Operating Manual

AMAZONE

Catros+ 4002-2TS
Catros+ 5002-2TS
Catros+ 6002-2TS

Trailed compact disc cultivator with swivelling running gear

MG6835
BAG0155.9 10.22
Printed in Germany

SmartLearning

Please read and follow this operating manual before putting the machine into operation. Keep it in a safe place for future use.

en_US

Reading the instruction

Manual and following it should seem to be inconvenient and superfluous as it is not enough to hear from others and to realize that a machine is good, to buy it and to believe that now everything should work by itself. The person in question would not only harm himself but also make the mistake of blaming the machine for possible failures instead of himself. In order to ensure success one should enter the mind of a thing, make himself familiar with every part of the machine and get acquainted with how it's handled. Only in this way could you be satisfied both with the machine and with yourself. This goal is the purpose of this instruction manual.

Leipzig-Plagwitz 1872. Rud. Sark.

Identification data

Enter the machine identification data here. You will find the identification data on the rating plate.

Machine identification number: (ten-digit)	
Type:	Catros
Year of manufacture:	
Basic weight	
Approved total weight	
Maximum load	

Manufacturer's address

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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: MG6835
Compilation date: 10.22

Foreword

Dear Customer,

You have chosen one of the quality products from the wide product range of AMAZONEN-WERKE, H. DREYER SE & Co. KG. We thank you for your confidence in our products.

On receiving the machine, check to see if it was damaged during transport or if parts are missing. Using the delivery note, check that the machine 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 machine into operation. Only after careful reading will you be able to benefit from the full scope of your newly purchased machine.

Please ensure that all the machine operators have read this operating manual before they put the machine 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 machine.

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 machine.
- Provides important information on safe and efficient handling of the machine.
- Is a component part of the machine and should always be kept with the machine 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 machine 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 (Fig. 3/6)

- Figure 3
- Item 6

2 General safety instructions

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

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 machine operation.

Obligations of the operator

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

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

The operator is obliged

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

If you still have queries, please contact the manufacturer.

Obligations of the user

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

- To comply with the basic workplace safety instructions and accident prevention regulations.
- To read and understand the section "General safety information" of this operating manual.
- To read the section "Warning symbols and other labels on the machine" (page **16**) of this operating manual and to follow the safety instructions represented by the warning symbols when operating the machine.
- To get to know the machine.
- 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 machine

The machine 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 machine

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

Only use the machine

- 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 machine.
- Improper installation, commissioning, operation and maintenance of the machine.
- Operation of the machine 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 machine.
- Insufficient monitoring of machine 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 machine handling.

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

NOTE

Indicates handling tips and particularly useful information.

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

2.3 Organisational measures

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

- Protective glasses
- Protective shoes
- Protective suit
- Skin protection, etc.

The operation manual

- Must always be kept at the place at which the machine 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 machine, 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 those people who have been trained and instructed may work with/on the machine. The operator must clearly specify the responsibilities of the people charged with operation, maintenance and repair work.

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

Activity \ People	Person specially trained for the activity [1]	Trained person [2]	Person with specialist training (specialist 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 machine, 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 machine in a way which is both appropriate and safe.

2.7 Safety measures in normal operation

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

Check the machine 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 machine.

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 machine 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 machine parts which are not in a perfect state.

Use only genuine AMAZONE spare and wear parts or the parts cleared by AMAZONEN-WERKE so 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 machine must be operated by only one person from the driver's seat of the tractor.

2.13 Warning pictograms and other signs on the machine

2.13.1 Positioning of warning pictograms and other labels

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

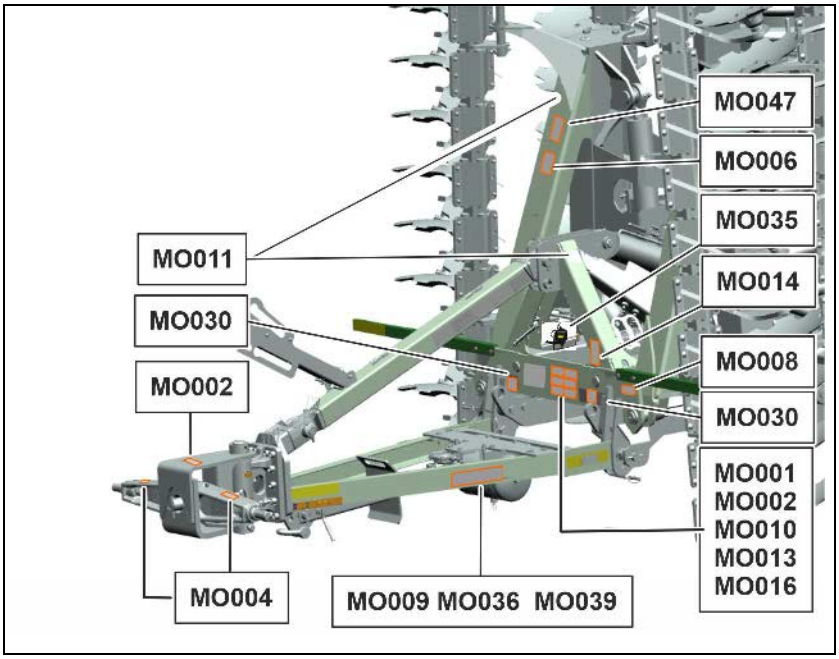


Fig. 1

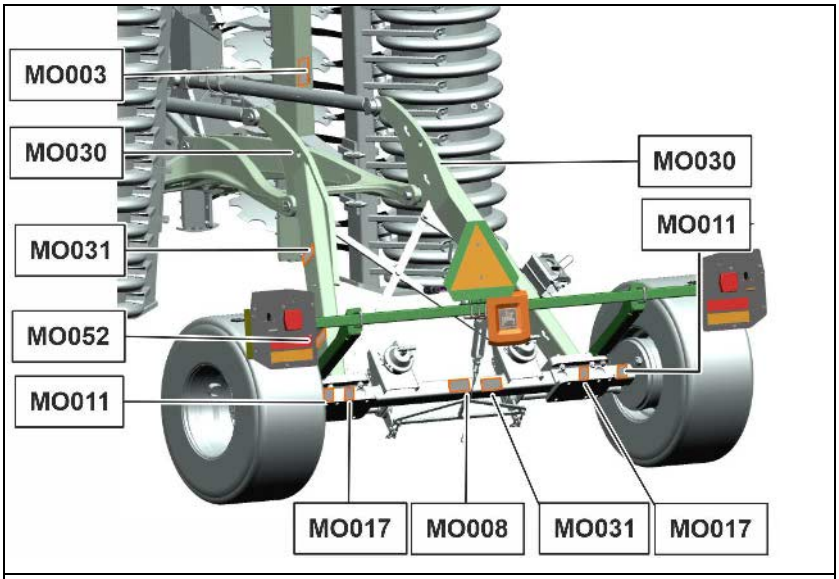


Fig. 2

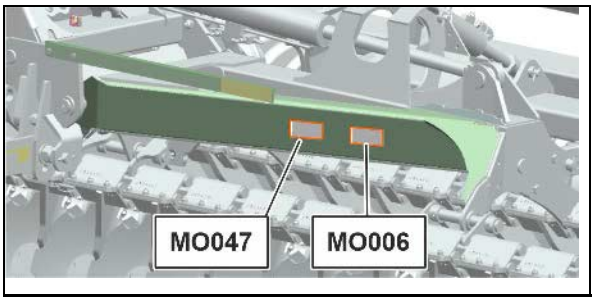


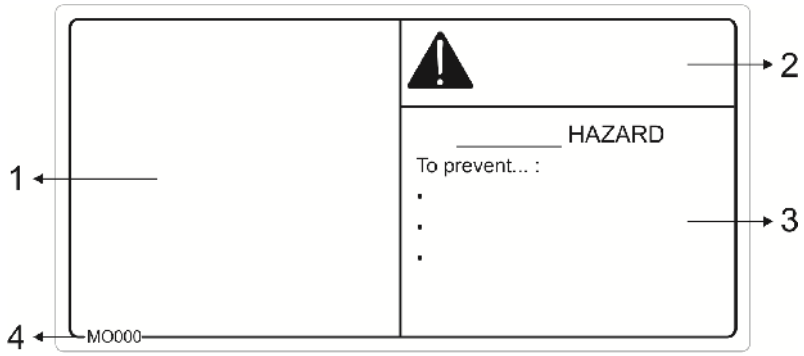
Fig. 3

Always keep all the warning pictograms of the machine 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. MD078).

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

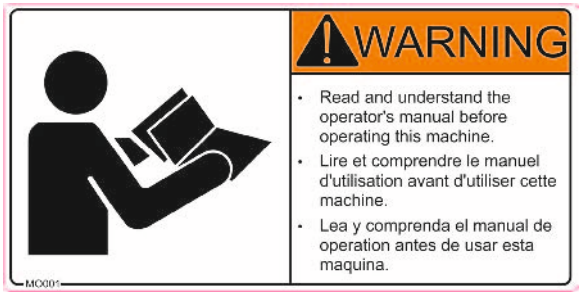
In the following pages, the individual warning labels will be explained in more detail. The column on the left, **Order number and explanation**, provides an explanation of the warning pictorial on the right. The description of the warning labels always follows the same order:

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

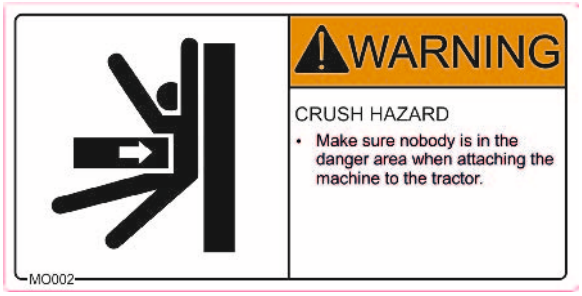
- Read and understand the operator's manual before operating this machine.
- Lire et comprendre le manuel d'utilisation avant d'utiliser cette machine.
- Lea y comprenda el manual de operation antes de usa resta maquina.



MO002 WARNING

CRUSH HAZARD

- Make sure nobody is in the danger area when attaching the machine to the tractor.



MO003 WARNING

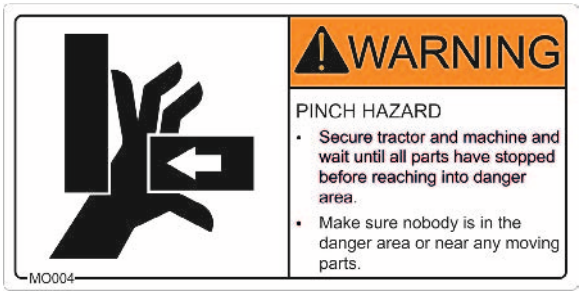
MOVING WING HAZARD

- Make sure nobody is in the danger area.

MD004 WARNING

PINCH HAZARD

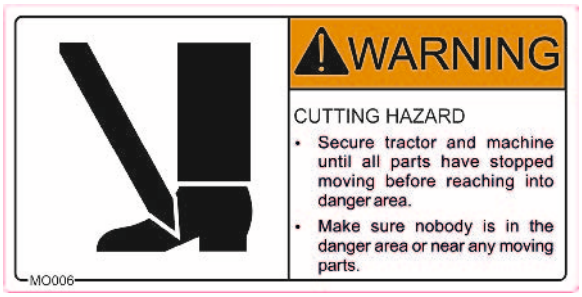
- Secure tractor and machine and wait until all parts have stopped before reaching into danger area:
- Make sure nobody is in the danger area or near any moving parts.



MO006 WARNING

CUTTING HAZARD

- Secure tractor and machine 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 machine.
- Keep others from climbing onto or riding on the machine.

MO009 WARNING

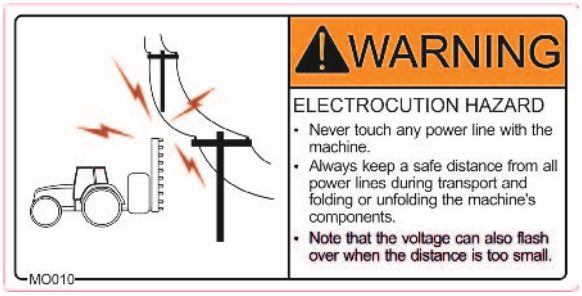
RUN-AWAY HAZARD

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

MO010 **WARNING**

ELECTROCUTION HAZARD

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



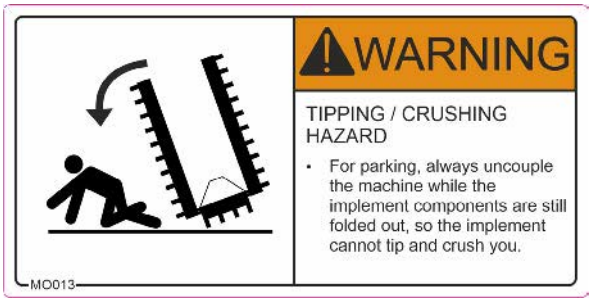
MO011 **WARNING**

LIFTING POINT

MO013 **WARNING**

TIPPING / CRUSHING HAZARD

- For parking, always uncouple the machine while the implement components are still folded out, so the implement cannot tip and crush you.

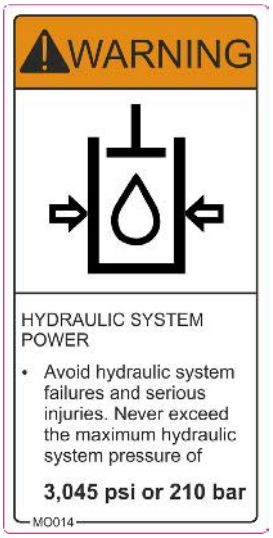


MO014 **WARNING**

HYDRAULIC SYSTEM POWER

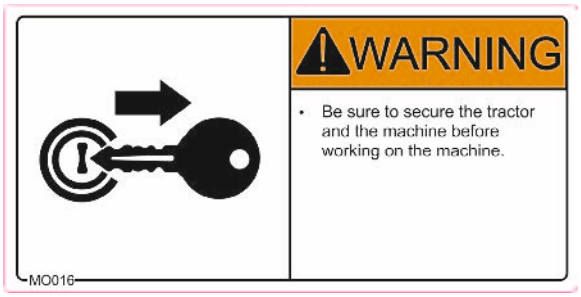
- Avoid hydraulic system failures and serious injuries. Never exceed the maximum hydraulic system pressure of

  3045 psi or 210 bar



MO016 **WARNING**

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



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

MD031 **WARNING**

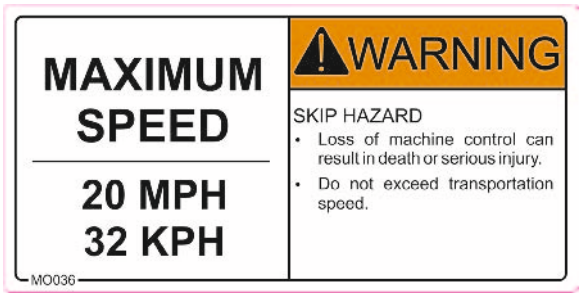
MOVING WING HAZARD

- Make sure nobody is in the danger area.

MO036 WARNING

SKIP HAZARD

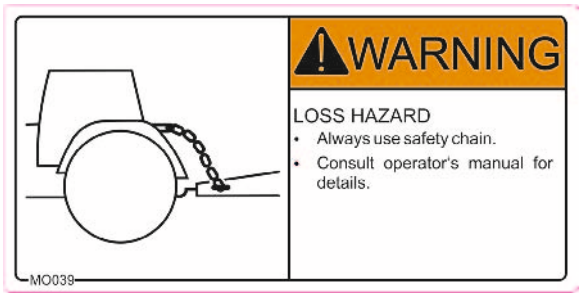
- Loss of machine control can result in death or serious injury.
- Do not exceed transportation speed.



MO039 WARNING

LOSS HAZARD

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



MD047 WARNING

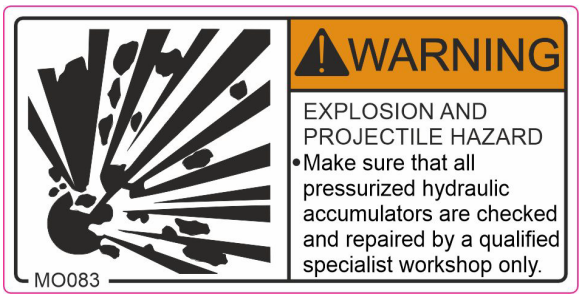
PROJECTILE HAZARD

- 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 if the safety information is not observed

Nonobservance of the safety information

- Can pose both a danger to people and also to the environment and machine.
- 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 machine 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

Risk of being crushed, cut, caught, drawn in or struck due to insufficient traffic and operational safety!

Before starting up the machine 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 machine provide important information on safe machine operation. Compliance with this information guarantees your safety!
- Before moving off and starting up the machine, check the immediate area of the machine (children)! Ensure that you can see clearly!
- It is forbidden to ride on the machine 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 machine.

  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 machine.

Connecting and disconnecting the machine

- Only connect and transport the machine with tractors suitable for the task.
- When connecting machines to the tractor three-point hydraulic system, the attachment categories of the tractor and the machine must always be the same!
- Connect the machine to the prescribed equipment in accordance with the specifications.
- When coupling machines 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 tyres
- Secure the tractor and the machine against unintentional rolling, before coupling or uncoupling the machine.
- It is forbidden for people to stand between the machine to be coupled and the tractor, whilst the tractor is moving towards the machine!

  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.
- Secure the operating lever of the tractor hydraulic system so that unintentional raising or lowering is impossible, before connecting the machine to or disconnecting the machine from the tractor's three-point hydraulic system.

- When coupling and uncoupling machines, move the support equipment (if available) to the appropriate position (stability).
- When actuating the support equipment, there is a danger of injury from contusion and cutting points!
- Be particularly careful when coupling the machine 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 machine.
- It is forbidden to stand between the tractor and the machine when actuating the three-point hydraulic system.
- Coupled supply lines:
  - Must give without tension, bending or rubbing on all movements when travelling round corners.
  - May not scour other parts.
- The release ropes for quick action couplings must hang loosely and may not release themselves when lowered.
- Also ensure that uncoupled machines are stable!

Use of the machine

- Before starting work, ensure that you understand all the equipment and actuation elements of the machine and their function. There is no time for this when the machine 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 machine, when all the safety equipment has been attached and is in the safety position!
- Comply with the maximum load of the connected machine 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 machine.
- It is forbidden to stand in the turning and rotation area of the machine.
- There are contusion and cutting points at externally-actuated (e.g. hydraulic) machine points.
- Only actuate externally-actuated machine parts when you are sure that there is no-one within a sufficient distance from the machine!
- Secure the tractor against unintentional start-up and rolling before you leave the tractor.

  For this:
  - Lower the machine onto the ground
  - Apply the parking brake
  - Switch off the tractor engine
  - Remove the ignition key

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

  Any machines 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 machine 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 machine).
- Check the brake power before moving off.
- When turning corners with the machine connected, take the broad load and balance weight of the machine into account.
- Before moving off, ensure sufficient side locking of the tractor lower links, when the machine is fixed to the three-point hydraulic system or lower links of the tractor.
- Before moving off, move all the swivel machine parts to the transport position.
- Before moving off, secure all the swivel machine parts in the transport position against risky position changes. Use the transport locks intended for this.
- Before moving off, secure the operating lever of the three-point hydraulic system against unintentional raising or lowering of the connected machine.
- Check that the transport equipment, e.g. lighting, warning equipment and protective equipment, is correctly mounted on the machine.
- 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 machine 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 machine
  - 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 leakage 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 with too high a rating, 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. Contact with earth may cause an explosion
- Risk of explosion: avoid the production of sparks or the presence of naked flames in the vicinity of the battery.
- The machine 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 machine, 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 appropriate version and carry the CE label.

2.16.4 Attached machines

- Comply with the approved combination options for the attachment equipment on the tractor and the machine drawbar.

  Only couple approved combinations of vehicles (tractor and attached machine).
- In the case of single axle machines, observe the maximum permitted drawbar load of the tractor on the attachment equipment.
- Ensure that the tractor has sufficient steering and braking power.

  Machines connected to a tractor can influence your driving behaviour, as well as the steering and braking power of the tractor, in particular in the case of single axle machines with the drawbar load on the tractor.
- Only a specialist workshop may adjust the height of the drawbar on yoke bars with a drawbar load.
- 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 can carry out adjustment and repair work on the brake system.
- Have the brake system thoroughly checked regularly.
- If there are any malfunctions, stop the tractor immediately using the brake system. Have the malfunction rectified immediately.
- Before performing any work on the braking system, park the machine safely and secure the machine 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.
- Always carry out a braking test after any adjusting or repair work on the braking system.

Pneumatic braking system

- Before coupling the machine, clean the sealing rings on the hose couplings of the supply and brake line.
- Only move off with the machine connected when the pressure gauge on the tractor shows 5.0 bar.
- Drain the air reservoir every day.
- Before driving without the machine, lock the hose couplings on the tractor.
- Hang the hose couplings of the machine supply and brake lines in the appropriate empty 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, lose or missing.

Hydraulic brake system for export machines

- Hydraulic brake systems are prohibited 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 Tyres

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

2.16.7 Cleaning, maintenance and repairs

- Only carry out cleaning, maintenance and repair work on the machine when:
  - the drive is switched off
  - the tractor engine is at a standstill
  - the ignition key has been removed
  - the connector to the machine has been disconnected from the on-board computer
- Regularly check the nuts and bolts for a firm seat and retighten them as necessary.
- If the machine or parts of the machine are raised, secure them against unintentional lowering before cleaning, maintaining or repairing the machine.
- 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 machines.
- 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

After unloading:

Move the wheels from transport position to operating position.

1. Fold out the machine.
2. Raise the chassis slightly to that the wheels are clear of the ground.
3. Rotate both wheels and tighten the wheel nuts to 200 ft-lb / 270 Nm.

See page 105!

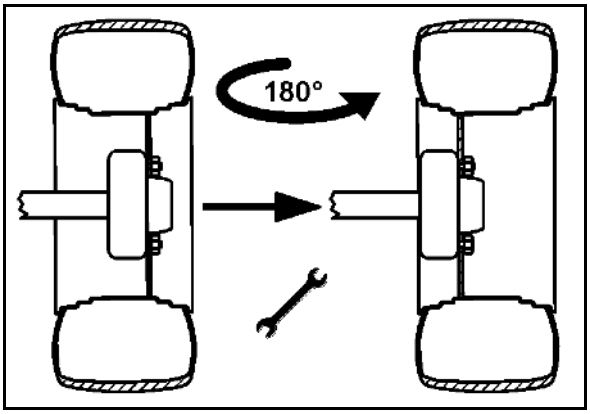


Fig. 4

Loading using a lifting crane

WARNING

Risk of crushing due to accidental falling of a machine attached to a load carrier during loading and unloading!

- Only attach your lifting gear to/at the designated points.
- Never remain in or enter the area below a raised, unsecured load.

The minimum tensile strength of each lifting belt must be 200 kg!

The machine has 5 attachment points for lifting equipment.

Fig. 5

The machine has 5 attachment points for lashing.

Fig. 6

Loading on a low-loader:

- Machine is folded in, the chassis is lowered.
- Lower the machine in longitudinal direction onto the low-loader.
- The low-loader must have the necessary ground clearance.
- Lower the disc rows onto the low-loader by slightly raising the chassis.

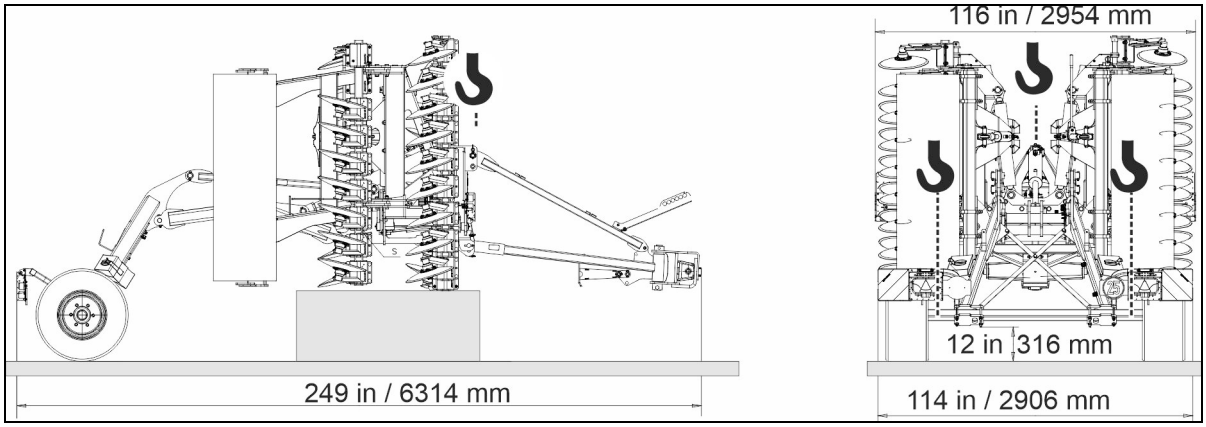


Fig. 7

Loading onto truck platform:

- Machine is folded out, the chassis is raised.
- The draw bar is removed.
- Lower the machine transversely onto the truck platform.

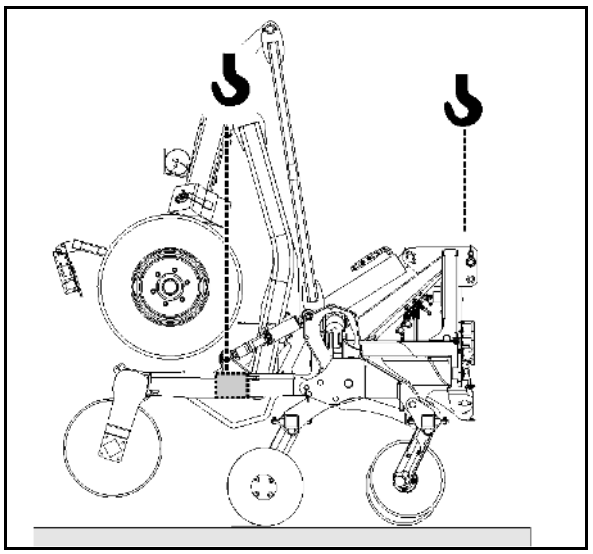


Fig. 8

Loading and unloading with a tractor

WARNING

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

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

  You may only move off with the machine connected if the pressure gauge on the tractor shows 73 psi / 5.0 bar.

If the machine is to be loaded onto or unloaded from a transport vehicle, it must be coupled to a suitable tractor.

Loading:

A person to help with manoeuvring is required for loading.

Secure the machine according to instructions.

Then disconnect the tractor from the machine.

Unloading:

Remove the transportation safety equipment.

A person is required to help with manoeuvring when unloading.

After unloading, park the machine and uncouple the tractor.

4 Product description

This section:

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

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

4.1 Overview of subassemblies

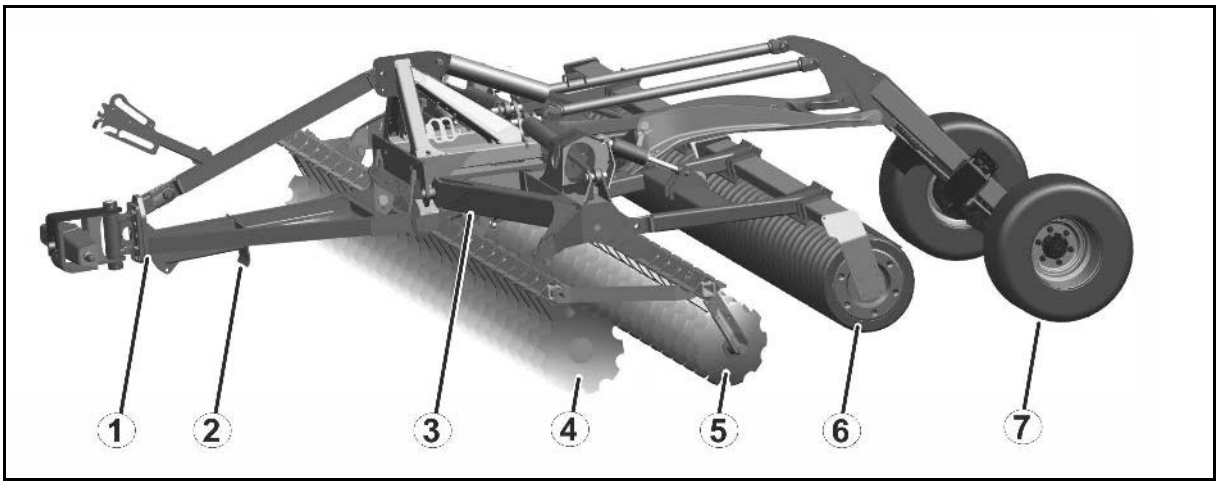


Fig. 9

(1) Drawbar with tensioned crosspiece, drawbar eye or ball bracket
(2) Jack for rigid drawbar
(3) Frame
(4) Foldable implement sections
(5) 1st disc gang
(6) 2nd disc gang
(7) Roller
(8) Swivelling running gear

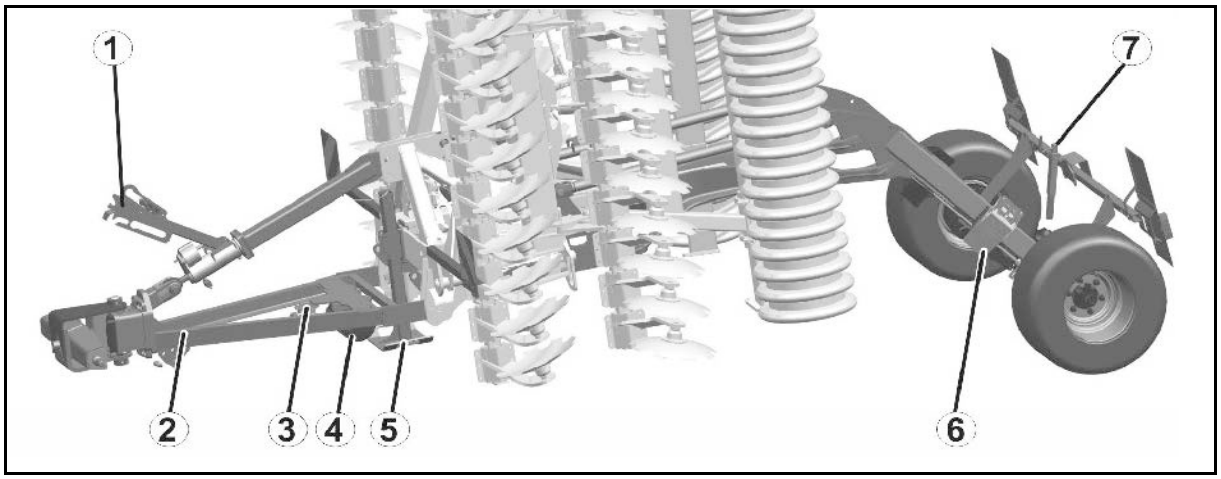


Fig. 10

(1) Hose cabinet

(2) Drawbar hydraulically actuated for coupling procedure

(3) Brake valve

(4) Compressed air reservoir

(5) Jack for hydraulic drawbar

(6) Wheel chocks in transport position

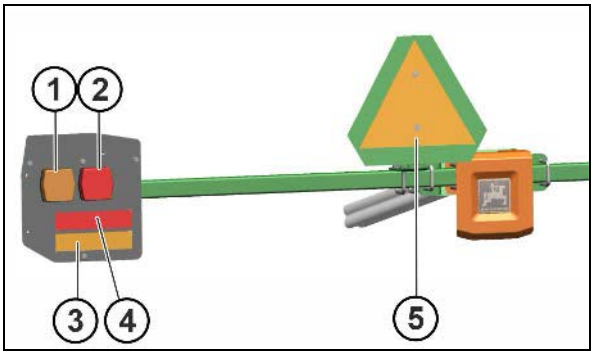
(7) Parking brake

4.2 Supply lines Safety and protection equipment

- Hydraulic hose lines
- Electric cable for lighting

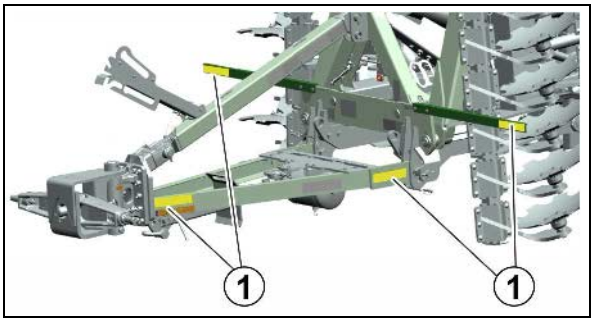
4.3 Transportation equipment

(1) Side Reflectors, yellow
(2) Turn indicators
(3) Rear lights
(4) Red reflectors
(5) Orange reflectors



(1) Side Reflectors, yellow

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



4.4 Intended use

The compact disc harrow is

- Has been designed for conventional soil tillage of agricultural crop lands.
- coupled to the tractor using the tractor lower link and operated by an additional person.

Slopes can be travelled

- 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 %

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

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.

4.5 Danger area and danger points

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

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

Within the machine 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 machine danger area:

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

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

Danger points exist:

- between the tractor and machine, especially when coupling and uncoupling.
- in the area of moving parts:
  - Trailing roller
  - Rotating discs
  - Displaceable disc rows
- when the machine is in motion
- in the swivel area of the machine
- within the pivot range of the running gear and boom
- in the area of the machine's hydraulic system:
  - Working on the hydraulic hoses

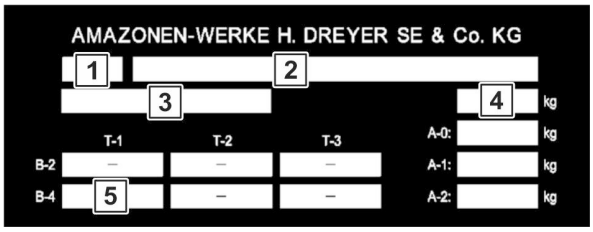
4.6 Rating plate

Machine rating plate

(1) Implement number
(2) Vehicle identification number
(3) Product
(4) Permissible technical implement weight
(5) Model year
(6) Year of manufacture

Additional rating plate

(1) Note for type approval
(2) Note for type approval
(3) Vehicle identification number
(4) Permissible technical 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 for axle 1
(A2) Permissible technical axle load for axle 2



4.7 Technical data

	Catros+
Disc diameter	20 in / 510 mm
Working depth	2,4 – 6 in / 60– 150 mm

Catros	**4002-2TS**	**5002-2TS**	**6002-2TS**
Working width	157 in / 4000 mm	197 in / 5000 mm	236 in / 6000 mm
Transport width	118 in / 3000 mm	118 in / 3000 mm	118 in / 3000 mm
Transport height	118 in / 3000 mm	138 in / 3500 mm	157 in / 4000 mm
Total length	248 in / 6300 mm	248 in / 6300 mm	248 in / 6300 mm
Max. permitted speed	16 mph / 25 kph		
Disc spacing	9,85 in / 250 mm		
No. of discs	2 x 16	2 x 20	2 x 24
Permitted mounting category	category 3 / category 4 N / category 5 K700		

The specified working width is only reached, when all disks are set to the same working width.

4.7.1 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.

Tyre load capacity per wheel

- The load index on the tyre indicates the load capacity of the tyre.
- The speed index on the tyre indicates the maximum speed at which the tyre has the tyre load capacity according to the load index.
- The tyre load capacity is only achieved when the tyre inflation pressure matches 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 inflation pressure

- When the inflation pressure is lower than the nominal pressure, the tyre load capacity is reduced!

  In that case, observe the reduced payload of the implement.
- Please also follow the specifications of the tyre manufacturer!

WARNING

Risk of accident!

In event of too low inflation pressure, the stability of the vehicle is no longer guaranteed.

4.8 Necessary tractor equipment

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

Tractor engine power

Catros+ 4002-2TS	from 137 hp / 102 kW (140 PS)
Catros+ 5002-2TS	from 161 hp / 120 kW (165 PS)
Catros+ 6002-2TS	from 194 / 145 kW (200 PS)

Electrical system

Battery voltage:
- 12 V (volts)

Lighting socket:
- 7-pin

Hydraulic system

Maximum operating pressure:
- 3045 psi /210 bar

Tractor pump power:
- At least 3,96 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 fluid circuits of all standard tractor brands.

Control units:
- see page 51.
-  Folding implements without this protective device need a lockable tractor control unit as fold-out safeguard.

SConnection fitting between the tractor and the machine:

- The lower link of the tractor must have lower link hooks.

4.9 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 is primarily dependent on the vehicle used.

5 Structure and function

The following section provides information on the machine structure and the functions of the individual components.

5.1 Function

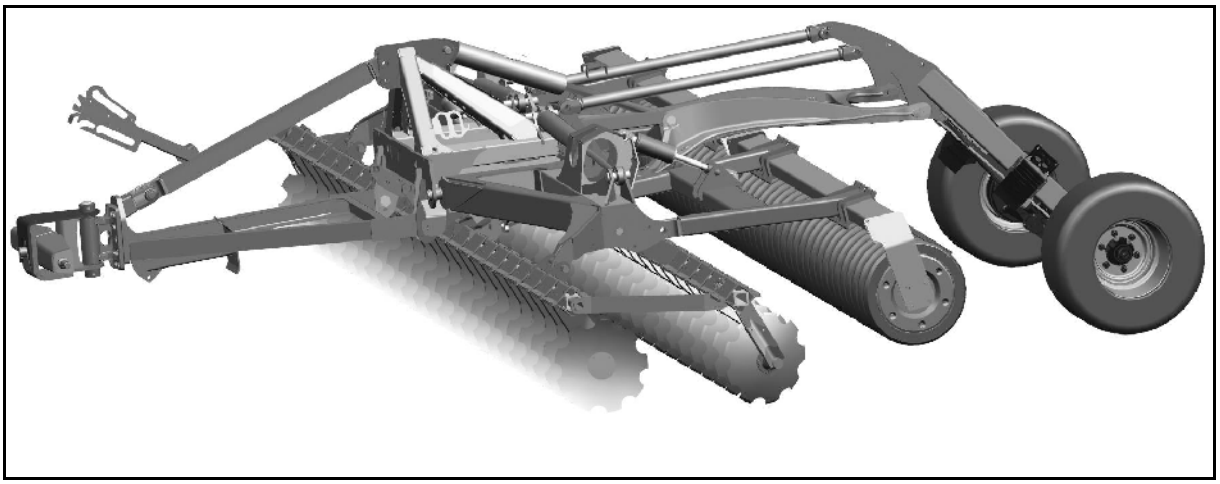


Fig. 11

The Catros compact disc cultivator is suitable for

- shallow stubble cultivation directly after threshing
- seed bed preparation in spring for maize or sugar beet
- incorporation of catch crops, e.g. yellow mustard

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

The trailing wedge ring roller serves to re-consolidate the soil and to adjust the depth of the discs. The depth setting of the concave discs is carried out using the adjustment spindle or hydraulically (optional).

5.2 Two-row disc cultivator

Catros+ disc cultivator with serrated discs and 20 in / 510 mm diameter.

The concave discs are arranged offset to the direction of travel by an angle of 17° at the front and 14° at the rear.

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 following are adjustable

- The offsetting of the two disc rows is adjusted via the offset slide to working depth and speed.

  Adjustment is made with the AMAZONE eccentric pins.

- The working intensity of the discs over the working depth of the disc cultivator can be adjusted. The depth is adjusted
  - mechanically by means of setting spindles
  - hydraulically via tractor control unit *green*.
  - The two outside discs are adjustable in vertical direction to prevent dam or furrow formation.

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.

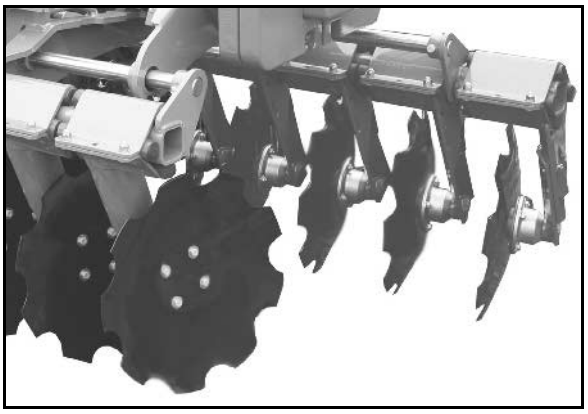


Fig. 12

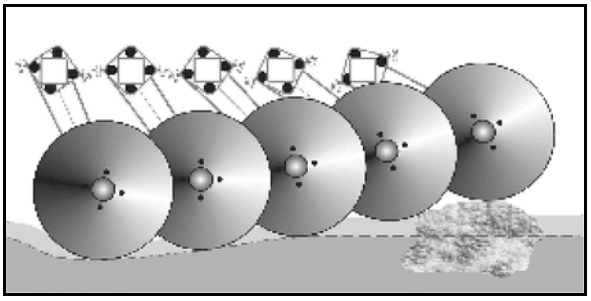


Fig. 13

5.3 Wedge ring tyre roller

The roller assumes the depth control of the tools.

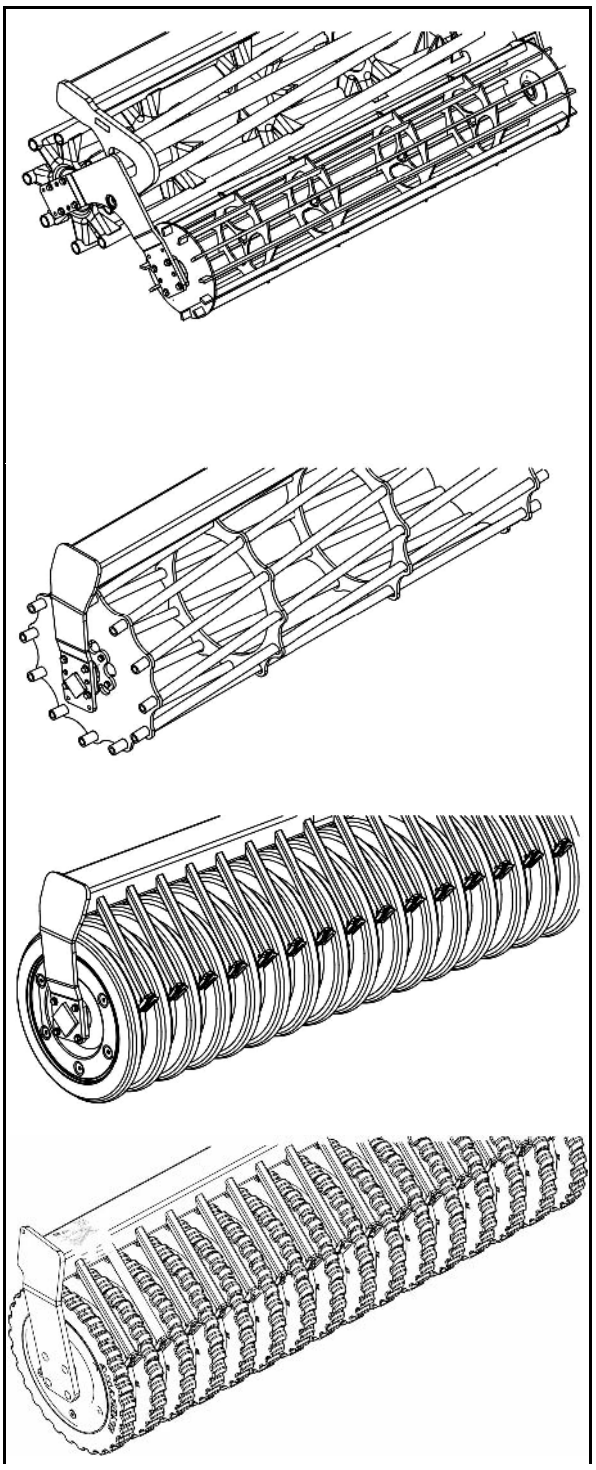
- **Tandem roller TW520/380**

The tandem roller consists of

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

→ Provides very good crumbling.

Damage on the roller.
It is forbidden to turn on the roller



- **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.

- **U- profile roller UW580**

→ Very well suited for light soils.

→ Resistant to clogging and good load-bearing capacity.

- **Double U-profile roller DUW580**

→ Very well suited for light and medium soils.

→ Resistant to clogging and good load-bearing capacity.

Damage on the roller.
It is forbidden to turn on the roller

- **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.

- **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-disc roller DDW**

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

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

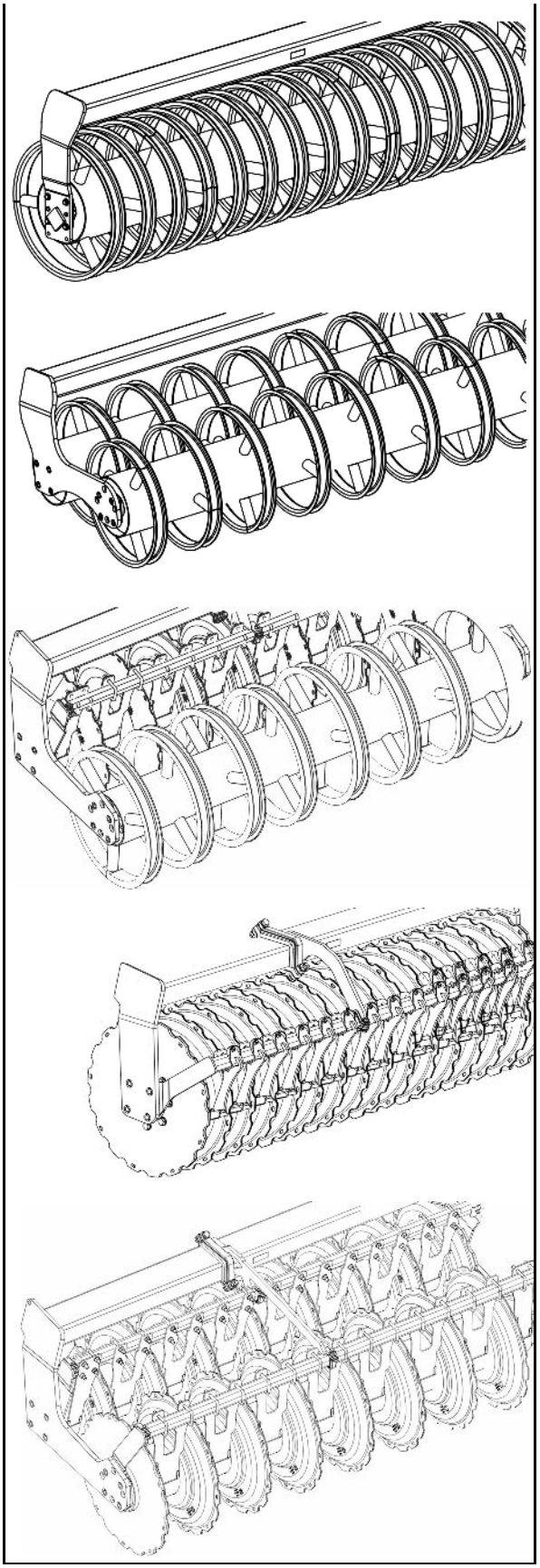


Fig. 14

5.4 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 front.

(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

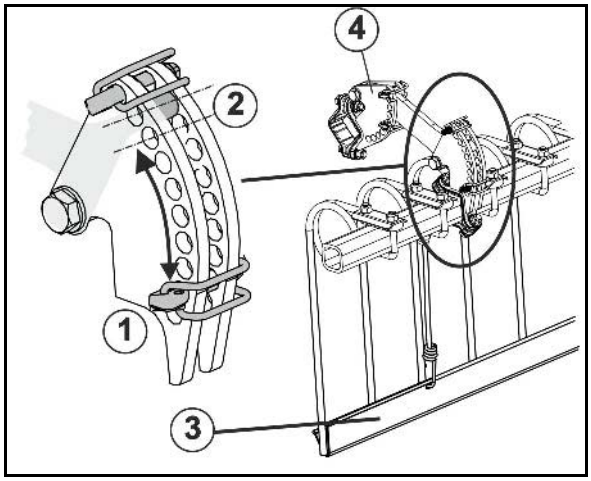


Fig. 15

- 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: SW600, , KW580, KWM600, UW580

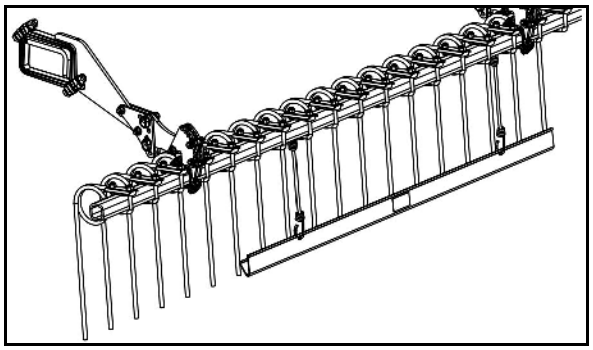


Fig. 16

Harrow system KWM65012--125 Hi

For roller: KWM650 DW600

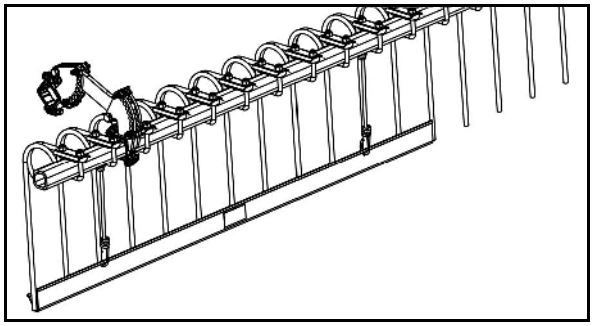


Fig. 17

Spring-mounted clearing system 167

For roller:U-profile roller UW580

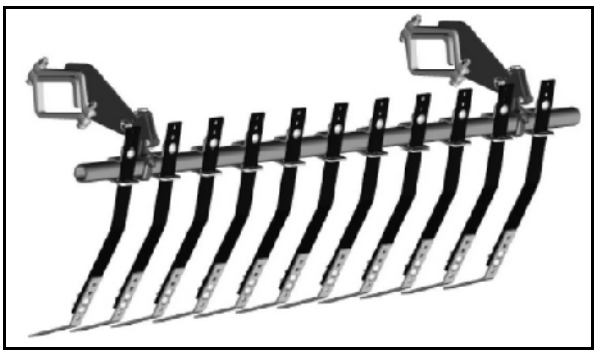
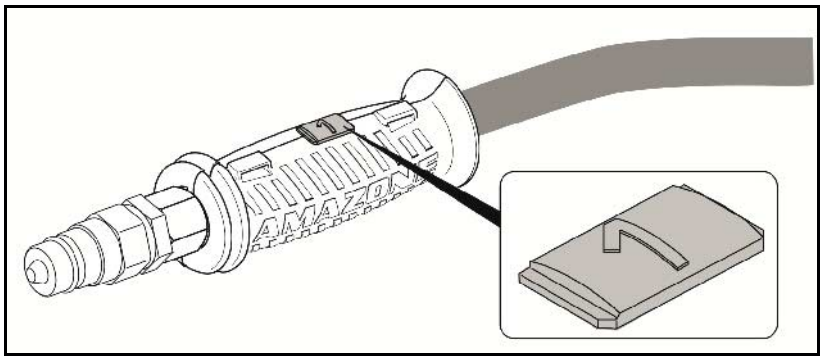


Fig. 18

5.5 Hydraulic system connections

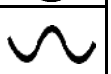
- All hydraulic hose lines are equipped with grips.

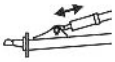
  Coloured markings with a code number or code letter have been applied to the gripping sections in order to assign the respective hydraulic function to the pressure line of a tractor control unit!



  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		Machine	lower	Double acting	
	2			raise		
Yellow	3		Drawbar	lower	Double acting	
	4			raise		
Blue	1		Machine	Fold out	Double-acting, lockable	
	2			Fold in		
Green	1		Set working depth (Optional)	Increase	Double acting	
	2			Decrease		

WARNING

Danger of infection from escaping hydraulic fluid at high pressure!

When coupling and uncoupling the hydraulic hose lines, ensure that the hydraulic system is depressurised on both the machine and tractor sides.

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

5.5.1 Coupling the hydraulic hose lines

WARNING

Risk of being crushed, cut, caught, drawn in or struck due to faulty hydraulic functions when the hydraulic hose lines are connected incorrectly!

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

- Check the compatibility of the hydraulic fluids before connecting the machine to the hydraulic system of the tractor.
  Do not mix any mineral oils with biological oils.
- Observe the maximum approved hydraulic fluid pressure of 3045 psi / 210 bar.
- Only couple clean hydraulic connectors.
- Push the hydraulic plug(s) into the hydraulic sockets until the hydraulic plug(s) is (are) felt to lock.
- Check the coupling points of the hydraulic hose lines for a correct, tight seat.

1. Swivel the actuation lever on the control valve on the tractor to float position (neutral position).
2. Clean the hydraulic connectors of the hydraulic hose lines before you couple the hydraulic hose lines to the tractor.
3. Connect the hydraulic hose line(s) to the tractor control unit(s).

5.5.2 Uncoupling the hydraulic hose lines

1. Swivel the actuation lever on the control valve on the tractor to float position (neutral position).
2. Unlock the hydraulic connectors from the hydraulic sockets.
3. Protect the hydraulic connectors and hydraulic connector sockets against soiling with the dust protection caps.

5.6 Chassis

The running gear and draw bar are a component of the entire machine and must only be used as a part of this machine.

Mounting onto another Catros disc cultivator is not permitted.

- Running gear swivelled up, implement in working position without vibration compensation.

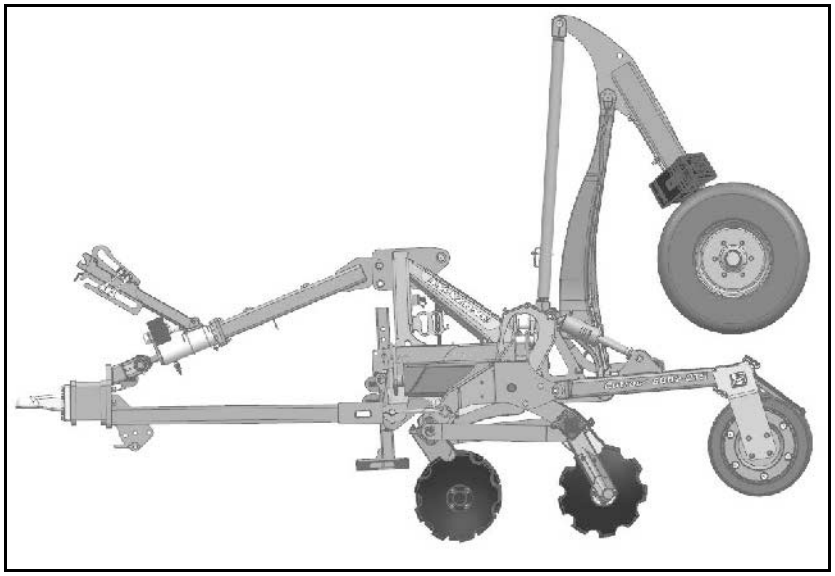


Fig. 19

- Running gear swivelled up, implement in working position with vibration compensation.

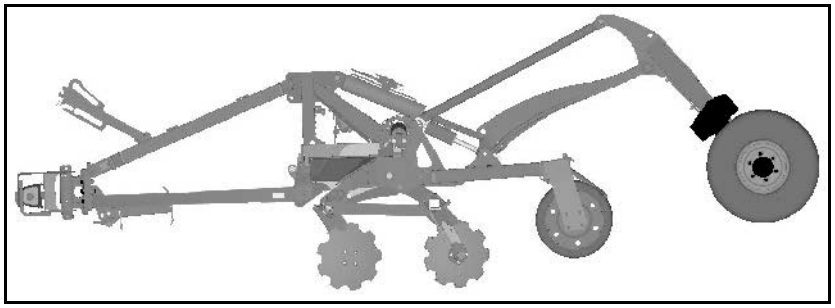


Fig. 20

- Running gear swivelled down, headland position

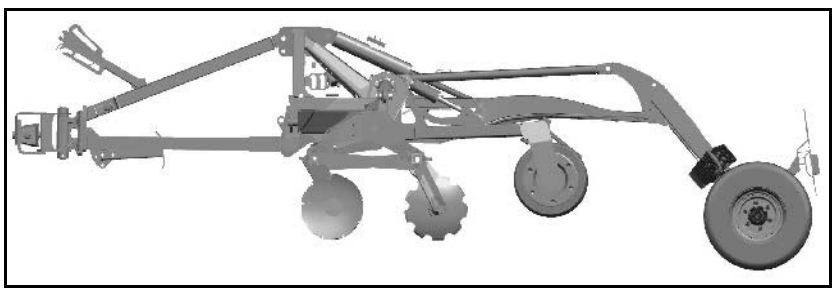


Fig. 21

5.7 Drawbar

Rigid drawbar

Rigid drawbar on implements with tensioned crosspiece as a coupling device to the tractor.

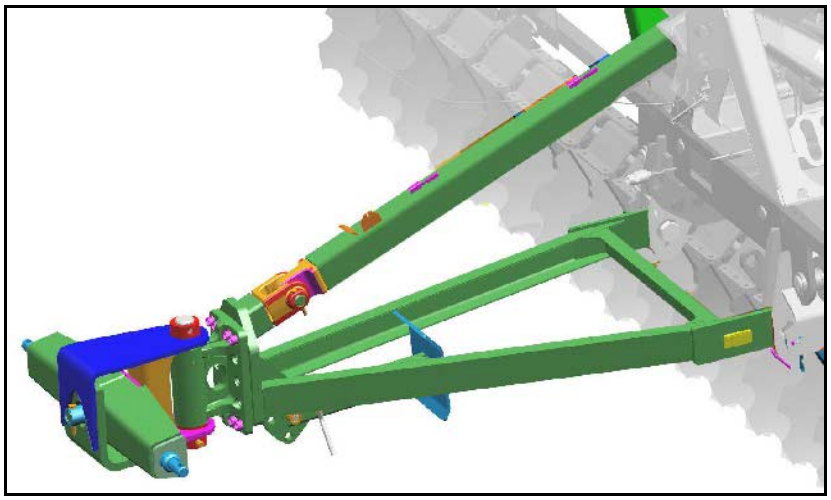


Fig. 22

WARNING

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

Always use ball sleeves with sockets and integrated linch pins.

Hydraulic drawbar

Hydraulic drawbar

- For horizontal alignment of implements without support wheels.
- For coupling implements with ball bracket or drawbar eye.

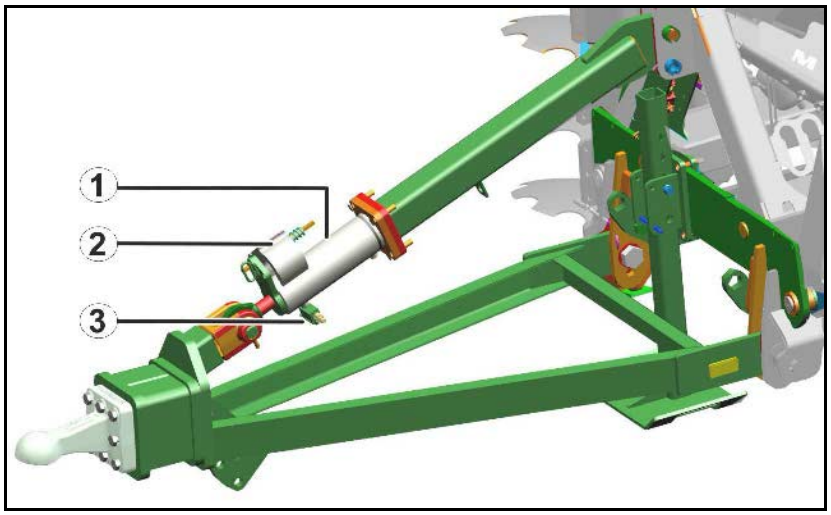


Fig. 23

(1) Hydraulic cylinders

(2) Spacer elements for horizontal alignment of the implement

(3) Stop tap

Horizontally align implement via drawbar cylinder and spacer elements:

To pivot the spacer elements, ensure that the hydraulic cylinders are not resting on the spacer elements.

1. Remove the linch pin (1).
2. Pull pin (2).
3. Pivot spacer elements.
4. Insert pin and secure with linch pin.

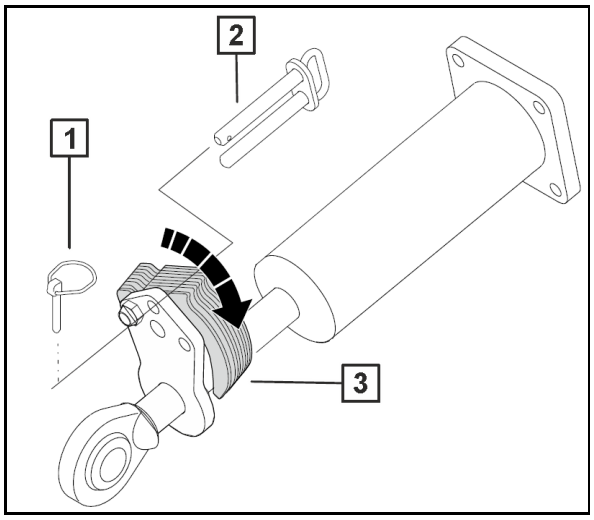


Fig. 24

5.8 Jack

Swivelling jack

(1) Handle

(2) Bolt with linch pin.

During operation or transport:

Jack fixed in raised position with pin and secured with linch pin.

With machine uncoupled:

Jack fixed in lowered position with pin and secured with linch pin.

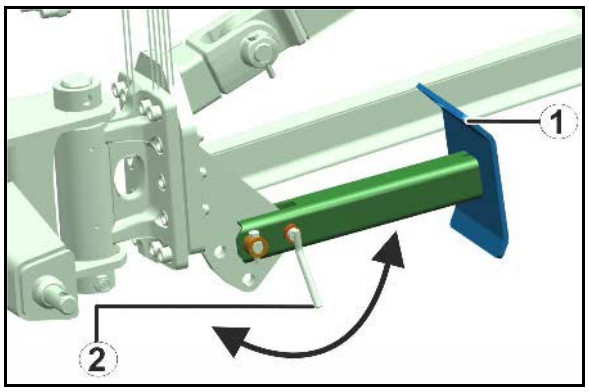


Fig. 25

Moveable jack

(1) Handle

(2) Bolt with linch pin.

During operation or transport:

Jack fixed in raised position with pin and secured with linch pin.

With machine uncoupled:

Jack fixed in lowered position with pin and secured with linch pin.

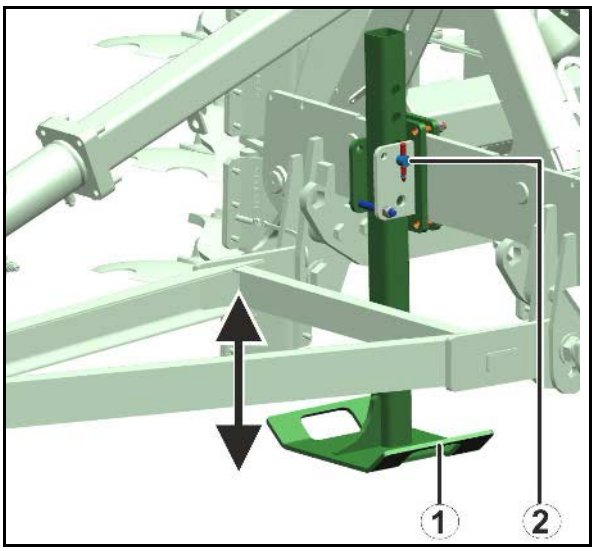


Fig. 26

5.9 Support wheels (Option)

The support wheels are designed for a load that has the mass of the machine so that the lower links of the tractor can be moved in the float position.

The front supporting wheels guide the machine reliably at the set working depth.

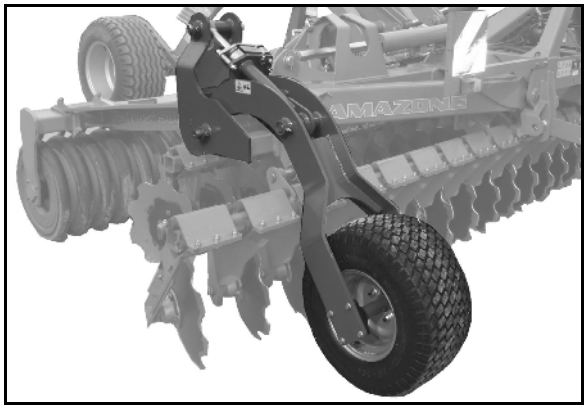


Fig. 27

Machine with support wheels in use:

- Operate in the insert of the tractor lower link in float position.
- The support wheels must not be used for cornering.

  If necessary, lift the machine slightly via the tractor lower link.
- Machines with hydraulic depth adjustment can be adjusted hydraulically at the limit of the working depth without having to adjust the support wheels.

Setting the working depth

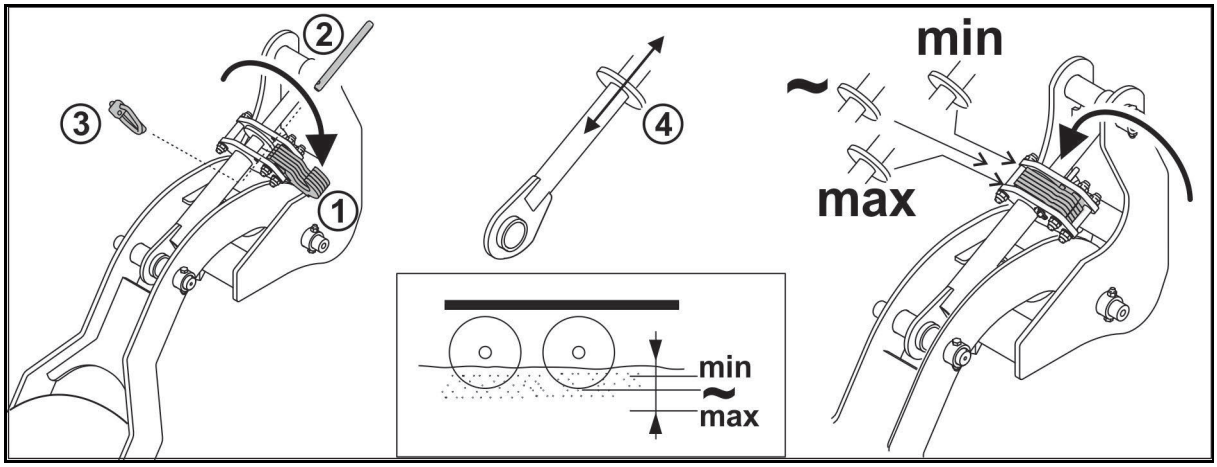


Fig. 28

Before making the adjustment, pull the fastening bolt (Fig. 32/2).

After the adjustment, hold the spacer elements (Fig. 32/1) in place using the fastening bolt and secure them using the clip pin (Fig. 32/3).

Increase working depth:

1. Actuate tractor control unit *yellow.*

→ Raise the machine, thus relieving the rear spacer elements.

2. Swivel out the rear spacer elements (starting with both stop washers (Fig. 32/4) on both booms).
3. Actuate tractor control unit *yellow*.

→ Lower the machine, thus relieving the front spacer elements.

4. Swivel-in and secure the spacer elements again.

Reduce working depth:

1. Actuate tractor control unit *yellow*

→ Lower the machine, thus relieving the front spacer elements.

2. Swivel out the front spacer elements (starting with both stop washers (Fig. 32/4) on both booms).
3. Actuate tractor control unit *yellow*.

→ Raise the machine, thus relieving the rear spacer elements.

4. Swivel-in and secure the spacer elements again.

5.10 Swing compensation

The swing compensation reduces the pitching motion and jumping of the machine when in operation.

Switch on the swing compensation when required:

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

→ Raise the running gear slightly from the ground.

3. Switch tractor control unit *yellow* to the float position.

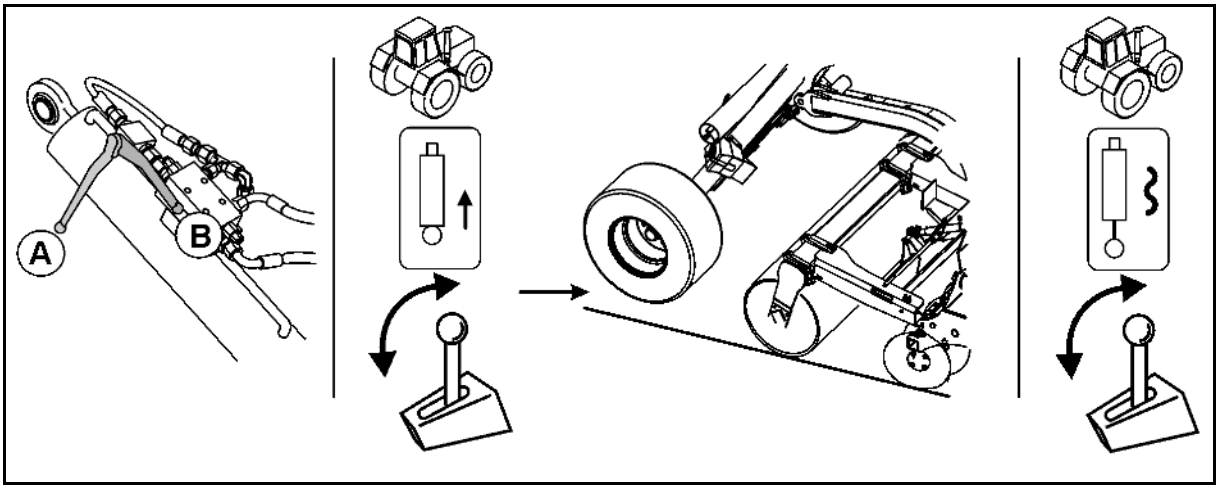


Fig. 29

Close the stop tap before road transport (Position A)!

Machine in working position with swing compensation

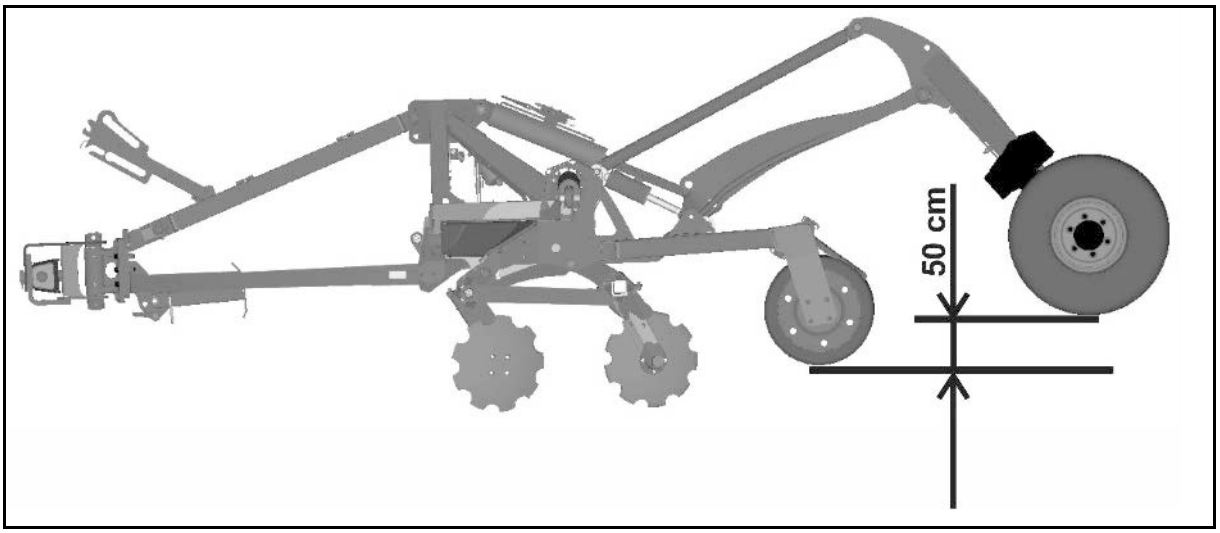


Fig. 30

5.11 Additional weights

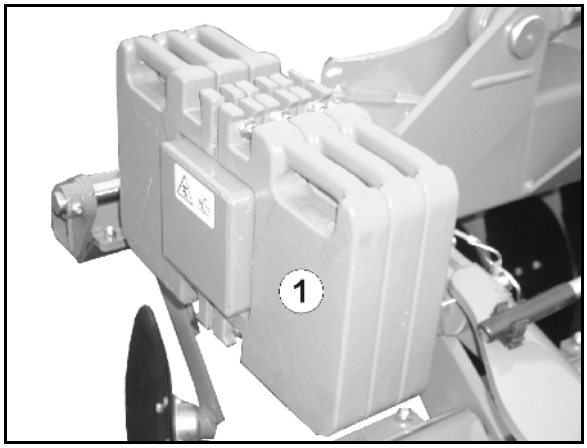


Fig. 31

(Optional)

The **Catros** can be equipped with additional weights (Fig. 35/1).

Under dry and extremely hard conditions, the additional weights make it possible to optimise the penetration of the discs into the soil

One set of additional weights corresponds to 4 times 55 lb / 25 kg.

→ Install max. 2 x 3 sets.

	Number	Additional weights
Catros+ 4002-2	2	441 lb / 200 kg
Catros+ 5002-2	3	661 lb / 300 kg
Catros+ 6002-2	4	882 lb / 400 kg

Mounting the additional weights:

1. Mount the holder tube (Fig. 36/1) with four-screws (Fig. 36/2) on the outside of the boom.
2. Screw two additional weights (Fig. 36/3) onto each holder tube (Fig. 36/4) and secure.

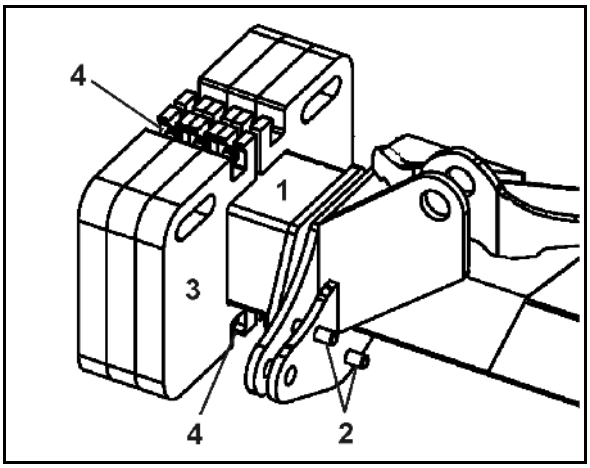


Fig. 32

5.12 GreenDrill catch crop sowing unit

The GreenDrill catch crop sowing unit enables the sowing of fine seeds and catch crops during soil cultivation with the Catros disc cultivator.

(1) GreenDrill

(2) Foldable ascent

(3) Locking pin for securing the foldable ascent

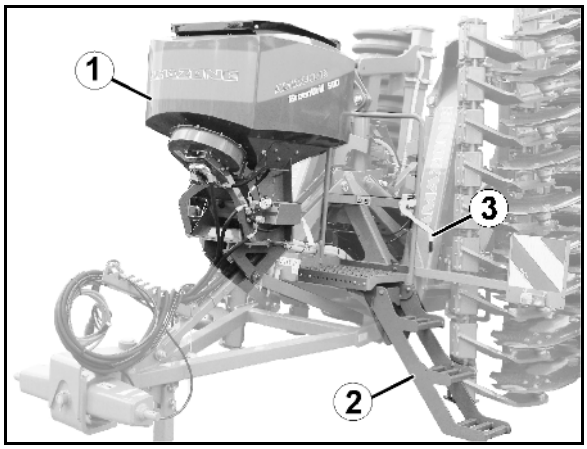


Fig. 33

See also the GreenDrill operating manual.

Fold the access ladder to the transport position before driving.

Use the step of the ladder as handle.

5.13 Safety chain for machines without brake systems

Machines without brake systems are equipped with a safety chain according to the regulations in each country.

The safety chain must be mounted on an appropriate location of the tractor as prescribed before setting the vehicle in motion.

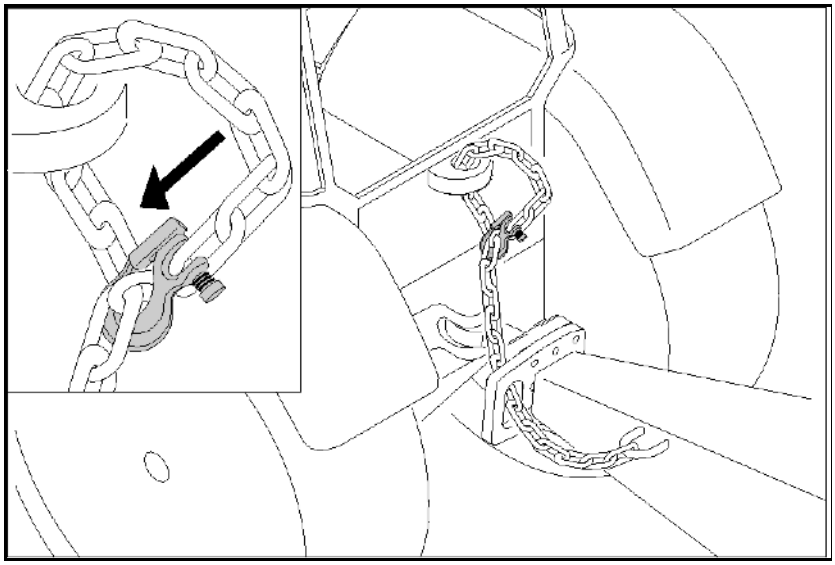


Fig. 34

5.14 Safety device against unauthorised use

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

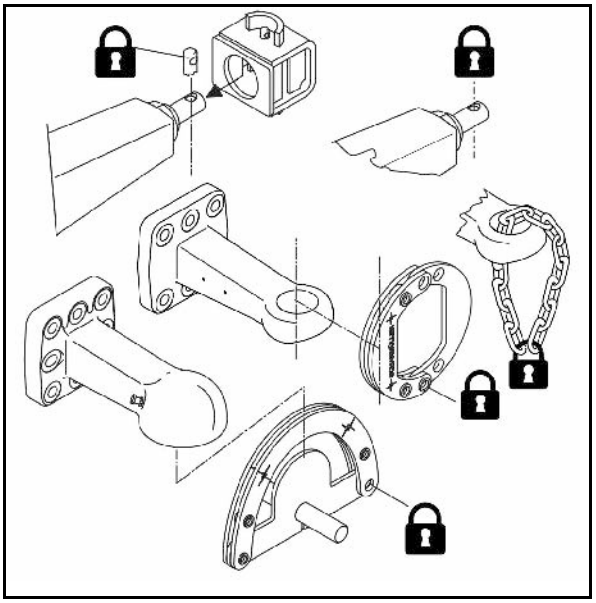


Fig. 35

5.15 Central lubrication (optional)

Only for Catros Pro

The implement is lubricated electrically with a central pump.

(1) Tank

(2) Connection for filling with cartridge/return line

(3) Rotary knob for time interval with sealing cap

(4) Grease nipple for filling the tank

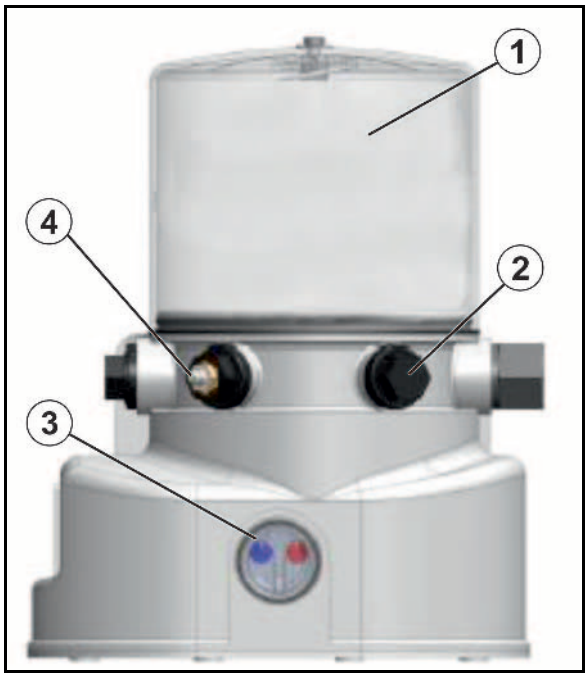


Fig. 36

(1) Rotary knob, blue
(pause time: standard 2 hours)

(2) Rotary knob, red
(lubrication time: standard 8 minutes)

(3) Button for starting the lubrication cycle

(4) Sealing cap

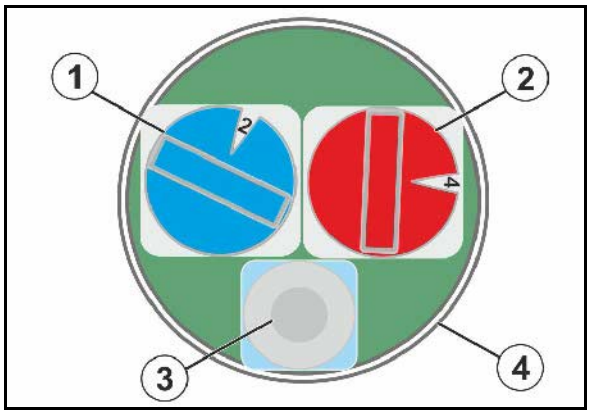


Fig. 37

- Set the rotary knob according to the table.
- Do not set the rotary knob to 0!

Pause times

Rotary knob **blue**	1	**2**	3	4	5	6	7	8	9	A	B	C	D	E	F
Hours	1	**2**	3	4	5	6	7	8	9	10	11	12	13	14	15

Lubrication times

Rotary knob **red**	1	2	3	**4**	5	6	7	8	9	A	B	C	D	E	F
Minutes	2	4	6	**8**	10	12	14	16	18	29	22	24	26	28	30

Lubrication recommendation

- When applying slurry:

  Initial use: Pause time 2 hours
  Later: Pause time 2-4 hours

- No slurry: Lubricate once a day

Connection

(1) red (+)

(2) brown (-)

The direction of rotation of the pump must match with the arrow on the hopper.

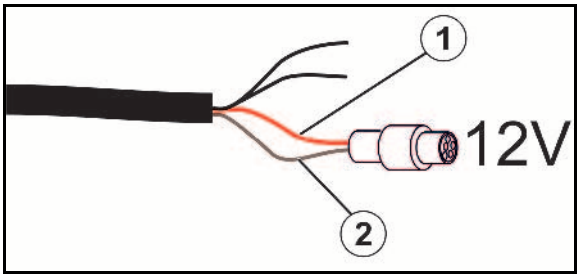


Fig. 38

6 Commissioning

This section contains information

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

- Before operating the machine 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 25 onwards when
  - connecting and disconnecting the machine,
  - transporting the machine and
  - using the machine
- Only couple and transport the machine to/with a tractor which is suitable for the task.
- The tractor and machine must meet the national road traffic regulations.
- The operator and the user shall be responsible for compliance with the statutory 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 on improper use of the tractor!

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

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

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

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

- The approved total weight
- The approved axle loads
- The approved drawbar load at the tractor coupling point
- The load capacity of the installed tyres
- The approved trailer load must be sufficient

  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 machine 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

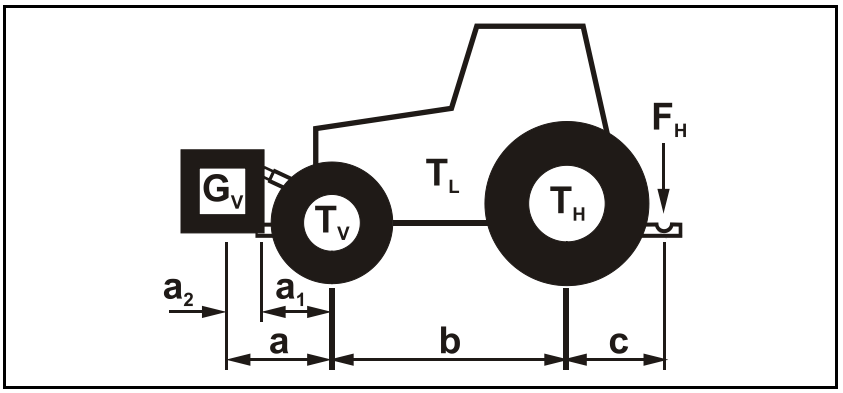
The approved total tractor weight specified in the vehicle documentation must be greater than the sum of the

- empty tractor weight
- ballast weight and
- machine'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 registration document
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 the technical data, or weigh
F_H	lb [kg]	Determine actual drawbar	load
A	ft [m]	Distance between the center of gravity of the front-mounting implement or the front weight and the center of the front axle (total $a_1 + a_2$)	See technical data for tractor and front-mounting implement or front weight, or measure
a_1	ft [m]	Distance from the center of the front axle to the center of the lower link connection	See tractor operating manual or measure
a_2	ft [m]	Distance between the center of the lower link connection point and the center of gravity of the front-mounting implement or front ballast (center of gravity distance)	See technical data for front-mounting implement or front weight, or measure
b	ft [m]	Tractor wheelbase	See tractor operating manual or vehicle registration certificate, or measure
c	ft [m]	Distance between the center of the rear axle and center of the lower link connection	See tractor operating manual or vehicle registration certificate or measure

6.1.1.2 Calculation of the required minimum ballasting at the front $G_{V\ min}$ of the tractor for assurance of the steering capability

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

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 machine

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

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 Tyre load capacity

Enter the double value (two tyres) of the approved load capacity (see, for example, tyre 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 tyres)
Minimum ballast front / rear	/	lb/ kg	--		--
Total weight		lb/ kg	≤	lb/ kg	--
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

Risk of crushing, cutting, being caught or drawn in, or impact through insufficient stability and insufficient tractor steering capability and brake power.

It is forbidden to couple the machine 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 ($G_{V\,min}$).

- You must use a front weight which is equal to at least the required minimum front ballast ($G_{V\,min}$).

6.1.2 Requirements for tractor operation with attached machines

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 supported weight 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 weight does not exceed the permissible rear axle weight.
  - that the permissible total weight of the tractor is observed.
  - that the approved load capacities of the tractor tyres 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 ⌀ 1,6 in / 40 mm	(ISO 5692-2)
		Drawbar eye	⌀ 1,6 in /40 mm	(ISO 8755)
		Drawbar eye	⌀ 2 in / 50 mm, only compatible with form A	(ISO 1102)
Upper / lower hitch				
Ball head coupling Ø 3 in / 80 mm	(ISO 24347)	Ball coupling	Ø 3 in / 80 mm	(ISO 24347)
Lower hitch				
Towing hooks / hitch hooks	(ISO 6489-19)	Drawbar eye	Centre bore Ø 2 in / 50 mm Eyelet Ø 1,2 in /30 mm	(ISO 5692-1)
		Swivel drawbar eye	compatible only with form Y, hole Ø 2 in /50 mm,	(ISO 5692-3)
		Drawbar eye	Centre bore Ø 50 mm , Eyelet Ø 1,2 -1,6 in /30 - 41 mm	(ISO 20019)
Drawbar - Category 2	(ISO 6489-3)	Drawbar eye	Socket ⌀ 1,6 in /40 mm	(ISO 5692-2)
			⌀ 1,6 in /40 mm	(ISO 8755)
Drawbar	(ISO 6489-3)	Drawbar eye		(ISO 21244)
Drawbar / Piton-fix	(ISO 6489-4)	Drawbar eye	Centre bore Ø 2 in / 50 mm Eyelet Ø 1,2 in /30 mm	(ISO 5692-1)
		Swivel drawbar eye	compatible only with form Y, hole Ø 2 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)

DANGER

Damage to the implement due to use of non-approved coupling devices.

A Category 2 drawbar may not be coupled to a drawbar eye with a ⌀ 50 centre hole.

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!

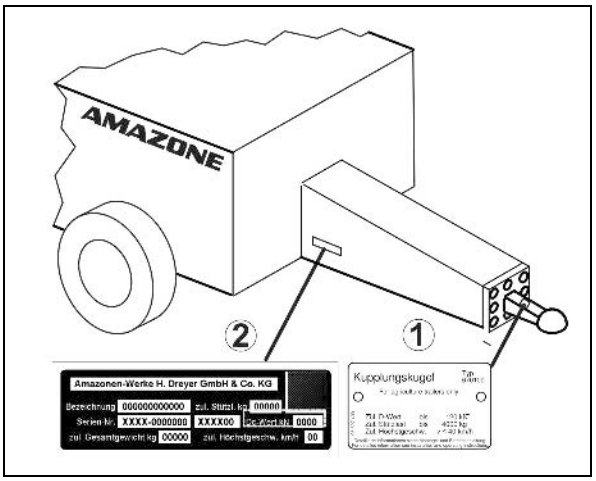
1. Calculate the actual D_C value of your combination, comprising tractor and implement.
2. Compare the actual D_C value with the following permissible D_C values:

- 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:

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

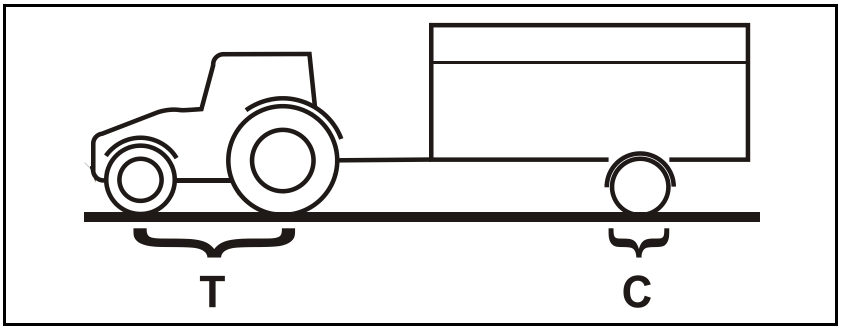


Fig. 39

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 / machine against unintentional start-up and rolling

WARNING

Risk of contusions, cutting, catching, drawing in and knocks when making interventions in the machine through

- **unintentional lowering of the machine when it is raised with the tractor's three-point hydraulic system and unsecured.**
- **unintentional lowering of parts of the machine when in a raised position and unsecured.**
- **unintentional start-up and rolling of the tractor-machine combination.**
- Secure the tractor and the machine against unintentional start-up and rolling before any intervention in the machine.
- It is forbidden to make any intervention in the machine, such as installation, adjustment, troubleshooting, cleaning, maintenance and repairs
  - o when the machine is being operated.
  - o as long as the tractor engine is running with the PTO shaft / hydraulic system connected.
  - o if the ignition key is in the tractor and the tractor engine can be started unintentionally with the PTO shaft / hydraulic system connected.
  - o if the tractor and machine have not each been prevented from unintentionally rolling away by applying their parking brakes and/or securing them with wheel chocks
  - o 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 machine and machine parts when raised and unsecured.

→ This prevents unintentional falling:

2. Turn off 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)
   - o By using the wheel chocks on level terrain or with the parking brake if fitted.
   - o By using wheel chocks and the parking brake on very uneven terrain or on a slope.

7 Coupling and uncoupling the machine

When coupling and uncoupling machines, follow the instructions given in the section "Safety instructions for the operator" page 25.

WARNING

Risk of contusions from unintentional starting and rolling of the tractor and machine when coupling or uncoupling the machine!

Secure the tractor and machine against unintentional start-up and rolling away before entering the danger area between the tractor and machine to couple or uncouple the machine. See page 74.

WARNING

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

Only actuate the operator controls for the tractor's three-point hydraulic system:

- only from the intended workstation.
- only if you are outside of the danger area between the tractor and the machine.

7.1 Coupling the machine

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 machine to tractors suitable for the purpose. See section "Checking tractor suitability", page 66.

WARNING

Risk of contusions when coupling the machine and standing between the tractor and the machine!

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

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

WARNING

Risk of contusions, cutting, catching, drawing in and knocks when the machine unexpectedly releases from the tractor!

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

  Be absolutely certain to upgrade the category II upper and lower link pins of the machine to category III using reducing sleeves if your tractor has a category III three-point linkage.
- Only use the upper and lower link pins provided for coupling the machine.
- Visually check the upper and lower link pins for obvious defects whenever the machine is coupled. Replace upper and lower link pins if there are clear signs of wear.
- Use a lynch pin on each of the upper and lower link pins in the pivot points on the three-point frame attachment to secure them against unintentional release.

WARNING

Risk of energy supply failure between the tractor and the machine through damaged power 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 machine.
- may not scour other parts.

Coupling the implement with the tensioned crosspiece

1. Slide ball sleeves onto the lower link pins of the implement and secure them with linch pins.
2. Instruct persons to get out of the danger area between the tractor and the implement.
3. Drive the tractor towards the implement.
4. Couple the lower links from the tractor seat.

→ The lower link hooks lock automatically.

5. Visually check to ensure that the lower link hooks are correctly locked.
6. Lift the jack.
7. Couple the supply lines with the tractor.
8. Remove wheel chocks.

Country-specific regulation for implements without brake system:

9. Properly attach the safety chain to the tractor.

Coupling the implement with the ball bracket / drawbar eye

1. Instruct persons to get out of the danger area between the tractor and the implement.
2. Drive the tractor in reverse towards the implement so that the coupling device can be coupled.
3. Couple the supply lines with the tractor.
4. Open the stop tap on the hydraulic drawbar.
5. Couple the coupling device.
6. Ball coupling: Actuate tractor control unit *yellow4*:

   Position the ball bracket hydraulically on the tractor ball coupling and lock it.
7. Actuate the *yellow4* tractor control unit.

→ Lift the implement using the drawbar controls.

8. Lift the jack.
9. Remove wheel chocks.

Country-specific regulation for implements without brake system:

10. Properly attach the safety chain to the tractor.
11. Actuate the *yellow3* tractor control unit.

→ Lower the implement using the drawbar controls.

12. If necessary, actuate the *yellow 1, 2* tractor control unit.

→ Adjust the ground clearance via the running gear.

7.2 Uncoupling the machine

WARNING

Risk of contusions, cutting, catching, drawing in and knocks through insufficient stability and possible tilting of the uncoupled machine!

Park the empty machine on a horizontal space with a hard surface.

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

Put the machine only with full running gear.

Uncoupling the implement with tensioned crosspiece

1. Safeguard tractor and implement against rolling off unintentionally.
2. Lower the jack.
3. Use the wheel chocks.
4. Disconnect the supply lines.
5. Set the implement down on the jack.
6. Unlock and uncouple the lower link hooks from the tractor cab.

Uncoupling the implement with ball bracket / drawbar eye

1. Safeguard tractor and implement against rolling off unintentionally.
2. Lower the jack.
3. Use the wheel chocks.
4. Actuate the *yellow3* tractor control unit.
5. Set the implement down on the jack.
6. Disconnect the coupling device.

→ Ball coupling: Raise the ball bracket hydraulically.

7. Close the stop tap on the hydraulic drawbar.
8. Switch the *yellow* tractor control unit to float position and depressurise the hydraulic hose lines.
9. Disconnect the supply lines.

8 Adjustments

WARNING

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

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

Secure the tractor and the machine against unintentional start-up and rolling before making adjustments to the machine. See Page 74.

8.1 Mechanical working depth adjustment

The working depth of the discs is set by adjusting the spindle length.

Use the hand lever with the ratchet to make the adjustment.

- Check the set working depth using the scale mounted on the side frame.

- Shorten the spindle, set indicator toward 12:

→ Increase the working depth.

- Lengthen the spindle: set indicator toward 2:

→ Reduce the working depth.

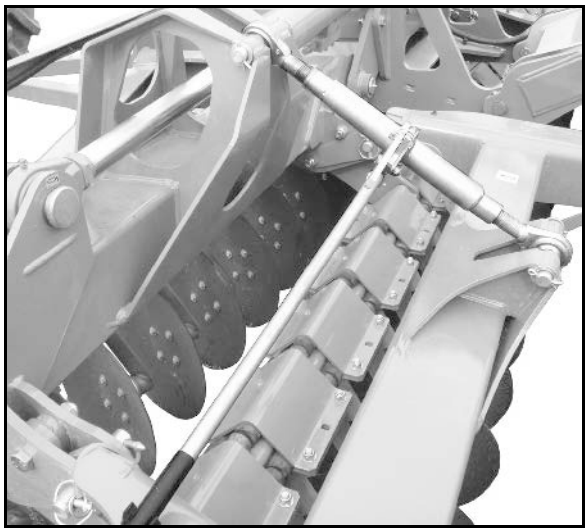


Fig. 40

Set the length of the setting spindles the same on both sides.

Both rollers must be aligned flush with one another!

Both rollers must be aligned flush with one another!

Adjusting the spindle using the ratchet

1. Remove the clip pin (Fig. 46/3).
2. Engage the turning lever (Fig. 46/2) in the required direction.
3. Use the hand lever (Fig. 46/1) to lengthen or shorten the spindle.
4. Secure using the clip pin (Fig. 46/3).

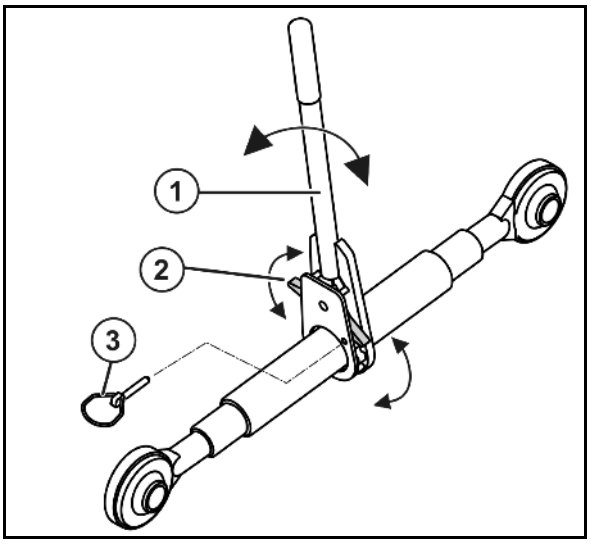


Fig. 41

8.2 Hydraulic working depth adjustment (optional)

Actuate tractor control unit *green*.

→ The working depth is set hydraulically using the scale (Fig. 47/1).

- Reduce working depth: set indicator toward 2.
- Increase working depth: set indicator toward 12.

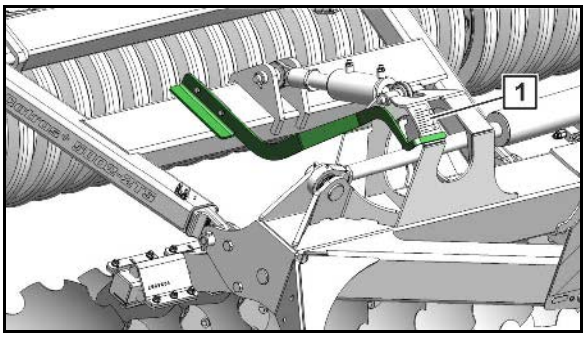


Fig. 42

8.3 Offset of the disc rows

The offset of the disc rows is adjusted as required by means of an AMAZONE eccentric pin.

6 insertion holes are available for this purpose. (Fig. 48).

1. Move the machine back a little.

   → The disc rows are displaced so that the insertion holes are uncovered.

2. Secure the tractor against unintentional starting and unintentional rolling away.
3. Release clip pins (Fig. 48/1).
4. Insert eccentric pins (Fig. 48/2) into the desired insertion hole.
5. Secure the clip pin.

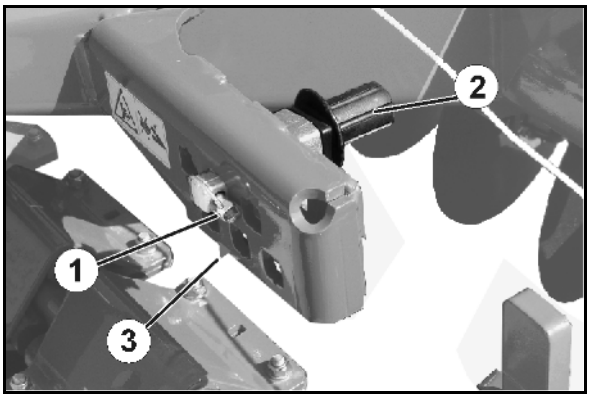


Fig. 43

CAUTION

Crushing hazard between eccentric pin and stop of disc row!

- A preferential insertion hole is marked with an arrow (Fig. 48/3).

Fine adjustment is carried out by rotating the eccentric pin (Fig. 49) from position 1 to position 4.

1. Release the clip pin.
2. Turn the eccentric pin (position 1-4).
3. Secure the clip pin.

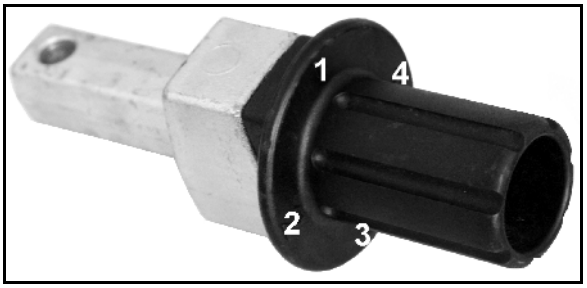


Fig. 44

The work pattern must be checked by viewing the cultivation horizon behind the machine:

(1) Cutting edge 1st disc row

(2) Cutting edge 2nd disc row

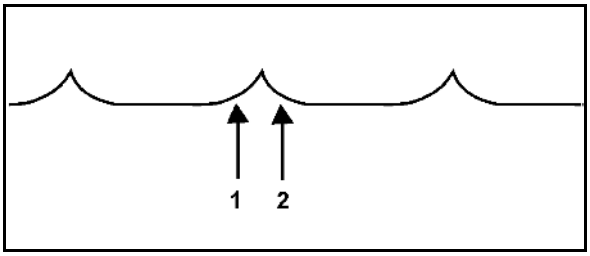


Fig. 45

- **Fig. 50:**
  Correct setting of disc rows.
- **Fig. 51**:
  Adjust 1st disc row to right and check again.
- **Fig. 52**:
  The cutting edge of the 2nd disc row is not visible and follows the 1st disc row. Adjust 1st disc row to left.

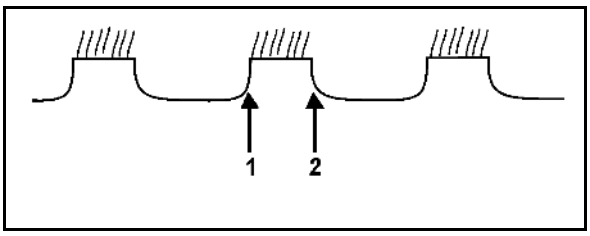


Fig. 46

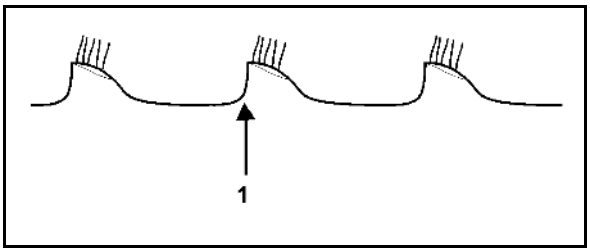


Fig. 47

8.4 Working depth of the outside discs

The raised outside discs at the front right and rear left must be adjusted.

Use the bearing pin and hub as handle.

1. Secure the tractor against unintentional starting and unintentional rolling away.
2. Release screw unions (Fig. 53/1).
3. Adjust the side discs in the slot so that no dam formation is caused during use.
4. Retighten the screw unions.

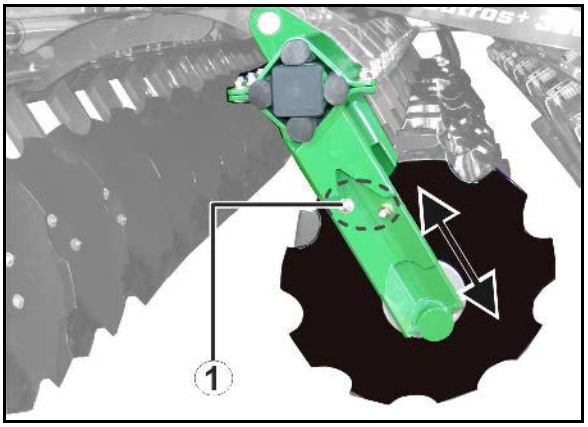


Fig. 48

8.5 Scraper

Scrapers are adjusted at the factory. Adjust the setting to the working conditions as follows:

1. Secure the tractor against unintentional starting and unintentional rolling away.
2. Release the screw (Fig. 54/1) below the scraper.
3. Adjust the scraper in the slotted hole.
4. Retighten the screw.

Wedge ring rollers:

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

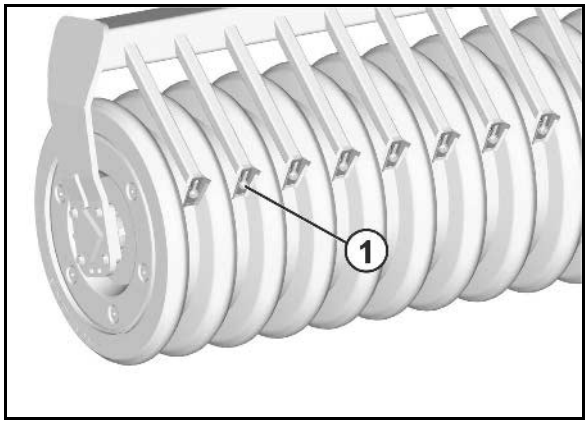


Fig. 49

9 Transportation

- On transportation journeys, 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, function and cleanliness.
  - the hydraulic system for visible defects

WARNING

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

Before transportation, carry out a visual check that the upper and lower link pins are secured with a lynch pin against unintentional release.

WARNING

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

- On folding machines, check that the transport locks are locked correctly.
- Secure the machine 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 machine.

  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 machine.
- Before transportation, fasten the side locking of the tractor lower link, so that the connected or coupled machine 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.

Comply with the maximum load of the connected machine and the approved axle and support loads of the tractor. If necessary, drive only with a partially-filled hopper.

WARNING

Risk of falling from the machine if riding against regulations!

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

9.1 Conversion from operational to transport position

WARNING

- **Instruct persons away from the swivel range of the running gear before folding this up or down!**
- **Instruct people to leave the swivel area of machine's extension arm before you fold the machine's extension arm out or in.**

- Align the tractor and machine straight on a flat surface before you fold the machine's extension arm out or in!
- Always raise the machine fully before you fold the machine's extension arm out or in. Only when the machine is fully raised do the soil cultivating tools have sufficient ground clearance and are thus protected against damage.

Implement with lower link hitch:

1. Activate the *yellow* tractor control unit.

→ Completely lower the running gear into transport position.

2. Lift tractor lower link.

Implements with tandem roller:

Setting the maximum working depth.

→ This ensures that the maximum transport width of 3 m is not exceeded.

3. Activate the *blue* tractor control unit.

→ Completely fold boom.

4. Prevent the *blue* tractor control unit from being actuated unintentionally.
5. De-activate vibration compensation: Close stop tap.
6. To align the implement horizontally in transport height, activate the tractor lower link and the *yellow* tractor control unit.

Implement with hydraulic drawbar:

1. Activate both *yellow* tractor control units.

→ Lift the implement to maximum height.

Implements with tandem roller:

Setting the maximum working depth.

→ This ensures that the maximum transport width of 3 m is not exceeded.

2. Activate the *blue* tractor control unit.

→ Completely fold boom.

3. Prevent the *blue* tractor control unit from being actuated unintentionally.
4. De-activate vibration compensation: Close stop tap.
5. Pivot in and secure all spacer elements on the drawbar cylinder.
6. Lower drawbar via the yellow tractor control unit.
7. To align the implement horizontally on the running gear at transport height, activate the *yellow* tractor control unit.

Comply with the specified sequence. If you do not, the boom and running gear will collide!

The graphic shows the implement in horizontal position and with correctly adjusted transport height. The correct transport height is reached when the pivot point of the drawbar is at the specified height.

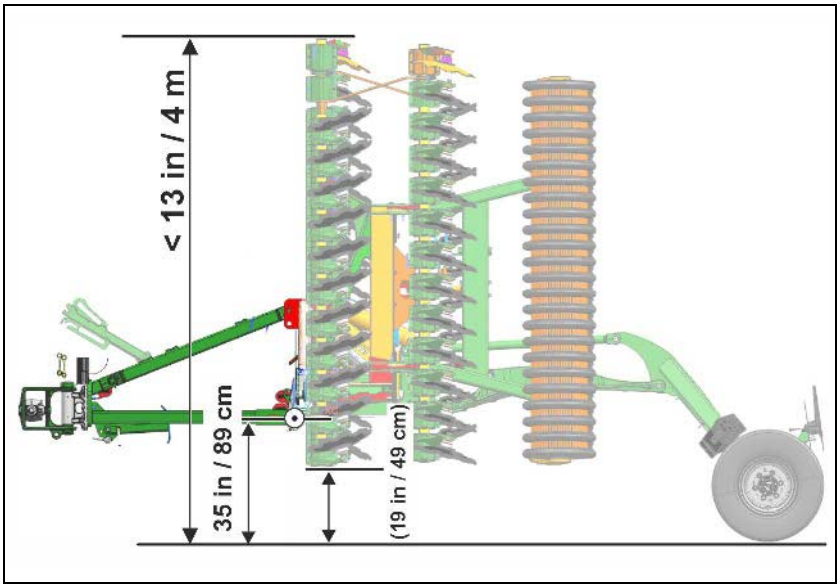


Fig. 50

10 Use of the machine

When using the machine, observe the information in the sections

- "Warning signs and other labels on the machine", from page **16** and
- "Safety instructions for operators", from page 25

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 machine and the approved axle and support 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 machine.

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

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 machine.

WARNING

Risk of being crushed, cut, caught, drawn in or struck if the machine is unintentionally released from its attached or hitched position. Each time before the machine is used, carry out a visual check whether the lower link pins are secured with linch pins to prevent them from falling out.

WARNING

Risk of falling from the machine if riding against regulations!

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

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.

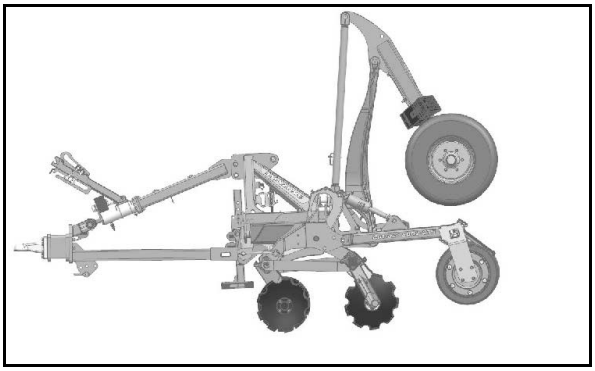
- Fix the connection device during transport.

10.1 Conversion from transport to operational position

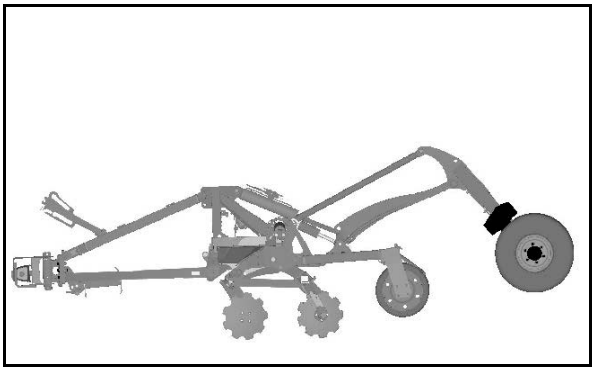
WARNING

- **Instruct people to leave the swivel area of machine's extension arm before you fold the machine's extension arm out or in.**
- **Instruct persons away from the swivel range of the running gear before folding this up or down!**

- Align the tractor and machine straight on a flat surface before you fold the machine's extension arm out or in!
- Always raise the machine fully before you fold the machine's extension arm out or in. Only when the machine is fully raised do the soil cultivating tools have sufficient ground clearance and are thus protected against damage.



Implement in working position without vibration compensation.



Implement in working position with vibration compensation.

Implement with lower link hitch:

1. Activate the *yellow* tractor control unit.

→ Completely lift the implement via the running gear.

2. Lift tractor lower link.
3. Activate the *blue* tractor control unit.

→ Completely unfold boom.

4. Activate the *yellow* tractor control unit.

→ Completely lower the implement via the running gear.

5. To align the implement horizontally, lower the tractor lower link.

Or if support wheels are present:

Operate the tractor lower link in float position.

Implement with hydraulic drawbar:

1. Activate both *yellow* tractor control units.

→ Completely lift the implement.

2. Activate the *blue* tractor control unit.

→ Completely unfold boom.

3. Activate the *yellow* tractor control unit.

→ Completely lower the implement via the running gear.

4. Pivot out as many spacer elements on the hydraulic cylinder of the drawbar as necessary so that the implement is aligned horizontally in working position.

Or if support wheels are present:

Pivot out all spacer elements.

5. Activate *yellow 3.4* tractor control unit.

→ Lower the implement via the drawbar
and

Or if support wheels are present:

Operate the *yellow 3.4* tractor control unit in float position.

Comply with the specified sequence. If you do not, the boom and running gear will collide!

10.2 Use on the field

Implement with tensioned crosspiece:

Work with the tractor lower links laterally arrested.

The implement must be adjusted on the lower link of the tractor such that the frame is parallel to the ground surface in the longitudinal direction and horizontal direction during the work process!

Implements with support wheels:

- Operate the tractor lower link in float position.
- Operate hydraulic drawbar in float position.

Driving in reverse is prohibited when the implement is in the working position!

10.3 Driving on the headlands

Depending on the roller, turning is performed on the roller or on the running gear wheels.

10.4 Driving on the headland

Depending on the roller, turning is performed on the roller or on the running gear wheels.

10.4.1 Turning on the roller on the headlands

Damage to rollers and rear harrows due to overload

- Do not turn the implement on the tandem roller or the angle profile roller.
- If the implement has a rear harrow, turn the implement on the running gear.
- Use the running gear for road transport or longer driving on the headlands.

1. To prevent lateral loads when driving in curves on the headlands,

   lift the implement with the lower link or the *yellow* tractor control unit.

→ The roller supports the implement.

2. When the direction of the implement matches the direction of travel,

   lower the implement with the lower link or the *yellow* tractor control unit.

10.4.2 Turning on the running gear on the headlands

1. To prevent lateral loads when driving in curves on the headlands,

   actuate both *yellow* tractor control units and lift the implement.

2. When the direction of the implement matches the direction of travel,

   actuate both *yellow* tractor control units and lower the implement.

11 Faults

WARNING

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

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

Secure the tractor and the machine against unintentional start-up and rolling before eliminating faults on the machine. See Page 74.

Wait for the machine to stop, before entering the machine danger area.

11.1 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. Keep actuating the *green* tractor control unit until the hydraulic cylinders are completely extended.
2. Continue actuating the control unit for another 10 s.

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

Secure the tractor and machine against unintentional starting and unintentional rolling away before you perform any cleaning, servicing or maintenance work on the machine. See page 74.

12.1 Cleaning

- Pay particular attention to the brake, air and hydraulic hose lines.
- Never treat brake, air and hydraulic hose lines with petrol, benzene, petroleum or mineral oils.
- After cleaning, grease the machine, 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 with 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 chromed components.
  - Never aim the cleaning jet from the nozzle of the high pressure cleaner / steam jet directly on lubrication and bearing points.
  - Always maintain a minimum jet distance of 300 mm between the high pressure cleaning or steam jet cleaning nozzle and the machine.
  - Comply with safety regulations when working with high pressure cleaners.

12.2 Lubrication regulations

Lubrication points on the machine are indicated with the foil (Fig. 56).

Carefully clean the lubrication nipple 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.

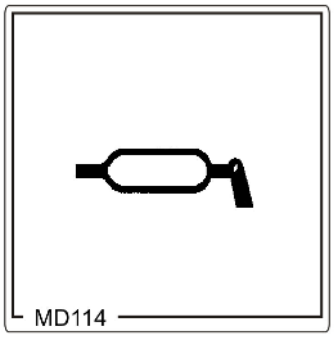


Fig. 51

12.2.1 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

12.2.2 Lubrication point overview

Fig. 52	Lubrication point	Intervall [h]	Number
1	Tensioned crosspiece	50	3
2	Upper / lower coupling points	50	3
3	Chassis hydraulic cylinder	50	2
4	Chassis mounting	50	8
5	Roller frame mounting	50	4
6	Hydraulic top belt	50	4
7	Machine wing bearings	50	4
8	support wheels	50	2
9	Axle	200	4

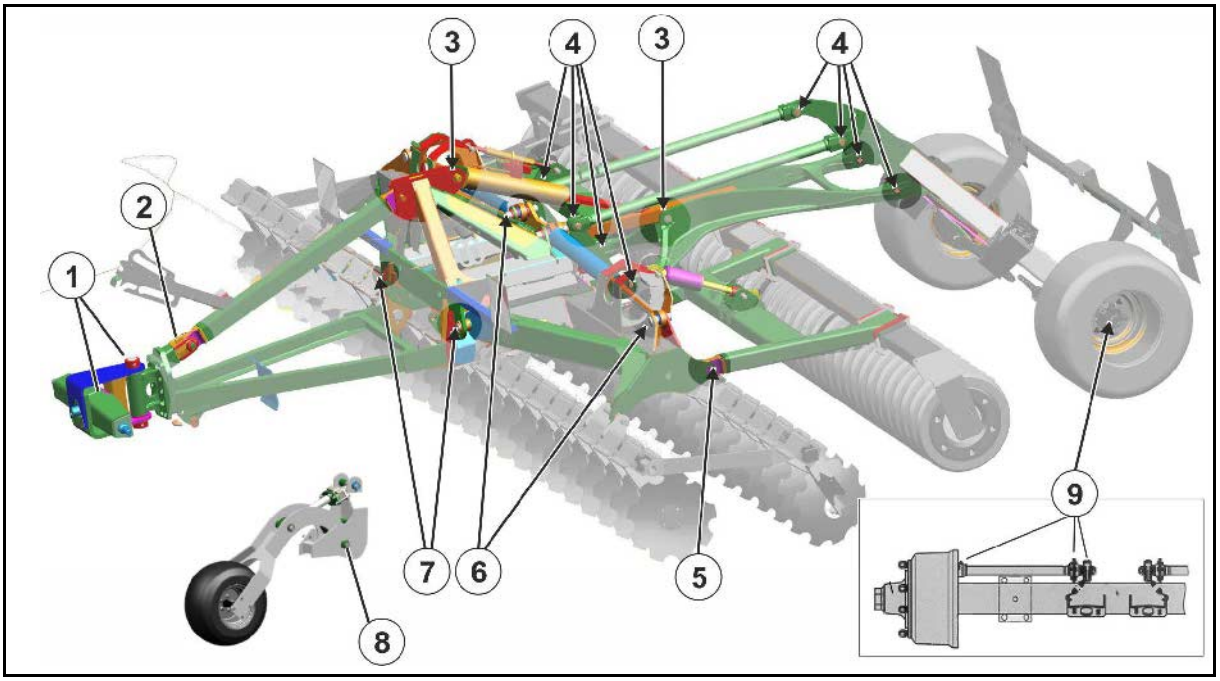


Fig. 53

12.3 Service plan – overview

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

After the first working run

Component	Servicing work	See page	Specialist workshop
Disc carrier fixture	• Retighten bolted connections	101	
Hydraulic system	• Inspection for defects • Check leak tightness	109	**X**
Roller	• Check bolts of clamping brackets.	101	
Axle	• Check axle bolts.	101	
Wheels	• Wheel nut check	102	

Daily

Component	Servicing work	see page	Specialist workshop
Whole implement	• Visual inspection before operation		

Weekly / every 50 working hours

Component	Servicing work	See page	Specialist workshop
Hydraulic hose lines	• Check	110	**X**
Wheels	• Check air pressure • Wheel nut check	102	
Coupling device	• Check for damage, deformation and cracks	104	

Every 2 months

Component	Servicing work	See page	Workshop work
Central lubrication	• Check the central lubrication	107	**X**

Every 200 working hours

Component	Servicing work	See page	Specialist workshop
Coupling device	• Check the fastening bolts for wear and tight fit	104	
Axle	• Check axle bolts.	101	
Roller	• Checking the roller.	101	
Hydraulic cylinder folding	• Check that the cylinder eye is firmly attached to the hydraulic cylinder	104	

Every year / 1000 operating hours

Component	Servicing work	See page	Workshop work
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	87	**X**

As required

Component	Servicing work	See page	Specialist workshop
Disc XL011	• Check wear	99	**X**
Slide bearing 78200437	• Check wear	100	**X**

12.4 Checking the play on wheel hub bearings

To check the play on wheel hub bearings, raise the axle until the wheels turn freely. Release the brake. Place a lever between the tyre 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.

Top up the dust cap with high melting point grease and drive it into, or screw it onto the wheel hub.

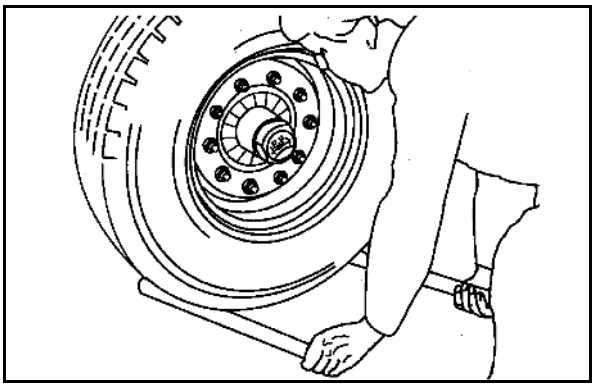


Fig. 54

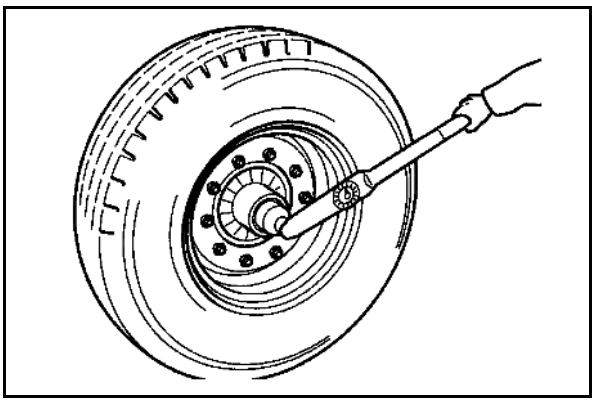


Fig. 55

12.5 Replacing the discs (Workshop work)

Minimum disc diameter: 360 mm.

The discs are replaced with

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

1. Release the four screws securing the disc.
2. Remove the disc.
3. Secure the new disc with four screws.

CAUTION

When removing spring-suspended elements (disc segments), remember that the parts are under pretension! Use a suitable tool!

Use circlip pliers 78400609!

For installation and removal, additionally use longer screws as an auxiliary tool! (Fig. 72)

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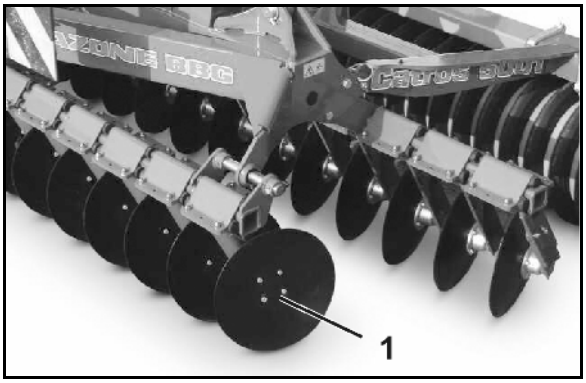


Fig. 56

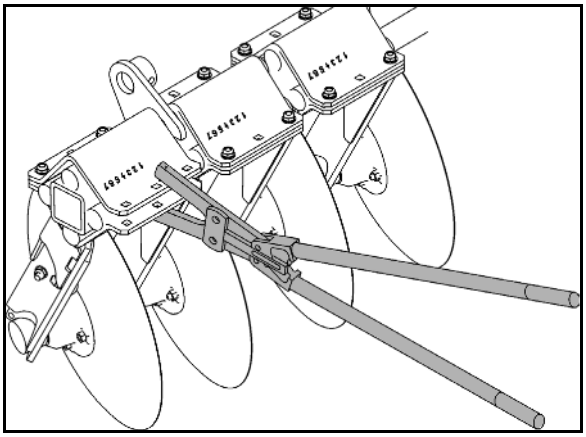


Fig. 57

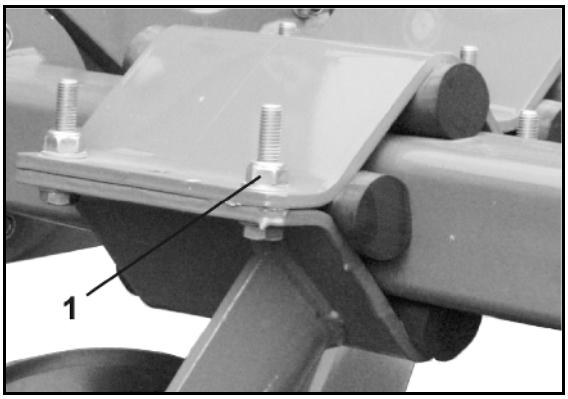


Fig. 58

12.6 Slide bearings of offset slide (Workshop work)

Replace slide bearing at approx. 0,16 in / 4 mm clearance.

To replace the slide bearings (Fig. 73/1), place the folded-out machine down so that the slide bearings are free from tension.

The disc units must touch the ground, but must not support the weight of the machine!

If necessary, support the disc units!

- Each disc unit has two slide bearings.

1. Release the screw union (Fig. 73/2) of the shifting shaft (Fig. 73/3).
2. Drive the shifting shaft out of the bearing.
3. Remove the circlips from the slide bearing.
4. Replace the slide bearing.
5. Fit the circlips.
6. Reinstall the shifting shaft and secure with a screw union.

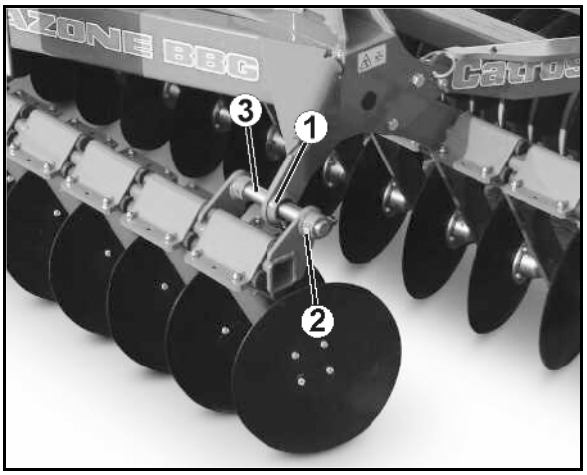


Fig. 59

12.7 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.

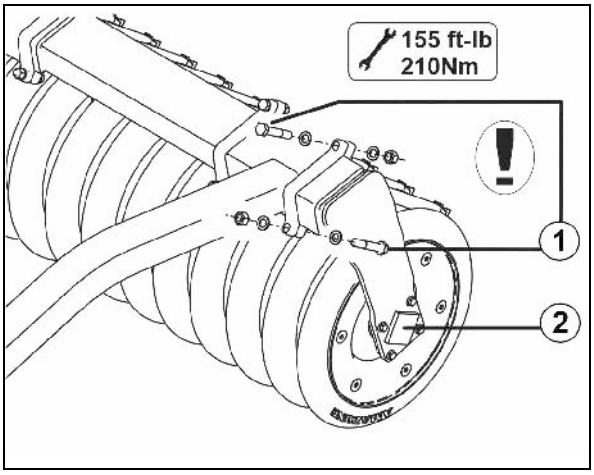


Fig. 60

12.8 Disc carrier fixture

Check the bolts for tightness.

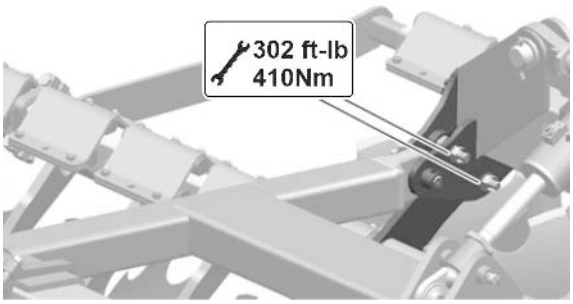


Fig. 61

12.9 Axle

(1) Axle bolts with clamping plates

Check the bolts for tightness.

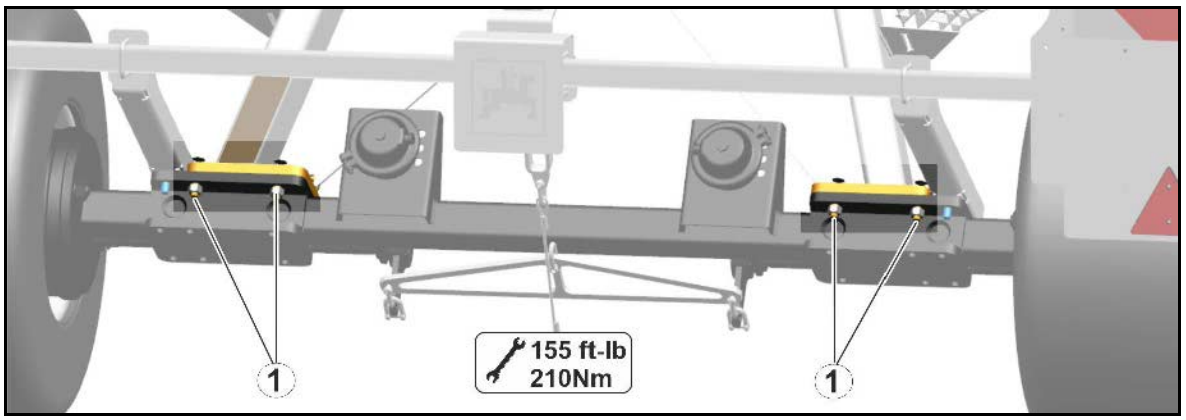


Fig. 62

12.10 Tyres/wheels

Check chassis wheels regularly for damage and firm seating on the wheel rim.

Running gear tires / Support wheels:	Required tightening torque for wheel nuts or bolts
M18 x 1,5	**200 ft- lb (-0/+15)** **270 Nm (-0/20)**
M20 x 1,5	**258 Nm (- 0/+22)** **270 Nm (-0/30)**
M22 x 1,5	**332 Nm (-0/+44)** **450 Nm (-0/+60)**

- Regularly check
  - o that wheel nuts are firmly seated.
  - o tyre pressures.
- Only use the tyres and wheels which we have specified.
- Repair work on tyres must only be carried out by specialists using suitable assembly tools.
- Tyre fitting requires sufficient skills and proper assembly tools.
- Use the jack only at the jacking points indicated.

12.10.1 Tyre pressures

Inflate the tyres with the indicated nominal pressure.

- The value for the nominal pressure can be read on the rim.
- The value for the nominal pressure can be obtained from the tyre manufacturer.

- Check tyre pressures regularly when the tyres are cold, i.e. before starting a run.
- The difference in pressure between the tyres on one axle must be no greater than 1,45 psi / 0.1 bar.
- Tyre pressure can be raised by up to 1 bar after a fast run or in warm weather. Tyre pressure should on no account be reduced as it is then too low when the tyres cool down.

12.10.2 Mounting tyres (workshop work)

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

12.11 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	443 ft-lb	600 Nm
D51 (LI069)		2,08 in	53 mm	M16 10.9	6	214 ft-lb	290 Nm
D58 (LI031)		2,36 in	60 mm	M20 10.9	12	406 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

12.12 Hydraulic cylinder for foldable booms

Check that the cylinder eye is firmly attached to the hydraulic cylinder

Required tightening torque for lock nut on hydraulic cylinder for foldable booms: **221 ft-lb / 300 Nm**

Check the screw connections on the hydraulic cylinders (Fig. 78/1) Check the screw connections on the hydraulic cylinders

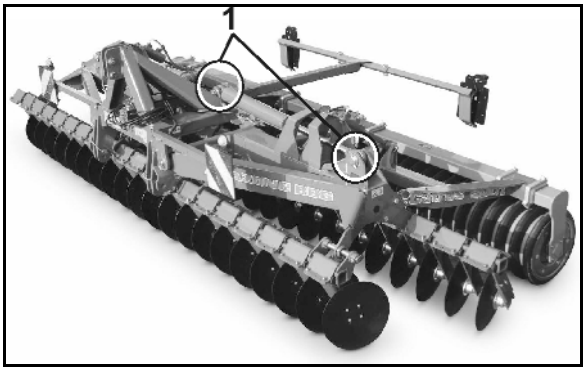


Fig. 63

Fig. 79: Specified screw-in depth

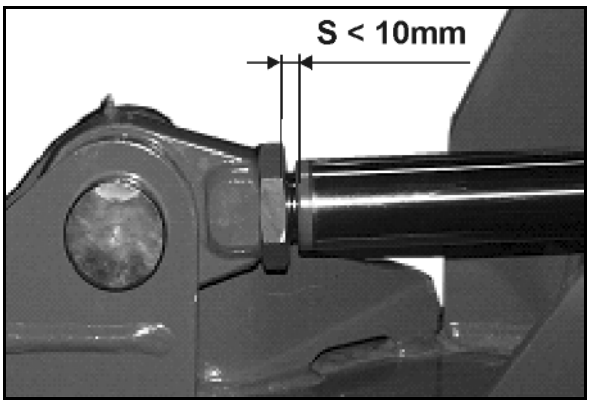


Fig. 64

Fig. 80: Tightening torque 221 ft-lb / 300 Nm

Use bolt locking compound KA071!

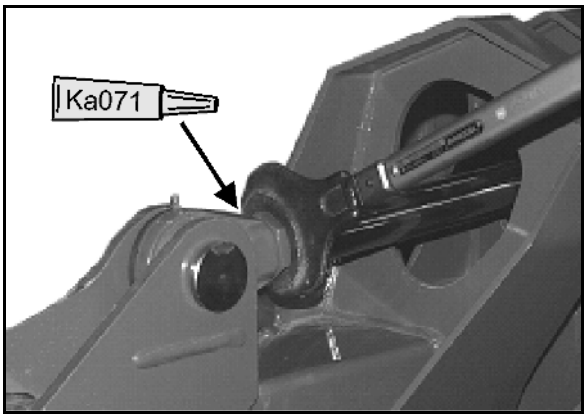


Fig. 65

12.13 Alignment of folding implements (workshop work)

WARNING
Danger of crushing due to unintentional movement of implement parts.

Only dismount the hydraulic cylinder when it is in a powerless state.

Aligning the boom parallel to the ground

Adjust the length of the hydraulic cylinder such that both lateral frames are parallel to the ground when in working position on a level surface.

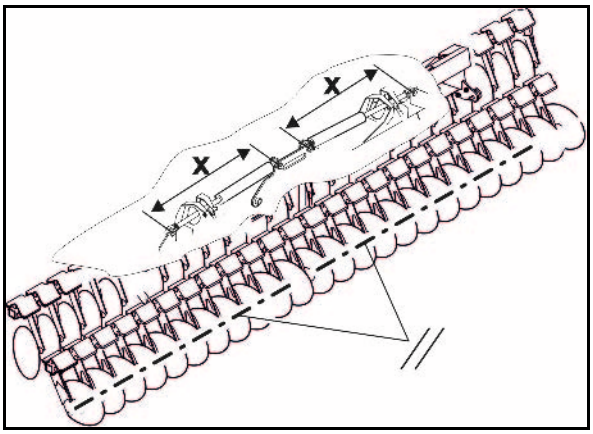


Fig. 66

Aligning the rollers with each other

Adjust the length of the completely extended hydraulic cylinder such that both rollers are at the same height when the implement is raised.

Before doing so, synchronise the hydraulic cylinders, see page 93.

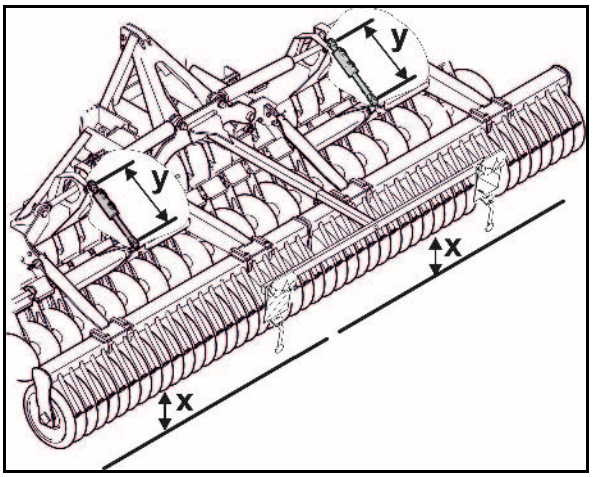


Fig. 67

12.14 Check the central lubrication

Check the pressure relief valve on the pump (1) to determine whether grease escapes.

→ If grease escapes, this indicates incorrect lubrication.

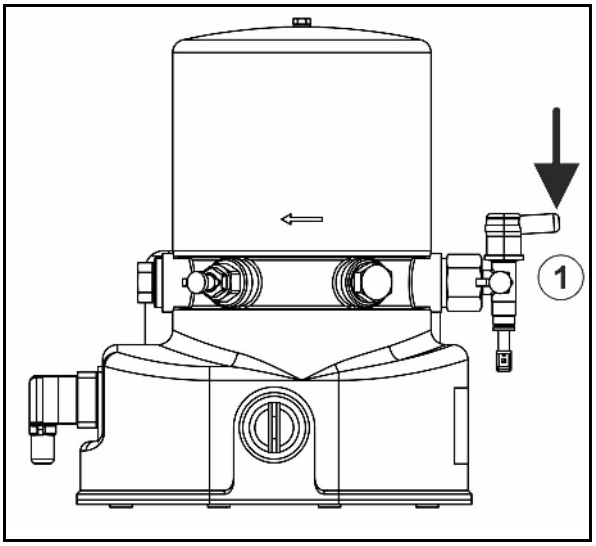


Fig. 68

Cause	Remedy
Lubricating pump with incorrect power supply	Ensure power supply of 9.6 V – 15.6 V
Pause times that are too long and lubricating intervals that are too short	Use the blue rotary knob to reduce the pause interval Use the red rotary knob to extend the lubrication interval
Grease nipple blocked	Eliminate the blockage on the grease nipple

Starting with the last distributor in the lubricating sequence, pump in grease via grease nipple (2).

If this is possible, all lubrication points on the distributor are functional.

If a non-functioning distributor was found, the lubrication points of the distributor are checked.

Here's how:

Dismount the screw-in element of a lubrication point and replace it with an M8x1 grease nipple.

Pump in grease with a grease gun.

If this is possible, the lubrication point on the distributor is functional.

If this is not possible, dismount and and clean the lubrication point.

Then check the central lubrication.

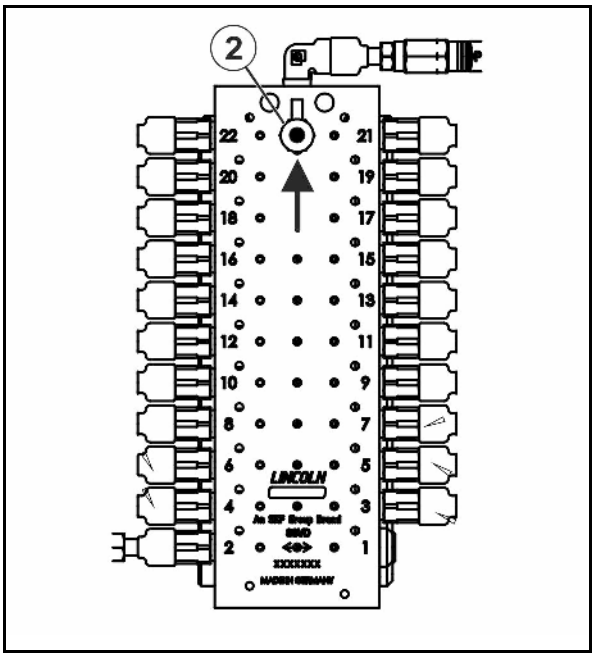


Fig. 69

Checking the central lubrication overnight:

1. Adjust the rotary knobs for time intervals as follows:
   - Rotary knob blue (1):
     3 = 3 hour pause
   - Rotary knob red (2):
     9 = 18 minute lubrication interval
2. Let the central lubrication system run overnight.

   Ensure that there is a 12 V connection in the workshop.
3. Check for grease escape at all lubrication points.
4. Restore the original settings.

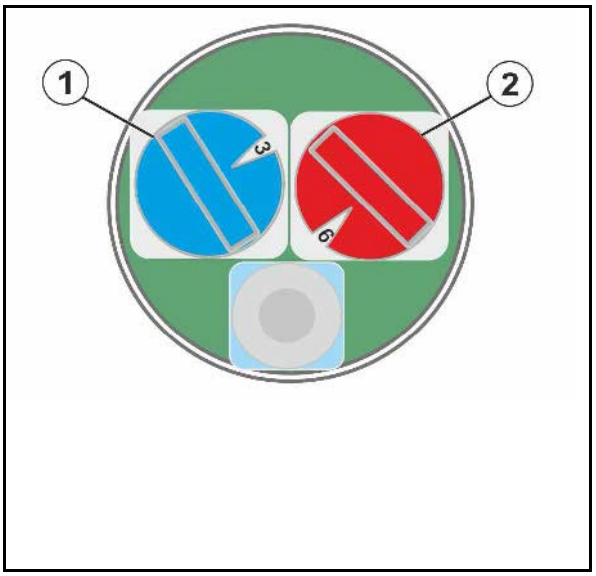


Fig. 70

12.15 Hydraulic system

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 machines, 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.

12.15.1 Labelling hydraulic hose lines

The assembly labelling provides the following information:

Fig. 86/...

(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 (3045 psi / 210 bar).

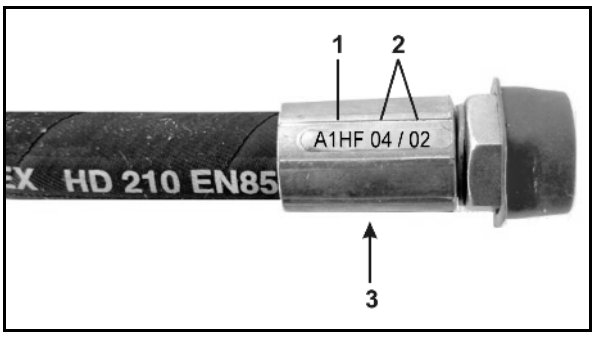


Fig. 71

12.15.2 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.

12.15.3 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".

12.15.4 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. There, avoid hose clips, which impair the natural movement and length changes of the hose.
- It is forbidden to paint over hydraulic hose lines!

12.16 Electrical lighting system

Changing bulbs

1. Unscrew safety lens.
2. Remove defective bulb.
3. Insert replacement bulb (make sure voltage and wattage is correct).
4. Fit safety lens and screw on.

12.17 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.

12.18 Hydraulics diagram

(1) Chassis hydraulics (*yellow*)

(2) Folding hydraulics (*blue*)

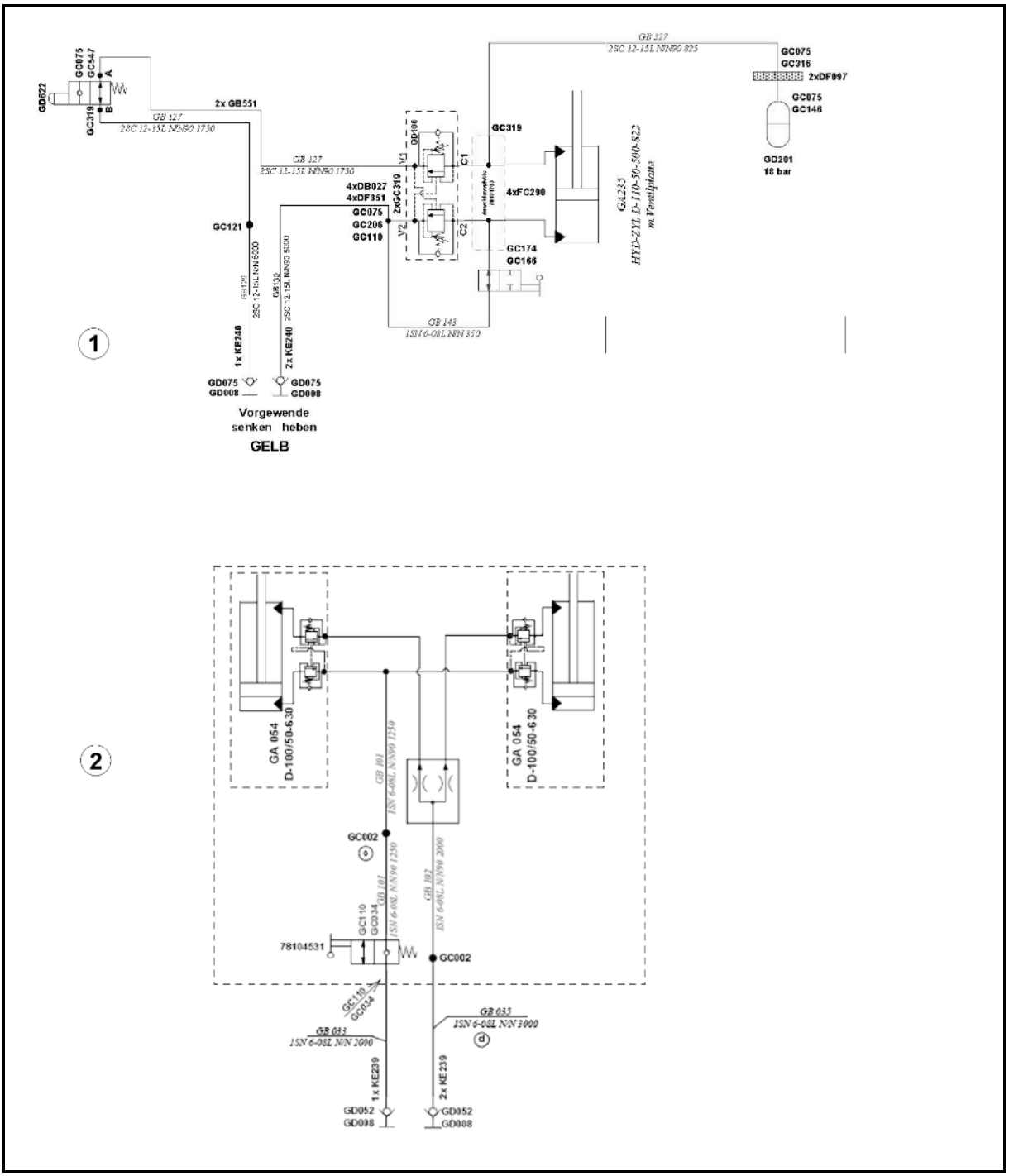


Fig. 72

Hydraulics – Set working depth (*green*)

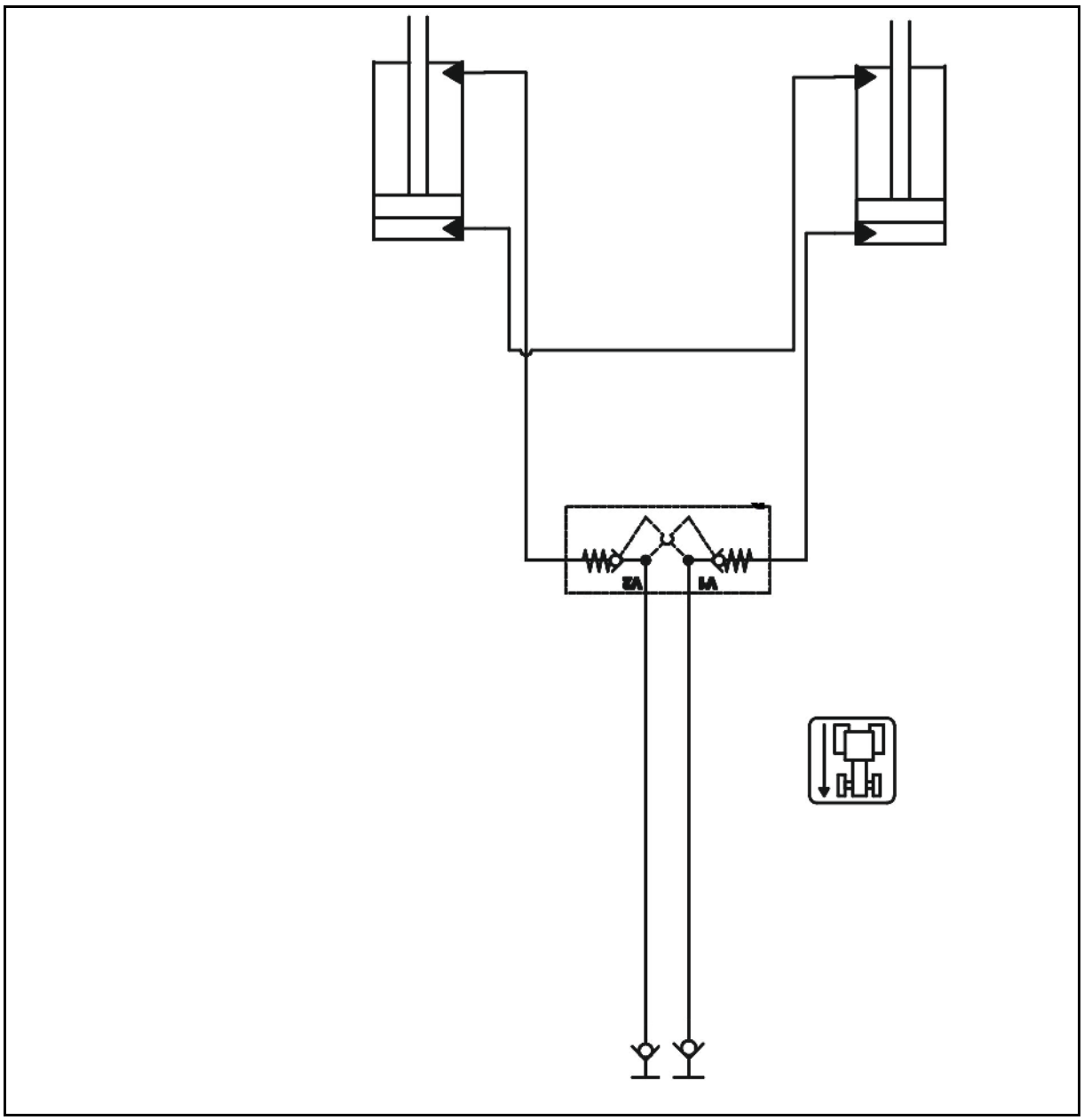


Fig. 73

Hydraulics Drawbar

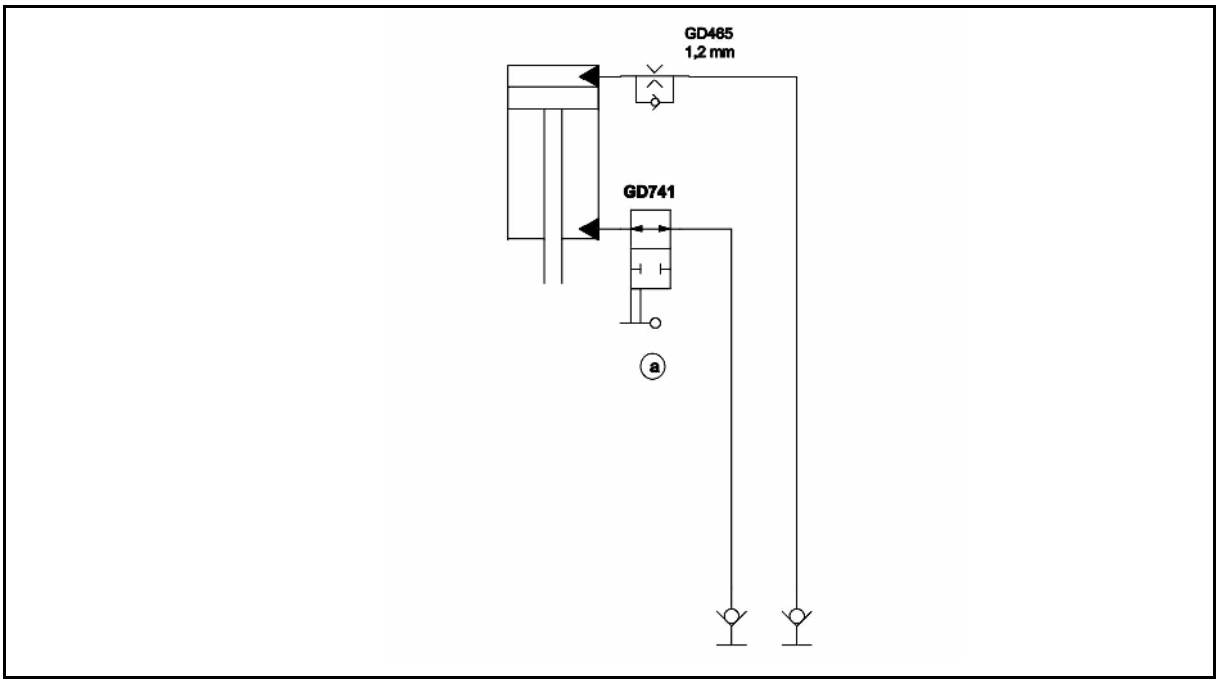
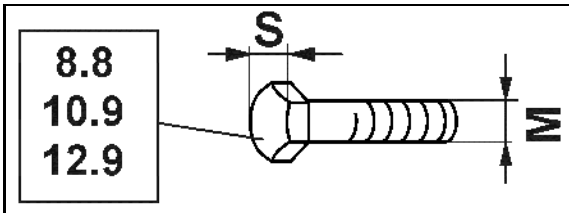
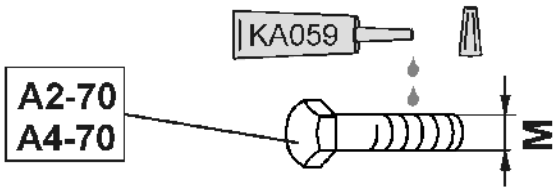


Fig. 74

12.19 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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