



Order-No. 9900.01.23GB01

Operating instructions  
Subsoiler  
***Digger HA***





Read and follow safety instructions





# **For Your Own Safety**

**In this enclosure to the operating instructions you will find some general rules of conduct explaining how to operate the implement correctly - and some safety advice which we advise you to observe for your own safety!**

**The list is very extensive, and some of the advice does not specifically relate to the implement supplied. However, the summary of advice is to remind you of safety guidelines which are often unconsciously ignored when operating the machines and implements on a daily basis.**

## **1. Authorized Use**

The implement has been specifically built to perform standard operations pertaining to agricultural work (authorized use).

Any type of usage outside of these parameters is deemed to be improper usage. The manufacturer accepts no responsibility for damage resulting from such usage, and the risks are to be borne solely by the user.

Within the bounds of authorized usage it is also necessary to adhere to the manufacturer's prescribed operational, maintenance and service conditions.

The implement may only be used, maintained or serviced by people who are familiar with such an implement and aware of the risks involved. Please also ensure that all safety instructions are passed on to other users.

It is important that any and all relevant accident prevention regulations and any other generally recognized safety, industrial hygiene and road traffic regulations be observed.

Modifications to the implement made by the user will void any liability on the part of the manufacturer for any resulting damage.

## **2. General Safety Advice and Accident Prevention Regulations**

- Before starting up your implement and tractor, please check that it is roadworthy and operatively safe.
- Please observe all generally valid safety and accident prevention regulations.
- The warnings and signs found on the implement are there to provide essential data needed to operate the unit safely. Please observe these for your own safety.
- When using public roads always follow the relevant traffic regulations.
- Before commencing work, ensure that you are familiar with all devices and operating controls as well as with the functions these perform. It is too late to do so once the implement is in operation!
- Operators should wear tight-fitting clothing. Try to avoid wearing loose clothing wherever possible!
- The machine should be kept clean to prevent the risk of fire!
- Check the immediate surroundings before driving off and putting the machine into operation! (Beware of children!) Ensure that you have sufficient visibility!
- Riding on the equipment during work or transportation is not allowed!
- Implements should be correctly coupled and only secured to the specified appliances.
- Special care is to be taken when coupling and uncoupling implements to or from the tractor.
- When coupling and uncoupling supports, always position them correctly. (Stability)
- Always ensure that weights are only added correctly to the specified mounting points.
- Observe all permissible axle loads, total weights and transportation dimensions.
- Check and mount transportation equipment such as lighting, warning devices, and guards, if necessary.
- Ensure that the release ropes used for rapid coupling and uncoupling hang loose and do not automatically release when in a low position.
- Never leave the operating platform when in transit.

- Road, steering and braking performance will be influenced by mounted or attached implements and ballast. Therefore make sure that you have sufficient steering and brake capability.
- Account for the width of the implement and its working load when taking corners.
- Only operate implements once all the safety devices/guards have been mounted and are in protection mode.
- Keep clear of working areas at all times.
- Keep clear of rotating and swinging parts on the implement.
- Ensure the swinging parts are clear of bystanders before operating any hydraulic folding frames.
- Power-steered parts (e.g. hydraulics) can cause crushing or amputation!
- On high-speed implements with ground-driven implements beware of after-running swinging parts! Only approach once the implement is at a complete standstill!
- Before leaving the tractor, lower the implement to the ground, switch off the engine and remove the ignition key!
- Do not allow anyone to stand between the tractor and the implement without first having secured the vehicle against running away by putting on the handbrake and/or using wheel chocks.
- Ensure that the folded-in frames and lifting equipment are securely in transportation position.
- Fold in and lock the packer catching arms before transporting on roads.
- Lock the marker arms to transportation position.

## **2.1 Coupled Implements**

- Before coupling or uncoupling an implement to the three-point linkage, position the operating device in such a way as to prevent unintentional lifting or lowering.
- When using the three-point linkage it is vital that the coupling configurations of the tractor and implement correspond or are co-ordinated.
- There is a risk of injury through crushing or amputation near the three-point linkage.

- When using the external controls to operate the three-point linkage, keep clear of the area between the tractor and the implement.
- When the implement is in transportation position, always ensure that the tractor's three-point linkage is sufficiently locked at the side.
- When transporting a raised implement on public roads ensure the control lever is locked in place to prevent accidental lowering.

## **2.2 Mounted Implements**

- Secure the implement to prevent it from running away.
- Observe the max. permissible bearing loads for the trailer coupling, swinging drawbar or hitch.
- If a drawbar trailer is used, ensure that there is sufficient manoeuvrability at the towing point.

## **2.3 PTO Drive (applies only to PTO-driven implements)**

- Only use the drive shafts specified by the manufacturer.
- A pipe shield and protective bell must be mounted on the drive shaft as well as a PTO guard – also possible on the implement - and must be in perfect working order.
- Ensure the specified pipe covers are used on the drive shafts when in transportation and working position.
- Only couple and uncouple the drive shaft once the PTO has been disengaged, the engine switched off and the ignition key removed.
- Ensure that the drive shaft is mounted and secured correctly at all times.
- Secure the drive shaft guard by locking the chains in place to prevent them from turning.
- Before engaging the PTO make sure that the PTO speed chosen on the tractor complies with the permissible speed of the implement.
- When using ground speed power take-off ensure that the speed is regulated by the travel speed and that the direction of rotation changes when reversing.

- Before engaging the PTO make sure that the area of danger around the implement is free of bystanders.
- Never engage the PTO when the engine is switched off.
- When working with the PTO, keep the area around the rotating PTO and drive shaft clear of any bystanders.
- Always disengage the PTO where the bends are too big and it is not needed.
- Caution! Beware of after-running gyrating loads after disengaging the PTO! Do not stand too close to the implement during this time. Only begin working on it once it has come to a complete standstill. It is essential that you switch off the engine and remove the ignition key.
- Before cleaning, greasing or adjusting a PTO-driven implement or its drive shaft, always disengage the PTO, switch off the engine and remove the ignition key.
- Place the uncoupled drive shaft on the specified support.
- Cover the stump of the PTO with a protective cover after dismounting the drive shaft.
- Any damage which may arise should be repaired immediately. Never work with a damaged implement.

## 2.4 Hydraulic Equipment

- Hydraulic equipment is under very high pressure.
- When connecting hydraulic cylinders and motors ensure that the hydraulic hoses are connected as specified.
- When connecting hydraulic hoses to the tractor's hydraulics ensure that the hydraulics are depressurized on the tractor and the implement.
- Where it is necessary to connect hydraulic functions between the tractor and the implement, the coupling sockets and plugs should be marked to prevent faulty operation.  
Mixing up the connections will reverse the functions (e.g. lift/lower) - **Risk of injury!**
- Check the hydraulic hose connections at regular intervals and replace if damaged or aged. The replacement hydraulic hoses must comply with the technical requirements stipulated by the implement manufacturer.
- When looking for leaks, use suitable aids and resources to prevent injury.

- Liquids that leak at high pressure (hydraulic oil) can penetrate the skin and cause serious injury! In the event of injury, consult a doctor immediately. Risk of infection!
- Before working on hydraulic units, lower the implement, depressurize the system, switch off the engine and remove the ignition key.

## **2.5 Brakes and Tyres**

- Check that the brakes are functional before every journey.
- Thorough checks are to be performed on the brake systems at regular intervals.
- Adjustments or repairs to the brake system may only be performed by qualified staff or recognized brake service centres. Only use the prescribed brake fluid and replace as specified.
- When working on the tyres please ensure that the implement has been securely parked and cannot run away (wheel chocks).
- Fitting tyres requires having sufficient training and the correct fitting tools.
- Wheel and tyre repairs may only be performed by qualified staff using the correct fitting tools.
- Check the air pressure at regular intervals observing the prescribed air pressures given.

## **2.6 Maintenance**

- Service, maintenance and cleaning work as well as the elimination of malfunctions should only be carried out once the drive unit has been switched off and the engine has come to a standstill. Remove the ignition key.
- Check that the nuts and bolts are snug, and tighten as necessary.
- When carrying out maintenance work on a raised implement always secure using suitable support elements.
- When replacing bladed working tools use the appropriate tools and gloves.
- Dispose of all oils, grease and filters in a due and proper manner.
- Always disconnect the power supply before working on electrical equipment.

- When performing electrical welding work on a tractor with a mounted implement disconnect any cables connected to the generator and the battery.
- Gas tanks must only be filled using nitrogen to avoid risk of explosion.!
- Spare parts must at a minimum comply with the technical requirements given by the manufacturer of the implement. We therefore recommend that for your own safety you **use original parts only!**

## **2.7 Additional Hints and Tips: Mechanical Seed Drills**

- Danger! Beware of rotating and oscillating machine parts when performing a calibration test.
- Only use the tread plates for filling purposes. Riding on the machine during operation is prohibited.
- When transporting on public roads protect or remove the thrust collars on the pre-emergence marking.
- When filling the seed hopper, observe the information provided by the implement manufacturer.
- Lock row markers in transportation position.
- Do not place any foreign parts in the seed hopper – the agitating shaft also rotates during manoeuvring.
- Observe the permissible filling quantities.





## Operating instructions

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### *Digger HA*

Read carefully through these operating instructions and safety precautions ("For your safety") before operating the device for the first time, and ensure that they are observed at all times.

The person operating the machine must be properly qualified to do so, trained in its use and everyday maintenance, and familiar with the potential hazards and accident-prevention regulations involved. Ensure that a copy of the safety precautions is passed on to all subsequent users.

Ensure that all relevant local accident-prevention regulations are observed, along with generally accepted safety procedures and any legislation that may apply with respect to health and safety in the workplace.

Observe all warning notices.

Instructions in this manual accompanied by this symbol are used to indicate danger, along with warning notices fixed to the device. (For a key to warning symbols, see the appendix).



#### **Loss of warranty**

The digger is designed exclusively for normal agricultural use. Any use for a purpose other than this shall be regarded as incorrect operation, and no liability will be accepted for resulting loss or damage. This concept of intended use also covers the full observance of all operating, maintenance and servicing specifications: including, for example, the kW/PS limits and the exclusive use of original spare parts.

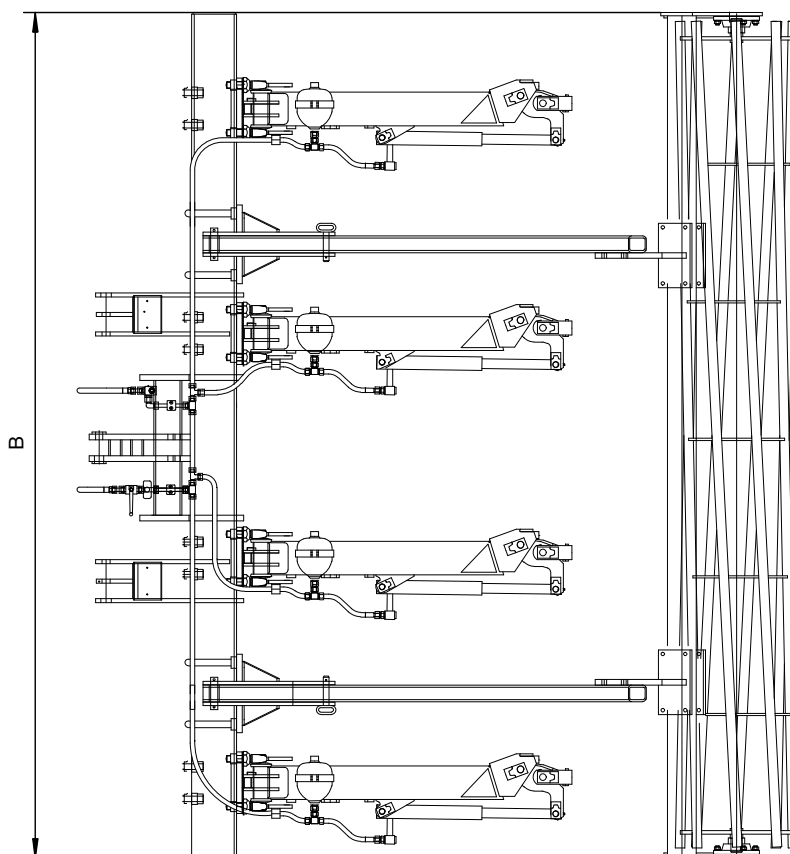
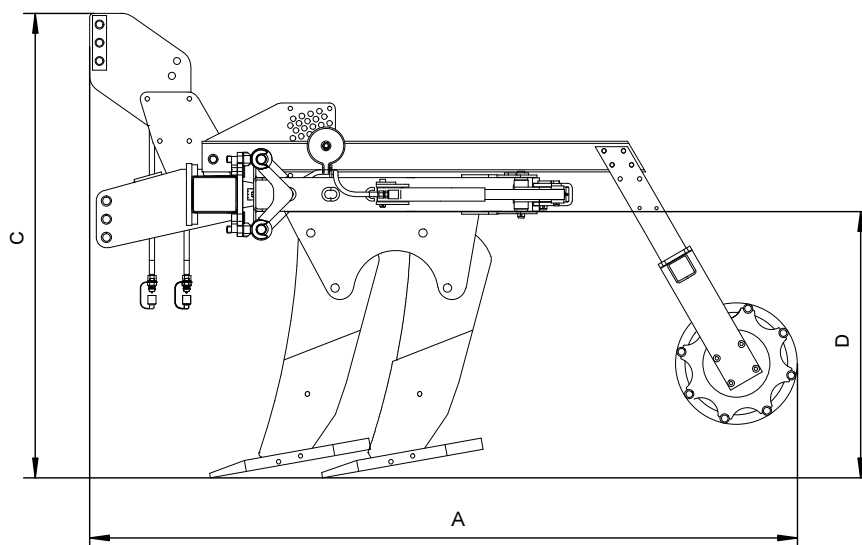
The use of non-original accessories, spares and/or consumables that do not carry specific approval from Rabe shall void all warranty liabilities.

We can accept no liability whatsoever for damage, loss or injury resulting from the carrying out of unauthorised repairs and/or modifications to the device.

Claims for missing or damaged items detected at the moment of delivery (transit damage, missing parts) should be made immediately and in writing.

Guarantee claim conditions and our liability exclusions are based on our general terms and conditions.

## Machine data



Digger HA								
Ground type	Number of cutters	Working depth approx.	Weight in kg (approx.)	For tractors up to kW/PS	Lengths in mm (approx.)			
					A	B	C	D
Digger HA 2	2/4	200-450 mm	670	90/120	2500	3000	1500	900
Digger HA 3	3/6		905	150/180				
Digger HA 4	4/8		1110	180/250				

The weight can be increased by up to 380 kg with the addition of extra attachments.

We reserve the right to make technical changes.

## Safety precautions



Do not allow anyone to stand between the tractor and the device during coupling or uncoupling, even if this is to allow operation of the external hydraulic controls. Danger of injury!

The operator should run the machine from the tractor driver's seat at all times. Always set the tractor's hydraulic lifting mechanism to "attitude control" before coupling or uncoupling. Check the tractor and ground loosener before each startup to ensure that they are in perfect working order for driving and operation.



Take secure steering into account, by attaching an adequate counterweight to the front of the tractor if necessary. Note that there is a danger of crushing and cutting injuries occurring in the area of the three-point attachment and folding side sections, and also around the roller-attachment linkage.

Beware of after-running packer rollers when the implement is lifted at the end of a fast run; do not approach until the rollers have come to a complete stop.

Before moving or operating the implement (or folding in/out), always check to ensure that no one is standing within its turning circle or operating area.

DO NOT stand or ride on the implement or remain within its turning circle or operating area.



Disable the tractor's hydraulic control system to prevent accidental operation while the implement is being towed along public roads. Before leaving the tractor unattended, lower the implement, switch off the engine and remove the ignition key.

Carry out all adjustment and maintenance operations with the implement lowered.

Before operating for the first time – or after a long period out of use – check all screws and bolts for tightness, make sure that all bearings are sufficiently greased, examine the hydraulic system for leaks and check tyre pressures.

The operating pressure of the hydraulic system must not exceed 200 bar.

- Sound level: < 70 dB(A)


- Maximum length of combination (tractor + device) 12m

- Width 2.55m, maximum 3m

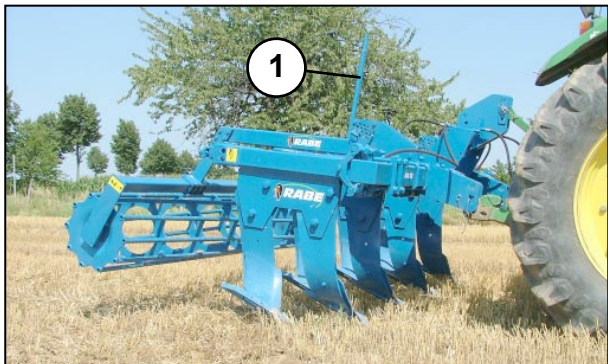
- Maximum height 4m

- Maximum total weight of combination 16t, of which 20% on front axle.

The machine identification plate (3.1) contains certification details, and must not be altered or made illegible.

Typ: _____		 Rabe Agrarsysteme GmbH & Co. KG, D-49152 Bad Essen
Fz.-Ident.-Nr. _____		
zul. Stuetzlast	kg	
zul. Achslast	kg	
zul. Gesamtgewicht	kg	
Eigengewicht	kg	
Baujahr:	Nr.	

3.1



4.1

### Attachment / Removal

Check for matching connection ratings (category II or III).

Adjust both lower arms to the same height. Start by hitching the lower arms to the device. Then attach the upper arms.

You can now retract the support stands (4.1/1).

Correctly secure the coupling assembly (three-point linkage).

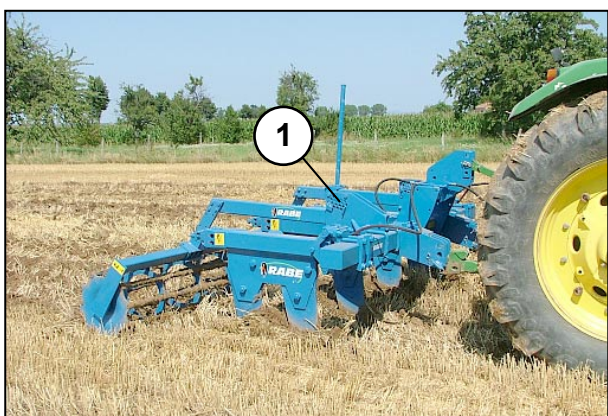
Remove in reverse order (extend support (4.1/1) and secure, detach upper arms, release lower arms).

Set the hydraulic system to "attitude control" before carrying out the coupling operation. Do not stand between the tractor and device when carrying out the coupling operation, not even to allow use of the rear-mounted hydraulic controls. Danger of injury!

### Working-depth adjustment

Select a length for the upper arm that ensures the horizontal alignment of the device during operation. To maintain the depth adjustment, the ground loosener can be operated in pulling-power or attitude-control mode.

Adjust the operating depth to above the rod packer roller – secure in perforated strip (4.2/1) using pins.



4.2

### Operating speed

Driving speed should not exceed 4.5 km/h.

### Working width, tine position

The tines can be infinitely laterally adjusted on the frame by further limits.

When doing so, ensure that the tines are distributed symmetrically overall.

### IMPORTANT

After positioning the tines, check to ensure that there is still sufficient room after activation of the stone guard.

### "HydroAvant" hydraulic stone guard

The "HydroAvant" stone guard protects the tines from being strained excessively.

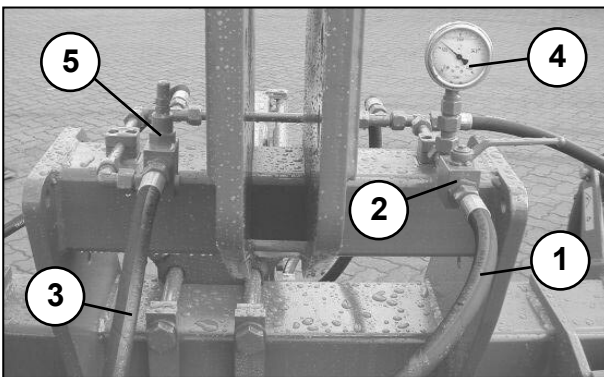
The stone guard is factory-adjusted to a pressure of 100 bar.

If the cutters become slightly misaligned in soft ground, or if the spring-back force is insufficient for heavy soil, pressure can be adapted to ground conditions.

The return conduit (5.1/3) (with yellow cap) must always be connected to a pressure-free return socket on the tractor during operation. The pressure conduit (5.1/1) (red cap) is required only for the correction of system pressure.

#### System-pressure settings

- Connect the pressure conduit (5.1/1) to the single-action tractor control device.
- Open the shutoff valve (5.1/2)
- Use the tractor control device to adjust system pressure to the desired setting, observing the value displayed on the pressure gauge (5.1/4). The maximum adjusted pressure in the system when idle must not exceed 160 bar.
- If the system pressure is higher, oil is blown out via the return conduit (5.1/3) and pressure control valve (5.1/5). Close the shutoff valve (5.1/2).
- Release pressure on the conduit at the tractor end and uncouple from the tractor.



5.1

Max. tractor operating pressure approx. 200 bar.

System pressure must also be corrected after simultaneous release of several tines at a high pressure. The drained oil must then be put back into the system via the fine-adjustment pressure control valve (5.1/5) and the return conduit (5.1/3) to the tractor.

#### IMPORTANT

All fitting work on the hydraulic stone guard must be carried out by suitably trained personnel.

- Installation must be carried out with the hydraulic system depressurized (see: system-pressure adjustment).
- The digger must be placed on supports before releasing system pressure.
- The digger tines must not be used again until system pressure is adjusted.

## Maintenance

Switch off the engine and remove the ignition key before working on the attached implement.

Do not work under a non-secured raised implement.

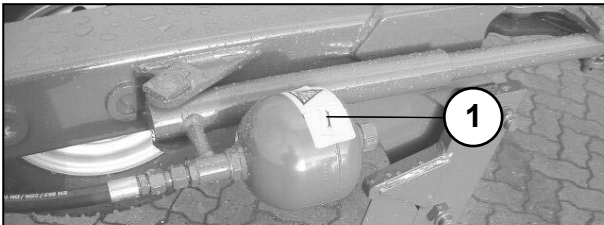
Provide the raised device with additional support to prevent accidental dropping.

Before working on the hydraulic system, lower the device and release the hydraulic pressure. Do not attempt to replace tyres without adequate expertise or the right tools. Dispose of anti-freeze and waste oil correctly.

After initial startup (approx. 8 h), retighten all screws and bolts, then check for tightness at regular intervals.

Apply a grease gun to all bearing lubrication nipples at regular intervals; the wheel bearings must be lubricated once a year (remove the wheel hubs).

Check the wheel bearings (tapered roller bearings) and adjust as required. These hoses are subject to a natural ageing process and should in any case be replaced after 5-6 years, regardless of their apparent condition.



6.1

## Residual risks

Danger zone	Note
Shut down the entire device	Operating Instructions: Attachment and removal
Connection of the complete device	Operating Instructions: Safety precautions
HA: Stone guard	Operating Instructions: Hydraulic stone guard

Do not carry out modifications on the hydraulic buffer (6.1/1) by machining, welding or other procedures. The liquid pressure in the hydraulic buffer must be completely released before work of any kind is carried out on the hydraulic circuit. All maintenance, servicing and / or the removal of components must be carried out by properly-trained personnel.

## Caution / transport



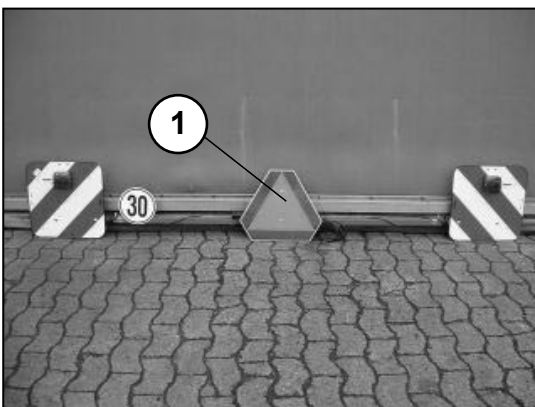
Prepare and check the implement for transport by road. Do not allow persons to stand or ride on the implement, or remain within its turning circle or operating area. Observe the relevant speed limits and traffic regulations when transporting the outfit by road. Take care when negotiating curves, as towed implements tend to swing out. Observe the road traffic regulations (StVZO or your local equivalent). These regulations normally make the user responsible for the secure hitching and safe operation on public roads of the tractor and the implements being towed. The attachment of towed implements must not lead to any excess with respect to the permitted axle load, laden weight or tyre load (depending on speed and pressure) of the tractor. For safe steering, the front axle of the tractor must bear at least 20 % of the vehicle's unladen weight.



The maximum permitted width of the load is three metres. A special permit is normally required for moving oversized loads. In the case of front attachment, the distance between the front end/ground loosener and centre of steering wheel /tractor must not exceed 3.5 m. If this "front-end limit" is exceeded, the user must take appropriate measures to ensure that there is adequate driver visibility at the farmyard exit, road junctions and crossings. This can be carried out, for example, by use of a second person (on foot or in another vehicle) to give the tractor driver appropriate instructions. No avoidable overhanging item must endanger other traffic or road users (sect. 32 StVZO or your local equivalent). Overhanging items that cannot be avoided must be covered and fitted with warning notices. Safety devices include appropriate lighting and signs around all sides and the rear of the vehicle and towed implement, e.g. red/white striped warning signs (423 x 423 mm). Additional lighting is required if the towed implement blocks those already fitted to the tractor, or weather conditions make it advisable: e.g. to front and rear, if the towed implement is wider than the tractor's lights by more than 40 cm, or overhangs by more than 1 metre with respect to the existing rear lights. If an additional pair of headlamps is required for the front-mounted configuration (with only one set of headlamps switched on at once), a special permit is normally required.

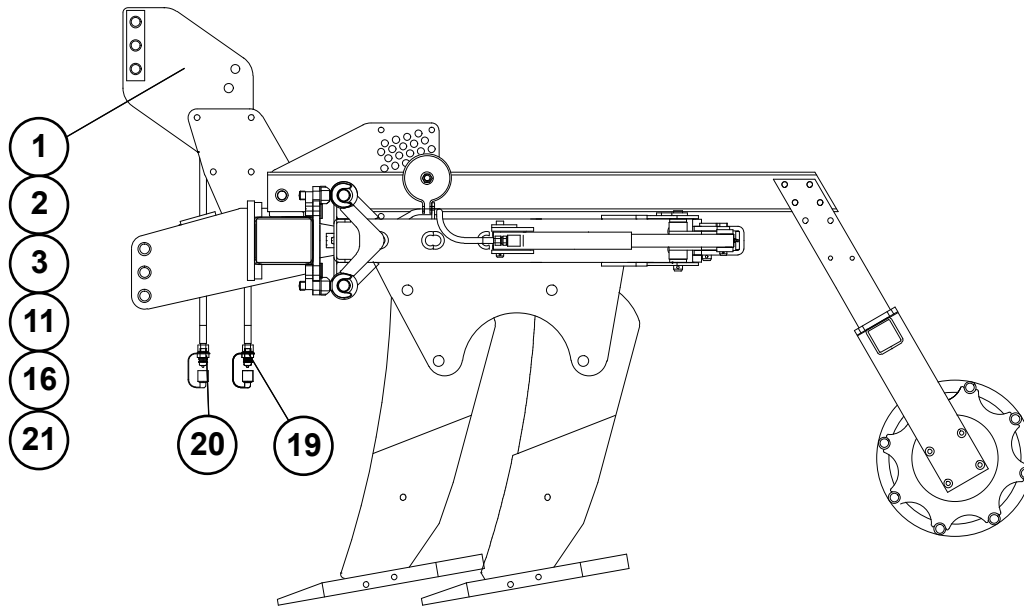
A lighting system – with warning panels – can also be obtained from RABE as an optional extra.

When transporting on public roads in Poland, the warning triangle (7.1/1) must be fixed to the centre of the machine.

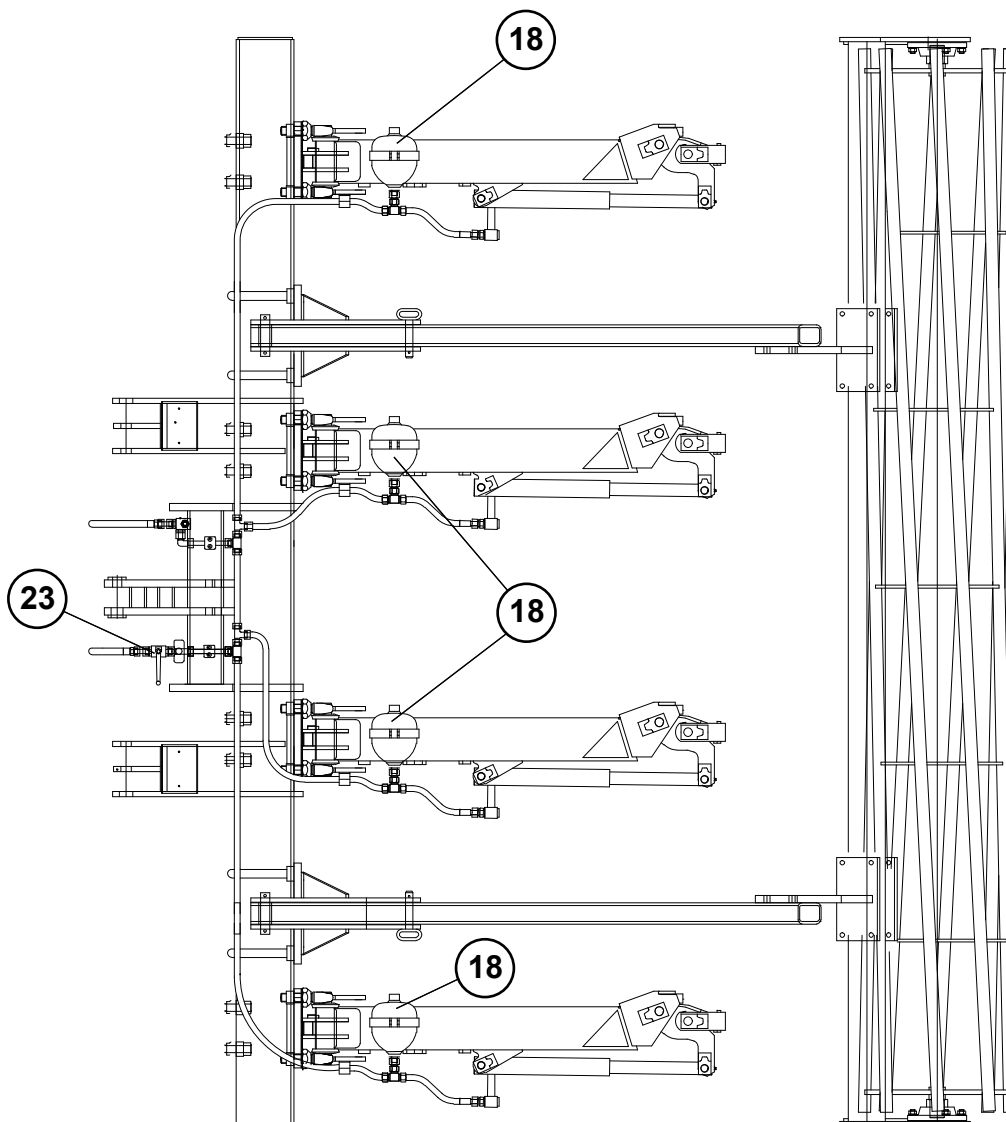


7.1

## Arrangement of warning signs on the device



For key to symbols, see following warning signs.



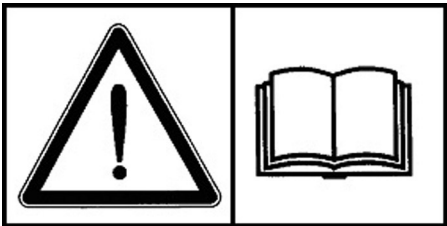

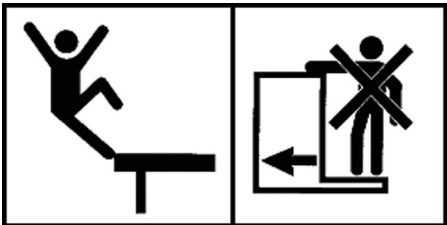


# Key to warning labels (pictograms)








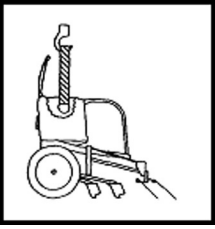
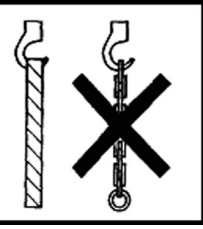




Warning labels are used to indicate possible danger areas; they provide information on how to operate the implement safely.



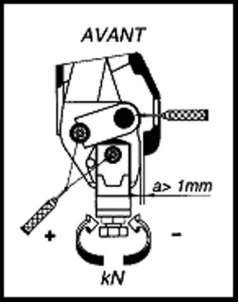




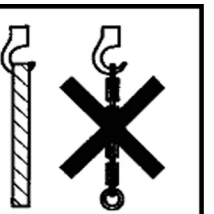

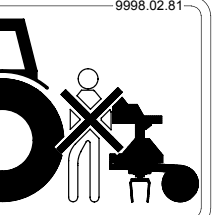

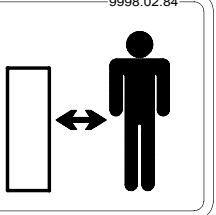
The pictograms are an integral part of the implement.

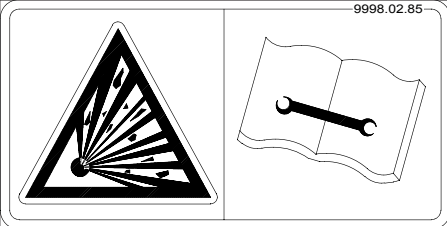
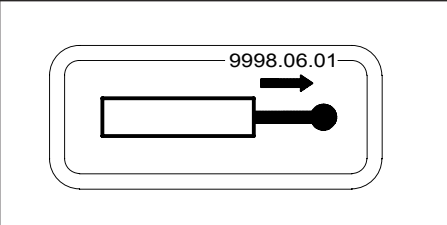
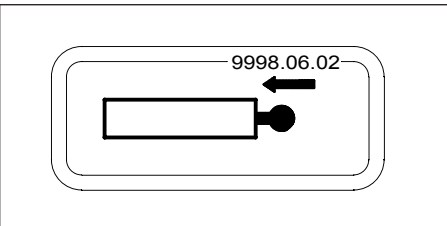
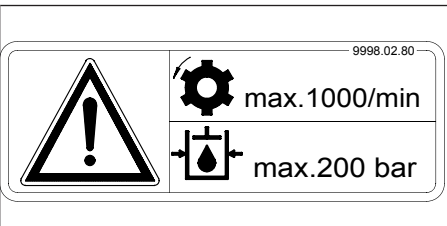
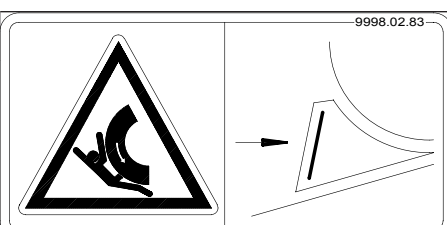
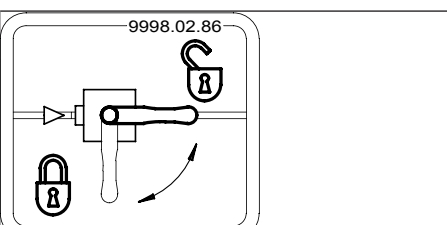
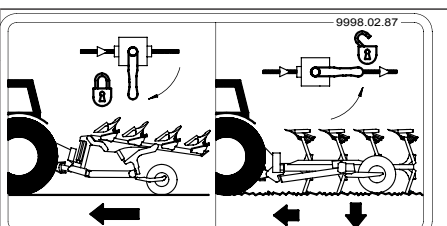
Warning labels should be visible (dirt-free) at all times, and replaced if damaged – they can be ordered from Rabe under the relevant pictogram number (Pict. No.).

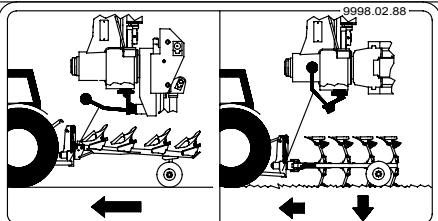
Pict. No.

1 9998.02.59	Position-No. 	<p>Read operators instruction book before operation and ensure you understand the safety advices and the informations contains in it.</p>
2 9998.02.73		<p>Retighten all screws and bolts after the initial hours of work, and check regularly for tightness thereafter. For torque settings refer to manual or parts list. Use torque limiting spanner.</p>
3 9998.02.56		<p>Never allow people to stand or sit on the machine during work or in transport. Enter filling platform only when the machine is not in motion.</p>
4 9998.02.53		<p>Folding wings. Keep away! Keep clear and do not enter danger area. When extending take care of sufficient space.</p>
5 9998.02.52		<p>Plough may turn or swing in. Keep away. Do not enter danger area.</p>

<p>6</p> <p>9998.02.61</p>	 	<p>Danger of squeezing. Keep away!</p>
<p>7</p> <p>9998.02.55</p>	 	<p>Rotating tools. Keep away!</p> <p>Do not grasp behind safety devices or covers.</p> <p>Never carry out work unless PTO-drive is disengaged and the engine is stopped.</p>
<p>8</p> <p>9998.02.57</p>	 	<p>Danger of Life by load from top!</p> <p>Lift Turbodrill only with empty hopper and never together with rotary harrow.</p> <p>Use safe lifting gear and fit straps only on hooks provided.</p>
<p>9</p> <p>9998.02.12</p>	  	<p>Danger of Life by load from top! For lifting seed drills use only straps. No chains.</p> <p>Fit straps on divider plate inside the hopper.</p>
<p>10</p> <p>9998.02.11</p>	 	<p>Danger of Life by load from top!</p> <p>Lift with empty hopper only and never with rotary harrow or any other implement attached.</p> <p>Use safe lifting gear and fit straps only on hooks provided.</p>
<p>11</p> <p>9998.02.63</p>	 	<p>Use suitable and safe lifting gear and fasten here.</p> <p>Keep a safe distance from the machine being lifted.</p>

12	9998.02.60	 	<p>Danger of leg injuries when elements may suddenly swing out. Keep away!</p>
13	9998.02.58		<p>Grease all marked grease nipples regularly. The reset force can be increased by adjusting the bolt (kN) to the left (!). Reduce by turning to the right. There must be always a minimum clearance a of 1 mm. Caution! Spring is pre-loaded. Do not dismantle or remove spring system without the use of special tools and without being familiar with the dismantling instructions provided by the manufacturer. Danger of Life!</p>
14	9998.02.64	 	<p>Never open or remove any safety guards when the unit is running. Keep away!</p>
15	9998.02.10	  	<p>Danger of Life by load from top! Lift with empty hopper only and never with rotary harrow or any other implement attached. Fit straps on divider plate inside the hopper and only on hooks provided. Use no chains.</p>
16	9998.02.81	 	<p>Risk of crushing in and around the tractor and the implement! When coupling the implement combination to the tractor, ensure that no one is standing within the operating areas of the tractor or implement! Do not step between the tractor and implement to operate the external three-point hydraulic controls.</p>
17	9998.02.84	 	<p>Caution! Hurling foreign objects! Keep danger areas clear of people!</p>

<b>18</b> 9998.02.85		<p>Hydraulic accumulator is pressurized. Repair and replace only as prescribed in the Technical Manual provided.</p>
<b>19</b> 9998.06.01		<p>Oil flow path: Forward: "Lift"</p>
<b>20</b> 9998.06.02		<p>Oil flow path: Return "Lower" or "Tank"</p>
<b>21</b> 9998.02.80		<p>The maximum operating pressure for the hydraulic system must not exceed 200 bar! The maximum rotational frequency of the PTO shaft must not exceed 1000/min!</p>
<b>22</b> 9998.02.83		<p>Before uncoupling or parking an implement, secure with wheel chocks to prevent rolling.</p>
<b>23</b> 9998.02.86		<p>Stop-cock to throughput and closed.</p>
<b>24</b> 9998.02.87		<p>Before transporting on roads, set to lock position with the shut-off valve open.</p>

<p><b>25</b></p> <p>9998.02.88</p>		<p>Safety catch for road transportation on combi-wheel.</p> <p>Disengage safety catch before working in the field.</p>
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