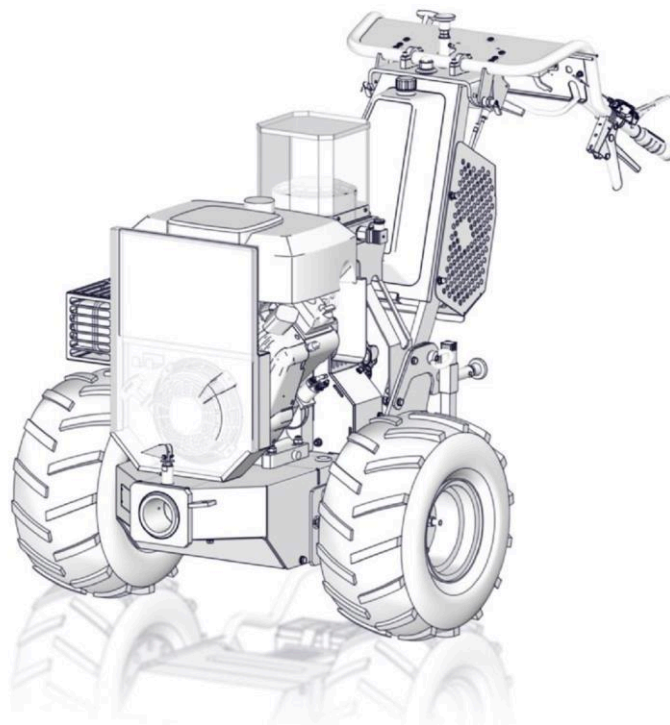


Kersten

SITE MAINTENANCE EQUIPMENT

Original Operating Instructions

Hydrostatic single-axe carrier vehicle UBS Alpin II



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maschinen.de/](http://www.kersten-
maschinen.de/)

Information about the operating instructions

This manual enables the machine to be used safely and efficiently. The manual is part of the machine and must be kept in the immediate vicinity of the machine so that it is accessible to personnel at all times.

The personnel must read and understand these instructions carefully before starting any work. The basic requirement for safe work is compliance with all specified safety instructions and Instructions in this manual.



Risk of accidents and property damage if used improperly!

Since self-propelled implements and attachments can pose a significant risk of accidents and danger if not used properly, it is essential that you receive instruction from qualified and authorized personnel when using the Kersten implement for the first time. The best way to familiarize yourself with its basic functions and how to use it is to choose an open, level area for your first trip.

- For further information or in case of any kind of difficulty, please contact the dealer, importer or the manufacturer directly.
- Please pass on all safety instructions to other users!

In addition, local occupational health and safety regulations and general safety provisions for the area in which the machine is to be used apply.

Co-Applicable Documents

In addition to these instructions, the following documents and the safety instructions listed therein must be observed:

- Operating instructions for the supplier components
- Operating instructions of the carrier vehicle

manufacturer's customer service

The machine manufacturer's customer service is available for technical information:

manufacturer address	Kersten Arealmaschinen GmbH Empeler Straße 95 46459 Rees Germany
service telephone	+ 49 2851 9234-10
fax	+ 49 2851 9234-44
e-mail	Info@kersten-maschinen.de
Internet	http://www.kersten-maschinen.de



When making enquiries, please have the following information ready:

- Machine / device type
- Machine order number
- In case of problems: precise description or exact error messages

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1 foreword

Dear Customer,

Thank you for choosing a quality product from Kersten.

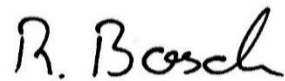
This product has been manufactured using the most modern manufacturing processes and extensive quality assurance measures, because our goal is only achieved when you are satisfied with your device.

Before using this machine or attachment for the first time, please read this operating manual completely and carefully.

If you do not understand any information in this safety data sheet or the product-specific installation or operating instructions, please contact your sales representative or the machine manufacturer directly.

Please keep this manual handy so that you can refer to important information and instructions when required.

We wish you much joy with your Kersten device



Dipl.- Ing. (FH) Robert Bosch
Managing Director

2 Security

2.1 Symbols in this manual

safety instructions

The following occupational safety symbols are used for all occupational safety instructions that indicate a danger to life and limb of people and are marked by a pictogram, a signal word and a signal color.

In the documentation you will find the dangerous situations explained at the relevant points.

Please note these instructions!

Observe the locally applicable safety and accident prevention regulations!

DANGER



nature and source of the danger

This symbol warns of an immediate danger to the life and health of people.

Failure to follow these instructions will result in serious health consequences, including life-threatening injuries and extensive property damage.

- Action that must be avoided to prevent the danger from occurring

WARNING



nature and source of the danger

This symbol warns of an imminent danger to the life and health of people, as well as of environmental and material damage.

Failure to observe these instructions may result in serious health consequences, including life-threatening injuries, or may cause extensive environmental and material damage.

- Action that must be avoided to prevent the danger from occurring

CAUTION



nature and source of the danger

This symbol warns of an imminent danger to the health of people as well as of environmental and material damage.

Failure to observe these instructions may result in moderate or minor health effects or even injury, or may cause extensive environmental and material damage.

- Action that must be avoided to prevent the danger from occurring

A NOTICE**type and source of the machine or system damage**

This symbol warns of a dangerous situation and is used to indicate instructions for handling the machine or system.

Failure to follow these instructions may result in extensive property damage.

- Action that must be avoided to prevent damage to the machine or system

tips and recommendations

This symbol highlights useful tips and recommendations, as well as information for efficient and trouble-free operation.

Other markings

The following markings are used in this manual to highlight instructions, results, lists, references and other elements:

labeling	explanation
1st, 2nd, 3rd ...	step-by-step instructions
→	results of action steps
•	Lists without a fixed order
[button]	Control elements (e.g. buttons, switches), display elements (e.g. signal lights)
"Advertisement"	Screen elements (e.g. buttons, function key assignments)

2.2 Pictograms**follow the instructions**

Do not use the marked machine until you have read the instructions.

Wear protective work clothing

This sign indicates that protective work clothing must be worn in the area in question.

Protective work clothing is tight-fitting work clothing with low tear resistance, with tight sleeves and no protruding parts.

Wear safety shoes

This sign indicates that safety shoes must be worn in the area concerned.

Safety shoes protect the feet from crushing, falling objects and slipping on slippery surfaces.

Wear protective gloves

This sign indicates that protective gloves must be worn in the area concerned.

Protective gloves are used to protect hands from friction, abrasions, punctures, cuts or deeper injuries as well as from contact with hot surfaces.

wear safety glasses

This sign indicates that protective goggles must be worn in the area concerned.

The safety goggles are used to protect the eyes from flying parts and liquid splashes.



Before commissioning, read and observe the operating instructions and safety information.



Never open or remove protective devices while the engine is running.



Observe the instructions in the technical manual.
Lubrication point!



Only touch machine parts when they have come to a complete standstill.



Danger from flying parts when the engine is running.
Keep a safe distance!

2.3 Intended use

WARNING



Risk of injury / risk of environmental damage due to improper use of the machine!

Improper use of the machine may result in injury, as well as environmental and material damage (to the machine or system)!

- The single-axle carrier vehicle and the equipment approved by the manufacturer are built for the usual or usual use and work in agriculture and forestry, such as green space and facility maintenance as well as for winter service.
- Any use beyond this is considered improper. The manufacturer is not liable for any resulting damage; the risk is borne solely by the operator.
- Proper use includes compliance with the operating, maintenance and maintenance conditions.
- The single-axle carrier vehicle may only be used, maintained and repaired by persons who are familiar with it and are informed of the dangers.
- The relevant accident prevention regulations as well as other generally accepted safety and occupational health rules must be observed.
- Unauthorized modifications to the machine will result in the manufacturer being exempt from liability for any resulting damage.

2.4 Work and danger areas

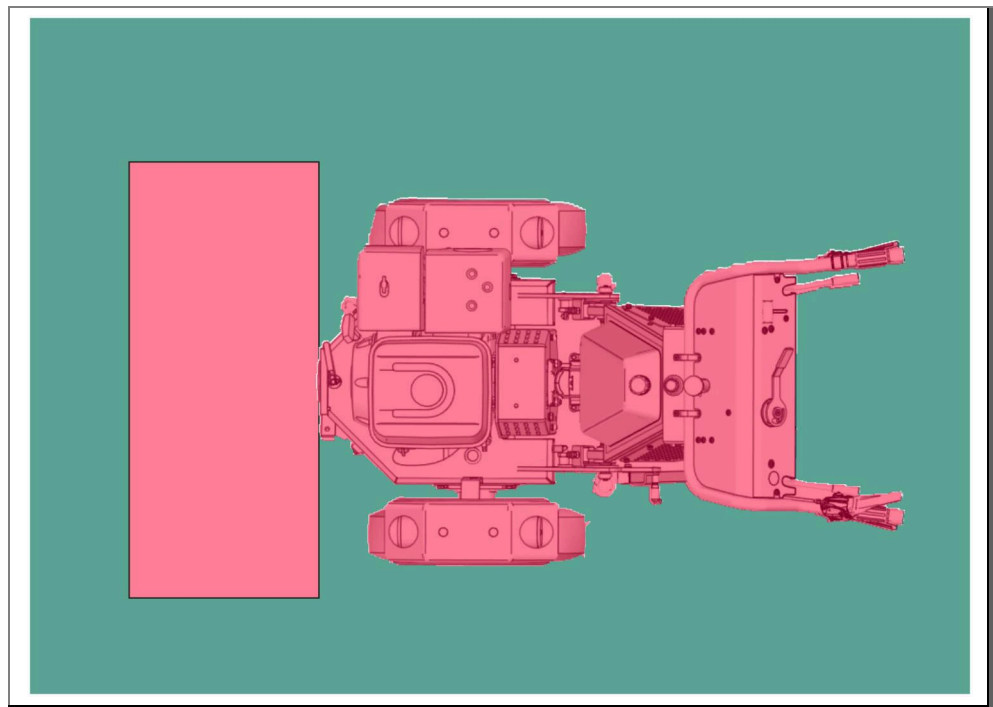


Fig. 1: Danger zone (top view)

The scope of delivery essentially consists of the machine shown and listed. It is the UBS Hydro series.

- RED → danger zone
- GREEN → work area

WARNING



Risk of injury/risk of environmental damage due to working/staying in the danger area!

Working / staying in the danger zone poses a risk of injury as well as environmental and material damage (to the machine or system)!

- The user is responsible towards third parties in the danger area of the machine!
- It is forbidden to stay in the danger zone of the machine! Expel all persons from the danger zone.
- If people approach the danger area, the machine must be switched off.
- The operator must ensure that there are no persons or property in the possible ejection area of an attachment.
- Before switching on the attachment and starting off, check the danger area. Pay particular attention to children and animals. Make sure you have sufficient visibility!

- In areas where visibility is difficult, switch off the attachment and ensure that no one is in the danger area.
- Before starting work, foreign objects must be removed from the surface to be treated. During work, pay attention to other foreign objects and remove them in good time.
- When working in enclosed areas, the safety distance from the edge must be maintained to avoid damaging the machine.
- When working in the immediate vicinity of public roads and paths, it is important to ensure that the discharge area is in the work area, as there is a risk of injury to third parties. The work paths must therefore be approached lengthways with sweeping rollers. When operating a weed brush, the work path must be approached crosswise.
- When carrying out work on public roads and squares or in the immediate vicinity, information and danger signs must be put up to draw the attention of third parties.

2.5 Safety during the work process

WARNING



Risk of injury / risk of environmental damage due to non-compliance with safety measures!

Failure to comply with safety measures may result in injury, as well as environmental and material damage (to the machine or carrier vehicle)!

- Never leave the operator's position on the handlebar while driving.
- Never adjust the control handle while driving.
- In addition to the information in this operating manual, please also observe the generally applicable safety and accident prevention regulations!
- The single-axle carrier vehicle must not be operated by persons under 16 years of age, even under adult supervision! Children and young people should be instructed not to play with the device.
- Only trained personnel or persons may use this machine!
- When using public transport, please observe the relevant regulations!
- The single-axle carrier vehicle is not approved for public transport.
- The user's clothing should fit tightly. Avoid loose clothing and wear sturdy shoes or safety shoes!
- Only work in good visibility and lighting conditions!
- The warning and information signs provided provide important information for safe operation; observance is for your own safety!
- The engine must be switched off for transport on motor vehicles or trailers outside the area to be worked!
- Be careful with rotating tools - keep a safe distance!
- Be careful with tools that are running after a while. Wait until they have come to a complete stop before working on them!

- If the attachment is blocked by a foreign object, the engine must be switched off and the attachment must be cleaned using a suitable tool!
 - There are crushing and shearing points on driven parts! The
 - transport of people and objects is prohibited!
 - Driving behavior, steering and braking ability, as well as tipping behavior are influenced by attached or coupled equipment and load. For this reason, only attachments approved by the manufacturer may be used. The working speed must be adapted to the respective conditions.
 - Do not change the engine's upper idle speed. Too high a speed increases the risk of an accident.
 - Unauthorized modifications that endanger the operational safety of the machine are prohibited!
 - If the self-propelled implement or attachment is damaged, switch off the engine immediately and have the damage repaired!
 - If there is a risk of slipping on sloping terrain, the equipment carrier must be secured by an accompanying person with a pole or rope. The accompanying person must be above the vehicle at a sufficient distance from the work tools! It is recommended that the helper wear crampons.
 - If possible, always drive across the slope.
 - Do not operate the machine on slopes in damp or rainy conditions.
 - On steep slopes, mesh wheels or spiked wheels must be used to prevent slipping.
 - If there is a malfunction in the steering, stop the self-propelled implement immediately and switch off the engine. Eliminate the problem immediately.
 - Before each use, check the machine for operational safety!
 - If the implement begins to slip on a slope, release the handles immediately.
-

coupling and uncoupling of attachments

WARNING



Risk of injury / risk of environmental damage due to non-compliance with safety measures!

Failure to comply with safety measures may result in injury as well as environmental and material damage (to the machine or system)!

- The relevant instructions and safety regulations of the carrier vehicle must be observed.
- When changing attachments and their parts, use suitable tools and wear gloves.
- When assembling and dismantling, place the necessary support devices in the appropriate position and ensure sufficient stability.
- Secure the self-propelled work machine and the attachment against rolling away (parking brake, wheel chocks).
- There is a risk of injury (crushing) when coupling attachments. Particular caution is required.
- Couple attachments correctly and secure them in the prescribed places.

2.6 Safety devices

DANGER



Danger of death or injury due to non-functioning safety devices!

If safety devices do not function or are disabled, there is a risk of serious injury or even death.

- Before starting work, check that all safety devices are functioning properly and are correctly installed.
- Never override or bypass safety devices. Ensure that all safety devices are always accessible.

2.6.1 Emergency shutdown via dead man's lever

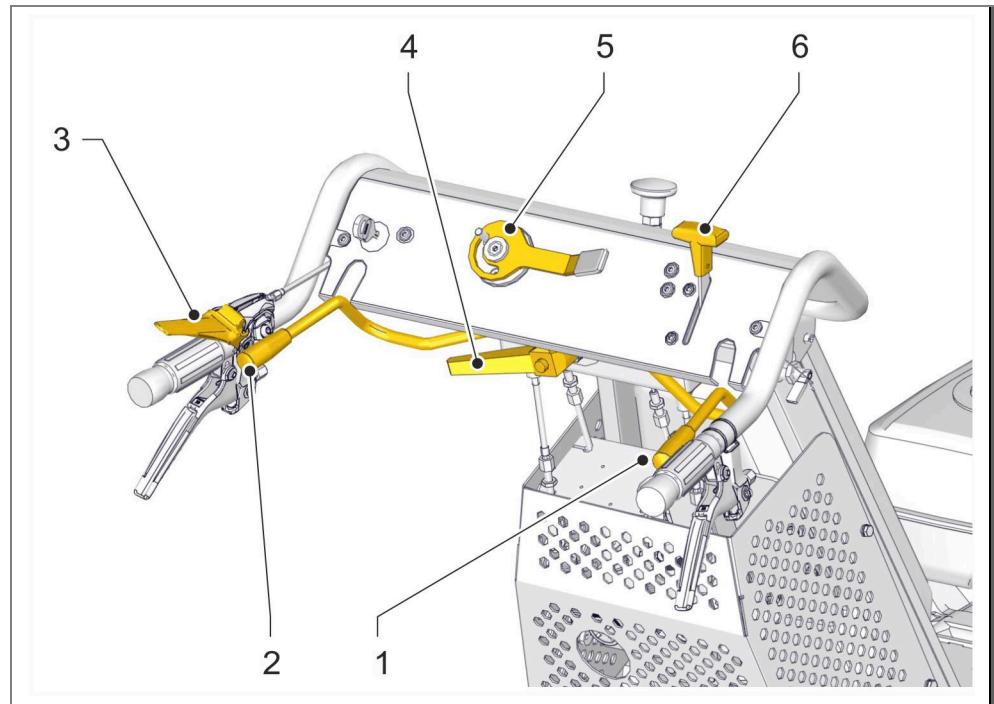


Fig. 2: Dead man's lever

- 1 drive lever, right
- 2 drive lever, left
- 3 dead man's lever
- 4 adjustment lever
- 5 auxiliary drive
- 6 throttle

In the event of an emergency, immediately release both handles of the control unit. This will trigger the dead man's lever (3).

- The single-axle carrier vehicle remains stationary
- The drive to the attachment is interrupted
- The combustion engine is NOT switched off and continues to run



Before you set off, please follow these steps!

- The driving lever (1, 2) must be in a horizontal position.
- The auxiliary drive lever (5) must be in the "Off" position.
- Press the dead man's lever (3) down.

If even one of the above conditions is not met, it is NOT possible to start driving / switch on the auxiliary drive despite operating the dead man's lever (3).

2.7 Safety marking

The following symbols and information signs are located in the work area. They refer to the immediate area in which they are installed.

WARNING



Risk of injury due to illegible or missing signs!

Missing and illegible stickers and signs can have serious health consequences, including life-threatening injuries.

- Keep all safety, warning and operating instructions in a legible condition at all times.
- Replace damaged signs or stickers immediately.

2.8 Residual risks

The machine is designed according to the state of the art and in accordance with current safety requirements. However, residual risks remain that require careful action. The residual risks and the resulting behavior and measures are listed below.

Improper transport

A NOTICE



Property damage due to improper transport

If transported improperly, items may fall or tip over. This can cause significant property damage.

- When unloading the transport items upon delivery and during
When transporting the product within the company, be careful and observe the symbols and instructions on the packaging.
- Only use the attachment points provided. Only
- remove packaging shortly before assembly.

dirt and objects lying around

CAUTION



Risk of injury from falling over dirt and objects lying around!

Dirt and objects lying around can cause slipping and tripping. If you fall, you may be injured.

- Always keep the work area clean.
- Remove any objects that are no longer needed from the work area, especially from near the floor.
- Remove tools or components from the work area.

cleaning products**⚠ WARNING****Risk of injury due to improper handling of cleaning agents or substances**

Improper handling of cleaning agents or substances can have serious health effects and even life-threatening injuries.

- Read the material safety data sheets and manufacturer's instructions for the cleaning agents or substances
- Wear appropriate protective equipment (e.g. gloves, safety shoes, protective suit, respirator, safety goggles, etc.)
- Ensure adequate ventilation of the environment
- Be careful when handling hot cleaning agents or substances. Touching them can cause burns and scalding
- If necessary, clean parts, assemblies or components of adhering oils, greases and other contaminants
- Avoid skin contact with cleaning agents or substances. Do not breathe in
- fumes from cleaning agents or substances. Do not handle near open
- flames and do not smoke.

noise level

Applicable noise protection regulations must be observed, as must the warnings in the overall documentation. The noise level on site depends on the local ambient noise. The noise level must be checked by the operator at regular intervals.

⚠ WARNING**Risk of injury due to noise!**

The noise level in the work area can cause serious hearing damage.

- Covers, insulating materials and other insulating parts of the device must not be removed and must be replaced if damaged.
- If the daily noise exposure level exceeds 85 dB(A), the operator must order the wearing of hearing protection.
- Stay in the danger area only if necessary.

moving components**⚠ DANGER****Danger to life or injury from moving components!**

Improper handling of moving components can result in danger of death or injury as well as risk of material damage to the machine or system

- Do not reach into or handle moving components during operation.
 - Never open covers during operation.
 - Observe the run-on time: before opening the covers, make sure that no components are moving.
 - Wear tight-fitting protective work clothing with low tear resistance in the danger area.
-

Sharp edges and pointed corners**⚠ CAUTION****Risk of injury from sharp edges and pointed corners!**

Sharp edges and pointed corners can cause skin abrasions and cuts.

- Be careful when working near sharp edges and pointed corners.
 - If in doubt, wear protective gloves.
-

hydraulics**⚠ DANGER****Danger to life or injury from hydraulic energy!**

Hydraulically driven moving components pose a risk to life or injury.

- Work on the hydraulic system may only be carried out by hydraulic specialists.
 - Do not reach into or handle moving components during operation.
 - Do not open covers during operation.
 - Wear tight-fitting protective work clothing with low tear resistance in the danger area.
-

Operating materials / Operating materials / Lubricants / Oils

 WARNING**Risk of injury due to improper handling of operating materials or - fabrics!**

Improper handling of operating resources or materials can result in serious health consequences and even life-threatening injuries.

- Read the material safety data sheets and manufacturer's instructions applicable to the equipment or materials.
- Wear appropriate protective equipment (e.g. gloves, safety shoes, protective suit, respirator, safety glasses, etc.).
- In case of accidental eye contact, rinse eyes thoroughly with plenty of water and seek medical attention.
- After skin contact, wash thoroughly with plenty of water.
- Ensure adequate ventilation of the area.
- Be careful when handling hot equipment or materials. Touching them can cause burns and scalding.
- If necessary, clean parts, assemblies or components of any adhering oil, grease or other contaminants.
- Avoid skin contact with operating materials or substances. Do not breathe in vapors from operating materials or substances. Do not work near open flames and do not smoke.

2.9 Environmental protection

 WARNING**Risk of environmental damage due to improper handling of operating resources or operating materials as well as cleaning agents or cleaning substances!**

Improper handling of operating materials or substances as well as cleaning agents or substances can result in extensive environmental and material damage.

- Read the operating instructions and cleaning agents and cleaning materials that apply to the equipment.
Material Safety Data Sheets and Manufacturers' Instructions
- Store operating materials or operating substances that are hazardous to water and soil, such as oil-contaminated parts, assemblies or components, in secure areas or drip trays
- Bind any leaked operating materials or cleaning agents or cleaning substances with a binding agent and dispose of it in accordance with local regulations
- If necessary, clean parts, assemblies or components of adhering oils, greases and other contaminants
- Do not allow leaked operating materials or cleaning agents or cleaning substances to seep into the soil or enter the sewage system

The following environmentally hazardous substances are used: lubricants

Lubricants such as grease and oil contain toxic substances. They must not be released into the environment. Disposal must be carried out by a specialist waste disposal company.

oils

Oils (e.g. lubricating, hydraulic or cleaning oils) must not be released into the environment. Oils have long-term harmful effects on water bodies. Disposal must be carried out by a specialist disposal company.

Observe the manufacturer's safety data sheets.

Electronic components

Electronic components can contain toxic substances. They must not be released into the environment. Disposal must be carried out by a specialist waste disposal company.

rechargeable batteries and batteries

Rechargeable batteries and batteries contain toxic heavy metals. They are subject to hazardous waste treatment and must be handed in to municipal collection points or disposed of by a specialist company.

2.10 Safety instructions for maintenance / troubleshooting

Behavior in the event of dangerous disturbances

Basically:

1. In the event of faults that pose an immediate danger to persons or property, initiate an emergency stop immediately.
- 2nd Determine the cause of the fault.
3. If troubleshooting requires work in the danger zone, switch off the machine and secure it against being switched on again.
- 4th Depending on the type of fault, have it repaired by authorized specialist personnel or repair it yourself.

⚠ DANGER



Danger of death or injury due to improperly performed maintenance work/troubleshooting work!

Improper maintenance work/troubleshooting may result in death or injury and may cause damage to the machine or system!

- Observe all safety instructions in this chapter as well as the relevant local safety and accident prevention regulations
- Only remedy faults that require intervention and carry out maintenance and cleaning work once you have ensured that the machine is at a standstill and secured against being switched on again.

- Only release blockages when it is certain that releasing them will not result in any dangerous movement of machine parts.
- Before starting work, ensure that there is sufficient space for installation.
- Make sure the assembly area is tidy and clean! Components and tools that are loosely stacked or lying around are sources of accidents.
- If components have been removed, ensure correct assembly and reinstall all fasteners.
- Before restarting, please note the following:
 - Make sure that all work has been carried out and completed in accordance with the information and instructions in this manual.
 - Make sure that no one is in the danger area.
 - Make sure all covers and safety devices are installed and functioning properly.
- Wait until the oil has cooled to below 50 °C before starting work
- Before starting work, have a temperature-resistant collecting container with the necessary capacity ready.

WARNING



Risk of injury / risk of environmental damage due to lack of / incorrect maintenance!

Lack of maintenance can result in injury, as well as environmental and material damage (to the machine or system)!

- Maintenance and cleaning work may only be carried out when the engine is stopped.
 - Always remove the spark plug connector when working on the engine.
 - Simple cleaning and adjustment work may be carried out by operating personnel. Maintenance and repair work may only be carried out by trained specialist personnel.
 - Notes and instructions from the original operating manual of the installed supplied parts must be observed.
 - If protective devices and work tools are subject to wear, they must be checked regularly and replaced if necessary.
 - When changing cutting tools, the appropriate tools and suitable protective equipment must be worn.
 - After maintenance and cleaning work, be sure to reinstall the protective devices and put them into the protective position!
 - Only use original spare parts from the manufacturer, as these meet the technical requirements and thus minimize the risk of accidents!
- Cleaning work with the high-pressure cleaner should be carried out in such a way that the water jet is not aimed directly at bearings, rotating parts, grease nipples, shaft seals, wheel hubs, etc. After each cleaning with the high-pressure cleaner, the lubrication points must be regreased. Failure to do so will void the warranty!
- Check nuts and bolts for tightness for the first time after 5 hours of operation and then regularly thereafter and tighten if necessary.

- After maintenance, install protective devices and place them in protective position.
- When carrying out maintenance, cleaning and repair work on the raised device, always ensure that it is secured using suitable support elements.
- When working on the electrical system, the earth strap must be removed from the battery.
- When carrying out welding work on the machine, the battery must be disconnected.
- Repair work such as welding, drilling, grinding, etc. must not be carried out on load-bearing safety components.
- Before carrying out repair work, ensure that the hydraulic system is depressurized, as fluids under pressure can penetrate the skin and cause serious injuries! Therefore, seek medical attention immediately - risk of infection!
- Check hydraulic connections for the first time after 5 hours of operation and tighten if necessary!



Simply following suit will not work!

If a hydraulic fitting is leaking, first loosen it, then move the hose or fitting. The fitting can then be tightened again.

- Check hydraulic hose lines at regular intervals for damage and aging and replace if necessary.
- Hydraulic hose lines must be completely replaced at least every 6 years. The date of manufacture is stamped on the hose line.
- Recycle used oils and fats. Immediately remove any oil that flows past using an oil binding agent. Remove any excess fat.

A NOTICE



Incorrect amounts of oil or grease, as well as contamination, can cause damage to gears and components!

Damage to components can shorten the service life of components.

- The amount of oil and the position of the locking elements of gearboxes depend on their design and installation position
- After removing the oil level screw, the oil level may be a maximum of 3 to 5 mm below the prescribed filling level
- Close the gearbox immediately after checking the oil level or changing the oil
- Only flush components (gears, bearings, etc.) using cleaning agents after consulting the manufacturer.
- When regreasing lubrication points via grease nipples, the lubricant must not be pressed in with high pressure or hard lubrication shocks. The maximum permissible lubrication pressure is 15 bar.

2.11 Safety instructions for disassembly and disposal

WARNING



Risk of injury if disassembled improperly!

Stored residual energy, sharp-edged components, points and corners on or in the machine or on the required tools can cause injuries.

- Ensure that there is sufficient space before starting work.
 - Handle open, sharp-edged components with care.
 - Make sure the workplace is tidy and clean! Components and tools that are loosely stacked or lying around are sources of accidents.
 - Dismantle components properly. Take into account the high weight of some components. Use lifting equipment if necessary.
 - Secure components so that they do not fall or tip over.
-

3 functional description

3.1 Overview

The hydrostatic single-axle carrier vehicle is used for the following tasks.

- Mowing and mulching
- Snow clearing
- Spreading
- Remove weeds
- sweeping
- Remove leaves
- Artificial turf care

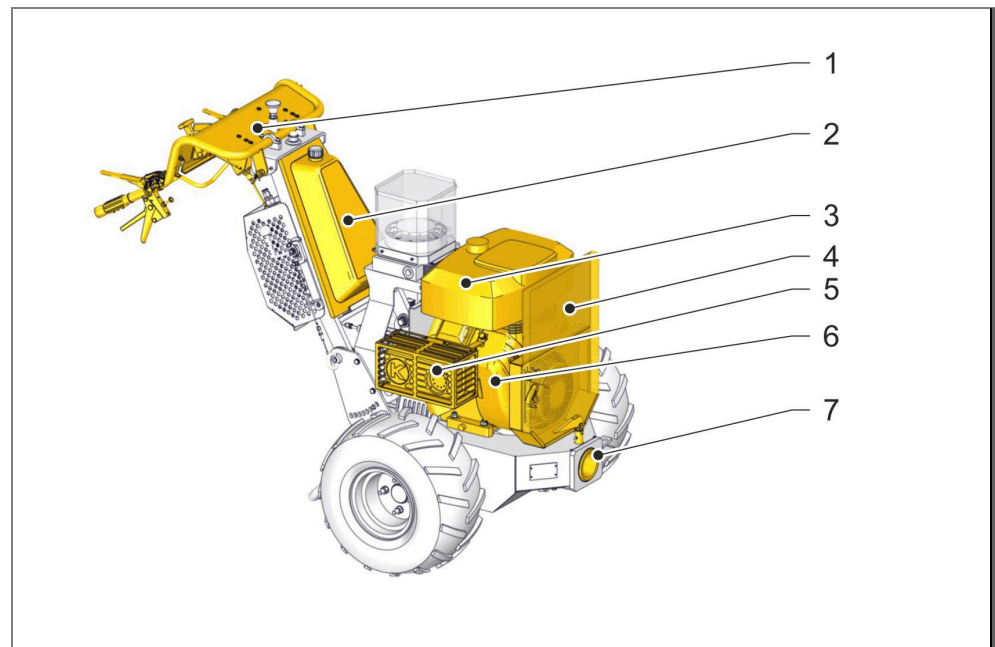


Fig. 3: Overview 1

- | | |
|---|----------------------------|
| 1 | control unit |
| 2 | oil tank |
| 3 | gas tank |
| 4 | engine air filter |
| 5 | exhaust system |
| 6 | engine with electric start |
| 7 | interchangeable holder |

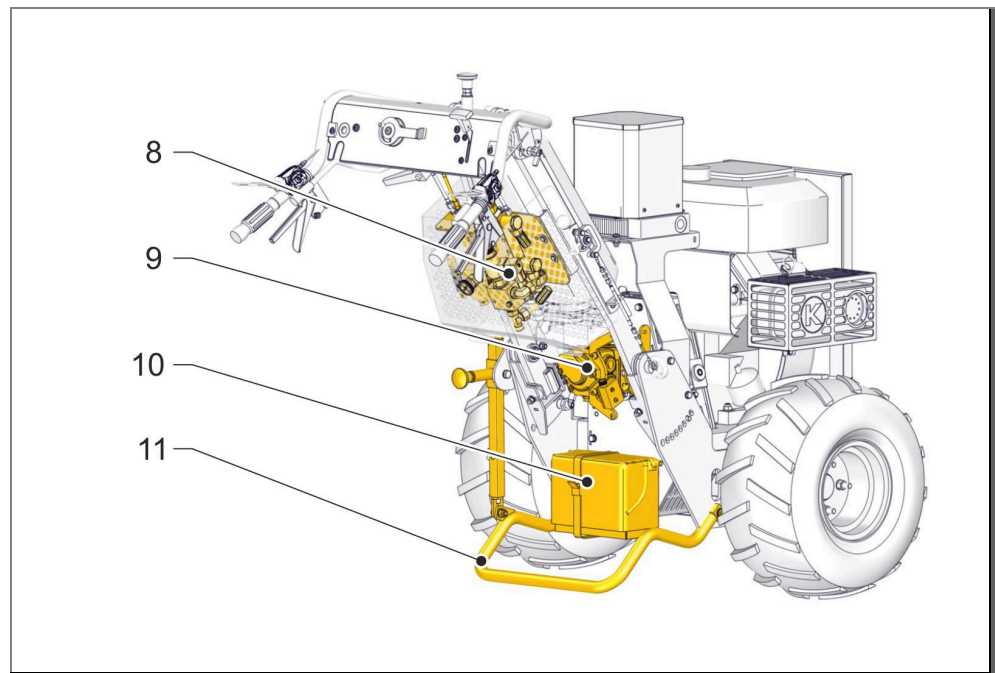


Fig. 4: Overview 2

- 8 hydraulic valves
- 9 hydraulic pump
- 10 battery
- 11 stand

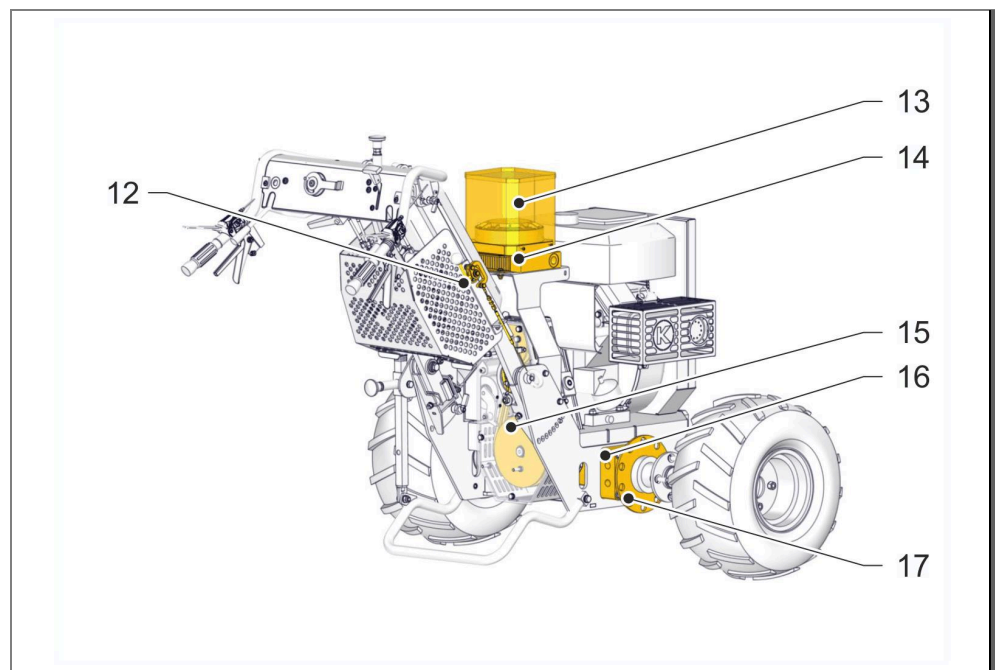


Fig. 5: Overview 3 12 Operation -
Parking brake

- 13 air filter - oil cooler
- 14 oil cooler
- 15 auxiliary drive (PTO)
- 16 hydraulic - wheel hub motor

The USB Alpin II is operated via the control panel (1).

The central unit is the engine with electric starter (6). This is used to drive the single-axle carrier vehicle as well as to drive the attachments.

The single-axle carrier vehicle is driven by two hydraulic wheel hub motors (16). The wheels can be driven at different speeds and in different directions of rotation. This enables very good maneuverability. The oil pressure is generated by a built-in hydraulic pump (9). The wheels can be blocked by parking brakes (17) using the associated controls (12). The auxiliary drive (15) with interchangeable holder (7) can be switched on by the operator to operate the attachments (see chapter 6.3 Driving off / switching on the auxiliary drive on page 36). The UBS Alpin II is equipped with an oil cooler (14) to ensure a constant oil temperature.

4 transport, packaging and storage



Assembly, installation and initial commissioning may only be carried out by the dealer's employees or by persons authorized by the dealer.

However, it may happen that during installation and subsequent use, operators or maintenance personnel of the operator are entrusted with handling packages. The following instructions must be observed.

4.1 Safety instructions



Please be sure to observe all safety instructions listed in the Safety chapter!

(See Chapter 2 Safety on page 7)

4.2 Transport inspection

Upon receipt, check the delivery immediately for completeness and transport damage.

If transport damage is visible, proceed as follows:

- Do not accept delivery or accept it only with reservations.
- Note the extent of the damage on the transport documents or on the carrier's delivery note.
- Initiate a complaint.



Report any defect as soon as it is discovered. Claims for damages can only be made within the applicable complaint periods.

4.3 Packaging

handling of packaging materials

The packaging material must be disposed of in accordance with the applicable legal provisions and local regulations.

A NOTICE**Danger to the environment due to incorrect disposal!**

Packaging materials are valuable raw materials and can in many cases be reused or sensibly processed and recycled. Incorrect disposal of packaging materials can pose a risk to the environment.

- Dispose of packaging materials in an environmentally friendly manner.
- Observe the local disposal regulations. If necessary, commission a specialist company to dispose of the waste.

4.4 Transport of the machine

The machine is usually transported together with the required carrier vehicle.

A NOTICE**Property damage due to improper handling!**

Improper handling of the machine can cause damage.

- Do not tilt the machine or rotate it around the horizontal axes.
- Vehicles, equipment and lifting gear must be suitable for the weight of the transport units.
- The driver must be authorized to drive the vehicle.

protective equipment

- protective work clothing
- protective gloves
- safety shoes

The following points must be observed when transporting the machine / carrier vehicle:

- Loading, unloading and transport is carried out using suitable transport vehicles and trailers approved for public transport.
- The transport vehicles must be suitable for the transport weight and dimensions of the machine/carrier vehicle combination to be transported.
- The machine and carrier vehicle must be secured to the marked anchor points (see overview on page 24).
- Sufficiently dimensioned lifting/lashing devices must be used.
- The lifting gear / lashing equipment must not show any damage.
- For transport, only vehicles and equipment or slings/lashing devices that are functional, safe and appropriate for the load may be used.
- Do not stack the individual transport units on top of each other!

⚠ DANGER**Risk of death or injury due to incorrect transport of the machine!**

Incorrect transport of the machine may result in death or injury, as well as property damage to the machine or system!

- When using cranes and/or forklifts, the user/driver must be authorized to operate them.
- The machine may only be secured to the lifting eyes/lashing points provided for transport.
- The machine must not tip over or rotate on its own axis when being lifted. Pay attention to the center of gravity!
- Pay attention to the towing capacity of the towing vehicle and the permissible total weight of the trailer.
- The ramps must be secured against slipping / rolling away.
- The loading ramps must have sufficient load-bearing capacity.

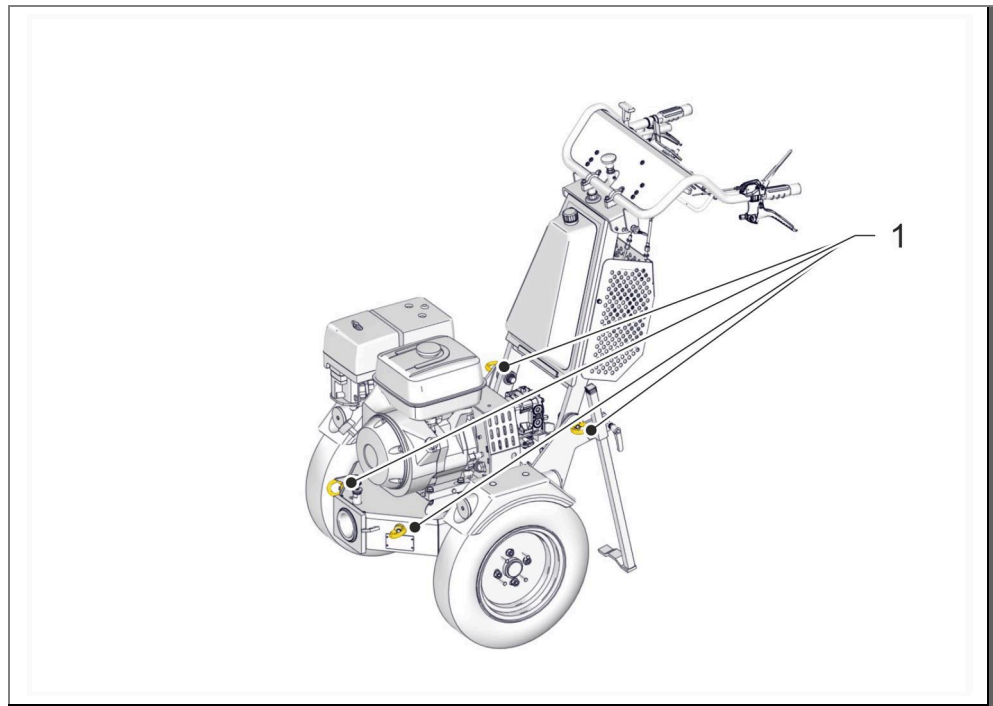


Fig. 6: Anchor eyes / lashing points of the machine

1 Anchor eyes / lashing points

To transport and lash the machine, only the existing lifting eyes/lashing points (1) on the two-axle tractor and the existing attachments may be used. Only use lifting gear that is functional, safe and suitable for the load.

The following steps must be observed when transporting the machine:

- 1st Without an attachment, the parking support must be extended.
- 2nd If equipped, apply the parking brake so that the drive wheels are blocked.

- 3. Stop the engine and close the fuel tap.
- 4th Fasten the lifting gear to the lifting eyes/lashing points (1) of the two-axle tractor and the attachments.
- 5th Pre-tension the lifting gear and ensure that it fits correctly and the load is distributed correctly.
- 6th Secure the machine to the lifting eyes/lashing points (1).
- 7th Before unloading the machine, make sure that there are no obstacles on the ground directly in front of the loading ramps, otherwise there is a risk of collision. When unloading several machines, they must be driven far enough out of the loading area.

5 assembly/installation, installation, initial commissioning

5.1 Safety instructions



Please be sure to observe all safety instructions listed in the Safety chapter!

(See Chapter 2 Safety on page 7)

5.2 Installing the attachment

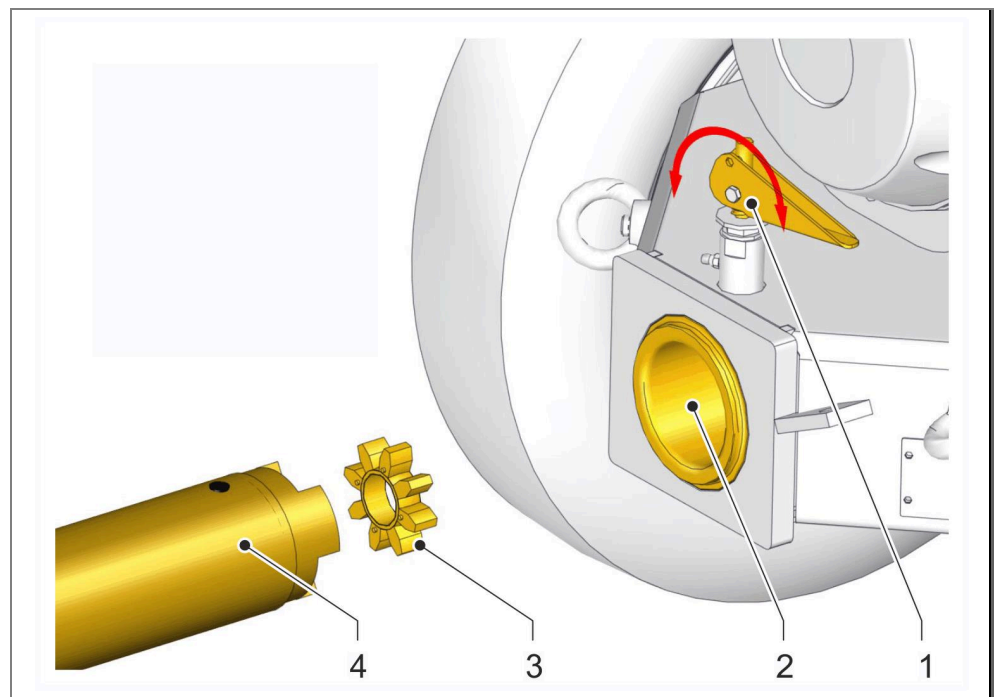


Fig. 7: Mounting attachment

- 1 locking lever
- 2 wear bushing
- 3 clutch driver
- 4 coupling of the attachment

To install the attachments, follow these steps:

- To install an attachment, the attachment mount and the mounting tube on the drive unit must be free of dirt and well greased (see chapter 7.3 Maintenance work on page 52).
- The coupling of the attachment (4) and the wear bushing (2) of the drive unit must be at the same height to enable them to be pushed together. For this purpose, some attachments have parking supports on which the appropriate height can be set.

- When assembling, make sure that the clutch driver (3) is located in one of the two clutch halves.
- Pull up the locking lever (1) and fold the lever upwards.
- If the attachment holder cannot be pushed completely into the wear bushing (2), then the teeth of the two coupling halves may be against each other. By switching on the auxiliary drive and slowly pulling on the starter rope of the engine, the drive shaft continues to rotate and allows it to be pushed in further.

⚠ DANGER



Danger of death or injury due to unsecured attachments!

Unsecured attachments pose a risk to life or injury, as well as a risk of material damage to the machine or system!

- Fold the locking lever (1) back down and check that the locking pin is fully engaged. An incorrectly engaged locking bolt can result in the loss of the attachment during use.

5.3 Installing the grid wheels (option)

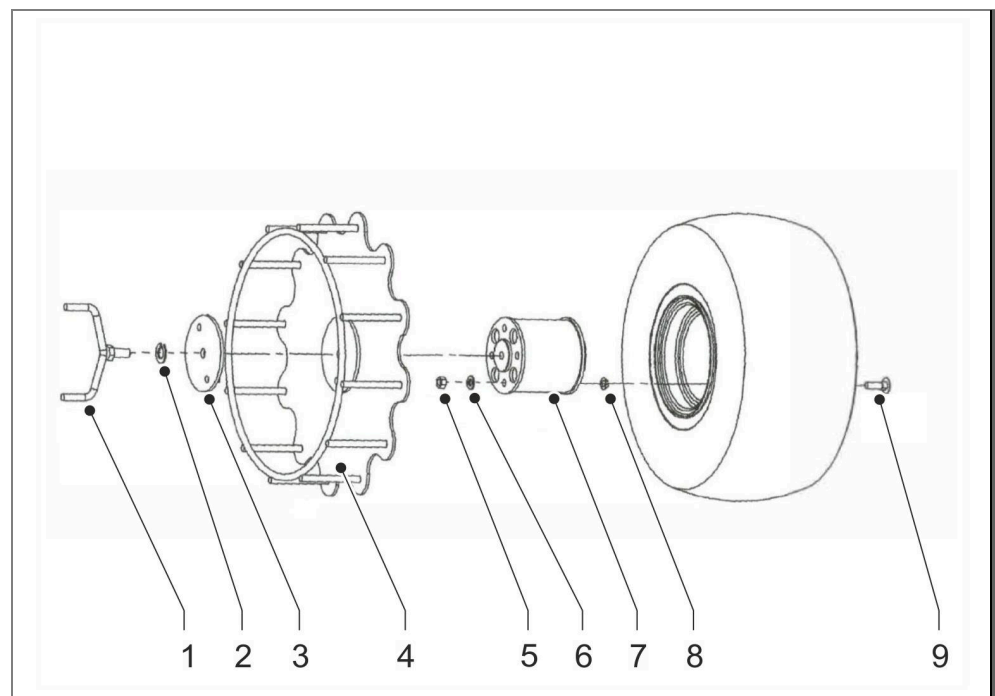


Fig. 8: Installation of grid wheels

- | | |
|---|-------------|
| 1 | wing screw |
| 2 | spring ring |
| 3 | drive plate |
| 4 | grid wheel |

- 5 hexagon nut
- 6 washer
- 7 mounting hubs
- 8 lock nut
- 9 wheel bolts M12 x 50

To mount the lattice wheel set, the mounting hubs (7) must be mounted on both sides of the self-propelled implement

To assemble the lattice wheel set, follow these steps:

- Raise the rear part of the self-propelled implement using appropriate tools until the drive wheels are relieved of load and can move freely. The raised machine must be secured with a hard base - e.g. squared timber - to prevent it from falling accidentally.
- Loosen the wheel nuts on both sides, remove the drive wheels and remove the existing wheel bolts from the wheel hubs. These are replaced with the supplied M12 x 50 wheel bolts (9).
- First put the drive wheel and then the supplied mounting hub (7) of the grid wheel onto the existing wheel hub. The Limes rings (conical washers) must be inserted between the drive wheel and the mounting hub so that the drive wheel is firmly centered on the wheel hub. The drive hub and the mounting wheel are screwed on tightly using the supplied lock nuts (8). The lock nut is inserted into the 19 mm nut and guided through the mounting hub to the wheel bolt using a long extension.
- The grid wheels (4) are mounted on soft ground immediately before use. Since the grid wheels (4) are larger in diameter than the drive wheels, the machine or the drive wheels must stand on a firm base, e.g. a block of wood.
- The grid wheel (4) is placed on the hub and fixed by the drive plate (3).
- Finally, the grid wheel and the drive plate are secured using the wing screw (1). To prevent the wing screw from coming loose accidentally, there must be a spring washer (2) in front of the wing screw.

6 service

6.1 Safety instructions



Please be sure to observe all safety instructions listed in the Safety chapter!

(See Chapter 2 Safety on page 7)

6.2 Starting the engine

DANGER



Danger to life or injury due to escaping exhaust gases in confined spaces, as well as due to movements during and after the starting process!

There is a risk of death or injury due to escaping exhaust gases in confined spaces and due to movements during and after the starting process!

- The engine must not be operated in confined spaces
- Do not stand in front of the two-wheel tractor or the attachment to start the engine
- Do not use starting fluids when using electrical jump starters (jumper cables)
- Always ensure adequate ventilation

E-Start

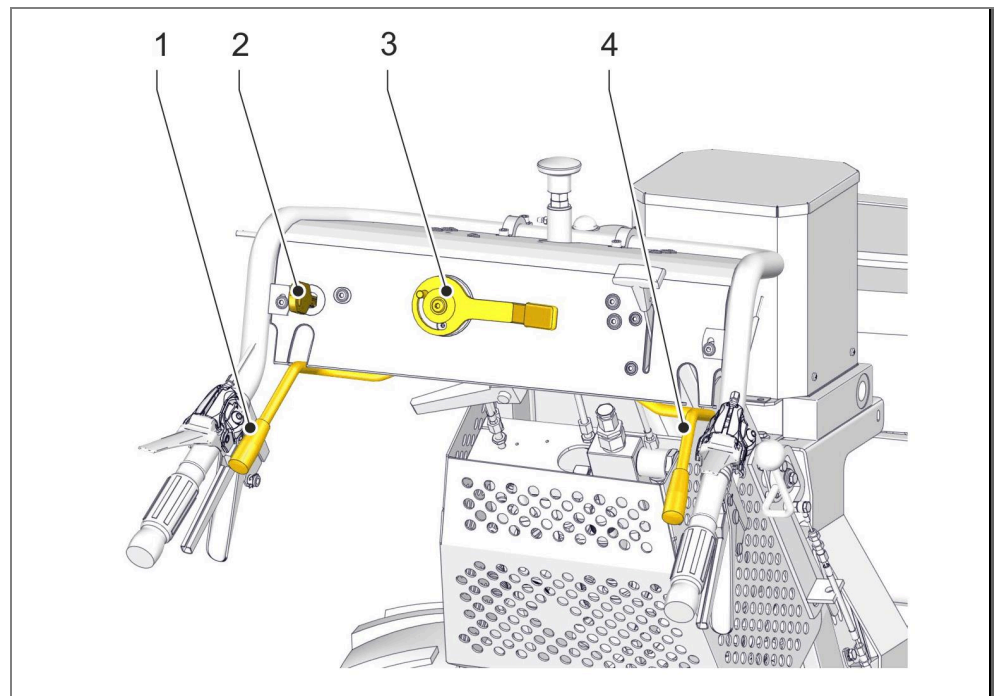


Fig. 9: Control unit

- 1 drive lever, left
- 2 ignition key
- 3 auxiliary drive
- 4 drive lever, right

The engine can also be started without following the process described below. The manufacturer specifies that the following procedure must be followed. The procedure described is essential to driving off.

To start the engine, follow these steps:

- The drive lever (1, 3) must be in a horizontal position.
- The auxiliary drive lever (2) must be in the "Off" position.
- Turn the ignition key (2) and hold it in the end position until the engine has started.

hand start

If the electric starter fails, the engine can be started using the manual starter (5).

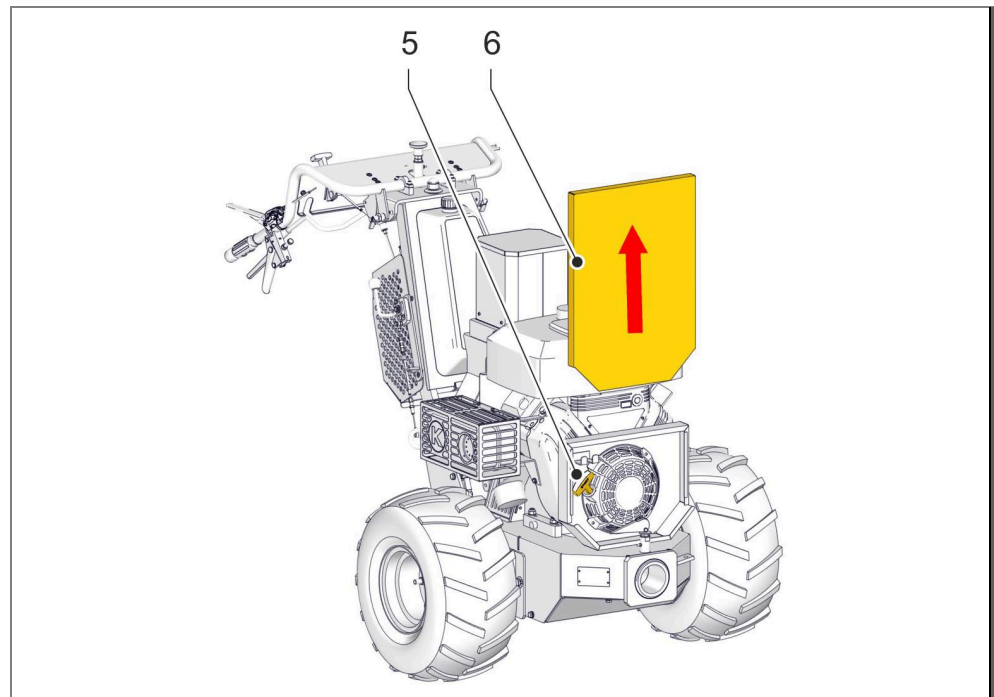


Fig. 10: Single-axle carrier vehicle front view

- 5 hand starter
- 6 air filter

To start the engine, follow these steps:

- The drive lever (1, 3) must be in a horizontal position.

- The auxiliary drive lever (2) must be in the "Off" position.
- Turn the ignition key (2) to the "On" position.
- Pull the hand starter (5) slowly until resistance is felt and then pull it through with as long a stroke as possible.

6.3 Starting off / Switching on the auxiliary drive

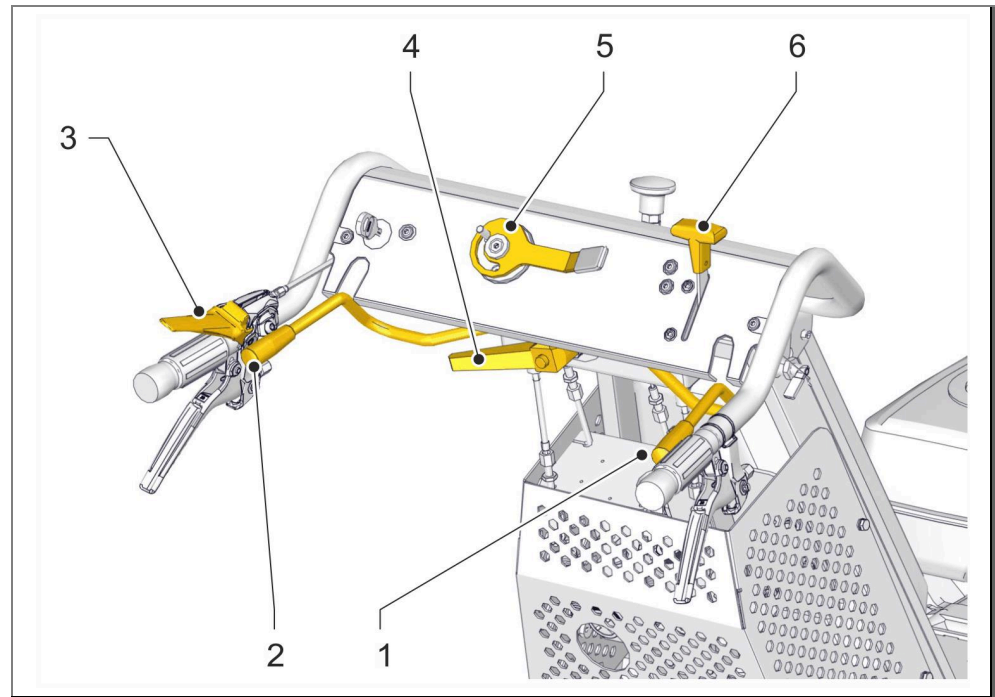


Fig. 11: Control unit

- | | |
|---|--------------------|
| 1 | drive lever, right |
| 2 | drive lever, left |
| 3 | dead man's lever |
| 4 | adjustment lever |
| 5 | auxiliary drive |
| 6 | throttle |



Before you set off, please follow these steps!

- The driving lever (1, 2) must be in a horizontal position.
- The auxiliary drive lever (5) must be in the "Off" position.

- Press the dead man's lever (3) down.

If even one of the above conditions is not met, it is NOT possible to start driving / switch on the auxiliary drive despite operating the dead man's lever (3).

For the first ride, choose a clear and flat area.

- Operate the throttle lever (6) approximately 1/3.
- Press down the dead man's lever (3) and hold it down.
- Make sure that no one is in front of or behind the machine!
- There is a driving lever on both sides of the handlebar (1 and 2). The driving lever is mounted on a central pivot point. When one driving lever is operated, the opposite driving lever performs an opposite movement, so that the driving lever functions like a seesaw.

- To drive forward, the right-hand drive lever (1) is pushed down. The further the drive lever is pushed down, the faster the machine travels. To reduce the speed or to stop the machine, the drive lever (2) that has been swung up is pushed down again.

- If the individual drive levers (1 and 2) are at the same height or in a horizontal position to each other, the machine is stationary.
- To reverse, the left drive lever (2) is pushed down with the left thumb. The further the drive lever is pushed down, the faster the machine travels. To reduce the speed or to stop the machine, the upwardly swung drive lever (1) is pushed down again with the right thumb.

- To select the direction of travel and the appropriate speed, you no longer have to take your hands away from the handles!
- The force that must be applied with the thumb to operate the drive lever can be adjusted to the operating conditions. For light maintenance work, the braking resistance for the self-holding of the drive lever can be lower than, for example, when mowing on a slope. If the friction resistance is too small, the drive lever automatically retracts towards the neutral position. The adjustment lever (4) for setting the correct braking resistance is located in the middle and below the control console.

- The throttle lever (6) regulates the engine speed and therefore the driving speed. Always drive at the lowest necessary speed. This protects materials and the environment.
- The attachment is switched "on" or "off" using the lever (5).
- The attachment may only be switched on in a clear area or on an area that has already been worked!
- It is not permitted to switch on the attachment outside the area of use!

- Never operate the attachment when there are children or animals in the work area.
- If, when switching on the attachment, you notice that the tool does not reach speed and you can hear a V-belt slipping, then the attachment must be switched off immediately. If the tool is engaged, then the initial torque is too high. If possible, switch on the machine without a load.

If necessary, check the tension of the V-belts (see chapter 7.4 Checking the auxiliary drive belt tension on page 56).

6.4 Steering

⚠ WARNING



Risk of injury / risk of environmental damage due to sudden dangerous situations!

Sudden dangerous situations pose a risk of injury as well as environmental and material damage (to the machine or system)!

- If danger suddenly occurs, immediately activate the dead man's lever
The drive connection to the attachment is disconnected and the wheels are braked.

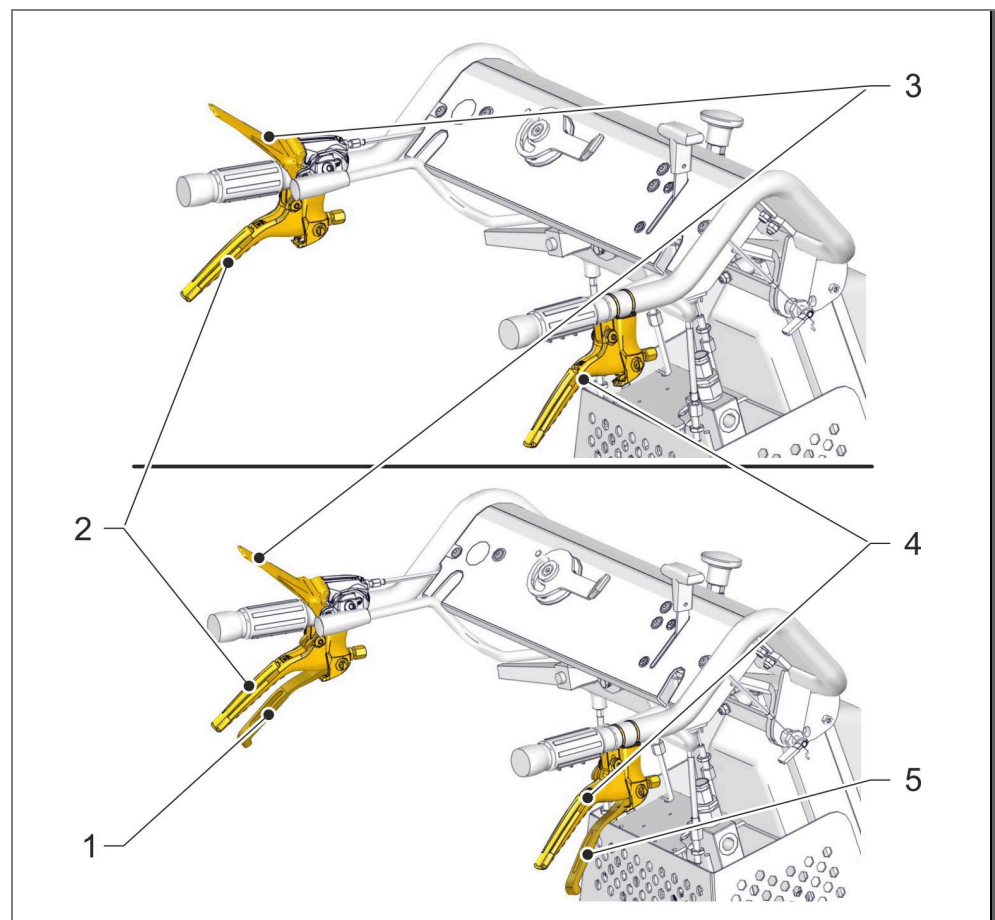


Fig. 12: Steering with single lever and optional double lever

- | | |
|---|-----------------------------|
| 1 | Second steering lever left |
| 2 | Steering lever left |
| 3 | dead man's lever |
| 4 | steering lever right |
| 5 | Second steering lever right |

The steering is constructed as follows:

- The implement is driven by two wheel motors which are controlled separately.
- The individual wheel drive allows the wheels to rotate at different speeds and in different directions. This makes it possible to take very tight turns and, if necessary, to stop the machine quickly or drive backwards.
- As can be seen in the illustration, there is a steering lever (2 and 4) on each handle on the control console. In the case of the version with double levers, the optionally available second steering levers (1 and 5) are arranged.
- If you want to turn left, you do this by operating the left steering lever (2) on the left handle. The harder you pull the steering lever, the smaller the turning circle becomes until the left wheel finally blocks. The right wheel is not affected by this steering maneuver and maintains its speed. In the case of the optional double levers, the left wheel can be moved backwards if necessary by switching from the first steering lever to the second steering lever (1), which can reduce the turning circle so that the single-axle carrier vehicle turns on its own vertical axis. The steering levers have a proportional behavior. This means that the further you pull the steering lever, the faster the wheel in question stops from the driving state and moves into the stop position.
- If the first two steering levers (2 and 4) are operated simultaneously, the drive unit remains stationary, whereas if the second steering levers (1 and 5) are operated simultaneously, it moves in the reverse direction.
- The control device with two steering levers on each side also represents a safety device, since a conscious grip on the two steering levers is required to change the direction of rotation of the wheel in question.

6.5 Handlebar active steering (option)

The optional Holm active steering enables simplified handling of the single-axle carrier vehicle.

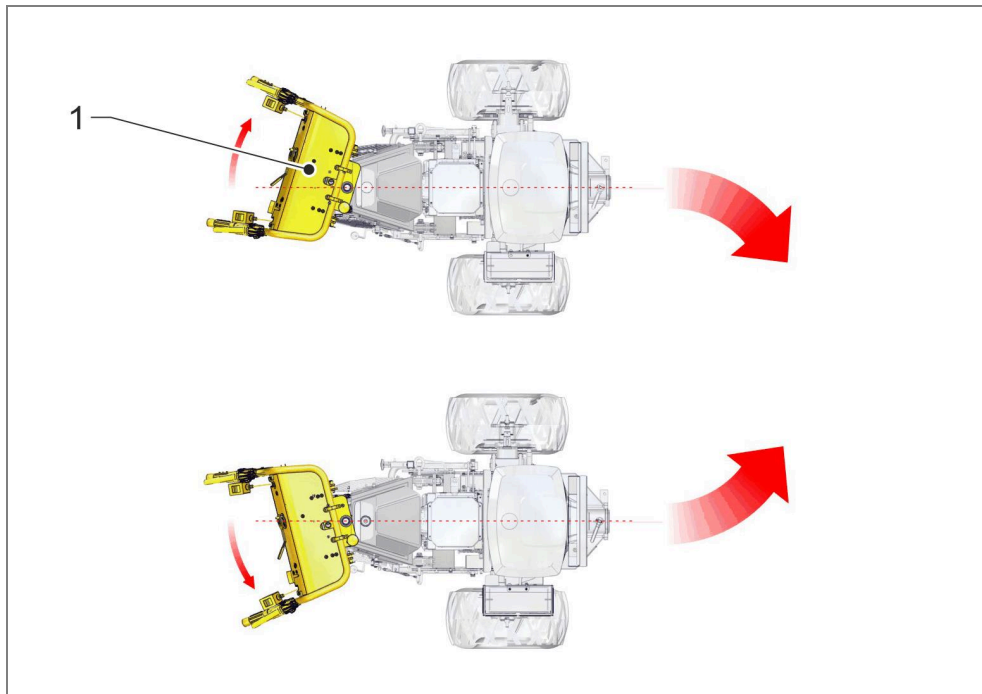


Fig. 13: Bar active steering - function 1

bar

The single-axle carrier vehicle can be steered by turning the bar (1), similar to Fig. 13. The steering angle is proportional to the angle of rotation of the bar (1).



Caution

It is forbidden to use the active steering when reversing!

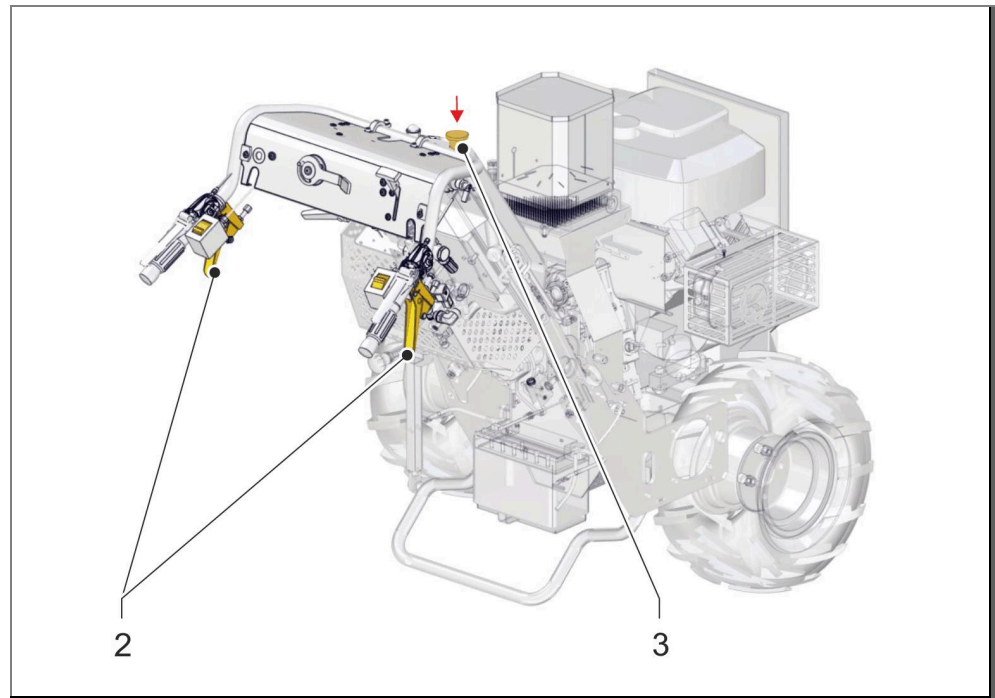


Fig. 14: Holm active steering – preparation for reversing

- 2 steering lever
3 locking mechanism with detent

⚠ DANGER



Danger of death or injury due to uncontrolled steering when reversing!

When reversing with the active steering system activated, the vehicle will swing uncontrollably against the operator's steering angle! There is an acute risk of injury to the operating personnel!

- Lock the handlebar (1) using the locking mechanism (3).
- Use the steering levers (2) to steer the single-axle carrier vehicle when reversing.

6.6 Switching off the combustion engine

DANGER



Danger of death or injury due to escaping exhaust gases in confined spaces!

Escaping exhaust gases in confined spaces pose a risk to life or injury, as well as a risk of material damage to the machine or system!

- The engine must not be operated in confined spaces
- Do not stand in front of the two-wheel tractor or the attachment to start the engine
- Do not use starting fluids when using electrical jump starters (jumper cables)
- Always ensure adequate ventilation

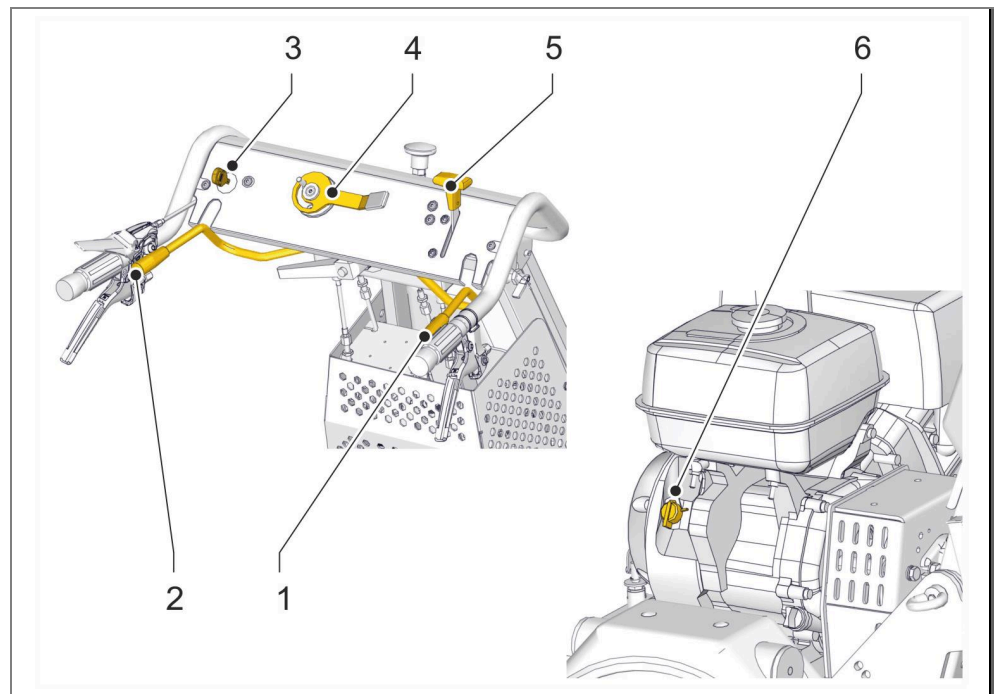


Fig. 15: Control unit

- | | |
|---|-----------------|
| 1 | driving lever |
| 2 | driving lever |
| 3 | ignition key |
| 4 | auxiliary drive |
| 5 | throttle |
| 6 | engine switch |

To stop the engine, follow these steps:

- Before switching off the combustion engine, ensure that the drive levers (1 and 2) are in the horizontal position and the auxiliary drive lever (4) is in the "Off" position.

- Put the throttle grip (5) in the idle position and let the engine idle for about half a minute.
- Switch off the engine using the ignition key (3) or the engine switch (6) located on the combustion engine. To do this, turn the ignition key (3) / engine switch (6) to the "O" position.



Notice

In the optional version with Comfort Drive control unit (see Comfort Drive with one-hand control (option) on page 47) (see Comfort Drive with two-hand control (option) on page 49), a horn signal sounds when the engine is switched off and the ignition is switched on. This horn signal is intended to alert the user that the ignition is still switched on. If the engine is switched off and the ignition is switched on, the starter battery will be discharged within a short time.

- Close the fuel tap
- Secure the two-axle tractor against unauthorized use and, if necessary, remove the ignition key (3).
- When leaving the machine, secure it against rolling away by using wheel chocks or, if necessary, by applying the parking brake.

If the engine is not to be used for a long period of time, do not switch it off using the "engine off" switch. Instead, close the fuel tap and let the engine run until it stops on its own. This will empty the carburettor and prevent any build-up of resin.

Always switch off the ignition when finished!

6.7 Tilting the handlebar

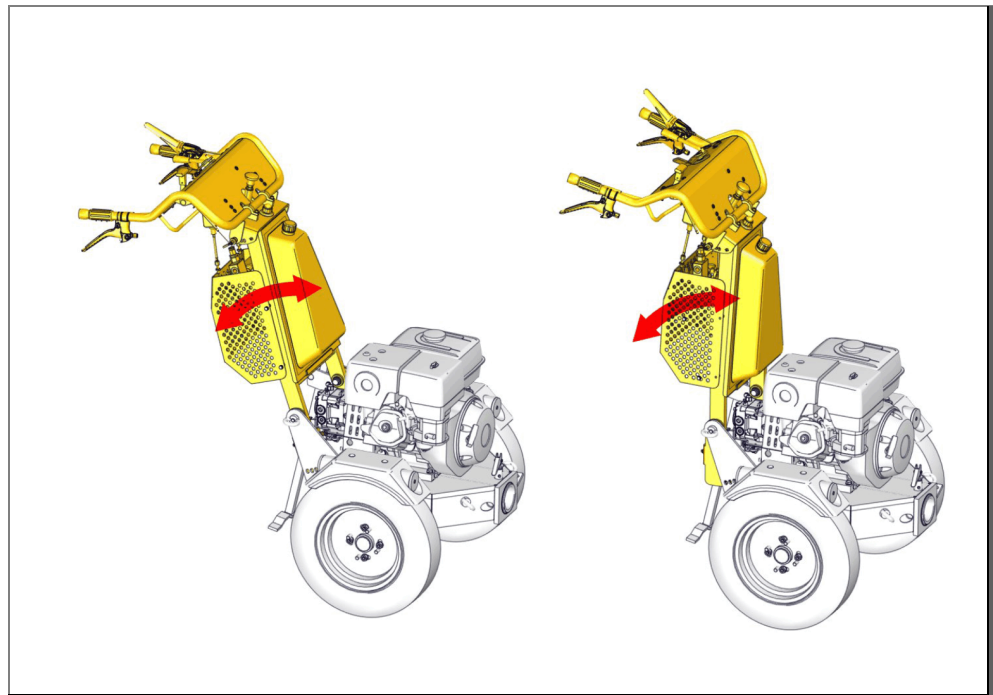


Fig. 16: Guide bar tilted backwards and forwards

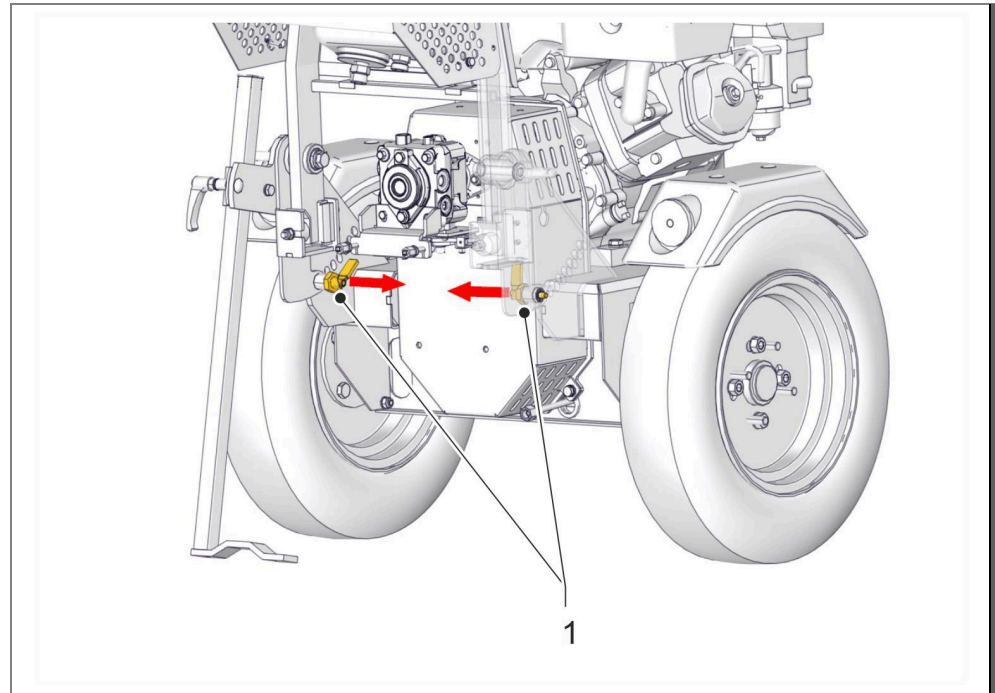


Fig. 17: Locking guide bar 1 locking bolt

The guide bar is adjustable in inclination angle to ensure the operator an ergonomically optimal working height.

Furthermore, the adjustment of the guide bar allows an upright position of the guide bar in order to keep the dimensions small for transport.

To tilt the guide bar, follow these steps: 1. Loosen the locking bolts on both sides at the bottom (1).

2. Adjust the guide bar to the desired angle.

3. Allow the locking pins at the bottom to engage on both sides (1) and move the guide bar slightly forwards and backwards until the locking pin engages.

6.8 Tilting the control console

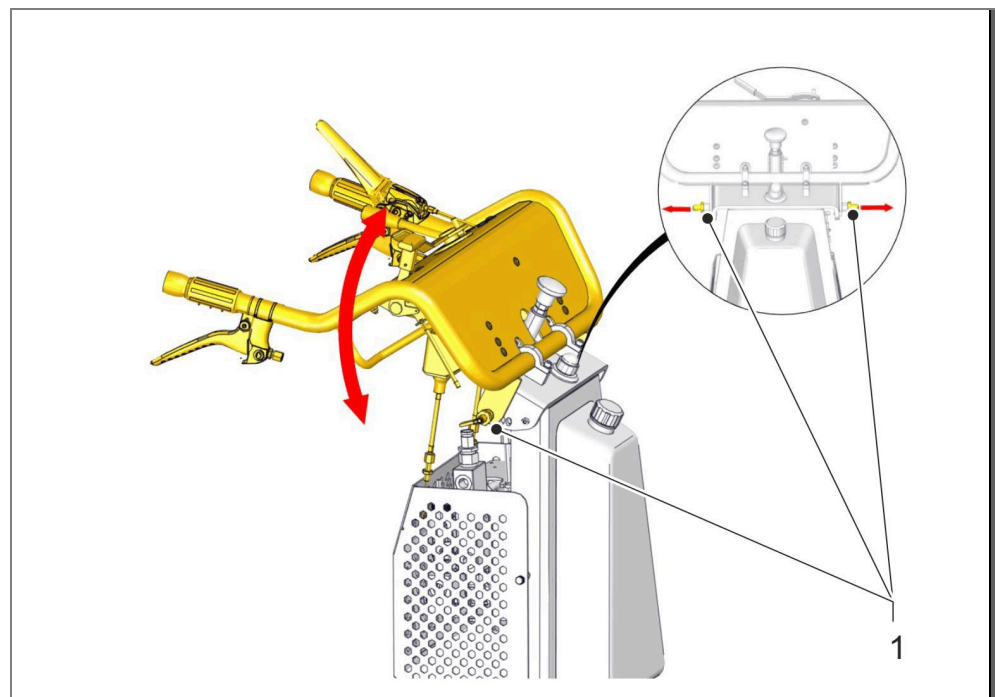


Fig. 18: Tilt control unit 1

locking pin

The angle of the control console can be adjusted to ensure the operator has an ergonomically optimal working height.

To tilt the control unit, follow these steps: 1. Loosen the locking bolts on both sides (1).

2. Adjust the control console to the desired angle.

3. Allow the locking pins to engage on both sides (1) and move the control console up and down a little until the locking pin engages.

6.9 Swivel the control unit sideways

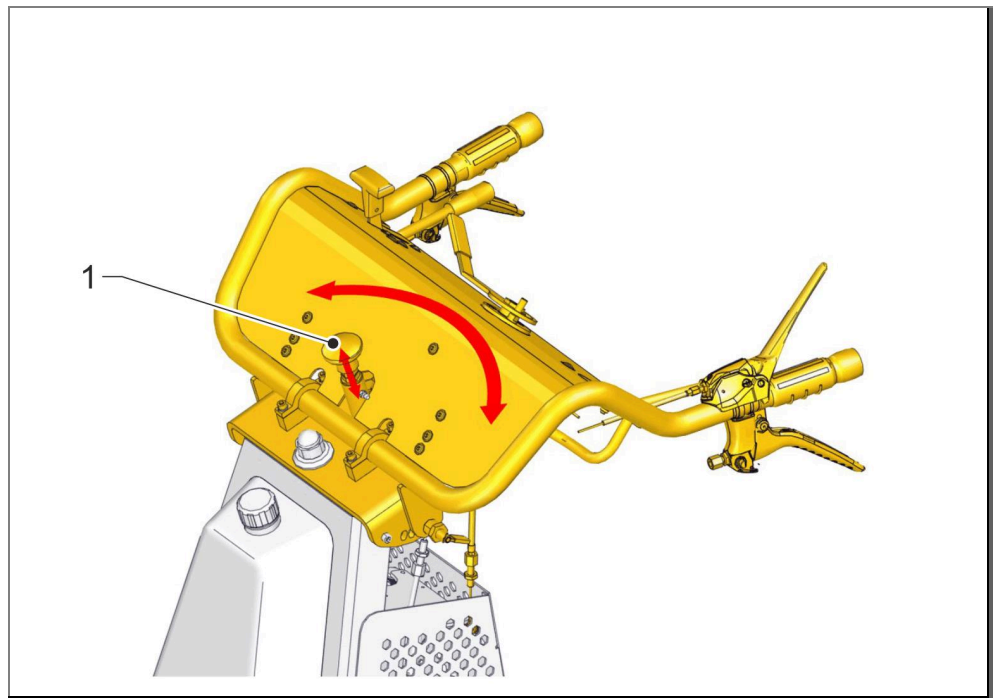


Fig. 19: Swivel the control unit sideways 1
locking pin

In the standard configuration (without boom active steering) the control unit can be swiveled by $\pm 30^\circ$.

- To swivel the control unit, follow these steps:
1. Pull up and hold the locking pin (1).
 2. Swivel the control console to the left or right to the desired position.
 3. Release the locking pin (1) and move the control console slightly to the left and right until the locking pin engages.

6.10 Comfort-Drive with one-hand control (option)

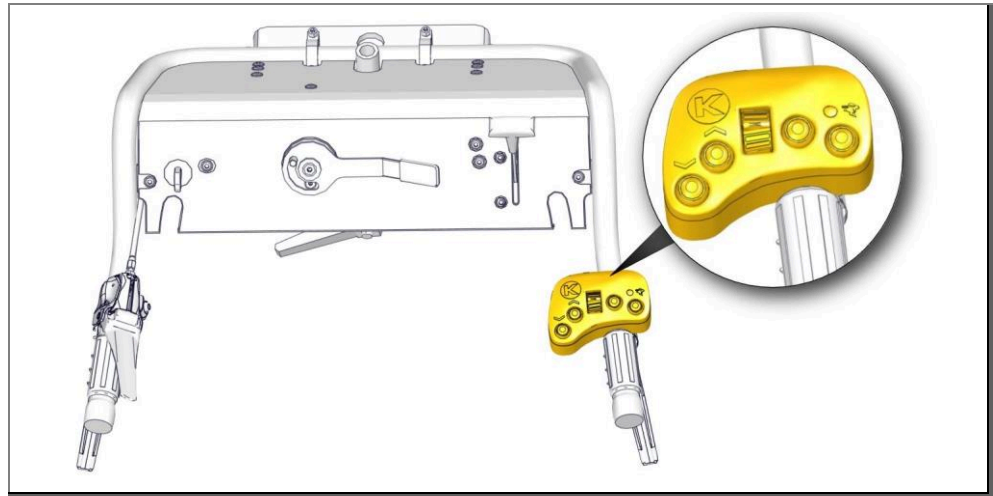


Fig. 20: Control unit with Comfort Drive control unit

The optional Comfort Drive control unit is located on the right-hand handle of the control unit. It enables simplified direction and Speed control of the single-axle carrier vehicle.

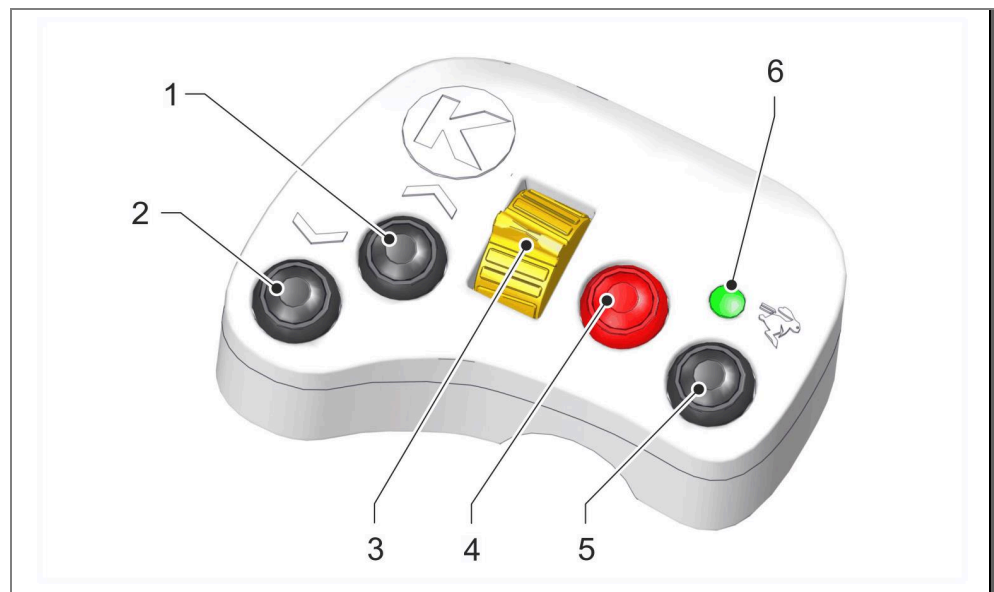


Fig. 21: Control elements of the Comfort Drive control unit

- 1 forward drive switch
- 2 switch reverse
- 3 potentiometer
- 4 Stop switch
- 5 Switch On/Off Speed reduction Green LED light
- 6

The optional Comfort Drive control unit replaces the control using two drive levers and a cable pull.

The Comfort Drive control unit controls the forward and reverse movement of the hydrostatic single-axle carrier vehicle.

The forward and reverse switches (1 and 2) determine the direction of travel.

The potentiometer (3) has eleven notches and controls the speed:

- 0% → lever at the bottom
- 100% → lever at the top

Reversing takes place at a speed that is reduced compared to the set forward speed. The hydrostatic single-axle carrier vehicle is stopped using the stop switch (4). The speed reduction on/off switch (5) can be used to

Speed reduction can be activated, which halves the speed set on the potentiometer (3). Pressing the switch (5) again switches back to the full set speed.



When the ignition is switched on, the green LED light (6) flashes. During this time, an internal control check is carried out. After a short time, the LED light (6) lights up continuously. The check sequence is finished. The engine can be started. If the ignition is switched on and the engine is not running, a buzzing tone sounds.

Starting procedure with Comfort Drive:

1. Turn the ignition key to the first notch (ignition on).
2. Wait until the green LED light in the Comfort Drive control unit lights up constantly after approx. 3 seconds.
3. Start the engine by turning the ignition key to the second notch.

In addition to the signal function during the start-up process, the LED light (6) shows the status of the speed reduction when the engine is running:

- LED light off: speed reduction switched on – half the set speed.
- LED light on: speed reduction is off – full speed according to potentiometer (3).



Control interrupted!

If the connection between the Comfort Drive control unit and the motor is interrupted (e.g. cable breakage), the motor switches off after a time delay.

6.11 Comfort-Drive with two-hand control (option)

forward motion

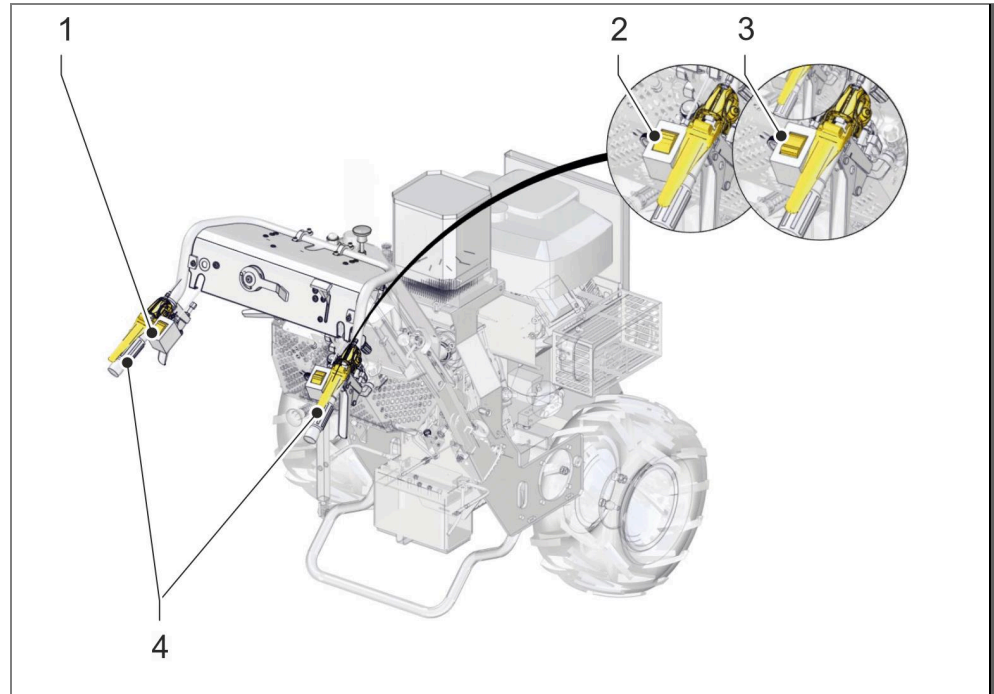


Fig. 22: Active steering – forward travel

- 1 direction switch
- 2 Rotary switch – speed + Rotary
- 3 switch – speed - dead man's
- 4 lever

To move forward, proceed as follows:

1. Start the engine (see Starting the engine on page 34)
2. Set the direction switch (1) to the zero position.
3. Press down the dead man's lever.
4. Turn the direction switch (1) forward. The single-axle carrier vehicle rolls slowly in the direction of travel.
- 5th As shown in Fig. 22, the single-axle carrier vehicle is accelerated when moving forward by moving the rotary switch forwards (2). The single-axle carrier vehicle is decelerated by moving the rotary switch backwards (3). The deceleration or acceleration takes place gradually between 0 - 6 km/h.



Danger!

In case of danger, immediately trigger an emergency stop by releasing the dead man's lever (4). The preset speed will be reset. To restart the machine, repeat steps 2-5.

reversing

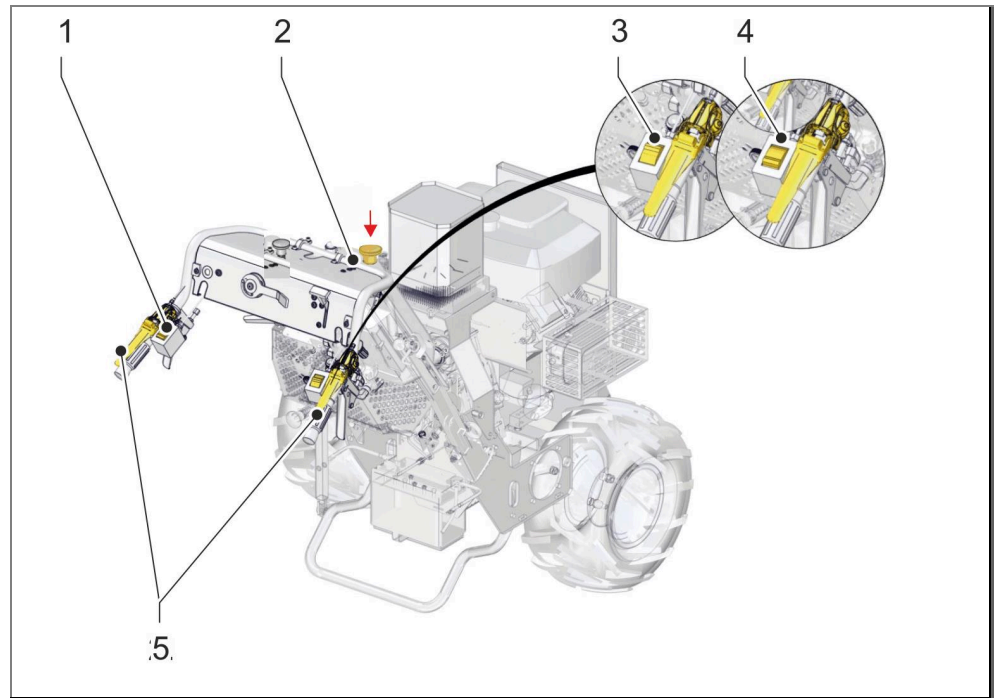


Fig. 23: Active steering – reversing

- 1 direction switch
- 2 Locking with locking function
- 3 Rotary switch – speed - Rotary
- 4 switch – speed + dead man's
- 5 lever

To reverse, proceed as follows:

1. Start the engine (see Starting the engine on page 34)
2. Lock the handrail using the lock (2) (only with handlebar active steering)
3. Set the direction switch (1) to the zero position.
4. Press down the dead man's lever.
5. Turn the direction switch (1) backwards. Single-axle carrier vehicle rolls slowly in the direction of travel.
- 6th As shown in Fig. 23, the single-axle carrier vehicle is accelerated when reversing by moving the rotary switch backwards (3). The single-axle carrier vehicle is decelerated by moving the rotary switch forwards (4). The deceleration or acceleration takes place in steps between 0 - 6 km/h.



Danger!

In case of danger, immediately trigger an emergency stop by releasing the dead man's lever (5). The preset speed will be reset. To restart the machine, repeat steps 3-6.

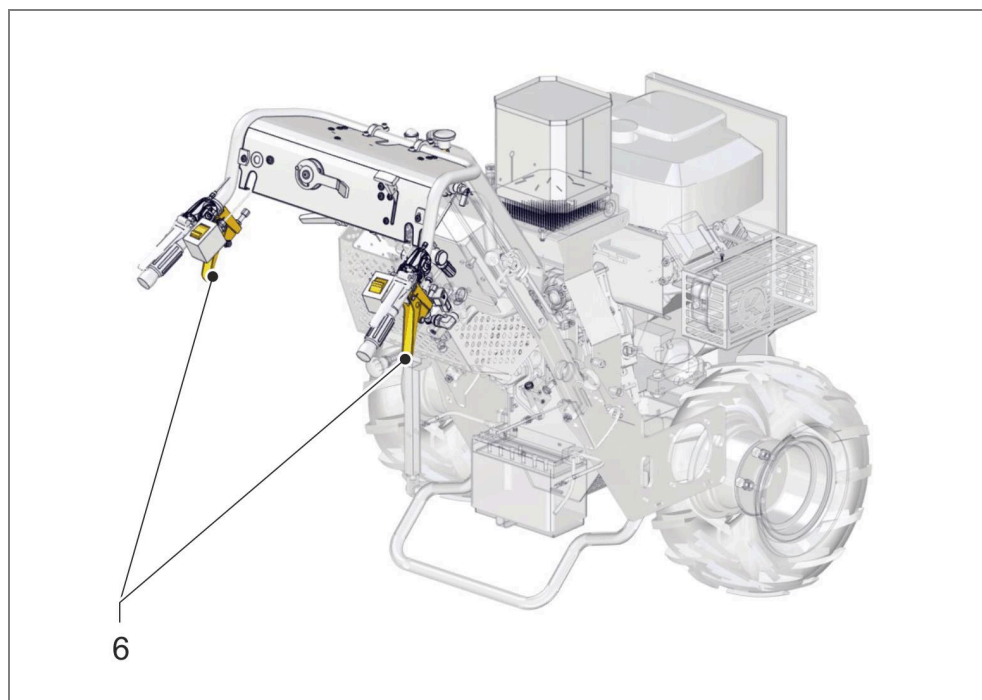


Fig. 24: Active steering - steering lever

6 steering lever

⚠ DANGER**Danger to life or injury due to activated active steering when reversing!**

When reversing with the active steering system activated, the vehicle will swing uncontrollably against the operator's steering angle! There is an acute risk of injury to the operating personnel!

- Lock the handlebar using the locking mechanism (2).
- Use the steering levers (6) to steer the single-axle carrier vehicle when reversing.

7 maintenance

7.1 Safety instructions



Please be sure to observe all safety instructions listed in the Safety chapter!

(See Chapter 2 Safety on page 7)

7.2 Spare parts

Incorrect spare parts

 **DANGER**



Risk of death or injury due to the use of incorrect spare parts!

This symbol warns of an immediate danger to the life and health of people.

The use of incorrect or faulty spare parts poses a risk of death or injury as well as a risk of material damage to the machine or system!

- Use only original spare parts from the manufacturer or spare parts approved by the manufacturer.
- If you have any questions, please contact our customer service / the manufacturer's customer service (see manufacturer's customer service on page 3).

spare parts procurement

Spare and wear parts must be ordered through customer service (see manufacturer's customer service on page 3).

7.3 Maintenance work

7.3.1 Check safety devices for functionality

Staff:

- Operating personnel

Protective equipment:

- Protective work clothing
- Protective gloves

The planning, implementation and documentation of tests must be carried out by the operator in accordance with the applicable regulations and laws.

To ensure safe operation of the machine, the safety devices must be checked:

Separating protective devices (covers)	
interval	When commissioning, when switching on the machine
Scope	visual inspection for integrity
examiner	operating personnel
Measures in case of errors	<ul style="list-style-type: none"> Block off danger area Repair

dead man's lever	
interval	When operating the machine, additionally once a year
Scope	functionality
examiner	operating personnel
Measures in case of errors	<ul style="list-style-type: none"> not put into operation Switch off the engine and secure it against being switched on again. Arrange for maintenance by a trained specialist

7.3.2 Daily inspection

Staff:

- Private and commercial operators

Protective equipment:

- Protective work clothing
- Protective gloves
- Safety glasses

The planning, implementation and documentation of tests must be carried out by the operator in accordance with the applicable regulations and laws.

To ensure safe operation of the machine, the safety devices must be checked:

The following things should be checked on the machine daily:

- Before each use, the safety elements and moving parts must be checked for wear.
 - Check the hydraulic oil level before each use. To do this, unscrew the cap from the tank and visually check whether the oil in the tank slightly covers the horizontally arranged sheet metal.
 - Check the engine oil level before each use.
 - Check the air pre-filter (if equipped) and air filter cartridge for dirt and replace if they are very dirty or damaged.



- Check hydraulic connections and lines for leaks and damage.
- Check the air pressure of the drive wheels.
- Perform a test run before each use. Clean the device after each use. Clean the engine air filter and oil cooler air filter.
- The locking lever for attachments must be securely engaged.

7.3.3 Maintenance after 20 operating hours / longer downtime

DANGER



Danger to life or injury from a machine in operation!

A machine in operation poses a risk to life or injury, as well as a risk of material damage to the machine or system!

- Before carrying out maintenance work, the machine must be disconnected from the power supply and secured against being switched on again.

The planning, implementation and documentation of tests must be carried out taking into account the applicable regulations and laws.

To ensure safe operation of the machine, the safety devices must be checked:

All moving parts of the device must be greased or oiled at intervals of no more than 20 hours of operation, as well as at the beginning and end of the season.

Lubrication points

Staff:

- Private and commercial operators

Protective equipment:

- Protective work clothing
- Protective gloves
- Safety glasses

- At regular intervals and at the beginning and end of the season, the moving parts of the device must be greased or oiled.
- There is a grease nipple underneath the device holder on the base unit; lubricate this regularly.
- Regularly grease the attachment mount or the mount tube of the self-propelled machine.
- Grease or oil Bowden cables as needed
- Change the hydraulic oil and filter after 20 operating hours, then every 100 operating hours. Change the hydraulic oil filter at the same time interval as

Change the oil. (For the type of oil used, see (See Chapter 10 Technical Data on page 68))

- Clean the air pre-filter (if present) after 20 hours of operation at the latest and after a few hours in very dusty conditions
- Replace the air pre-filter (if equipped) and air filter cartridge if they are very dirty or damaged.

7.3.4 Maintenance after 100 operating hours / longer downtime

DANGER



Danger to life or injury from a machine in operation!

A machine in operation poses a risk to life or injury, as well as a risk of material damage to the machine or system!

- Before carrying out maintenance work, the machine must be disconnected from the power supply and secured against being switched on again.

The planning, implementation and documentation of tests must be carried out taking into account the applicable regulations and laws.

To ensure safe operation of the machine, the safety devices must be checked:

All moving parts of the device must be greased or oiled at intervals of no more than 100 operating hours, as well as at the beginning and end of the season.

Lubrication points

Staff:

- Private and commercial operators

Protective equipment:

- Protective work clothing
- Protective gloves
- Safety glasses

- Remove the fan housing after every 100 operating hours or at least once a year - preferably before the season - and clean the cooling fins on the cylinder and cylinder head as well as the baffles, cooling air screen and oil cooler necessary for air circulation.
- Change the hydraulic oil and filter for the first time after 20 operating hours, then every 100 operating hours. Change the hydraulic oil filter at the same time interval as the oil change. (For the type of oil used, see (see Chapter 10 Technical Data on page 68))
- Clean the spark plug of soot deposits using a wire brush and then check the electrode gap. The electrode gap should be approx. 1 mm. Replace the spark plugs after 200 hours of operation.
- Clean the air filter cartridge after 100 hours of operation at the latest and after a few hours in very dusty conditions.

7.4 Check the auxiliary drive belt tension

A NOTICE



Lack of traction to the attachment due to burnt V-belts!

Burnt V-belts can lead to a lack of traction to the attachment.

- Check the V-belt tension.
- Use only original parts.
- If the slipping belt causes squeaking noises, the belt must be replaced with an original belt in a specialist workshop.
- V-belts that have burned must be replaced with new V-belts as they can no longer transmit torque!

In order to prevent slipping and, as a result, burning of the drive belts, the drive belts must be sufficiently tensioned when the auxiliary drive is switched on.

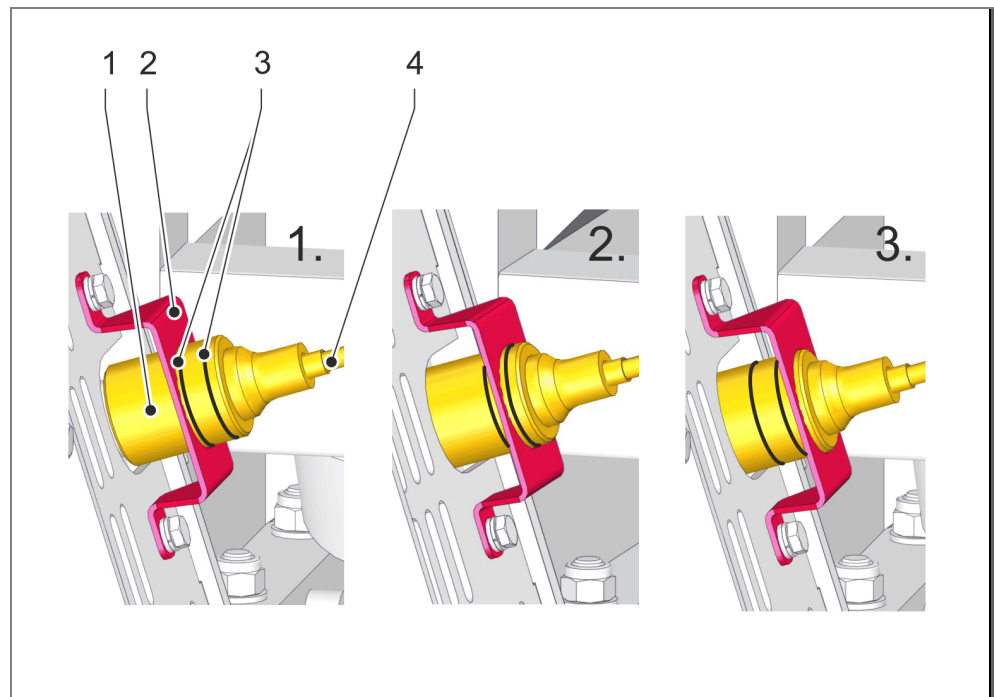


Fig. 25: Indication of belt tension

- | | |
|---|-----------------|
| 1 | socket |
| 2 | indicator plate |
| 3 | grooves |
| 4 | Bowden cable |

The tension of the drive belts can be controlled via the position of the bushing (1) on the right side of the single-axle carrier vehicle.

1. Grooves (3) in the bushing are located above the indicator plate (2) → Increase belt tension

- 2nd Indicator plate (2) is located between the two grooves (3) → belt tension OK
3. Grooves (3) are located below the indicator plate (2) → Reduce belt tension

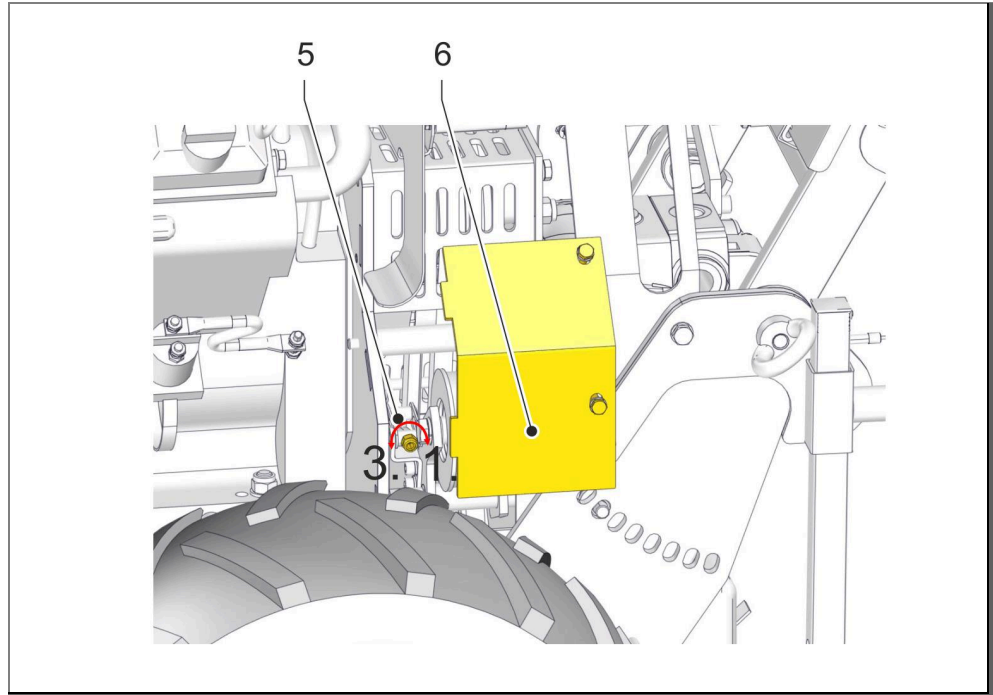


Fig. 26: Tensioning device for the belt drive

- 5 clamping nut
- 6 cover plate (disassembled)

Before readjusting the belt tension, the cover plate (6) must be removed. The belt tension is changed by loosening or tightening a self-locking hexagon nut (5). The self-locking hexagon nut (5) can be reached using a socket wrench.

- 1 Increase belt tension → Turn the hexagon nut clockwise
- 3 Reduce belt tension → Turn the hexagon nut counterclockwise

7.5 Maintenance of the wear bushing

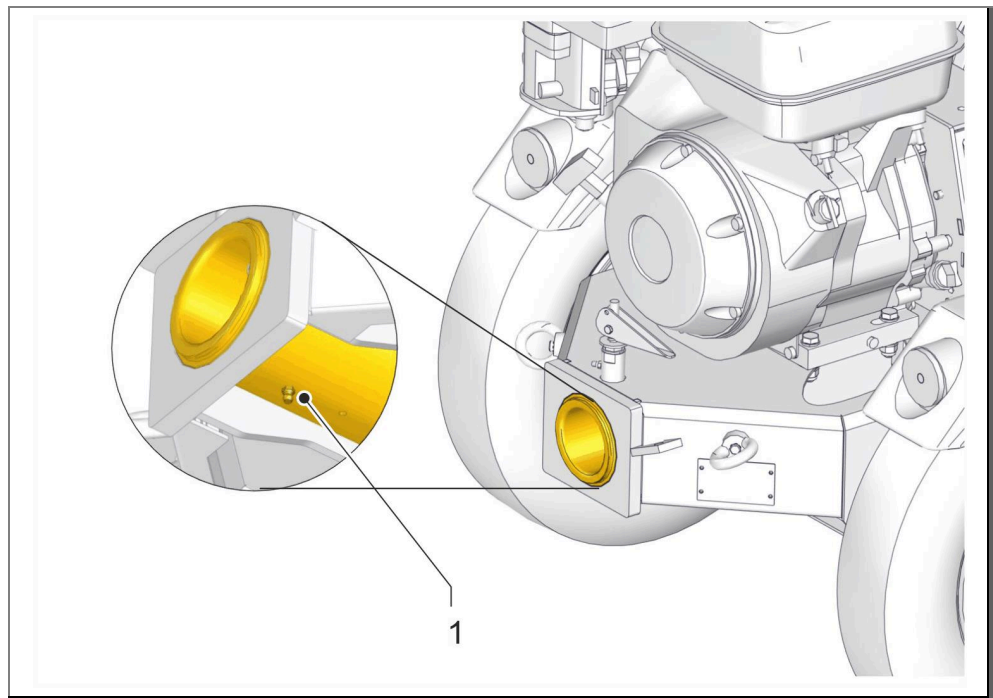


Fig. 27:

1 grease nipple

Wear bushings are installed to protect against wear caused by friction between moving components. The wear bushing installed here is lubricated via a grease nipple (1). The wear bushing is subject to wear due to the ambient conditions.



If play increases, the wear bushing must be replaced by a specialist workshop!

7.6 Cleaning the air filter

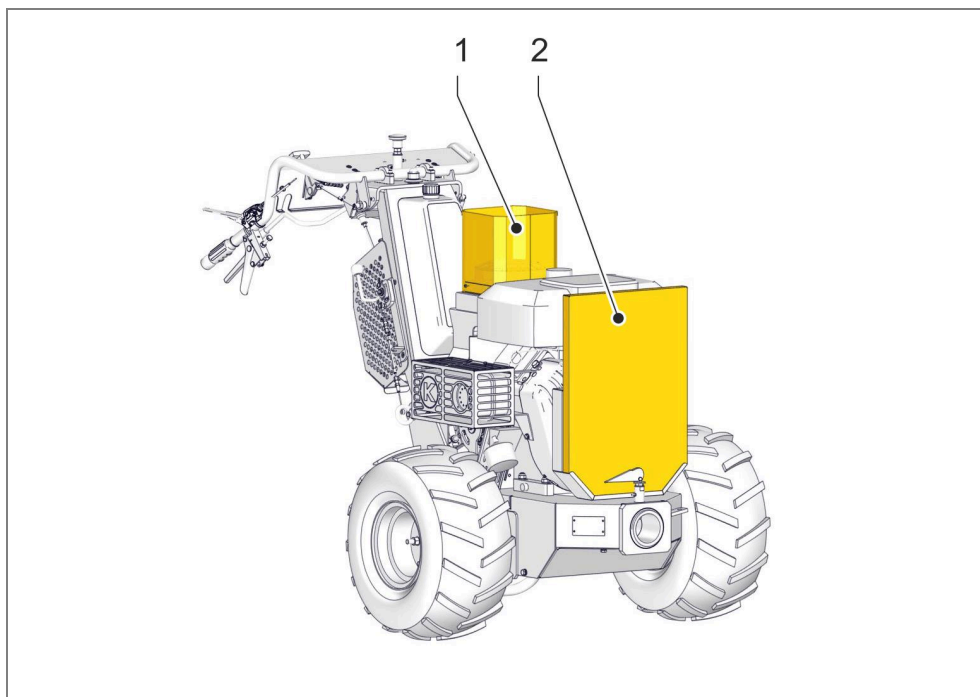


Fig. 28: Air filter

- 1 Oil heat exchanger Air filter
- 2 Engine Air filter

Always ensure that the air filters (1, 2) are free of foreign objects.

7.7 Measures after maintenance

Staff:

- Private and commercial operators

After completing maintenance work and before switching on the machine, perform the following steps:

1. Check that all previously loosened screw connections are tight.
2. Check that all previously removed guards and covers are properly reinstalled.
3. Ensure that all tools, materials and other equipment used have been removed from the work area.
- 4th Clean the work area and remove any spilled substances such as liquids, processing materials or similar.
- 5th Make sure that all safety devices on the machine are working properly.



- 6th Make sure that the locking bolt (1) is securely engaged when the attachment is mounted.

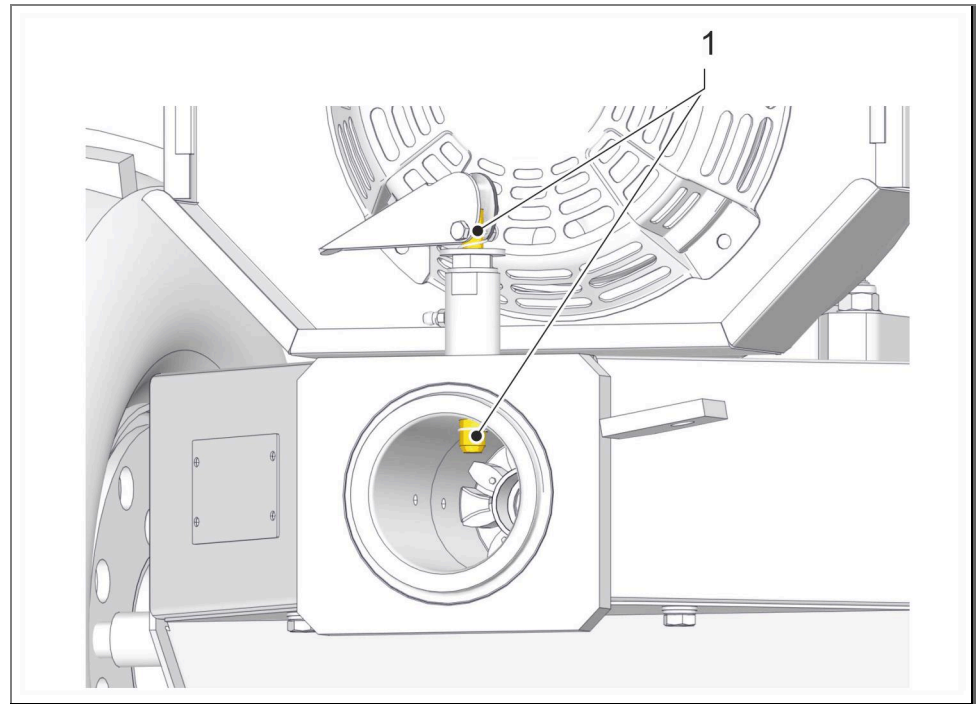


Fig. 29: Locking bolt (view without attachment)

7.8 Storage

If the machine is not used for a long period of time, follow these steps:

1. Perform cleaning
2. Preserve the engine (follow the engine manufacturer's instructions for use!)
 - Drain the fuel completely or fill the fuel tank completely, add fuel stabilizer to the fuel.
 - Let the engine run for about 1 minute
 - Pour a teaspoon (approx. 30 milliliters) of engine oil into the spark plug opening and then slowly crank the engine.
 - Reinstall the spark plug and do not attach the spark plug connector. Pull the starter handle until you feel the compression resistance; this closes the valves.
 - Every 2 - 3 weeks, turn the engine slowly and pull until the compression resistance is noticeable.
3. jack up the drive wheels
 - Use wooden blocks to jack up the machine so that the drive wheels are not on the ground. Make sure it is stable!
- 4th machine under cover

- To avoid corrosion, protect the machine from the weather. Do not store the machine in damp rooms, fertilizer stores or stables.
- 5th Cover the machine with a cloth or something similar.

8 malfunctions / troubleshooting

The following chapter describes possible causes of faults and the work to eliminate them.

If faults occur more frequently, shorten the maintenance intervals according to the actual load.

If a fault cannot be resolved using the following instructions, contact the manufacturer.

8.1 Safety instructions



Please be sure to observe all safety instructions listed in the Safety chapter!

(See Chapter 2 Safety on page 7)

8.2 Cause of the fault and its remedy

This chapter describes in more detail the most important faults that can occur during operation of the self-propelled implement. Faults that require major intervention should always be rectified by your specialist workshop.

8.3 Gasoline engine troubleshooting table

Disturbance	Possible causes	remedy
Gasoline engine does not start	Spark plug connector not plugged in	Insert the spark plug connector
	Choke not switched	Move the choke lever to the choke position
	engine off switch to "O"	Switch the engine off switch to position "I"
	Safety circuit not in start position	Put the safety circuit into the start position
	Fuel tank empty or bad fuel	Fill the fuel tank with fresh fuel
	fuel line clogged	Clean the fuel line
	spark plug defective	Clean, adjust or replace spark plug
	engine too much fuel (flooded)	Dry and clean the spark plug and start at FULL THROTTLE
	engine-off line defective	Check cable and plug connections
	False air due to loose carburetor and intake line	tighten the fastening screws

Disturbance	Possible causes	remedy
Gasoline engine does not start (Comfort Drive option)	Startup process performed too quickly	Wait 3 seconds until the LED light lights up permanently
gasoline engine has misfires	Engine runs in CHOKE range	Place the choke lever in the operating position
	loose ignition cable	Firmly attach the spark plug connector to the ignition cable Tighten the ignition cable fastening. Firmly attach the spark plug connector to the spark plug.
	Fuel line clogged or bad fuel	Change the fuel filter or fill up with fresh fuel
	Ventilation in fuel tank cap clogged	Replacing the fuel tank cap
	Water or dirt in the fuel system	Drain and clean fuel, refuel with fresh fuel
	air filter dirty	Clean or replace air filter
	carburetor adjusted	Adjusting the carburetor
Gasoline engine gets too hot	Too little engine oil	immediately refill engine oil
	cooling air system restricted	Clean the fan grille, clean the internal cooling fins
	air filter dirty	Clean or replace air filter
	carburetor not adjusted correctly	Adjusting the carburetor
Gasoline engine misfires at high speeds	ignition gap too small	Adjusting the Spark Plug
	Idle mixture not set correctly	Adjusting the carburetor
Gasoline engine goes in idling frequently	Ignition gap too large, spark plug defective	Adjust or replace spark plug
	carburetor not adjusted correctly	Adjusting the carburetor
	air filter dirty	Clean or replace air filter
gasoline engine works irregular	Regulator linkage dirty, jammed	Clean the regulator linkage
Gasoline engine goes into stop position not	engine stop line defective	Check cable and plug connections
	missing mass	Check ground contact
gasoline engine too little Performance	air filter dirty	Clean or replace air filter
	Cylinder head gasket loose or gasket damaged	Tighten cylinder head gasket Replace gasket
	too little compression	Have the engine checked

8.4 Troubleshooting table for electric start equipment

Disturbance	Possible causes	remedy
E-starter does not work	battery empty	Charge or replace the battery
	fuse defective	Replace fuse
	Defect in the wiring harness, electric starter	Check wiring harness and electric starter

8.5 Drive fault table

Disturbance	Possible causes	remedy
Machine moves one-sidedly to the left or to the right	Different tire pressures	Check tire pressure and inflate if necessary
	Wheel motors are worn out	Determine the amount of oil leaking from both wheel motors. If the amount deviates too much, replace both wheel motors.
	wheel hub came loose	Check the position of the hydraulic motor and wheel hub and replace if necessary. Tighten the castle nut with an impact wrench and apply Loctite to the thread beforehand
	Valve levers are not at the end stop	Check Bowden cables for smooth movement and re-oil or replace if necessary Check the stroke of the Bowden cables and adjust if necessary
	Clamp the wheel fork(s) from the attachment	Grease all wheel forks so that they rotate smoothly.
Machine loses mileage	V-belt of axial piston pump not sufficiently tensioned (only applies to RoughCutter)	Check the V-belt tension. Replace the V-belt if it is burnt or the V-belt tensioner is at the end stop
	Pump does not build up enough pressure (pump becomes louder or screeches)	Replace pump
	oil temperature too hot	Check the amount of oil in the hydraulic oil tank and refill if necessary
	Bypass valve is not properly closed	Close the bypass valve on the steering valve
	oil filter dirty	Replace the oil filter in the hydraulic oil tank (make sure it is clean)
	oil leak	Check hydraulic connections for leaks

8.6 Drivetrain fault table

Disturbance	Possible causes	remedy
V-belts slip through	V-belt tension too weak due to insufficient preload	Adjusting the stroke of the Bowden cable
	Flanks of the V-belts are hard and cracked	Replace V-belt because it is burned
	attachment is blocked	Check attachment for foreign objects and remove if necessary
	Outer flail blade is jammed between flail shaft and side plate of flail housing (only applies to flail mowers and rough cutters)	Freeing knives from a difficult situation

9 dismantling, disposal

9.1 Safety instructions



Please be sure to observe all safety instructions listed in the Safety chapter!

(See Chapter 2 Safety on page 7)

9.2 Disassembly

Before starting disassembly:

- Switch off the machine and secure it against being switched on again.
- Physically disconnect the entire power supply from the machine and discharge any stored residual energy.
- Remove operating and auxiliary materials as well as remaining processing materials and dispose of them in an environmentally friendly manner.

Then clean the assemblies and components properly and disassemble them in accordance with applicable local occupational health and safety and environmental protection regulations.

9.3 Disposal

Unless a take-back or disposal agreement has been made, dismantled components should be recycled:

- Scrap metals.
- Give plastic elements for recycling.
- Dispose of remaining components sorted according to material composition.

CAUTION



Danger to the environment due to incorrect disposal!

Incorrect disposal can pose a risk to the environment.

- Have electrical waste, electronic components, lubricants and other auxiliary materials disposed of by approved specialist companies.
- If in doubt, obtain information about environmentally friendly disposal from your local authority or specialist waste disposal companies.

batteries and rechargeable batteries

 CAUTION



Danger to the environment from batteries and accumulators!

Components of batteries and accumulators are toxic and pose a danger to the environment.

- Never dispose of batteries and rechargeable batteries in household waste and only dispose of them in accordance with the regulations applicable at the place of use.



Components of the machine marked with the symbol shown here must never be disposed of in household waste. These components may only be disposed of by specialist companies authorized at the place of use.

lubricants

 CAUTION



Danger to the environment from lubricants

Lubricants such as greases and oils contain toxic substances. They must not be released into the environment.

- Disposal must be carried out by a specialist waste disposal company.

10 Technical data

10.1 Generally

		Unit
type	UBS Alpin II	
Width	798	mm
length	1323	mm
Height	1273	mm
Weight	about 300	kg
hydraulic oil tank	10	liter
hydraulic oil	Synthetic Ester-based bio-hydraulic oil Avia Syntofluid N68 (recommended)	
viscosity grade according to ISO	VG 68	
max. operating pressure	240	bear
pump delivery volume	about 24	l/min
driving speed forward / forward	approx. 0 - 6 continuously variable	km/h
PTO speed at: 3,600 min⁻¹ engine speed	1,360	min ⁻¹
direction of rotation of the PTO shaft	right-handed - clockwise from front view of the PTO shaft	
handrail	adjustable and vibration-damped	
steering	fully hydraulic (mechanically operated)	
Tire pressure at: 23x11-8 AS 5.00-10 AS	(max. 2.5 bar - risk of explosion) 1.5 2.2	bear bear
hand-arm vibrations according to DIN EN 12733	with flail mower attachment < 2.5	m/s ²
Sound pressure level at the ear according to DIN EN 12733 (L _{pa} , L _{eq})	< 85	dB

10.2 Engine types

UBS Alpin II

		Unit
Motor	Vanguard	
net output	17.2	kW
	23	PS
Max. torque, at specified speed	26.5	Nm
	2,500	min ⁻¹
displacement	627	cc
Upper idle speed	3,600	min ⁻¹
spark plug	e.g. NGK BPR 6 ES	
Engine oil (for the general use recommended)	about 1.7 multigrade oil SAE 10W-30 API SJ (or higher)	liter
fuel	Unleaded regular and premium gasoline	
fuel tank	8.5	liter
fuel consumption (under continuous load)	9.3	l/h
	3,600	min ⁻¹
air filter	dry filter element	
starting device	recoil starter	
electric starter battery	12	V
	22	Uh

10.3 Circuit diagram

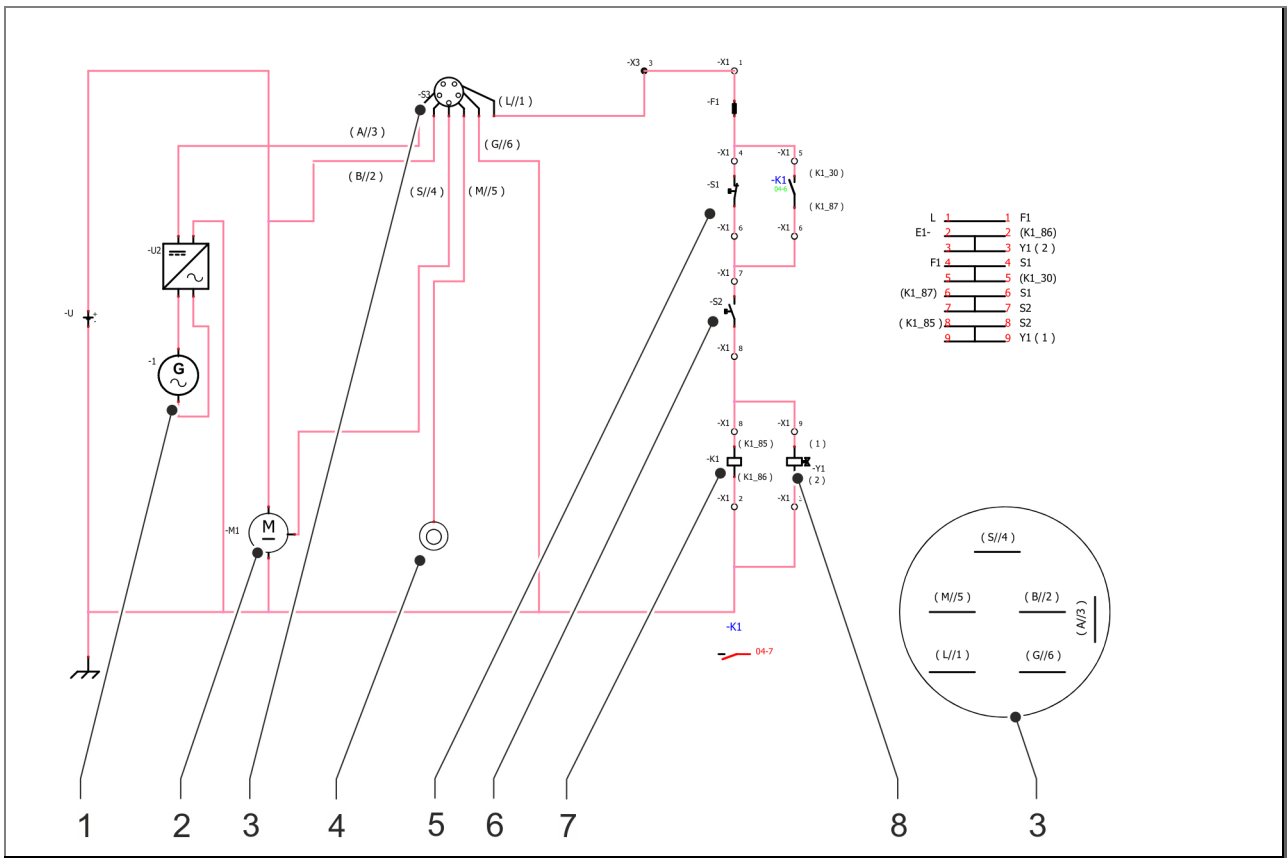



Fig. 30: Circuit diagram

- 1 alternator
- 2 starter
- 3 ignition lock
- 4 stop terminal
- 5 roller head switch
- 6 dead man's switch
- 7 relay
- 8 solenoid valve

G+	rectifier positive pole
G-	rectifier negative pole
S1	switch on the pump
S2	dead man's switch
K1	Relay in electrical box
Ma	magnetic switch on the valve
O	terminal in the cube plug
	wire number

10.4 Declaration of Conformity

We, the
Kersten Arealmaschinen GmbH
Empeler Straße 95
D- 46459 Rees

declare that the product

Hydrostatic single-axle carrier vehicle
UBS Alpin II

complies with all relevant provisions of the EC Machinery Directive 2006/42/EC.

The machine is also in compliance with all relevant provisions of the following EC Directives:

Low Voltage Directive Pressure	2014/35/EU
Equipment Directive	2014/68/EU

Furthermore, the following standards were applied:

EN ISO 12100: 2011
EN 12733: 2019
EN 709: 2011

Mr. Dipl. Ing. (FH) Robert Bosch, Empeler Straße 95, D-46459 Rees, is authorized to compile the technical documentation.

Rees, May 20, 2020



Dipl. Ing. (FH) Robert Bosch
Managing Director