.
The wheels wobble when driving straight ahead	Fault in the compressed air control	▶ Contact an authorised specialist workshop or customer service.

6.1 Fixing braking abnormalities

WARNING

Risk of accident due to unharmonised brake power tuning!

Unharmonised brake power between the tractor unit and trailer may lead to insufficient or excessive trailer braking values. This can cause increased wear and accidents.

- ▶ Monitor the automatic coupling force control to harmonize the brake power.
- ▶ Pay attention to the sticker on the trailer.

Technically optimised function of the brake system is only possible when trailer is combined with the corresponding allocated tractor unit. All components and the con-

trols must function without faults and be properly set. If braking abnormalities occur, the following apply:

- ▶ Fill in the following questionnaire for basic information regarding braking abnormalities and send it to KRONE.
- ▶ More information and instructions can be found on the KRONE website or requested from customer service (see "9.2 Customer service and support", pg. 43).
- ▶ Observe the operating and maintenance instructions of the installed supplied components.

Questionnaire: Basic information about braking abnormalities

- ▶ Copy the questionnaire below.
 - Error memory
- ▶ Fill in the questionnaire completely.
 - Operating data
- ▶ Include the following attachments:
 - If necessary, the data from the internal CPU memory (e.g. EEPROM memory)
- Logs from the rolling brake test stand
- Data from the memory of the brake electronics

Customer	
Name/company	
Telephone	
Fax	
Email	
Trailer	
Item number	
Vehicle ID number	Product identification and type plate
New registration	
Trailer mileage	km
Brake pads mileage	km
Tractor unit	
Manufacturer	
Type	
New registration	
Tractor unit mileage	km
Brake pads mileage	km

- ▶ Send the filled form and annexes to:
 Fahrzeugwerk Bernard KRONE
 GmbH & Co. KG
 Customer Service
 D-49757 Werlte
 email: kd.nfz@krone.de

7 Maintenance and repair

DANGER

Risk of accident due to unintended vehicle movements!

Unintended vehicle movements can cause serious injury.

- ▶ Use wheel chocks to prevent the trailer from rolling away.
- ▶ Park the trailer on solid and level ground to avoid sinking in or tipping.
- ▶ During maintenance and repair work, observe the stability of the trailer.
- ▶ Observe the applicable national accident prevention regulations.

WARNING

Risk of accident and property damage caused by improperly performed maintenance and repair work!

Improperly performed maintenance and repair work affects the safety of the KRONE Trailer Axle.

- ▶ Only have maintenance and repair work performed by an authorised specialist workshop in compliance with the KRONE maintenance instructions.
- ▶ Observe the maintenance and repair instructions issued by the suppliers of the installed components.
- ▶ Only use original spare parts and spare parts authorised by KRONE.

WARNING

Risk of accident and material damage caused by improperly performed troubleshooting and repair work!

Improperly performed troubleshooting and repair work affect safety and may lead to serious injuries and property damage.

- ▶ Only have necessary repair work performed by an authorised specialist workshop.
- ▶ Only use original spare parts and spare parts authorised by KRONE.
- ▶ Observe the instructions concerning troubleshooting issued by the suppliers of the installed components.
- ▶ Verify functionality after installing/repairing components.

NOTE

Environmental damage due to chemicals and improper disposal!

During maintenance, lubricants and operating substances may end up in the waste water and damage the environment.

- ▶ Do not allow lubricants or other chemicals to escape into drains, sewers or to seep into the ground.
- ▶ Ensure that lubricants, operating materials and components are disposed of properly and in an environmentally-friendly way.
- ▶ Observe the nationally applicable environmental protection regulations.
- ▶ Observe the applicable environmental protection measures.

Maintenance and repair serve to maintain the operational readiness and to prevent premature wear. Maintenance is divided into:

- Maintenance
- Repair

7.1 Preparatory work

⚠ WARNING

Risk of accident caused by pressurised lines!

Loosening lines that are pressurised can cause serious injuries.

- ▶ Disconnect the compressed air supply and ensure that it does not inadvertently power on.

Depending on the scope of the repairs, preparatory work is required to allow safe repair work and to prevent accidents.

Carry out the following preparatory work:

- ▶ Use wheel chocks to prevent the trailer from rolling away.
- ▶ Use supports on the vehicle frame.
- ▶ Secure the axle or components that you are working on using a height-adjustable jack or similar.
- ▶ Depressurise the brake system or the air suspension system.
- ▶ Remove the wheels on the axle that you are working on.

7.2 Maintenance

⚠ WARNING

Risk of accident and property damage caused by improperly performed or lack of maintenance!

Improperly performed or lack of maintenance work and incorrect replacement parts affect safety.

- ▶ Observe the national accident prevention regulations.
- ▶ Only have maintenance work performed by an authorised specialist workshop in compliance with the KRONE maintenance and repair instructions.
- ▶ Only use original spare parts.
- ▶ Observe the maintenance instructions for the installed supplied components (e.g. brake cylinder).

⚠ WARNING

Risk of accident due to instability and rolling away!

Unintentional trailer movements can cause serious injury and property damage.

- ▶ Secure the trailer against rolling away by applying the parking brake.
- ▶ Use the wheel chocks to prevent the trailer from rolling away.
- ▶ Park the trailer on a solid surface to avoid sinking in or tipping.

NOTE

Environmental damage due to chemicals and improper disposal!

During maintenance, lubricants and operating substances may end up in the waste water and damage the environment.

- ▶ Do not allow lubricants or other chemicals to escape into drains, sewers or to seep into the ground.
- ▶ Ensure that lubricants, operating materials and components are disposed of properly and in an environmentally-friendly way.
- ▶ Observe the nationally applicable environmental protection regulations.
- ▶ Observe the applicable environmental protection measures.

The aim of maintenance is:

- that the commissioned KRONE Trailer Axle is kept operating safely and performing properly during use,
- to prevent downtimes,
- to keep the costs of operational readiness reasonable and financially justifiable,
- and to limit unavoidable repair expenditures.

7.2.1 Maintenance intervals

In addition to the general safety inspections in accordance with statutory regulations, for KRONE axle assemblies there is

the visual inspection of the components and threaded unions. This maintenance work may only be performed by an authorised specialist workshop. For the check, the threaded unions should be checked visually as specified and if necessary, checked for firm seat with the torque spanner. With regards to the maintenance, replace the screw fittings, if necessary, and tighten them to the prescribed torque (among other things, rust and settling signs can be an indication of loose fittings). Also observe the maintenance instructions of the installed supplied components.

In the maintenance intervals, you will find the maximum maintenance work for the vehicle when used on the road. The maintenance intervals are shortened accordingly when using the vehicle off-road or depending on the driving style, and must be adjusted individually. To ensure proper operating condition of the KRONE Trailer Axle, the following maintenance work must be carried out:

- ▶ Perform regular visual inspections.

- ▶ Observe the maintenance intervals.
- ▶ Observe the applicable current national and international regulations.
- ▶ Report any safety faults determined to the operator.
- ▶ Take the KRONE Trailer Axle out of service in the event of poor operational safety.
- ▶ If there is a fault, have the KRONE Trailer Axle repaired by an authorised specialist workshop.
- ▶ Properly performed maintenance work must be documented in the maintenance master data sheet. (see "7.2.2 Maintenance master data sheet", pg. 35).

All maintenance intervals and work are listed on the following page and shown in an overview.



Visual inspection



Work step










Visual inspection and work steps


Maintenance intervals for the authorised specialist workshop


Air suspension	Maintenance work	Monthly	Every 3 months	Every 6 months	Yearly
Air spring bracket Pos. 1					X
Shock absorber Pos. 3					X
Integration Pos. 4					X
Air spring bellow Pos. 5					X
Thrust washers Pos. 6					X
Silent block Pos. 12					X
Link fitting Pos. 15					X




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Wheel bearing unit	Maintenance work	Monthly	Every 3 months	Every 6 months	Yearly
Wheel bearing unit Pos. 2		When changing a brake disc			
Torx screws Pos. 7		When fitting the wheel flange and after every brake disc change, tighten up after 100 km.			



Brake	Maintenance work	Monthly	Every 3 months	Every 6 months	Yearly
Wheel nuts Pos. 8		During initial commissioning and after every wheel change, tighten up after 100 km.			
Brake disc Pos. 9				X	
Brake pad Pos. 10			X		
Brake calliper* Pos. 11					X
Brake cylinder Pos. 14				X	
* Observe the maintenance instructions from the manufacturer.					

Twinlift	Maintenance work	Monthly	Every 3 months	Every 6 months	Yearly
All components Pos. 16				X	

Axle body	Maintenance work	Monthly	Every 3 months	Every 6 months	Yearly
All components Pos. 13				X	

Self-steering axle	Maintenance work	Monthly	Every 3 months	Every 6 months	Yearly
Steering pin Pos. 17					X
Steering pin Pos. 18			X		
Tie rod end Pos. 19					X

Maintenance intervals for the operator/driver

Brake	Maintenance work	Monthly	Every 3 months	Every 6 months	Yearly
Wheel nuts Pos. 8	 	Visual inspection for wear and damage before each trip. After each wheel change, tighten up after 100 km. Tightening torque: 630 Nm +/- 30 Nm Test torque: 600 Nm			

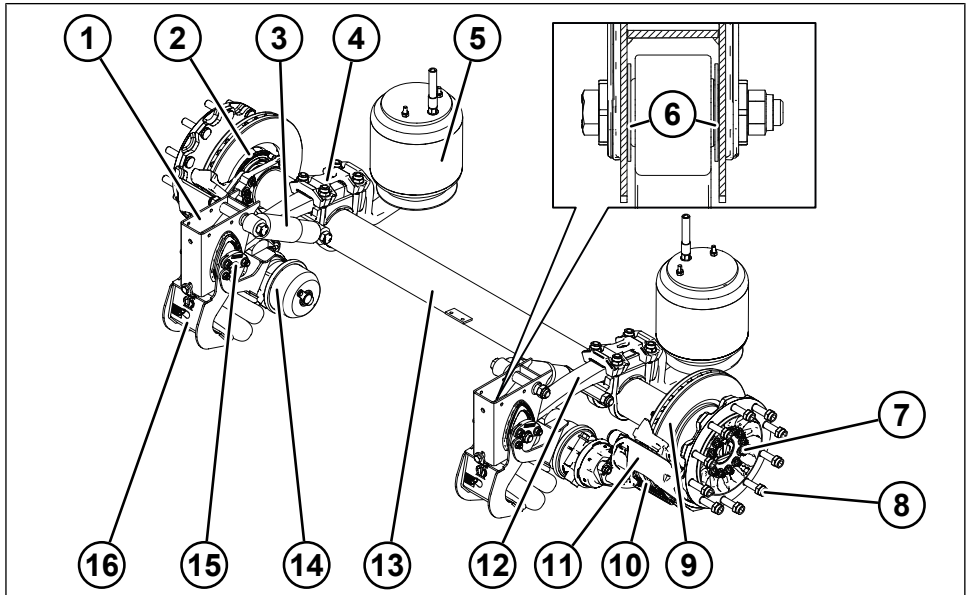


Fig. 7-1: Maintenance overview (top air spring link)

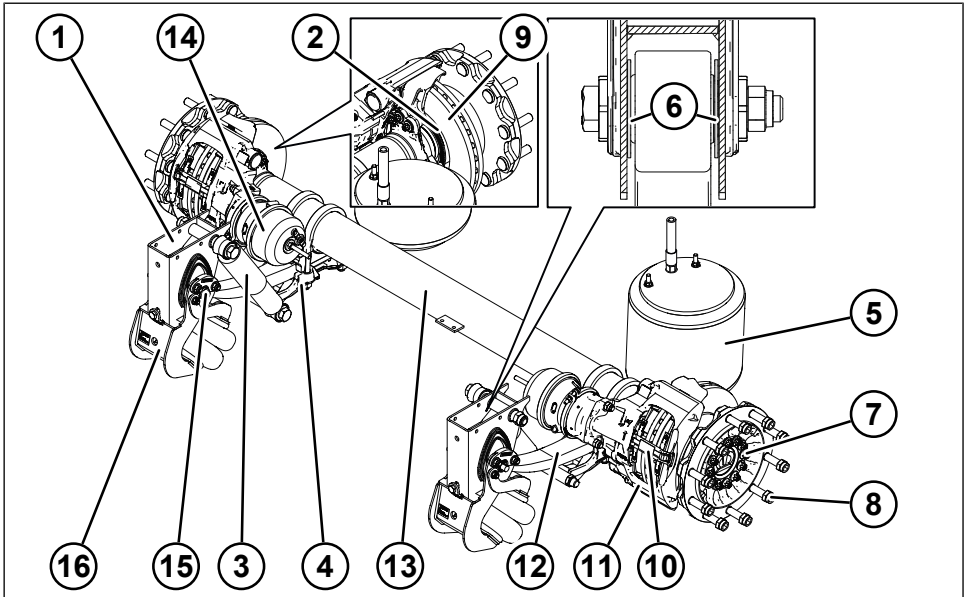


Fig. 7-2: Maintenance overview (bottom air spring link)

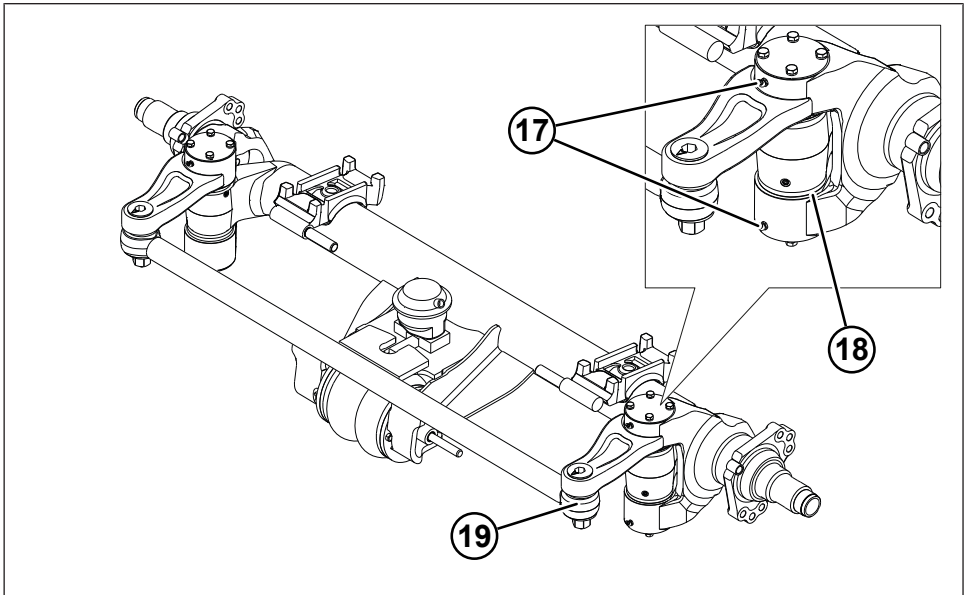


Fig. 7-3: Additional maintenance overview for self-steering axles

7.2.2 Maintenance master data sheet

- All properly performed maintenance work must be documented in the maintenance master data sheet.

Inspection after max. 1,000-1,500 km	
Bolted connections checked and tightened with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
After the first laden journey:	
Always check screw connections in accordance with the detailed maintenance guidelines in the maintenance booklet and re-tighten if necessary.	
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

1st maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the operation and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

2nd maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the service and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

3rd maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the service and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

4th maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the service and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

5th maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the service and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

MAINTENANCE AND REPAIR

6th maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the service and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

7th maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the service and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

8th maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the service and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

9. Maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the service and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

MAINTENANCE AND REPAIR

10th maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the service and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

11th maintenance	
Bolted connections checked and tightened, if necessary, with the prescribed tightening torque according to the detailed testing and maintenance regulations.	<input type="checkbox"/>
Chassis checked for wear, leaks and damage.	<input type="checkbox"/>
Air spring bellows checked.	<input type="checkbox"/>
Brake system checked for leaks.	<input type="checkbox"/>
Braking effect for the service and parking brake checked.	<input type="checkbox"/>
Brake pads checked.	<input type="checkbox"/>
Maintenance work performed according to the detailed maintenance instructions.	<input type="checkbox"/>
Brake pad thickness	
1st axle, left:	mm
1st axle, right:	mm
2nd axle, left:	mm
2nd axle, right:	mm
3rd axle, left:	mm
3rd axle, right:	mm
Mileage/km reading:	
Repair order no.:	
Date, signature:	
Company stamp of specialist workshop:	

7.3 Repair

DANGER

Risk of accident due to unintended vehicle movements!

Unintended vehicle movements can cause serious injury.

- ▶ Use wheel chocks to prevent the trailer from rolling away.
- ▶ Park the trailer on solid and level ground to avoid sinking in or tipping.
- ▶ During maintenance and repair work, observe the stability of the trailer.
- ▶ Observe the applicable national accident prevention regulations.

CAUTION

Risk of injury due to unexpected component movements!

Pneumatically or electrically driven components may move unexpectedly and injure people.

- ▶ Fully depressurise the pneumatic system and disconnect the electrical connections before beginning maintenance work. Ensure that the system cannot be switched on again.

WARNING

Risk of accident and material damage caused by improperly performed troubleshooting and repair work!

Improperly performed troubleshooting and repair work affect safety and may lead to serious injuries and property damage.

- ▶ Only have necessary repair work performed by an authorised specialist workshop.
- ▶ Only use original spare parts and spare parts authorised by KRONE.
- ▶ Observe the instructions concerning troubleshooting issued by the suppliers of the installed components.
- ▶ Verify functionality after installing/repairing components.

NOTE

Environmental damage due to chemicals and improper disposal!

During maintenance, lubricants and operating substances may end up in the waste water and damage the environment.

- ▶ Do not allow lubricants or other chemicals to escape into drains, sewers or to seep into the ground.
- ▶ Ensure that lubricants, operating materials and components are disposed of properly and in an environmentally friendly way.
- ▶ Observe the nationally applicable environmental protection regulations.
- ▶ Observe the applicable environmental protection measures.

Repair work includes the replacement and the repair of components and is only required when components are damaged by wear or other external circumstances.

The following applies to the specialist workshop:

- For repairs, observe the maintenance instructions for the KRONE Trailer Axle.
- The necessary repair work must be performed professionally, according to the rules of engineering and in accordance with the applicable regulations.
- Do not repair worn or damaged components using a makeshift repair.
- Only use original or approved spare parts for repairs (see "9.1 Spare parts", pg. 43).
- Always replace any removed seals with new seals.
- Welding work on the frame, chassis and on bearing parts may only be performed after consultation with KRONE customer service and KRONE construction.

8 Decommissioning

8.1 Temporary decommissioning

NOTE

Material damage caused by long downtimes!

If the decommissioning lasts for several months, the tyres can be damaged by storage deterioration.

- ▶ Move the trailer once a month to prevent the tyres from deteriorating during storage.
- ▶ Observe the operating instructions for the trailer to temporarily decommission the vehicle with KRONE Trailer Axle.

8.2 Recommissioning

⚠ WARNING

Risk of accident and material damage due to lack of checks!

After longer downtimes, the wear condition of the KRONE trailer's axle can change. Operating the axle when not in perfect technical condition can lead to serious accidents or material damage.

- ▶ Perform a component check before driving for the first time.
- ▶ Fix any detected faults before driving off.
- ▶ Serious faults must be repaired by an authorised specialist workshop.
- ▶ Observe the operating instructions for the trailer to recommission the vehicle with KRONE Trailer Axle after temporary decommissioning.
- ▶ Check the brakes and air suspension for proper function.

8.3 Final decommissioning and disposal

NOTE

Environmental damage due to improper disposal!

Improperly disconnecting and disposing of operating materials along with electric, pneumatic and hydraulic parts may harm the environment.

- ▶ Ensure that they are disposed of properly by a specialist company
- ▶ Observe the national and local regulations for the disposal.

After the end of its useful life, the KRONE Trailer Axle must be permanently decommissioned and properly disposed of. The KRONE Trailer Axle contains electrical and pneumatic components that must be disposed of separately. To permanently decommission the KRONE Trailer Axle and to dispose of it properly, the following actions must be performed:

- ▶ Ensure that the disposal is done properly and in an environmentally sound way.
- ▶ Have the KRONE Trailer Axle disposed of properly by a specialist company.
- ▶ Observe the national and local regulations for the disposal.
- ▶ Observe the instructions for decommissioning issued by the suppliers of the installed components.
- ✓ The KRONE Trailer Axle is permanently decommissioned and disposed of.

9 Spare parts and customer service

GmbH & Co. KG
Bernard-Krone-Straße 1
D-49757 Werlte

9.1 Spare parts

NOTE

Property damage caused by incorrect spare parts!

The use of non-approved or incorrect spare parts affects safety and can result in voiding of the operating permit.

- ▶ Only use original spare parts.

The original spare parts are regularly checked for safety and functionality. The use of original spare parts guarantees road and operating safety and the operating permit is retained.

- ▶ When ordering spare parts, provide the item number and the axle name.

You can order spare parts by phone under +49 (0) 59 51 / 209-302 or from the KRONE website. An electronic spare parts catalogue is available on the website: www.krone-trailer.com

9.2 Customer service and support

The customer service department at Fahrzeugwerk Bernard KRONE GmbH & Co. KG can be reached using the following contact data:

Customer Service

Telephone: +49 (0) 59 51 / 209-320

email: kd.nfz@krone.de

Internet: www.krone-trailer.com/service/kundendienst

Spare parts

Telephone: +49 (0) 59 51 / 209-302

e-mail: Ersatzteile.nfz@krone.de

Internet: www.krone-trailer.com

Fahrzeugwerk Bernard KRONE

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