Translation of the original instructions

UBS Hydro II

Order number: B00085 From machine number: Rev.: R00 Issued: 2018-05-02

Manufactured by
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Information concerning the Operating Instructions

These Operating Instructions ensure the safe and efficient handling of the machine. These Operating Instructions are part of the machine and must be kept easily accessible for the staff at all times near the machine.

The staff must carefully read and understand this manual before starting the work. Basic prerequisite for a safe working is to adhere to all the safety and handling instructions mentioned in this manual.

Risk of accident and damages to property if not used properly!

Because self-propelled working machines and attachments can cause serious accidents or hazards if not properly operated, it will be required for the initial commissioning of the Kersten machines that you are instructed by a specialised and authorised person. Preferably, you make yourself familiar with its basic functions and its operation by testing it for the first time on an open and plane ground.

- For further information and in case any problems occur whatsoever they may be, please contact your seller, importer or directly ask the manufacturer.
- Also inform all other users about these safety instructions!

Apart from these, the local industrial safety regulations and the general safety provisions are applicable for the area of use of the machine.

Other applicable documents

Apart from these Operating Instructions, the following documents and the safety instructions given in these documents are also to be followed:

- Operating Instructions for supplied components
- Operating Instructions for the host vehicle

Customer service provided by the manufacturer

Please contact the customer service of the manufacture of the machine for technical information:

Manufacturer's address		Kersten Arealmaschinen GmbH Empeler Straße 95 46459 Rees, Germany Germany
Service telephone		+ 49 2851 9234-10
Fax		+ 49 2851 9234-44
E-mail		Info@kersten-maschinen.de
Website		http://www.kersten-maschinen.de

Please have the following information ready for inquiries:

- Machine / device type
- Order number of the machine
- In case of problems: exact description or exact fault messages

1 Preface

Dear customer,

Thank you for choosing a quality product from the company Kersten.

This product was produced using the most modern manufacturing techniques and extensive quality assurance measures because only then when you are satisfied with your product our goal will be achieved.

Before the first use of this machine or the attachment, please read these Operating Instructions fully and conscientiously.

In case you do not understand any items of this safety data sheet or of the product-specific assembly and operating instructions, please contact your seller or directly ask the manufacture of the machine.

Keep these Operating Instructions handy for future reference. If necessary, you will be able to look up important information and instructions there.

We hope you enjoy your Kersten machine

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

2 Safety

2.1 Symbols in these instructions

Safety instructions

The following symbols referring to occupational safety are used for all safety notes that indicate the danger to life and limb for persons and are marked by a pictogram, a signal word or a signal colour.

Please find the descriptions of the dangerous situation in the corresponding items of the documentation.

Please observe these notes!

Observe the locally applicable safety and accident prevention regulations!

⚠ DANGER

Type and source of danger

This symbol warns against an immediate risk to the life and health of persons.

Nonobservance of these safety notes can lead to severe impacts on the health, with the possibility of life-threatening injuries and extensive material damages.

- Activity that is not allowed to prevent the danger

⚠ WARNING

Type and source of danger

This symbol warns of an imminent danger for life and health of persons as well as of damages to environment and property.

Nonobservance of these safety notes can lead to severe consequences for health leading to life-threatening injuries or may lead to extensive environment and property damages.

- Activity that is not allowed to prevent the danger

⚠ CAUTION

Type and source of danger

This symbol warns of an imminent danger for the health of persons as well as of damages to environment and property.

Nonobservance of these safety notes can lead to medium or minor consequences for health or may lead to extensive environment and property damages.

- Activity that is not allowed to prevent the danger

NOTE

Type and source of damage to machine or plant

This symbol warns of a dangerous situation and serves for marking a safety note referring the dealing with the machine or plant.

Failure to obey these instructions may lead to property damage.

- Activity that is not allowed to prevent the damage to the machine or plant

Hints and recommendations

This symbol highlights useful hints and recommendations as well as information about efficient and proper operation.

Further signs

For highlighting instructions to act, results, lists, references and other elements, the following signs are used in these Operating Instructions:

Marking		Explanation
1., 2., 3. ...		Step-by-step instructions for acting
➔		Results of action steps
•		List without specified order
[Button]		Control elements (e.g. push-buttons, switches), indicators (e.g. signal lamps)
"Display"		Screen elements (e.g. softkeys, assignment of function keys)

2.2 Pictograms

Observe the instruction

Use the marked machine only after you have read the instructions.

Wear protective clothing

This sign indicates that protective clothing is to be worn in the respective area.

Protective clothing is close-fitting work clothing with low tear strength and narrow sleeves and without protruding parts.

Wear protective shoes

This sign indicates that protective shoes are to be worn in the respective area.

Safety shoes protect your feet from crushing, falling parts and slipping on slippery floor.

Wear protective gloves

This sign indicates that protective gloves are to be worn in the respective area.

Wear protective gloves to protect your hands from friction, abrasion, punctures, cuts or deep injuries, as well as from contact with hot surfaces.

Wear safety glasses

This sign indicates that safety glasses are to be worn in the respective area.

Safety glasses shall protect the eyes from particles flying around and splashing fluid.

Operating Instructions and Safety Instructions

Before commissioning, read and observe the Operating Instructions and the safety instructions.

Never open or remove the safeguards with the engine running.

Observe the instructions in the technical Operating Instructions.
Lubrication point!

Only touch any parts of the machine after they have been stopped completely.

Danger due to thrown out parts with the engine running.
Keep a safe distance!

2.3 Intended use

⚠ WARNING

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

There is a risk of injury, as well as a risk of damage to environment and material damages (on the machine or system) due to improper use of the machine!

- The one-axle carrier vehicle as well as the attachments released by the manufacturer are built for the use für den respective usual or common application and works in the field of agriculture and forestry, e.g. green area conservation and premises upkeep as well as for winter service.
- Any other use will be regarded as unintended use. The manufacturer shall not be liable for damages resulting from this; the risk is borne solely by the operator.
- The intended use also includes the observance of all operating, maintenance and servicing instructions prescribed by the manufacturer.
- The one-axle carrier vehicle is only allowed to be used, maintained and repaired by persons who are familiar with it and have been instructed about the risks.

- The applicable accident prevention regulations and the otherwise generally approved regulations for safety and occupational health must be complied with.
- Unauthorized changes on the machine cause the manufacturer's exclusion of liability for the resulting damages.

2.4 Work areas and danger zones

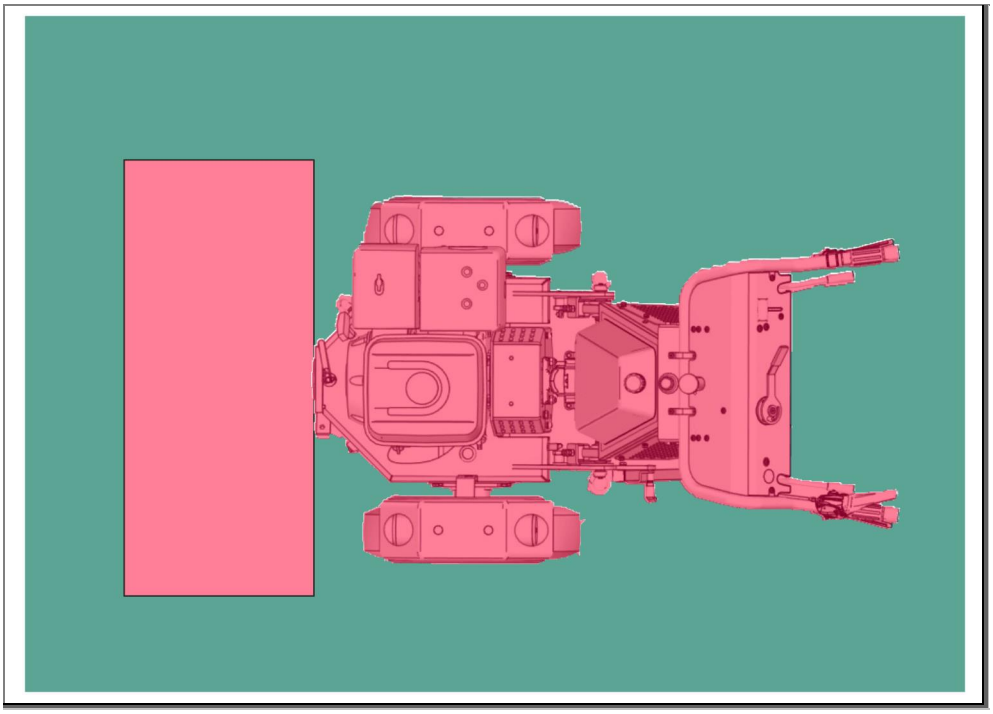

Fig. 1: Danger zone (top view)

Basically, the scope of delivery includes the machine as displayed and listed. It refers to the UBS Hydro series.

- RED ➔ Danger zone
- GREEN ➔ Work area

⚠ WARNING

Risk of injury / risk damage to environment when working / staying within the danger zone!

There is a risk of injury, as well as a risk of damage to environment and material damages (on the machine or system) due to improper use of the machine!

- In the danger zone of the machine, the user has to ensure the safety of third party!

It is not allowed to stay within the danger zone of the machine! Expel all people from the danger zone.

- If any people approach the danger zone, the machine must be switched off.

- The operator has to ensure that no persons or objects are within the possible discharge area of an attachment.
- Before switching on the attachment and starting up of the machine, check the danger zone. Mainly pay attention to children and animals. Provide for sufficient sight!
- In poorly visible areas, switch the attachment off and make sure that nobody is within the danger zone.
- Before starting work, remove all foreign bodies from the area to be treated. While working, pay attention to other foreign bodies and remove them early enough.
- When working in bordered areas, the safety distance to the border must be kept to prevent the machine from being damaged.
- When working in close vicinity to public roads and paths make sure that the discharge area is with the work area because there is a risk of injury for third parties. Therefore, approach the working paths with rotating brushes in longitudinal direction. If a weed brush is used, approach the working path in transverse direction.
- When working near or in close vicinity to public roads and places, put up information and danger signs to draw third parties' attention.

2.5 Safety during the working process

⚠ WARNING

Risk of injury / risk damage to environment due to nonobservance of safety measures!

There is a risk of injury, as well as a risk of damage to environment and material damages (on the machine or the host vehicle) due to nonobservance of safety measures!

- During driving, never leave the place on the steering bar.
- Never change the steering bar during driving.
- Additionally to the instructions in these Operating Instructions also observe the applicable safety and accident prevention regulations!
- The one-axle host vehicle is not allowed to be operated by persons aged under 16; this is also forbidden under the supervision of an adult! Children and young people are to be taught not to play with machine.
- Only instructed personnel or persons are allowed to use this machine!
- When driving on public traffic routes, observe the applicable regulations!
- The one-axle host vehicle is not approved for driving on public traffic roads.
- The operator shall wear tight fitting clothing. Loose clothing is to be avoided and sturdy shoes or safety shoes must be worn!
- Work only with good sight and light conditions!
- The attached warning and information signs include important instructions on safe operation; their observance is required for your safety!
- If it is transported on motor vehicles or trailers outside the area to be treated, switch the engine off!
- Beware of rotating tools - safety distance!

- Beware of coasting down tools. Before working on these components, wait until they stopped completely!
- If the attachment is blocked by a foreign body, switch the engine off and clean the attachment using a suitable tool!
- There are crushing and shearing positions on driven parts!
- It is forbidden to transport people and objects!
- Driving behaviour, steering and possibly braking capability as well as tipping behaviour are influenced by attached or hooked-up devices and load. For this reason, only the attachments are allowed to be used that have been approved by the manufacturer. Adapt the working speed to the current conditions.
- Do not change the maximum idle speed of the engine. A too high speed will increase the risk of injury.
- Unauthorised modifications that put operational safety of the machine at risk are forbidden!
- If the self-propelled working machine or the attachment is damaged, immediately switch the engine off and get the damage repaired!
- If there is a risk of sliding off in sloping areas, it is required that an accompanying person secures the host vehicle using a bar or a rope. The accompanying person has to be above the vehicle at a sufficient distance from the working tools! The assistant should wear pole climbers.
- Drive across the slope, if possible.
- Under humid and rainy conditions, do not use the machine at the slope.
- On steep slopes, use grid wheels or spike wheels to avoid sliding off.
- In case steering is troubled, immediately stop the self-propelled working machine and switch the engine off. Immediately eliminate the malfunction.
- Before each commissioning, check the machine for operational safety!
- If the working machine starts sliding down at the slope, immediately let off the handles.

Coupling and decoupling of attachments

⚠ WARNING

Risk of injury / risk damage to environment due to nonobservance of safety measures!

There is a risk of injury, as well as a risk of damage to environment and material damages (on the machine or the system) due to nonobservance of safety measures!

- Observe the relevant instructions and safety instructions of the host vehicle.
- When changing the attachments and their components use suitable tools and wear gloves.
- For mounting and demounting place the necessary supports in the respective position and provide for sufficient stability.
- Secure the self-propelled working machine and the attachment against rolling away (locking brake, chocks).

- There is a risk of injury when the attachments are coupled (crushing). Special attention is required.
- Couple the attachments correctly and fasten them in the specified positions.

2.6 Safety equipment

DANGER

Danger to life and limb due non-functioning safety devices!

Non-functioning or overridden safety devices can result in danger to life and limb.

- Verify if the safety equipment is fully functional and installed correctly before start of operation.
- Never override or bridge the safety equipment.
- Ensure that all the safety equipment is always accessible.

2.6.1 Emergency shut-down via the dead man lever

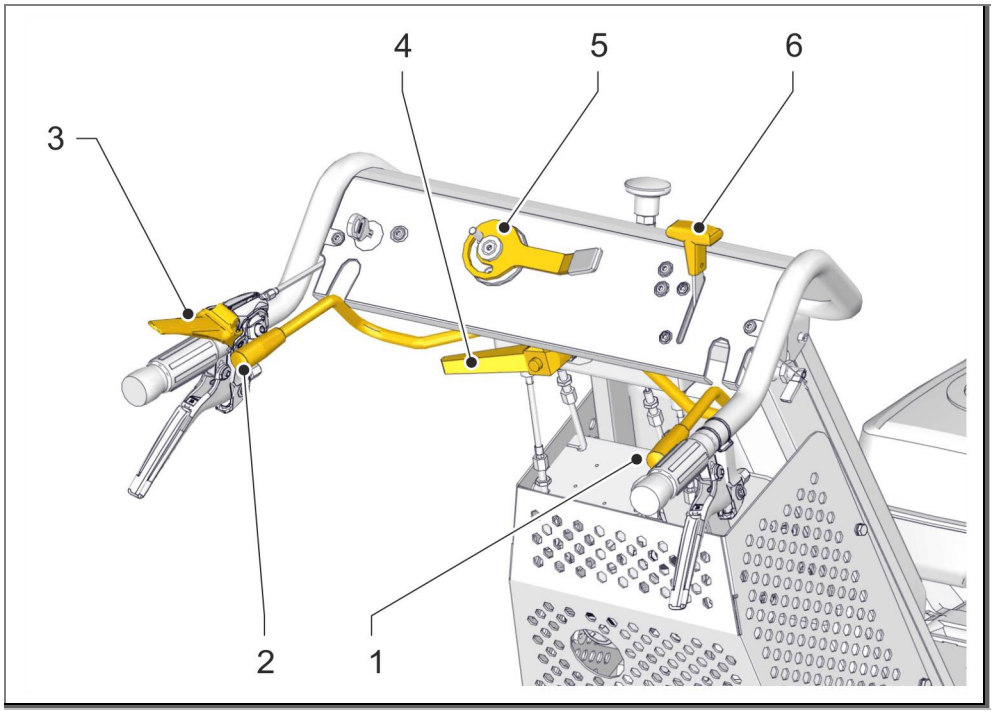

Fig. 2: Dead man lever

1 Drive lever, right
2 Drive lever, left
3 Dead man lever
4 Adjustment lever
5 Auxiliary drive
6 Throttle lever

In an emergency, immediately release the two handles of the operating unit. With this, the dead man lever (3) triggers.

- The one-axle host vehicle stops
- The drive to the attachment is interrupted
- The engine will NOT be switched off and continues running

Before moving off, perform the following steps!

- Drive lever (1, 2) must be in horizontal position.
- The lever for the auxiliary drive (5) must be switched in the „Off“ position.
- Push the dead man lever (3) down.

If only one of the before mentioned conditions is not fulfilled, moving off / switching on of the auxiliary drive will NOT be possible despite of the actuation of the dead man lever (3).

2.7 Safety signage

The following symbols and indicating labels are in the work area. They refer to the immediate vicinity where they are attached.

WARNING

Risk of injury due to illegible or missing signage!

Missing or illegible Labels and signs can lead to severe health impairment and potential life-threatening injuries.

- Keep all safety, warning and operating indications al-ways in a good legible state.
- Exchange immediately damaged signs and stickers.

2.8 Residual risk

The machine is designed according to the state of the art and the actual safety requirements. However, there are still residual risks that require cautious acting. The residual risks and the corresponding behavior and measures are listed below.

Improper transportation

NOTE

Material damages due to improper transportation

Pieces been transported can fall or tumble if transported improperly. This can cause considerable material damages.

- Work carefully when unloading the transport pieces upon delivery as well as when transporting within the factory and pay attention to the symbols and instructions on the packaging.
- Use only the attachment points provided.
- Remove the packaging only just before assembly.

Dirt and scattered objects

⚠ CAUTION

Risk of injuries due to falling over dirt and objects lying around!

Dirt and scattered objects are the reasons for slipping and tripping hazards. Falling may result in personal injuries.

- Always keep the work area clean.
- Remove objects that are not required anymore from the work area, especially near the floor.
- Remove the tools or components from the work area.

Cleaning agent

⚠ WARNING

Risk of injury due to improper use of cleaning agents or substances

Improper use of cleaning agents or substances can have severe consequences for health leading to life-threatening injuries.

- Read the material safety data sheets and the manufacturer's instructions applicable for the cleaning agents or substances
- Wear your appropriate personal protective equipment (e.g. gloves, safety shoes, protective suit, protective mask safety glasses, etc.)
- Provide for sufficient ventilation of the environment
- Use caution when handling hot cleaning agents or substances. Touching can cause burns and scalding
- If necessary, clean parts, assemblies, or components from sticking grease and other pollution
- Avoid skin contact with cleaning agents or substances
- Do not inhale vapour caused by cleaning agents or substances
- Keep it away from naked flames and do not smoke

Noise level

Applicable noise-abatement regulations and warning signs in the complete documentation must be observed as well. The noise level on site depends on the local background noise. The user must check the noise level regularly.

⚠ WARNING

Risk of injury due to noise!

The noise level occurring in the working area may cause serious hearing impairment.

- Do not remove covers, insulating materials, and other insulating parts of the machine and replace them if damaged.
- If the daily noise exposition level exceeds 85 dB(A), in this case the user of the machine must instruct the operators to wear hearing protection.
- Stay within the danger zone only when it is necessary.

Moving parts

DANGER

Danger to life and risk of injury due to moving parts!

There is danger to life and a risk of injury, as well as a risk of material damage to the machine or system due to improper dealing with moving parts

- Do not reach into moving parts or manipulate moving parts during operation.
- Do not open the coverings during operation.
- Pay attention to the after-run time: Before opening the coverings, make sure that there are no parts still moving.
- Within the danger zone, wear tight fitting protective clothing with low tear strength.

Sharp edges and corners

CAUTION

Risk of cutting due to sharp edges and corners!

Sharp edges and corners can cause excoriation and cuts of skin.

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

Hydraulic system

DANGER

Danger to life and risk of injury due to hydraulic energies!

There will be danger to life or a risk of injury due to hydraulically driven components.

- Only qualified hydraulic specialists are allowed to work on the hydraulic system.
- Do not reach into moving parts or manipulate moving parts during operation.
- Do not open the coverings during operation.
- Within the danger zone, wear tight fitting protective clothing with low tear strength.

Operating agents / consumables / lubricants / oils

WARNING

Risk of injury due to improper use of operating agents or substances!

Improper use of operating agents or substances can have severe consequences for health leading to life-threatening injuries.

- Read the material safety data sheets and the manufacturer’s instructions applicable for the operating agents / substances

- Wear your appropriate personal protective equipment (e.g. gloves, safety shoes, protective suit, protective mask safety glasses, etc.)
- After unintended eye contact flush your eyes thoroughly with much water and consult the doctor.
- After contact thoroughly wash your skin with much water.
- Provide for sufficient ventilation of the environment
- Use caution when handling hot operating agents or substances. Touching can cause burns and scalding
- If necessary, clean parts, assemblies, or components from sticking grease and other pollution
- Avoid skin contact with operating agents or substances
- Do not inhale vapour caused by operating agents or substances
- Keep it away from naked flames and do not smoke

2.9 Environment protection

⚠ WARNING

Environmental hazard by wrong handling of environmentally hazardous substances!

When handling environmentally hazardous substances wrong, especially when they are disposed of incorrectly, considerable environmental damages may occur.

- Read the Material Safety Data Sheets and the manufacturers' instructions for operating resources or substances as well as for cleaning agents or substances
- Store water and ground hazardous operating resources or substances, such as oil-contaminated parts, assemblies or components in secured areas or collecting trays
- Bind leaked operating resources or substances as well as for cleaning agents or substances with a binder and dispose it according to local regulations
- If necessary, clean parts, assemblies or components from adhering oil, grease and other contaminants
- Do not let drains operating resources or substances as well as cleaning agents or substances into soil or canalization

The following environmentally hazardous substances are used:

Lubricants

Lubricants like grease and oil contain poisonous substances. They must not get to the environment. The disposal has to be done by a professional disposal company.

Oils

Oils (e.g. lubrication-, hydraulic- or cleaning oils) must not get to the environment. Oils causes long-term environmental damages in waters. The disposal has to be done by a professional disposal company.

Observe the safety data sheets of the manufacturer.

Electronic components

Electronic components may contain poisonous substances. They must not get to the environment. The disposal has to be done by a professional disposal company.

Accumulators and batteries

Rechargeable batteries contain toxic heavy metals. They are subject to special treatment and must be returned to municipal collection points or disposed of by a specialist.

2.10 Safety instructions for maintenance / trouble shooting

Conduct in case of dangerous faults

The following applies:

1. Initiate the emergency stop immediately in case of faults that represent an immediate risk for persons or objects.
2. Determine the cause of fault.
3. In case rectification of the fault requires work to be done in the danger zone, switch off the machine and secure it against a restart.
4. Depending upon the type of fault, get it rectified by authorized specialist personnel or rectify it yourself.

⚠ DANGER

Risk to life or risk of injury due to improperly carried out maintenance work / trouble shooting!

Maintenance work / trouble shooting conducted improperly causes danger to life or risk of injury, as well as risk of material damages to the machine or system!

- Observe all safety instructions in this chapter as well as the applicable local safety and accident prevention regulations
- Malfunctions, which require an intervention, as well as maintenance and cleaning works, should be rectified only when it is ensured that the machine is at a standstill and is safeguarded against a restart.
- Release the blockages only when it is ensured that removing them will not result in any dangerous movements of machine parts.
- Ensure adequate freedom of movement before starting the work.
- Pay attention to order and cleanliness at the assembly place! Parts lying around loose or one above the other are sources of accidents.

- If components have been removed, pay attention to correct assembly, reassemble all fixing elements.

- Pay attention to the following before a restart:
- Make sure that all works have been done and completed according to the instructions and information given in these Operating Instructions.
- Ensure that no persons are present in the danger zone.
- Make sure that all coverings and safety devices are installed and are working properly.
- Wait until the oil has cooled down below 50 °C, before starting works
- Before starting works, make a temperature-resistant collecting container with the necessary capacity available.

⚠ WARNING

Risk of injury / risk damage to environment due to poor / missing maintenance!

There is a risk of injury, as well as a risk of damage to environment and material damages (on the machine or the system) due to poor maintenance!

- Only perform maintenance and cleaning works when the engine stands still.
- When working on the engine, generally pull the spark plugs off.
- The operating personnel are allowed to perform simple cleaning and adjusting works. Maintenance and service works are only allowed to be done by instructed specialist personnel**.**
- Observe the instructions given in the original Operating Instructions of the subcontracted parts.
- If safeguards and tools are subject to wearing, they have to be checked regularly and replaced, if necessary.
- For the replacement of cutting tools use the appropriate tool and suitable protective equipment.
- After maintenance and cleaning works, it is definitely necessary to remount the safeguards and to place them in their protecting position!
- Only use original spare parts from the manufacturer because these meet the technical specifications and with this, the risk of accidents will be minimised!
- Cleaning works with the high-pressure cleaner should be done in a way that the water jet does not directly meet the bearing, rotating parts, lubricating nipples, shaft sealing rings, wheel hubs, etc. After each cleaning procedure with the high pressure cleaner, the lubricating points must be re-greased. If this is not observed, the warranty claim will be rendered null and void!
- After 5 operating hours and then regularly, check the screws and nuts for tight fit and retighten them, if necessary.
- After maintenance mount the safeguards and place them in their protecting position.
- If the machine is maintained, cleaned, or repaired in a raised position, always secure it by suitable supporting elements.

When working on the electrical system, the earth strap must be removed from the battery.

- If welding works are done on the machine, disconnect the battery.
- Repair works like welding, drilling, grinding, etc. may not be done on load-bearing, safety-related parts.
- Before starting any repair works, make sure that the hydraulic system has been depressurised, because pressurised fluids can penetrate skin and cause serious injuries! Therefore, immediately consult a doctor - risk of infection!
- Check hydraulic connections after 5 operating hours for the first time, retighten if necessary!

Only re-tightening is not successful!

First release a leaky hydraulic screwed connection, then move hose or screwed connection. After that, the screwed connection can be tightened again.

- Regularly examine the hydraulic hose lines for damages and ageing and replace if necessary.
- Completely replace hydraulic hose lines every 6 years at the latest. The date of manufacture is impressed on the hose line.
- Dispose of waste oils and greases for recycling.
- If oil escapes, immediately remove it using oil binder.
- Remove excess grease.

NOTE

Wrong oil or grease quantities, as well as pollution can cause damages on gear units and components!

Damages on components can reduce the service life of the components.

- Oil quantity as well as the position of the closing caps of gear units depends on their design and the installation position
- After removing the oil level plug, the oil level may be maximum 3 to 5 mm below the specified filling level
- Re-close the gear unit immediately after the oil level check or the oil change
- Only flush components (gear units, bearings, etc.) using cleaning agents after consultation with the manufacturer.
- For regreasing of lubricating points through lubricating nipples, lubricant may not be pressed in at high pressure or with strong lubricating impacts. The maximum permissible lubricating pressure is 15 bar.

2.11 Safety instructions for dismantling and disposal

⚠ WARNING

Risk of injury in case of improper dismantling!

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

- Ensure there is adequate space before starting the work.
- Work carefully with open, sharp-edged parts.
- Pay attention to order and cleanliness at the workplace! Parts lying around loose or one above the other are sources of accidents.
- Dismantle the parts properly. In some cases, pay attention to the high own weight of the parts. If necessary, use lifting devices.
- Secure the parts so that they do not fall or tumble.

3 Functional description

3.1 Overview

The hydrostatic one-axle host vehicle is used for the following tasks.

- Mowing and mulching
- Snow clearing
- Gritting
- Removing of weeds
- Sweeping
- Removing of leafs
- Caring of artificial lawn

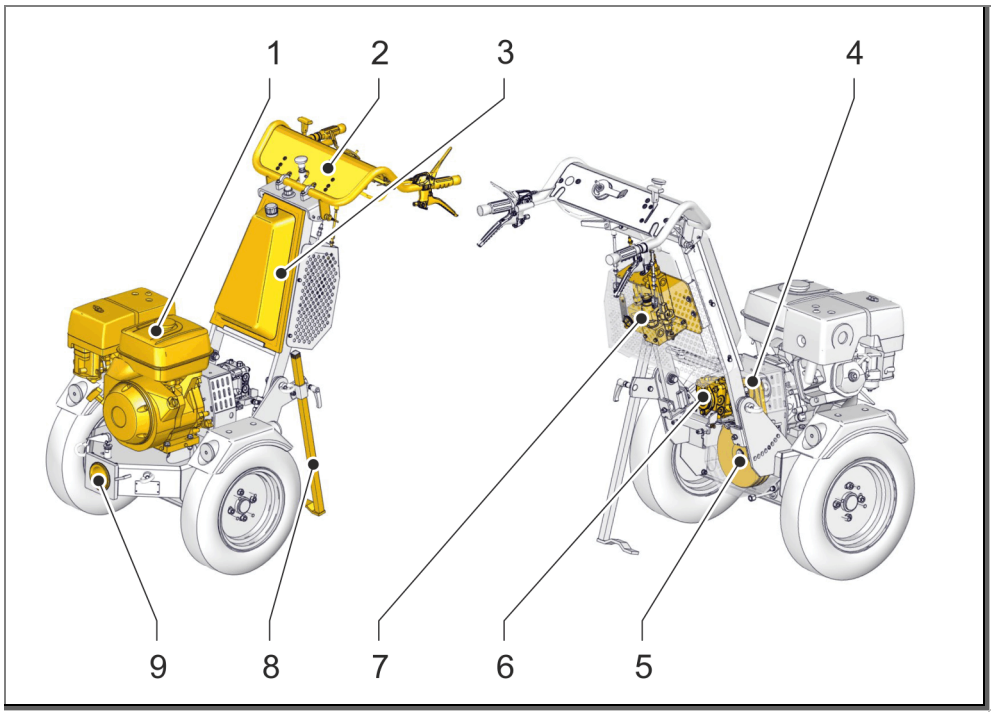

Fig. 3: Overview on front side and rear side

1 Combustion engine
2 Operating Unit
3 Oil tank
4 Crank shaft
5 Auxiliary drive (power take-off shaft)
6 Hydraulic pump
7 Hydraulic valves
8 Parking support
9 Change fixture

A combustion engine (1) is installed on the frame. It drives the following components:

- Hydraulic pump (6) for the travel drive of the wheels
- Mechanically shiftable auxiliary drive (power take-off shaft) (5)

The hydraulic pump (6) provides for the circulation of hydraulic oil. The system is supplied with hydraulic oil by a central oil tank (3).

Each of the four wheels is individually supplied with hydraulic oil. This takes place via the hydraulic valves (7). Therefore it is possible to drive the wheels with different speeds and directions of rotation. This ensures very good manoeuvrability. Depending on its configuration, the one-axle host vehicle can be turned around its central high axis on the spot.

The crankshaft (4) is used for driving the hydraulic pump (6) and the power take-off shaft (5). The power take-off shaft can be shifted manually via the operating unit (2) and makes it possible that the attachment connected to the change fixture (9) can be switched on or off. The attachments can vary. The one-axle host vehicle is controlled via the operating unit (2). The one-axle host vehicle is parked without attachment using the parking support (8).

4 Transport, Packaging and storage

Mounting, installation and initial commissioning are done only by the employees of the seller or by a person authorised by it.

Still, it can happen that during the installation and further use, the operators or maintenance staff of the operator are assigned the task of handling the packages. In doing so, the instructions given below must be followed.

4.1 Safety instructions

Please strictly observe all safety instructions listed in the chapter Safety!

(See chapter 2 Safety on page 7)

4.2 Transport inspection

Upon receiving, immediately check the delivery for completeness and transport damages.

Proceed as follows if transport damages can be seen from outside:

- Do not accept the delivery or accept it only conditionally.
- Note the extent of damages in the transport documents or on the delivery slip of the transporter.
- Initiate claim.

Claim each defect as soon as it is detected. Indemnity claims can be asserted only within the applicable claim periods.

4.3 Packaging

Handling the packaging materials

Dispose of the packaging material must be according to the respectively applicable legal regulations and guidelines.

NOTE

Environmental damage caused by incorrect waste disposal!

Packaging materials are valuable raw materials and can be reused in many cases or prepared and recycled. An incorrect disposal of the packaging materials can result in environmental damage.

- Dispose of packaging materials in an environment-friendly manner.
- Follow the locally applicable disposal guidelines. If applicable, assign the disposal to a specialist company.

4.4 Transport of the machine

Usually, the machine is transported together with the required host vehicle.

NOTE

Material damage due to improper handling!

Improper handling of the machine can lead to damages.

- Do not tilt the machine or rotate it around the horizontal axes.
- Vehicles, auxiliary aids and lifting tackle must be suitable for the weight of the transported units.
- The driver must be authorised to drive the vehicle.

Protective equipment	• Protective clothing • Protective gloves • Safety shoes

The following items must be observed when the machine /host vehicle is transported:

- Loading, unloading and transport take place using the appropriate transport vehicles and trailers approved for the public transport.
- The transport vehicles must be suitable for the transport weight and the dimensions of the combination of machine/host vehicle to be transported.
- Fasten the machine and the host vehicle on the anchor points marked accordingly.
- Use sufficiently dimensioned lifting tackle / lashing means.
- The lifting tackle / lashing means may not be damaged.
- For transport, only use functional vehicles and auxiliary aids or lifting tackle / lashing means in safety-related good order and condition and with sufficient load capacity.
- Do not stack the individual transport units on top of each other!

⚠ DANGER

Risk to life or risk of injury due to incorrect transport of machine!

Improper transport of the machine can cause risk to life or risk of injury, as well as risk of material damages to the machine or system!

- Only secure the machine for transport at the provided anchor points.
- Consider the towing capacity of the towing vehicle and the permissible gross load weight of the trailer.
- The access ramps must be secured against sliding away.
- The access ramps must have a sufficient load capacity.

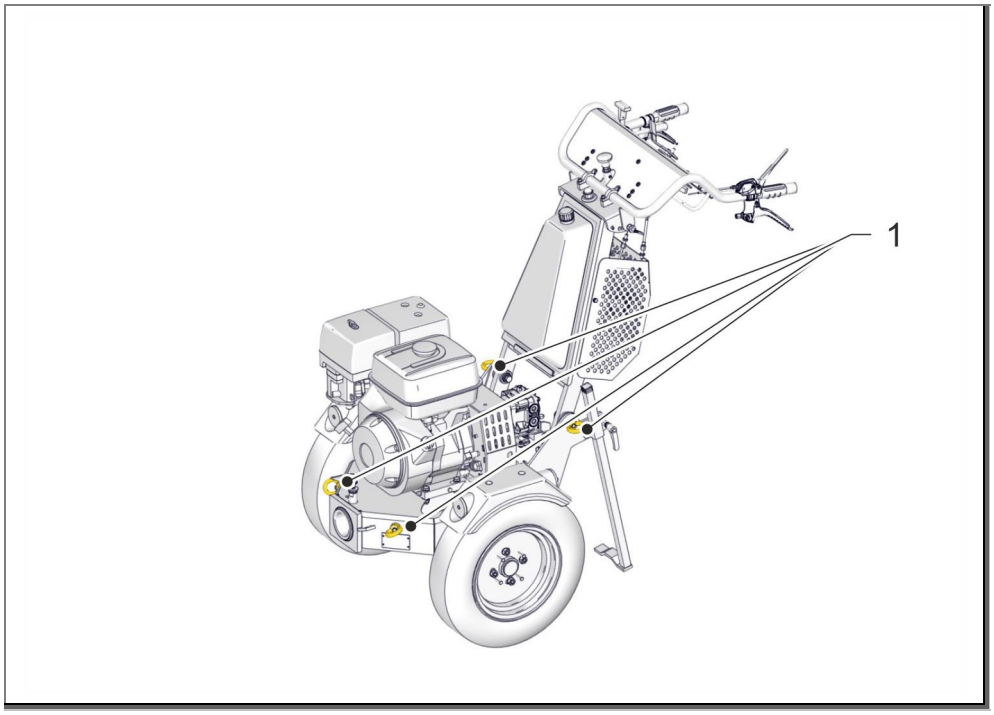

Fig. 4: Transport of the machine

1 Anchor points

For the transport of the machine use the provided lifting eyes (1) of the one-axle tractor and the existing attachments. Only use functional lifting tackle in safety-related good order and condition and with sufficient load capacity.

Observe the following steps when transporting the machine:

1. Without attachment, extend the parking support.
2. If installed, actuate the locking brake, so that the driving wheels are blocked.
3. Switch the engine off and close the fuel tap.
4. Fix the lifting tackle to the lifting points of the one-axle tractor and the attachments.
5. Pre-stress the lifting tackle and check it for correct seat and load distribution.
6. Tension the machine.

5 Assembly/set up, installation, first commissioning

5.1 Safety instructions

Please strictly observe all safety instructions listed in the chapter Safety!
(See chapter 2 Safety on page 7)

5.2 Assembly of attachments

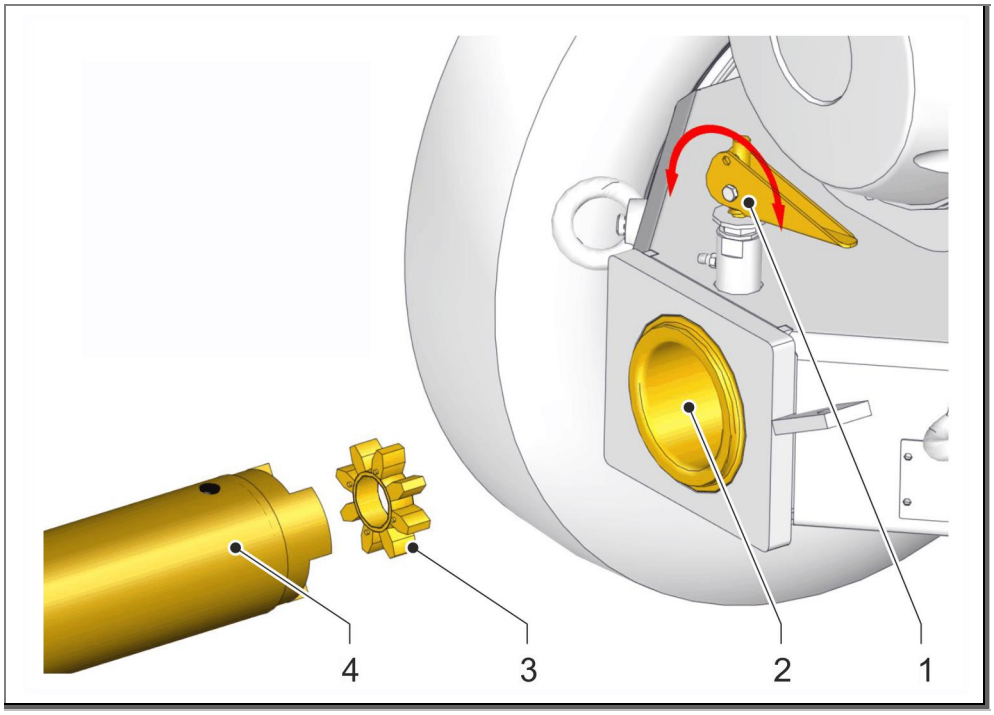

Fig. 5: Assembly of attachment

1 Locking lever
2 Wearing bushing
3 Coupling cam
4 Coupling of attachment

To mount the attachments carry out the following steps:

- For the assembly of an attachment, the holding fixture of the attachment and the fixing tube on the driving machine must be free from dirt and well-greased (See chapter 7 Maintenance on page 39).
- The coupling of the attachment (4) and the wearing bush (2) of the driving machine must be at the same height to allow them to be pushed together. For this purpose, some attachments have parking supports that can be adjusted to the appropriate height.

- During assembly, definitely make sure that the coupling cam (3) is in one of the two halves of the coupling.
- Pull the locking lever (1) up and turn the lever up.
- If the fixture of the attachment should not be able to be pushed into the wearing bush (2), possibly the teeth of the two halves of coupling stand against each other. If the auxiliary drive is switched on and the starter rope of the engine is pulled slowly, the driving shaft turns further on and with this, the coupling can be pushed in further.
- Turn the locking lever (1) down again and make sure that the locking pin snapped in completely.

5.3 Assembly of grid wheels (optional)

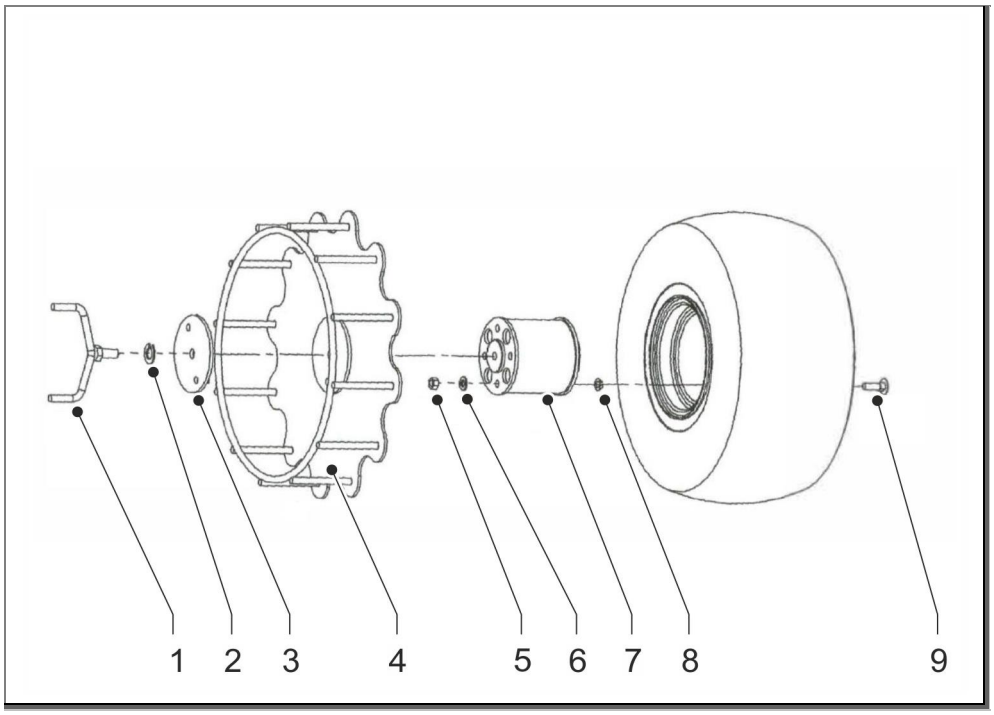

Fig. 6: Assembly of grid wheels

1 Butterfly screw
2 Lock washer
3 Cam plate
4 Grid wheel
5 Hexagon nut
6 Washer
7 Attachment hub
8 Stop nut
9 Wheel bolt M12 x 50

For the assembly of the set of grid wheels, the attachment hubs (7) must be mounted on the two sides of the self-propelled working machine

To mount the set of grid wheels carry out the following steps:

- Lift the rear part of the self-propelled working machine with the appropriate tools to a height that the driving wheels are released and freely moveable. Secure the lifted machine by a rigid support, e.g. pieces of lumber - in a way that unintended dropping is prevented.
- Release the wheel nuts on the two sides; remove the driving wheels and remove the mounted wheel bolts from the wheel hubs. They are replaced by the wheel bolts M12 x 50 (9) that come with the product.
- First put the driving wheel and then the mounting hub (7) of the grid wheel supplied on the existing wheel hub. Limes rings (conical washers) must be inserted between the driving wheel and the mounting hub to centre the driving wheel tightly on the wheel hub. The driving hub and the mounting wheel are rigidly screwed on using the stop nut (8) that comes with the product. With this, the stop nut is inserted in the 19-size socket and led through the mounting hub to the wheel bolt using the long extension.
- The grid wheels (4) are mounted immediately before the machine is used on soft ground. Because the diameter of the grid wheels (4) is larger than of the driving wheels, the machine or the driving wheels must stand on a rigid support, e.g. a wood block.
- The grid wheel (4) is pushed onto the hub and fixed by the cam plate (3).
- Finally, the grid wheel and the cam plate are locked by the butterfly screw (1). To prevent the butterfly screw from releasing, a lock washer (2) must be in front of the butterfly screw.

6 Operation

6.1 Safety instructions

Please strictly observe all safety instructions listed in the chapter Safety!
(See chapter 2 Safety on page 7)

6.2 Starting the engine

DANGER

Danger to life or risk of injury due to escaping flue gases in confined spaces!

There is danger to life or a risk of injury due to escaping flue gases as well as a risk of property damage on the machine or system!

- The engine may not be operated within confined spaces
- When starting the engine, do not step in front of the one-axle tractor or the attachment
- Do not use starting aid fluids when using an electrical starting aid (starting aid cable)
- Generally, provide for sufficient ventilation

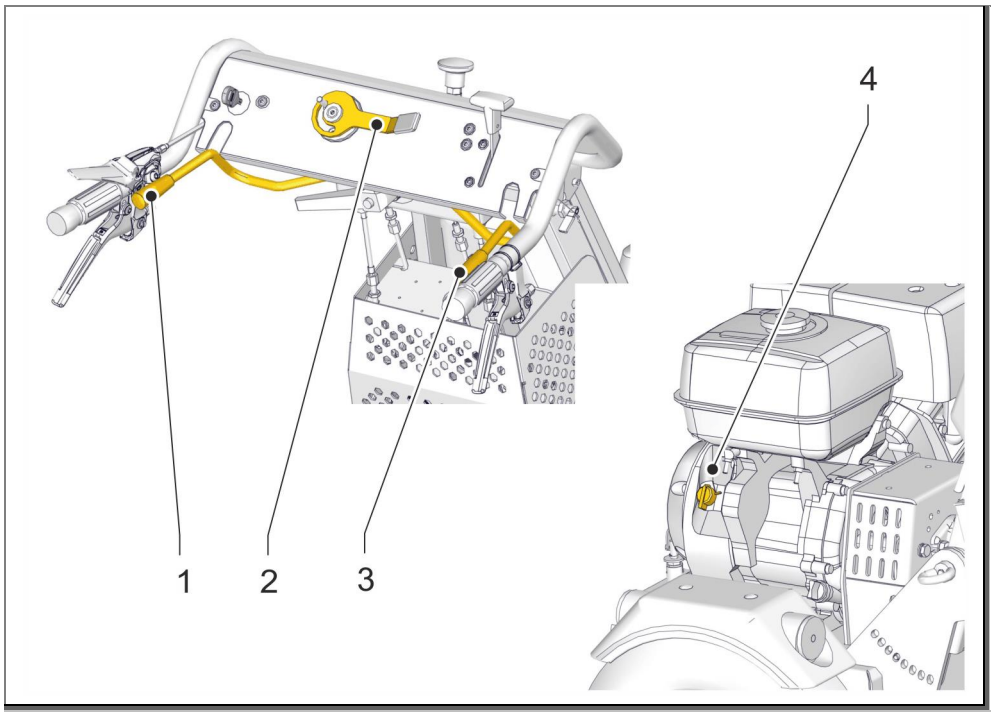

Fig. 7: Operating Unit

1 Drive lever, left

2 Auxiliary drive
3 Drive lever, right
4 Engine switch

To start the engine carry out the following steps:

- Drive lever (1, 3) must be in horizontal position.
- The lever for the auxiliary drive (2) must be shifted to the „Off“ position.
- Set the engine switch (4) on the engine in its „I" position.

Also when the engine can be started without meeting the before mentioned conditions, the manufacturer recommends ensuring the before mentioned conditions.

The engine can be started without meeting the items mentioned above. For moving off however, it is strictly required to meet the above mentioned conditions.

To start the engine, observe the respective Operating Instructions issued by the engine manufacturer!

6.3 Moving off / switching on the auxiliary drive

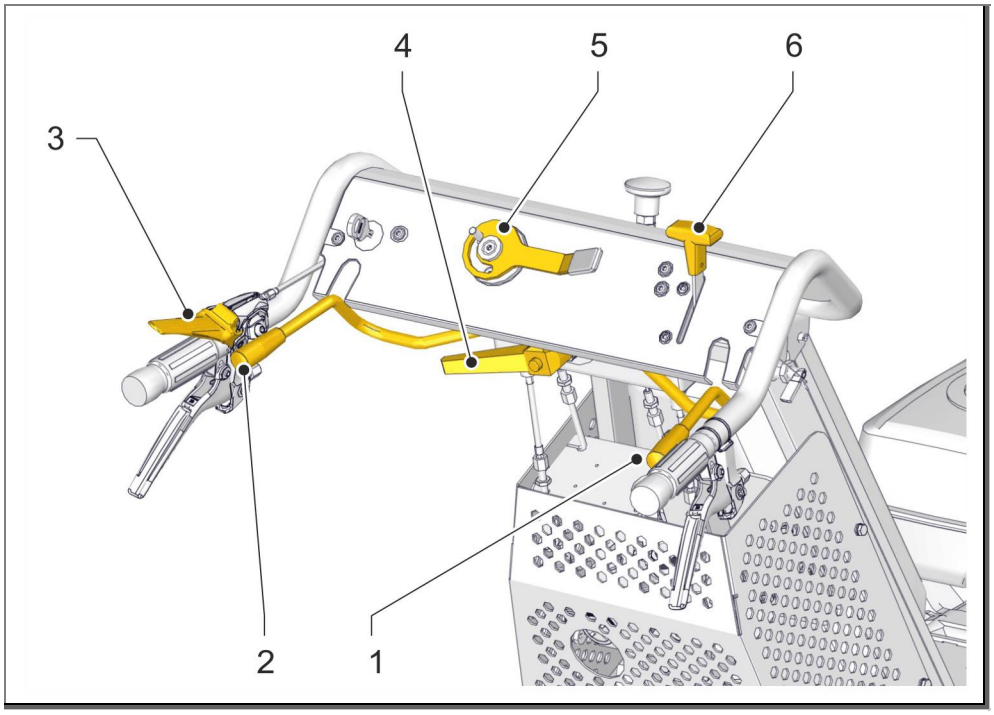

Fig. 8: Operating Unit

1 Drive lever, right
2 Drive lever, left
3 Dead man lever
4 Adjustment lever
5 Auxiliary drive
6 Throttle lever

Before moving off, perform the following steps!

- Drive lever (1, 2) must be in horizontal position.
- The lever for the auxiliary drive (5) must be switched in the „Off“ position.
- Push the dead man lever (3) down.

If only one of the before mentioned conditions is not fulfilled, moving off / switching on of the auxiliary drive will NOT be possible despite of the actuation of the dead man lever (3).

Select an open and plane ground for the first travel.

- Actuate the throttle lever (6) for approx. 1/3.
- Push down and hold the dead man lever (3).
- Make sure that no person is in front or behind the machine!
- On the two sides of the hand bar, there is a drive lever each (1 and 2). The drive lever is supported by bearings above a central turning point. If a drive lever is actuated, the opposite drive lever will move in the opposite direction, so that it functions like a rocker.
- To drive forwards, press the right drive lever (1) down. The more the drive lever is pressed down the faster the machine drives. To slow down or to stop the machine, the elevated drive lever (1) is pressed down again.
- If the individual levers (1 and 2) are at the same height or are in horizontal position to each other, the machine stands still.

For reversing, the left thumb presses the left drive lever (2) down. The more the drive lever is pressed down the faster the machine drives. To slow down or to stop the machine, the right thumb presses the elevated drive lever (1) down again.

- To select the direction of travel and the suitable travel speed, the hands must not be withdrawn from the handles!
- The force that is required to be applied by the thumb for the actuation of the drive lever can be adapted to the operating conditions. For easy landscape conservation the brake resistance for the self-sustaining force of the drive lever can, for instance, be smaller than for mowing works at the slope. If the frictional resistance is too small the drive lever will retract itself to the neutral position. The adjustment lever (4) serves for setting the correct brake resistance and is mounted centrally below the control panel.
- The throttle lever (6) is used for controlling the engine speed and with this also the driving speed. Always drive at the lowest necessary speed. This protects material and environment.
- The attached machine is switched „On“ - or „Off“ using the lever (5).
- Switching on of the attachment is only allowed on a free or already treated work area!
- Outside the work area it is not allowed to switch the attachment on!
- Never actuate the attachment when children or animals are in the work area.
- If you notice that, after switching on the attachment, the tool does not reach its speed and slipping of the V-belt is audible, the attachment must be switched off immediately. If the tool is engaged the initial torque is too high. If possible, switch the machine on without load. If necessary, check the tension of the V-belt (See chapter 7.4 Check the belt drive of the auxiliary drive on page 43).

6.4 Steering

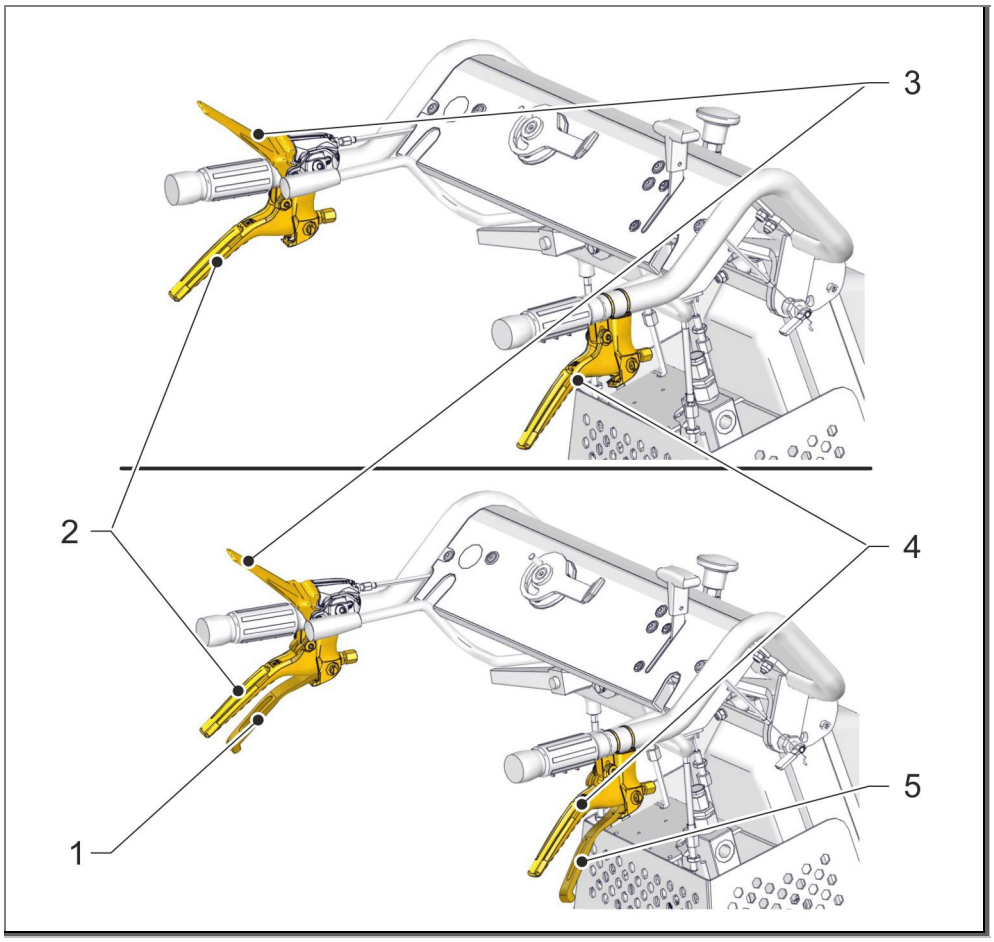

Fig. 9: Steering with single lever and optional double lever

1 Second steering lever left
2 Steering lever left
3 Dead man lever
4 Steering lever right
5 Second steering lever right

The steering unit is designed as follows:

- The working machine is driven by two wheel motors that are controlled separately.
- Due to the individual wheel drive the wheels can be turned at different speeds and in different directions. This makes it possible to drive narrow curves and, if required, to stop the machine fast or to reverse.
- As displayed in the figure, the control panel includes one handle each on the steering levers (2 and 4). If it is a model with double levers, the optionally available second steering levers (1 and 5) are installed.
- If, for instance, a drive shall be started to the left, this can be done by actuation of the left steering lever (2) on the left handle. The more the steering lever is pulled through, the smaller the turning circle will be until,

finally, the left wheel will be blocked. During this exercise, the right steering wheel is not affected and keeps its speed. In case of the optional double lever, it is possible, if required, by changing from the first steering lever to the second steering lever (1), to move the left wheel in reverse direction; this reduces the turning circle in a way that the one-axle host vehicle can turn around its own axis. The two functions of the steering lever behave proportionally. This means that the further the second steering lever is pulled through, the faster the left wheel turns away from the blocked status in the opposite direction.

- If the two first steering levers (2 and 4) are actuated simultaneously, the drive unit will stop, and it moves in the reverse direction when the second steering lever (1 and 5) is actuated simultaneously.
- The steering unit with two steering levers on each side is also a safety device, because a conscious change of grip is required on the two steering levers, to change the direction of turning of the respective wheel.

If dangerous situations suddenly occur:

- Release the dead man lever (3). The drive connection to the attachment is disconnected and the wheels are braked. At maximum speed the machine comes to a standstill after a few metres.

6.5 Switching off of combustion engine

⚠ DANGER

Danger to life or risk of injury due to escaping flue gases in confined spaces!

There is danger to life or a risk of injury due to escaping flue gases as well as a risk of property damage on the machine or system!

- The engine may not be operated within confined spaces
- When starting the engine, do not step in front of the one-axle tractor or the attachment
- Do not use starting aid fluids when using an electrical starting aid (starting aid cable)
- Generally, provide for sufficient ventilation

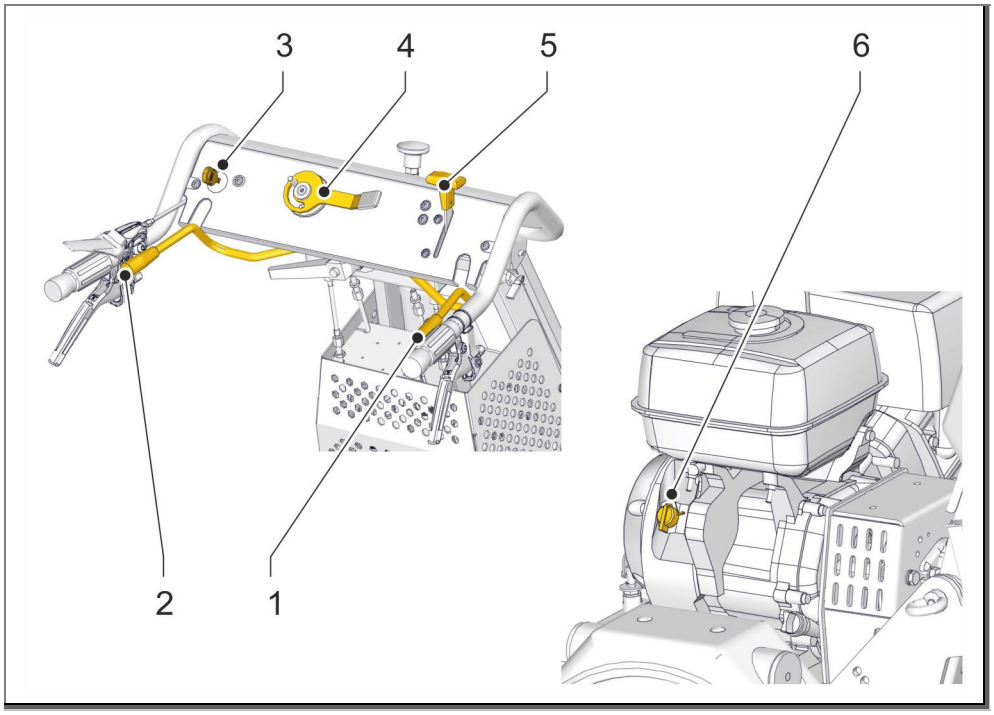

Fig. 10: Operating Unit

1 Drive lever
2 Drive lever
3 Ignition key
4 Auxiliary drive
5 Gas handle
6 Engine switch

To switch off the engine, carry out the following steps:

- Before switching off the engine, make sure that the drive levers (1 and 2) are in horizontal position and the lever of the auxiliary drive (4) is in its “Off” position.
- Put the gas handle (5) in neutral position and leave the engine running at idle for approx. half a minute.
- Set the engine switch (6) on the engine in its „O" position.
- Close the fuel valve
- Secure the one-axle tractor against unauthorised usage and pull out the ignition key (3) if necessary.
- When leaving the machine, secure it against rolling away by placing wheel chocks or, if necessary, by activating the locking brake.

For longer standstill periods of the engine, do not switch off the “Engine-Off switch” but close the fuel valve and leave the engine running until it automatically comes to a standstill. With this, the gasifier is empty and it cannot become resinous.

6.6 Tilting of steering bar

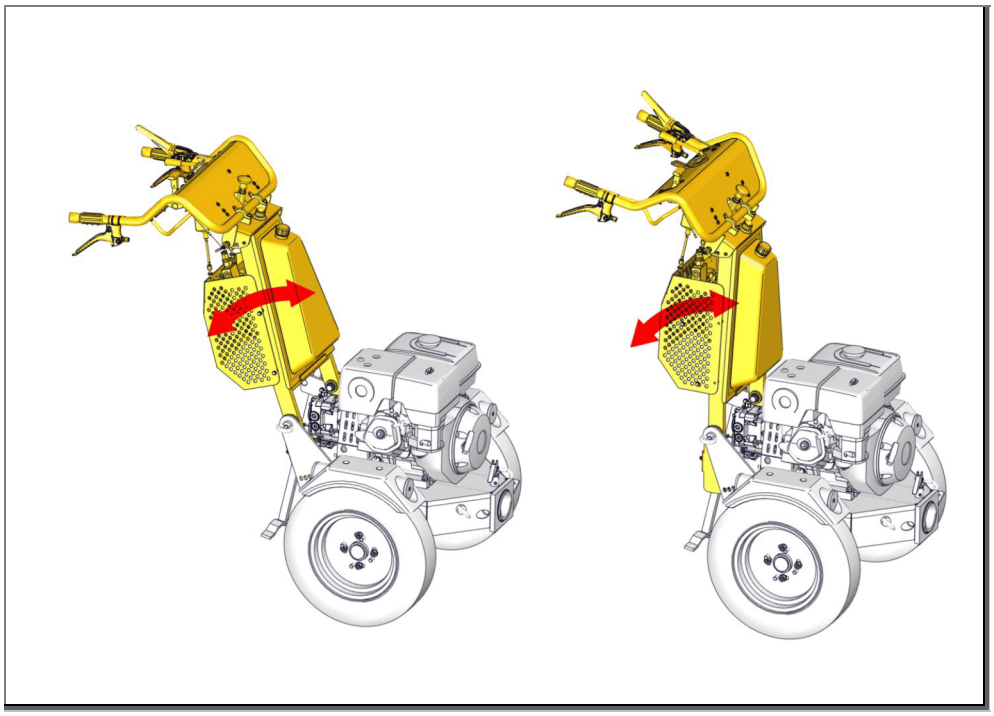

Fig. 11: Steering bar tilted to the rear or the front

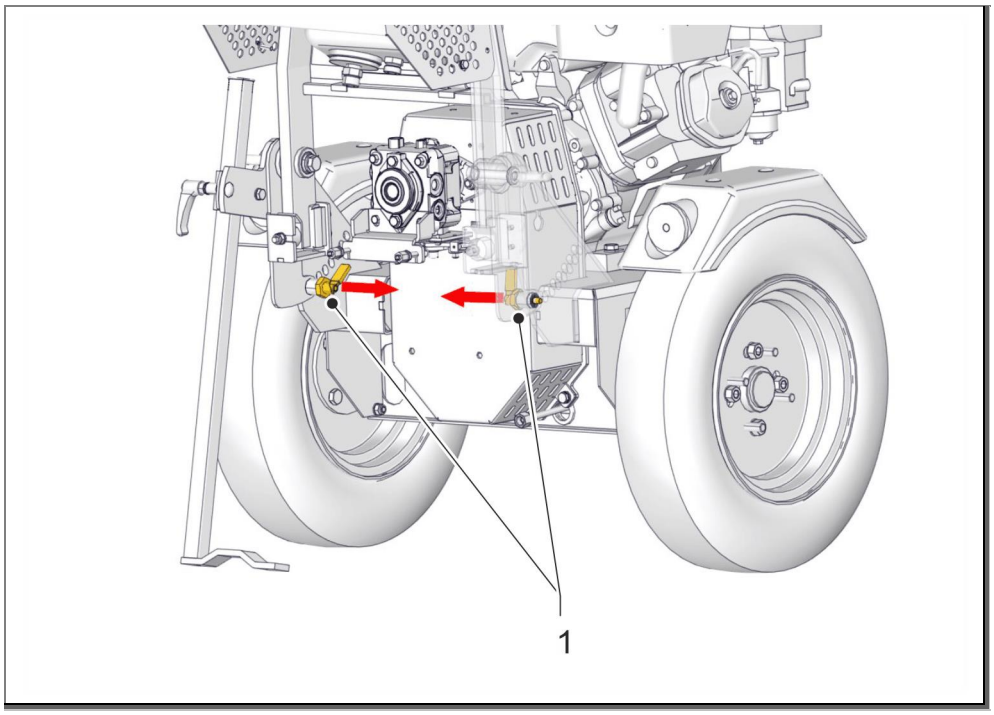

Fig. 12: Locking device - steering bar

1 Locking bolt

The tilting angle of the steering bar can be adjusted to ensure the ergonomically optimum operating height for the operator.

Furthermore, this adjustment makes it possible to set the steering bar in its vertical position to minimise the dimensions for transport.

To tilt the steering bar, carry out the following steps:

1. Release the locking bolts on both bottom sides (1).
2. Set the steering bar in its desired inclined position.
3. Get the locking bolts snapped in on both bottom side (1) and move the steering bar a bit to the front and to the rear until the locking bolt snaps in.

6.7 Tilting of the operating panel

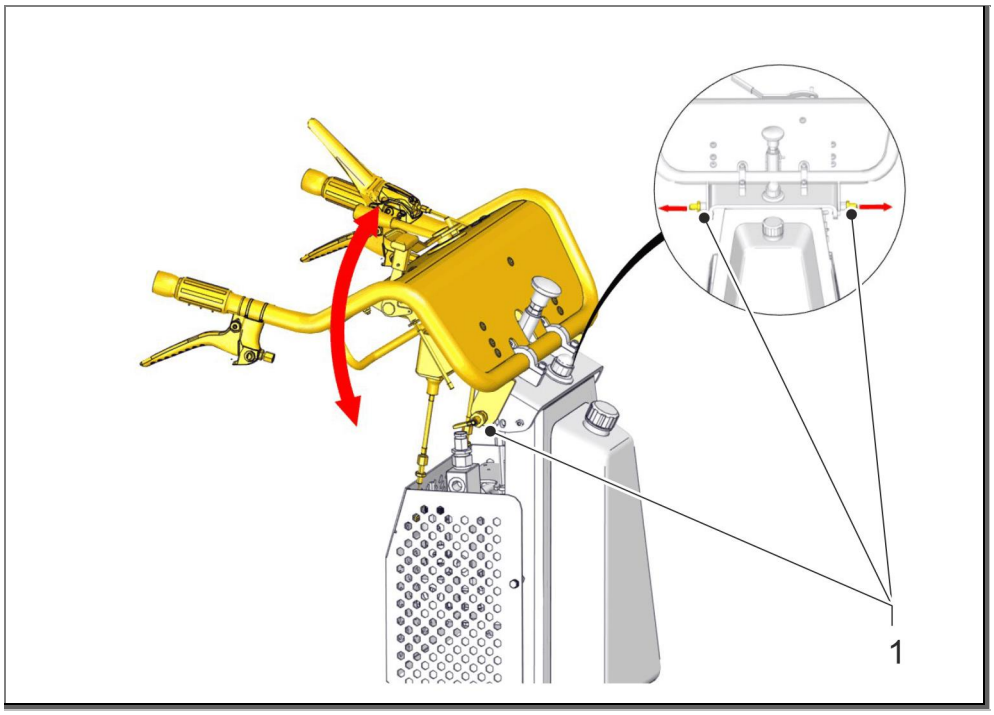

Fig. 13: Tilting of operating unit

1 Locking bolt

The tilting angle of the operating panel can be adjusted to ensure the ergonomically optimum operating height for the operator.

To tilt the operating unit, carry out the following steps:

1. Release the locking bolts on both sides (1).
2. Set the operating panel in its desired inclined position.
3. Get the locking bolts snapped in on both sides (1) and move the operating panel a bit up and down until the locking bolt snaps in.

6.8 Swivel the operating unit to the side

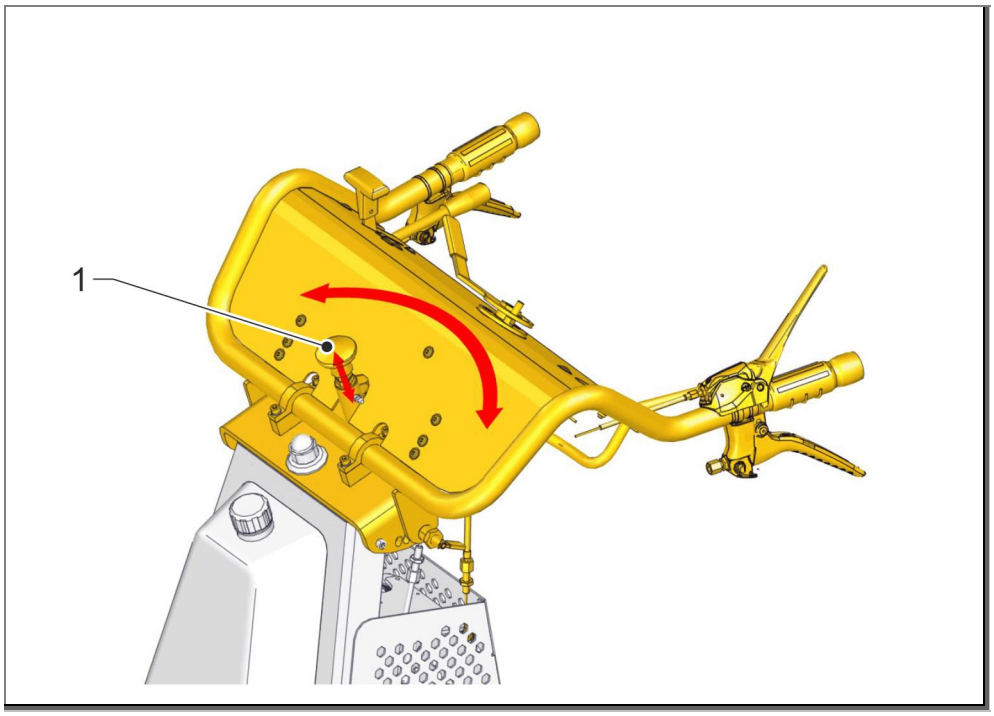

Fig. 14: Swivel the operating unit to the side

1 Locking bolt

The operating unit can be swivelled out of its normal position (central position) by approx. 30° to the left or the right side.

To swivel the operating unit, carry out the following steps:

1. Lift the locking bolt (1) and hold it.
2. Swivel the control panel to the left or right side in the desired position.
3. Release the locking bolt (1) and move the control panel a bit to the left and right side until the locking bolt snaps in.

7 Maintenance

7.1 Safety instructions

Please strictly observe all safety instructions listed in the chapter Safety!
(See chapter 2 Safety on page 7)

7.2 Spare parts

Incorrect spare parts

DANGER

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

This symbol warns against an immediate risk to the life and health of persons.

The use of incorrect or defective spare parts causes risk to life or risk of injury, as well as risk of material damages to the machine / system!

- Use only original spare parts made by the manufacturer or the spare parts approved by the manufacturer.
- In cases of doubt, please always contact our customer service / the manufacturer's customer service(See Customer service provided by the manufacturer on page 3).

Procurement of spare parts

Spare and wear parts can be ordered from the customer service(See Customer service provided by the manufacturer on page 3).

7.3 Maintenance work

7.3.1 Check safety devices for function

Personnel:

- Operating personnel

Protective equipment:

- Protective clothing
- Protective gloves

The user shall plan, perform and record the tests considering the applicable regulations and laws.

The safety devices must be ensured, in order to ensure a safe operation of the machine:

Guards (coverings)	
Interval	When the machine is put into service, is switched on
Test scope	Visual inspection for integrity
Tester	Operating personnel
Measures to be taken in case errors occurred	• Cordon off the danger zone Repair

Dead man lever	
Interval	During operation of the one-axle carrier vehicle, in addition once a year
Test scope	Operability
Tester	Operating personnel
Measures to be taken in case errors occurred	• Do not put into service • Switch off the engine and secure it against a restart • Initiate maintenance by trained specialist

7.3.2 Daily check

Personnel:

- Private and commercial users

Protective equipment:

- Protective clothing
- Protective gloves
- Safety goggles

The user shall plan, perform and record the tests considering the applicable regulations and laws.

The safety devices must be ensured, in order to ensure a safe operation of the machine:

Check the following items on the machine every day:

- Before each use, check the safety elements and movable parts for wear and tear.
- Before each use, check the hydraulic oil level. For this purpose, unscrew the tank filler cap and visually check if the oil in the tank slightly covers the horizontally arranged metal sheet.
- Before each starting up, check the engine oil level.
- Check the primary air filter (if installed) and the air filter cartridge for pollution and replace in case it is very dirty or damaged.

- Check the hydraulic connections and lines for tightness and damages.
- Check the air pressure of the driving wheels.
- Before each use, perform a test run.
- Clean the machine after each use.

7.3.3 Maintenance after 20 operating hours / longer down-time

⚠ DANGER

Danger to life or risk of injury due to a running machine!

A running machine can cause danger to life or risk of injury, as well as risk of material damages to the machine or system!

- Prior to maintenance works, disconnected the machine from the power supply and secure it against unintended switching on.

The user shall plan, perform and record the tests considering the applicable regulations and laws.

The safety devices must be ensured, in order to ensure a safe operation of the machine:

At an interval of maximum 20 operating hours, as well as at the beginning and the end of the season, all movable parts must be greased or oiled.

Lubrication points

Personnel:

- Private and commercial users

Protective equipment:

- Protective clothing
- Protective gloves
- Safety goggles

- Regularly and at the beginning and the end of the season, all movable parts of the machine must be greased or oiled.
- There is lubrication nipple below the equipment fixture on the base machine; lubricate it regularly.
- Regularly grease the fixture of the attachment or fixing tube of the self-propelled work machine.
- Grease or oil the Bowden cables, if necessary
- Replace hydraulic oil and filter for the first time after 20 operating hours, then every 100 operating hours. Replace hydraulic oil filter within the same time intervals as the oil changes take place. (For the types of oil used refer to(See chapter 10 Technical data on page 53))
- Clean the primary air filter (if installed) at least after 20 operating hours and if there are very dusty conditions, after a few hours
- Replace the primary air filter (if installed) and the air filter cartridge for pollution and replace in case it is very dirty or damaged.

7.3.4 Maintenance after 100 operating hours / longer down-time

DANGER

Danger to life or risk of injury due to a running machine!

A running machine can cause danger to life or risk of injury, as well as risk of material damages to the machine or system!

- Prior to maintenance works, disconnected the machine from the power supply and secure it against unintended switching on.

The user shall plan, perform and record the tests considering the applicable regulations and laws.

The safety devices must be ensured, in order to ensure a safe operation of the machine:

At an interval of maximum 100 operating hours, as well as at the beginning and the end of the season, all movable parts must be greased or oiled.

Lubrication points

Personnel:

- Private and commercial users

Protective equipment:

- Protective clothing
- Protective gloves
- Safety goggles

- Take off the fan housing after each 100 operating hours or at least once a year - preferably before the season starts - and clean the cooling fins on the cylinder and the cylinder head, as well as the baffle plates, cooling air sieves and oil coolers required for the circulation of air.
- Replace hydraulic oil and filter for the first time after 20 operating hours, then every 100 operating hours. Replace hydraulic oil filter within the same time intervals as the oil changes take place. (For the types of oil used refer to(See chapter 10 Technical data on page 53))
- Clean the spark plug from soot deposits using a wire brush and finally check the distances of the electrodes. The electrode distance shall be approx. 1 mm. Replace after approx. 200 operating hours.
- Air filter - Clean the cartridge after 100 operating hours and if there are very dusty conditions, after a few hours.

7.4 Check the belt drive of the auxiliary drive

To prevent the drive belt from slipping through and following burning, the drive belts must be sufficiently tensioned when the auxiliary drive is switched on.

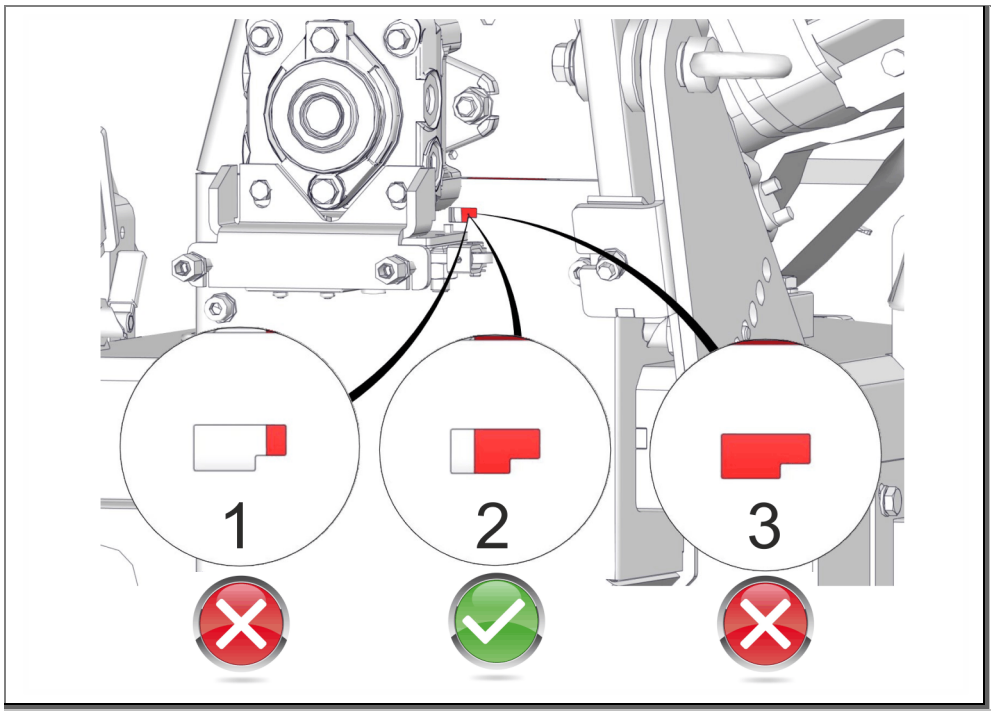

Fig. 15: Inspection window at the rear of the one-axle carrier vehicle

The tension of the drive belts can be checked through an inspection window on the rear side of the one-axle carrier vehicle.

1 Red colour field in the right (narrow) window area ➔ Increase belt tension

2 Red colour field in the left (wide) window area ➔ Belt tension OK

3 Red colour field fills the whole window area ➔ Reduce belt tension

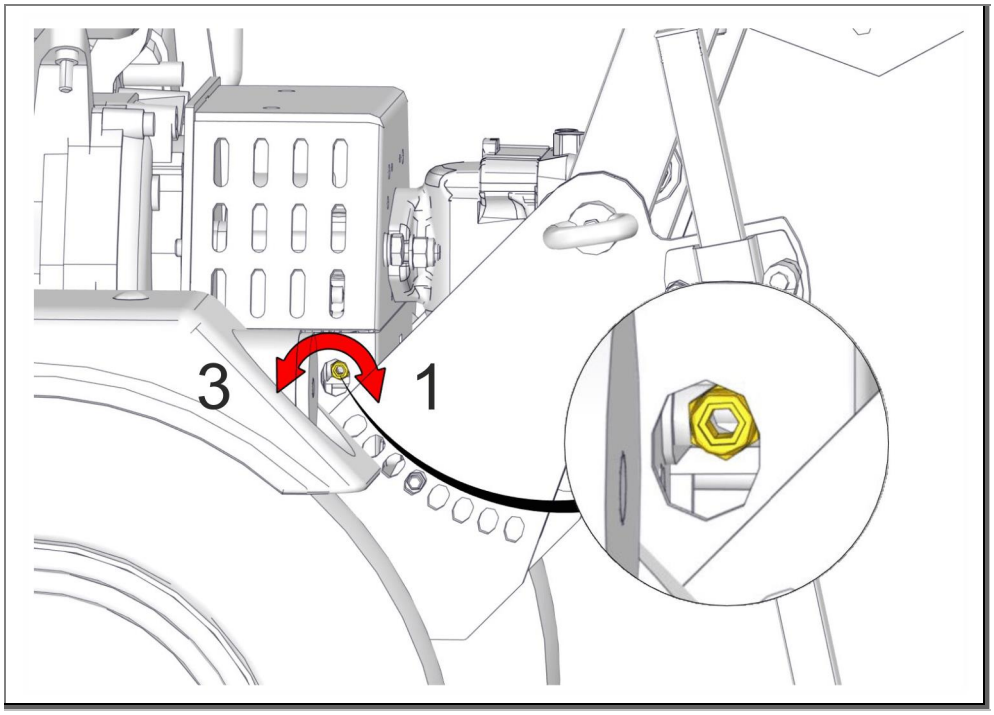

Fig. 16: Tensioning device for the belt drive

The belt tension is changed by releasing or tightening of a self-locking hexagon nut. The self-locking hexagon nut is accessible using a socket wrench. The socket wrench is guide through the housing opening on the side and is set onto the self-locking hexagon nut.

1 Increase belt tension ➔ Turn the hexagon nut clockwisely

3 Reduce belt tension ➔ Turn the hexagon nut counter-clockwisely

NOTE

Missing frictional connection to the attachment can be caused by burned V-belt!

Burned V-belts can cause missing frictional connection to the attachment.

- Check the V-belt tension.
- Only use original parts.
- If the slipping belt causes squeaking noises, the belt has to be replaced by an original belt in a specialist workshop.
- V-belts, that have burned, must be replaced by new V-belts, because they cannot transfer a torque anymore!

7.5 Maintenance of wearing bush

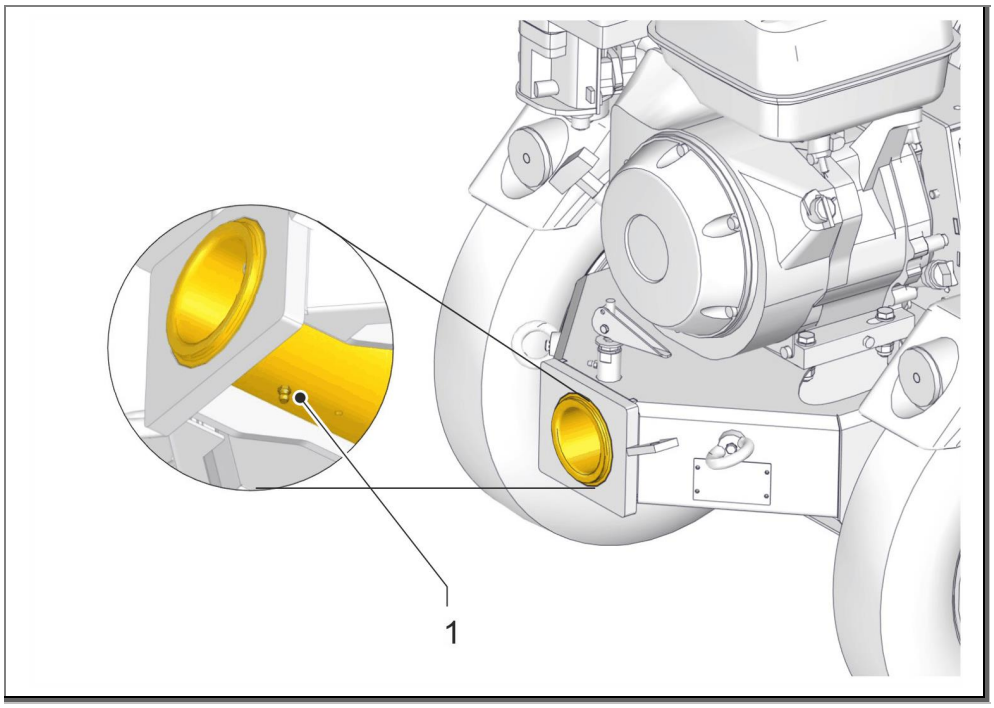

Fig. 17:

1 Grease nipple

Wearing bushes are installed to protect moving components from wearing caused by friction. The wearing bush installed here is lubricated through a lubrication nipple (1). Due to the environmental conditions, the wearing bush is subject to wearing.

If the clearance of the wearing bush is increasing, get it replaced by a specialist company!

7.6 Measures after maintenance is done

Personnel:

- Private and commercial users

Carry out the following steps after completing the maintenance work and switching on the machine:

1. Check all the screw connections which may have loosened earlier for a tight fit.
2. Check whether all the safety devices and coverings removed earlier have been installed again properly.
3. Ensure that all tools, materials and other equipment used have been removed from the work area.
4. Clean the work area and remove any discharged materials, such as liquids, processing materials or the like.
5. Ensure that all safety devices of the machine are working perfectly.

7.7 Storage

If the machine is not used for a longer period, perform the following steps:

1. Clean it
2. Preserve the engine (Observe the engine manufacturer’s instruction manual)!
   - Discharge fuel completely or refill the fuel tank completely; add fuel stabiliser to the fuel.
   - Leave the engine running for approx. 1 minute
   - Fill a spoonful of engine oil in the opening of the spark plug (approx. 30 millilitres) and then spin the engine slowly.
   - Reinstall the spark plugs and do not plug the spark plug terminal. Pull on the starter handle until you feel the compression resistance, in this way the valves are closed.
   - Every 2 - 3 weeks, slowly spin the engine again and pull again until you feel the compression resistance.
3. Jack the driving wheels
   - Jack the machine on logs, so that the driving wheels do not stand on the floor. Pay attention to stability!
4. Shelter the machine
   - To avoid corrosion, protect the machine from weather effects. Do not store the machine in humid rooms, storages of artificial fertilisers or stables.
5. Cover the machine with a cloth or similar.

8 Faults / fault removal

This section describes the possible causes of faults and the steps for removing them.

In case of faults that occur repeatedly, reduce the maintenance intervals according to the actual load.

Contact the manufacturer in case of faults, which cannot be removed based on the instructions given below.

8.1 Safety instructions

Please strictly observe all safety instructions listed in the chapter Safety!

(See chapter 2 Safety on page 7)

8.2 Cause of a malfunction and its elimination

This chapter describes the most important malfunctions in detail that can occur during operation of the self-propelled working machine. Always get malfunctions that require a major intervention repaired by your specialist workshop.

8.3 Error list - petrol engine

Fault	Possible causes	Remedy
Petrol engine does not start	Spark plug terminal not plugged	Connect the spark plug socket in
	Choke not switched	Set the choke lever in choke position
	Engine-Off switch to "O"	Switch the Engine-Off switch over to the "I" position
	Safety circuit not in Start position	Set the safety circuit in Start position
	Fuel tank is empty or fuel is bad	Fill the fuel tank with fresh fuel
	Fuel line is plugged	Clean the fuel line
	Spark plug defective	Clean, adjust or replace the spark plug
	Engine too much fuel (flooded)	Dry and clean the spark plug and start AT FULL THROTTLE
	Engine-Off line defective	Check the line and the connectors
	Wrong air due to loose gasifier and intake line	Tighten fastening screws
Petrol engine has black-outs	Engine runs within the range CHOKE	Set the choke lever in Operation position
	Loose ignition cable	Tightly plug the spark plug terminal on the ignition cable Firmly clamp the ignition cable

Fault	Possible causes	Remedy
		fastening Firmly plug the spark-plug terminal on the spark plug
	Fuel line is plugged or fuel is bad	Replace fuel filter or fill in fresh fuel
	Ventilation in the fuel tank cap plugged	Replace the fuel tank cap
	Water or dirt in the fuel system	Discharge fuel and clean; fill in fresh fuel
	Air filter dirty	Clean the air filter or replace it
	Gasifier wrongly adjusted	Adjust the gasifier
Petrol engine becomes too hot	Too less engine oil	Immediately refill engine oil
	Cooling air system restricted	Clean the fan grill; clean the internal clean the cooling fins
	Air filter dirty	Clean the air filter or replace it
	Gasifier not correctly adjusted	Adjust the gasifier
Petrol engine has black-outs at high speed	Ignition distance too small	Adjust spark plug
	No-load mixture not correctly adjusted	Adjust the gasifier
Petrol engine often goes out at no load	Ignition distance too wide, spark plug defective	Adjust or replace the spark plug
	Gasifier not correctly adjusted	Adjust the gasifier
	Air filter dirty	Clean the air filter or replace it
Petrol engine works irregularly	Governor control linkage polluted, jams	Clean the governor control linkage
Petrol engine does not go out in Stop position	Engine-Stop line defective	Check the line and the connectors
	Missing earth contact	Check the earth contact
Petrol engine too less power	Air filter dirty	Clean the air filter or replace it
	Cylinder head gasket loose or gasket damaged	Tighten the cylinder head gasket; replace seal
	Too low compression	Get the engine checked

8.4 Error list E-Start equipment

Fault	Possible causes	Remedy
E-starter does not work	Battery empty	Charge battery or replace it
	Fuse defective	Replace fuse
	Defect on cable harness, E-starter	Check cable harness and E-starter

8.5 Error list - traction drive

Fault	Possible causes	Remedy
Machine drives to the left right on one side	Different tyre pressures	Check tyre pressures and pump up if necessary
	Wheel motors worn	Determine the leakage oil quantity on the two wheel motors. If they differ too much, replace the two wheel motors.
	Wheel hub became loose	Check the seat of the hydraulic motor and the wheel hub and replace, if necessary. Tighten the castellated nut using an impact screw driver
	Valve levers are not in the end position	Check the Bowden cables for ease of motion and re-oil or replace, if necessary Check the stroke of the Bowden cables and re-adjust if necessary
	Clamp the wheel fork(s) of the attachment	Lubricate all wheel forks, so that this can be turned easily.
Performance of machine decreases	V-belts of the axial piston pumps are not sufficiently tensioned (only applies to RoughCutter)	Check the V-belt tension Replace the V-belt in case it is burned or the V-belt tensioner is in its end position
	Pump builds up too less pressure (Pump becomes louder or screeches)	Replace pump
	Oil temperature too hot	Check the oil quantity in the hydraulic oil tank and replace if necessary
	Bypass valve wrongly connected	Close the bypass valve on the steering valve
	Oil filter dirty	Replace the oil filter in the hydraulic oil tank (Pay attention to cleanliness)
	Oil leakage	Check hydraulic elements for leaks

8.6 Error list - drive line

Fault	Possible causes	Remedy
V-belts slip	V-belt tension too low because pretension is not sufficient	Adjust the stroke of the Bowden cable
	Flanks of the V-belts are hard and cracked	Replace V-belt because burned
	Attachment is blocked	Examine the attachment for foreign bodies and remove them if necessary
	External mallet blade has jammed between the mallet shaft and the side wall of the mallet housing (only applies to mallet mower and RoughCutter)	Release the blade from its jammed position

9 Dismantling, disposal

9.1 Safety instructions

Please strictly observe all safety instructions listed in the chapter Safety!
(See chapter 2 Safety on page 7)

9.2 Dismantling

Before starting the dismantling:

- Switch off the machine and safeguard it against a restart.
- Physically disconnect all power supplies from the machine, discharge stored residual energies.
- Remove the consumables and supplies as well as the processing materials and dispose them in an environmentally-friendly manner.

Subsequently, clean the assemblies and components properly and dismantle them by following the locally applicable work safety and environmental safety regulations.

9.3 Disposal

If no return- or disposal agreement has been signed, send the dismantled components for recycling:

- Scrap metals.
- Send plastic components for recycling.
- Sort the remaining components according to material composition and dispose them of.

⚠ CAUTION

Environmental damage caused by incorrect waste disposal!

An incorrect disposal can result in environmental damage.

- e-waste, electronic components, lubricants and other auxiliary materials must be disposed of by the authorised specialist company.
- In case of doubt, get information about proper environmental disposal from the local authorities or from specialist waste disposal companies.

Batteries and accumulators

⚠ CAUTION

Environmental damage due to batteries and accumulators!

Components of batteries and accumulators are toxic and represent a hazard for the environment.

- Never throw away batteries and accumulators in the household waste and dispose them only according to the regulations applicable at the place of use.

Components of the machine, which are marked by the symbol given alongside, should never be thrown in the household garbage. These components may be disposed of only by the specialist companies authorised at the place of use.

Lubricants

⚠ CAUTION

Environmental damage due to lubricants

Lubricants such as grease and oils contain toxic substances. These must not reach the environment.

- The disposal must be done by a specialist disposal company.

10 Technical data

10.1 General

		Unit
Type	UBS Hydro II	
Hydraulic oil tank	10	litres
Hydraulic oil	Bio hydraulic oil based on synthetic ester Avia Syntofluid N68 (recommended)	
Class of viscosity as per ISO	VG 68	
Max. operating pressure	180	bar
Delivery rate - pump	approx. 18	l/min
Drive speed **Forwards / backwards**	approx. 0 – 6 Infinitely variable	km/h
Power-take off speed at: **3,400 min^{-1} engine speed**	1,350	min^{-1}
Direction of rotation - power take-off shaft	Clockwise - seen from the front to the power take-off shaft	
Hand bar	Adjustable and vibration-damped	
Steering	Fully hydraulic (mechanically actuated)	
Tyre pressure at:	(max. 2.5 bar - potentially explosive)	
4.00-8 Block	1.4	bar
4.00-8 AS	2.2	bar
5.00-10 AS	2.2	bar
16x6.5-8 Block	1.9	bar
16x6.5-8 AS	1.9	bar
18x7 .00-8 AS	2.0	bar
Hand-arm-vibrations **as per DIN EN 12733:2009**	With mallet mower attachment < 2.5	m/s^2

10.2 Types of engine

UBS Hydro II 13

		Unit
Engine	Honda, top-controlled four-cycle one-cylinder engine	
Net generation	8.7 11.7	kW PS
Max. torque at specified speed	26.5 2,500	Nm min^{-1}
Cubic capacity	389	ccm
Maximum idle speed	3,000	min^{-1}
Spark plug	E.g. NGK BPR 6 ES	
Engine oil (recommended for common use)	approx. 1.1 Multi-purpose oil SAE 10W-30 API SJ (or higher)	litres
Fuel	Unleaded regular grade and super petrol	
Fuel tank	6.1	litres
Fuel consumption (at continuous operation)	3.5 3,600	l/h min^{-1}
Air filter	Dry filter element	
Start device	Reversing starter	
E-Start device - battery (optional)	12 90	V Ah

UBS Hydro II 14

		Unit
Engine	Briggs & Stratton Vanguard four-cycle one-cylinder engine	
Gross output	10.4 14	kW PS
Max. torque at specified speed	32.5 2,400	Nm min^{-1}
Cubic capacity	480	ccm
Maximum idle speed	3,300	min^{-1}
Spark plug	Bosch FR8DC Champion RC12YC	
Engine oil (recommended for common use)	approx. 1.7 SAE 10W-40 API-SE/SF or higher at ambient temperatures -15°C to +45°C SAE SW-20 API-SE/SF or higher at ambient temperatures -25°C to +15°C	litres
Fuel	Unleaded regular grade and super petrol	
Fuel tank	8.5	litres
Fuel consumption (at continuous operation)	5.4 3,600	l/h min^{-1}
Air filter	Dry filter element with primary filter of foam material	
Start device	Reversing starter	
E-Start device - battery (optional)	12 90	V Ah

UBS Hydro II 16

		Unit
Engine	Briggs & Stratton Vanguard four-cycle one-cylinder engine	
Gross output	11.9 16	kW PS
Max. torque at specified speed	33 2,400	Nm min^{-1}
Cubic capacity	480	ccm
Maximum idle speed	3,300	min^{-1}
Spark plug	Bosch FR8DC Champion RC12YC	
Engine oil (recommended for common use)	approx. 1.7 SAE 10W-40 API-SE/SF or higher at ambient temperatures -15°C to +45°C SAE SW-20 API-SE/SF or higher at ambient temperatures -25°C to +15°C	litres
Fuel	Unleaded regular grade and super petrol	
Fuel tank	8.5	litres
Fuel consumption (at continuous operation)	6 3,600	l/h min^{-1}
Air filter	Dry filter element with primary filter of foam material	
Start device	Reversing starter	
E-Start device - battery (optional)	12 90	V Ah

10.3 Electrical circuit diagrams

10.3.1 Without battery

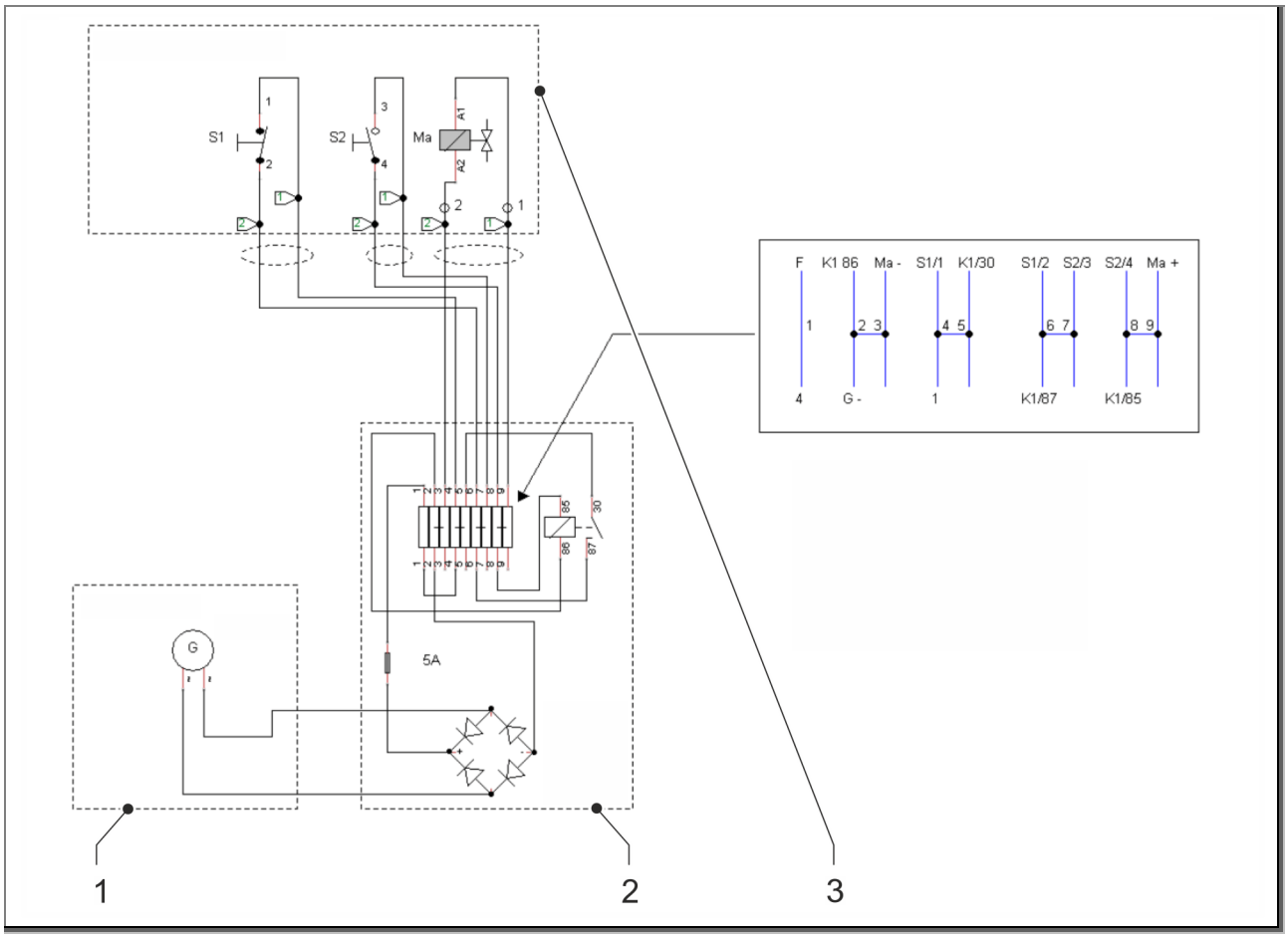

Fig. 18: Version without battery

1 Chassis / engine with dynamo machine
2 Electric box with rectifier
3 Dashboard panel / steering bar

G+	Rectifier plus-pole
G-	Rectifier minus-pole
S1	Switch on the pump
S2	Dead man switch
K1	Relay in electric box
Ma	Magnetic switch on valve
O	Terminal in cubic plug
1	Wire number

10.3.2 With battery

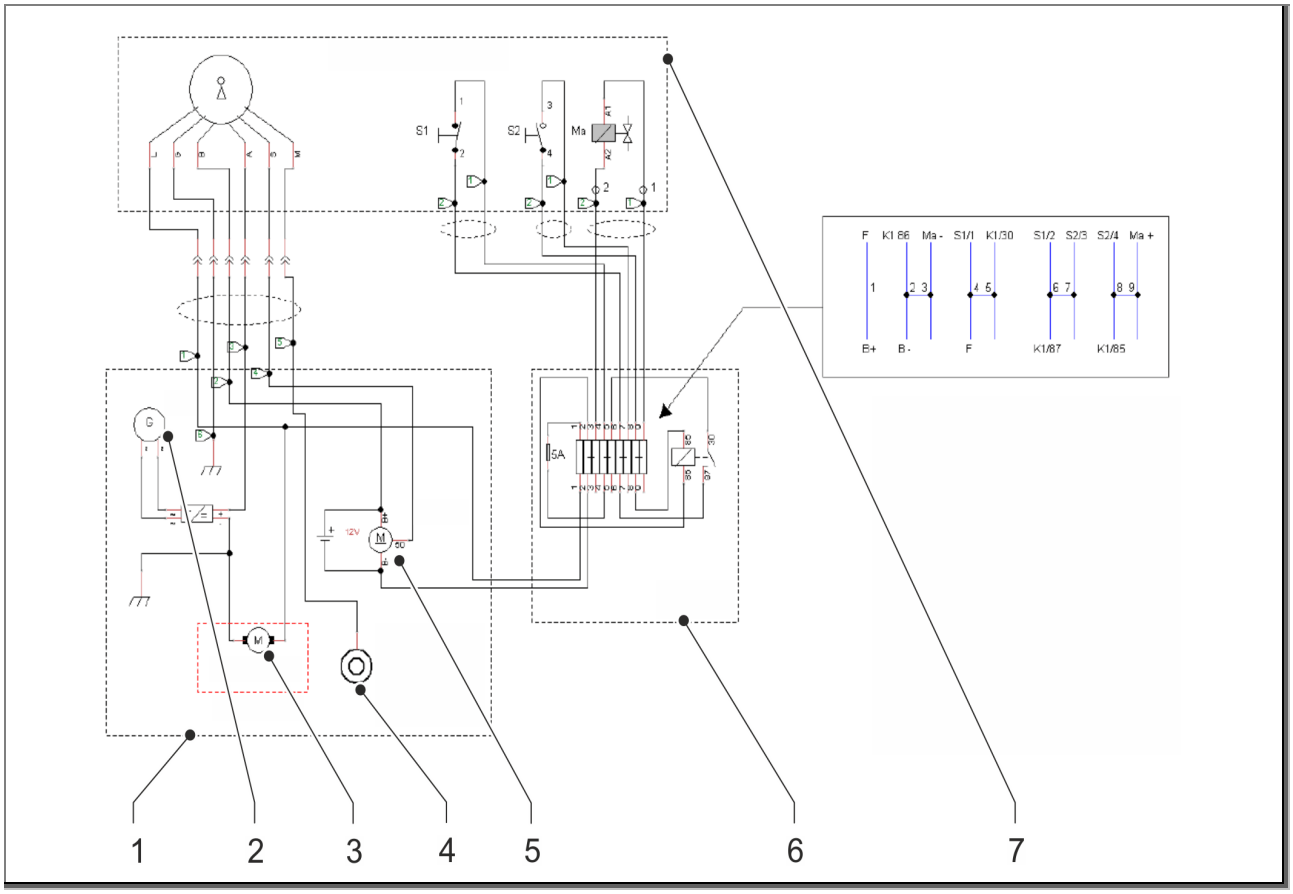

Fig. 19: Version with battery

1 Chassis
2 Dynamo machine
3 Fan / oil cooler (optional)
4 Engine earth conductor / Stop terminal
5 Starter
6 Electric box
7 Dashboard panel / steering bar

G+	Rectifier plus-pole
G-	Rectifier minus-pole
S1	Switch on the pump
S2	Dead man switch
K1	Relay in electric box
Ma	Magnetic switch on valve
O	Terminal in cubic plug
	Wire number

10.4 Declaration of conformity

We, the company
Kersten Arealmaschinen GmbH
Empeler Straße 95
46459 Rees, Germany

declare that the product

UBS Hydro II

complies with all applicable provisions of the Machinery Directive 2006/42/EC.
The machine is also in compliance with all applicable provisions of the following EC directives:

Low voltage directive	2014/35/EC
Pressure Equipment Directive	2014/68/EC

Furthermore, the following standards were applied:
EN ISO 12100: 2010
EN 12733: 2001
EN 709: 2011

Dipl. Ing. (FH) Robert Bosch, Empeler Straße 95, D- 46459 Rees
is authorized for compiling the technical documents.

Rees, 31.01.2018

Dipl. Ing. (FH) Robert Bosch
Managing Director

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