Operating Manual

AMAZONE

Certos 5002-2TX
Certos 6002-2TX
Certos 7002-2TX

Trailed compact disc harrow

MG6905
BAG0219.8 03.24
Printed in Germany

SmartLearning

Read and observe this operating manual before using the implement for the first time! Keep it in a safe place for future use!

en-US

Reading the instruction

manual and to adhere to it should not appear to be inconvenient and superfluous as it is not enough to hear from others and to realise that a implement is good, to buy it and to believe that now everything would work by itself. The person concerned would not only harm himself but also make the mistake of blaming the implement for the reason of a possible failure instead of himself. In order to ensure a good success one should go into the mind of a thing or make himself familiar with every part of the implement and to get acquainted with its handling. Only this way, you would be satisfied both with the implement as also with yourself. To achieve this is the purpose of this instruction manual.

Leipzig-Plagwitz 1872. Rud. Sark.

Identification data

Manufacturer:	AMAZONEN-WERKE H. DREYER SE & Co. KG
Implement identification no.:	
Type:	Certos
Year of manufacture:	
Factory:	
Basic weight	
Approved total weight	
Maximum load:	

Manufacturer's address

AMAZONEN-WERKE
H. DREYER SE & Co. KG
Postfach 51
D-49202 Hasbergen
Phone: + 49 (0) 5405 50 1-0
E-mail: amazone@amazone.de

Spare part orders

Spare parts lists are freely accessible in the spare parts portal at www.amazone.de.

Please send orders to your AMAZONE dealer.

Formalities of the operating manual

Document number:	MG6905
Compilation date:	03.24

Foreword

Dear Customer,

You decided to purchase one of our high quality implements from the comprehensive range of farm implementry produced by AMAZONEN-WERKE, H. DREYER SE & Co. KG. We thank you for your confidence in our products.

On receiving the implement, check to see if it was damaged during transport or if parts are missing. Using the delivery note, check that the implement was delivered in full including the ordered special equipment. Replacement will be made only if a claim is filed immediately!

Please read and follow this operating manual—in particular, the safety instructions—before putting the implement into operation. Only after careful reading will you be able to benefit from the full scope of your newly purchased implement.

Please ensure that all the implement operators have read this operating manual before they put the implement into operation.

Should you have any questions or problems, please consult this operating manual or contact your local service partner.

Regular maintenance and timely replacement of worn or damaged parts increases the lifespan of your implement.

User evaluation

Dear Reader

We update our operating manuals regularly. Your suggestions for improvement help us to create ever more user-friendly manuals.

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1 User information

The "User information" section supplies information on using the operating manual.

1.1 Purpose of the document

This operating manual

- Describes the operation and maintenance of the implement.
- Provides important information on safe and efficient handling of the implement.
- Is a component part of the implement and should always be kept with the implement or the traction vehicle.
- Keep it in a safe place for future use.

1.2 Locations in the operating manual

All the directions specified in the operating manual are always viewed in the direction of travel.

1.3 Diagrams used

Instructions for action and reactions

Tasks to be carried out by the user are presented as numbered instructions. Always keep to the order of the instructions. The reaction to instructions is given by an arrow. Example:

1. Instruction for action 1

→ Reaction of the implement to instruction for action 1

2. Instruction for action 2

Lists

Lists without a mandatory sequence a presented as a list with bullet points. Example:

- Point 1
- Point 2

Item numbers in diagrams

Numbers in round brackets refer to the item numbers in the diagrams. The first digit refers to the diagram; the second digit, to the item number in the illustration.

Example (6)

→ Item 6

2 General safety instructions

This section contains important information on safe operation of the implement.

2.1 Obligations and liability

Comply with the instructions in the operating manual

Knowledge of the basic safety information and safety regulations is a basic requirement for safe handling and fault-free implement operation.

Obligations of the operator

The operator is obliged only to let those people work with/on the implement who

- Are aware of the basic workplace safety information and accident prevention regulations.
- Have been introduced to working with/on the implement.
- Have read and understood this operating manual.

The operator is obliged

- To keep all the warning pictograms on the implement in a legible state.
- To replace damaged warning pictograms.

Obligations of the user

Before starting work, anyone charged with working with/on the implement is obliged

- To comply with the basic workplace safety instructions and accident prevention regulations.
- To read and observe the section "General safety information" of this operating manual.
- To read the section "Warning symbols and other labels on the implement" (page 18) of this operating manual and to follow the safety instructions represented by the warning symbols when operating the implement.
- To get to know the implement.
- To read the sections of this operating manual, important for carrying out your work.

If the user discovers that a function is not working properly, then they must eliminate this fault immediately. If this is not the task of the user or if the user does not possess the appropriate technical knowledge, then they should report this fault to their superior (operator).

Risks in handling the implement

The implement has been constructed to the state-of-the art and the recognised rules of safety. However, there may be risks and restrictions which occur when operating the implement

- For the health and safety of the user or third persons,
- For the implement,
- For other goods.

Only use the implement

- For the purpose for which it was intended.
- In a perfect state of repair.

Eliminate any faults that could impair safety immediately.

Guarantee and liability

Our "General conditions of sales and business" are always applicable. These shall be available to the operator, at the latest on the completion of the contract. Guarantee and liability claims for damage to people or goods will be excluded if they can be traced back to one or more of the following causes:

- Improper use of the implement.
- Improper installation, commissioning, operation and maintenance of the implement.
- Operation of the implement with defective safety equipment or improperly attached or non-functioning safety equipment.
- Non-compliance with the instructions in the operating manual regarding commissioning, operation and maintenance.
- Independently-executed construction changes to the implement.
- Insufficient monitoring of implement parts that are subject to wear.
- Improperly executed repairs.
- Catastrophic events as a result of the impact of foreign objects or force majeure.

2.2 Representation of safety symbols

Safety instructions are indicated by the triangular safety symbol and the highlighted signal word. The signal word (DANGER, WARNING, CAUTION) describes the gravity of the risk and has the following significance:

DANGER

Indicates an immediate high risk, which will result in death or serious physical injury (loss of body parts or long term damage) if not avoided.

If the instructions are not followed, then this will result in immediate death or serious physical injury.

WARNING

Indicates a medium risk, which could result in death or (serious) physical injury if not avoided.

If the instructions are not followed, then this may result in death or serious physical injury.

CAUTION

Indicates a low risk, which could incur minor or medium level physical injury or damage to property if not avoided.

IMPORTANT

Indicates an obligation to special behaviour or an activity required for proper implement handling.

Non-compliance with these instructions can cause faults on the implement or in the environment.

NOTE

Indicates handling tips and particularly useful information.

These instructions will help you to use all the functions of your implement to the optimum.

2.3 Organisational measures

The operator must provide the necessary personal protective equipment, such as:

- Protective goggles,
- Safety shoes,
- Protective overall,
- Skin protection cream, etc..

The instruction manual

- Must always be kept at the place at which the implement is operated.
- Must always be easily accessible for the user and maintenance personnel.

Check all the available safety equipment regularly.

2.4 Safety and protection equipment

Before each commissioning of the implement, all the safety and protection equipment must be properly attached and fully functional. Check all the safety and protection equipment regularly.

Faulty safety equipment

Faulty or disassembled safety and protection equipment can lead to dangerous situations.

2.5 Informal safety measures

As well as all the safety information in this operating manual, comply with the general, national regulations pertaining to accident prevention and environmental protection.

When driving on public roads and routes, then you should comply with the statutory road traffic regulations.

2.6 User training

Only trained and instructed persons should be allowed to work with/on the implement. The responsibilities of the operating and maintenance personnel must be clearly defined.

People being trained may only work with/on the implement under the supervision of an experienced person.

Activity \ People	Particularly trained persons[1)]	Instructed operator [2)]	Persons with specialist training (authorised workshop) [3)]
Loading/Transport	X	X	X
Commissioning	--	X	--
Set-up, tool installation	--	--	X
Operation	--	X	--
Maintenance	--	--	X
Troubleshooting and fault elimination	X	--	X
Disposal	X	--	--

Legend: X..permitted --..not permitted

1) A person who can assume a specific task and who can carry out this task for an appropriately qualified company.

2) Instructed persons are those who have been instructed in their assigned tasks and in the possible risks in the case of improper behaviour, have been trained if necessary, and have been informed about the necessary protective equipment and measures.

3) People with specialist technical training shall be considered as a specialist. Due to their specialist training and their knowledge of the appropriate regulations, they can evaluate the work with which they have been charged and detect possible dangers.

Comment:

A qualification equivalent to specialist training can be obtained through long term activity in the appropriate field of work.

Only a specialist workshop may carry out maintenance and repair work on the implement, if such work is specifically designated "Workshop work". The personnel of a specialist workshop shall possess the appropriate knowledge and suitable aids (tools, lifting and support equipment) for carrying out the maintenance and repair work on the implement in a way which is both appropriate and safe.

2.7 Safety measures in normal operation

Only operate the implement if all the safety and protection equipment is fully functional.

Check the implement at least once a day for visible damage and check the function of the safety and protection equipment.

2.8 Dangers from residual energy

Note that there may be residual mechanical, hydraulic, pneumatic and electrical/electronic energy at the implement.

Use appropriate measures to inform the operating personnel. You can find detailed information in the relevant sections of this operating manual.

2.9 Maintenance and repair work, fault elimination

Carry out prescribed setting, maintenance and inspection work in a timely manner.

Secure all media such as compressed air and the hydraulic system against unintentional start-up.

Carefully fix and secure larger subassemblies to lifting gear when carrying out replacement work.

Regularly check that bolted connections are firmly secured and tighten if necessary.

When the maintenance work is completed, check the function of the safety devices.

2.10 Constructive changes

You may make no changes, expansions or modifications to the implement without the authorisation of AMAZONEN-WERKE. This is also valid when welding support parts.

Any expansion or modification work shall require the written approval of AMAZONEN-WERKE. Only use the modification and accessory parts released by AMAZONEN-WERKE so that the operating permit, for example, remains valid in accordance with national and international regulations.

Vehicles with an official type approval or with equipment connected to a vehicle with a valid type approval or approval for road transport according to the German road traffic regulations must be in the state specified by the approval.

WARNING

Risk of being crushed, cut, caught, drawn in or struck if supporting parts break.

It is forbidden to:

- Drill holes in the frame or on the chassis.
- Increasing the size of existing holes on the frame or the chassis.
- Welding support parts.

2.10.1 Spare and wear parts and aids

Immediately replace any implement parts which are not in a perfect state.

Use only genuine AMAZONE spare and wear parts or parts approved by AMAZONEN-WERKEN to ensure that the operating permit retains its validity in accordance with national and international regulations. If you use wear and spare parts from third parties, there is no guarantee that they have been designed and manufactured in such a way as to meet the requirements placed on them.

AMAZONEN-WERKE accepts no liability for damage arising from the use of unapproved spare parts, wear parts or auxiliary materials.

2.11 Cleaning and disposal

Handle and dispose of any materials used carefully, in particular:

- When carrying out work on lubrication systems and equipment and
- When cleaning using solvents.

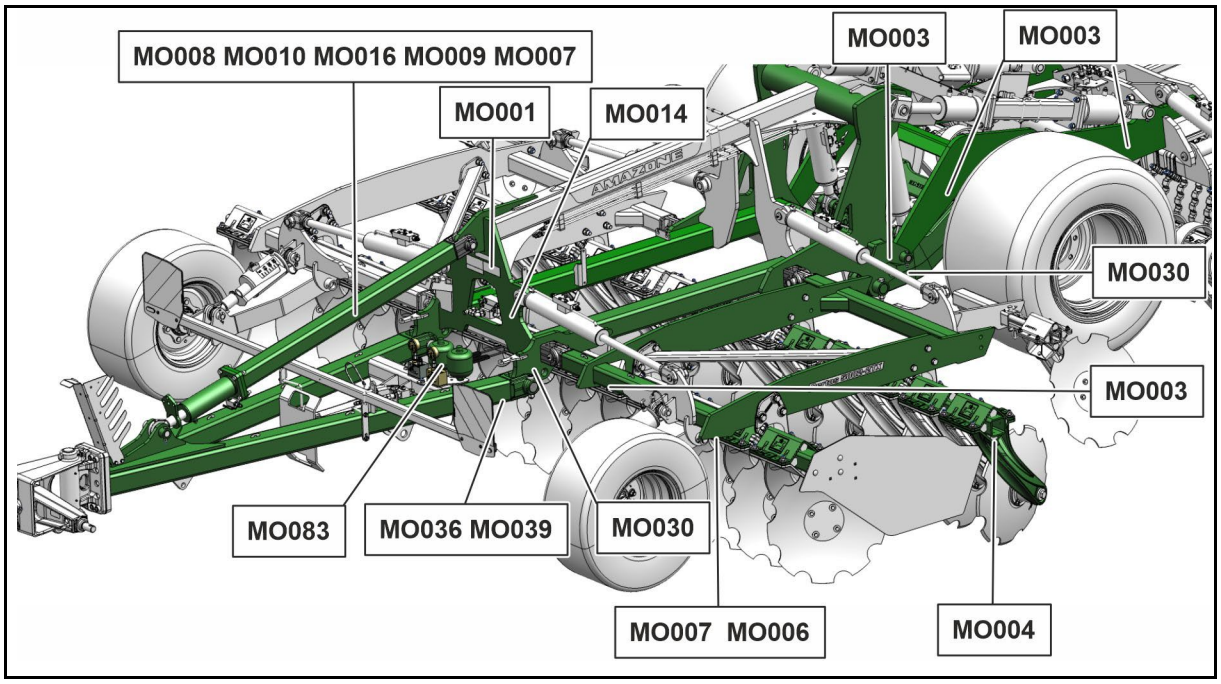
2.12 User workstation

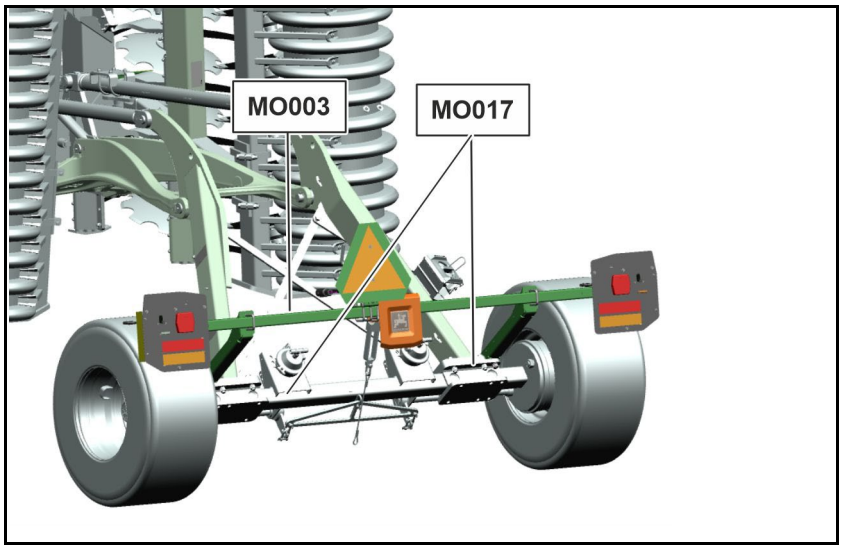
The implement must be operated by only one person from the driver's seat of the tractor.

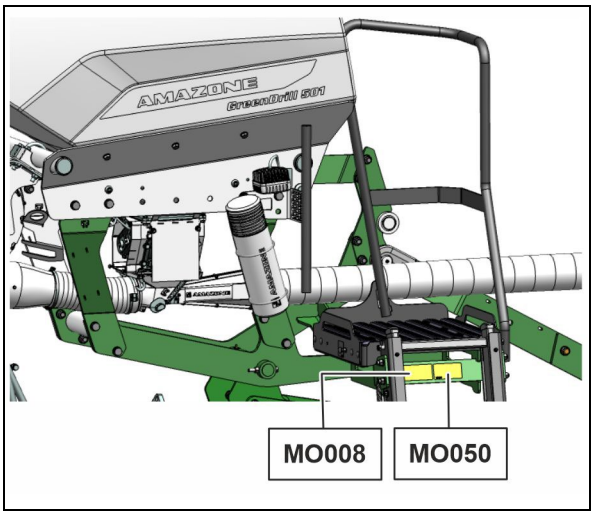
2.13 Warning pictograms and other signs on the implement

2.13.1 Positioning of warning pictograms and other labels

The following diagrams show the arrangement of the warning pictograms on the implement.





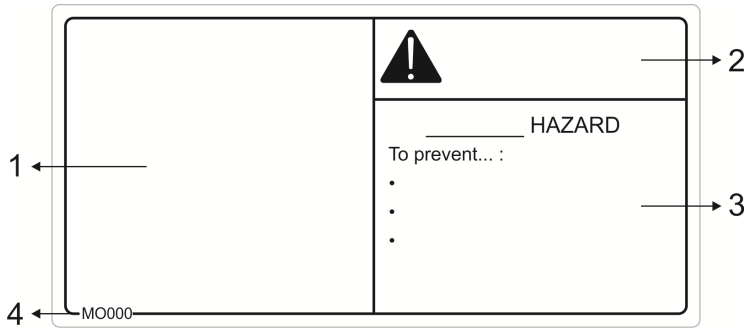


Always keep all the warning pictograms of the implement clean and in a legible state. Replace illegible warning pictograms. You can obtain the warning pictograms from your dealer using the order number (e.g. MD 078).

Warning pictorial - structure

Warning labels indicate dangers on and around the implement and warn for hazards. At these points, there are permanent and/or unexpected dangers.

A warning pictorial consists of four fields:



Field 1

a pictorial depicting the danger.

Field 2

shows the safety alert symbol along with a signal word which indicates the level of danger.

Field 3

explains the type of hazard, as well as how to avoid it.

Field 4

is where the order number is located.

Warning pictorial - explanation

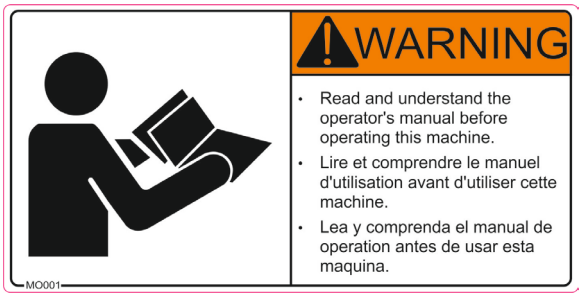
In the following pages, the individual warning labels will be explained in more detail. The column on the left, **Order number and explanation**, provides an explanation of the warning pictorial on the right. The description of the warning labels always follows the same order:

1. The order number.
   For example: MO007
2. The hazard is shown in **bold** when applicable.
   For example: **High Pressurized Fluid Hazard**
3. Instructions for avoiding the danger.
   For example: Do not use hands to locate leaks.

Order number and explanation	Warning pictorial

MO001 WARNING

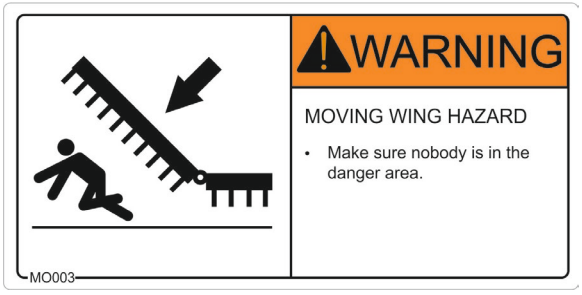
- Read and understand the operator's manual before operating this implement.
- Lire et comprendre le manuel d'utilisation avant d'utiliser cette implement.
- Lea y comprenda el manual de operation antes de usa resta maquina.



MO003 WARNING

MOVING WING HAZARD

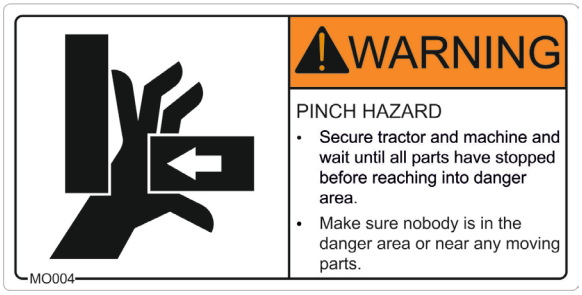
- Make sure nobody is in the danger area.



MD004 WARNING

PINCH HAZARD

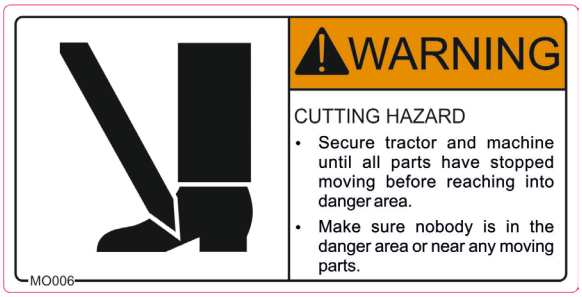
- Secure tractor and implement and wait until all parts have stopped before reaching into danger area:
- Make sure nobody is in the danger area or near any moving parts.



MO006 WARNING

CUTTING HAZARD

- Secure tractor and implement until all parts have stopped before reaching into danger area:
- Make sure nobody is in the danger area or near any moving parts.



MO007 WARNING

HIGH PRESSURE HYDRAULIC OIL
IS HAZARDOUS

- Never use your hands to locate or plug any leak in the hydraulic hoses.
- If hydraulic oil penetrates your skin, seek immediate medical attention.

MO008 **WARNING**

FALL HAZARD

- Never ride on the implement.
- Keep others from climbing onto or riding on the implement.

MO009 **WARNING**

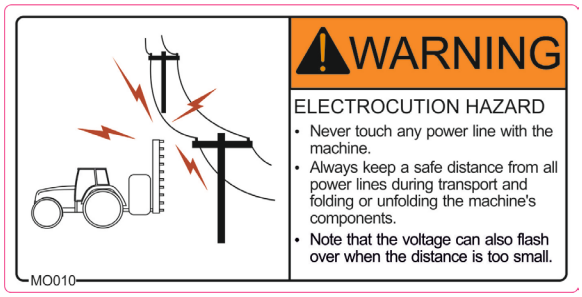
RUN-AWAY HAZARD

- Secure implement from accidental rolling.
- Use parking blocks or chocks to secure implement.

MO010 **WARNING**

ELECTROCUTION HAZARD

- Never touch any power line with the implement.
- Always keep a safe distance from all power lines during transport and folding or unfolding the implement’s components.
- Note that the voltage can also flash over when the distance is too small.

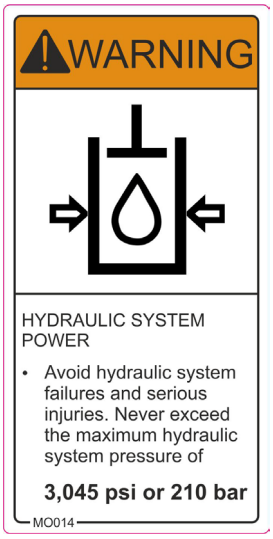


MO014 **WARNING**

HYDRAULIC SYSTEM POWER

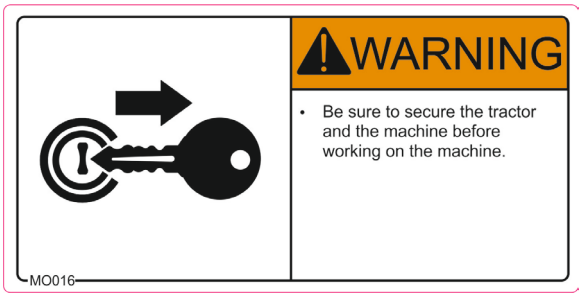
- Avoid hydraulic system failures and serious injuries. Never exceed the maximum hydraulic system pressure of

  3045 psi or 210 bar



MO016 **WARNING**

- Be sure to secure the tractor and the implement before working on the implement.



MO017 **WARNING**

LIFT POINT

MO020 **WARNING**

FALLING HAZARD

To prevent serious injury or death:

- Do not climb on the finishing roller wheels or finishing roller support.
- Keep others away from the finishing rollers and finishing roller supports.

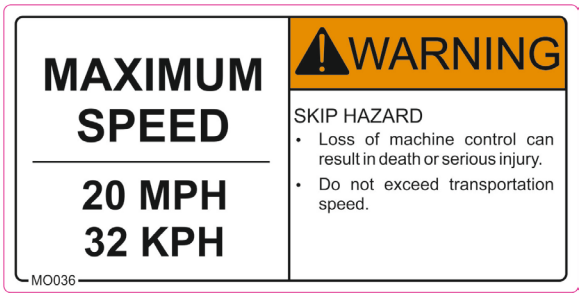
MD030 **WARNING**

ATTACHMENT POINT

MO036 **WARNING**

SKIP HAZARD

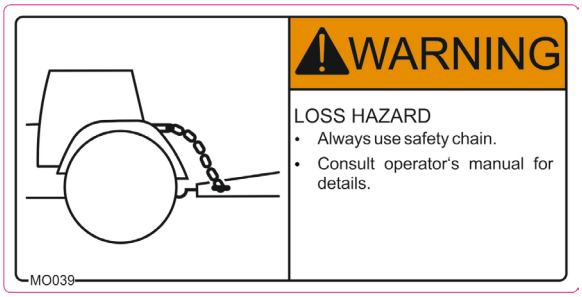
- Loss of implement control can result in death or serious injury.
- Do not exceed transportation speed.



MO039 WARNING

LOSS HAZARD

- Always use safety chain.
- Consult operator's manual for details.



MD047 WARNING

PROJECTILE HAZARD

- Make sure nobody is in the danger area.

MD083 WARNING

EXPLOSION AND PROJECTILE HAZARD

- Make sure that all pressurized hydraulic accumulators are checked and repaired by a qualified specialist workshop only.

2.14 Dangers of not observing safety instructions

Nonobservance of the safety information

- Can pose both a danger to people and also to the environment and implement.
- Can lead to the loss of all warranty claims.

Seen individually, non-compliance with the safety information could pose the following risks:

- Danger to people through non-secured working areas.
- Failure of important implement functions.
- Failure of prescribed methods of maintenance and repair.
- Danger to people through mechanical and chemical impacts.
- Risk to environment through leakage of hydraulic fluid.

2.15 Safety-conscious working

Besides the safety information in this operating manual, the national general workplace safety and accident prevention regulations are binding.

Comply with the accident prevention instructions on the warning pictograms.

When driving on public roads and routes, comply with the appropriate statutory road traffic regulations.

2.16 Safety information for users

WARNING

Before starting up the implement and the tractor, always check their traffic and operational safety.

2.16.1 General safety and accident prevention information

- Beside these instructions, comply with the general valid national safety and accident prevention regulations.
- The warning pictograms and labels attached to the implement provide important information on safe implement operation. Compliance with this information guarantees your safety!
- Before moving off and starting up the implement, check the immediate area of the implement (children)! Ensure that you can see clearly!
- It is forbidden to ride on the implement or use it as a means of transport!
- Drive in such a way that you always have full control over the tractor with the attached implement.

  In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected implement.

Connecting and disconnecting the implement

- Only couple and transport the implement with a tractor which has been designed for this task and fulfils the power requirements.
- When connecting implements to the tractor three-point hydraulic system, the attachment categories of the tractor and the implement must always be the same!
- When coupling implements to the front or the rear of the tractor, the following may not be exceeded:
  - The approved total tractor weight
  - The approved tractor axle loads
  - The approved load capacities of the tractor tires
- Secure the tractor and the implement against unintended rolling away before mounting or dismounting the implement.
- It is forbidden for people to stand between the implement to be coupled and the tractor, whilst the tractor is moving towards the implement!

  Any helpers may only act as guides standing next to the vehicles, and may only move between the vehicles when both are at a standstill.
- Before mounting and dismounting the implement to the three-point linkage secure the control lever for the tractor hydraulics in such a position that an unintended lifting or lowering is impossible.
- When coupling and uncoupling implements, move the support equipment (if available) to the appropriate position (stability).
- When actuating the support equipment, there is a danger of inju-

ry from contusion and cutting points!

- Be particularly careful when coupling the implement to the tractor or uncoupling it from the tractor! There are contusion and cutting points in the area of the coupling point between the tractor and the implement.
- Standing between tractor and implement when the three point hydraulic is actuated is prohibited.
- Connect the implement to the prescribed equipment in accordance with the specifications.
- The release ropes for quick action couplings must hang loosely and may not release themselves when lowered.
- Also ensure that uncoupled implements are stable!

Use of the implement

- Before starting work, ensure that you understand all the equipment and actuation elements of the implement and their function. There is no time for this when the implement is already in operation!
- Do not wear loose-fitting clothing! Loose clothing increases the risk over being caught by drive shafts!
- Only start-up the implement, when all the safety equipment has been attached and is in the safety position!
- Comply with the maximum load of the connected implement and the approved axle and support loads of the tractor. If necessary, drive only with a partially-filled hopper.
- It is forbidden to stand in the working area of the implement.
- It is forbidden to stand in the turning and rotation area of the implement.
- There are contusion and cutting points at externally-actuated (e.g. hydraulic) implement points.
- Only actuate externally-actuated implement parts when you are sure that there is no-one within a sufficient distance from the implement!
- Secure the tractor against unintentional start-up and rolling before you leave the tractor.

  For this:

  - Lower the implement onto the ground
  - Apply the parking brake
  - Switch off the tractor engine
  - Remove the ignition key

Implement transportation

- When using public highways, national road traffic regulations must be observed.
- Before moving off, check:
  - the correct connection of the supply lines
  - the lighting system for damage, function and cleanliness
  - the brake and hydraulic system for visible damage
  - that the parking brake is released completely
  - the proper functioning of the braking system
  - the bearing frame parts for damage.
- Ensure that the tractor has sufficient steering and braking power.
  Any implements and front/rear weights connected to the tractor influence the driving behaviour and the steering and braking power of the tractor.
- If necessary, use front weights.
  The front tractor axle must always be loaded with at least 20% of the empty tractor weight, in order to ensure sufficient steering power.
- Always fix the front or rear weights to the intended fixing points according to regulations.
- Comply with the maximum load of the connected implement and the approved axle and support loads of the tractor.
- The tractor must guarantee the prescribed brake delay for the loaded vehicle combination (tractor plus connected implement).
- Check the brake power before moving off.
- When turning corners with the implement connected, take the broad load and balance weight of the implement into account.
- Before moving off, ensure sufficient side locking of the tractor lower links, when the implement is fixed to the three-point hydraulic system or lower links of the tractor.
- Before moving off, move all the swivel implement parts to the transport position.
- Before moving off, secure all the swivel implement parts in the transport position against risky position changes. Use the transport locks intended for this.
- Before transporting, secure the operating lever of the three-point hydraulic system against the unintentional raising or lowering of the connected/hitched implement.
- Check that the transport equipment, e.g. lighting, warning equipment and protective equipment, is correctly mounted on the implement.
- Before transportation, carry out a visual check that the upper and lower link pins are firmly fixed with the lynch pin against unintentional release.
- Adjust your driving speed to the prevailing conditions.
- Before driving downhill, switch to a low gear.
- Before moving off, always switch off the independent wheel braking (lock the pedals).

2.16.2 Hydraulic system

- The hydraulic system is under a high pressure.
- Ensure that the hydraulic hose lines are connected correctly.
- When connecting the hydraulic hose lines, ensure that the hydraulic system is depressurised on both the implement and tractor sides.
- It is forbidden to block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:
  - are continuous or
  - are automatically locked or
  - necessarily require an open centre or pressure position to operate correctly
- Before working on the hydraulic system
  - Lower the implement
  - Depressurise the hydraulic system
  - Switch off the tractor engine
  - Apply the parking brake
  - Take out the ignition key
- Have the hydraulic hose line checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is damaged or worn. Only use AMAZONE original hydraulic hose lines.
- The hydraulic hose lines should not be used for longer than six years, including any storage time of maximum two years. Even with proper storage and approved use, hoses and hose connections are subject to natural ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
- Never attempt to plug leaks in hydraulic lines using your hand or fingers.

  Escaping high pressure fluid (hydraulic fluid) may pass through the skin and ingress into the body, causing serious injuries!

  If you are injured by hydraulic fluid, contact a doctor immediately. Danger of infection.
- When searching for leak points, use suitable aids, to avoid the serious risk of infection.

2.16.3 Electrical system

- When working on the electrical system, always disconnect the battery (negative terminal).
- Only use the prescribed fuses. If fuses are used that are too highly rated, the electrical system will be destroyed – danger of fire!
- Ensure that the battery is connected correctly - firstly connect the positive terminal and then connect the negative terminal. When disconnecting the battery, disconnect the negative terminal first, followed by the positive terminal.
- Always place the appropriate cover over the positive battery terminal. There is a danger of explosion in the event of an accidental earth contact!
- Danger of explosion! Avoid the production of sparks and naked flames in the vicinity of the battery!
- The implement can be equipped with electronic components, the function of which may be influenced by electromagnetic interference from other units. Such interference can pose risks to people, if the following safety information is not followed.
  - In the case of retrofitting of electrical units and/or components on the implement, with a connection to the on-board power supply, the user must check whether the installation might cause faults on the vehicle electronics or other components.
  - Ensure that the retrofitted electrical and electronic components comply with the EMC Directive 2004/108/EC in the latest version and bear the CE mark.

2.16.4 Coupled implements

- Observe the permitted combination options of the attachment equipment on the tractor and the implement drawbar.

  Only couple permitted combinations of vehicles (tractor and attached implement).

- On single axle implements, observe the maximum permitted drawbar load of the tractor on the attachment equipment.

- Ensure that the tractor has sufficient steering and braking power.

  Implements attached or coupled to a tractor influence the driving behaviour and steering and braking power of the tractor, and in particular single axle implements with drawbar loads on the tractor.

- Only one specialist workshop can adjust the height of the drawbar if it is a straight drawbar with drawbar load.

- Implements without brake system:

  Observe the national regulations for implements without brake system.

- Implements without brake system:

  Observe the national regulations for implements without brake system.

2.16.5 Brake system

- Only specialist workshops or recognised brake services may carry out adjustment and repair work on the brake system.
- Have the brake system checked regularly.
- If there are any functional faults in the brake system, stop the tractor immediately. Have the malfunctions rectified immediately.
- Before performing any work on the braking system, park the implement safely and secure the implement against unintentional lowering or rolling away (wheel chocks)
- Be particularly careful when carrying out any welding, torch cutting or drilling work in the area of the brake lines.
- After carrying out any adjusting and repair work on the brake system, always carry out a brake test.

Pneumatic braking system

- Before coupling the implement, clean any dirt on the sealing rings on the hose couplings of the supply and brake lines.
- Only move off with the implement connected when the pressure gauge on the tractor shows 5.0 bar.
- Drain the air reservoir every day.
- Before driving without the implement, lock the hose couplings on the tractor.
- Hang the hose couplings of the implement supply and brake lines in the appropriate idle couplings.
- When filling up or replacing the brake fluid, use the prescribed fluid. When replacing the brake fluid, comply with the appropriate regulations.
- Do not make any changes to the specified settings on the brake valves!
- Replace the air reservoir if:
  - the air reservoir can be moved in the tensioning belts
  - the air reservoir is damaged
  - the rating plate on the air reservoir is rusty, loose or missing.

Hydraulic braking system for export implements

- Hydraulic brake systems are not approved in Germany.
- When filling up or replacing the brake fluid, use the prescribed hydraulic fluids. When replacing the hydraulic fluids, comply with the appropriate regulations.

2.16.6 Tires

- Repair work on tires and wheels may only be carried out by specialists with suitable installation tools.
- Check the air pressure at regular intervals.
- Inflate tires to the specified pressure. If the air pressure in the tires is too high, then there is a risk of explosions!
- Park the implement in a safe place and lock the implement against unintentional falling and rolling (parking brake, wheel chocks), before carrying out work on the tires.
- Tighten or retighten all the fixing screws and nuts in accordance with the specifications of AMAZONEN-WERKE!

2.16.7 Cleaning, maintenance and repairs

- Repair-, maintenance- and cleaning operations as well as the remedy of function faults should principally be conducted with
  - the drive is switched off
  - the tractor engine is at a standstill
  - the ignition key has been removed
  - the connector to the implement has been disconnected from the on-board computer
- Regularly check the nuts and bolts for a firm seat and retighten them as necessary.
- Before carrying out any maintenance-, repair- and cleaning work ensure the lifted implement or lifted implement parts against unintended lowering.
- When replacing work tools with blades, use suitable tools and gloves.
- Dispose of oils, greases and filters in the appropriate way.
- Disconnect the cable to the tractor generator and battery, before carrying out electrical welding work on the tractor and on attached implements.
- Spare parts must meet at least the specified technical requirements of AMAZONEN-WERKE! This is ensured through the use of AMAZONE original spare parts!

3 Loading and unloading

Loading and unloading with a tractor

WARNING

There is a risk of an accident when the tractor is unsuitable and the implement brake system is not connected to the tractor or is filled.

- Correctly couple the implement to the tractor, before loading the implement onto a transport vehicle or unloading it from a transport vehicle.
- You may only couple and transport the implement with a tractor for loading and unloading, as long as the tractor fulfils the power requirements.

Pneumatic braking system:

- Only move off with the implement connected when the pressure gauge on the tractor shows 5.0 bar.

If the implement is to be loaded onto a transportation vehicle or unloaded from such a vehicle, it must be coupled to a suitable tractor.

Loading:

A marshalling person is required for loading.

Secure the implement according to instructions.

Then disconnect the tractor from the implement.

Unloading:

Remove the transportation locks.

A person is required to help with manoeuvring when unloading.

After unloading, park the implement and uncouple the tractor.

4 Product description

This section:

- Provides a comprehensive overview of the implement structure.
- Provides the names of the individual modules and controls.

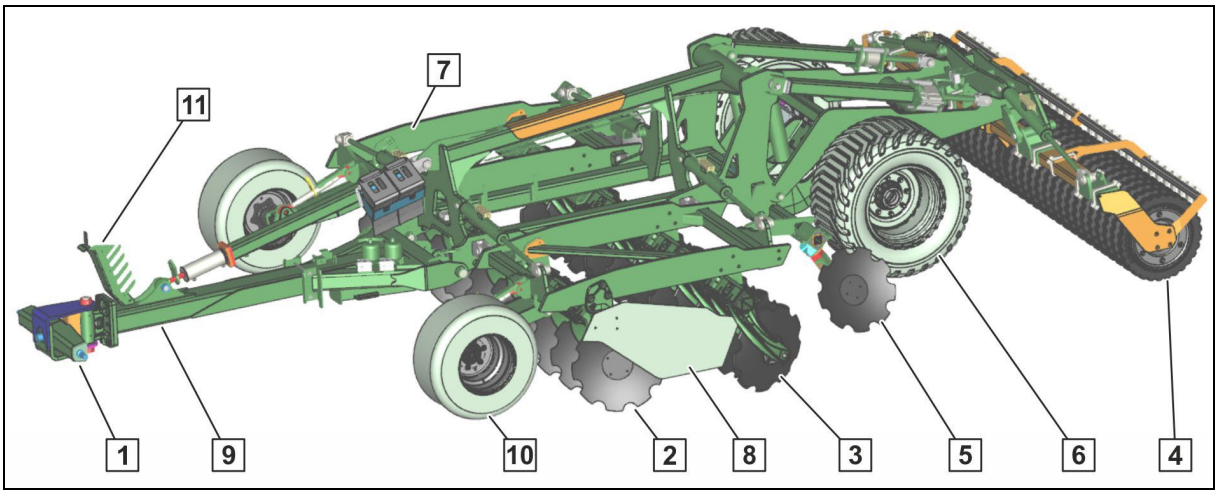
Read this section when actually at the implement. This helps you to understand the implement better.

The implement is composed of the following main components:

- Hydraulically foldable frame
- Two-row concave-disc arrangement
- Trailing roller
- Swivelling running gear

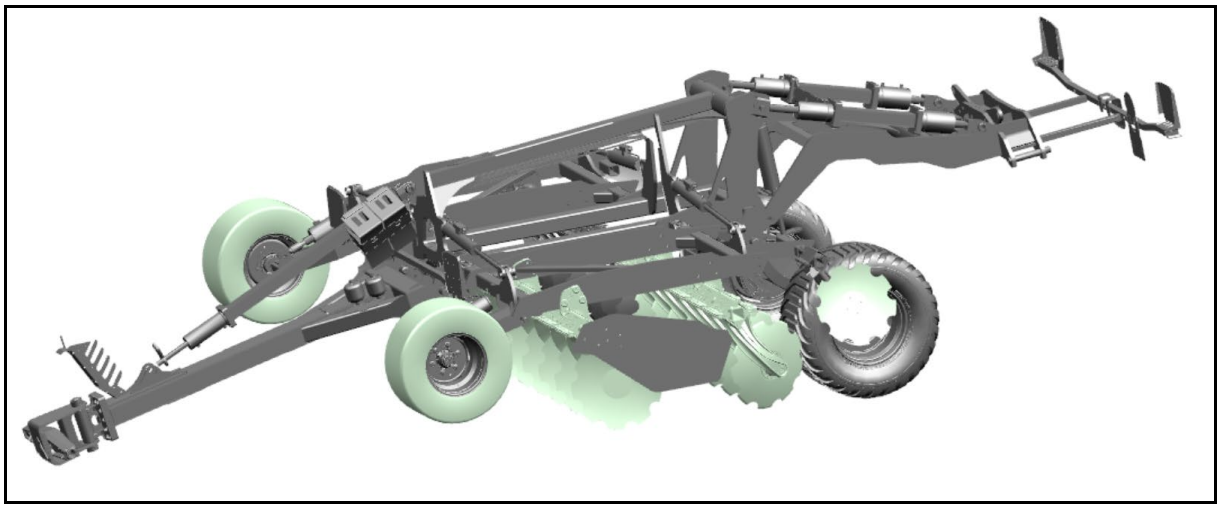
4.1 Overview of subassemblies

Implement in working position



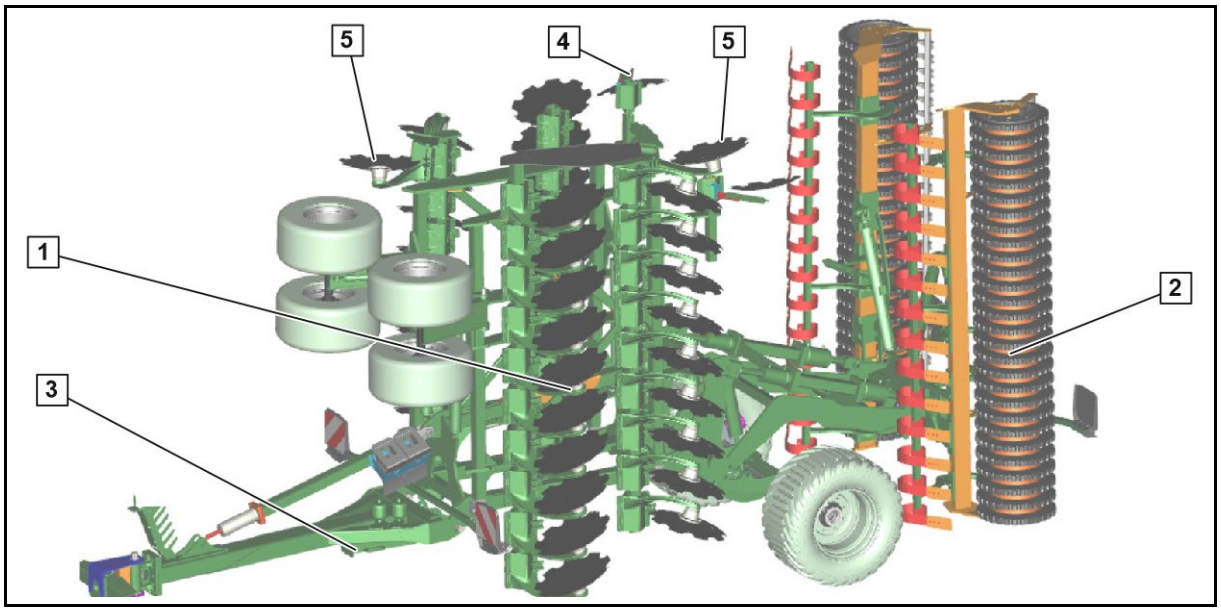
4(1) Draw rail
(2) 1st row of discs
(3) 2nd row of discs
(4) Roller
(5) Side disc
(6) Swivelling running gear
(7) Foldable implement wings
(8) Deflector guide
(9) Hydraulic drawbar for headland position
(10) Support wheel
(11) Hose cabinet

Implement in working position (working without roller)



- Roller is dismounted
- Depth control via the running gear

Maschin in transportposition:



(1) Disc gangs, folded in

(2) Roller segments, folded in

(3) Jack, lifted

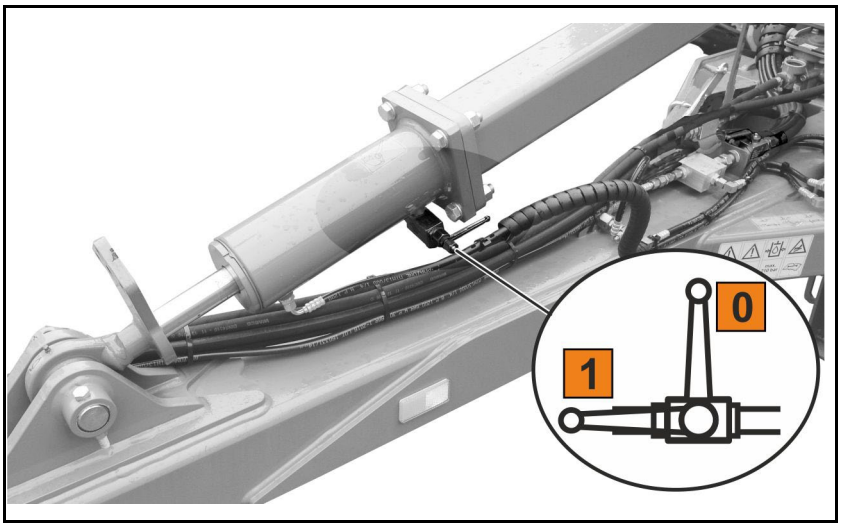
(4) Side disc, right, pushed in into transport position

(5) Outer discs, right and left, swivelled up.

- Rear harrow covered with road safety bar.

4.2 Safety and protection equipment

- Stop tap for securing the drawbar in transport position
  - Position 0 – secured transport position
  - Position 1 – working position

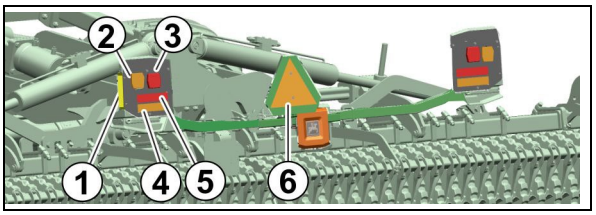


4.3 Supply lines between the tractor and the implement

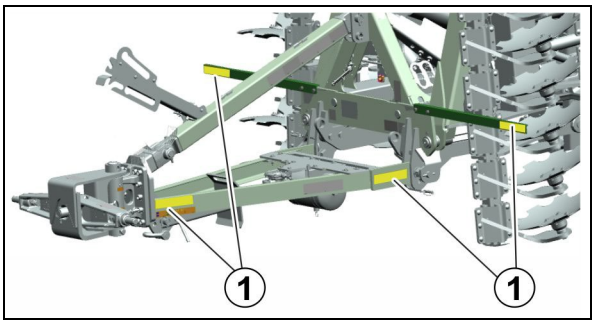
- Hydraulic hose lines
- Electric cable for lighting
- Connection to hydraulic brake or
- dual-circuit pneumatic braking system:
  - Brake line with coupling head (yellow)
  - Supply line with coupling head (red)

4.4 Transportation equipment

(1) Side Reflectors, yellow
(2) Turn indicators
(3) Rear lights
(4) Red reflectors
(5) Orange reflectors
(6) Slow Moving Vehicle Emblem



(1) Side Reflectors, yellow



Connect the lighting system via the connector to the 7-pin tractor socket.

- One additional warning sign on each side in France. (not illustrated).

4.5 Intended use

The implement

- is intended exclusively for normal use in intensive, shallow soil cultivation.
- is operated by one person.
- depending on equipment, is coupled to
  - the tractor lower link, Category 3,4,K700.
  - the ball head coupling 80
  - the swinging drawbar

Optimum soil tillage can only be achieved to a soil hardness of 3.0 MPa (in the range of the selected working depth).

Slopes can be navigated as follows:

- Along the contours

Direction of travel to left	15 %
Direction of travel to right	15 %

- Along the gradient

Up the slope	15 %
Down the slope	15 %

The intended use also includes:

- Compliance with all the instructions in this operating manual.
- Execution of inspection and maintenance work.
- Exclusive use of AMAZONE original spare parts.

Other uses to those specified above are forbidden and shall be considered as improper.

For any damage resulting from improper use:

- the operator bears the sole responsibility,
- AMAZONEN-WERKE assumes no liability whatsoever.

4.6 Danger area and danger points

The danger area is the area around the implement in which people can be caught:

- By work movements made by the implement and its tools
- By materials or foreign objects ejected by the implement
- By tools rising or falling unintentionally
- By unintentional rolling of the tractor and the implement

Within the implement danger area, there are danger points with permanent or unexpected risks. Warning pictograms indicate these danger points and warn against residual dangers, which cannot be eliminated for construction reasons. Here, the special safety regulations of the appropriate section shall be valid.

No-one may stand in the implement danger area:

- as long as the tractor engine is running with a connected PTO shaft/hydraulic system.
- as long as the tractor and implement are not protected against unintentional start-up and running.

The operating person may only move the implement or switch or drive the tools from the transport position to the working position or vice-versa when there is no-one in the implement danger area.

The following danger areas exist:

- Between the tractor and implement, especially when coupling and uncoupling.
- Near moving parts.
- When the implement is in motion.
- Within the pivot range of the implement wing.
- Underneath raised, unsecured implements or parts of implements.
- When unfolding/folding the implement wing in the area of overhead cables.

4.7 Rating plate

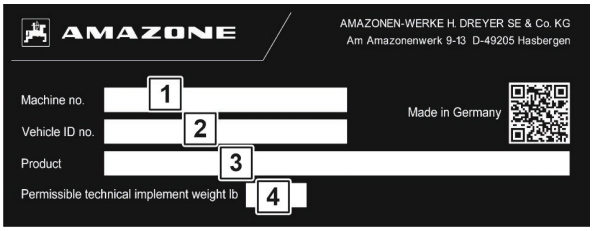
Machine rating plate

(1) Implement number

(2) Vehicle identification number

(3) Product

(4) Permissible technical implement weight



Additional rating plate

(1) Note for type approval

(2) Note for type approval

(3) Vehicle identification number

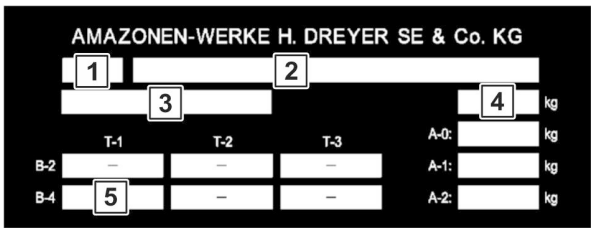
(4) Technically permissible total weight

(5) Permissible technical trailer load for a drawbar trailer vehicle with pneumatic brake

(A0) Permissible technical drawbar load A-0

(A1) Permissible technical axle load, axle 1

(A2) Permissible technical axle load, axle 2



4.8 Technical data

Certos		5002-2TX	6002-2TX	7002-2TX
Working width		197 in	236 in	276 in
		5000 mm	6000 mm	7000 mm
Transport width		118 in	118 in	118 in
		3000 mm	3000 mm	3000 mm
Transport height with ground clearance	8 in	131,5 in	151,5 in	157 in
	20 cm	3340 mm	3850 mm	3990 mm
Total length (depending on the roller)		313 – 352 in / 7940-8930 mm		
Working speed		6-9 mph		
		10-15 km/h		
Max. permitted speed		25 mph / 40 km/h		
Discs				
o Disc diameter		24 in / 660 mm		
o Disc spacing		14 in / 350 mm		
o Number of discs		28	34	40
Working depth		3 – 8 in / 70 - 200 mm		
Permitted mounting category for the lower link hitch		3, 4, K700		

4.8.1 Weights and tyre load capacity

- The permissible technical implement weight is specified on the implement rating plate.
- Weigh the empty implement to determine the tare weight.

Depending on the tyres, the tyre load capacity of both tyres can be lower than the permissible axle load.

In this case, the tyre load capacity limits the permissible axle load.

4.8.2 Tire load capacity per wheel

- The load index on the tire specifies the load capacity of the tire.
- The speed index on the tire specifies the maximum speed, at which the tire still has the tire load capacity according to the load index.
- The tire load capacity is only achieved when the tire pressure is equal to the nominal pressure.

Load index		**140**	**141**	**142**	**143**	**144**	**145**	**146**	**147**
Tire load capacity	(lb)	5512	5657	5842	6008	6173	6393	6614	6779
	(kg)	2500	2575	2650	2725	2800	2900	3000	3075
Load index		**148**	**149**	**150**	**151**	**152**	**153**	**154**	**155**
Tire load capacity	(lb)	6945	7165	7385	7606	7826	8047	8267	8488
	(kg)	3150	3250	3350	3450	3550	3650	3750	3850
Load index		**156**	**157**	**158**	**159**	**160**	**161**	**162**	**163**
Tire load capacity	(lb)	8819	9094	9370	9645	9921	10196	10472	11023
	(kg)	4000	4125	4250	4375	4500	4625	4750	5000
Load index		**164**	**165**	**166**	**167**	**168**	**169**	**170**	**171**
Tire load capacity	(lb)	11023	11354	11685	12016	12346	12787	13228	13558
	(kg)	5000	5150	5300	5450	5600	5800	6000	6150
Load index		**172**	**173**	**174**	**175**	**176**	**177**	**178**	**179**
Tire load capacity	(lb)	13889	14330	14771	15212	15653	16094	16535	17086
	(kg)	6300	6500	6700	6900	7100	7300	7500	7750

Speed index	**A5**	**A6**	**A7**	**A8**	**B**	**C**	**D**	**E**
Permissible maximum speed								
(mph)	15,5	18,6	22	25	31	37	40	43
(km/h)	25	30	35	40	50	60	65	70

Driving with reduced tire pressure

- If tire pressure is less than the nominal pressure, the tire load capacity is reduced!

  In this case, ensure that the payload of the implement is also reduced.
- Also comply with the specifications of the tire manufacturer!

WARNING

Danger of accident!

Vehicle stability is no longer ensured if tire pressure is insufficient.

4.9 Necessary tractor equipment

For the implement to be operated as intended, the tractor must fulfil the following requirements:

Tractor engine power

	Minimum required	Maximum permissible
Certos 5002-2TX	from 147 kW (200 hp)	220 kW (300 hp)
Certos 6002-2TX	from 184 kW (250 hp)	294 kW (400 hp)
Certos 7002-2TX	from 257 kW (350 hp)	385 kW (525 hp)

Electrical system

Battery voltage:
- 12 V (volts)

Lighting socket:
- 7-pin

Hydraulics

Maximum operating pressure:
- 3046 psi /210 bar

Tractor pump power:
- At least 4 gpm / 15 l/min at 2176 psi / 150 bar

Implement hydraulic fluid:
- HLP68 DIN 51524

  The implement hydraulic fluid is suitable for the combined hydraulic circuits of all standard tractor brands.

Control units:
- See page 45.
- ⚠ Folding implements without this protective device need a lockable tractor control unit as fold-out safeguard.

Service brake system

Dual-circuit service brake system:
- 1 hose coupling (red) for the supply line
- 1 hose coupling (yellow) for the brake line

Hydraulic braking system:
- 1 hydraulic coupling in accordance with ISO 5676

ℹ The hydraulic braking system is not allowed in Germany and several other EU countries!

4.10 Noise production data

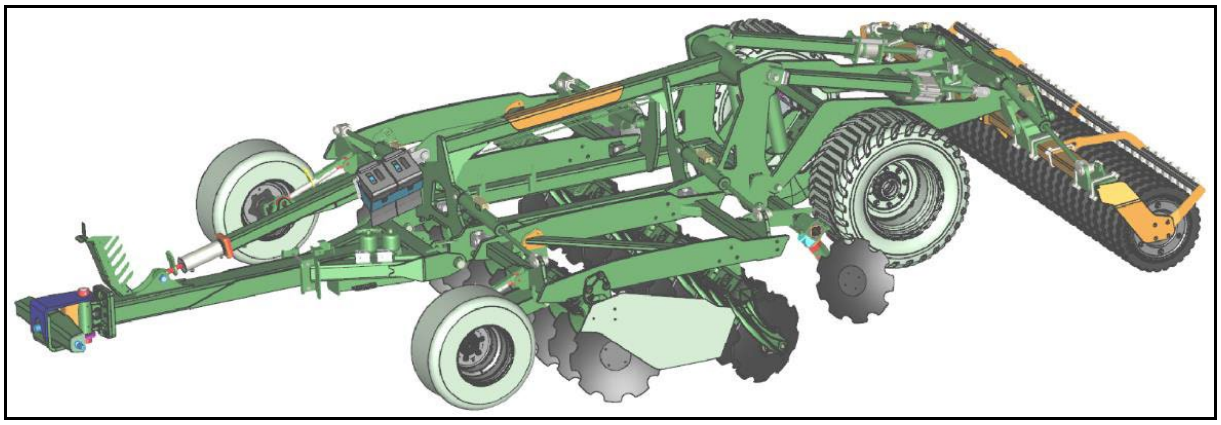
The workplace-related emission value (acoustic pressure level) is 74 dB(A), measured in operating condition at the ear of the tractor driver with the cabin closed.

Measuring unit: OPTAC SLM 5.

The noise level depends on the type of tractor used.

5 Structure and function

5.1 Function



The compact disc cultivator is suitable for

- shallow stubble cultivation directly after threshing
- seed bed preparation in spring for maize or sugar beet
- incorporation of liquid manure.

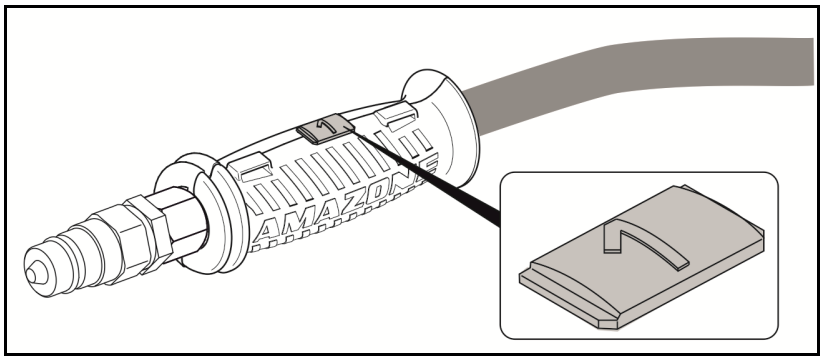
The two-row disc arrangement ensures soil cultivation and rotavation.

The trailing roller wheels serve to re-consolidate the soil.

5.2 Hydraulic connections

- All hydraulic hose lines are equipped with grips.

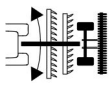
  Coloured markings with a code number or code letter have been applied to the gripping sections in order to assign the respective hydraulic function to the pressure line of a tractor control unit!



  Films are stuck on the implement for the markings that illustrate the respective hydraulic function.

- The tractor control unit must be used in different types of activation, depending on the hydraulic function.

Latched, for a permanent oil circulation	
Tentative, activate until the action is executed	
Float position, free oil flow in the control unit	

Marking		Function			Tractor control unit	
yellow	1		Running gear / drawbar	Put in working position	Double acting	
	2			Put in headlands position.		
blue	1		Implement	Fold out	Double-acting, lockable	
	2			Fold in		
green	1		Working depth	Increase	Double acting	
	2			Decrease		
beige	1		Crushboard Intensity	Increase	Double acting	
	2			Decrease		
Redt	1		Compensating for lateral pull	To the right	Double acting	
	2			To the left		

WARNING

Risk of infection from hydraulic fluid escaping at high pressure.

When coupling/uncoupling the hydraulic hose line, ensure that the hydraulic system is not under pressure on the tractor or implement side.

If you are injured by hydraulic fluid, contact a doctor immediately.

5.2.1 Coupling hydraulic hose lines

WARNING

Risk of crushing, cutting, being trapped or drawn in, or impact through faulty hydraulic functions when hydraulic hose lines are incorrectly connected.

When coupling the hydraulic hose lines, please note the coloured markings on the hydraulic plugs.

- Check the compatibility of the hydraulic fluids before connecting the implement to the tractor hydraulic system.

  Do not mix any mineral oils with biological oils.
- Observe the maximum permissible hydraulic fluid pressure of 210 bars.
- Only couple clean hydraulic connectors.
- Plug the hydraulic plug(s) into the hydraulic sockets until you can feel the hydraulic plug(s) locking.
- Check the coupling points on the hydraulic hose lines, to see if they are sitting correctly and are sealed.

1. Swivel the actuation lever on the control valve on the tractor to float position (neutral position).
2. Clean the hydraulic plugs on the hydraulic hose lines before coupling the hydraulic hose lines with the tractor.
3. Connect the hydraulic hose line(s) to the tractor control unit(s).

5.2.2 Disconnecting hydraulic hose lines

1. Swivel the actuation lever on the tractor control unit on the tractor to float position (neutral position).
2. Unlock the hydraulic connectors from the hydraulic sockets.
3. Protect the hydraulic plug and hydraulic socket against soiling using the dust protection caps.
4. Store the hydraulic hose lines in the hose cabinet.

5.3 Dual-circuit service brake system

Compliance with the maintenance intervals is essential for the correct function of the dual-circuit service brake system.

WARNING

If the implement, when uncoupled from the tractor, has full compressed air tanks, the compressed air from the air tanks acts on the brakes and the wheels jam.

The compressed air in the compressed air tank and hence the braking force will drop continuously until there is a complete brake failure, if the compressed air tank is not refilled. This is why the implement may only be parked using wheel chocks.

The brakes are released immediately with a full compressed air tank when the supply line (red) is connected to the tractor. For this reason, the implement must be connected to the lower links of the tractor and the tractor's hand brake must be applied before the supply line (red) is connected.

The wheel chocks may not be removed until the implement is connected to the lower links of the tractor and the hand brake is applied.

To activate the dual-circuit compressed-air brake system, the tractor requires a compressed-air brake system which is also dual circuit.

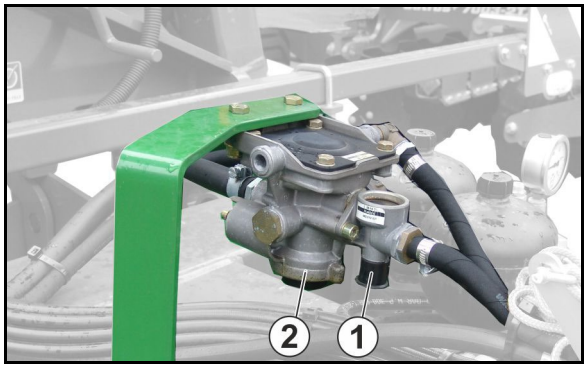
- Supply line with coupling head (red)
- Brake line with coupling head (yellow)

(1) Release valve with actuator button:

→ Actuator button;

- o press in until it stops and the service brake system releases, e.g. for shunting the uncoupled trailed sprayer.
- o pull it out as far as it will go, and the trailed sprayer is braked again by the supply pressure coming from the air reservoir..

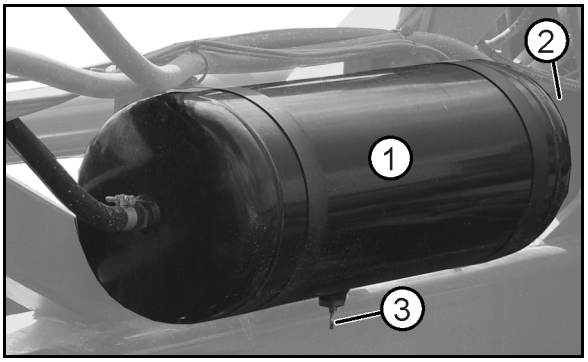
(2) Brake valve



(1) Air reservoir

(2) Test connection

(3) Drainage valve for condensate



5.3.1 Coupling the brake and supply lines

WARNING

Risk of contusions, cuts, dragging, catching or knocks from incorrectly functioning brake system.

- When coupling the brake and supply line, ensure that:
  - the coupling head seals are clean.
  - the sealing rings of the hose couplings form a proper seal.
- Always replace damaged seals immediately.
- Drain the air tank before the first journey each day.
- Only move off with the implement connected when the pressure gauge on the tractor shows 72,5 psi / 5.0 bar.

WARNING

Risk of contusions, cuts, dragging, catching or knocks from unintentionally rolling implement with the operating brake released!

Always couple the hose coupling of the brake line (yellow) first, followed by the hose coupling of the supply line (red).

The operating brake of the implement moves out of the brake position immediately the red hose coupling has been coupled.

1. Open the tractor coupling head caps.
2. Remove brake line coupling head (yellow) from the empty coupling.
3. Check coupling head seals for damage and cleanness.
4. Clean dirty seals, replace damaged seals.
5. Fasten the brake line coupling head (yellow) as directed in the tractor coupling with the yellow marking.
6. Remove the supply line coupling head (red) from the empty coupling.
7. Check coupling head seals for damage and cleanness.
8. Clean dirty seals, replace damaged seals.
9. Fasten the supply line coupling head (red) in the tractor coupling with the red marking, as instructed.

→ On coupling the supply line (red), the supply pressure coming from the tractor automatically pushes out the button for the release valve on the trailer brake valve.

10. Remove wheel chocks.

5.3.2 Uncoupling the brake and supply lines

WARNING

Risk of contusions, cuts, dragging, catching or knocks from unintentionally rolling implement with the operating brake released!

Always uncouple the hose coupling of the supply line (red) first followed by the hose coupling of the brake line (yellow).

The operating brake of the implement only moves into the brake position when the red hose coupling has been uncoupled.

Always keep to this order, as otherwise the operating brake system will trip and may set the unbraked implement moving.

When the implement is uncoupled or pulled away from the trailer, air is vented from the trailer brake valve supply line. The trailer brake valve is automatically switched and operates the service braking system independently of the automatic, load-dependent braking force regulator.

1. Secure the implement against unintentionally rolling away. Use chocks.
2. Release supply line coupling head (red).
3. Release brake line coupling head (yellow).
4. Fasten coupling heads in the empty coupling points.
5. Close tractor coupling head caps.

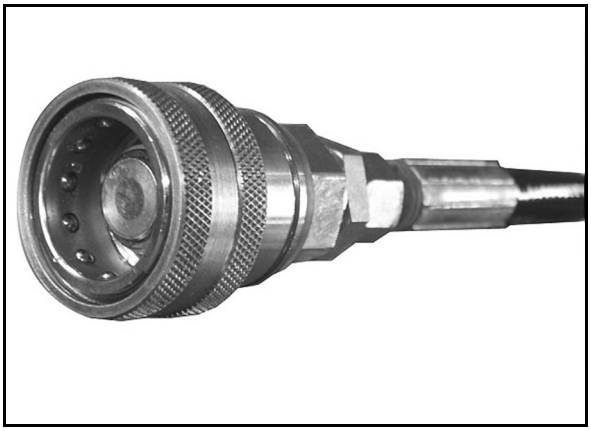
5.4 Hydraulic service brake system

To control the hydraulic operating brake system, the tractor requires hydraulic braking equipment.

5.4.1 Coupling the hydraulic service brake system

Only couple clean hydraulic couplings.

1. Remove the protective caps.
2. Clean the hydraulic plug and socket if necessary.
3. Couple the implement's hydraulic socket with the tractor's hydraulic plug.
4. Manually tighten the hydraulic screw joint (if present).

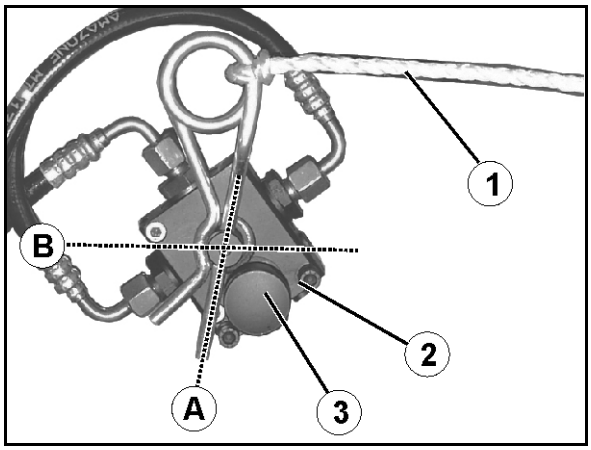


5.4.2 Uncoupling the hydraulic operating brake system

1. Loosen the hydraulic screw joint (if present).
2. Use the protective caps to protect the hydraulic plug and socket from contamination.
3. Store the hydraulic hose line in the hose cabinet.

5.4.3 Emergency brake

In event of the implement being released from the tractor during travel, the emergency brake will brake the implement.



(1) Pulling cable

(2) Brake valve with pressure accumulator

(3) Hand pump to relieve the brake

(A) Brake released

(B) Brake applied

DANGER

Before travel, set the brake to the application position.

For this purpose:

1. Secure the pulling cable to a fixed point on the tractor.
2. Apply the tractor brake with the tractor engine running and hydraulic brake connected.

→ Pressure accumulator of the emergency brake is being charged.

DANGER

Risk of accident through brake malfunction!
After withdrawing the safety splint (e.g. when activating the emergency brake), it is essential to insert the safety splint into the brake valve from the same side. Otherwise the brake will not function.

After reinserting the safety splint, carry out a brake test for the service brake and the emergency brake.

When the implement is uncoupled, the pressure accumulator presses hydraulic oil:

- into the brake and decelerates the implement,

or

- into the hose line to the tractor and impedes the coupling of the brake line to the tractor.

In these cases, relieve pressure using the hand pump on the brake valve.

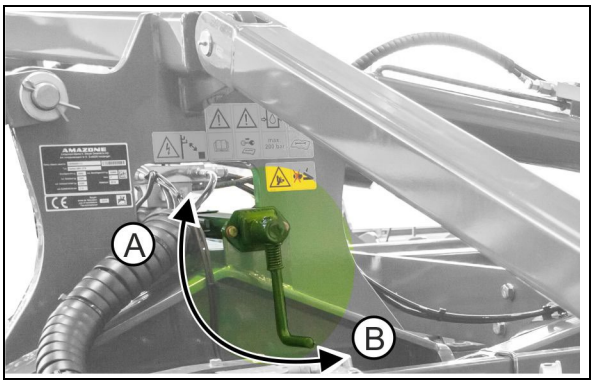
5.5 Parking brake

When the parking brake is on, it secures the uncoupled implement against unintentional rolling. The parking brake is operated by turning the crank, which in turn operates the spindle and bowden cable.

- Crank position for quick releasing / applying.

  (A) Apply the tractor parking brake.

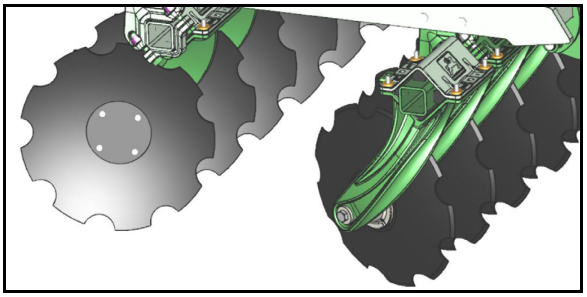
  (B) Release parking brake.



- Correct the setting of the parking brake if the spindle's tension is no longer sufficient.
- Ensure that the bowden cable is not lying or rubbing against other vehicle parts.
- When the parking brake is off, the bowden cable must be slightly slack.

5.6 Two-row disc cultivator

disc cultivator with serrated discs and 660 mm diameter.



The mounting of the concave discs consists of a two-row angular-contact ball bearing with slide seal and oil filling and is maintenance-free.

The elastic rubber sprung suspension of the individual discs enables

- adaptation to soil unevenness
- evasion by the discs when hard obstacles are encountered, e.g. stones. This protects the individual discs against damage.

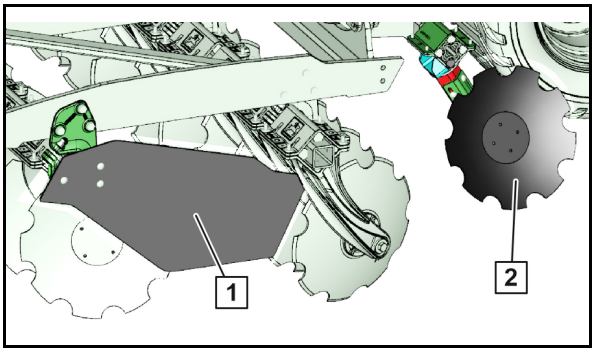
Certos 7002-TX: The outer discs on the left and right can be swivelled to comply with a transport height of less than 4 metres.

5.7 Side elements for levelling

Levelling is performed in the edge area with:

(1) an adjustable deflector guide on the left.

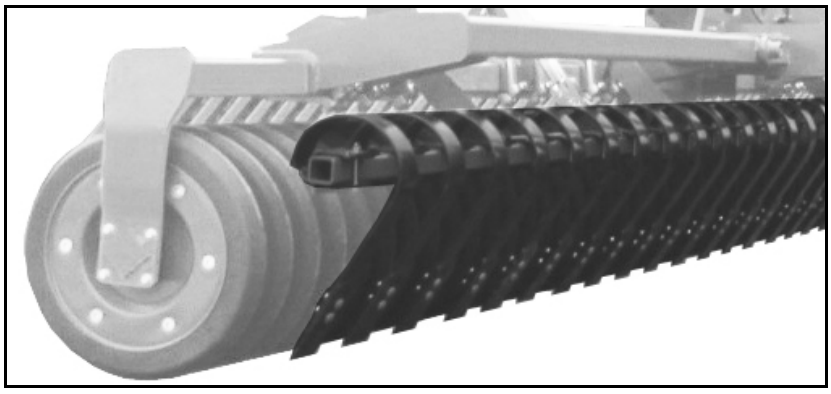
(2) adjustable side discs on the left and right



5.8 Crushboard (option)

The crossboard is located between the discs and the roller. It serves to level and crumble the soil.

The working intensity can be adjusted mechanically or hydraulically



5.9 Roller

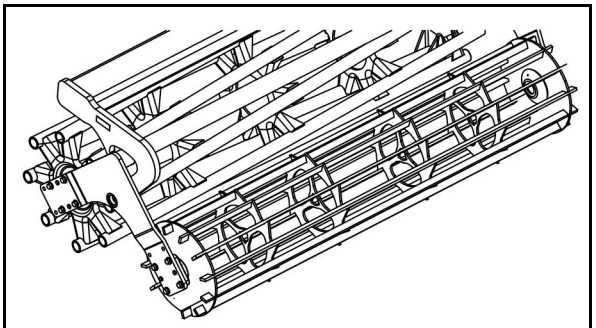
The roller assumes the depth control of the tools.

- **Tandem roller TW520/380**

The tandem roller consists of

  - o the front spiral tube roller installed in the top group of holes.
  - o the rod roller installed in the bottom group of holes.

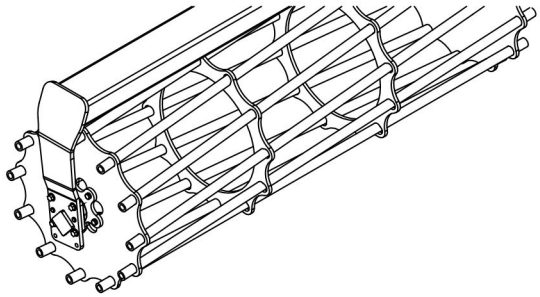
→ Provides very good crumbling.



- **Cage roller SW600**

→ The cage roller can be used where lighter reconsolidation of the soil is required.

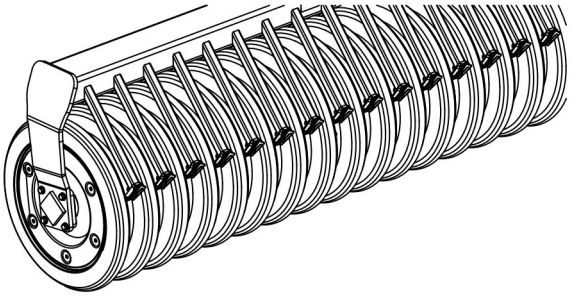
→ Disposes of a very good self-propulsion.



- **Wedge ring roller KW580**

with adjustable scraper.

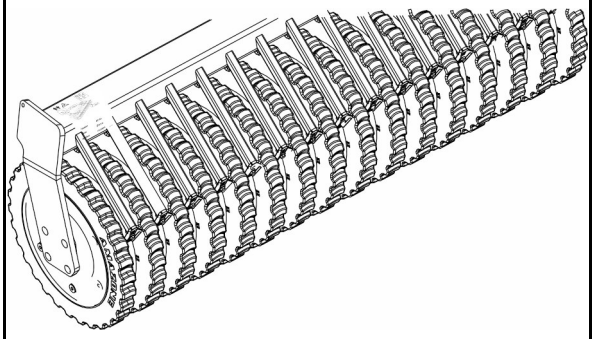
→ Very well suited for medium soils.



- **Wedge ring roller KWM600**

with matrix tread and adjustable scraper.

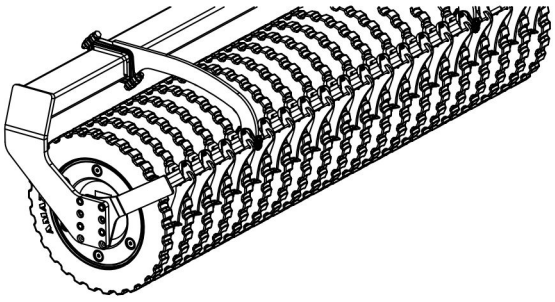
→ Very well suited for light, medium, and heavy soils.



- **Wedge ring roller KWM 650**

with Matrix profile and adjustable scraper.

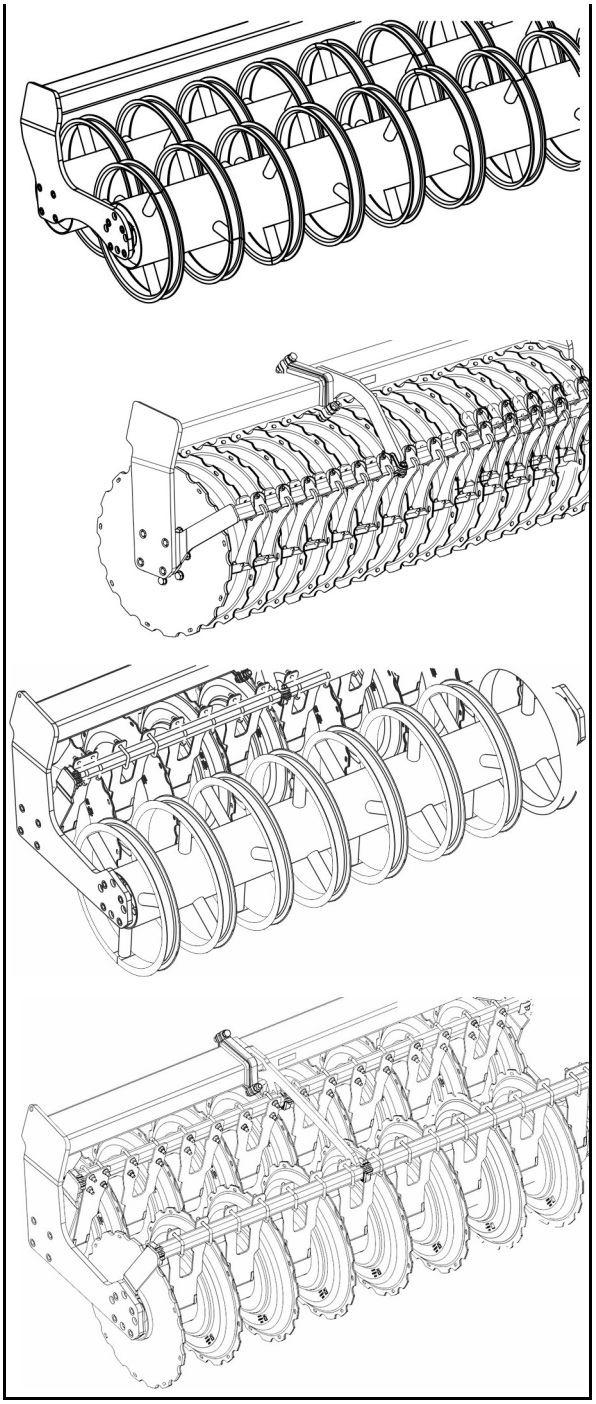
→ Very well suited for light, medium and heavy soils.



- **Double U-profile roller DUW580**

→ Very well suited for light and medium soils.

→ Resistant to clogging and good load-bearing capacity.



- **Disc roller DW600**

→ Very well suited for light, medium and heavy soils.

- Provides very good crumbling.

→ Resistant to clogging and sticking, offers a good load-bearing capacity.

- **Double-disk U-profile roller DDU 600**

→ Very well suited for light, medium, and heavy soils.

→ Resistant to clogging and sticking, offers a good load-bearing capacity.

- **Double-disc roller DDW**

→ Very well suited for light, medium and heavy soils.

→ Resistant to clogging and sticking, offers a good load-bearing capacity.

5.10 Working without the roller

Special considerations when working without the roller:

- Before working without a roller, the roller must be removed.
- The soil is not compacted over the entire area.
- The running gear wheels compact the soil in strips.
- Tracks remain on the field.
- The drawbar load on the tractor is increased.

Removing the roller (workshop task)

1. Activate the blue tractor control unit.

→ Unfold the implement.

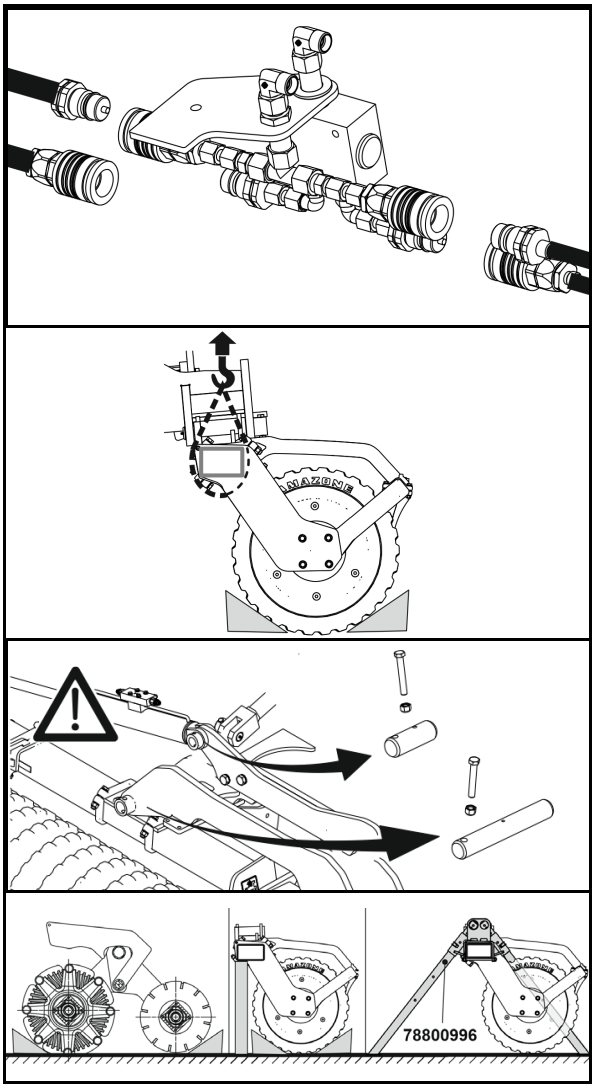
2. Switch the blue tractor control unit to the float position.
3. Disconnect the roller's hydraulic system from the implement.

→ Couple hoses together to protect them from contamination.

4. Switch the green tractor control unit to the float position.
5. Attach the roller to lifting crane and secure it against rolling.
6. Disconnect the roller from the implement by pulling out the pins.

Support the weight of the hydraulic cylinder and set the hydraulic cylinder down properly.

7. Secure the roller against tipping over and rolling away.



Assembling the roller (workshop task)

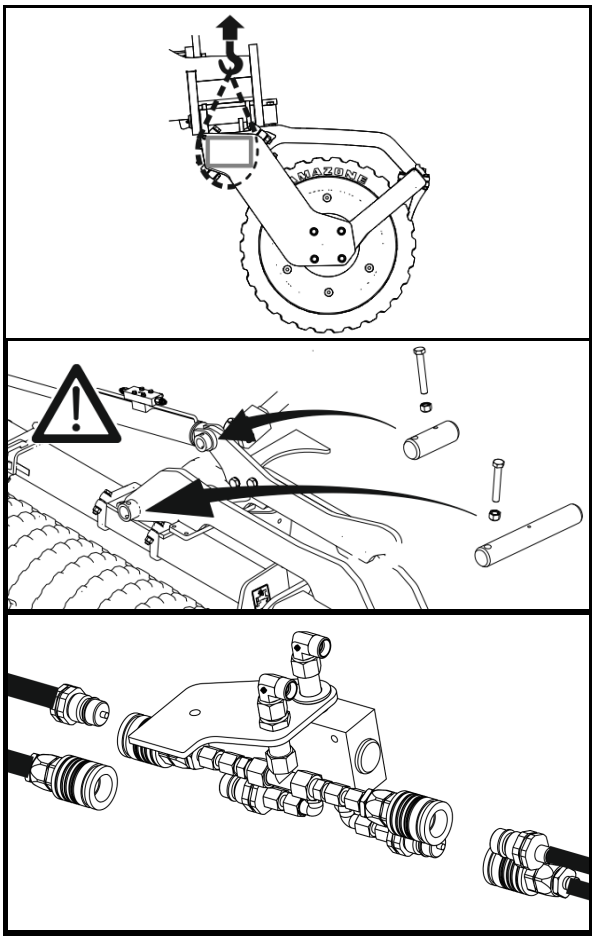
1. Activate the blue tractor control unit.

→ Unfold the implement.

2. Switch the blue tractor control unit to the float position.
3. Switch the green tractor control unit to the float position.
4. Attach the roller onto the lifting crane and position it on the implement.
5. Mount the roller to the implement by inserting the pin.

Support the weight of the hydraulic cylinder.

6. Clean the hydraulic couplings thoroughly.
7. Connect the hydraulic systems of the rollers to the implement.



5.11 Rear harrow (optional)

The rear harrow is used to crumble and level the soil.

The working intensity can be adjusted by inserting the pins into different holes.

Secure the pin with a linch pin.

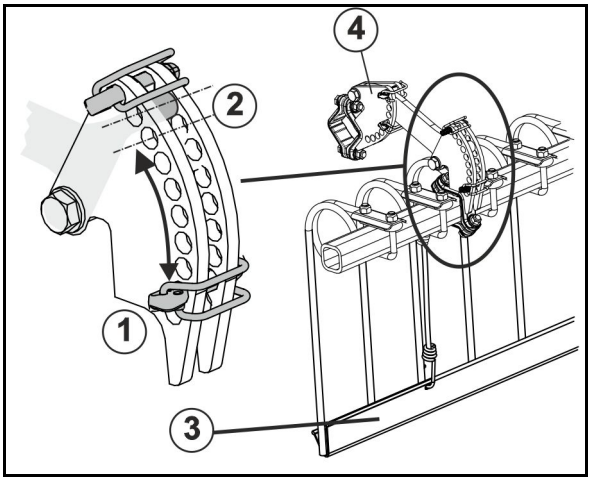
(1) Positioning pin for adjusting the working intensity.

→ Peg the positioning pin so that the harrow is resting and can swing freely to the rear.

(2) Position of the positioning pin to lock the exact following harrow during road transport.

(3) Install the road safety bar for road transport.

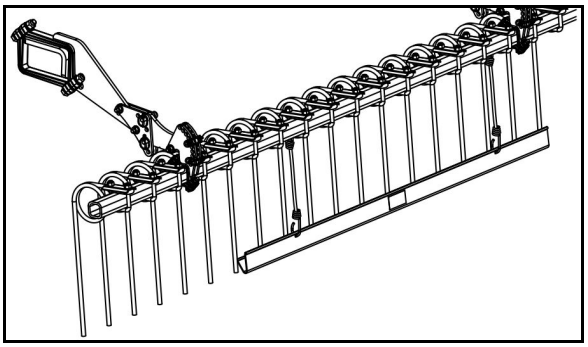
(4) Depending on the harrow system, adjust the harrow height so that it is free of play



- Make the same adjustments on all of the setting points.
- Raise and peg the harrow to take it out of operation.
- Attach the transport safety bars on the roller during operation.

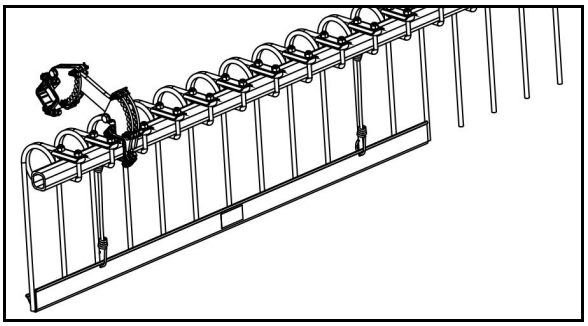
Harrow system 12-125 Hi

For rollers: SW520, SW600, KW580, UW580



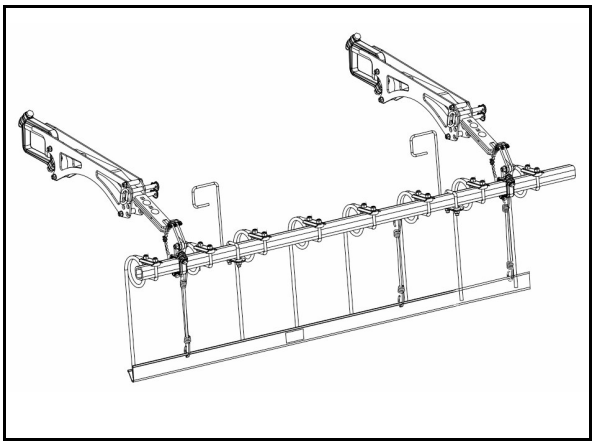
Harrow system KWM650-125 Hi

For roller: KWM650



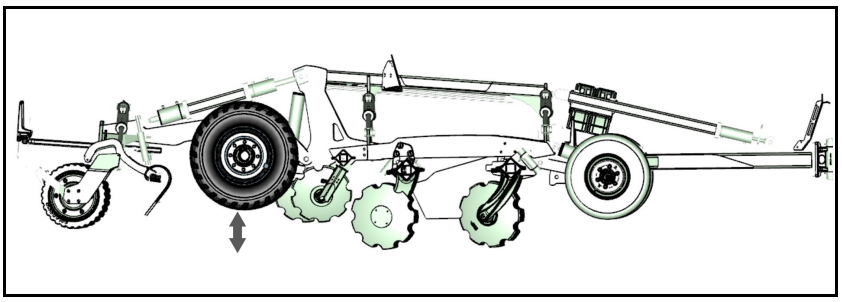
Harrow system 12-250 Hi

For rollers: DUW580



5.12 Running gear

- Running gear lowered for road transport and on the headlands.
- Running gear completely lifted when operating the implement.

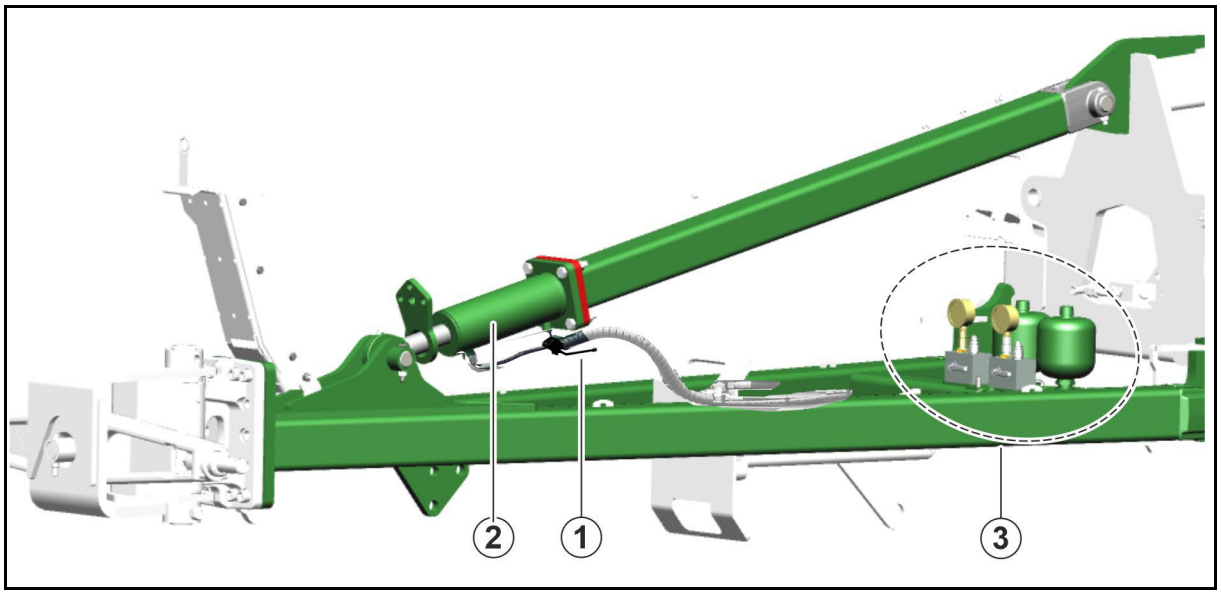


5.13 Drawbar

The drawbar must be raised and lowered hydraulically using the tractor control unit *yellow*.

The following functions are implemented by this measure:

- Lower the implement at the front into working position/lift implement into headlands position
- Hydraulic float position as working position
- Relieving of hydraulic lines for decoupling
- Lower and lift drawbar separately for coupling

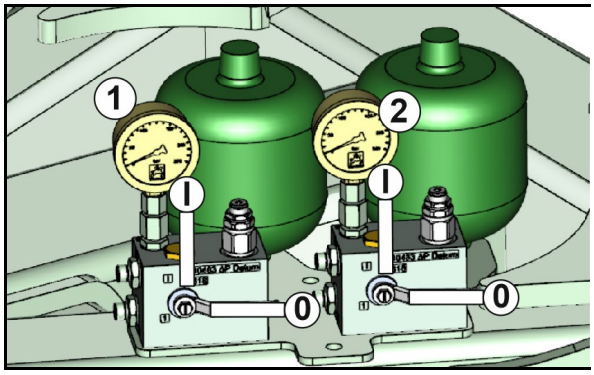


(1) Stop tap for drawbar

(2) Hydraulic cylinder drawbar control

(3) Swing compensation

5.14 Swing compensation



The swing compensation reduce the pitching movements and skipping of the implement during the operation.

Only use the vibration compensation in these special cases, because the vibration compensation has a negative effect on the driving comfort.

(I) Switch on the swing compensation, if the implement is in working position.

(0) Switch off the swing compensation, if the implement is in transport position.

According to requirements switch on the swing compensation on both hydraulic block (position I)

During operation:

- Display on the left pressure gauge (1): 60 +/- 10 bar.
- Display on the right pressure gauge (2): 50 +/- 10 bar.

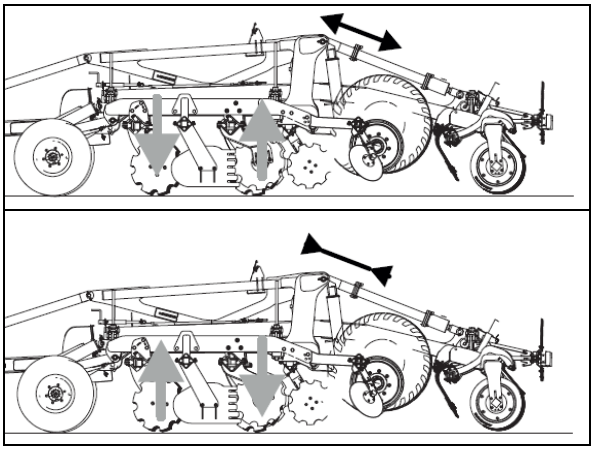
Set both units to the same position.

5.15 Hydraulic lateral pull compensation

The lateral pull compensation counteracts any occurring lateral pull under changing soil conditions.

By lifting or lowering the rear of the implement, one of the two disc gangs has stronger contact with the soil and aligns the implement behind the tractor.

To do so, actuate the *red* tractor control unit.



5.16 Jack

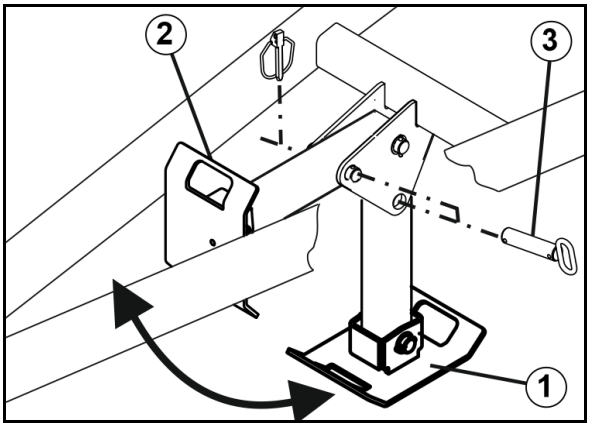
The jack is raised during operation or transport.

The lowered jack supports the uncoupled implement.

(1) Swivel-mounted jack

(2) Handle

(3) Bolt with linch pin.



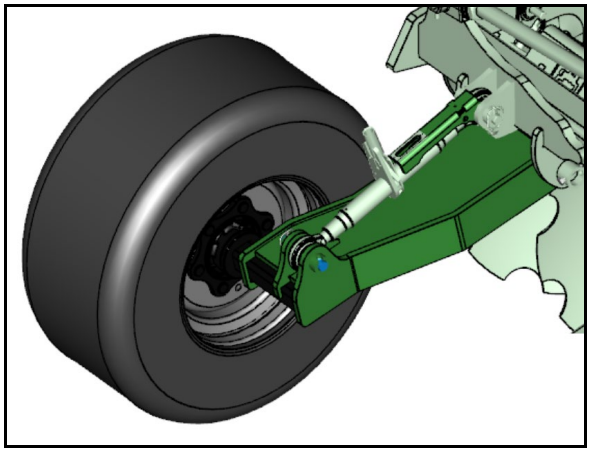
Bring the jack into the desired position:

1. Grasp and hold the jack with handle from above.
2. Pull the linch pin and the pin.
3. Swing the jack to the end position.
4. Fix the position of the jack with the pin and secure using the linch pin.

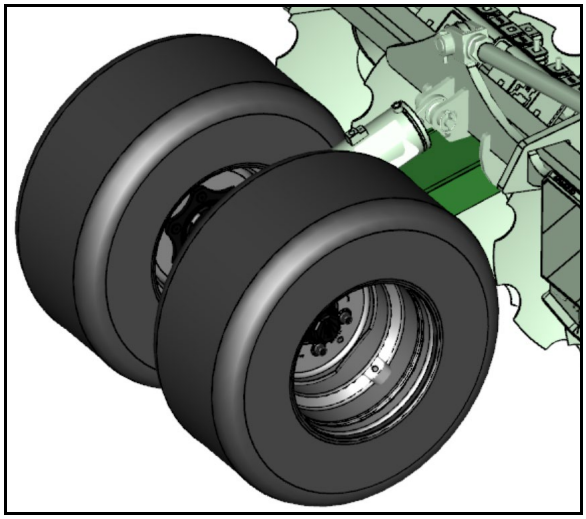
5.17 Supporting wheels (option)

The support wheels reduce swinging around the longitudinal axis during operation.

- Support wheel, single



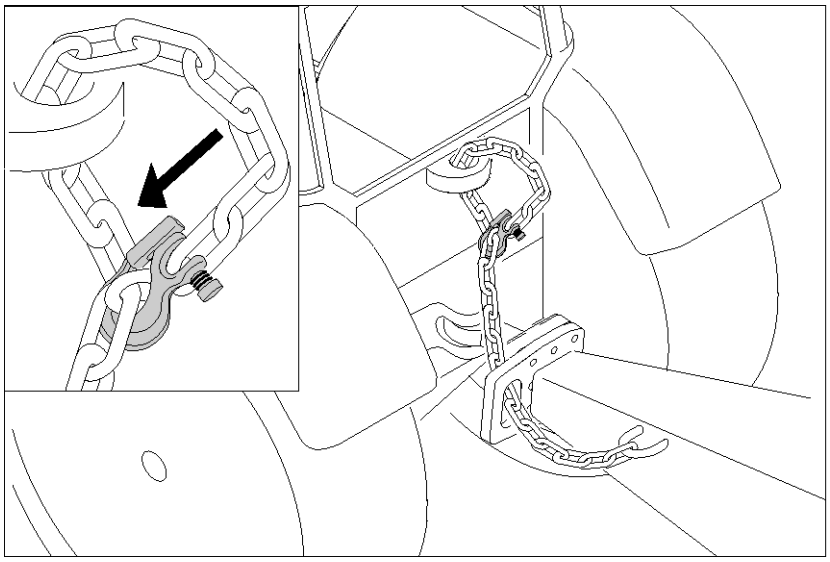
- Support wheel, double



5.18 Safety chain between tractor and implements

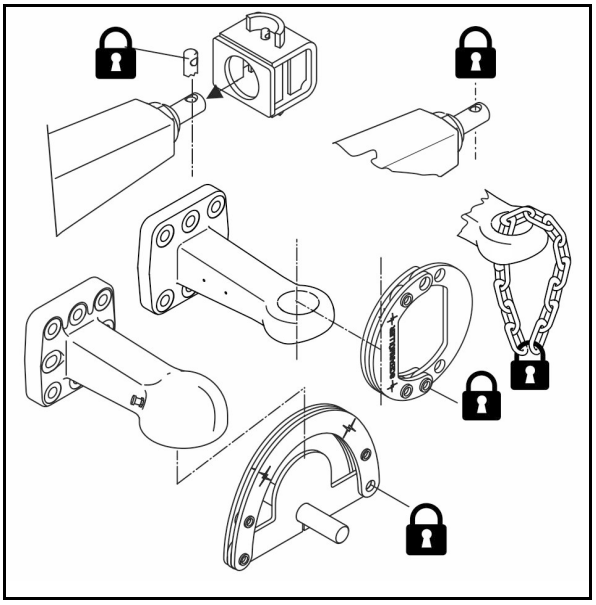
Depending on country-specific regulations, implements are equipped with a safety chain.

The safety chain must be mounted at a suitable point on the tractor as prescribed before travelling.



5.19 Safety device against unauthorised use

Lockable device for the drawbar eye, ball bracket, or lower link crosspiece, prevents unauthorised use of the implement.



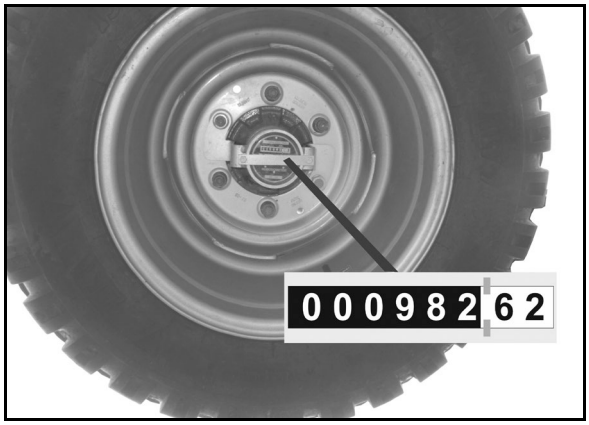
5.20 Hectare counter (optional)

The hectare counter is a mechanical counter on the support wheel for determination of the worked area.

The counter shows the distance run in the working position in kilometres.

Trailing of the feeler wheel and driving backwards distort the area calculation.

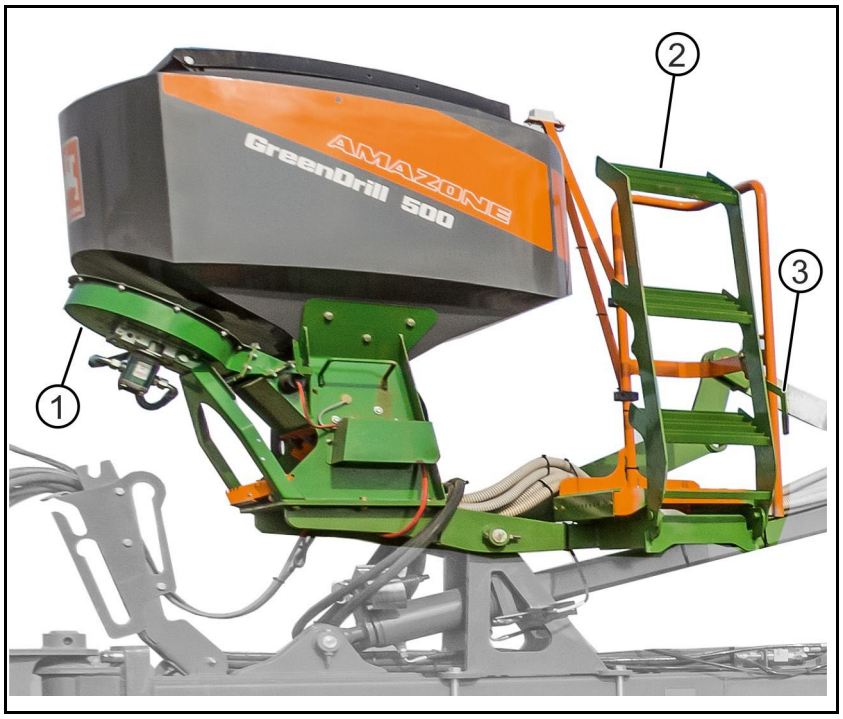
The counter also continues counting when driving backwards.



Area [ac / ha] = 0.1 x displayed value [mph / km] x working width [ft / m]

5.21 GreenDrill catch crop seeding unit

The GreenDrill catch crop seeding unit enables the seeding of fine seeds and catch crops during soil cultivation.



(1) Blower fan with hydraulic drive for connecting a double-acting tractor control unit

(2) Foldable ascent

(3) Automatic locking of the foldable ascent

Also see the GreenDrill operating manual.

Fold the ascent to the transport position before driving.

Use the step of the ladder as handle.

6 Commissioning

This section contains information

- on operating your implement for the first time.
- on checking how you may connect the implement to your tractor.

- Before operating the implement for the first time the operator must have read and understood the operating manual.
- Follow the instructions given in the section "Safety instructions for the operator" on page 24 onwards when
  - connecting and disconnecting the implement,
  - transporting the implement and
  - using the implement
- Only couple and transport the implement to/with a tractor which is suitable for the task.
- Tractor and implement must satisfy the national road traffic regulations!
- Vehicle owner and vehicle operator are responsible for compliance with the statutory provisions of the national road traffic regulations!

WARNING

Risk of contusions, cutting, catching, drawing in and knocks in the area of hydraulically or electrically actuated components.

Do not block the operator controls on the tractor which are used for hydraulic and electrical movements of components, e.g. folding, swivelling and pushing movements. The movement must stop automatically when you release the appropriate control. This does not apply to equipment movements that:

- are continuous or
- are automatically locked or
- necessarily require an open centre or pressure position to operate correctly

6.1 Checking the suitability of the tractor

WARNING

Danger of breaking during operation, insufficient stability and insufficient tractor steering and braking power in the event of improper use of the tractor!

- Check the suitability of your tractor before you attach or hook up the implement.

  You may only connect the implement to tractors suitable for the purpose.

- Carry out a brake test to check whether the tractor achieves the required braking delay with the implement connected.

Requirements for the suitability of a tractor are, in particular:

- The approved total weight
- The approved axle loads
- The load capacity of the installed tyres

  You can find this data on the rating plate or in the vehicle documentation and in the tractor operating manual.

The front axle of the tractor must always be subjected to at least 20% of the empty weight of the tractor.

The tractor must achieve the brake delay specified by the tractor manufacturer, even with the implement connected.

6.1.1 Calculating the actual values for the total tractor weight, tractor axle loads and load capacities, as well as the minimum ballast

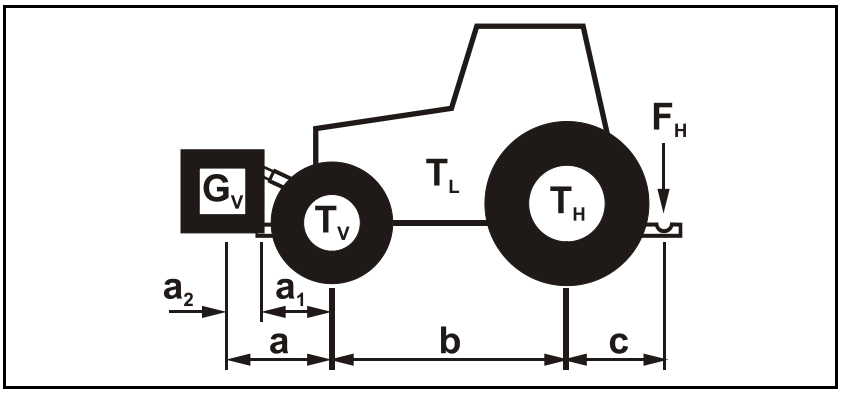
The approved total tractor weight specified in the vehicle documentation must be greater than the sum of the

- empty tractor weight
- ballast weight and
- implement's total weight when attached or supported weight when hitched.

This note only applies to Germany:

If, having tried all possible alternatives, it is not possible to comply with the axle loads and/or the approved total weight, then a survey by an officially recognised motor traffic expert can, with the approval of the tractor manufacturer, be used as a basis for the responsible authority to issue an exceptional approval according to § 70 of the German Regulations Authorising the Use of Vehicles for Road Traffic and the required approval according to § 29, paragraph 3 of the German Road Traffic Regulations.

6.1.1.1 Data required for the calculation



T_L	lb [kg]	Tractor empty weight	See tractor operating manual or vehicle documentation
T_V	lb [kg]	Front axle load of the empty tractor	
T_H	lb [kg]	Rear axle load of the empty tractor	
G_V	lb [kg]	Front weight (if available)	See front weight in technical data, or weigh
F_H	lb [kg]	Maximum drawbar load	See rating plate of implement
a	ft [m]	Distance between the centre of gravity of the front implement mounting or the front ballast and the centre of the front axle (total $a_1 + a_2$)	See technical data of tractor and front implement mounting or front ballast or measurement
a_1	ft [m]	Distance from the centre of the front axle to the centre of the lower link connection	See tractor operating manual or measurement
a_2	ft [m]	Distance between the centre of the lower link connection point and the centre of gravity of the front implement mount or front ballast (centre of gravity distance)	See technical data of front implement mounting or front ballast or measurement
b	ft [m]	Tractor wheel base	See tractor operating manual or vehicle documents or measurement
c	ft [m]	Distance between the centre of the rear axle and the centre of the lower link connection	See tractor operating manual or vehicle documents or measurement

6.1.1.2 Calculation of the required minimum front ballast $G_{V\ min}$ of the tractor to ensure safe steering

$$G_{V\ \min} = \frac{F_H \bullet c - T_V \bullet b + 0{,}2 \bullet T_L \bullet b}{a + b}$$

Enter the numeric value for the calculated minimum ballast $G_{V\ min}$, required on the front side of the tractor, in the table (Section 6.1.1.7).

6.1.1.3 Calculation of the actual front axle load of the tractor $T_{V\ tat}$

$$T_{V\ tat} = \frac{G_V \bullet (a + b) + T_V \bullet b - F_H \bullet c}{b}$$

Enter the numeric value for the calculated actual front axle load and the approved tractor front axle load specified in the tractor operating manual in the table (Section 6.1.1.7).

6.1.1.4 Calculation of the actual total weight of the combined tractor and implement

$$G_{tat} = G_V + T_L + F_H$$

Enter the numeric value for the calculated actual total weight and the approved total tractor weight specified in the tractor operating manual in the table (Section 6.1.1.7).

6.1.1.5 Calculation of the actual rear axle load of the tractor $T_{H\ tat}$

$$T_{H\ tat} = G_{tat} - T_{V\ tat}$$

Enter the numeric value for the calculated actual rear axle load and the approved tractor rear axle load specified in the tractor operating manual in the table (Section 6.1.1.7).

6.1.1.6 Tire load capacity

Enter the double value (two tires) of the approved load capacity (see, for example, tire manufacturer's documentation) in the table (Section 6.1.1.7).

6.1.1.7 Table

	Actual value according to calculation		Approved value according to tractor instruction manual		Double approved load capacity (two tires)
Minimum ballast front/rear	/ lb kg		--		--
Total weight	kg lb	≤	kg lb		--
Front axle load	lb kg	≤	lb kg	≤	lb kg
Rear axle load	lb kg	≤	lb kg	≤	lb kg

- You can find the approved values for the total tractor weight, axle loads and load capacities in the tractor registration papers.
- The actually calculated values must be less than or equal to (≤) the permissible values!

WARNING

Crush, cut, entanglement, pulling in and impact hazards caused by poor stability and insufficient steering and braking capacity of the tractor.

It is forbidden to couple the implement to the tractor used as the basis for calculation, if

- One of the actual, calculated values is greater than the approved value.
- There is no front weight (if required) attached to the tractor for the minimum front ballast ($G_{V\,min}$).

- Ballast your tractor with weights at the front or rear if the tractor axle load is exceeded on only one axle.
- Special cases:
  - If you do not achieve the minimum ballast at the front ($G_{V\,min}$) from the weight of the front-mounted implement (G_V), you must use ballast weights in addition to the front-mounted implement.
  - If you do not achieve the minimum ballast at the rear ($G_{H\,min}$) from the weight of the rear-mounted implement (G_H), you must use ballast weights in addition to the rear-mounted implement.

6.1.2 Requirements for tractor operation with attached implements

WARNING

Risk of breakage during operation of components through unapproved combinations of connecting equipment!

- Ensure:
  - that the connection fittings on the tractor possess sufficient permissible support capability for the drawbar load actually present.
  - that the axle loads and weights of the tractor altered by the drawbar load are within the approved limits. If necessary, weigh them.
  - that the tractor's actual static rear axle load does not exceed the permissible rear axle load.
  - that the permissible total weight of the tractor is observed.
  - that the approved load capacities of the tractor tires are not exceeded.

6.1.2.1 Combination options of coupling devices

The table shows the permitted combination options of coupling devices for the tractor and implement.

Coupling device				
Tractor		**AMAZONE implement**		
Upper hitch				
Pin coupling, form A, B, C A not automatically B automatic smooth pin C automatic curved pin	(ISO 6489-2)	Drawbar eye	Socket ⌀ 1,57 in / 40 mm	(ISO 5692-2)
		Drawbar eye	⌀ 1,57 in / 40 mm	(ISO 8755)
		Drawbar eye	⌀ 1,97 in / 50 mm, only compatible with form A	(ISO 1102)
Upper / lower hitch				
Ball head coupling Ø 80 mm	(ISO 24347)	Ball coupling	∅ 3,15 in / 80 mm	(ISO 24347)
Lower hitch				
Towing hooks / hitch hooks	(ISO 6489-19)	Drawbar eye	Centre bore ∅ 1,97 in / 50 mm Eyelet ∅ 1,18 in / 30 mm	(ISO 5692-1)
		Swivel drawbar eye	compatible only with form Y, hole ⌀ 1,97 in / 50 mm	(ISO 5692-3)
		Drawbar eye	Centre bore ∅ 1,97 in / 50 mm Eyelet ∅ 1,18-1,6 in / 30 - 41 mm	(ISO 20019)
Drawbar - Category 2	(ISO 6489-3)	Drawbar eye	Centre bore ∅ 1,97 in / 50 mm Eyelet ∅ 1,18 in / 30 mm	(ISO 5692-1)
			Socket ⌀ 1,57 in / 40 mm	(ISO 5692-2)
			⌀ 1,57 in / 40 mm	(ISO 8755)
			⌀ 1,97 in / 50 mm	(ISO 1102)
Drawbar	(ISO 6489-3)	Drawbar eye		(ISO 21244)
Drawbar / Piton-fix	(ISO 6489-4)	Drawbar eye	Centre bore ∅ 1,97 in / 50 mm Eyelet ∅ 1,18 in 30 mm	(ISO 5692-1)
		Swivel drawbar eye	compatible only with form Y, hole ⌀ 1,97 in / 50 mm	(ISO 5692-3)
Yoke that cannot be rotated	(ISO 6489-5)	Swivel drawbar eye		(ISO 5692-3)
Lower link hitch	(ISO 730)	Lower link traverse		(ISO 730)

6.1.2.2 Compare the permissible D_C value with actual D_C value

WARNING

Danger from breaking the coupling devices between the tractor and the implement when the tractor is not used for its intended purpose!

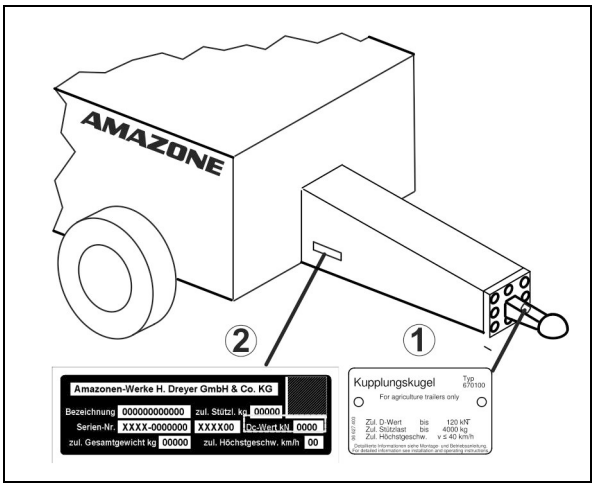
1. Calculate the actual D_C value of your combination, comprising tractor and implement.
2. Compare the actual D_C value with the following permissible D_C values:

- Coupling device of the implement
- Drawbar of the implement
- Coupling device of the tractor

The actual D_C value calculated for the combination must be less than or equal (≤) to the D_C values specified.

The permissible D_C values of the implement can be found on the rating plate of the coupling device (1) and the drawbar (2).

The permissible D_C value of the tractor coupling device can be found directly on the coupling device / in the operating manual of your tractor.

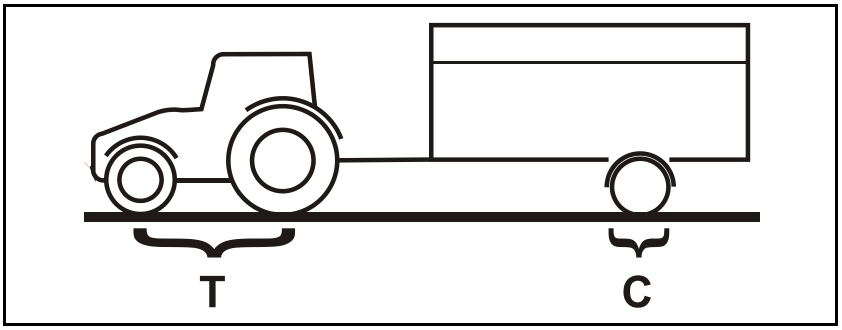


actually calculated D_C value for the combination		**specified D_C value**
kN	≤	Coupling device on the tractor: kN
	≤	Coupling device of the implement: kN
	≤	Drawbar of the implement: kN

Calculate the actual D_C value for the combination to be coupled

The actual D_C value of a combination to be coupled is calculated as follows:

$$D_C = g \times \frac{T \times C}{T + C}$$



T: permissible total weight of your tractor in [t] (See tractor operating manual or vehicle documentation)

C: axle load of the implement [t] loaded with the permissible mass without drawbar load (working load).

g: Gravity (9.81 m/s²)

6.2 Securing the tractor/implement against unintentional start-up and rolling

WARNING

Risk of crushing, shearing, cutting, catching, drawing in and knocks during all work on the implement

- **By driven work elements.**
- **By unintentional movement of work elements or unintentional actuation of hydraulic functions when the tractor engine is running.**
- **By unintentional starting and rolling of the tractor and mounted implement.**

- Secure the tractor and the implement against unintentional starting and rolling before any intervention in the implement.
- It is forbidden to make any intervention in the implement, such as installation, adjustment, troubleshooting, cleaning, maintenance and repairs
  - When the implement is being operated.
  - As long as the tractor engine is running with a connected PTO shaft/hydraulic system.
  - if the ignition key is in the tractor and the tractor engine can be started unintentionally with the PTO shaft/hydraulic system connected.
  - if the tractor and implement have not each been prevented from unintentionally rolling away by applying their parking brakes and/or securing them with wheel chocks
  - if moving parts are not blocked against unintentional movement.

  When carrying out such work, there is a high risk of contact with unsecured components.

1. Lower the raised, unsecured implement / raised, unsecured parts of the implement.
   - This is how to prevent unintentional falling:
2. Shut down the tractor engine.
3. Remove the ignition key.
4. Apply the tractor's parking brake.
5. Secure the implement against rolling away unintentional (only if the implement is hitched)
   - By using the wheel chocks on level terrain or with the parking brake if fitted.
   - By using wheel chocks and the parking brake on very uneven terrain or on a slope.

7 Coupling and uncoupling the implement

When coupling and uncoupling implements, follow the instructions given in the section "Safety instructions for the operator" page 24.

WARNING

Risk of crushing, catching, drawing in and/or knocks due to unintentional starting and rolling of the tractor when coupling or uncoupling the PTO shaft and supply lines.

Secure the tractor and implement against unintentional starting and rolling before entering the danger area between the tractor and implement to couple or uncouple the the PTO shaft and supply lines. See page 72.

WARNING

Risk of crushing and contusions between the rear of the tractor and the implement when coupling and uncoupling the implement!

Actuate the operator controls for the tractor's three-point hydraulic system

- Only from the intended workstation alongside the tractor.
- Only when you are outside the danger area between the tractor and the implement.

7.1 Coupling the implement

WARNING

Danger of breaking during operation, insufficient stability and insufficient tractor steering and braking power on improper use of the tractor!

You may only connect the implement to tractors suitable for the purpose. See section "Checking tractor suitability", page 68.

WARNING

Risk of crushing and contusions between the tractor and the implement when coupling the implement!

Instruct people to leave the danger area between the tractor and the implement before you approach the implement.

Any helpers may only act as guides standing next to the tractor and the implement, and may only move between the vehicles when both are at a standstill.

WARNING

Risk of crushing, drawing in, catching or contusions if the implement unexpectedly comes away from the tractor!

- Use the intended equipment to connect the tractor and the implement in the proper way.
- When coupling the implement to the tractor's three-point hydraulic system, ensure that the attachment categories of the tractor and the implement are the same.

WARNING

Risk of power supply failure between the tractor and the implement through damaged supply lines!

During coupling, check the course of the power lines. The power lines

- must give slightly without tension, bending or rubbing on all movements of the connected implement.
- may not scour other parts.

Couple the implement with draw rail on the lower link of the tractor

WARNING

Risk of accidents if the connection between implement and tractor separates!

Always use ball sleeves with sockets and integral linch pins.

1. Slide ball sleeves onto the lower link pins of the implement and secure them with linch pins.
2. Direct people out of the danger area between the tractor and implement before you approach the implement with the tractor.
3. First couple the supply lines to the tractor before coupling the implement to the tractor.
   - 3.1 Drive the tractor up to the implement in such a manner that a free space (approx. 25 cm) remains between tractor and implement.
   - 3.2 Secure the tractor against unintentional starting and rolling away.
   - 3.3 Couple supply lines to the tractor.
   - 3.4 Position the lower link hooks so that they are aligned with the lower pivot points on the implement.
4. Now drive the tractor in reverse further towards the implement, so that the lower link hooks of the tractor automatically take up the lower pivot points of the implement.

→ The lower link hooks lock automatically.

5. Visually inspect to ensure whether the lower link hooks are correctly locked.
6. Lift stand.
7. Remove wheel chocks.
8. Disengage parking brake.
9. Close the stop tap on the drawbar cylinder for road transport.

Couple the implement with ball bracket on the tractor ball head

1. Instruct persons to get out of the danger area between the tractor and the implement.
2. First couple the supply lines before coupling the implement to the tractor.
   - 2.1 Drive tractor up to the implement in such a manner that a free space (approx. 25 cm) remains between tractor and implement.
   - 2.2 Secure the tractor against unintentional starting and rolling away.
   - 2.3 Couple supply lines to the tractor.
3. Drive the tractor in reverse to the implement so that the coupling device can be coupled.
4. Open the stop tap on the drawbar (Position 1)
5. Actuate the tractor control unit *yellow*.

→ Lower drawbar.

6. Couple the coupling device.
7. Lift the stand into transport position.
8. Remove wheel chocks
9. Release the parking brake.
10. Close the stop tap on the drawbar cylinder for road transport.

7.2 Uncoupling the implement

DANGER

Danger of injury from coulters breaking and coulter pieces being ejected!

Do not rest the implement on the tines!

Park the folded implement with running gear and jack on a level parking surface with solid ground.

When uncoupling the implement, there must always be enough space in front of the implement, so that you can align the tractor with the implement if necessary.

Uncouple the implement with draw rail

1. Safeguard tractor and implement against rolling off unintentionally. See page 72.
2. Lower the stand.
3. Decouple the implement from the tractor.
   - 3.1 Release the lower link.
   - 3.2 Unlock and uncouple the lower link hooks from the tractor seat.
   - 3.3 Move the tractor forward by approx. 25 cm.
   - → This will allow more clearance between tractor and implement and give better access for uncoupling the supply lines.
   - 3.4 Safeguard tractor and implement against rolling off unintentionally.
   - 3.5 Switch the tractor control unit *yellow* to float position and depressurise the hydraulic hose lines.
   - 3.6 Uncouple the supply lines.

Uncouple the implement with ball bracket

1. Safeguard tractor and implement against rolling off unintentionally. See page 72.
2. Lower the stand.
3. Decouple the implement from the tractor.
   - 3.1 Decouple the coupling device.
   - 3.2 Open the stop tap on the drawbar (Position 1).
   - 3.3 Actuate the tractor control unit *yellow*.
   - → Lift off the drawbar.
   - 3.4 Pull the tractor forward by approx. 25 cm.
   - → This will allow more clearance between tractor and implement and give better access for uncoupling the supply lines.
   - 3.5 Safeguard the tractor and implement against unintentionally rolling off.
   - 3.6 Switch tractor control unit *yellow* to float position and thus depressurise the hydraulic hose lines.
   - 3.7 Decouple the supply lines.

8 Adjustments

WARNING

Risk of contusions, cutting, catching, drawing in and knocks through

- **unintentional falling of the implement raised using the tractor's three-point hydraulic system.**
- **unintentional falling of raised, unsecured implement parts.**
- **unintentional start-up and rolling of the tractor-implement combination.**

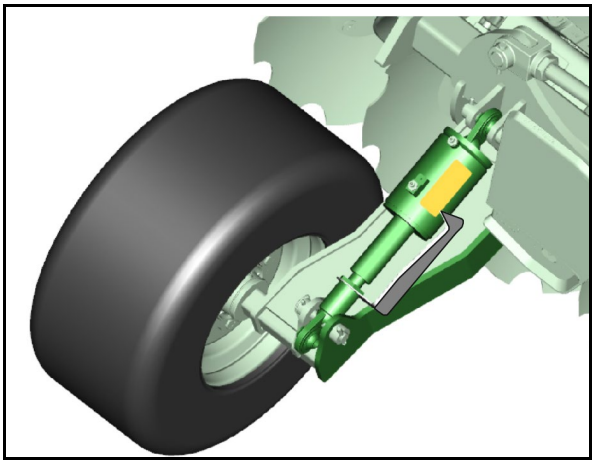
Secure the tractor and the implement against unintentional start-up and rolling before making adjustments to the implement. See page 72.

8.1 Adjusting the working depth of the discs

Adjust the working depth when the implement is unfolded.

8.1.1 Hydraulic working depth adjustment

The working depth is hydraulically adjusted using the tractor control unit *green* on the roller and the support wheels.



The values of the scale only indicate the approximate working depth.

If a uniform working depth cannot be adjusted, see page 99.

After adjusting the depth, the frame must be horizontally aligned.

8.1.2 Working depth – manual adjustment

Carry out the adjustment via:

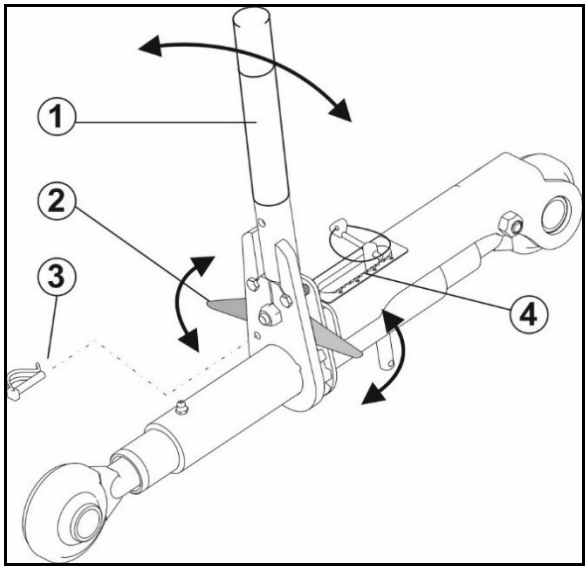
- The adjustment spindle on the support wheel
- The spacer elements on the roller

Ensure that the adjustment is the same on the right and on the left.

When performing the adjustment, ensure that the implement is horizontal.

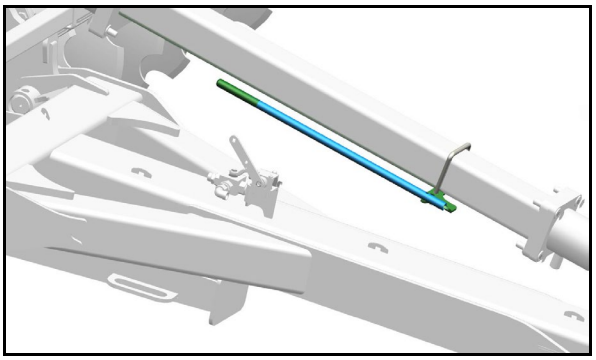
Adjusting the working depth on the support wheel

1. Slightly lift the unfolded implement.
2. Insert the hand crank to operate the spindle.
3. Remove the linch pin (3).
4. Engage the swivel lever (2) according to the desired direction of rotation.
5. Use the hand lever (1) to extend / shorten the spindle.
6. Secure the adjustment with the linch pin (3).
7. Place the hand lever in parking position and secure it with the linch pin.

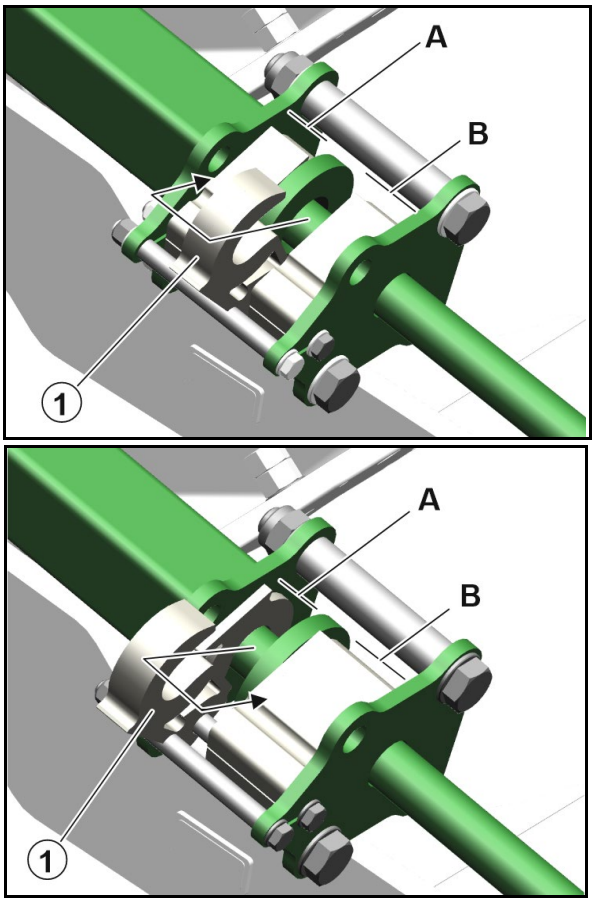


The scale (4) provides orientation when making the adjustment

Parking position for the hand lever



Adjusting the working depth on the roller



Increasing the working depth:

1. Parking the unfolded implement on the roller.
2. Swing the spacer elements out of position **B**.
3. Slightly lift the implement.
4. Swing the spacer elements into position **A**.

Reducing the working depth:

1. Slightly lift the unfolded implement.
2. Swing spacer elements out of position **A**.
3. Parking on the roller.
4. Swing spacer elements into position **B**.

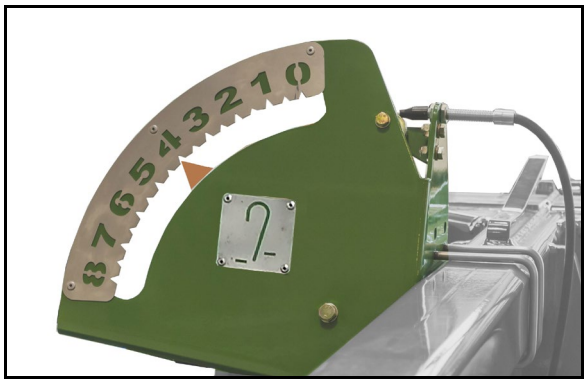
8.2 Intensity of the crushboard

Hydraulic adjustment

The intensity of the crushboard is hydraulically adjusted via the *beige* tractor control unit.

The display shows the set intensity.

A high displayed value indicates high intensity.



- Set both adjustment units to the same values.
- The values on the scale do not specify the working depth set in mm.

8.3 Adjusting the side elements

Adjust the side elements so that a smooth transition is achieved at the edge of the worked area.

Beforehand, ensure that the implement is working without lateral pull.

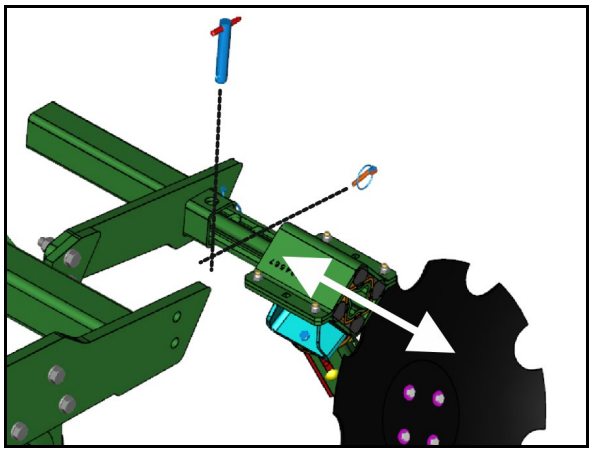
3 parameters can be adjusted for the side discs.

Telescoping the side discs:

1. Pull out the pin.
2. Telescope the side disc.
3. Position the side disc with the pin and secure with a linch pin.

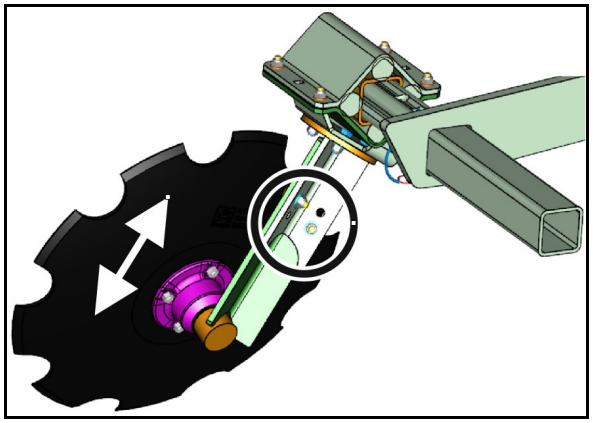
Default setting

- Right: 6th hole from the outside.



Adjusting the working depth of the side disc:

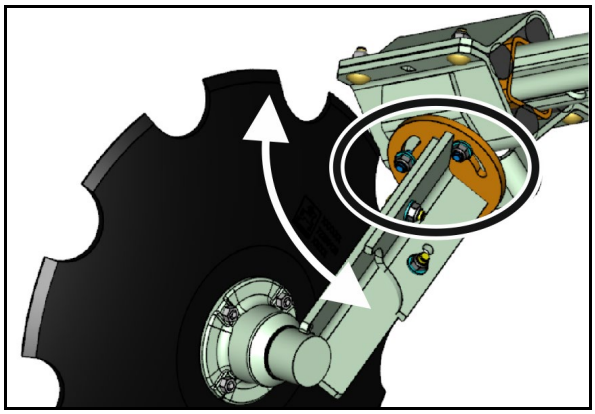
1. Loosen both bolts.
2. Adjust the working depth by lifting or lowering the side disc.
3. Retighten both bolts.



Turning the side disc:

1. Loosen the 3 bolts.
2. Turn the side disc.
3. Tighten the 3 bolts.

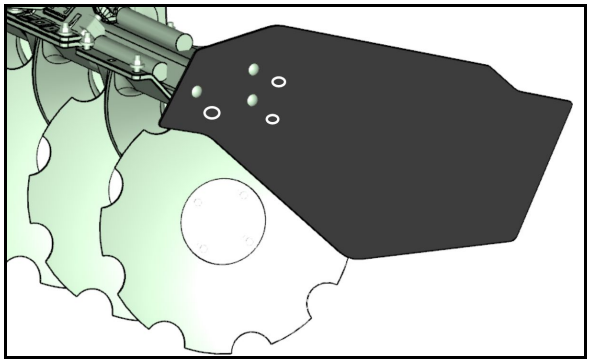
Right: Standard setting with disc completely turned clockwise, see figure.



Adjusting the deflector guide:

The deflector guide can be bolted in another group of holes.

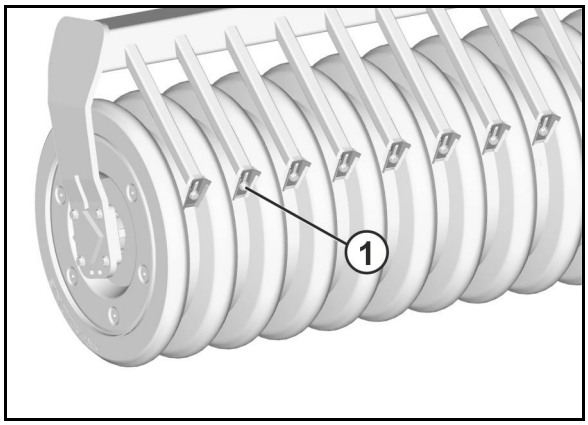
Two people are required to do this.



8.4 Adjusting the scraper of the rollers

The scraper is set at the factory. To adjust the setting to the working conditions:

1. Secure the tractor and the implement against unintentional start-up and rolling
2. Release bolt under the scraper.
3. Adjust the scraper in the slot.
4. Tighten the bolt again.



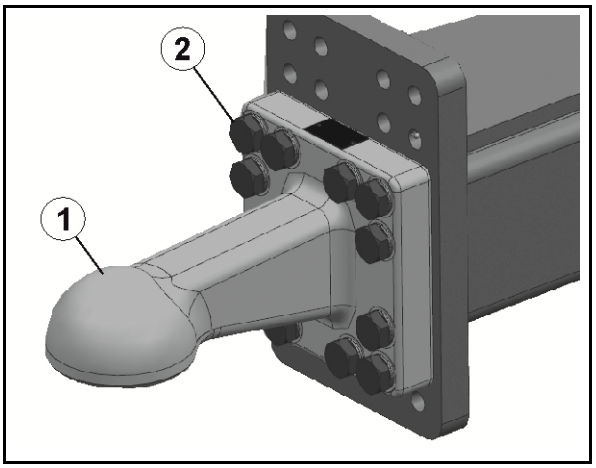
Wedge ring roller:

Do not adjust the distance between scraper and spacer ring to less than 10 mm to avoid excessive wear.

8.5 Height of towing eye

With the implement removed, the height of the towing eye (1) can be adjusted to the tractor.

Release the screws (2) and screw on the towing eye at the required height.



9 Transportation

WARNING

Do not exceed the maximum permissible speed. The permissible speed depends on the actual axle load of the implement, see Technical Data, Seite 40.

- During transportation, follow the instructions given in the section "Safety instructions for the operator", page 27.
- Before moving off, check:
  - that the supply lines are connected correctly.
  - the lighting system for damage, proper operation and cleanness,
  - the hydraulic systems visually for obvious defects
  - the bearing frame parts for damage.

WARNING

Risk of being crushed, cut, caught, drawn in or struck if the implement is unintentionally released from its attached or hitched position.

Carry out a visual check that the lower link pins are firmly fixed with the lynch pin against unintentional release.

WARNING

Risk of contusions, cutting, catching, drawing in and knocks when making interventions in the implement through unintentional implement movements.

- On folding implements, check that the transport locks are locked correctly.
- Secure the implement against unintentional movements before starting transportation.

WARNING

Risk of contusions, cuts, dragging, catching or knocks from tipping and insufficient stability.

- Drive in such a way that you always have full control over the tractor with the attached implement.

  In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor and the connected implement.
- Before transportation, fasten the side locking of the tractor lower link, so that the connected or coupled implement cannot swing back and forth.

WARNING

Danger of breaking during operation, insufficient stability and insufficient tractor steering and braking power on improper use of the tractor!

These risks pose serious injuries or death.

Observe the permissible axle and drawbar loads of the tractor.

WARNING

Risk of falling from the implement if riding against regulations!

It is forbidden to ride on the implement and/or climb the running implement.

Rear harrow (optional)

WARNING

Risk of injury due to non-compliance with the approved transport width.

Before folding the implement install the transport safety bar.

10 Use of the implement

When using the implement, observe the information in the sections

- "Warning pictograms and other labels on the implement", from page 18 and
- "Safety instructions for operators", from page 24

Observing this information is important for your safety.

WARNING

Danger of breaking during operation, insufficient stability and insufficient tractor steering and braking power on improper use of the tractor!

Comply with the maximum load of the connected implement and the approved axle and drawbar loads of the tractor.

WARNING

Risk of contusions, cutting, catching, drawing in and knocks through insufficient stability and tipping of the tractor and/or the connected implement.

Drive in such a way that you always have full control over the tractor with the attached implement.

In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the driver and the connected implement.

WARNING

Risk of being crushed, cut, caught, drawn in or struck if the implement is unintentionally released from its attached or hitched position.

Each time before the implement is used, carry out a visual check that the lower link pins are secured with a lynch pin against unintentional release.

WARNING

Risk of contusions, drawing in and catching during implement operation without the intended protective equipment!

Only ever start up the implement when the protective equipment is fully installed.

CAUTION

Use of tractors with centre-pivot steering or caterpillar tractor for towing the implement:

- Set the connection device to swing freely during operation.

→ Otherwise, side impacts can cause damage to the implement.

- Fix the connection device during transport.

10.1 Transport to working position

WARNING

Instruct people to leave the swivel area of the implement wing before you fold the implement wing out or in.

The execution of some hydraulic functions can take a little longer. Make sure that the hydraulic cylinders are able to move in and out to the limit of their stop positions.

10.1.1 Changing from transport to working position

1. Open the stop tap on the drawbar cylinder (Position 1)
2. Actuate the tractor control unit *yellow*.

→ Lift out the implement in headland setting.

3. actuate the tractor control unit *blue*.

→ unfold the implement.

4. Move the right telescopic side disc into working position.
5. **Certos 7002-2TX**: Move the folding outer discs into working position.
6. Implements without a roller: Swing in the spacer elements on both sides of the running gear.
   - o Swing in all thick spacer elements.
   - o Starting from the bottom, swing in thin spacer elements according to the desired working depth.
7. Actuate the tractor control unit *yellow*.

→ Lower the implement into working position.

→ Completely raise the running gear.

8. Operate the tractor control unit in float position during field operation.

10.1.2 Changing from working to transport position

WARNING

Instruct people to leave the swivel area of the implement wing before you fold the implement wing out or in.

The execution of some hydraulic functions can take a little longer. Make sure that the hydraulic cylinders are able to move in and out to the limit of their stop positions.

1. Actuate the tractor control unit *yellow*.

→ Raise the implement completely.

2. **Certos 7002-2TX**: Move the side elements into transport position.
3. Move the right telescopic side disc into transport position.
4. **Certos 7002-2TX**: Move the folding outer discs into transport position.
5. Rear harrow (optional): Before folding the implement install the transport safety bar.
6. Adjust the working depth so that the transport width of 10 ft / 3 m is not exceeded.

Implements with tandem roller:

Set the maximum working depth.

→ This ensures that the transport width of 10 ft / 3 m is not exceeded.

7. Implements without rollers: swivel out all spacer elements on both sides of the running gear.
8. Actuate the tractor control unit *blue*.

→ Fold in the implement.

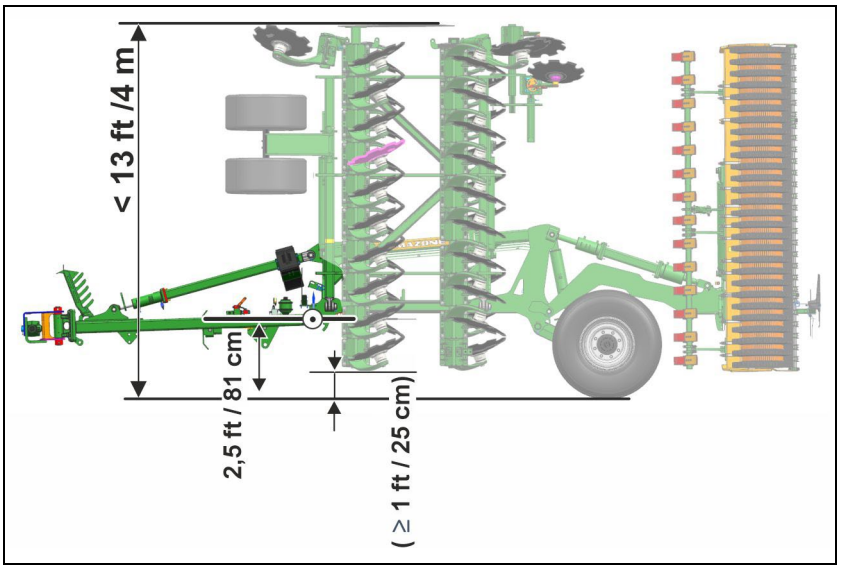
9. Prevent the *blue* tractor control unit from being actuated unintentionally.
10. Actuate the tractor control unit *yellow*.

→ Lower the implement so that the transport height does not exceed 13 ft / 4 m.

11. Close the stop tap on the drawbar cylinder (Position 0).

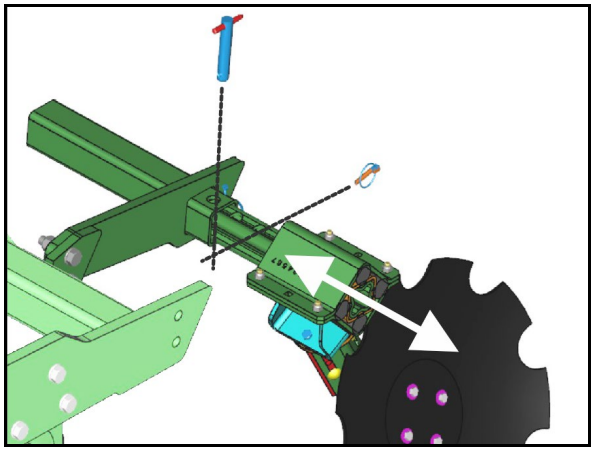
The specified values for ground clearance and height of the drawbar pivot point define the transport position.

If the values are complied with, the permissible transport height of 13 ft / 4 m is maintained.



10.1.3 Moving the right side disc into transport position / working position

1. Pull out the pin.
2. Push in the side disc completely for transport position, or
   push the side disc into the desired working position (default setting in 6th hole from the outside).
3. Position the side disc with the pin and secure with a linch pin.

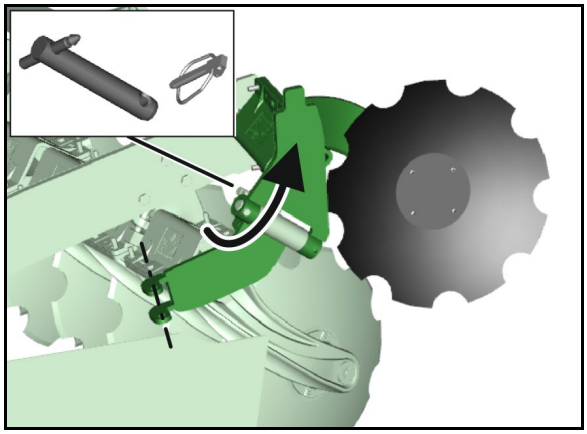


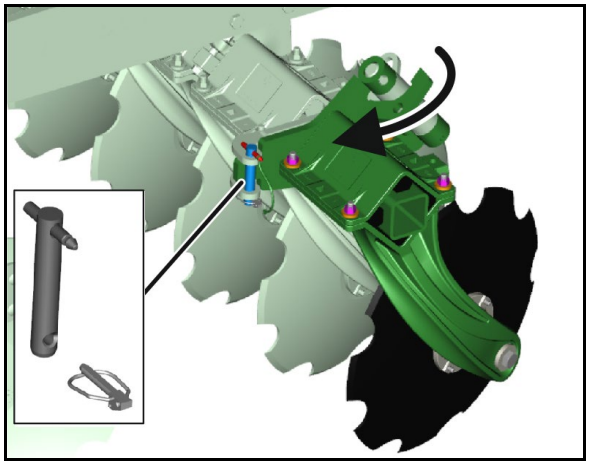
10.1.4 Certos 7002-2TX: Moving the outer discs into transport position / working position

1. Pull out the pin.
2. Swivel the outer disc up for transport position or down for working position.

⚠ Crushing hazard for hands. Use the disc carrier as a handle.

3. Fix the position of the outer disc with the pin and secure using the linch pin.

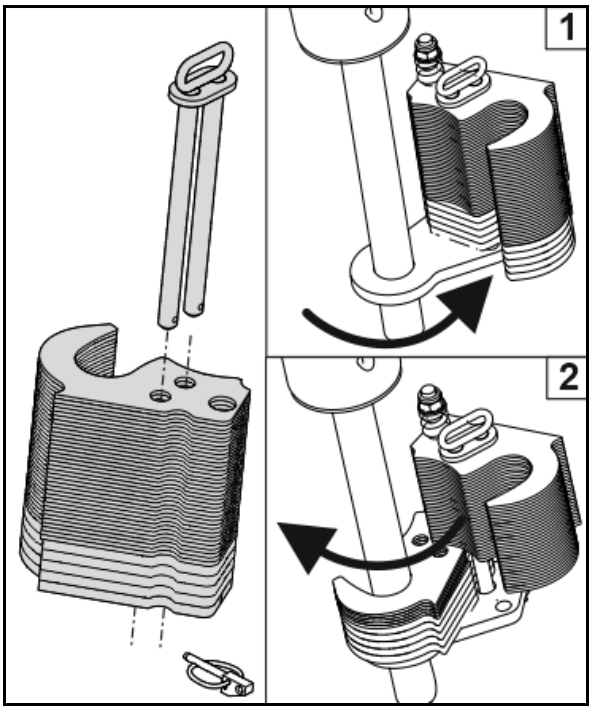




10.1.5 Move the spacer elements on the running gear into the transport position / working position (working without a roller)

(1) Road transport: swivel all the spacer elements away from the hydraulic cylinder.

(2) Operation: swivel in all the lower thick spacer elements.
Swivel in the other thin spacer elements for the depth adjustment starting from the bottom.



1. Remove the linch pin.
2. Remove the locking pins.
3. Swivel the spacer elements in or out.
4. Put the locking pin back in.
5. Secure the locking pin with a linch pin.

The more spacer elements are swiveled in, the lower the working depth.

Adjust both running gear cylinders equally!

10.2 Operation

To obtain optimum work results, work with the tractor lower links laterally arrested.

- When carrying out work, operate the tractor control unit *yellow* in float position.
- Adjust the tractor lower link so that the drawbar cylinder can be freely extended and retracted in float position.
- It is forbidden to drive in reverse when the implement is in working position!

For a uniform working depth across the entire implement width, the corresponding hydraulic cylinders must have the same length.

→ Synchronise the hydraulic cylinders, see page 99!

- When beginning operation, when the hydraulic oil has cooled down.
- During the course of operation, when the hydraulic oil has warmed up.
- Every 3 operating hours.

10.3 Headland

WARNING

Damage to the implement by turning on the roller.

Before turning, lower the running gear and turn the implement on the running gear!

Before turning on headlands:

- Actuate tractor control unit *yellow*.

→ Raise the implement.

After turning:

1. Actuate tractor control unit *yellow*.

→ Lower the implement completly.

2. Operate the tractor control unit *yellow* in float position.

→ Work now continues.

Use at the headland only when the direction of the implement corresponds to the direction of working.

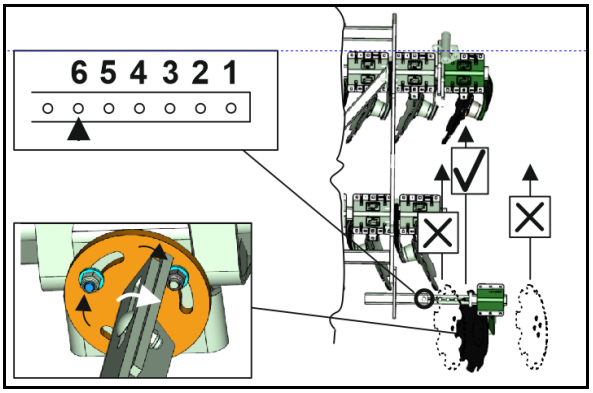
10.4 Preventing lateral pull

Checking the lateral pull:

Position the side disc in the sixth hole from the outside.

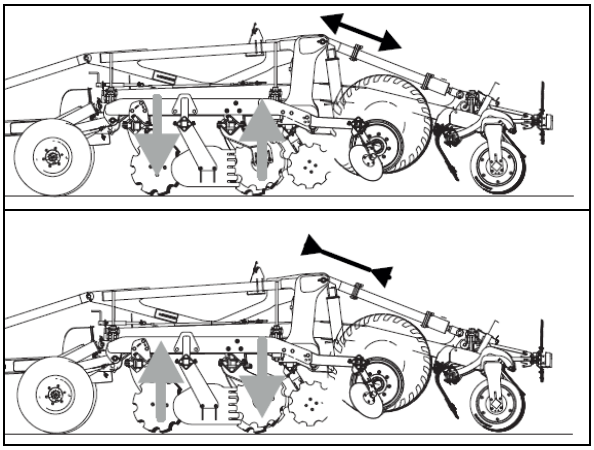
Turn the right side disc completely clockwise.

→ During operation, the front right disc and the right side disc are flush with each other.



To prevent lateral pull on the implement, the depth of the rear disc gang can be adjusted hydraulically or manually, depending on the implement equipment.

By lifting or lowering the rear of the implement, one of the two disc gangs has stronger contact with the soil and aligns the implement behind the tractor.



Working without a roller

To prevent the implement from pulling at an angle, the depth of the rear disc gang can be adjusted by varying the spacer elements.

11 Faults

Different working depths across the working width?

→ Synchronise the hydraulic cylinders!

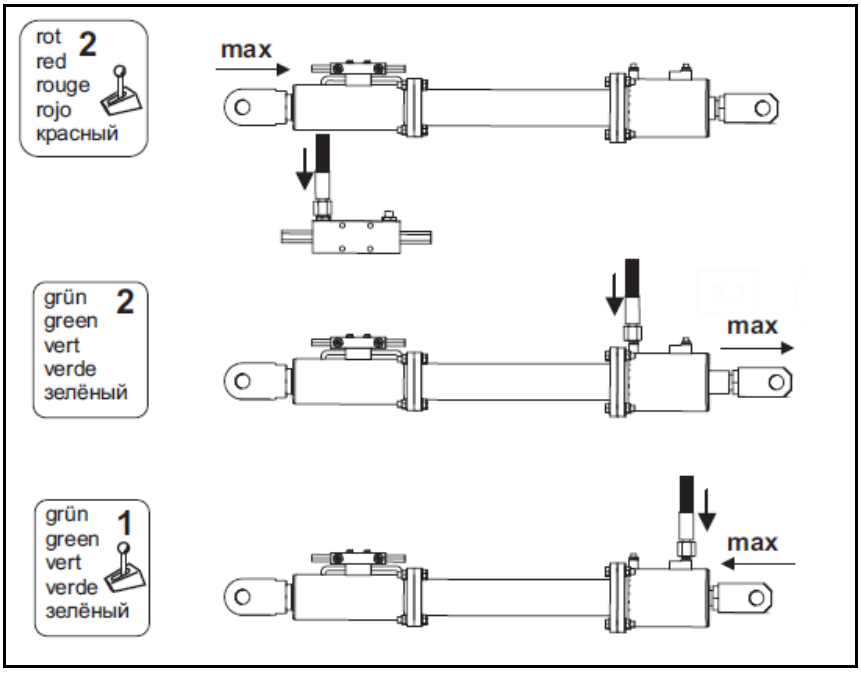
For a uniform working depth across the entire implement width, the corresponding hydraulic cylinders must have the same length.

If this is not the case, the hydraulic cylinders can be synchronised:

1. Actuate the *red 2* tractor control unit so that the hydraulic cylinder is completely retracted.
2. Actuate the *green 2* tractor control unit so that the hydraulic cylinders are completely extended.
3. Continue actuating the tractor control unit for another 10 s.
4. Actuate the *green 1* tractor control unit so that the hydraulic cylinders are completely retracted.

→ An overflow process is initiated that flushes all of the cylinders. This adjusts the cylinders to the same length.

This procedure should also be performed before operation after a longer period of standstill.



12 Cleaning, maintenance and repairs

WARNING

Risk of contusions, cutting, catching, drawing in and knocks through

- **unintentional falling of the implement raised using the tractor's three-point hydraulic system.**
- **unintentional falling of raised, unsecured implement parts.**
- **unintentional start-up and rolling of the tractor-implement combination.**

Secure the tractor and implement against unintentional starting and unintentional rolling away before you perform any cleaning, servicing or maintenance work on the implement. See page 72.

WARNING

Risk of contusions, cutting, catching, drawing in and knocks through unprotected danger points!

- Mount protective equipment, which you removed when cleaning, maintaining and repairing the implement.
- Replace defective protective equipment with new equipment.

WARNING

Risk of tipping!

Do not carry out repair work when the implement is folded in or partially folded in if the implement has been parked slanting.

12.1 Cleaning

- Pay particular attention to the brake, air and hydraulic hoses!
- Never treat brake, air and hydraulic hoses with petrol, benzene, petroleum or mineral oils.
- After cleaning, grease the implement, in particular after cleaning with a high pressure cleaner/steam jet or liposoluble agents.
- Observe the statutory requirement for the handling and removal of cleaning agents.

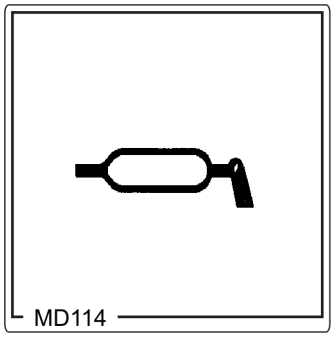
Cleaning by using a high pressure cleaner / steam jet

- Always observe the following points when using a high pressure cleaner/steam jet for cleaning:
  - Do not clean any electrical components.
  - Do not clean any chrome-plated components.
  - Never aim the cleaning jet of the cleaning nozzle of the high pressure cleaner/steam jet directly at lubrication points, bearings, rating plates, warning signs, and stickers.
  - Always maintain a minimum jet distance of 300 mm between the high pressure or steam jet cleaning nozzle and the implement.
  - The set pressure of the high-pressure cleaner/steam jet must not exceed 120 bar.
  - Comply with the safety regulations when working with high pressure cleaners.

12.2 Lubrication instructions

Lubrication points on the implement are indicated with the foil.

Carefully clean the lubrication points and grease gun before lubrication so that no dirt is pressed into the bearings. Press the dirty grease out of the bearings completely and replace it with new grease.



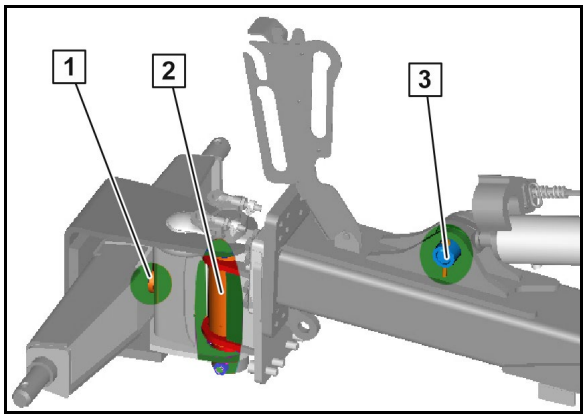
Lubricants

For lubrication work, use a lithium saponified multipurpose grease with EP additives:

Company	Lubricant name
ARAL	Aralub HL2
FINA	Marson L2
ESSO	Beacon 2
SHELL	Retinax A

Lubrication plan

	Description	Number	Lubrication interval [h]
1	Tensioned crosspiece	1	50
2		2	10
3	Drawbar	1	50
4		1	50
5		1	50
6	Boom	4	50
7	Section hydraulic cylinder	8	50
8	Support wheel	2	50
9		2	50
10	Running gear	2	50
11		2	50
12		2	50
13	Rear unit	2	50
14		2	50
15		2	
16		2	50
17	Rear unit hydraulic cylinder	4	50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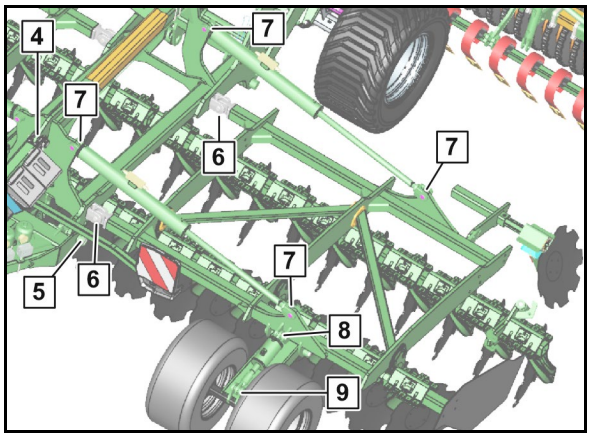
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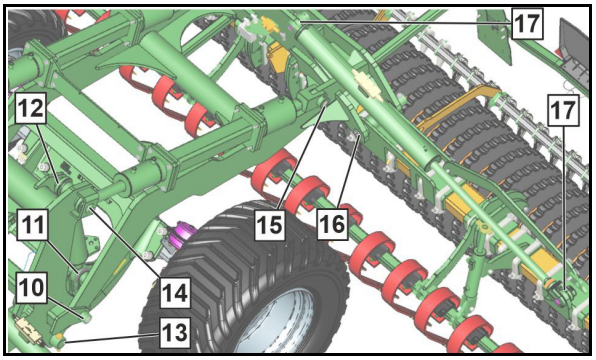
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12.3 Maintenance plan - overview

- Carry out maintenance work when the first interval is reached.
- The times, running hours or maintenance intervals of any third party documentation shall have priority.

After the first working run

Component	Servicing work	see page	Workshop work
Wheels	• Wheel nut check	116	
Hydraulic system	• Inspection for defects • Inspect for leaks	118	**X**
Axle	• Check the axle bolts	113	

On a daily basis

Component	Servicing work	see page	Workshop work
Whole implement	• Visual inspection before operation		
Brake system	• Draining the air reservoi	113	

Weekly/every 50 working hours

Component	Servicing work	see page	Workshop work
Hydraulic system	• Inspection for defects	118	**X**
Wheels	• Chec k the air pressure • Wheel nut check • Check for damage	116	
Parking brake	• Check the braking effect when the parking brake is applied	113	
Brake system	• Perform visual inspection	112	
Coupling device	• Check for damage, deformation and cracks	114	

Every three months / 200 operating hours

Component	Servicing work	See page	Workshop work
Brake system	• Check according to the inspection instructions	112	**X**
	• Brake pad check	109	
	• Adjustment of the slack adjuster	109	
Coupling device	• Check the fastening bolts for wear and tight fit	114	
Axle	• Check the axle bolts	113	
Roller	• Check the roller	113	
Coupling device	• Check the fastening bolts for wear and tight fit	114	

Every 6 months / 500 operating hours

Component	Servicing work	See page	Workshop work
Axle (running gear / support wheel)	• Retighten the bolts on the hub cap	--	**X**
	• Check / adjust the play on the hub bearing	94	**X**

Every year / 1000 operating hours

Component	Servicing work	See page	Workshop work
Brake system	• Check the brake drum for dirt	108	**X**
	Automatic slack adjuster • Functional check • Settings	109	**X**
Pneumatic brake	• Clean the compressed air line filter on the coupling head	111	**X**
Wheel hub bearing	• Change the grease • Check the taper roller bearing for wear		**X**

Every 2 years

Component	Servicing work	See page	Workshop work
Axle (running gear / support wheel)	• Lubricate the hub bearing		**X**

As required

Component	Servicing work	See page	Specialist workshop
Scraper	• Adjusting	87	
Upper/lower link pin	• Replace	120	
Disc	• Check wear	117	**X**

12.4 Axle (running gear / support wheel) and brake

For optimum brake performance with a minimum of wear, we recommend that the brakes on the tractor are balanced with those on the implement. After the service braking system has been run in for a suitable period, arrange for the brakes to be balanced by a specialist workshop.

To avoid problems with the brakes, adjust all vehicles in accordance with EC Guideline 71/320 EEC.

WARNING

- **Repair and adjustment work on the service braking system should only be carried out by trained specialist personnel.**
- **Special care is required for welding, torch cutting and drilling work in the vicinity of brake lines.**
- **Always carry out a braking test after any adjusting or repair work on the braking system**

General visual inspection

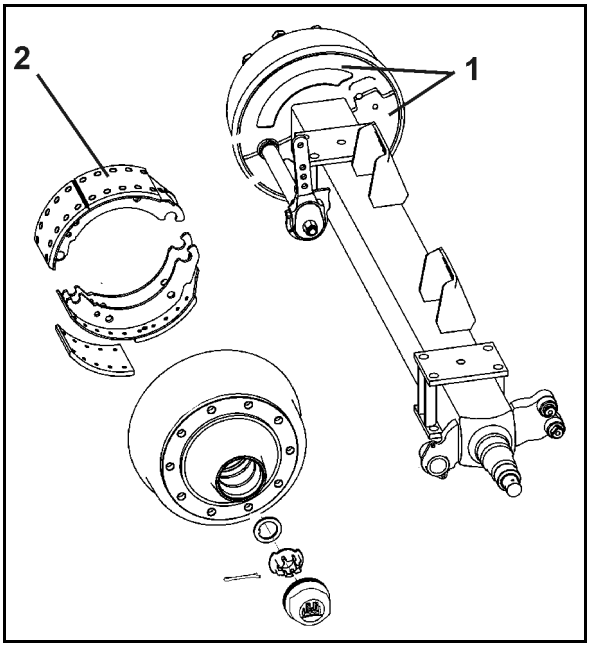
WARNING

Carry out a general visual check of the brake system. Observe and check the following criteria:

- **Pipe lines, hose lines and coupler heads must not be externally damaged or rusted.**
- **Hinges, e.g. on fork heads, must be properly secured, easy to move, and not worn out.**
- **Ropes and cables**
  - **Must be properly run.**
  - **May not have any visible cracks.**
  - **May not be knotted.**
- **Check the piston stroke on the brake cylinders, and adjust as necessary.**
- **The air reservoir must not**
  - **move around in the tensioning belts.**
  - **be damaged.**
  - **show any outward signs of corrosion damage.**

Checking the brake drum for dirt

1. Unscrew the two cover plates (1) on the inside of the brake drum.
2. Remove any dirt and plant debris which may have entered the drum.
3. Refit the cover plates.



CAUTION

Dirt entering the drums may be deposited on the brake pads (2) and thus die appreciably reduce brake performance.

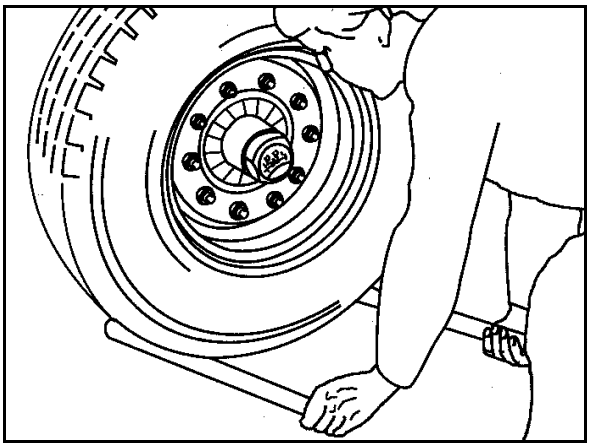
Risk of accident.

If dirt is discovered in the brake drum, the brake pads must be inspected by a specialist workshop.

For this to happen, the wheel and brake drum must be removed.

Checking the play on wheel hub bearings

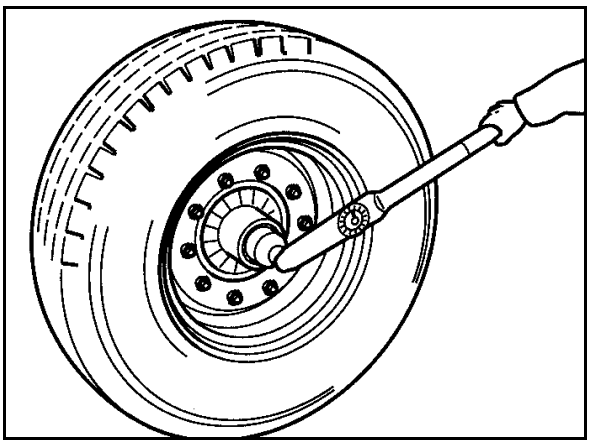
1. To check the play on wheel hub bearings, raise the axle until the wheels turn freely.
2. Release the brake.
3. Place a lever between the tire and the ground and check the play.



If bearing play can be detected:

Adjust the bearing play

1. Remove the dust cup or hub cap.
2. Remove the split pin from the axle nut.
3. Tighten the wheel nut while turning the wheel at the same time until the wheel hub is lightly braked as it turns.
4. Turn axle nut back to the next available split pin hole. To the next matching hole (max. 30°).
5. Fit split pin and bend slightly open.
6. Top up the dust cap with high melting point grease and drive it into, or screw it onto the wheel hub.



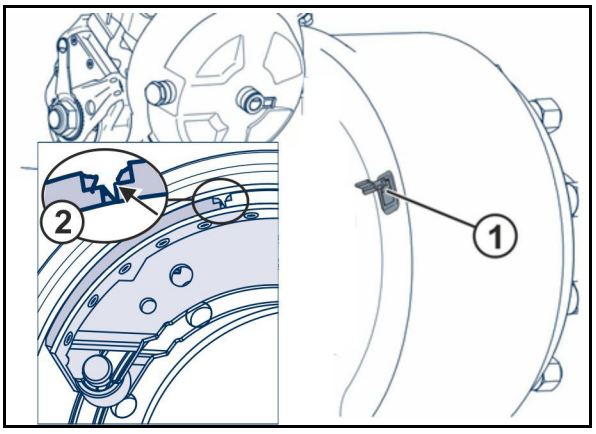
Brake pad check

To check the brake pad thickness, open the inspection hole (1) by opening the rubber tab.

Changing the brake pads → Workshop work

Criterion for changing the brake pads:

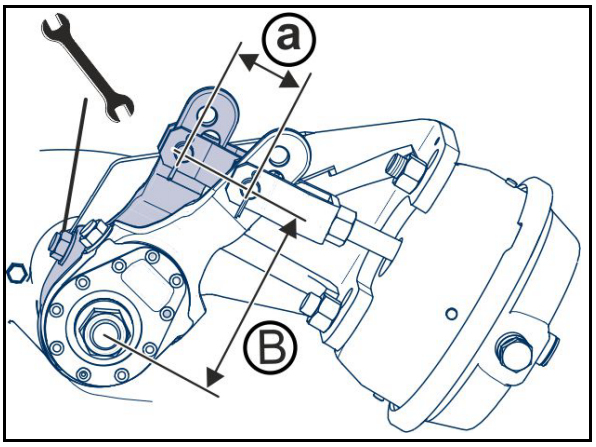
- Minimum pad thickness of 0,2 in / 5 mm was reached.
- Wear edge (2) was reached.



Adjusting the linkage adjuster

Move the linkage adjuster by hand in the pressure direction. If the free travel of the long-stroke diaphragm cylinder pressure rod is max. 35 mm, the wheel brake must be readjusted.

Adjustments are made using the readjustment hexagon bolt on the linkage adjuster. Set the free travel "a" to 10-12 % of the connected brake lever length "B",
e.g. lever length 6 in / 150 mm =
free travel 0,2 – 0,7 in / 15 – 18 mm.

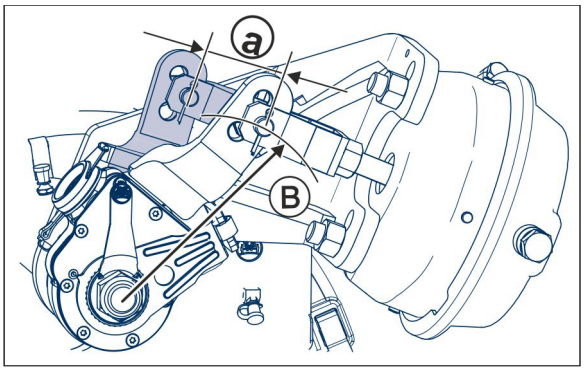


Checking the function of the automatic slack adjuster

1. Secure the implement against rolling away and release the service brake and parking brake.
2. Manually actuate the slack adjuster.

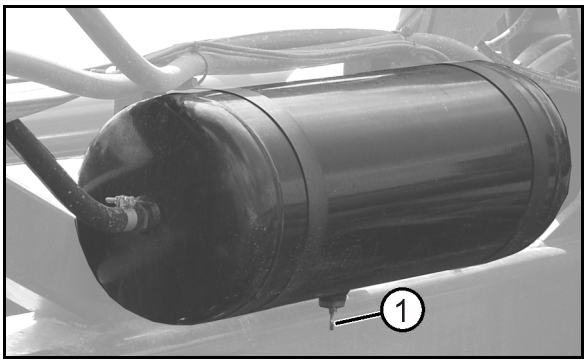
The free travel (a) may be a maximum of 10-15% of the connected brake lever length (B) (e.g. brake lever length 6 in / 150 mm =
free travel 0,6 – 0,9 in / 15 – 22 mm).

Readjust the slack adjuster if the free travel is outside of the tolerance. → Workshop work



Draining the air reservoir

1. Run the tractor engine (approx. 3 mins.) until the compressed air tank has filled.
2. Switch off the tractor engine, apply the handbrake and remove the ignition key.
3. Pull the drainage valve (1) in a sideways direction by the ring until no more water escapes from the compressed air tank.
4. If the escaping water is dirty, let off air, unscrew the drainage valve from the compressed air tank and clean the compressed air tank.



The compressed air tank must not

- move around in the tensioning belts
- be damaged
- show any outward signs of corrosion damage

The rating plate must not

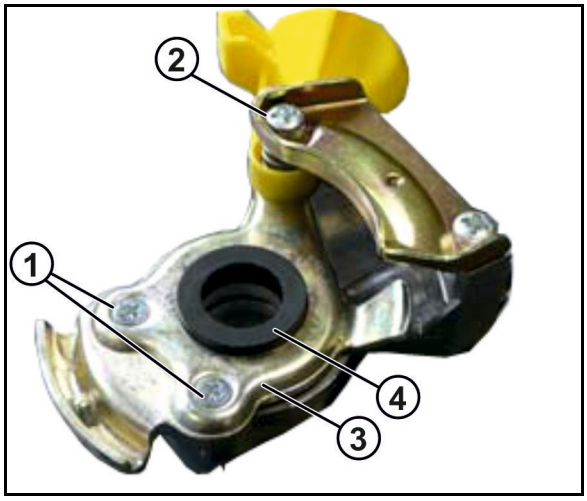
- show signs of corrosion
- be loose
- be missing

Replace the compressed air tank (workshop), if one of the above-stated points applies!

12.4.1 Cleaning the compressed air line filter on the coupling head

Perform work in an unpressurized state. Secure the implement against rolling away.

1. Remove the bolt locking compound by hammering and remove the bolts (1).
2. Unscrew the bolts (2) by a few turns.
3. Lift the plate (3) over the rubber seal (4) and turn to the side.

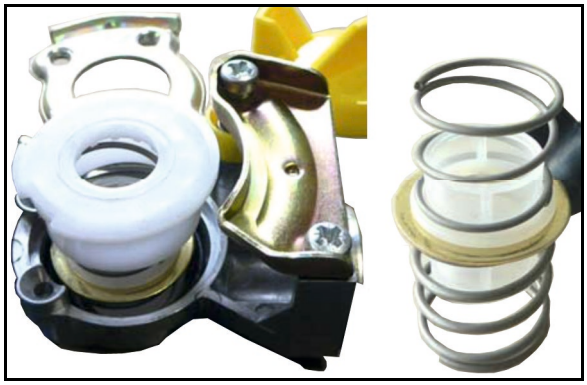


The unit is under spring tension.

4. Remove the rubber seal.

5. Clean and grease the sealing surfaces, O-ring and filter.

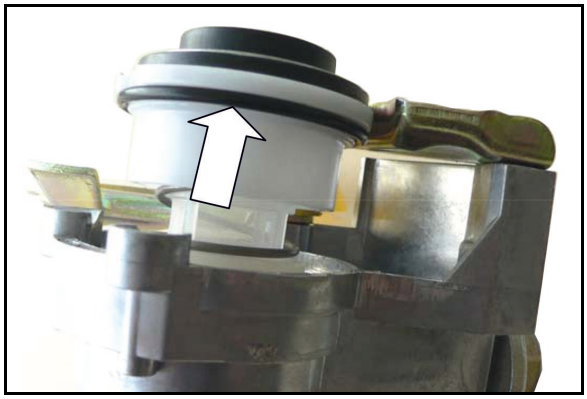
→ Replace the rubber seal if necessary.



Correctly position the O-ring on the plastic ring.

6. Reassemble in the reverse sequence.

- Bolt tightening torque (1):2 ft-lb / 2.5 Nm
- Bolt tightening torque (2): 5 ft-lb / 7 Nm



12.4.2 Inspection instructions for the dual-circuit service brake system

1. Leak tightness check

1. Check all connections, pipe lines, hose lines and screw connections for leak tightness.
2. Remedy leakages.
3. Repair any areas of chafing on pipes and hoses.
4. Replace porous and defective hoses.
5. The dual-circuit service brake system may be considered leakproof if the drop in pressure is no more than 0.15 bar after 10 minutes.
6. Seal any leaking areas or replace leaking valves.

2. Check pressure in the air reservoir

1. Connect a pressure gauge to the test connection on the air reservoir.

   Set value 6.0 to 8.1 $^{+0.2}$ bar

3. Check brake cylinder pressure

1. Connect a pressure gauge to the test connection on the brake cylinder.

   Set value: with brake not applied 0.0 bar

4. Visual inspection of brake cylinder

1. Check the dust collars or bellows for damage.
2. Replace damaged parts.

5. Joints on brake valves, brake cylinders and brake linkages

Joints on brake valves, brake cylinders and brake linkages must move freely. Grease or lightly oil, if necessary.

12.4.3 Hydraulic brakes

Check of the hydraulic brake

- Check all brake hoses for wear
- check all screw unions for seal tightness
- renew any worn or damaged parts.

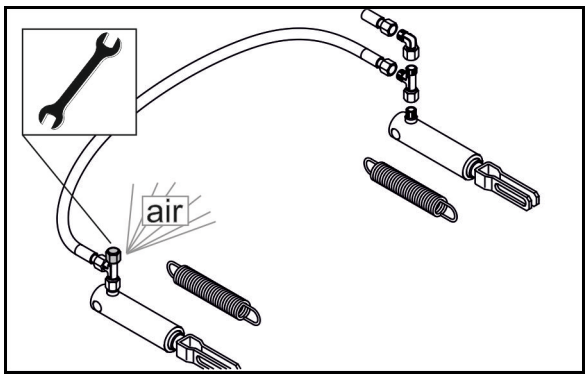
Venting the brake system (workshop work)

After each brake repair, for which the system has been opened, bleed the brake system, because air may have entered the pressure hoses.

1. Slightly loosen the vent valve.
2. Actuate the tractor brake.
3. Close the vent valve as soon as oil escapes.

→ Collect the escaping oil.

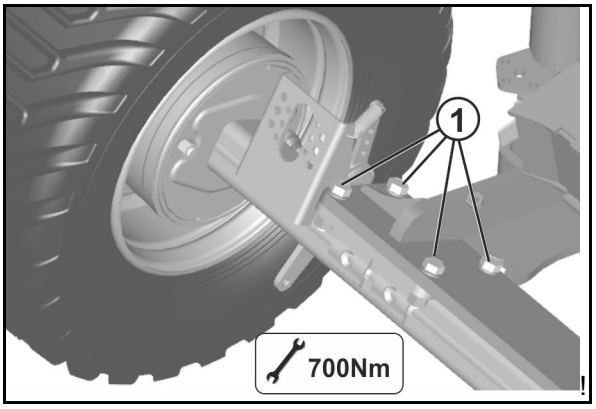
4. Perform a brake check.



12.4.4 Axle bolts

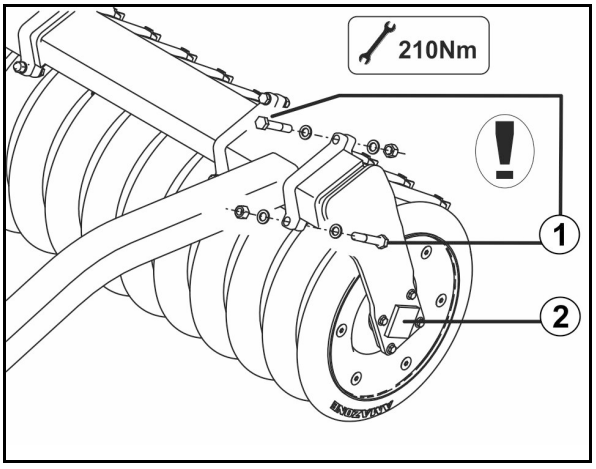
(1) Axle bolts with clamping plates

Check the bolts for tightness.



12.5 Checking the roller

- Check the alignment of the bolts (1).
- Check the bolts (1) for tightness.
- Check the roller bearing (2) for ease of movement..



12.6 Check the coupling device

DANGER!

- **Replace a damaged drawbar with a new one immediately - for road traffic safety reasons.**
- **Repairs may only be carried out by the manufacturer factory.**
- **For safety reasons, it is forbidden to weld on and drill holes in the drawbar.**

Check the coupling device (drawbar, lower link traverse, ball coupling, drawbar eye) for the following:

- damage, deformation, cracks
- wear
- tight fit of the fastening bolts

Coupling device		Wear dimension		Fixing bolts	Number	Tightening torque	
Lower link traverse	Cat. 3	1,36 in	34.5 mm	M20 8.8	8	302 ft-lb	410 Nm
	Cat. 4:	1,89 in	48.0 mm				
	Cat. 5:	2,20 in	56.0 mm				
Ball coupling							
K80 (LI009)		3,23 in	82 mm	M16 10.9	8	221 ft-lb	300 Nm
K80 (LI040)		3,23 in	82 mm	M20 10.9	8	302 ft-lb	560 Nm
K80 (LI015)		3,23 in	82 mm	M20 10.9	12	413 ft-lb	560 Nm
Drawbar eye							
D35 (LI038)		1,65 in	42 mm	M16 12.9	6	251 ft-lb	340 Nm
D40 (LI017)		1,63 in	41.5 mm	M16 10.9	6	221 ft-lb	300 Nm
D40 (LI006)		1,67 in	42.5 mm	M20 8.8	8	291 ft-lb	395 Nm
D46(LI034)		1,89 in	48 mm	M20 10.9	12	406 ft-lb	550 Nm
D50 (LI037)		2,36 in	60 mm	M16 12.9	4	251 ft-lb	340 Nm
D50 (LI010)		2,02 in	51.5 mm	M16 10.9	8	221 ft-lb	300 Nm
D50 (LI059)		2,02 in	51.5 mm	M20 10.9	4	413 ft-lb	560 Nm
D50 (LI011)		2,02 in	51.5 mm	M20 8.8	8	302 ft-lb	410 Nm
D50 LI060)		2,07 in	52.5 mm	M20 10.9	8	413 ft-lb	560 Nm
D51 (LI039)		2,09 in	53 mm	M20 10.9	12	221 ft-lb	600 Nm
D51 (LI069)		2,09 in	53 mm	M16 10.9	6	214 ft-lb	290 Nm
D58 (LI031)		2,36 in	60 mm	M20 10.9	12	443 ft-lb	550 Nm
D62 (LI007)		2,50 in	63.5 mm	M20 10.9	8	435 ft-lb	590 Nm
D79 (LI021)		3,19 in	81 mm	M20 10.9	12	406 ft-lb	550 Nm

12.7 Parking brake

On new implements, the brake cables of the parking brake may stretch.

Readjust the parking brake,

- if three quarters of the spindle tensioning distance is required to firmly apply the parking brake.
- if you have just fitted new brake pads.

Adjusting the parking brake

When the parking brake is off, the brake cable must be slightly slack. However, the brake cable must not rest or chafe against other parts of the vehicle.

1. Release the cable clamps.
2. Shorten the brake cable as appropriate and retighten the cable clamps.
3. Check for the correct braking effect from the parking brake when applied.

12.8 Tires / wheels

	Running gear tire / Support wheels:	Required tightening torque for wheel nuts or bolts
	M18 x 1,5	**270 Nm (-0/+20)**
	M20 x 1,5	**350 Nm (- 0/+30)**
	M22 x 1,5	**450 Nm (-0/+60)**

- Only use the tires and wheels which we have specified.
- Repair work on tires must only be carried out by specialists using suitable fitting tools.
- Tire fitting requires sufficient skills and proper fitting tools.
- Use the jack only at the jacking points indicated.

12.8.1 Tire air pressure

Inflate the tires to the specified nominal pressure.

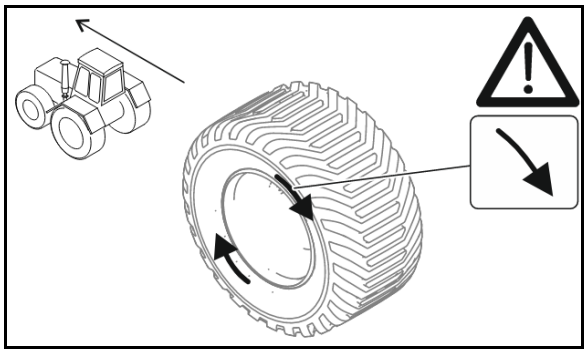
The required tire pressure is specified on a sticker affixed to the rim.

12.9 Fitting tires (workshop work)

- Remove any outbreaks of corrosion from the wheel rim seating surfaces before fitting a new / another tire. Corrosion can cause damage to the wheel rims when the vehicle is in operation.
- When fitting new tires, always use new valves for tubeless tires or new inner tubes.
- Always fit the valves with valve caps which have a gasket insert.

12.9.1 Mounting the wheels (workshop task)

Mount the wheels opposite to the direction of rotation specified on the tires.



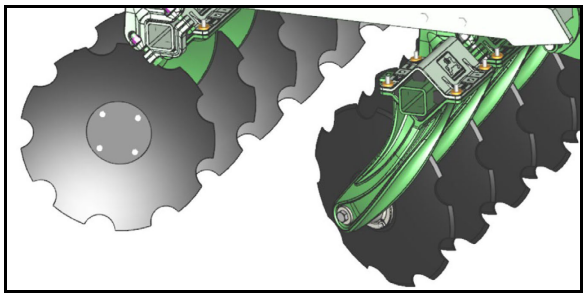
12.10 Replacing discs (workshop work)

Minimum disc diameter: 460 mm

The discs are replaced with

- the implement folded out
- the discs raised
- the implement secured against unintentional lowering

To replace the discs, release the four screw unions and then retighten.



12.11 Hydraulic system (workshop work)

WARNING

Risk of infection through the high pressure hydraulic fluid of the hydraulic system entering the body!

- Only a specialist workshop may carry out work on the hydraulic system.
- Depressurise the hydraulic system before carrying out work on the hydraulic system.
- When searching for leak points, always use suitable aids.
- Never attempt to plug leaks in hydraulic lines using your hand or fingers.

  Escaping high pressure fluid (hydraulic fluid) may pass through the skin and ingress into the body, causing serious injuries!

  If you are injured by hydraulic fluid, contact a doctor immediately. Risk of infection!

- When connecting the hydraulic hose lines to the hydraulic system of connected implements, ensure that the hydraulic system is depressurised on both the drawing vehicle and the trailer.
- Ensure that the hydraulic hose lines are connected correctly.
- Regularly check all the hydraulic hose lines and couplings for damage and impurities.
- Have the hydraulic hose line checked at least once a year by a specialist for proper functioning.
- Replace the hydraulic hose line if it is damaged or worn. Only use AMAZONE original hydraulic hose lines.
- The hydraulic hose lines should not be used for longer than six years, including any storage time of maximum two years. Even with proper storage and approved use, hoses and hose connections are subject to natural ageing, thus limiting the length of use. However, it may be possible to specify the length of use from experience values, in particular when taking the risk potential into account. In the case of hoses and hose connections made from thermoplastics, other guide values may be decisive.
- Dispose of old oil in the correct way. If you have problems with disposal, contact your oil supplier.
- Keep hydraulic fluid out of the reach of children!
- Ensure that no hydraulic fluid enters the soil or waterways.

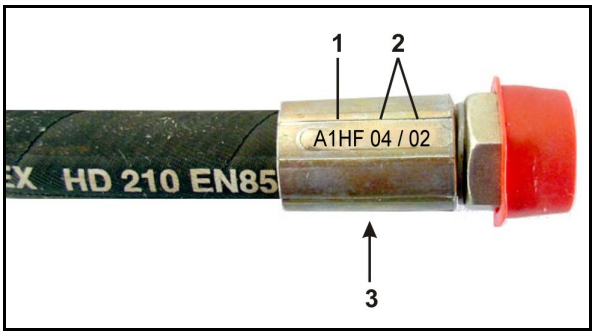
12.11.1 Labelling hydraulic hose lines

The assembly labelling provides the following information:

(1) Manufacturer's marking on the hydraulic hose line (A1HF)

(2) Date of manufacture of hydraulic hose line (04/02 = year/month = February 2004)

(3) Maximum approved operating pressure (210 BAR).



12.11.2 Maintenance intervals

After the first 10 operating hours, and then every 50 operating hours

1. Check all the components of the hydraulic system for tightness.
2. If necessary, tighten screw unions.

Before each start-up:

1. Check hydraulic hose lines for visible damage.
2. Eliminate any scouring points on hydraulic hose lines and pipes.
3. Replace any worn or damaged hydraulic hose lines immediately.

12.11.3 Inspection criteria for hydraulic hose lines

For your own safety, comply with the following inspection criteria!

Replace hydraulic hose lines, on determining any of the following during the inspection:

- Damage to the outer layer up to the ply (e.g. scouring points, cuts, cracks).
- Brittleness of the outer layer (crack formation of the hose material).
- Deformations which do not match the natural shape of the hose or the hose line. Both in a depressurised and pressurised state or when bent (e.g. layer separation, bubble formation, pinching, bends).
- Leak points.
- Damage or deformation of the hose assembly (sealing function restricted); minor surface damage is not a reason for replacement.
- Movement of the hose out of the assembly.
- Corrosion of assembly, reducing the function and tightness.
- Installation requirements not complied with.
- Life span of 6 years has been exceeded.

  The date of manufacture of the hydraulic hose line on the assembly is decisive for determining these six years. If the date of manufacture on the assembly is "2004", then the hose should not be used beyond February 2010. See also "Labelling of hydraulic hose lines".

12.11.4 Installation and removal of hydraulic hose lines

When installing and removing hydraulic hose lines, always observe the following information:

- Only use AMAZONE original hydraulic hose lines.
- Ensure cleanliness.
- You must always install the hydraulic lines so that, in all states of operation:
  - There is no tension, apart from the hose's own weight.
  - There is no possibility of jolting on short lengths.
  - Outer mechanical influences on the hydraulic hose lines are avoided.

    Use appropriate arrangements and fixing to prevent any scouring of the hoses on components or on each other. If necessary, secure hydraulic hose lines using protective covers. Cover sharp-edged components.
  - The approved bending radii may not be exceeded.
- When connecting a hydraulic hose line to moving parts, the hose length must be appropriate so that the smallest approved bending radius is not undershot over the whole area of movement and/or the hydraulic hose line is not over-tensioned.
- Fix the hydraulic hose lines to the intended fixing points. Avoid using hose clips in places where they impede the natural movement and length changes of the hose.
- Painting over hydraulic lines is not permitted.

12.12 Checking the upper and lower link pins

DANGER!

Hazards due to crushing, entrapment, entanglement, and impact if the implement unexpectedly detaches from the tractor!

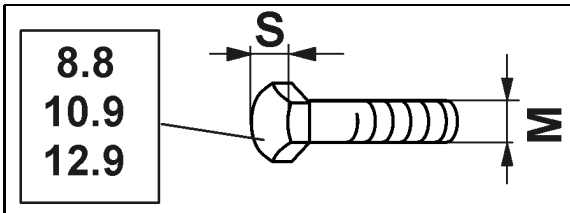
Replace damaged top link pins and lower link pins immediately for road traffic safety reasons.

Test criteria for top link pins and lower link pins:

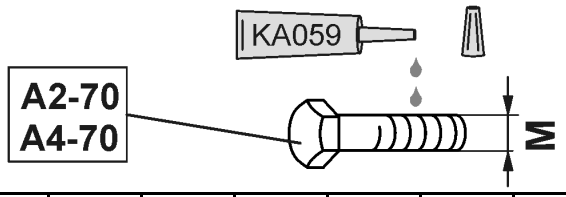
- Visual check for cracks
- Visual check for fractures
- Visual check for permanent deformations
- Visual check and measurements for wear. The permissible wear is 2 mm.
- Visual check for wear on the ball sleeves
- If necessary: check the fastening bolts for tightness

If a wear criterion is met, replace the top link pins or lower link pins.

12.13 Screw tightening torques



M	S	ft lb [Nm] 8.8	10.9	12.9
M 8	13	18.5 [25]	25.8 [35]	30.2 [41]
M 8x1		19.9 [27]	28 [38]	30.2 [41]
M 10	16 (17)	36 [49]	51 [69]	61 [83]
M 10x1		38 [52]	54 [73]	65 [88]
M 12	18 (19)	63 [86]	89 [120]	107 [145]
M 12x1.5		66 [90]	92 [125]	111 [150]
M 14	22	100 [135]	140 [190]	170 [230]
M 14x1.5		111 [150]	155 [210]	184 [250]
M 16	24	155 [210]	221 [300]	262 [355]
M 16x1.5		166 [225]	232 [315]	280 [380]
M 18	27	214 [290]	299 [405]	358 [485]
M 18x1.5		240 [325]	339 [460]	406 [550]
M 20	30	302 [410]	428 [580]	509 [690]
M 20x1.5		339 [460]	472 [640]	568 [770]
M 22	32	406 [550]	575 [780]	686 [930]
M 22x1.5		450 [610]	634 [860]	774 [1050]
M 24	36	524 [710]	738 [1000]	885 [1200]
M 24x2		575 [780]	811 [1100]	959 [1300]
M 27	41	774 [1050]	1106 [1500]	1328 [1800]
M 27x2		848 [1150]	1180 [1600]	1438 [1950]
M 30	46	1070 [1450]	1475 [2000]	1770 [2400]
M 30x2		1180 [1600]	1660 [2250]	1991 [2700]



M	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
ft-lb	1.8	3.6	6.2	15.2	3	5	82	128	178.5	252.2	346.7	434.4
Nm	2,4	4,9	8,4	20,6	40,7	70,5	112	174	242	342	470	589

Coated screws have different tightening torques.Note special information for tightening torques in chapter Maintenance.

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