Original operating manual

Mounted reversible plough with depth and transport wheel

Cayros M	Cayros M V
Cayros XM	Cayros XM V
Cayros XMS	Cayros XMS V
Cayros XS	Cayros XS V
Cayros XS-Pro	Cayros XS-Pro V

SmartLearning

Please enter the identification data of the implement. The identification data can be found on the rating plate.

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About this operating manual

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CMS-T-00000081-E.1

1.1 Copyright

CMS-T-00012308-A.1

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1.2 Diagrams

CMS-T-005676-D.1

1.2.1 Warnings and signal words

CMS-T-00002415-A.1

Warnings are marked with a vertical bar with a triangular safety symbol and the signal word. The signal words *"DANGER"*, *"WARNING"* or *"CAUTION"* describe the severity of the potential danger and have the following meanings:

DANGER

- Indicates a direct threat with high risk for severe physical injury, such as loss of limbs or death.

WARNING

- Indicates a possible threat with moderate risk for severe physical injury or death.

CAUTION

- Indicates a threat with low risk for light or moderately severe physical injuries.

1.2.2 Further instructions

CMS-T-00002416-A.1

IMPORTANT

- Indicates a risk for damage to the implement.

ENVIRONMENTAL INFORMATION

- Indicates a risk for environmental damage.

NOTE

Indicates application tips and instructions for optimal use.

1.2.3 Instructions

CMS-T-00000473-B.1

Numbered instructions

CMS-T-005217-B.1

Actions that have to be performed in a specific sequence are represented as numbered instructions. The specified sequence of the actions must be observed.

Example:

1. Instruction 1
2. Instruction 2

1.2.3.1 Instructions and responses

CMS-T-005678-B.1

Reactions to instructions are marked with an arrow.

Example:

1. Instruction 1

➡ Reaction to instruction 1

2. Instruction 2

1.2.3.2 Alternative instructions

CMS-T-00000110-B.1

Alternative instructions are introduced with the word *"or"*.

Example:

1. Instruction 1

   or

   Alternative instruction

2. Instruction 2

Instructions with only one action

CMS-T-005211-C.1

Instructions with only one action are not numbered, but rather shown with a arrow.

Example:

▶ Instruction

Instructions without sequence

CMS-T-005214-C.1

Instructions that do not require a specific sequence are shown as a list with arrows.

Example:

▶ Instruction

▶ Instruction

▶ Instruction

1.2.4 Lists

CMS-T-000024-A.1

Lists without an essential order are shown as a list with bullets.

Example:

- Point 1
- Point 2

1.2.5 Item numbers in figures

CMS-T-000023-B.1

A framed number in the text, e.g. a 1, indicates an item number in an adjacent figure.

1.2.6 Direction information

CMS-T-00012309-A.1

Unless otherwise specified, all directions are always seen in the direction of travel.

1.3 Other applicable documents

CMS-T-00000616-B.1

A list of other applicable documents can be found in the Appendix.

1.4 Your opinion is important

CMS-T-000059-C.1

Dear reader, our operating manuals are updated regularly. Your suggestions for improvement help us to create ever more user-friendly operating manuals. Please send us your suggestions by post, fax or email.

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Safety and responsibility 2

CMS-T-00005276-D.1

2.1 Basic safety instructions

CMS-T-00005277-D.1

2.1.1 Meaning of the operating manual

CMS-T-00006180-A.1

Observe the operating manual

The operating manual is an important document and a part of the implement. It is intended for the user and contains safety-related information. Only the instructions provided in the operating manual are reliable. If the operating manual is not observed, it can result in serious injury or death.

- ► The safety section must be completely read and observed before initial operation of the implement.
- ► Before starting work, also read and observe each section of the operating manual.
- ► Keep the operating manual in a safe place.
- ► Keep the operating manual available.
- ► Hand over the operating manual to the subsequent user.

2.1.2 Safe operating organisation

CMS-T-00002302-C.1

2.1.2.1 Personnel qualification

CMS-T-00002306-A.1

2.1.2.1.1 Requirements for all persons working with the machine

CMS-T-00002310-A.1

If the machine is used improperly, people can be injured or killed. To prevent accidents due to improper use, every person who works with

the machine must meet the following minimum requirements:

- The person is physically and mentally capable of controlling the machine.
- The person can safely perform work with the machine within the scope of this operating manual.
- The person understands the functioning of the machine within the scope of their work and can recognise and prevent dangers arising during operation.
- The person head understood the operating manual and can implement the information that is conveyed in the operating manual.
- The person must be familiar with safe driving of vehicles.
- For road travel, the person knows the relevant road traffic regulations and has the prescribed driving permit.

2.1.2.1.2 Qualification levels

CMS-T-00002311-A.1

For working with the machine, the following qualification levels are provided:

- Farmer
- Agricultural helper

As a matter of principle, the activities described in this operating manual can be performed by persons with the qualification level "Agricultural helper".

2.1.2.1.3 Farmer

CMS-T-00002312-A.1

Farmers use agricultural implement to cultivate fields. They decide on the use of an implement for a specific purpose.

Farmers are basically familiar with working with agricultural implements and can instruct agricultural helpers in how to use the implements if necessary. They can perform odd tasks and simple maintenance and repair work on agricultural implements themselves.

Farmers can be e.g.:

- Farmers with higher education or training from a technical college
- Farmers by experience (e.g. inherited farm, comprehensive practical knowledge)
- Contractors who work by order of farmers

Activity example:

- Safety training for agricultural helpers

2.1.2.1.4 Agricultural helpers

CMS-T-00002313-A.1

Agricultural helpers use agricultural implements by order of the farmer. They are instructed on the use of the implement by the farmer, and work independently according to the work assignment from the farmer.

Agricultural helpers can be e.g.:

- Seasonal workers and labourers
- Prospective farmers in training
- Employees of the farmer (e.g. tractor driver)
- Family members of the farmer

Activity examples:

- Driving the machine
- Adjusting the working depth

2.1.2.2 Workplaces and passengers

CMS-T-00002307-B.1

Passengers

Passengers can fall, be run over and severely injured or killed due to machine movements. Ejected objects can hit and injure passengers.

► Do not let anybody ride on the machine.

► Do not let anybody climb onto the driving machine.

2.1.2.3 Danger for children

CMS-T-00002308-A.1

Danger for children

Children cannot assess dangerous situations and can behave unpredictably. As a result, children are at a higher risk.

- Keep children away.
- *When you drive out or actuate machine movements,*
  make sure that there are no children in the danger area.

2.1.2.4 Operational safety

CMS-T-00002309-C.1

2.1.2.4.1 Perfect technical condition

CMS-T-00002314-C.1

Only use properly prepared machines

Without correct preparation according to this operating manual, operational safety of the machine is not ensured. This can result in accidents and serious personal injury or even death.

- Prepare the machine according to this operating manual.

Danger due to damage to the machine

Damage to the machine can impede the operational safety of the machine and cause accidents. This can result in serious injury or death.

- *If you suspect or observe damage,*
  secure the tractor and implement.
- Immediately fix any damage that can affect safety.
- Fix the damage according to this operating manual.
- Any damage that you cannot fix yourself according to this operating manual must be fixed by a qualified specialist workshop.

Observe the technical limit values

Non-observance of the technical limits values of the machine can result in accidents and serious personal injury or even death. Moreover, the machine can be damaged. The technical limit values can be found in the Technical Data.

- Comply with the technical limit values.

2.1.2.4.2 Personal protective equipment

CMS-T-00002316-B.1

Personal protective equipment

Wearing personal protective equipment is an important safety element. Missing or unsuitable personal protective equipment increases the risk of damage to health and personal injury. Personal protective equipment includes: work gloves, safety shoes, protective clothing, breathing protection, hearing protection, face protection, and eye protection

- ▶ Determine the personal protective equipment required for each job and have it ready.
- ▶ Use only protective equipment that is in proper condition and offers effective protection.
- ▶ Adjust the personal protective equipment to the person, e.g. the size.
- ▶ Observe the manufacturer's instructions regarding operating materials, seed, fertiliser, crop protection products, and cleaning agents.

Wear suitable clothing

Loosely worn clothing increases the risk of getting caught or entangled on rotating parts and getting stuck on protruding parts. This can result in serious injury or death.

- ▶ Wear close-fitting, snag-free clothes.
- ▶ Never wear rings, necklaces and other jewellery.
- ▶ *If you have long hair,*
  wear a hairnet.

2.1.2.4.3 Warning symbols

CMS-T-00002317-B.1

Keep warning symbols legible

Warning symbols on the machine warn you of risks in danger areas and are an important element of the machine's safety equipment. Missing warning symbols increase the risk of serious and lethal personal injury.

- ▶ Clean dirty warning symbols.
- ▶ Immediately replace any damaged and illegible warning symbols.
- ▶ Put the intended warning symbols on spare parts.

2.1.3 Recognising and preventing dangers

CMS-T-00005278-A.1

2.1.3.1 Safety hazards on the machine

CMS-T-00002318-D.1

Liquids under pressure

Escaping high pressure hydraulic fluid can penetrate into the body through the skin and cause serious personal injuries. A hole the size of a needle can already result in serious personal injuries.

- *Before you uncouple the hydraulic hose lines or check for damage,*
  depressurise the hydraulic system.
- *If you suspect damage on a pressure system,*
  have the pressure system checked by a qualified specialist workshop.
- Never look for leaks with your bare hands.
- Keep your body and face away from leaks.
- *If liquids penetrate the body,*
  consult a doctor immediately.

2.1.3.2 Danger areas

CMS-T-00005280-A.1

Dangers areas on the implement

The following basic dangers are encountered in the danger areas:

The implement and its work tools move during operation.

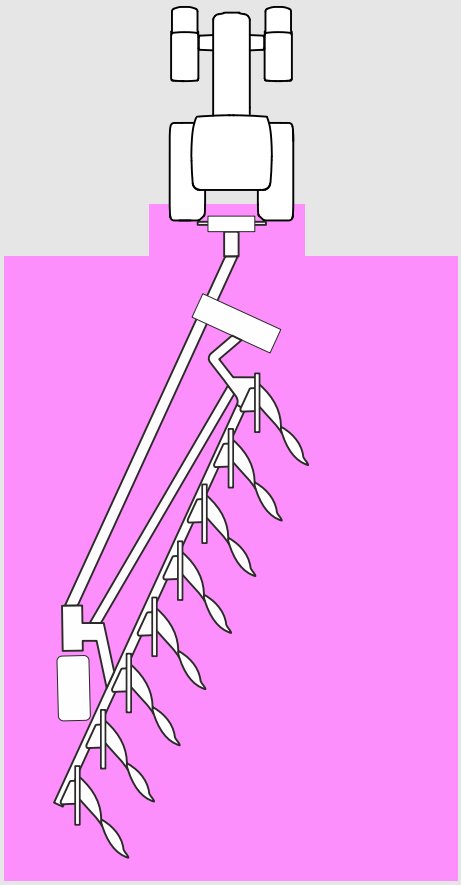
Hydraulically raised implement parts can descend unnoticed and slowly.

The machine can roll away unintentionally.

Materials or foreign objects can be ejected out of or away from the implement.

If the danger area is not observed, it can result in serious personal injury or death.

- Keep people out of the danger area of the implement.
- *If people enter the danger area,* immediately switch off the engines and drives.
- *Before you work in the danger area of the implement,* secure the machine. This also applies for quick checking work.



CMS-I-00003789

2.1.4 Safe operation and handling of the machine

CMS-T-00002304-I.1

2.1.4.1 Coupling implements

CMS-T-00002320-D.1

Coupling the implement on the tractor

Incorrectly coupling of the implement to the tractor results in hazards that can cause serious accidents.

There are crushing and shear points in the area of the coupling points between the tractor and the implement.

- *If you couple or uncouple the implement to or from the tractor,* be very careful.
- Use only suitable tractors for coupling and transporting the implement.
- *When the implement is coupled onto the tractor,* make sure that the tractor's connecting device meets the implement requirements.
- Couple the implement properly to the tractor.

2.1.4.2 Driving safety

CMS-T-00002321-E.1

Risk when driving on roads and fields

Any mounted or towed implement as well as front or rear ballast weights on the tractor influence the driving behaviour and the steering and braking power of the tractor. The driving characteristics also depend on the operating condition, the fill level of the load, and on the ground. If the driver does not take account of changing driving characteristics, he can cause accidents.

- Always ensure that the tractor's steering and braking systems are operating correctly.
- *The tractor must provide the required brake lag for the tractor and mounted implement.*
  Check the function of the brakes before moving off.
- *The tractor front axle must always be loaded with at least 20 % of the empty tractor weight to ensure sufficient steering power.*
  Use front ballast weights if necessary.
- Always attach the front or rear ballast weights properly on the specified fixing points.
- Calculate and observe the permitted payload for the mounted or towed implement.
- Observe the permissible axle loads and drawbar loads of the tractor.
- Observe the permissible drawbar load of the hitch device and drawbar.
- Drive in such a way that you always have full control over the tractor with the mounted or towed implement. In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor, and the influence of the mounted implement.

When driving on roads, risk of accident caused by uncontrolled lateral motions of the implement

- Lock the tractor lower links for road travel.

Preparing the machine for road travel

If the machine is not properly prepared for road travel, it can result in serious traffic accidents.

- Check the lighting and identification for road travel for proper function.
- Remove coarse dirt from the implement.
- Follow the instructions in the section "Preparing the implement for road travel".

Parking the implement

The parked machine can tip over. People can be crushed and killed.

- Only park the machine on stable and even ground.
- *Before you perform setting or maintenance work,*
  make sure that the implement is in a stable position. In case of doubt, support the implement.
- Follow the instructions in the section *"Parking the implement"*.

Unsupervised parking

Parked tractors with coupled implements that are insufficiently secured and unsupervised represent danger for people and playing children.

- *Before you leave the machine,*
  shutdown the tractor and the implement.
- Secure the tractor and machine.

2.1.5 Safe maintenance and modification

CMS-T-00002305-E.1

2.1.5.1 Changes on the implement

CMS-T-00002322-B.1

Only authorised design changes

Design changes and extensions can impede the functioning and operational safety of the machine. This can result in serious injury or death.

- Have any design changes and extensions performed only by a qualified specialist workshop.
- *To ensure that the operating permit remains valid in accordance with national and international regulations,*
  ensure that the specialist workshop only uses conversion parts, spare parts and special equipment approved by AMAZONE.

2.1.5.2 Work on the machine

CMS-T-00002323-D.1

Only work on the machine when it is at a standstill

If the machine is not standing still, part can move unintentionally or the machine can be set in motion. This can result in serious injury or death.

- ► Before performing any work on the machine, shutdown and secure the machine.
- ► *To immobilise the machine,*
  perform the following tasks.
- ► If necessary, secure the machine against rolling away with wheel chocks.
- ► Lower lifted loads down to the ground.
- ► Relieve the pressure in the hydraulic hose lines.
- ► *If you have to work on or under raised loads,*
  lower the loads or secure raised machine parts with a hydraulic or mechanical locking device.
- ► Switch off all drives.
- ► Actuate the parking brake.
- ► Particularly on slopes, additionally secure the machine against rolling away with wheel chocks.
- ► Remove the ignition key and carry it with you.
- ► Remove the key from the battery circuit breaker.
- ► Wait until all parts that are still running come to a stop and that hot parts cool down.

Maintenance work

Improper maintenance work, particularly on safety-related components, endangers operational safety. This can result in accidents and serious personal injury or even death. Safety-related components include, for example, hydraulic components, electronic components, frames, springs, trailer coupling, axles and axle suspensions, lines and tanks containing flammable substances.

- *Before you adjust, maintain or clean the machine,*
  secure the machine.
- Repair the machine according to this operating manual.
- Only perform the work that is described in this operating manual.
- Maintenance work that is not described in this operating manual should only be performed by a qualified specialist workshop.
- Maintenance work on safety-related components should be performed only by a qualified specialist workshop.
- Never perform welding, drilling, sawing, grinding, and cutting work on the frame, running gear or coupling devices of the implement.
- Never modify safety-related components.
- Never drill out existing holes.
- Perform all maintenance work at the prescribed maintenance intervals.

Raised implement parts

Raised implement parts can descend unintentionally and crush or kill people.

- Never linger under raised implement parts.
- *If you have to work on or under raised machine parts,*
  lower the implement parts or secure the raised implement parts with a mechanical support or hydraulic locking device.

Danger due to welding work

Improper welding work, particularly on or close to safety-related components, endangers the operational safety of the implement. This can result in accidents and serious personal injury or even death. Safety-related components include, for example, hydraulic components and electronic components, frames, springs, coupling devices to the tractor such as the 3-point mounting frame, drawbars, trailer support, trailer coupling, tensioned crosspiece as well as axles and axle suspensions, lines and tanks containing flammable substances.

- Allow only qualified specialist workshops with suitably approved personnel to perform welding work on safety-related components.
- Only allow qualified personnel to perform welding work on all other components.
- *If you have doubts as to whether a component can be welded,*
  ask a qualified specialist workshop.
- *Before welding on the implement,*
  uncouple the implement from the tractor.

2.1.5.3 Operating materials

CMS-T-00002324-C.1

Unsuitable operating materials

Operating materials that do not meet AMAZONE requirements can cause implement damage and accidents.

- Only use operating material that meet the requirements in the Technical Data.

2.1.5.4 Special equipment and spare parts

CMS-T-00002325-B.1

Special equipment, accessories, and spare parts

Special equipment, accessories, and spare parts that do not meet AMAZONE requirements can impede the operational safety of the implement and cause accidents.

- Only use original parts or parts that meet AMAZONE requirements.
- *If you have any questions regarding special equipment, accessories or spare parts,*
  contact your dealer or AMAZONE.

Intended use

3

CMS-T-00006508-A.1

- The implement is intended solely for professional use for soil tillage on agricultural crop lands according to Good Agricultural Practices.
- The implement is an agricultural implement to be mounted on the 3-point power lift of a tractor that meets the technical requirements.
- The implement is suitable and intended for inversion soil tillage.
- When driving on public roads, the implement, depending on the provisions of the applicable road traffic regulations, can be mounted and transported at the rear of a tractor that meets the technical requirements.
- The implement may only be used and maintained by persons who fulfil the requirements. The personnel requirements are described in the section *"Personnel qualification"*.
- The operating manual is part of the implement. The implement is solely intended for use in compliance with this operating manual. Uses of the implement that are not described in this operating manual can lead to serious personal injuries or even death and to implement and material damage.
- The applicable accident prevention regulations as well as generally accepted safety-related, occupational health and road traffic regulations must also be observed by the users and the owner.
- Further instructions for intended use in special cases can be requested from AMAZONE.
- Uses other than those specified under the intended use are considered as improper. The manufacturer is not liable for any damage resulting from improper use, solely the operator is responsible.

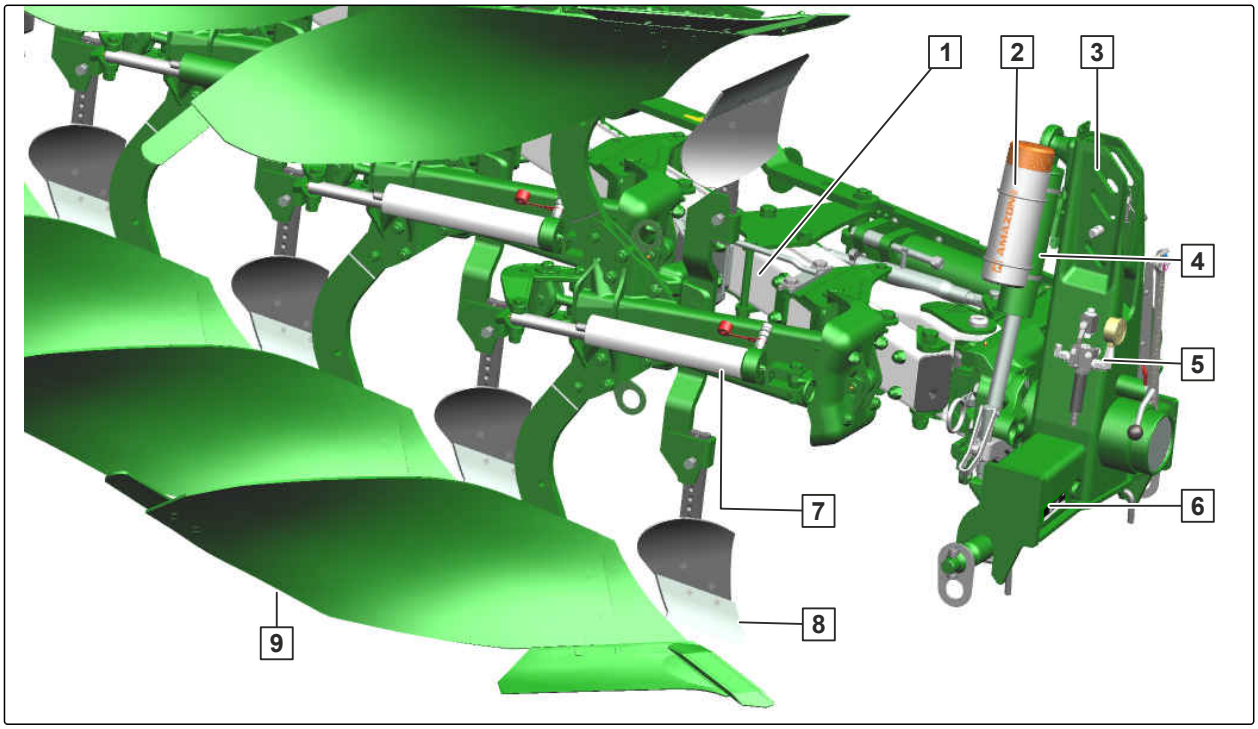
Product description

4

CMS-T-00007827-C.1

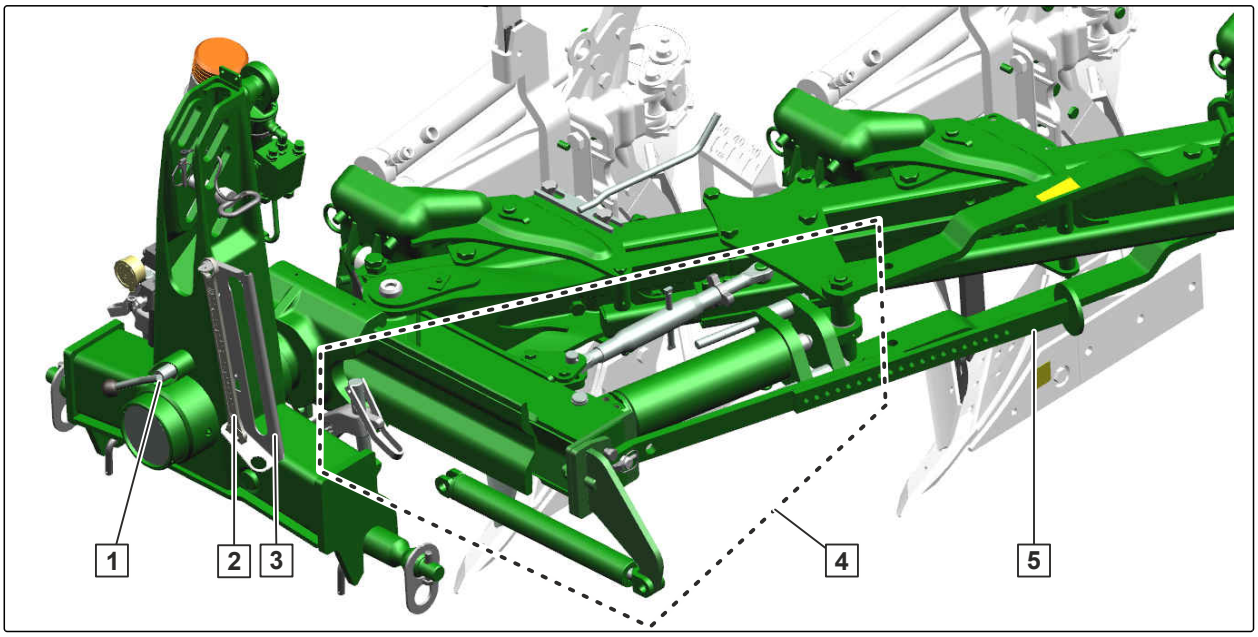
4.1 Implement overview

CMS-T-00007835-A.1



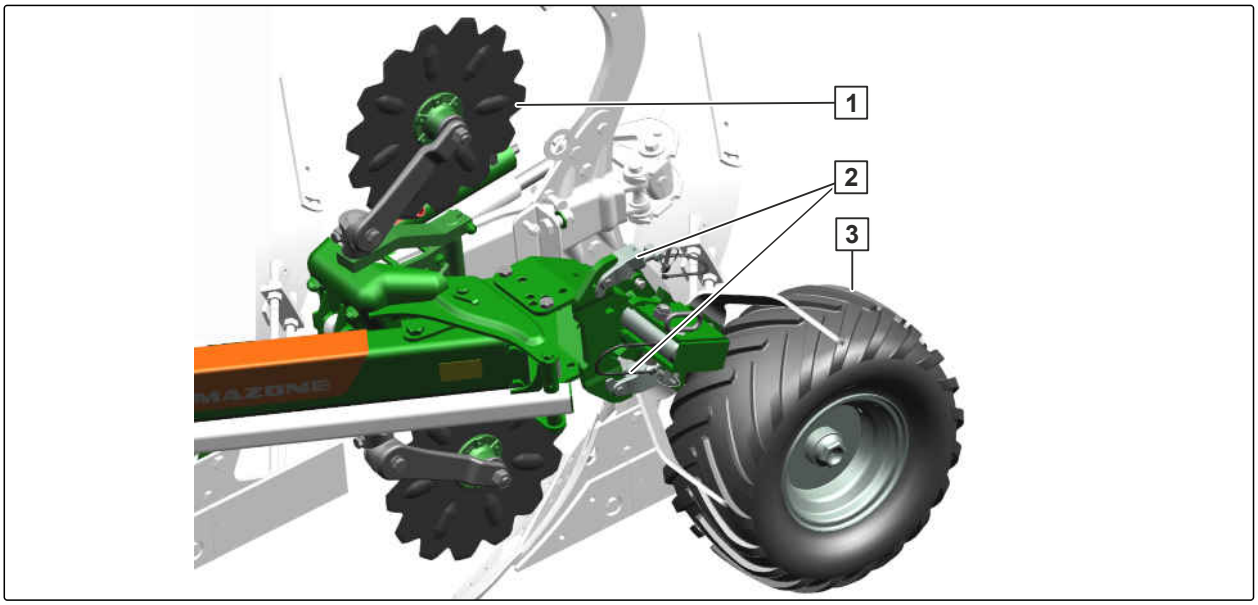
CMS-I-00005454

1	Beam	2	Threaded cartridge
3	Headstock	4	Turning cylinder
5	Adjustment unit of the hydraulic overload safety	6	Implement rating plate
7	Hydraulic overload safety	8	Skimmer
9	Plough body		



CMS-I-00005455

1 Transport lock
2 Wrench
3 Hose cabinet
4 Adjustment Centre
5 Parking support



CMS-I-00005456

1 Disc coulter
2 Working depth adjustment
3 Depth and transport wheel

4.2 Function of the implement

CMS-T-00007837-A.1

The mounted reversible plough has the following functions:

- The plough is an agricultural implement for loosening and turning over arable soil in the tillage horizon area.
- A plough can turn the soil to the right or to the left.
- To turn the soil towards the same side when driving back, the plough is lifted and rotated to the other side after turning at the end of the field.
- The front furrow width is adjustable.
- The working width can be manually adjusted in stages or, with the Cayros V, infinitely adjusted hydraulically.

4.3 Special equipment

CMS-T-00007832-A.1

Special equipment is equipment that is not fitted on the implement or is only available in certain markets. The sales documents provide information on the equipment of your implement, or consult your dealer for more detailed information.

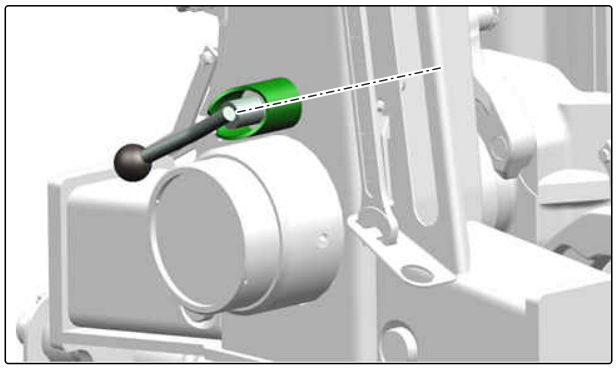
Special equipment:

- Skimmer
- Disc coulter
- Landside protector
- Landside coulter
- Trashboard
- Subsoiler point
- Scraper
- Packer arm for catch hooks
- Depth and transport wheel
- Quick-coupling adapter
- Swivelling beam
- LED rear lighting for road travel
- Hydraulic overload safety
- Semi-automatic overload safety
- Hydraulic working width adjustment

4.4 Protective device

CMS-T-00007830-A.1

The transport lock secures the implement in transport position.



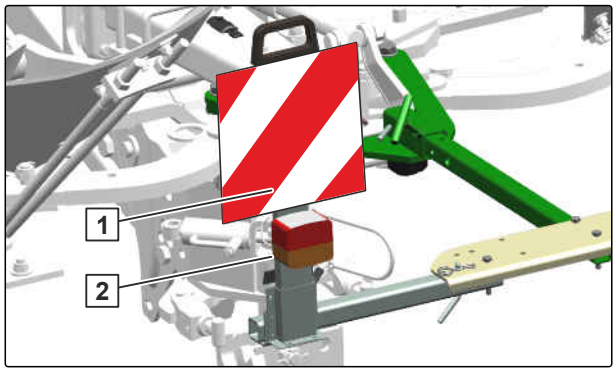
CMS-I-00005469

4.5 Rear lighting and identification for road travel

CMS-T-00007829-A.1

1 Warning sign

2 Rear lights, brake lights, and turn indicators



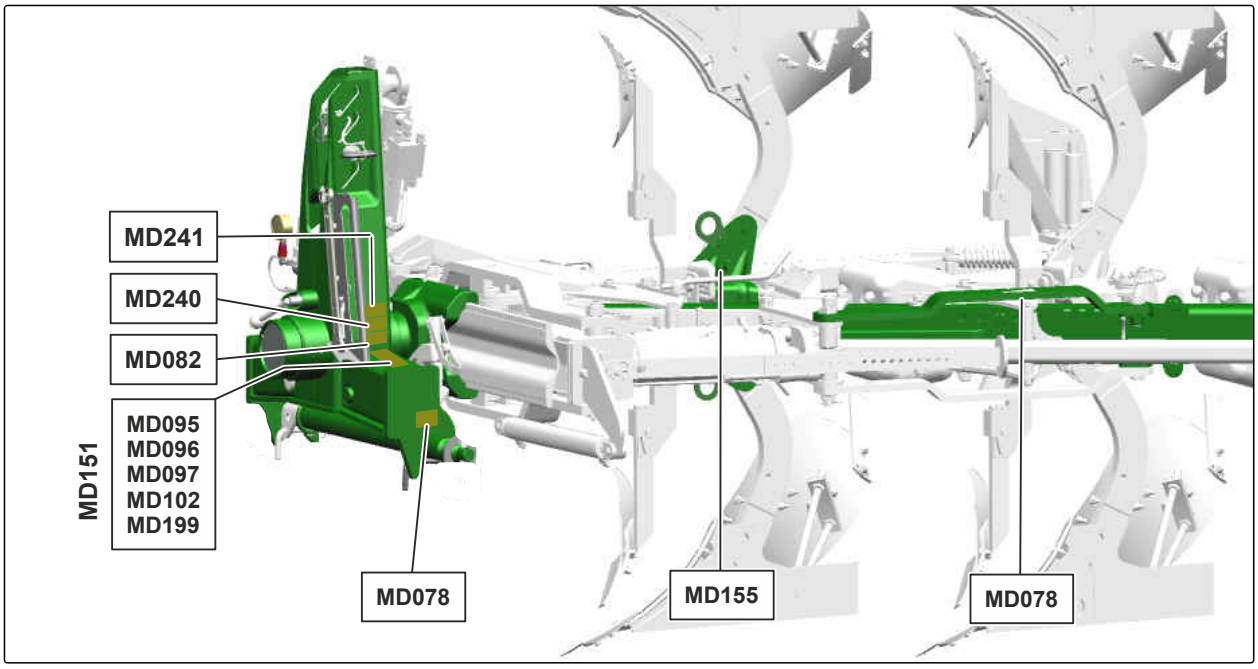
CMS-I-00005470

4.6 Warning symbols

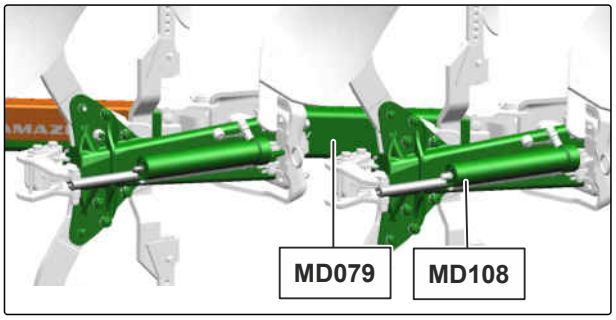
CMS-T-00007834-C.1

4.6.1 Positions of the warning symbols

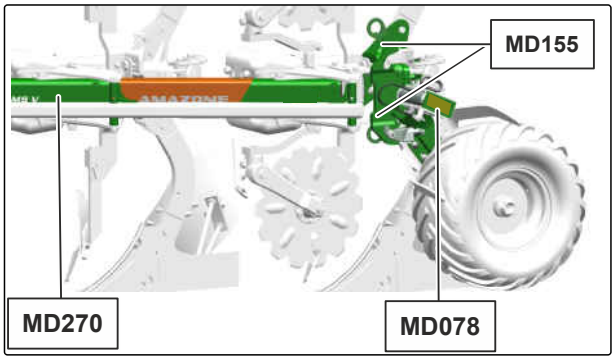
CMS-T-00007862-C.1



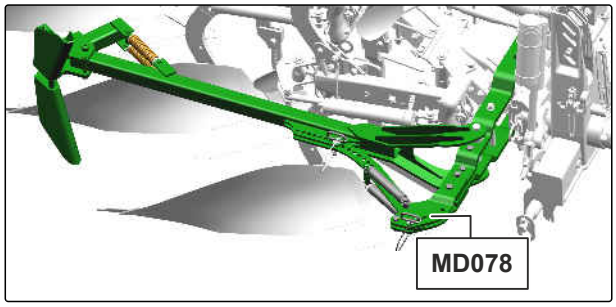
CMS-I-00005468



CMS-I-00005467



CMS-I-00005466



CMS-I-00005763

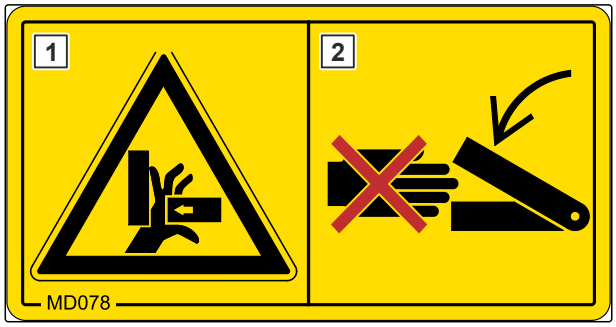
4.6.2 Layout of the warning symbols

CMS-T-000141-D.1

Warning symbols indicate danger areas on the machine and warn against residual dangers. In these danger areas, there are permanent or unexpected dangers.

A warning symbol consists of two fields:

- Field 1 shows the following:
  - A pictogram depicting the danger area, surrounded by triangular safety symbol
  - The order number
- Field 2 shows a pictogram depicting how to avoid the danger.



CMS-I-00000416

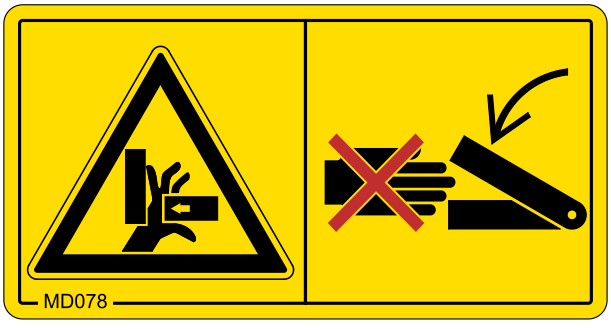
4.6.3 Description of the warning symbols

CMS-T-00007863-A.1

MD 078

Risk of crushing fingers or hands

- ▶ *As long as the tractor engine or implement motor is running,*
  stay away from the danger area.
- ▶ *If you have to move marked parts with your hands,*
  pay attention to the crushing areas.
- ▶ Make sure that there is nobody standing in the danger area.

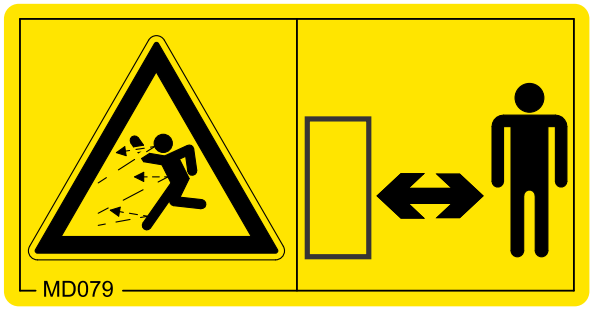


CMS-I-000074

MD 079

Danger due to ejected material

- *As long as engine of the tractor or machine is running,*
  stay away from the danger area.
- Make sure that there is nobody standing in the danger area.

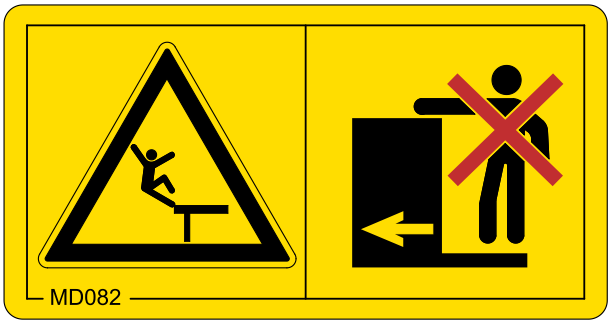


CMS-I-000076

MD 082

Risk of falling from tread surfaces and platforms

- Do not let anybody ride on the implement.
- Do not let anybody climb onto the driving implement.



CMS-I-000081

MD095

Risk of accident due to non-compliance with the instructions in this operating manual

- Before your work on or with the implement, read and understand the operating manual.

CMS-I-000138

MD 096

Risk of infection from escaping hydraulic fluid under high pressure

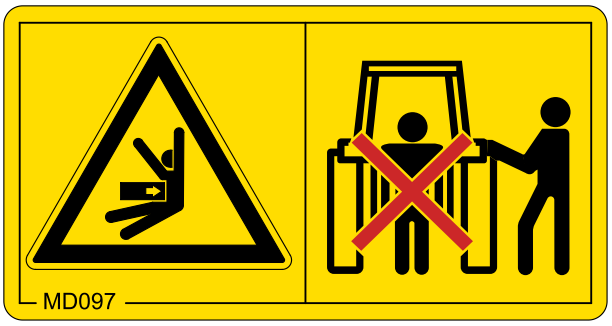
- Never look for leaks in hydraulic hose lines using your hand or fingers.
- Never attempt to plug leaks in hydraulic hose lines using your hand or fingers.
- *If you are injured by hydraulic oil,* consult a doctor immediately.

CMS-I-000216

MD 097

Risk of crushing between the tractor and the implement

- *Before you actuate the tractor hydraulic system,* instruct persons away from the area between the tractor and the implement.
- Actuate the tractor hydraulic system only from the designated work station.

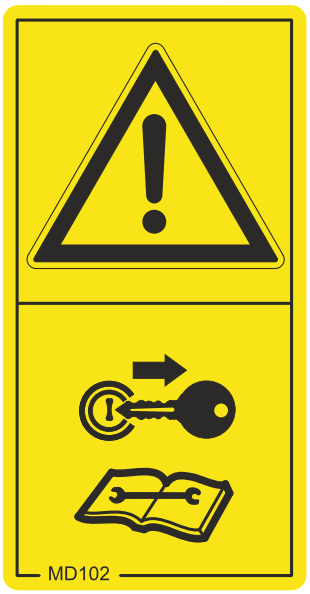


CMS-I-000139

MD 102

Risk due to unintentional starting and rolling away of the machine

- Before performing any work, secure the implement against unintentional starting and rolling away.

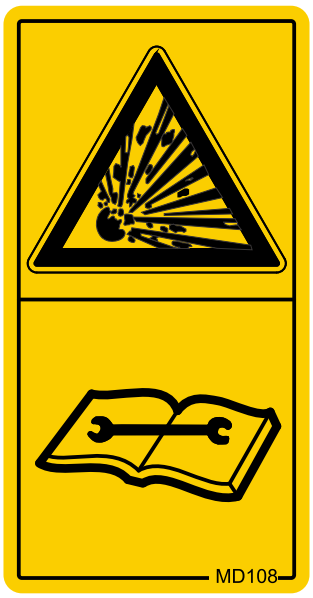


CMS-I-00002253

MD 108

Severe injuries due to incorrect handling of the hydraulic accumulator when it is under pressure

- Have the pressurised hydraulic accumulator checked and repaired only by a qualified specialist workshop.

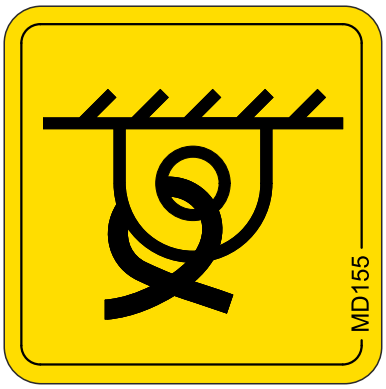


CMS-I-00004027

MD 155

Risk of accident and machine damage during transport due to improperly secured machine

- Only attach the lashing belts at the marked lashing positions for transporting the machine.

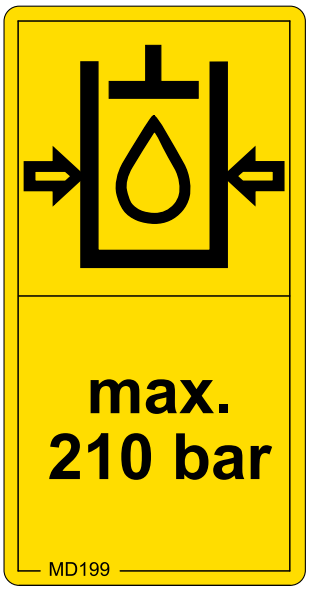


CMS-I-00000450

MD 199

Risk of accident if the hydraulic system pressure is too high

- Only couple the implement to tractors with a maximum tractor hydraulic pressure of 210 bar.

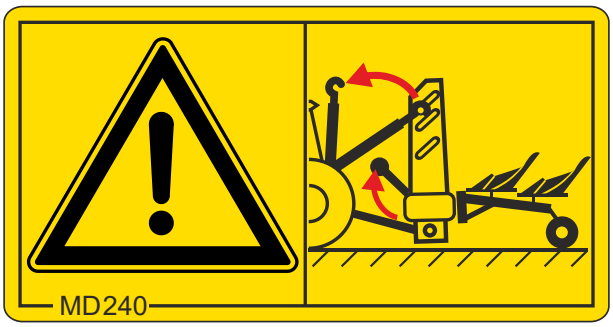


CMS-I-00000486

MD 240

Risk of accident when driving on roads due to incorrect preparation of the implement

- Prepare the implement properly for road travel.

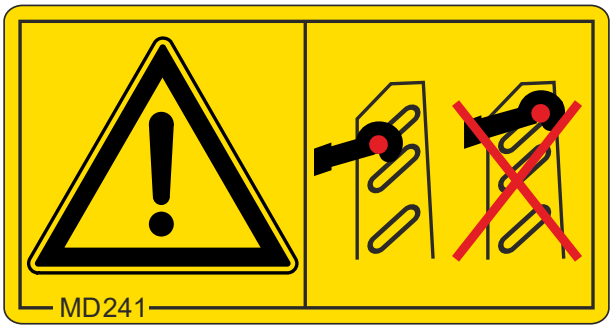


CMS-I-00004805

MD 241

Risk of accident when using the implement due to incorrect preparation of the implement

- Prepare the implement properly for operation.



CMS-I-00004804

MD 270

Risk of injury for the whole body due to swivelling and rotating of the implement

- Make sure that there is nobody standing in the danger area.

CMS-I-00005828

4.7 Rating plate on the implement

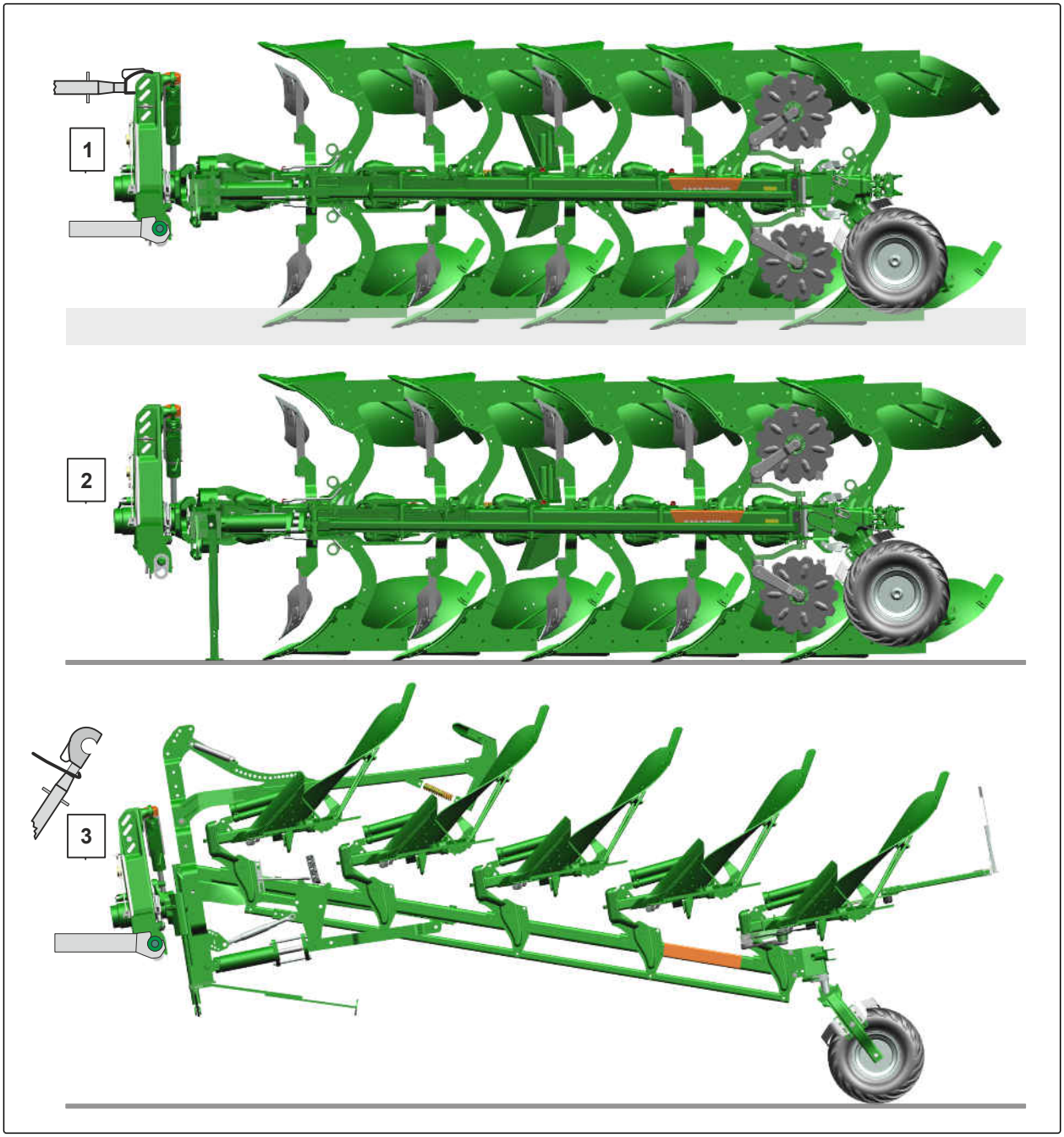
CMS-T-00004505-G.1

1. Implement number
2. Vehicle ID number
3. Product
4. Permissible technical implement weight
5. Model year
6. Year of manufacture

CMS-I-00004294

4.8 Implement positions

CMS-T-00007831-A.1



CMS-I-00005471

1 Implement in working position

2 Implement parked

3 Implement in transport position

4.9 Plough body

CMS-T-00006555-B.1

The plough bodies are selected depending on the soil properties and working conditions.

- The working width of the plough body is adjustable.
- The working width for all of the plough bodies must be adjusted the same.
- The sum of all working widths and the front furrow width corresponds to the working width implement.

Layout of the plough body

1 Plough body

2 Plough leg

3 Frog side section

4 Landside

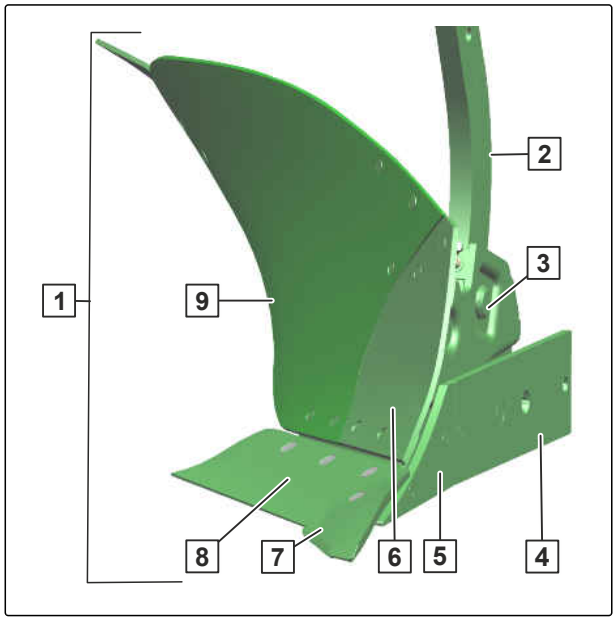
5 Landside point

6 Mouldboard front section

7 Share tip

8 Wing

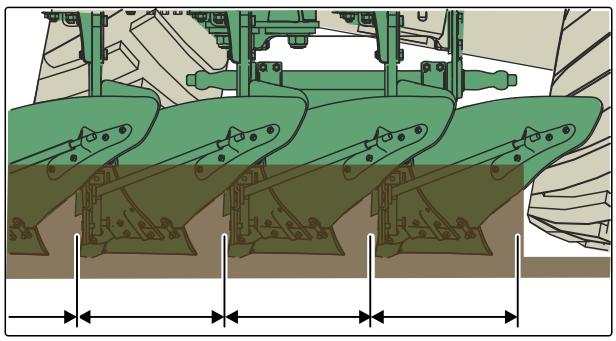
9 Mouldboard



CMS-I-00004826

Working width of the plough body

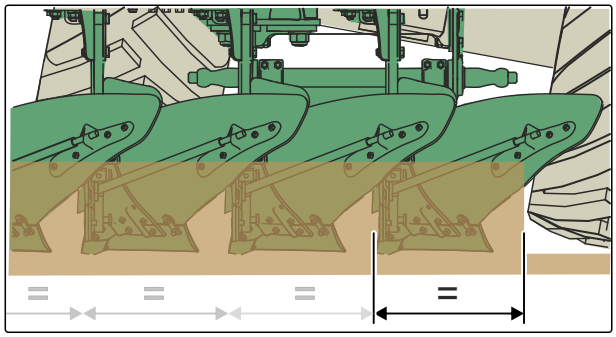
The working width is the actual cutting width of a plough body, measured at 90° to the direction of travel.



CMS-I-00002675

Front furrow width

- The front furrow width is measured from the furrow edge to the landside of the first plough body.
- The front furrow width is affected by the following factors:
  - Inner track width of the tractor
  - Working width of the plough
  - Tilt
  - Working depth



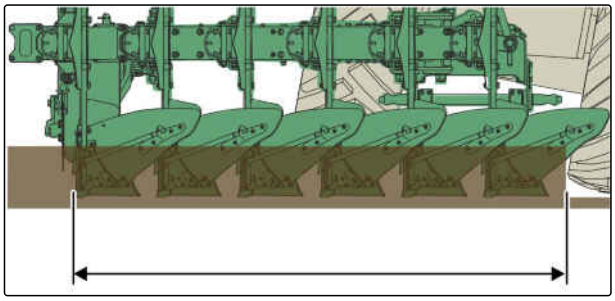
CMS-I-00002674

Working width of the plough

- The working width of the plough corresponds to the field width that is worked in one pass.

Example for 6-share plough:

Working width = 5 x working width of one plough body + front furrow width



CMS-I-00002676

4.10 Overload safety

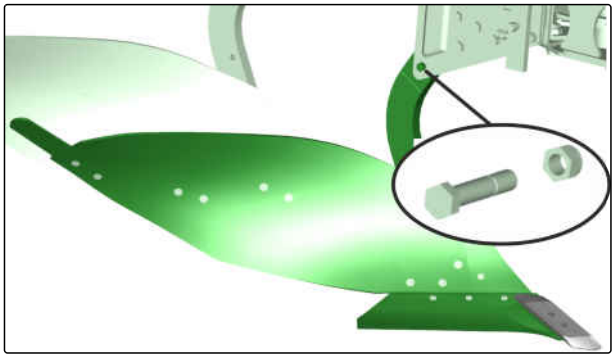
CMS-T-00008090-A.1

4.10.1 Shear bolt overload safety

CMS-T-00008489-A.1

Each plough body is protected against overload with a shear bolt.

In the event of an overload, the shear bolt shears off.



CMS-I-00003690

4.10.2 Hydraulic overload safety

CMS-T-00003656-C.1

With the overload safety, the plough bodies deflect in case of overload. Each plough body can deflect upwards or to the side individually. The pressurised hydraulic system guides the plough body back into working position.

The tripping force is adjusted with the hydraulic pressure and depends on the soil conditions.

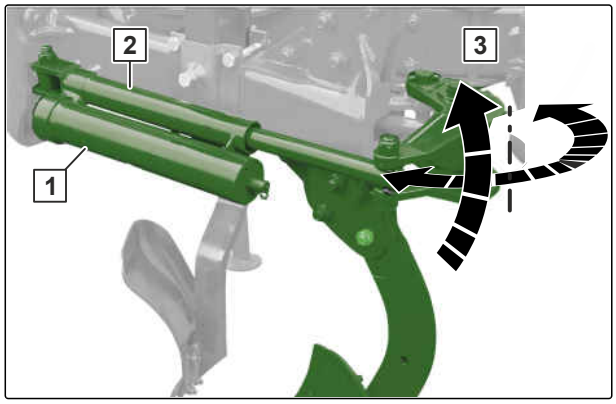
The hydraulic overload safety is available in two versions:

- The overload safety with central adjustment of the tripping force
- The overload safety with decentralised adjustment of the tripping force

1 Hydraulic cylinder

2 Hydraulic accumulator

3 Deflection



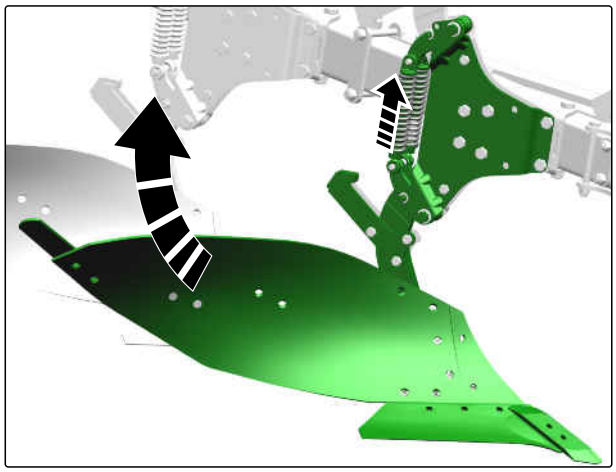
CMS-I-00003691

4.10.3 Semi-automatic overload safety

CMS-T-00008091-A.1

With the semi-automatic overload safety, the plough bodies deflect against the pressure of two springs.

The tripping force is adjusted with the spring preload and depends on the soil conditions.



CMS-I-00005603

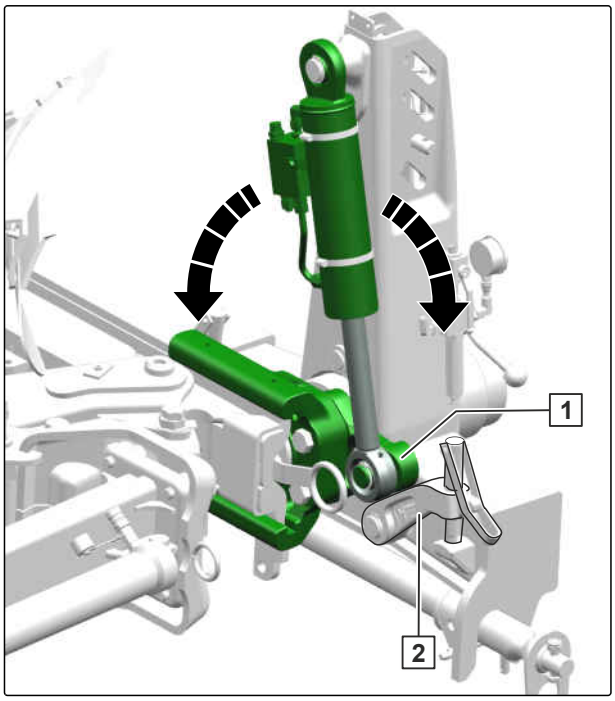
4.11 Turn-over bracket

CMS-T-00007828-A.1

The turn-over bracket [1] turns the plough bodies from one side to the other on the headlands.

The end position of the turn-over bracket determines the tilt of the plough. In the end position, the turn-over bracket rests on the adjustable stop [2].

In transport position, the turn-over bracket locks in the centre position.



CMS-I-00005472

To be able to use all of the functions of the turning procedure, a double-acting tractor control unit is required.

Special case: Turning with a single-acting tractor control unit

- A pressureless return flow to the tractor is required
- Turning back a started turning procedure is not possible.

4.12 Swivelling beam

CMS-T-00008114-A.1

The swivelling beam is hydraulically coupled with the turn-over bracket.

To reduce the lifting height, the plough beam automatically swivels towards the centre of the tractor before turning the plough bodies.

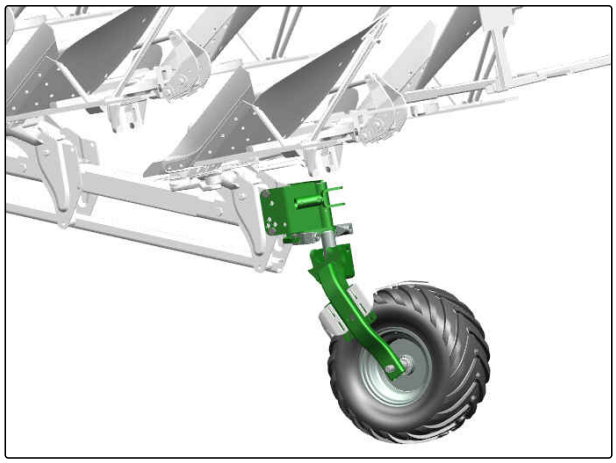
After turning, the plough beams swivels back to the set working width of the plough bodies.

4.13 Depth and transport wheel

CMS-T-00007836-A.1

The depth and transport wheel is used as a running gear wheel for road transport.

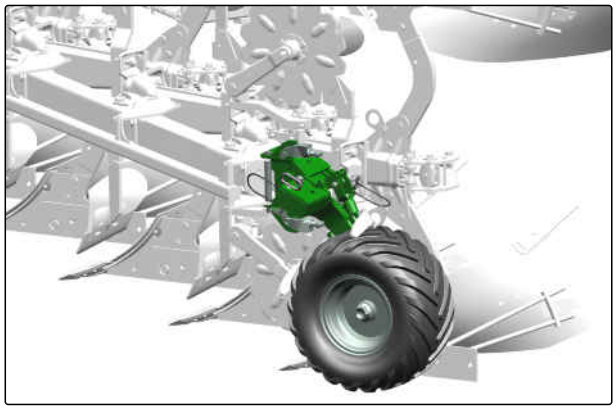
In transport position, the depth and transport wheel can be rotated around the vertical axis.



CMS-I-00005491

During operation, the depth and transport wheel is used for depth control of the plough bodies.

During operation, the working depth is adjusted manually on the depth and transport wheel.



CMS-I-00005490

4.14 Adjustment Centre

CMS-T-00007833-A.1

Cayros V

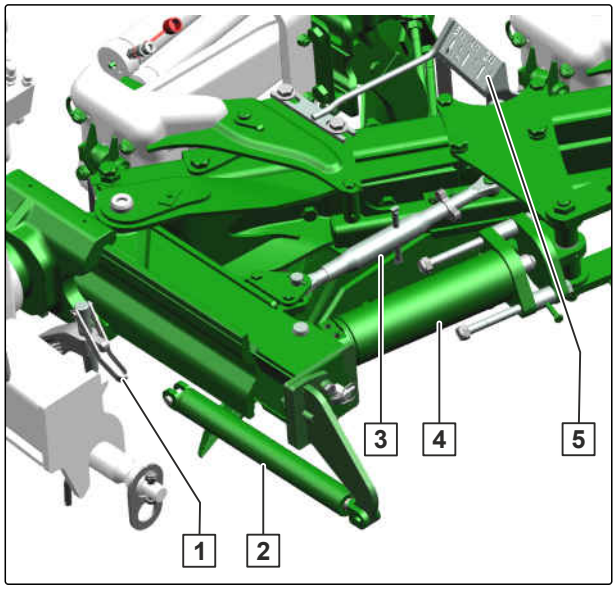
1 Tilt adjustment

2 Hydraulic front furrow width adjustment

3 Pull point adjustment

4 Hydraulic working width adjustment with or without swivelling beam and automatic pull point adjustment

5 Working width display



CMS-I-00005494

Cayros

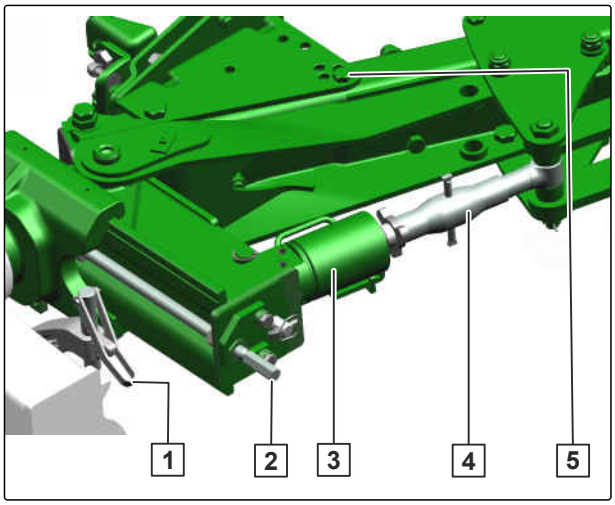
1 Tilt adjustment

2 Manual front furrow width adjustment

3 Swivelling beam

4 Pull point adjustment

5 Manual working width adjustment



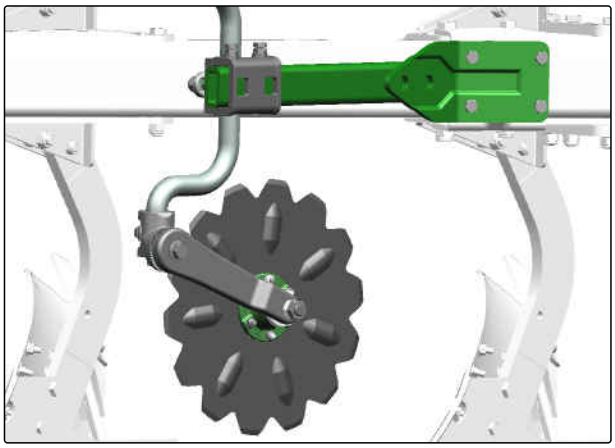
CMS-I-00005493

4.15 Disc coulter

CMS-T-00008442-A.1

The disc coulter produces a defined furrow edge.

The working depth and the distance from the disc coulter to the plough body can be adjusted.



CMS-I-00005726

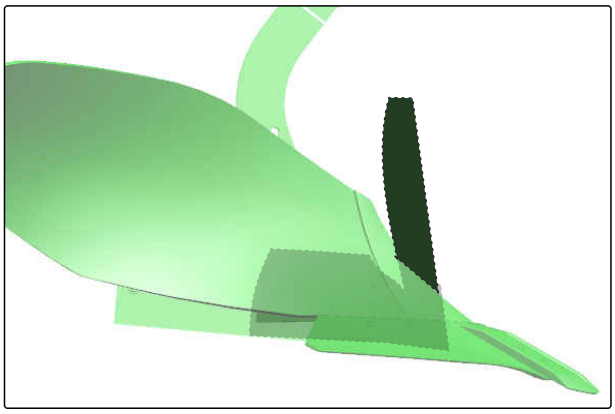
4.16 Landside coulter

CMS-T-00008523-A.1

The landside coulter can be installed on each plough body of the plough or only on the last plough body.

The landside coulter cuts a clean furrow on heavy or stony soils, and can replace the disc coulter.

The landside coulter reduces wear on the plough body.



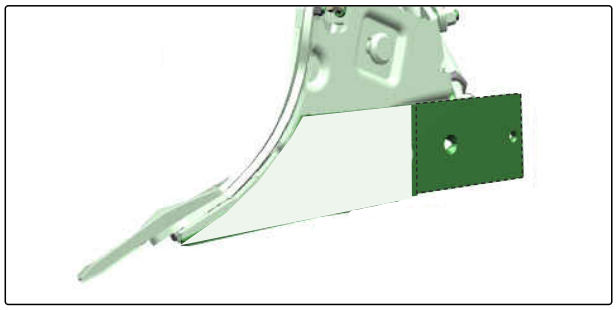
CMS-I-00005784

4.17 Landside protector

CMS-T-00006966-C.1

The landside protector is installed on the landside and increases its service life.

The landside protector gives the plough more secure lateral footing on slopes.

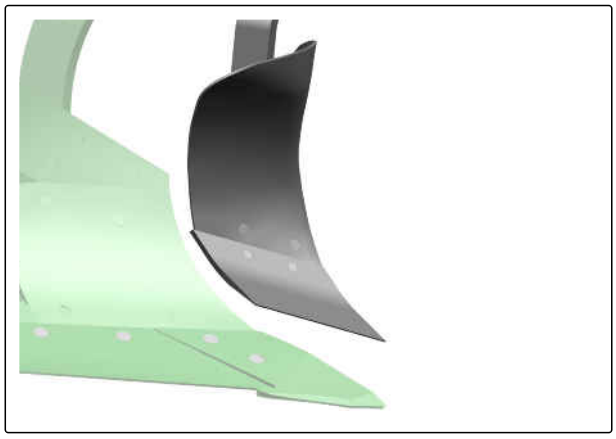


CMS-I-00004882

4.18 Skimmer

CMS-T-00006964-B.1

The skimmer is suitable for ploughing up grassland and for incorporation crop residues.



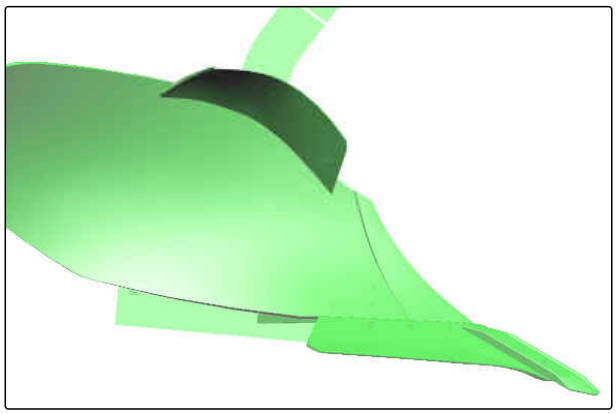
CMS-I-00004875

4.19 Trashboards

CMS-T-00008520-A.1

Trashboards are suitable for incorporating crop residues. Trashboards prevent or reduce clogging.

Trashboards are equipped with a support towards the plough leg.



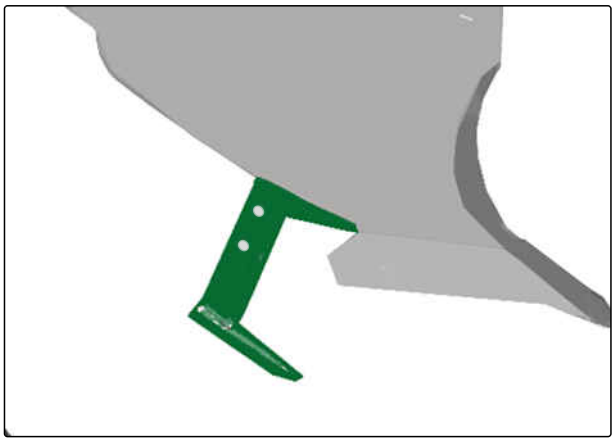
CMS-I-00005782

4.20 Subsoiler point

CMS-T-00008045-A.1

The subsoiler point ensures deep loosening of the soil underneath the plough body. As a result, the subsoiler point counteracts plough sole compaction.

The working depth of the subsoiler point is adjustable.



CMS-I-00005563

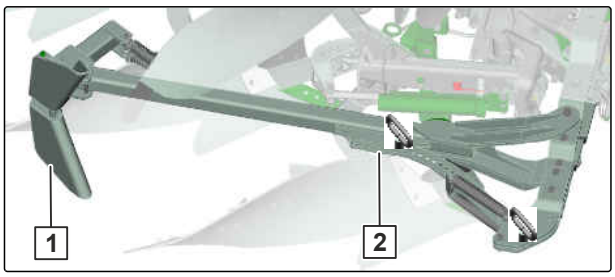
4.21 Packer arm

CMS-T-00008444-A.1

The packer arm picks up the hook linkage of the packer roller.

1 Packer catch hook with hydraulic release device

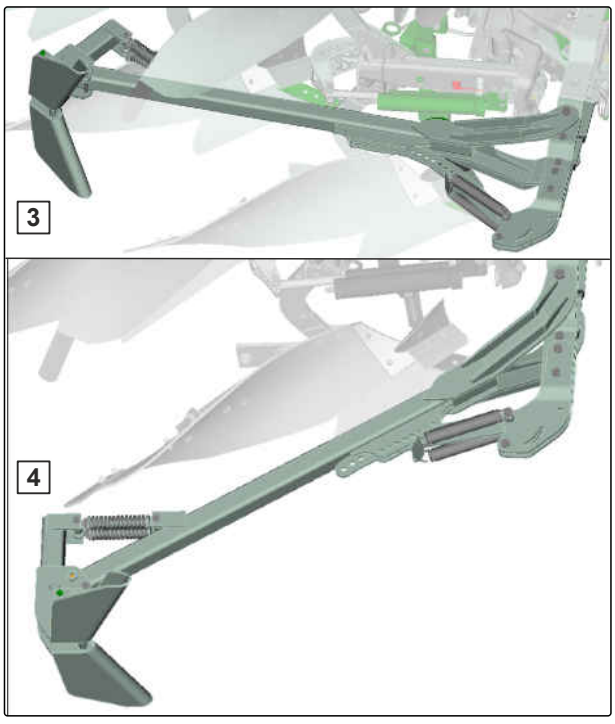
2 Swivel adjustment



CMS-I-00005733

3 Packer arm in transport position

4 Packer arm in working position



CMS-I-00005732

4.22 Threaded cartridge

CMS-T-00001776-E.1

The threaded cartridge contains the following items:

- Documents
- Aids

CMS-I-00002306

Technical data

5

CMS-T-00007795-B.1

5.1 Dimensions

CMS-T-00007798-B.1

Type	M	XM	XMS	XS	XS Pro
Longitudinal interbody clearance	85 cm, 95 cm or 102 cm	85 cm, 95 cm or 105 cm		95 cm, 105 cm or 115 cm	

Type Cayros	M	XM	XMS	XS	XS Pro
Underbeam clearance	78 cm	78 cm, 82 cm	78 cm, 82 cm	82 cm, 90 cm	82 cm, 90 cm
Working width	32 cm, 36 cm, 40 cm, 44 cm with a longitudinal interbody clearance of 85 cm cm 36 cm, 40 cm, 44 cm, 48 cm with a longitudinal interbody clearance of 95 cm or more				

Type Cayros V	M	XM	XMS	XS	XS Pro
Underbeam clearance	78 cm	78 cm	78 cm, 82 cm	78 cm, 82 cm	78 cm, 82 cm
Working width	32 cm - 52 cm				

Plough body	WY 400	WL 300	WX 400	WXL 430	S 35	WXH 400	WST 430	STU 40	UN 400/430
Minimum working depth	12 cm	12 cm	12 cm	15 cm	15 cm	15 cm	15 cm	18 cm	15/20 cm
Maximum working depth	30 cm	33 cm	25 cm	28 cm	30 cm	33 cm	33 cm	40 cm	30/40 cm
Maximum working width	50 cm	55 cm	50 cm	55 cm	50 cm	55 cm	55 cm	55 cm	50 cm

Centre of gravity distance d			
		Shear bolt overload safety	Hydraulic overload safety
Cayros M	2 plough body pairs	0.8 m	0.9 m
Cayros M	3 plough body pairs	1.1 m	1.3 m
Cayros M	4 plough body pairs	1.5 m	1.7 m
Cayros XM	2 plough body pairs	0.8 m	1.1 m
Cayros XM	3 plough body pairs	1.1 m	1.5 m
Cayros XM	4 plough body pairs	1.5 m	1.9 m
Cayros XMS	3 plough body pairs	1.3 m	1.2 m
Cayros XMS	4 plough body pairs	1.55 m	1.7 m
Cayros XMS	5 plough body pairs	1.8 m	2.2 m
Cayros XS	3 plough body pairs	1.15 m	1.5 m
Cayros XS	4 plough body pairs	1.45 m	1.8 m
Cayros XS	5 plough body pairs	1.75 m	2.3 m
Cayros XS	6 plough body pairs	2.05 m	2.8 m
Cayros XS Pro	4 plough body pairs	1.8 m	1.9 m
Cayros XS Pro	5 plough body pairs	2.1 m	2.4 m
Cayros XS Pro	6 plough body pairs	2.4 m	2.9 m

5.2 Depth and transport wheel

CMS-T-00007799-B.1

Depth and transport wheel at the rear	Single or double shaft		
Diameter	60 cm	68 cm	69 cm
Width	22 cm	25 cm	32 cm

5.3 Threaded spindle length for pull point adjustment

CMS-T-00008201-B.1

5.3.1 Default dimension for manual working width adjustment

CMS-T-00008202-B.1

NOTE

The default dimensions are theoretical dimensions and can deviate from the real dimensions.

Working width		32 cm	36 cm	40 cm	44 cm	48 cm
Cayros M without swivelling beam		Threaded spindle length				
Longitudinal interbody clearance	85 cm	50.5 cm	49.7 cm	47.3 cm	45.7 cm	-
	95 cm or 102 cm	-	50.8 cm	48.9 cm	47.3 cm	45.7 cm
Cayros M with swivelling beam		Threaded spindle length				
Longitudinal interbody clearance	85 cm	59.2 cm	54.9 cm	52.6 cm	-	
	95 cm or 102 cm	-	59.2	57.1	54.9 cm	52.6 cm
Cayros XM without swivelling beam		Threaded spindle length				
Longitudinal interbody clearance	85 cm	62.3 cm	59.8 cm	59.1 cm	57.5 cm	-
	95 cm or 102 cm	-	62.3 cm	60.7 cm	59.2 cm	57.5 cm
Cayros XM with swivelling beam		Threaded spindle length				
Longitudinal interbody clearance	85 cm	68.3 cm	66.1 cm	63.8 cm	61.4 cm	-
	95 cm or 102 cm	-	68.3 cm	66.1 cm	63.8 cm	61.4 cm
Cayros XMS		Threaded spindle length				
Longitudinal interbody clearance	85 cm, 63.5 cm	62 cm	60.4 cm	58.8 cm	-	
	95 cm or 102 cm	-	63.5 cm	62 cm	60.4 cm	58.8 cm
Cayros XS		-	62 cm	60 cm	58.0	56.0
Cayros XS Pro		-	63.1 cm	61.1 cm	59.1 cm	57.1 cm

5.3.2 Default dimension with hydraulic working width adjustment

CMS-T-00008203-B.1

NOTE

The default dimensions are theoretical dimensions and can deviate from the real dimensions.

Longitudinal interbody clearance	85 cm	95 cm	102 cm	105 cm	115 cm
Cayros V with hydraulic working width adjustment	**Threaded spindle length**				
Cayros M	52.5 cm cm	51 cm	49.5 cm	-	-
Cayros XM or Cayros XMS	53.8 cm	52.6 cm	-	50.4 cm	-
Cayros XS or Cayros XS Pro	56 cm	55 cm	-	55 cm	55 cm

5.4 Permitted mounting categories

CMS-T-00007796-A.1

Lower link mounting	Category 2, 3, 3N, 4N

5.5 Forward speeds

CMS-T-00007917-B.1

5.5.1 Optimal working speed

CMS-T-00007800-B.1

8-10 km/h

5.5.2 Maximum transport speed

CMS-T-00007916-B.1

25 km/h

5.6 Performance characteristics of the tractor

CMS-T-00007797-B.1

Type	M	XM	XMS	XS	XS Pro
	Engine rating				
2 plough body pairs	29-59 kW / 70-80 PS				
3 plough body pairs	37-70 kW / 50-95 PS	52-88 kW / 70-120 PS	66-103 kW / 90-140 PS		
4 plough body pairs	52-88 kW / 70-120 PS	66-103 kW / 90-140 PS	70-120 kW / 95-165 PS	88-154 kW / 120-210 PS	
5 plough body pairs			88-132 kW / 120-180 PS	103-180 kW / 140-245 PS	132-240 kW / 180-330 PS
6 plough body pairs				118-206 kW / 160-280 PS	162-279 kW / 220-380 PS

Electrical system	
Battery voltage	12 V
Lighting socket	7-pin

Hydraulic system	
Maximum operating pressure	210 bar
Tractor pump output	at least 15 l/min at 150 bar
Implement hydraulic oil	HLP68 DIN51524 The hydraulic fluid is suitable for the combined hydraulic fluid circuits of all standard tractor brands.
Control units	Depending on the implement equipment

5.7 Noise development data

CMS-T-00002296-C.1

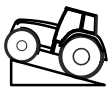
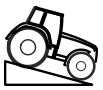
The workplace-related emission sound pressure level is lower than 70 dB(A), measured in operating condition at the ear of the tractor driver with the cab closed.

The emission sound pressure level mainly depends on the vehicle used.

5.8 Drivable slope inclination

CMS-T-00002297-E.1

Across the slope		
On left in direction of travel	15 %	
On right in direction of travel	15 %	

Up the slope and down the slope		
Up the slope	15 %	
Down the slope	15 %	

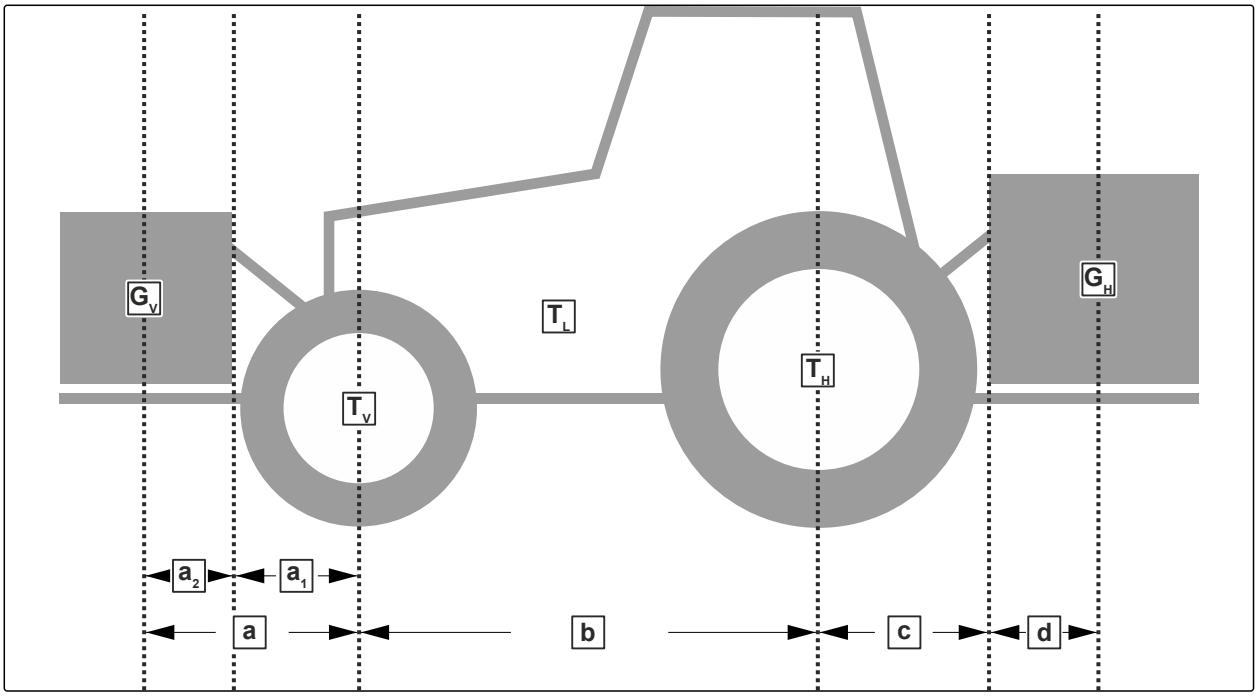
Preparing the machine

6

CMS-T-00007801-D.1

6.1 Calculating the required tractor characteristics

CMS-T-00000063-F.1



CMS-I-00000581

Designation	Unit	Description	Calculated values
T_L	kg	Tractor empty weight	
T_V	kg	Front axle load of the operational tractor without mounted implement or ballast weights	
T_H	kg	Rear axle load of the operational tractor without mounted implement or ballast weights	
G_V	kg	Total weight of front-mounted implement or front ballast	
G_H	kg	Permissible total weight of rear-mounted implement or rear ballast	
a	m	Distance between the centre of gravity of the front-mounted implement or the front ballast and the centre of the front axle	

Designation	Unit	Description	Calculated values
a_1	m	Distance between the centre of the front axle and the centre of the lower link connection	
a_2	m	Centre of gravity distance: Distance between the centre of gravity of the front-mounted implement or the front ballast and the centre of the lower link connection	
b	m	Wheelbase	
c	m	Distance between the centre of the rear axle and the centre of the lower link connection	
d	m	Centre of gravity distance: Distance between the centre of the lower link coupling point and centre of gravity of the rear-mounted implement or rear ballast.	

1. Calculate the minimum front ballasting.

$$G_{Vmin} = \frac{G_H \cdot (c + d) - T_V \cdot b + 0{,}2 \cdot T_L \cdot b}{a + b}$$

G_{Vmin} = _____

G_{Vmin} =

CMS-I-00000513

2. Calculate the actual front axle load.

$$T_{Vtat} = \frac{G_V \cdot (a + b) + T_V \cdot b - G_H \cdot (c + d)}{b}$$

T_{Vtat} = _____

T_{Vtat} =

CMS-I-00000516

3. Calculate the actual total weight of the tractor-implement combination.

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

$$G_{tat} =$$

$$G_{tat} =$$

CMS-I-00000515

4. Calculate the actual rear axle load.

$$T_{Htat} = G_{tat} - T_{Vtat}$$

$$T_{Htat} =$$

$$T_{Htat} =$$

CMS-I-00000514

5. Determine the tyre load capacity for two tractor tyres in the manufacturer specifications.

6. Write down the determined values in the following table.

IMPORTANT

Danger of accident due to implement damage caused by excessive loads

▶ Make sure that the calculated loads are smaller or equal to the permissible loads.

	Actual value according to calculation			Permitted value according to tractor operating manual			Tyre load capacity for two tractor tyres	
Minimum front ballasting		kg	≤		kg		-	-
Total weight		kg	≤		kg		-	-
Front axle load		kg	≤		kg	≤		kg
Rear axle load		kg	≤		kg	≤		kg

6.2 Coupling the implement

CMS-T-00007802-C.1

6.2.1 Locking the tractor lower links laterally

CMS-T-00007550-B.1

WARNING

When driving on roads, risk of accident caused by uncontrolled lateral motions of the implement

- ▶ Lock the tractor lower links for road travel.

- ▶ Lock the tractor lower links.

6.2.2 Checking the pre-tension of the overload safety

CMS-T-00005196-B.1

WARNING

Risk of accident due to the plough bodies with overload safety falling down

When you depressurise the hydraulic overload safety, the plough bodies fall out of their mount.

- ▶ Select a pre-tension of at least 80 bar for the overload safety.
- ▶ Always maintain pressure on the overload safety.
- ▶ Keep the stop tap of the hydraulic overload safety closed.

- ▶ Maintain the pre-tension on the plough body unit of the overload safety.

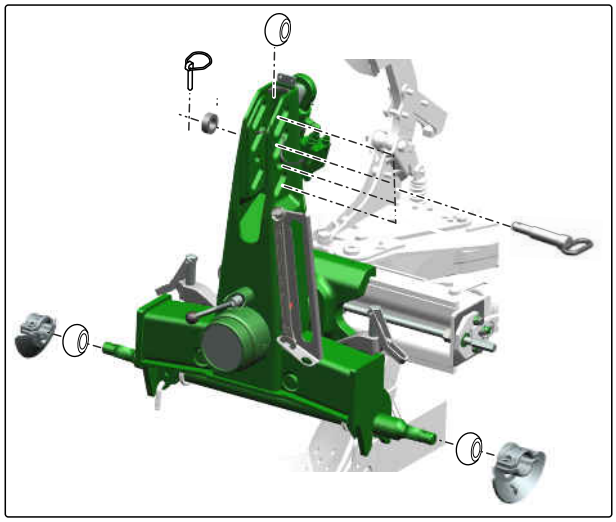
6.2.3 Preparing the headstock

CMS-T-00007809-A.1

NOTE

Use a ball sleeve without integrated catch profile.

1. Put the ball sleeve on the lower link pin.
2. Put the catch profile on the lower link pin and secure it.
3. Fasten the top link pin with the ball bushing in the elongated slot.
4. Put the bushing on the top link pin.
5. Secure the top link pin with the linch pin.



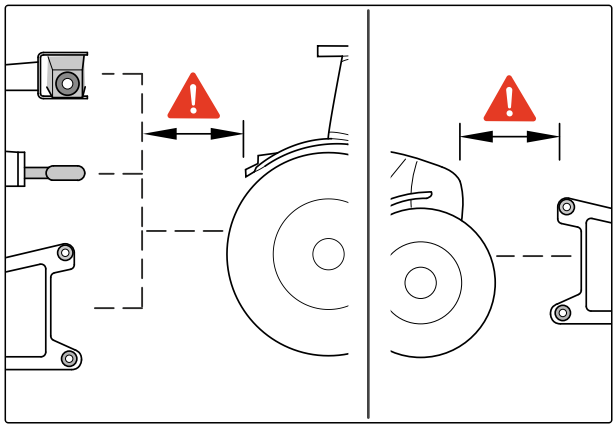
CMS-I-00005495

6.2.4 Driving the tractor towards the implement

CMS-T-00005794-D.1

Enough space must remain between the tractor and implement so that the supply lines can be coupled without obstructions.

▶ Drive the tractor towards the implement, leaving a sufficient distance.



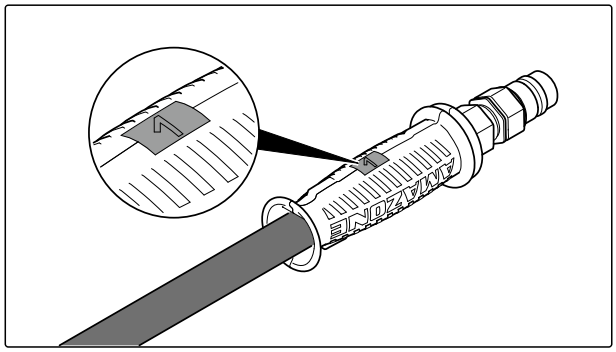
CMS-I-00004045

6.2.5 Coupling the hydraulic hose lines

CMS-T-00007810-B.1

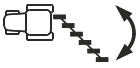
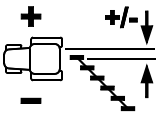
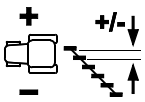
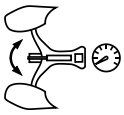
All hydraulic hose lines are equipped with handles. The handles have colour markings with a code number or a code letter. The markings are assigned to the respective hydraulic functions of the pressure line of a tractor control unit. Stickers are applied on the implement for the markings, which illustrate the respective hydraulic functions.

The tractor control unit is used with different types of actuation, depending on the hydraulic function:



CMS-I-00000121

Type of actuation	Function	Symbol
Latching	Permanent oil circulation	
Momentary	Oil circulation until action is executed	
Floating	Free oil flow in the tractor control unit	

Designation		Function			Tractor control unit	
Green			Direction of travel	Right and left	Double-acting	
				• Releasing the packer • Cancelling a started rotation		
Yellow			Front furrow width	Greater	Double-acting	
				Smaller		
Red			Working width	Greater	Double-acting	
				Smaller		
Beige			Pre-tensioning of the overload safety		Single-acting	

NOTE

When the adjustment of the front furrow width and the adjustment of the working width are coupled via a switch tap, the front furrow width is also adjusted via the *"red"* tractor control unit.

WARNING

Risk of injury or even death

If the hydraulic hose lines are incorrectly connected, the hydraulic functions may be faulty.

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

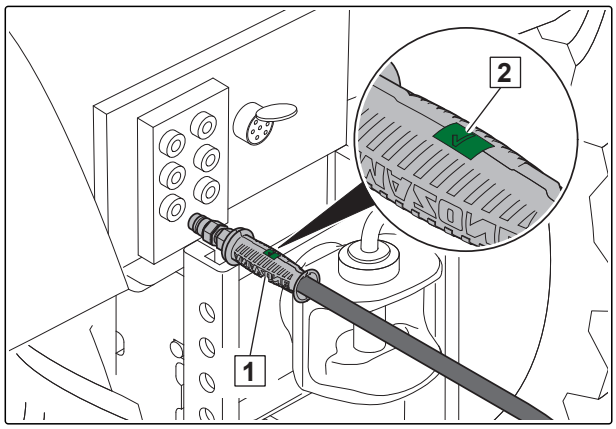
1. Depressurise the hydraulic system between the tractor and the implement using the tractor control unit.

2. Clean the hydraulic plugs.

3. Couple the hydraulic hose lines [1] to the hydraulic sockets of the tractor according to the marking [2].

➡ The hydraulic plugs lock perceptibly.

4. Route the hydraulic hose lines with sufficient freedom of movement and without chafing points.



CMS-I-00001045

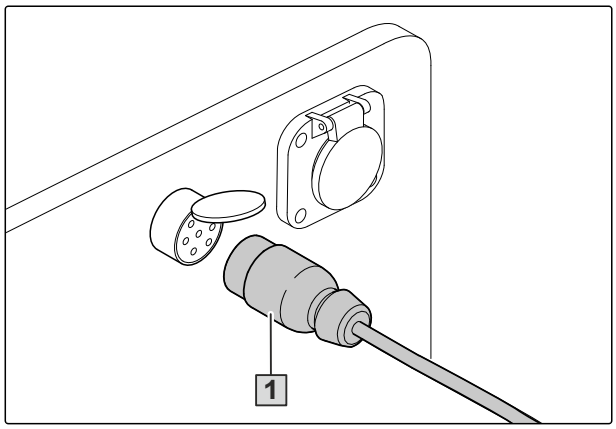
6.2.6 Coupling the power supply

CMS-T-00001399-G.1

1. Insert the plug [1] for the power supply.

2. Route the power supply cable with sufficient freedom of movement and without chafing or pinching points.

3. Check the lighting on the implement for proper function.



CMS-I-00001048

6.2.7 Coupling the tractor's lower link

CMS-T-00004294-F.1

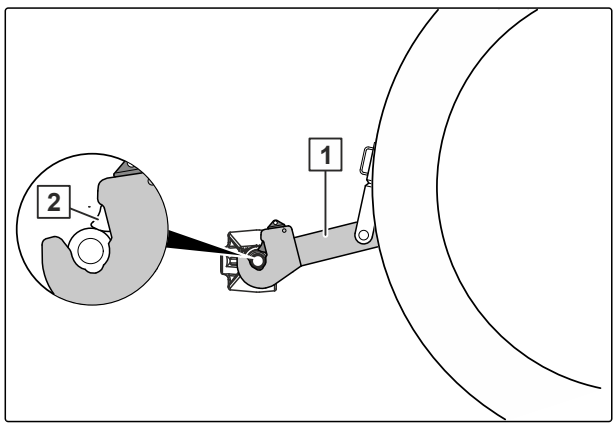
1. Set the tractor lower links [1] to the same height.

2. Drive the tractor towards the implement.

3. Couple the tractor lower links from the tractor seat.

4. Check whether the lower link catch hooks [2] are correctly locked.

5. Lock the tractor lower links laterally.

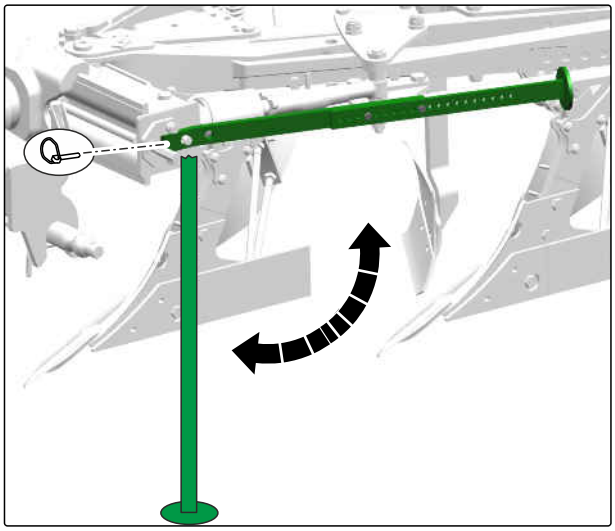


CMS-I-00003346

6.2.8 Lifting the parking support

1. Lift the implement slightly via the tractor lower link.
2. Remove the linch pin.
3. Lift the parking support.
4. Secure the parking support with the linch pin.

CMS-T-00007805-A.1



CMS-I-00005496

6.2.9 Coupling the top link

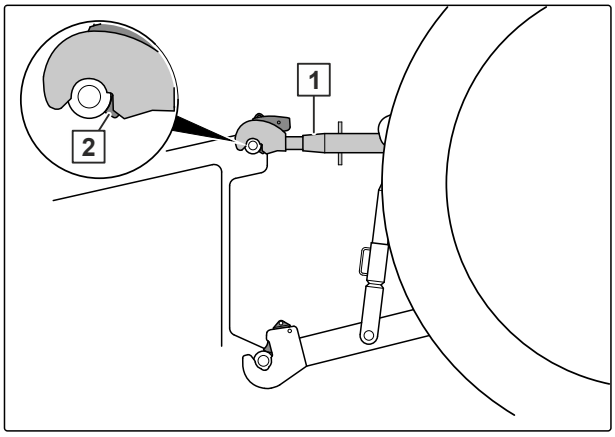
1. Lower the implement using the tractor's lower links.
2. Couple the top link 1.

NOTE

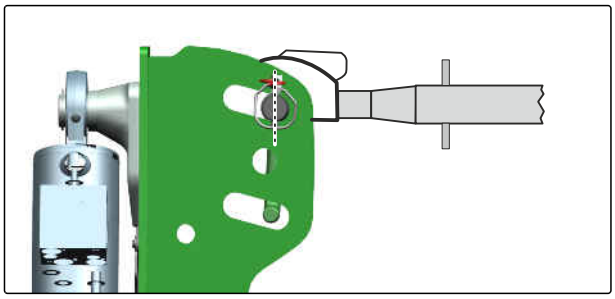
Select the coupling point on the implement side such that it is slightly higher than the coupling point on the tractor side, even during operation.

3. Check whether the top link catch hooks 2 is correctly locked.
4. Adjust the top link length so that the pin rests at the front of the slot.
5. Lift the implement using the 3-point hitch.

CMS-T-00007807-A.1



CMS-I-00003706



CMS-I-00005142

6.2.10 Moving the depth and transport wheel into transport position

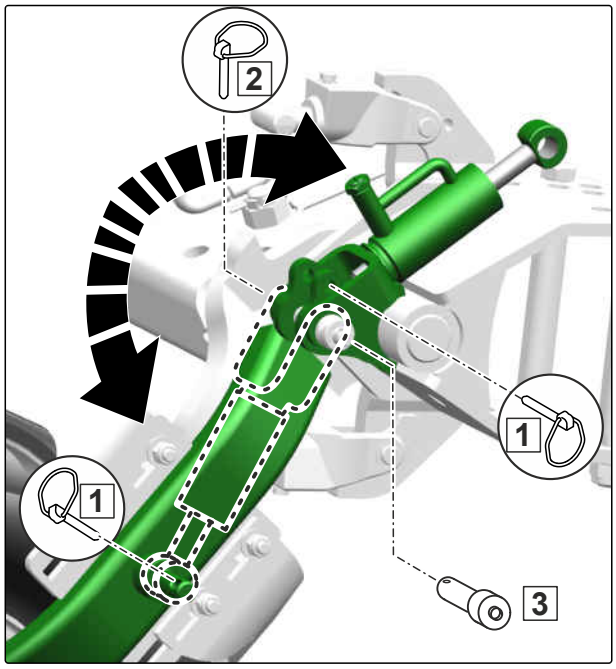
CMS-T-00007806-A.1

IMPORTANT

Risk of implement damage

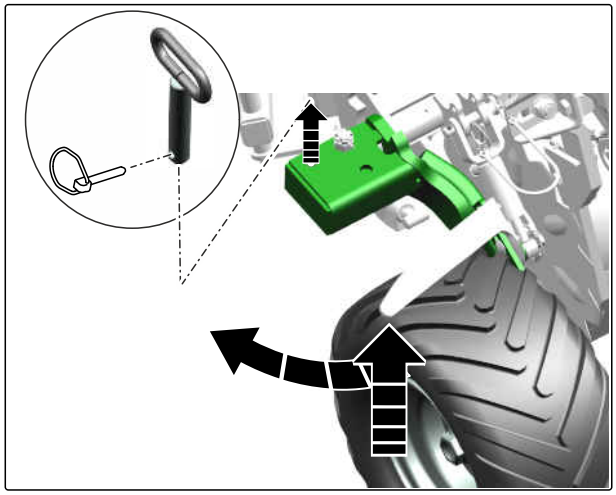
- ▶ Before road transport, move the depth and transport wheel into transport position.
- ▶ Park the implement on the depth and transport wheel.

1. Remove the linch pin **1**.
2. Remove the linch pin **2**.
3. Pull out the pin **3**.
4. Swivel up the damping cylinder into transport position.
5. Fix the position of the damping cylinder with the pin and secure using the linch pin **2**.
6. Secure the damping cylinder with the linch pin **1**.



CMS-I-00005607

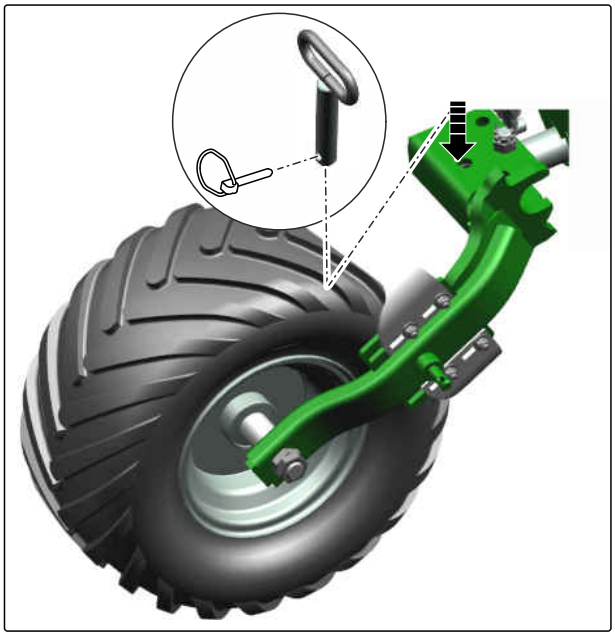
7. Pull out the pin.
8. Lift the depth and transport wheel and swivel into transport position.



CMS-I-00005502

9. Secure the depth and transport wheel with the pin.

10. Secure the pin with a linch pin.



CMS-I-00005501

6.2.11 Moving the plough body into transport position

CMS-T-00007808-A.1

1. Lock the transport lock with the hand lever.

2. Lift the implement using the 3-point hitch.

3. *To swivel the plough body,*
Actuate the *"green"* tractor control unit.

4. Pay attention to sufficient ground clearance when swivelling.

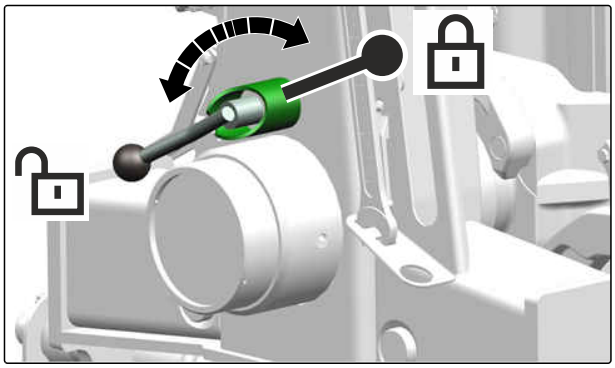
5. Check that the transport lock is engaged.

6. Lower the implement onto the depth and transport wheel by lowering the 3-point hitch.

7. Align the depth and transport wheel in the direction of travel by driving forward in a small curve.

8. Uncouple the unloaded top link.

9. For road transport, lift the implement as far as it goes using the tractor lower links.

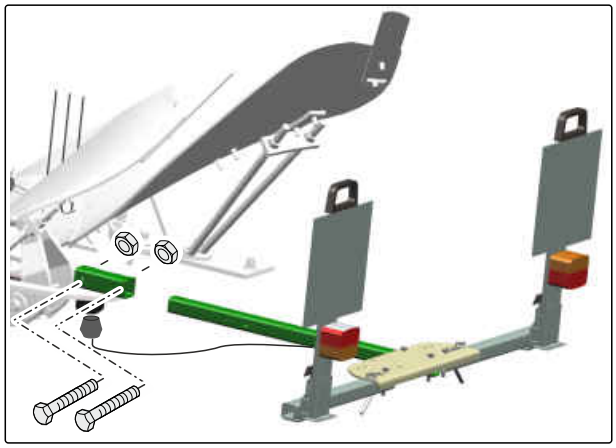


CMS-I-00005500

6.2.12 Installing the rear lighting

CMS-T-00007804-A.1

1. Insert the rear lighting in the mount.
2. Secure the rear lighting with 2 bolts.
3. Insert the plug for the power supply into the socket.



CMS-I-00005499

6.3 Preparing the implement for operation

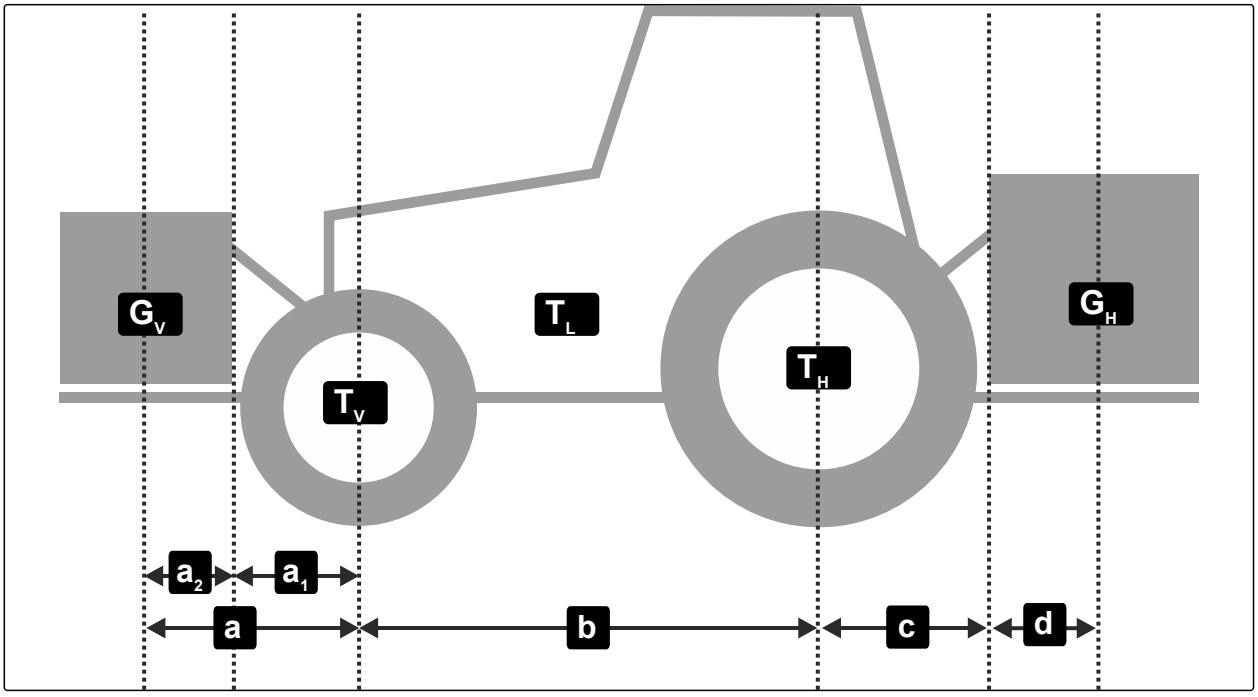
CMS-T-00007811-C.1

6.3.1 Preparing for initial operation

CMS-T-00008453-D.1

6.3.1.1 Calculating the required tractor characteristics

CMS-T-00000063-E.1



CMS-I-00000581

Designation	Unit	Description	Calculated values
T_L	kg	Tractor empty weight	
T_V	kg	Front axle load of the operational tractor without mounted implement or ballast weights	
T_H	kg	Rear axle load of the operational tractor without mounted implement or ballast weights	
G_V	kg	Total weight of front-mounted implement or front ballast	
G_H	kg	Permissible total weight of rear-mounted implement or rear ballast	
a	m	Distance between the centre of gravity of the front-mounted implement or the front ballast and the centre of the front axle	
a_1	m	Distance between the centre of the front axle and the centre of the lower link connection	
a_2	m	Centre of gravity distance: Distance between the centre of gravity of the front-mounted implement or the front ballast and the centre of the lower link connection	
b	m	Wheelbase	
c	m	Distance between the centre of the rear axle and the centre of the lower link connection	
d	m	Centre of gravity distance: Distance between the centre of the lower link coupling point and centre of gravity of the rear-mounted implement or rear ballast.	

1. Calculate the minimum front ballasting.

$$G_{Vmin} = \frac{G_H \cdot (c + d) - T_V \cdot b + 0{,}2 \cdot T_L \cdot b}{a + b}$$

$G_{Vmin} =$ _____

$G_{Vmin} =$

CMS-I-00000513

2. Calculate the actual front axle load.

$$T_{Vtat} = \frac{G_V \cdot (a + b) + T_V \cdot b - G_H \cdot (c + d)}{b}$$

$T_{Vtat} =$ _____

$T_{Vtat} =$

CMS-I-00000516

3. Calculate the actual total weight of the tractor-implement combination.

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

$G_{tat} =$

$G_{tat} =$

CMS-I-00000515

4. Calculate the actual rear axle load.

$$T_{Htat} = G_{tat} - T_{Vtat}$$

$T_{Htat} =$

$T_{Htat} =$

CMS-I-00000514

5. Determine the tyre load capacity for two tractor tyres in the manufacturer specifications.

6. Write down the determined values in the following table.

IMPORTANT

Danger of accident due to implement damage caused by excessive loads

- Make sure that the calculated loads are smaller or equal to the permissible loads.

	Actual value according to calculation			Permitted value according to tractor operating manual			Tyre load capacity for two tractor tyres	
Minimum front ballasting		kg	≤		kg		-	-
Total weight		kg	≤		kg		-	-
Front axle load		kg	≤		kg	≤		kg
Rear axle load		kg	≤		kg	≤		kg

6.3.1.2 Preparing the tractor

CMS-T-00009557-B.1

For optimum work results, prepare the tractor for plough operation.

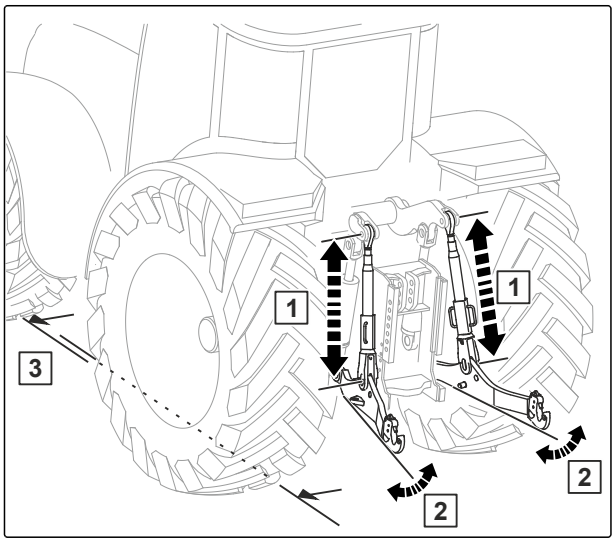
1. Select a tractor on which the track width 3 at the front and rear differs by no more than 10 cm.

2. Mounted plough: select a tractor on which the lateral play of the lower links 2 can be set to at least 8 cm.

3. Select a tractor on which the lower links run apart in a V-shape when the plough is mounted.

4. Adjust the tyre inflation pressure of the front wheels equally on both sides.

5. Adjust the tyre inflation pressure of the rear wheels equally on both sides.



CMS-I-00006537

NOTE

The required tyre load capacity must be ensured.

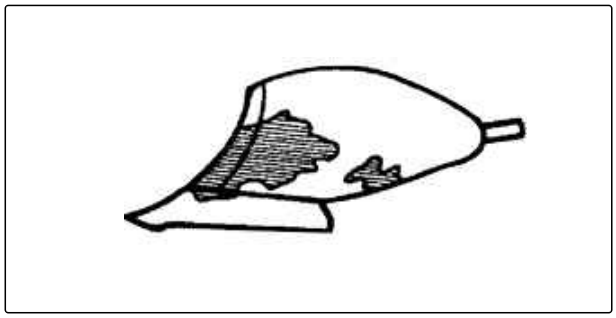
6. Adjust the lifting struts **1** to the same length.

7. Switch off the front axle suspension if possible.

6.3.1.3 Removing the protective varnish

CMS-T-00005238-A.1

- Before initial operation of the implement, remove the protective varnish from the plough bodies.



CMS-I-00003763

6.3.1.4 Preparing the central overload safety

CMS-T-00008454-B.1

WARNING

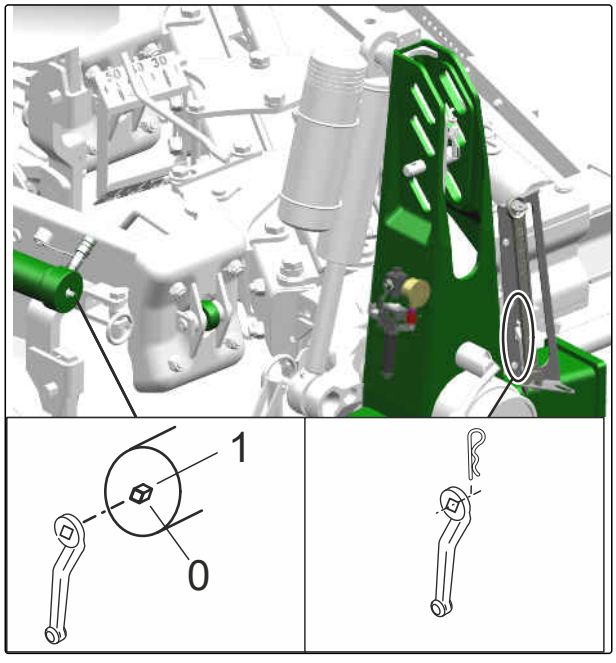
Risk of injury due to components under high pressure being thrown

- Open the bolted connection on the hydraulic accumulator up to a maximum of 180°.
- Do not completely unscrew the bolted connection.

1. Put the hand lever on the hydraulic accumulator.

2. Open the hydraulic accumulator with the hand lever.

3. Then fasten the hand lever in parking position with the spring cotter pin.



CMS-I-00005510

6.3.1.5 Configuring the operating hours counter

CMS-T-00009558-A.1

To enter the start command *"222"*, perform the steps within 3 seconds.

Otherwise, wait for at least 5 seconds and repeat the entry.

1. Hold the supplied magnet over the activation area until a display appears.

➡ The first digit shown will be a *"2"*.

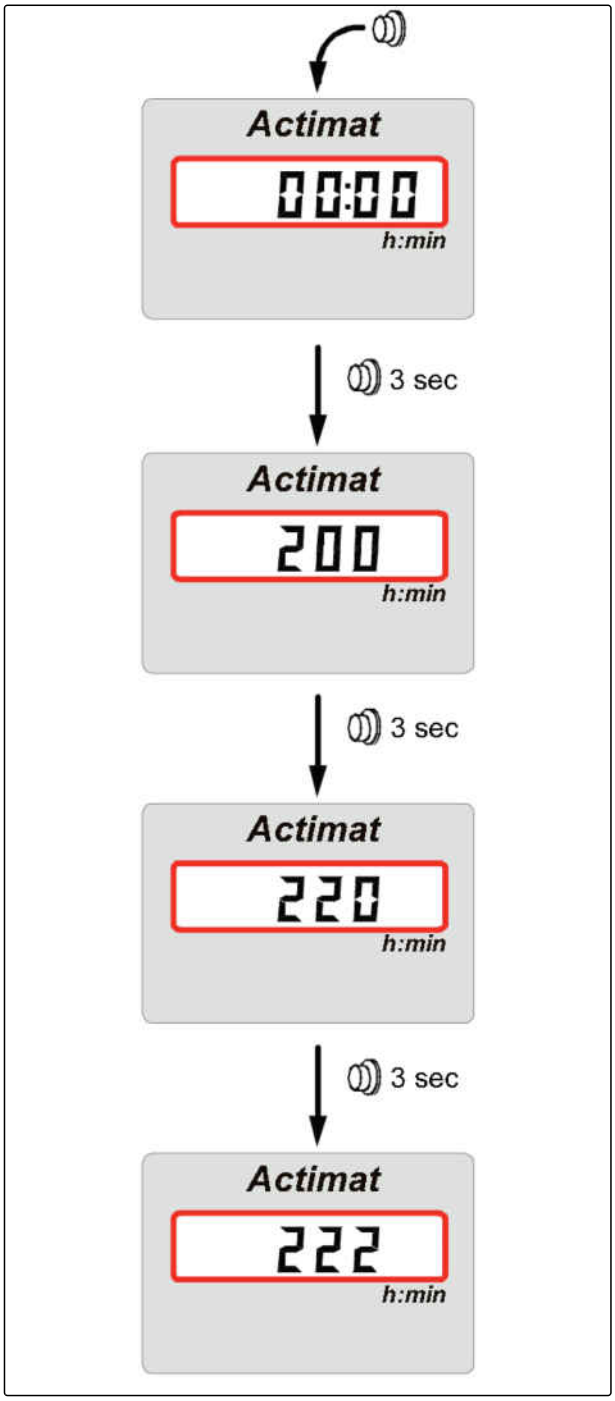
2. Briefly remove the magnet and hold it back on the area.

➡ The second digit shown will be a *"2"*.

3. Briefly remove the magnet and hold it back on the area.

➡ The third digit shown will be a *"2"*.

➡ The display changes to time counting mode. The device is ready for operation.



CMS-I-00006538

6.3.2 Hydraulic adjustment of the plough body working width

CMS-T-00007816-A.1

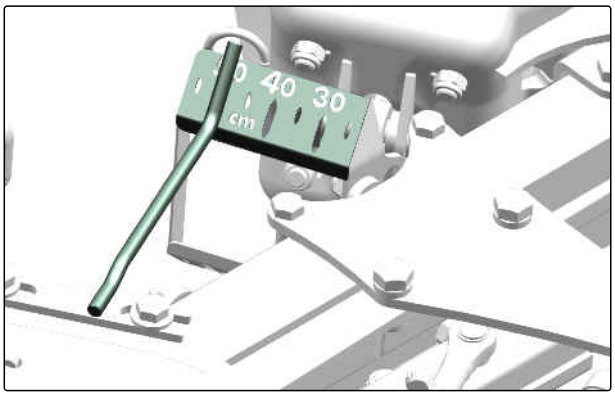
With the hydraulic working width adjustment of the plough bodies, the leading tools and the support wheel are automatically also adjusted. Moreover, the pull point and the front furrow width are also automatically adjusted.

REQUIREMENTS

✓ The implement is in working position

1. Lift the implement slightly using the 3-point hitch.
2. *To adjust the working width,*
   actuate the *"red"* tractor control unit.

➡ The set working width can be read on the scale.

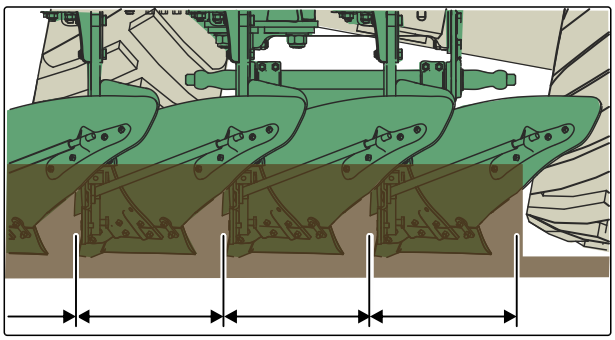


CMS-I-00005507

6.3.3 Manual adjustment of the working width of the plough bodies

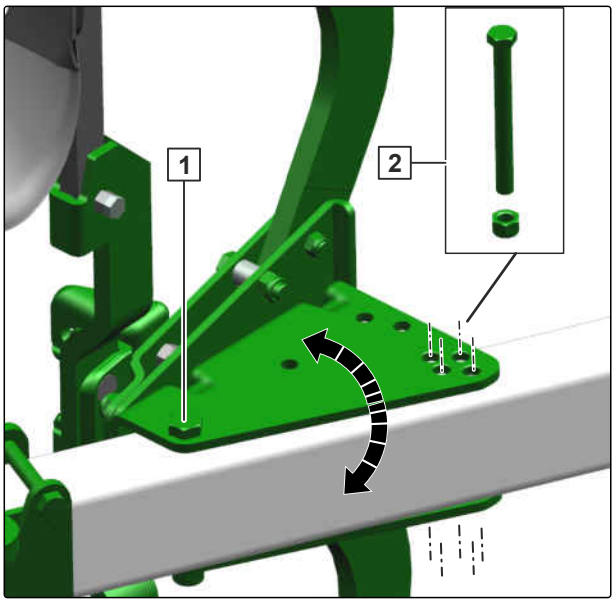
CMS-T-00007925-A.1

With the manual working width adjustment of the plough bodies, the leading tools and the depth and transport wheel are automatically also adjusted. The working width is separately adjusted on each plough body pair.



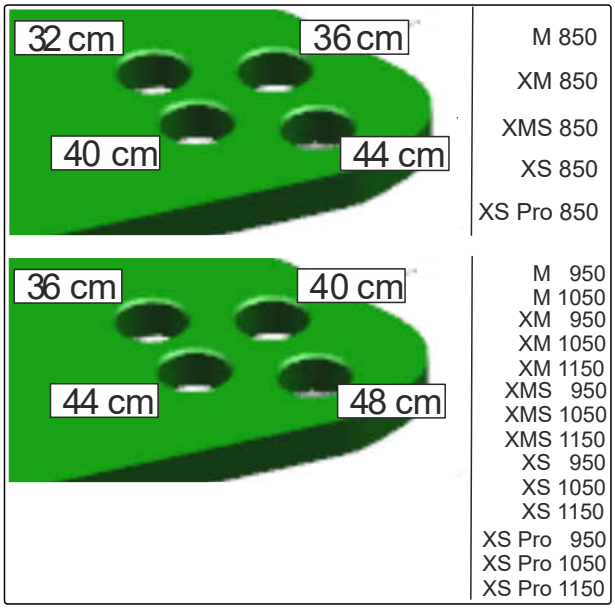
CMS-I-00002675

1. Lift the implement slightly using the 3-point hitch.
2. Loosen the bolt **1**.
3. Release and remove the bolt **2**.



CMS-I-00005503

4. Select the working width on the plough leg carrier via the screw hole.
5. Swivel the plough leg carrier according to the selected working width.
6. Reinsert the bolt in the selected screw hole and tighten it.
7. Repeat the procedure for all of the plough body pairs.
8. Adjust the pull point, see page 60.



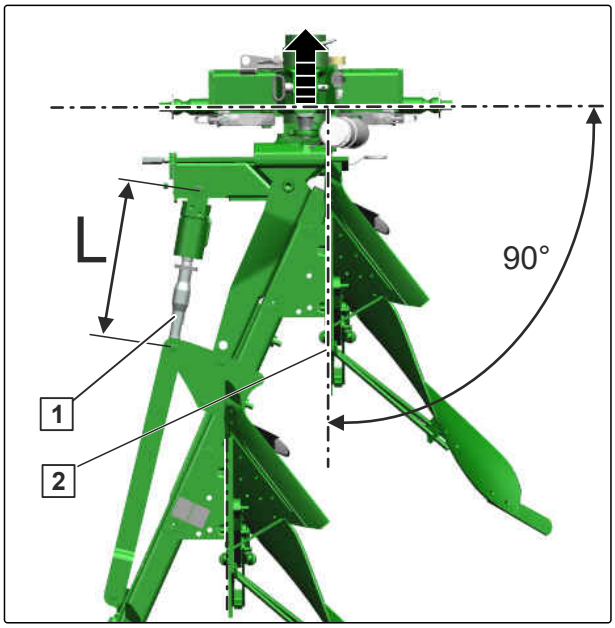
CMS-I-00005753

6.3.4 Adjusting the pull point

CMS-T-00008205-A.1

The pull point must be adjusted via the threaded spindle [1] such that there is no lateral pull.

To prevent lateral pull, the landside [2] of the plough body must be aligned with the direction of travel.

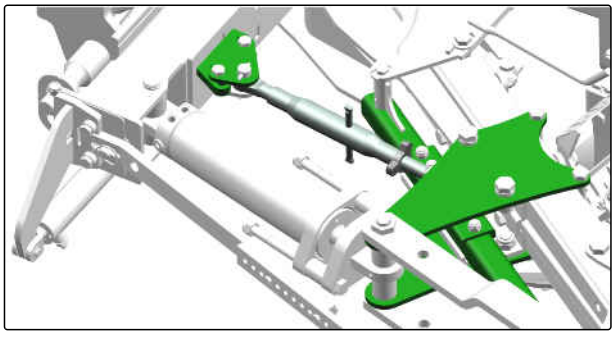


CMS-I-00005516

NOTE

Cayros V:

After adjusting the working width, the pull point does not need to be adjusted.


CMS-I-00005522

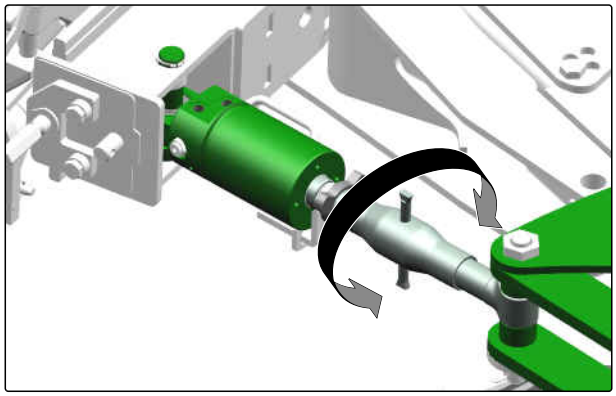
1. Slightly lift the implement out of the working position.

2. Release the lock nut for the threaded spindle.

3. *If the tractor pulls towards the ploughed side of the field,*
   reduce the threaded spindle length

   or

   If the tractor pulls towards the unploughed side of the field,
   increase the threaded spindle length.



CMS-I-00005521

NOTE

Information on the default dimension L, see page 39

4. Tighten the lock nut.

6.3.5 Adjusting the front furrow width

CMS-T-00008094-A.1

6.3.5.1 Hydraulic adjustment of the front furrow width

CMS-T-00008093-A.1

REQUIREMENTS

✓ The implement is in working position

1. *To relieve the guide,*
   slightly lift the implement using the 3-point hitch and then lower it again a bit.

2. *To adjust the front furrow width,*
   actuate the *"yellow"* tractor control unit.

3. During operation, stop and relieve the guide if necessary. Correct the setting.

6.3.5.2 Manual adjustment of the front furrow width

CMS-T-00008095-A.1

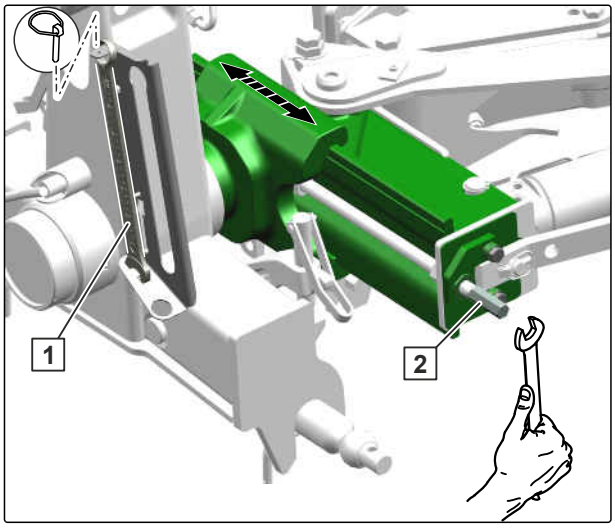
REQUIREMENTS

✓ The implement is in working position

1. *To relieve the guide,*
   slightly lift the implement using the 3-point hitch and then lower it again a bit.
2. Take the wrench 1 out of the parking position.
3. *To increase the front furrow width,*
   turn the threaded spindle to the right

   or

   To reduce the front furrow width,
   turn the threaded spindle to the left.
4. Put the wrench back into parking position. Secure with a linch pin.
5. During operation, stop and relieve the guide if necessary. Correct the setting.



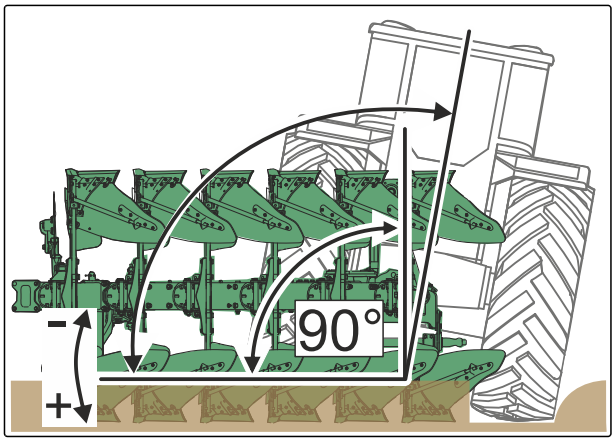
CMS-I-00005506

6.3.6 Adjusting the tilt angle of the plough relative to the tractor

CMS-T-00007813-A.1

During operation, the plough runs perpendicular to the unploughed soil. To do so, the tilt of the plough to the tractor must be adjusted.

- The stop can be adjusted with the spindles and determines the tilt angle.
- The tilt angle depends on the adjusted working depth.



CMS-I-00003708

1. Lift the safety clip **1**.

2. *To be able to adjust the stop to the current working side,*
   briefly actuate the *"green"* tractor control unit.

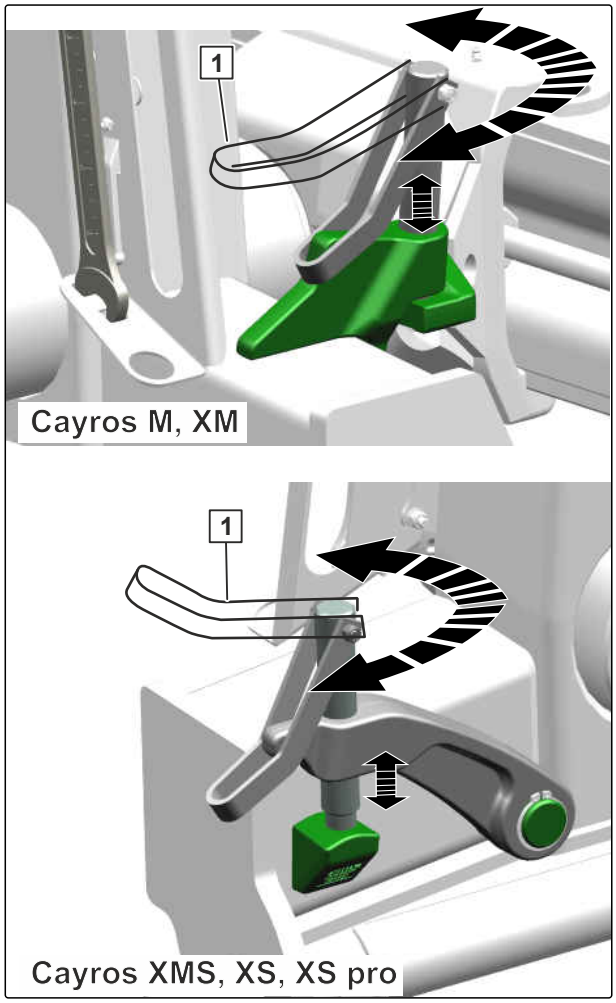
3. *To increase the tilt angle,*
   screw the threaded spindle further in

   or

   To reduce the tilt angle,
   screw the threaded spindle further out of the stop **1**.

4. Lower the safety clip again over the nose of the stop.

5. Adjust the tilt angle in the same way on both sides.



CMS-I-00005514

6.3.7 Adjusting the plough body working depth

CMS-T-00007812-A.1

Adjust the plough body working depth equally on both sides using the threaded spindles on the wheel.

REQUIREMENTS

✓ The implement is in working position

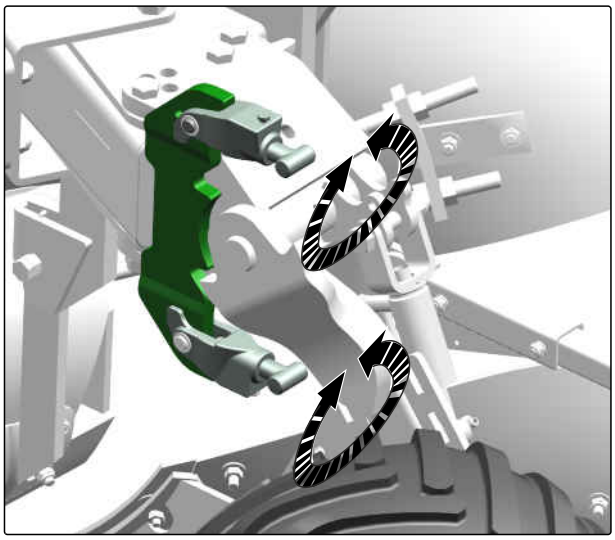
1. *To increase the working depth,*
   screw in the threaded spindle

   or

   To reduce the working depth,
   screw out the threaded spindle.

2. Lift the implement slightly via the tractor lower link.

3. Adjust the second threaded spindle to the same length.



CMS-I-00005512

6.3.8 Preparing the disc coulter for operation

CMS-T-00006529-D.1

6.3.8.1 Adjusting the working depth of the disc coulter

CMS-T-00007005-B.1

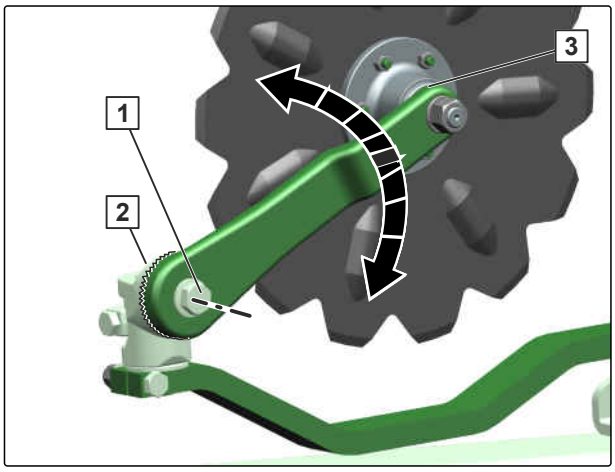
REQUIREMENTS

✓ The implement is in working position

IMPORTANT

Risk of damage to the hub due to excessive working depth

► Do not allow the hub of the disc coulter to sink into the soil.



CMS-I-00004928

1. Loosen the bolt 1 until the teeth 2 are released. At the same time, hold the disc coulter by the bearing journal 3.

2. Swivel the disc coulter up or down.

3. Retighten the bolted connection.

4. Check that the teeth are properly seated.

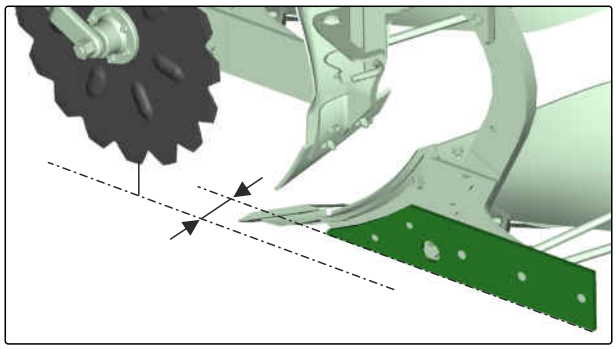
5. Adjust both disc coulters at the same working depth.

6.3.8.2 Adjusting the lateral distance of the disc coulter

CMS-T-00007006-D.1

The disc coulter runs parallel to the plough body landside.

The lateral distance from the disc coulter to the plough body landside is 1 to 3 cm.

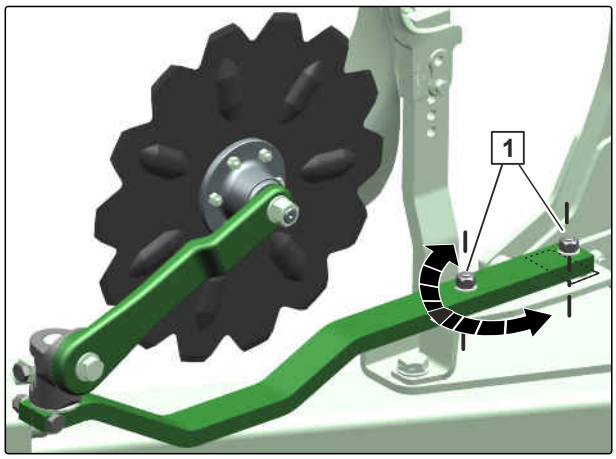


CMS-I-00003712

REQUIREMENTS

✓ The implement is in working position

1. Loosen the nuts **1** on the disc coulter holder.
2. Turn the disc coulter.
3. Retighten the nut.
4. Adjust the disc coulter equally on both sides.



CMS-I-00004926

6.3.8.3 Adjusting the swivelling range of the disc coulter

CMS-T-00007007-B.1

The disc coulter can turn freely around its vertical axis within the adjusted range.

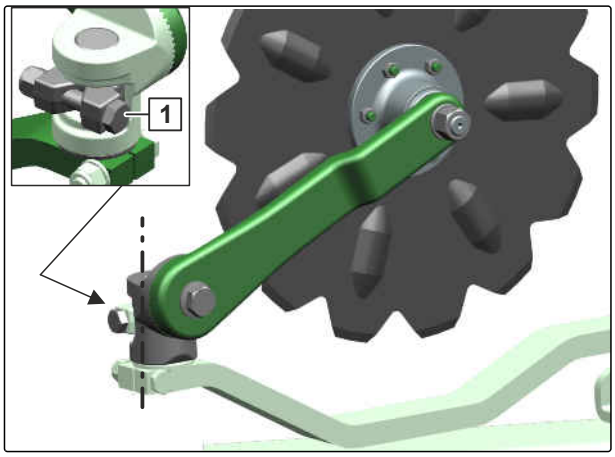
REQUIREMENTS

✓ The implement is in working position

1. Loosen the bolt 1.
2. Turn the stop so that the disc coulter runs parallel to the plough body landside.

➡ The disc coulter can deflect and does not collide with the skimmer.

3. Tighten the bolt.



CMS-I-00004925

6.3.9 Preparing the skimmers for operation

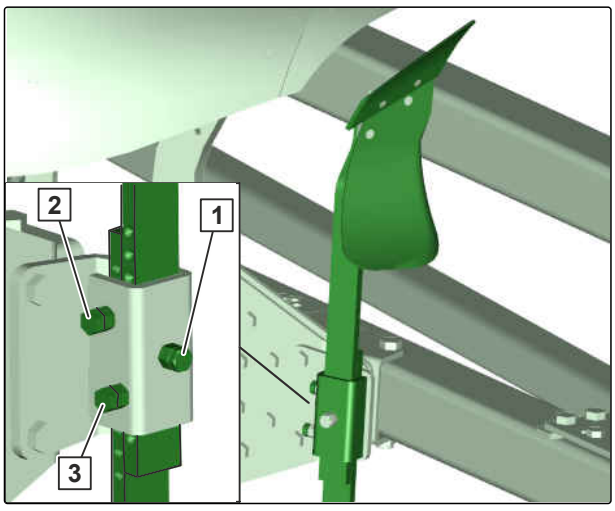
CMS-T-00006225-D.1

6.3.9.1 Adjusting the working depth of the skimmers

CMS-T-00005169-A.1

The working depth of the skimmers is 1/3 of the working depth of the plough bodies.

1. Loosen the locking bolt 1.
2. Loosen the locking bolt 2 and hold the corresponding skimmer.
3. Adjust the working depth and then tighten the locking bolt 2.
4. Loosen the locking bolt 3 and hold the corresponding skimmer.
5. Adjust the working depth and then tighten the locking bolt 3.
6. Tighten the locking bolt 1.
7. Lock all of the bolts with nuts.
8. Adjust all skimmers to the same working depth.



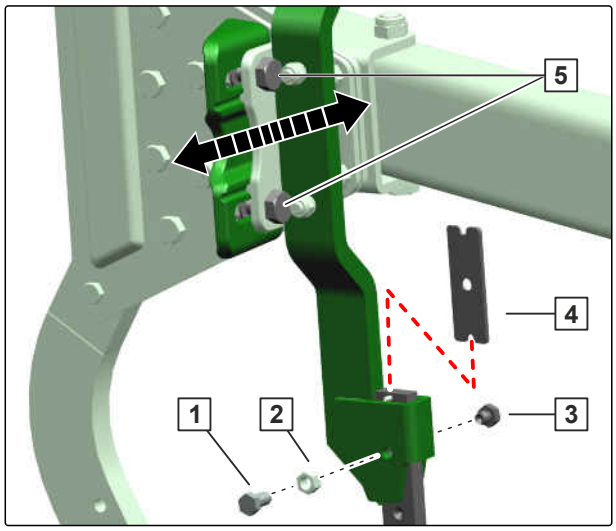
CMS-I-00003720

6.3.9.2 Adjusting the working angle of the skimmers

CMS-T-00006224-D.1

Depending on the installation of the wedge, the working angle of the skimmer can be adjusted.

Setting position: +3°, 0° or -3°



CMS-I-00004540

1. Remove the lock nut **2**.
2. Loosen the bolt **1**.
3. Remove the bolt **3**.
4. Install the wedge **4** rotated by 180°

   or

   Remove the wedge.
5. Fasten the wedge with the bolt **3**.
6. Tighten the bolt **1**.
7. Secure the bolt with the lock nut.
8. Loosen the bolts **5**.
9. Adjust the horizontal position of the pull-in force of the skimmer.

➡ The skimmer protrudes from the plough body by 1.5 to 2 cm.

10. Tighten the bolts **5**.

6.3.10 Adjusting the tripping force of the hydraulic overload safety

CMS-T-00007952-B.1

6.3.10.1 Setting the tripping force for the central overload safety

CMS-T-00007953-B.1

REQUIREMENTS

✓ The implement is coupled.

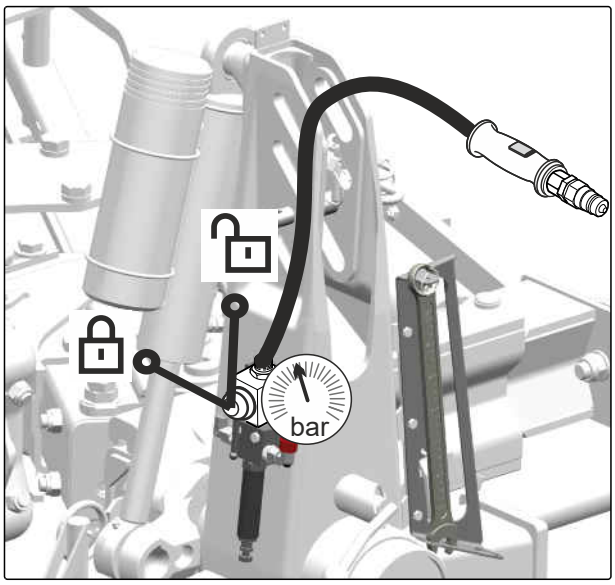
✓ The *"beige"* hydraulic connection is coupled.

WARNING

Risk of accident due to the plough bodies falling down

When you depressurise the hydraulic overload safety, the plough bodies fall out of their mount.

- ▶ Select a pre-tension of at least 80 bar for the hydraulic overload safety.
- ▶ Always maintain pressure on the hydraulic overload safety.



CMS-I-00005511

1. Open the stop tap.

2. *To set the tripping force of the hydraulic overload safety simultaneously for all plough bodies,*
   Actuate the *"beige"* tractor control unit.

➡ Select a pre-tension between 80 and 180 bar.
Default value: 100 bar

3. Close the stop tap.

4. Depressurise and uncouple the *"beige"* hydraulic connection.

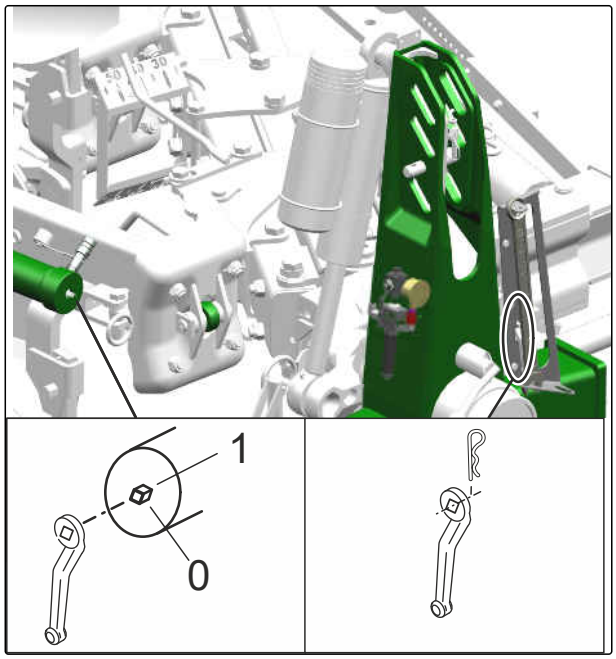
NOTE

To increase operational reliability, the hydraulic accumulator on each plough body can be closed with the hand lever.

Central adjustment of the pre-tension is then no longer possible.

By closing individual hydraulic accumulators, the tripping force can be adjusted differently on the plough bodies.

The parking position of the hand lever is located on the headstock.



CMS-I-00005510

6.3.10.2 Adjusting the tripping force of the decentralised overload safety

CMS-T-00007970-B.1

REQUIREMENTS

✓ The implement is coupled.

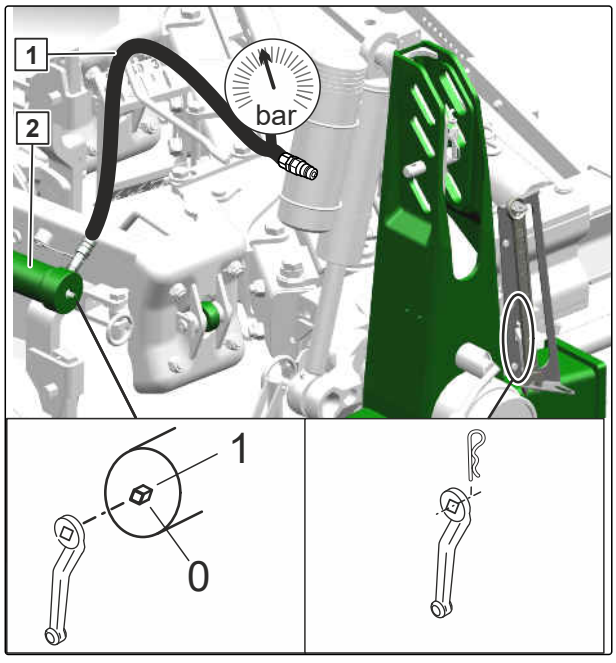
✓ The *"beige"* hydraulic connection is coupled.

WARNING

Risk of accident due to the plough bodies falling down

When you depressurise the hydraulic overload safety, the plough bodies fall out of their mount.

- ▶ Select a pre-tension of at least 80 bar for the hydraulic overload safety.
- ▶ Always maintain pressure on the hydraulic overload safety.



CMS-I-00005547

1. Couple the hydraulic unit [1] to the tractor control unit.

2. Connect the hydraulic unit to the hydraulic accumulator [2] of the hydraulic overload safety.

WARNING Risk of injury due to components under high pressure being thrown

- ▶ Open the bolted connection on the hydraulic accumulator up to a maximum of 180°.
- ▶ Do not completely unscrew the bolted connection.

3. Put the hand lever on the hydraulic accumulator.
4. Open the hydraulic accumulator with the hand lever.
5. *To adjust the tripping force of the hydraulic overload safety for the respective plough body,* Actuate the *"beige"* tractor control unit.

➡ Select a pre-tension between 80 and 180 bar. Default value: 100 bar

6. Close the hydraulic accumulator with the hand lever.
7. Depressurise the hydraulic unit.
8. Disconnect the hydraulic unit from the hydraulic accumulator.
9. Adjust all hydraulic accumulators of the hydraulic overload safety the same way.
10. Then fasten the hand lever in parking position with the spring cotter pin.

6.3.11 Setting the tripping force for the semi-automatic overload safety

CMS-T-00007954-B.1

The tripping force of the semi-automatic overload safety can be infinitely variably adjusted to suit the soil conditions.

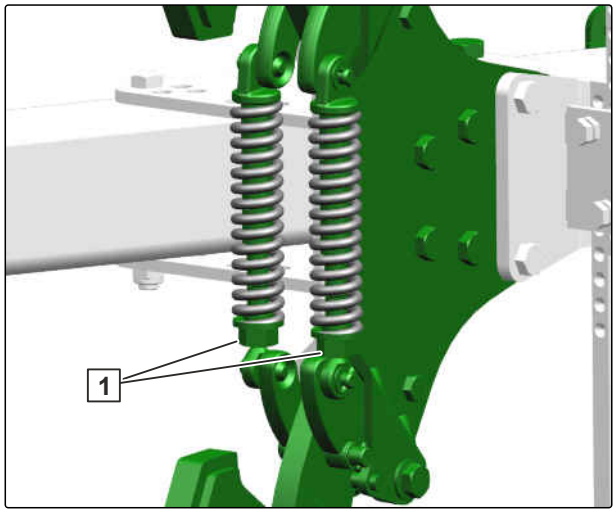
Default spring length L = 20 cm

1. *To increase the tripping force,*
   reduce the spring length by turning the nut 1

   or

   To reduce the tripping force,
   increase the spring length by turning the nut 1.

2. Set both springs to the same length.



CMS-I-00005515

6.4 Moving the implement into working position

CMS-T-00007814-B.1

6.4.1 Releasing the lateral locking of the tractor lower links

CMS-T-00008119-A.1

► *To allow the plough to freely align itself during operation,*
release the lateral locking of the tractor lower links.

6.4.2 Removing the rear lighting

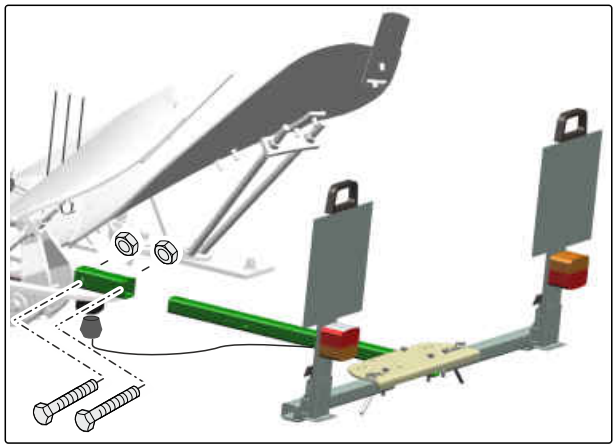
CMS-T-00007818-A.1

1. Insert the plug for the power supply into the socket.

2. Loosen and remove both bolts.

3. Pull the rear lighting out of the mount.

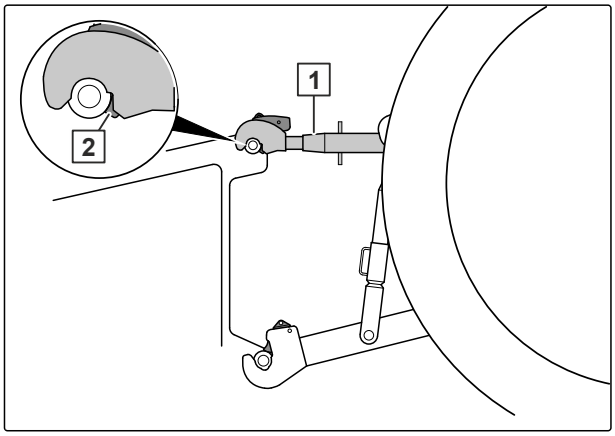
4. Store the rear lighting in a suitable place.



CMS-I-00005499

6.4.3 Coupling the top link

CMS-T-00007807-A.1



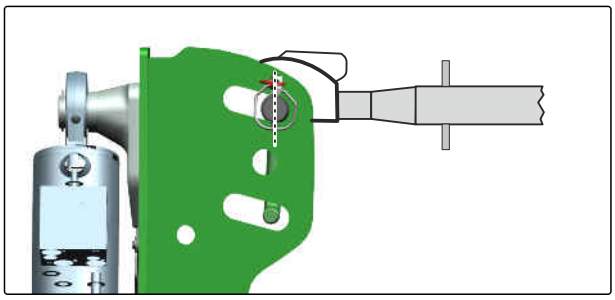
CMS-I-00003706

1. Lower the implement using the tractor's lower links.
2. Couple the top link 1.

NOTE

Select the coupling point on the implement side such that it is slightly higher than the coupling point on the tractor side, even during operation.

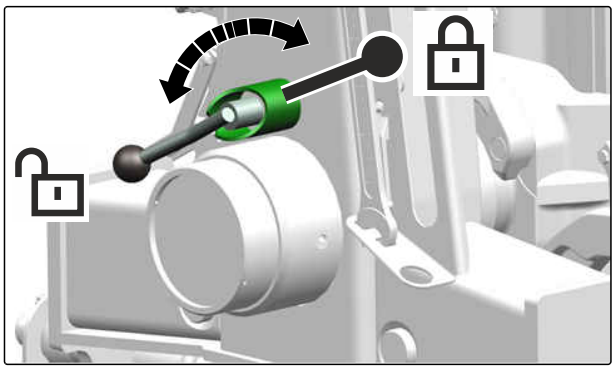
3. Check whether the top link catch hooks 2 is correctly locked.
4. Adjust the top link length so that the pin rests at the front of the slot.
5. Lift the implement using the 3-point hitch.



CMS-I-00005142

6.4.4 Moving the plough bodies into working position

CMS-T-00007815-A.1



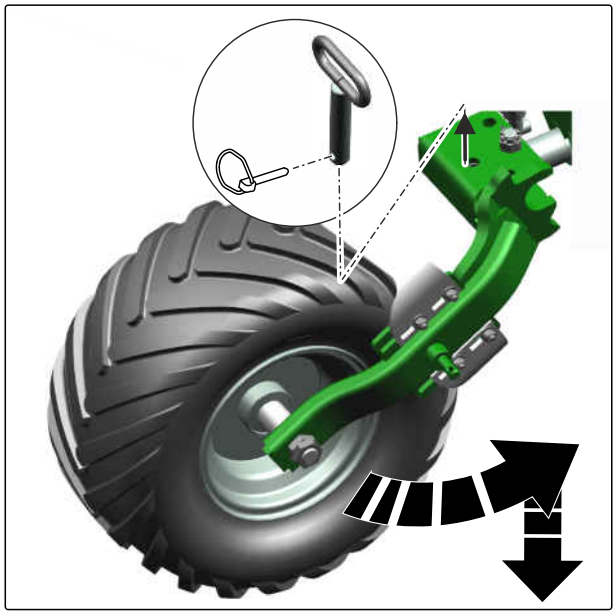
CMS-I-00005500

1. Unlock the transport lock using the hand lever.
2. Lift the implement using the 3-point hitch enough so that there is enough ground clearance to swivel the implement.
3. *To be able to swivel the plough bodies into working position,*
   set the tilt angle on the right from 90° back to the working value if necessary, see page 62.
4. *To swivel the plough bodies into working position,*
   Actuate the *"green"* tractor control unit.
5. Swivel the plough body to the right so that the control elements of the wheel are accessible.

6.4.5 Swivelling the depth and transport wheel into working position

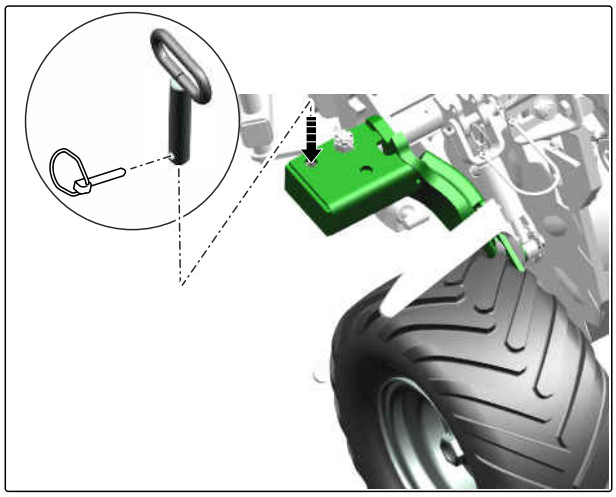
CMS-T-00007819-A.1

1. Pull out the pin.
2. Swivel the depth and transport wheel into working position.



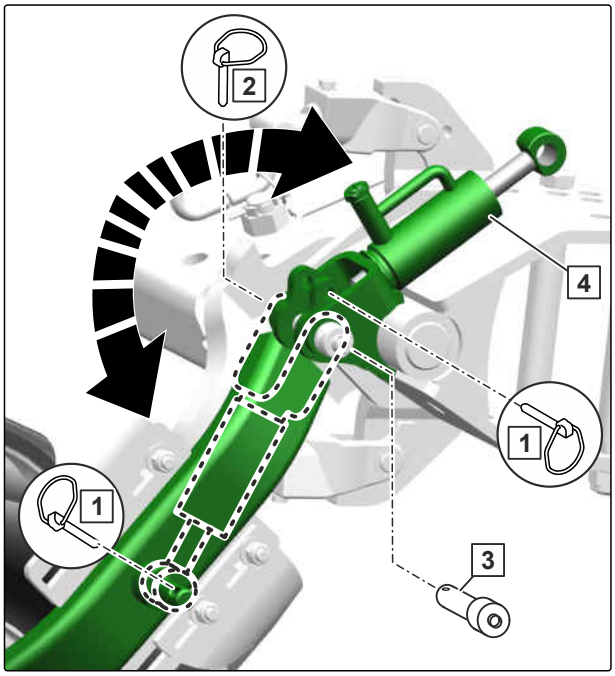
CMS-I-00005509

3. Secure the depth and transport wheel with the pin.
4. Secure the pin with a linch pin.



CMS-I-00005508

5. Remove the linch pin 1.
6. Remove the linch pin 2.
7. Pull out the pin 3.
8. Fasten the damping cylinder 4 onto the wheel linkage.
9. Fix the position of the damping cylinder with the pin and secure using the linch pin 1.

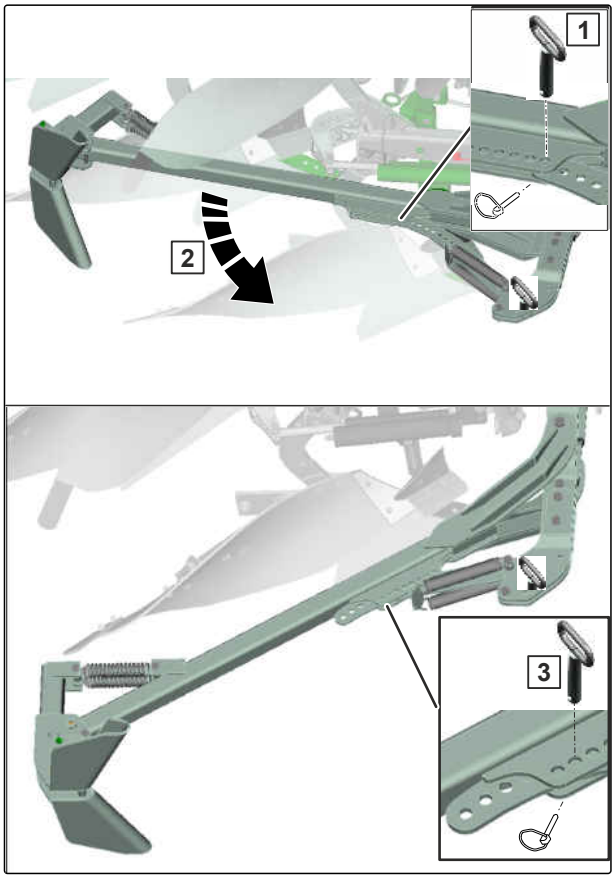


CMS-I-00005556

6.4.6 Swivelling the packer arm into working position

CMS-T-00007015-B.1

1. Take the pin 1 out of the swivel adjustment.
2. Swivel the packer arm 2 outwards according to the utilised packer roller.
3. *To secure the packer arm in position,* insert the pin 3 in the swivel adjustment.

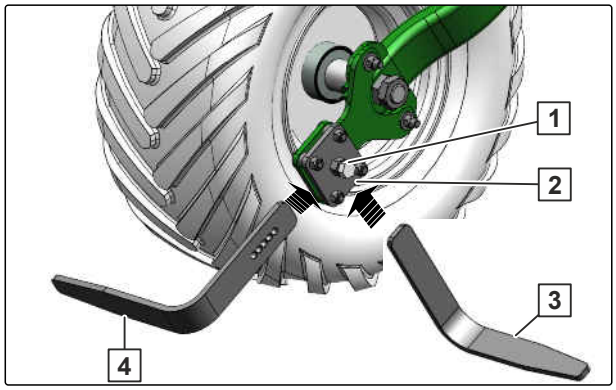


CMS-I-00005731

6.4.7 Installing the scraper for the depth and transport wheel in working position

CMS-T-00010866-A.1

1. Remove the bolt 1.
2. Take the scraper out from the transport position 3.
3. Insert the scraper in the mount 2 in working position 4.
4. Adjust the distance from the wheel.
5. Tighten the bolt.



CMS-I-00007402

6.5 Preparing the machine for road travel

CMS-T-00007821-B.1

6.5.1 Locking the tractor lower links laterally

CMS-T-00007550-B.1

WARNING

When driving on roads, risk of accident caused by uncontrolled lateral motions of the implement

- ▶ Lock the tractor lower links for road travel.

- ▶ Lock the tractor lower links.

6.5.2 Checking the pre-tension of the overload safety

CMS-T-00005196-B.1

WARNING

Risk of accident due to the plough bodies with overload safety falling down

When you depressurise the hydraulic overload safety, the plough bodies fall out of their mount.

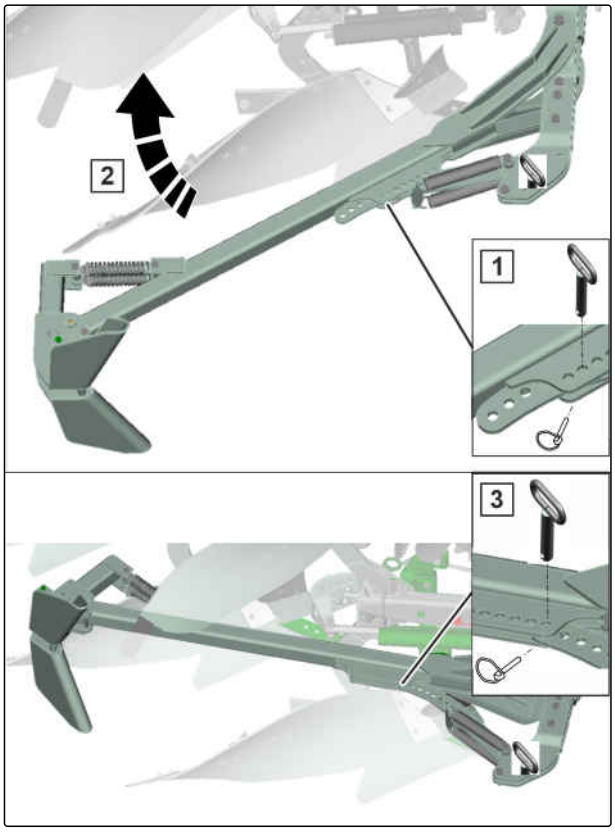
- ▶ Select a pre-tension of at least 80 bar for the overload safety.
- ▶ Always maintain pressure on the overload safety.
- ▶ Keep the stop tap of the hydraulic overload safety closed.

- ▶ Maintain the pre-tension on the plough body unit of the overload safety.

6.5.3 Swivelling the packer arm into transport position

CMS-T-00007024-C.1

1. Take the pin **1** out of the swivel adjustment.
2. Swivel the packer arm **2** inwards as far as possible.
3. *To secure the packer arm in position,* insert the pin **3** in the swivel adjustment.

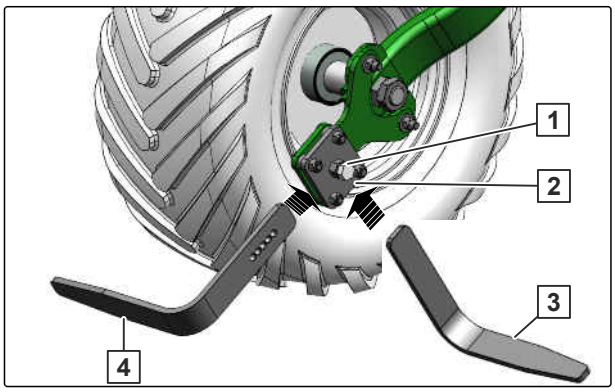


CMS-I-00005729

6.5.4 Installing the scraper for the depth and transport wheel in transport position

CMS-T-00010865-A.1

1. Remove the bolt **1**.
2. Take the scraper out from the working position **4**.
3. Insert the scraper in the mount **2** in transport position **3**.
4. Tighten the bolt.



CMS-I-00007402

6.5.5 Moving the depth and transport wheel into transport position

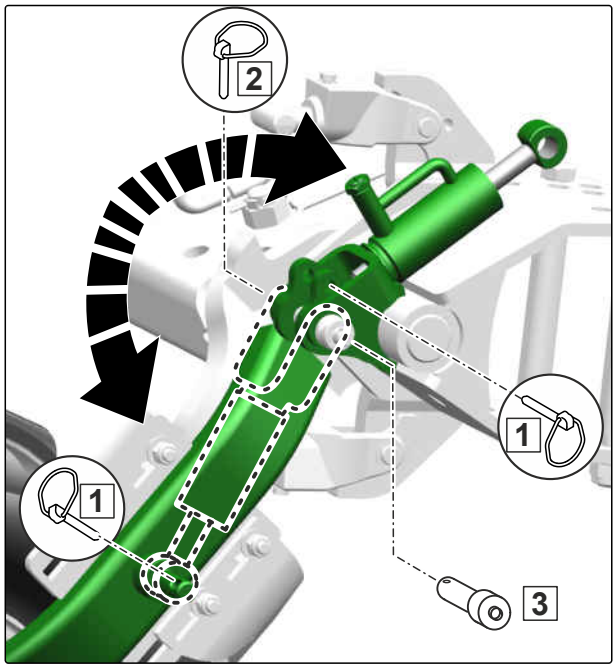
CMS-T-00007806-A.1

IMPORTANT

Risk of implement damage

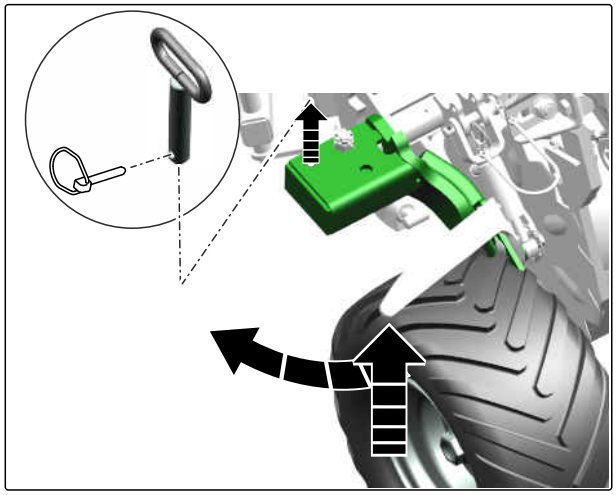
- ▶ Before road transport, move the depth and transport wheel into transport position.
- ▶ Park the implement on the depth and transport wheel.

1. Remove the linch pin **1**.
2. Remove the linch pin **2**.
3. Pull out the pin **3**.
4. Swivel up the damping cylinder into transport position.
5. Fix the position of the damping cylinder with the pin and secure using the linch pin **2**.
6. Secure the damping cylinder with the linch pin **1**.



CMS-I-00005607

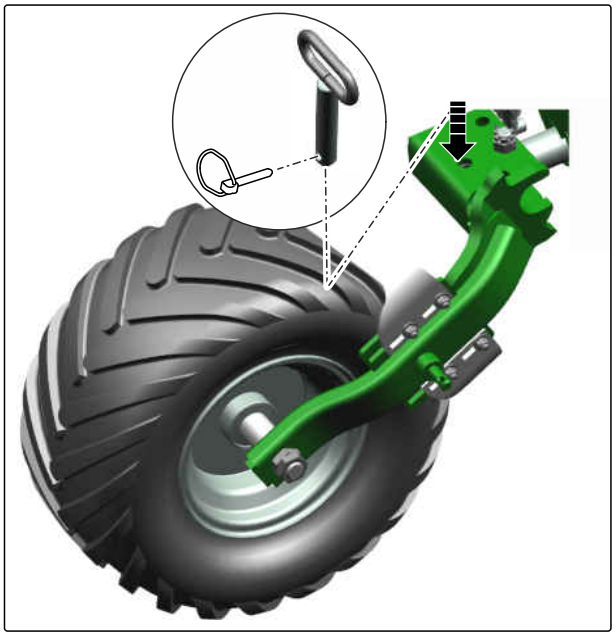
7. Pull out the pin.
8. Lift the depth and transport wheel and swivel into transport position.



CMS-I-00005502

9. Secure the depth and transport wheel with the pin.

10. Secure the pin with a linch pin.



CMS-I-00005501

6.5.6 Moving the plough body into transport position

CMS-T-00007808-A.1

1. Lock the transport lock with the hand lever.

2. Lift the implement using the 3-point hitch.

3. *To swivel the plough body,*
Actuate the *"green"* tractor control unit.

4. Pay attention to sufficient ground clearance when swivelling.

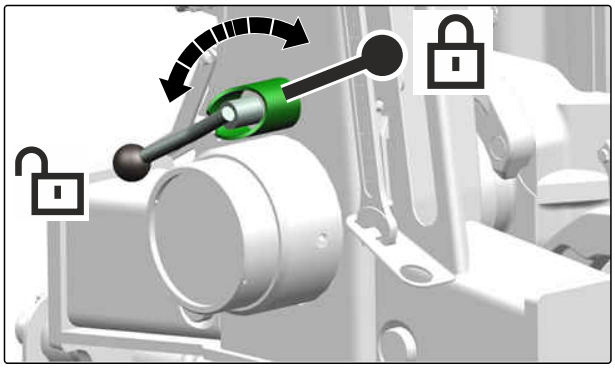
5. Check that the transport lock is engaged.

6. Lower the implement onto the depth and transport wheel by lowering the 3-point hitch.

7. Align the depth and transport wheel in the direction of travel by driving forward in a small curve.

8. Uncouple the unloaded top link.

9. For road transport, lift the implement as far as it goes using the tractor lower links.

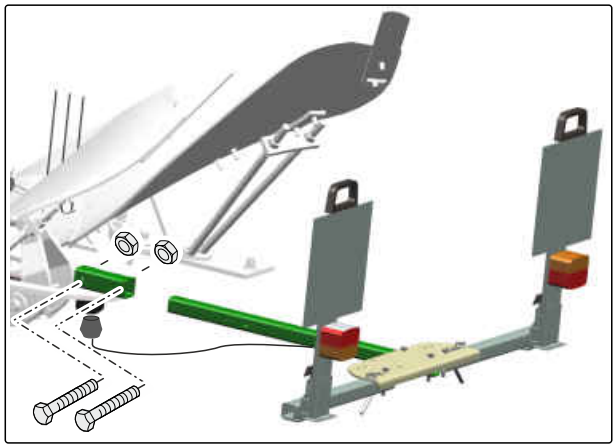


CMS-I-00005500

6.5.7 Installing the rear lighting

1. Insert the rear lighting in the mount.
2. Secure the rear lighting with 2 bolts.
3. Insert the plug for the power supply into the socket.

CMS-T-00007804-A.1



CMS-I-00005499

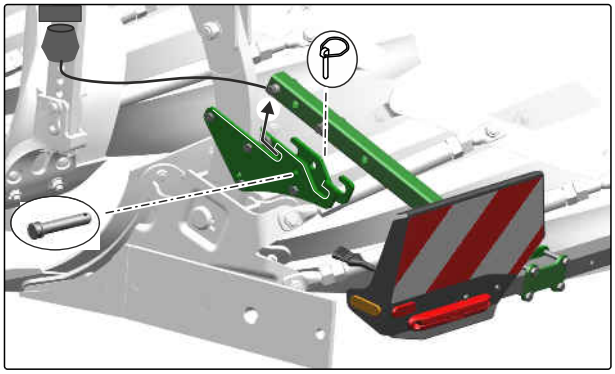
Using the implement 7

CMS-T-00007340-G.1

7.1 Removing the rear lighting

CMS-T-00009139-A.1

1. Pull out the plug for the power supply.
2. Pull the linch pin and the pin.
3. Take the rear lighting out of the device.
4. Store the rear lighting in a suitable place.

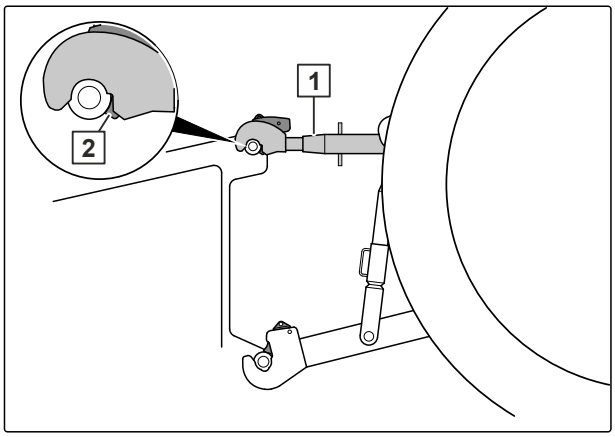


CMS-I-00006279

7.2 Coupling the top link

CMS-T-00007319-B.1

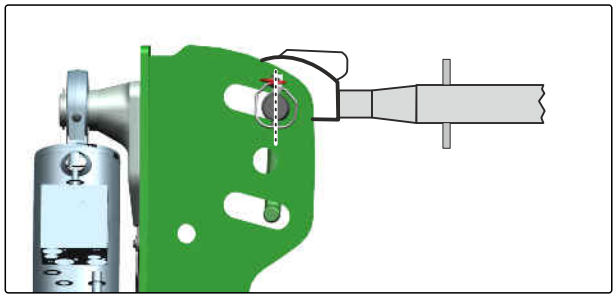
1. Lower the implement using the lower link.
2. Select the top link coupling point.
3. Couple the top link **1**.
4. Check whether the top link catch hooks **2** is correctly locked.



CMS-I-00003706

Criteria for selecting the top link coupling point:

- The round hole is only suitable for heavy soils
- Top elongated slot suitable for more lifting height
- Select the coupling point such that the top link is in a horizontal position during operation



CMS-I-00005142

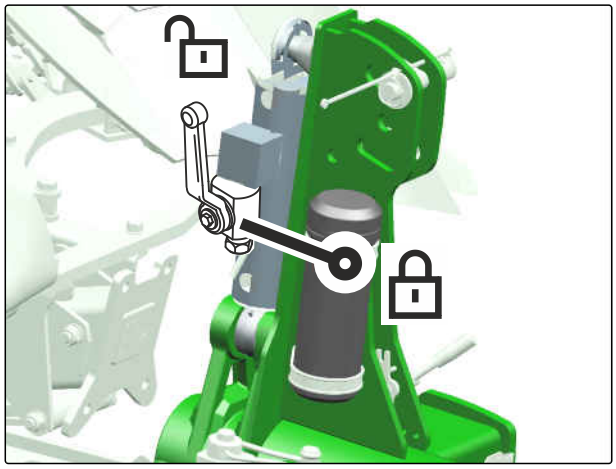
5. Adjust the top link length so that the pin rests at the front of the slot.

6. Lift the implement using the 3-point hitch.

7.3 Unlocking the depth and transport wheel

CMS-T-00010384-A.1

▶ Open the stop tap of the depth and transport wheel hydraulic system.



CMS-I-00005222

7.4 Moving the plough bodies into working position

CMS-T-00007329-B.1

1. Swing the lever for transport locking into the *"Unlocked"* position until the locking pin engages.

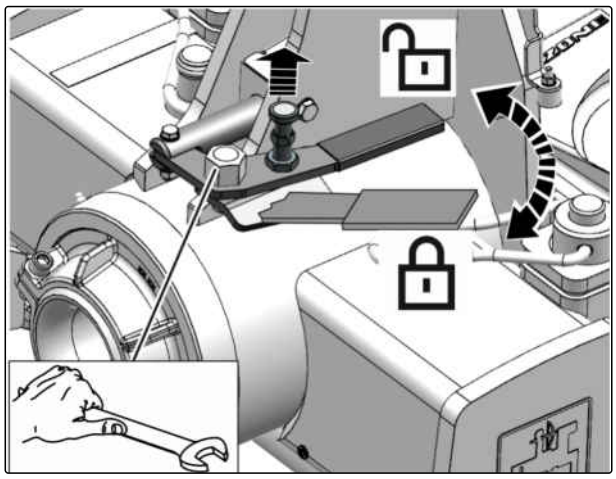
NOTE

If the activation movement is difficult, use a spanner as an auxilliary tool.

2. Completely lift the implement using the 3-point hitch.

3. *To swivel the plough bodies into working position,*
   Actuate the *"green"* tractor control unit.

➡ To reach the control elements of the depth and transport wheel, the plough body must be swivelled to the right.



CMS-I-00005221

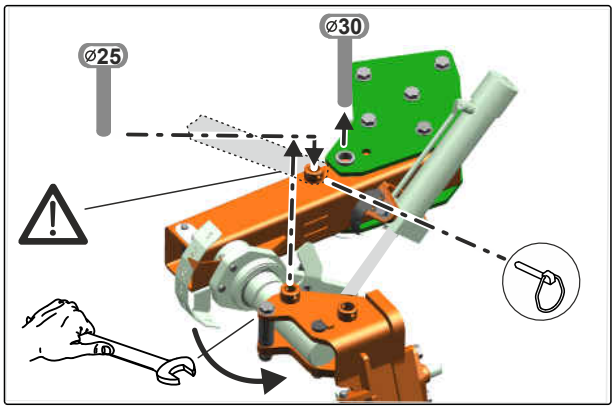
NOTE

Make sure that there is sufficient ground clearance during the swivelling procedure.

7.5 Swivelling the depth and transport wheel into working position

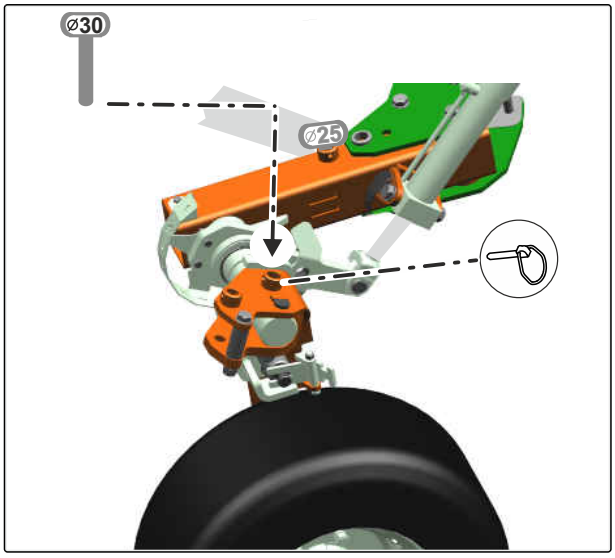
CMS-T-00007330-B.1

1. Pull out the 25 mm pin from the depth and transport wheel.
2. Pull out the 30 mm pin from the wheel carrier.
3. Insert the 25 mm pin through the wheel carrier and the beam plate.
4. Secure the 25 mm pin with a linch pin.
5. Put the wrench on the hexagon and swivel the depth and transport wheel.



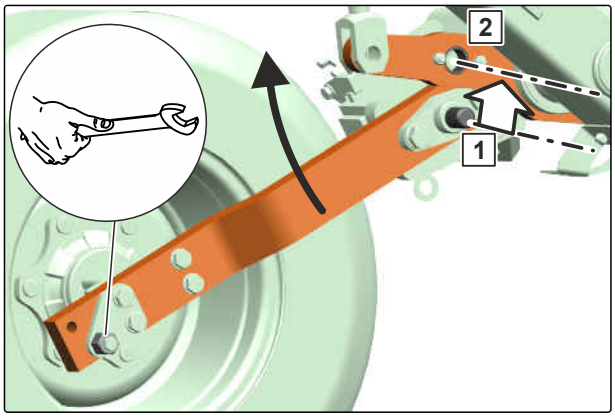
CMS-I-00005227

6. Pull out the 30 mm pin from the depth and transport wheel.
7. Secure the 30 mm pin with a linch pin.



CMS-I-00005228

8. Lower the implement into working position using the 3-point hitch.
9. *To align the depth and transport wheel correctly,*
   drive the implement slightly forwards.



CMS-I-00005229

10. *To lock the depth and transport wheel,*
    Set the maximum working depth hydraulically

    or

    Lift the depth and transport wheel using the wrench.

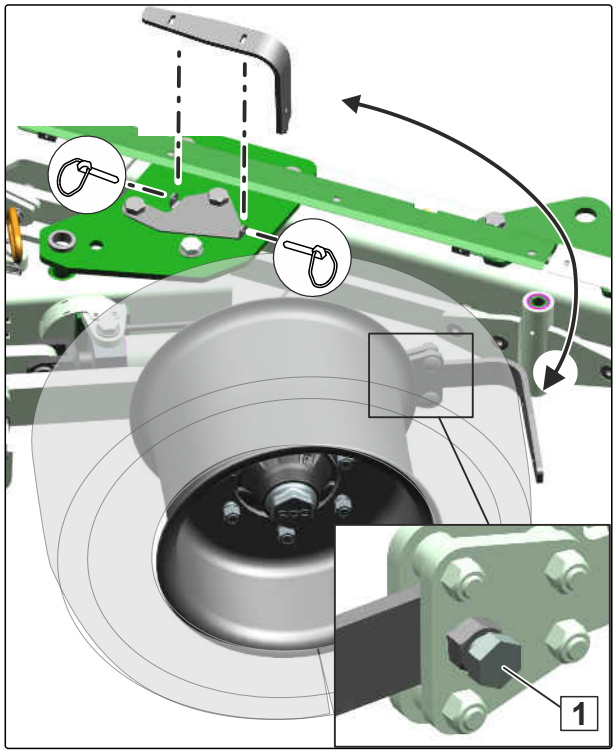
11. Check the locking mechanism.

➡ The pin [1] must engage in the hole [2].

7.6 Mounting the scraper for the depth and transport wheel

CMS-T-00007331-A.1

1. Release the linch pin on the scraper for the depth and transport wheel.
2. Take the scraper for the depth and transport wheel from the parking position.
3. Refasten the linch pin.
4. Loosen the bolt [1].
5. Install the scraper for the depth and transport wheel.
6. Tighten the bolt.

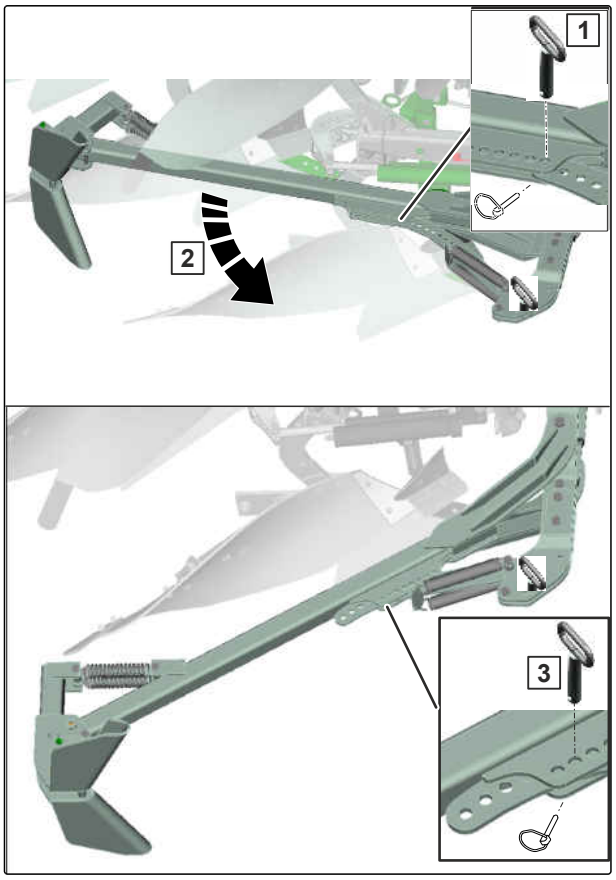


CMS-I-00005231

7.7 Swivelling the packer arm into working position

CMS-T-00007015-B.1

1. Take the pin 1 out of the swivel adjustment.
2. Swivel the packer arm 2 outwards according to the utilised packer roller.
3. *To secure the packer arm in position,*
   insert the pin 3 in the swivel adjustment.



CMS-I-00005731

7.8 Releasing the lateral locking of the tractor lower links

CMS-T-00008119-A.1

► *To allow the plough to freely align itself during operation,*
release the lateral locking of the tractor lower links.

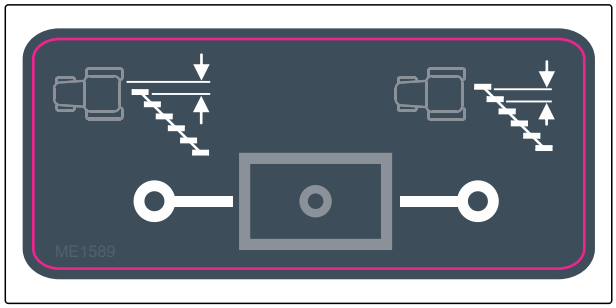
7.9 Hydraulic adjustment of the plough body working width

CMS-T-00007484-A.1

REQUIREMENTS

✓ The implement is in working position

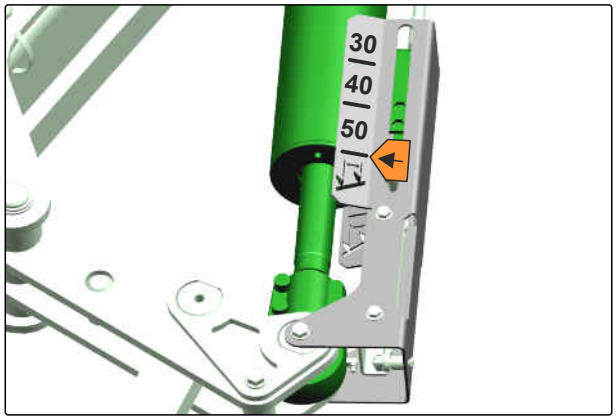
1. Depending on the equipment, set the switch tap on the headstock to the *"Working width"* position.
2. Lift the implement slightly via the tractor lower link.



CMS-I-00005232

3. *To adjust the working width,* actuate the *"red"* tractor control unit.

➡ The set working width can be read on the scale.



CMS-I-00005234

7.10 Adjusting the front furrow width

CMS-T-00007481-A.1

IMPORTANT

Risk of implement damage due to collision of components when turning

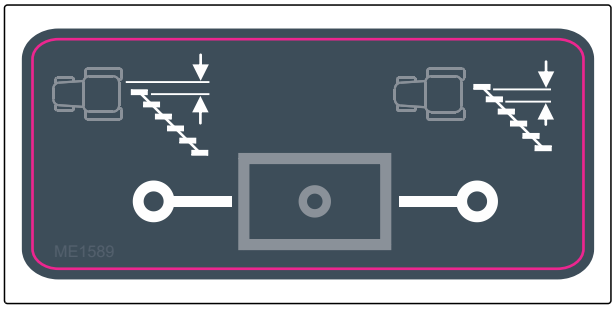
When turning with the maximum front furrow width, the plough bodies can collide with the beam.

▶ *Before you turn the plough bodies,* make sure that the front furrow width is not set at the maximum.

REQUIREMENTS

✓ The implement is in working position

1. Depending on the equipment, set the switch tap on the headstock to *"Front furrow"*.
2. Lift the implement slightly via the tractor lower link.



CMS-I-00005232

3. *To adjust the front furrow width,*
   actuate the *"red"* or *"yellow"* tractor control unit, depending on the equipment.

NOTE

The scale serves as orientation during adjustment.

CMS-I-00005230

4. Correct the adjustment during operation if necessary.

7.11 Using the implement

CMS-T-00007341-F.1

1. Lower the implement on the field.
2. Start ploughing.
3. Align the implement horizontally via the 3-point hitch.
4. Correct the settings.

5. *To relieve the support wheel and to reduce slippage,*
   fasten the top link pin at the front of the elongated slot,

   or

   To adapt the support wheel to ground contour,
   fasten the top link pin in the middle of the elongated slot.

IMPORTANT

Risk of damage to the skimmer

- Do not use the skimmer when driving in curves.
- Do not use the skimmer on stony soils.

7.12 Turning on the headlands

CMS-T-00007342-B.1

1. Lift the implement using the 3-point hitch.

2. *To turn the plough bodies,*
   Actuate the *"green"* tractor control unit.

3. After the headlands, align the implement horizontally to the ground using the 3-point hitch.

4. Check the adjustment after the second furrow.

Eliminating faults

8

CMS-T-00008031-B.1

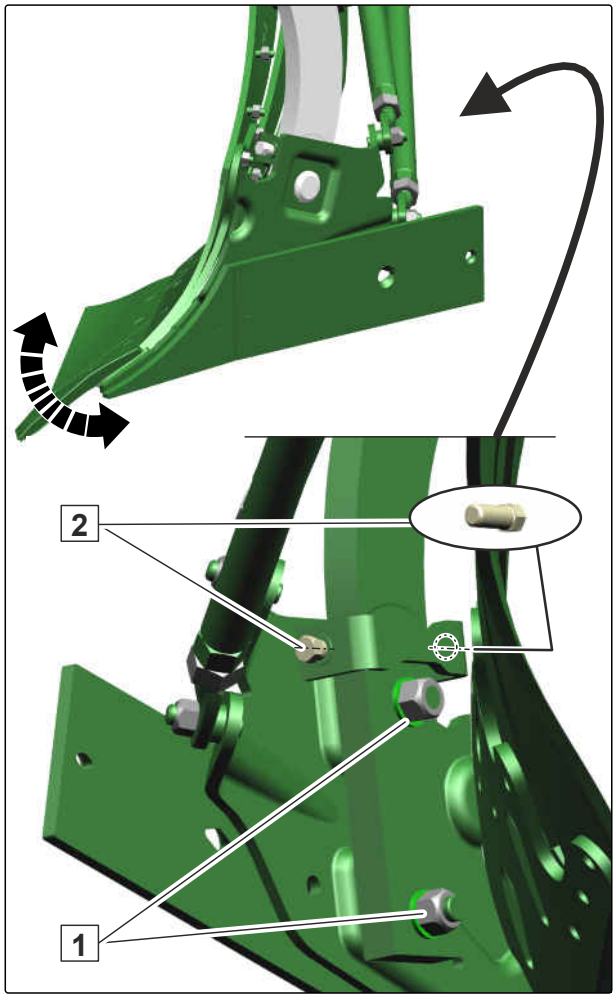
Errors	Cause	Solution
The plough pulls to the side	Incorrect angle of the landsides due to incorrect switching times of time-controlled tractor control units when turning.	► Completely retract the swivel-in cylinder during operation.
The smallest working width for the plough bodies cannot be set	The actuated swivel-in cylinder deactivates the setting of the working width. Faulty hydraulic operation due to time-controlled tractor control units.	► Turn the implement in working position again. ► Set the smallest working width.
The plough bodies do not turn	Hydraulic hose lines are kinked.	► Check the position of the hydraulic hose lines.
The implement does not reach the desired working depth	The soil is too hard.	► Draw transverse furrows at the ends of the field.
	The working depth is incorrectly adjusted.	► Adjust the working depth.
	The shares are worn.	► Replace the shares.
	The wrong share is being used.	► Use an interchangeable tip.
	The disc coulter is set too deep.	► Set the disc coulter shallower.
	The pitch is set too flat.	see page 89
Plough body not working	The shear bolt of the overload safety is broken.	see page 89
	Semi-automatic overload safety has reacted.	► Stop working. ► Drive a short distance in reverse. ► The plough body swivels back into working position.
Transport lock cannot be unlocked	The hand lever does not unlock the transport lock.	► *To release the transport lock,* actuate the *"green"* tractor control unit on both sides.

The implement does not reach the desired working depth

CMS-T-00007296-C.1

Not possible for all of the plough bodies.

1. Lift the implement out of the working position until the shares are slightly lifted from the ground .
2. Loosen the bolts [1] on the lower shares.
3. Set the pitch of the shares steeper using the bolts [2].
4. Tighten the bolts [1].
5. After turning, set the shares on the other side steeper.



CMS-I-00007933

Plough body not working

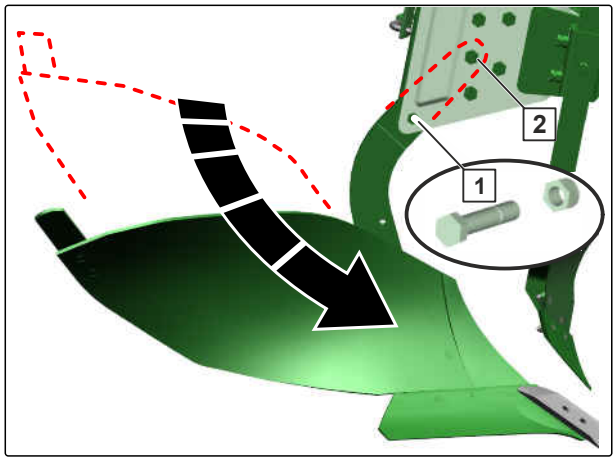
CMS-T-00008033-A.1

WARNING

Risk of injury due to the plough body suddenly swivelling down

- ▶ Only approach the plough bodies from the rear.
- ▶ Maintain a safe distance from the plough body.

1. Swivel the plough body back into working position.
2. If the plough body is blocked, loosen the bolt at the pivot point [2].



CMS-I-00005761

3. Tighten the bolt on the pivot point.

4. Take the shear bolt **1** and self-locking nut out of the transport box, and insert and tighten it.

Type	Part number	Shear bolt, special bolt with long shaft
Cayros M	DB646	M16x65 10.9
Cayros XMS		
Cayros XM		
Hydraulic overload safety		
Cayros XS	DB667	M16x72 10.9
Cayros XS Pro	DB673	M16x80 10.9

1. Stop working.

2. Drive a short distance in reverse.

3. The plough body swivels back into working position.

Parking the implement

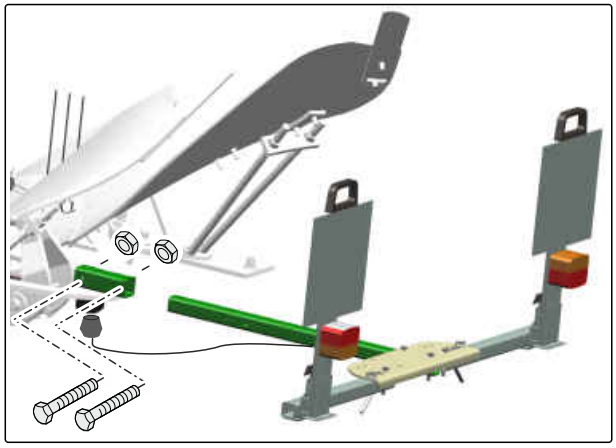
9

CMS-T-00007838-C.1

9.1 Removing the rear lighting

CMS-T-00007818-A.1

1. Insert the plug for the power supply into the socket.
2. Loosen and remove both bolts.
3. Pull the rear lighting out of the mount.
4. Store the rear lighting in a suitable place.



CMS-I-00005499

9.2 Coupling the top link

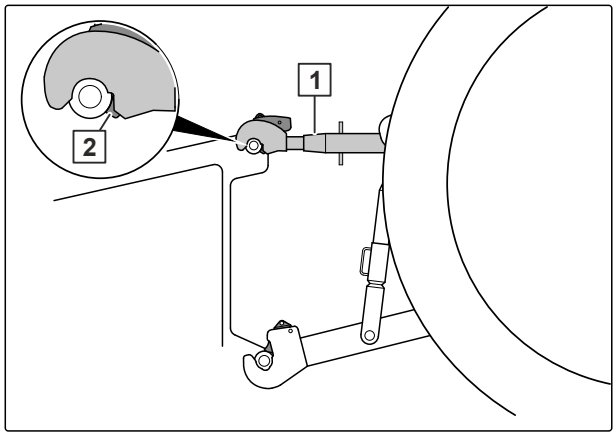
CMS-T-00007807-A.1

1. Lower the implement using the tractor's lower links.
2. Couple the top link **1**.

NOTE

Select the coupling point on the implement side such that it is slightly higher than the coupling point on the tractor side, even during operation.

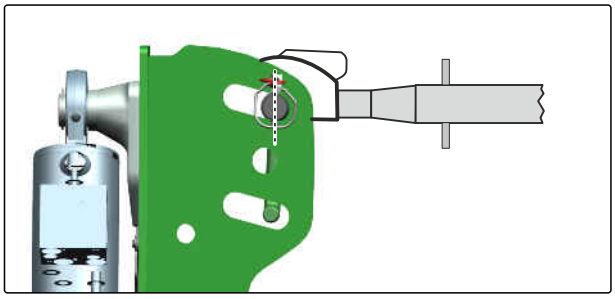
3. Check whether the top link catch hooks **2** is correctly locked.



CMS-I-00003706

4. Adjust the top link length so that the pin rests at the front of the slot.

5. Lift the implement using the 3-point hitch.



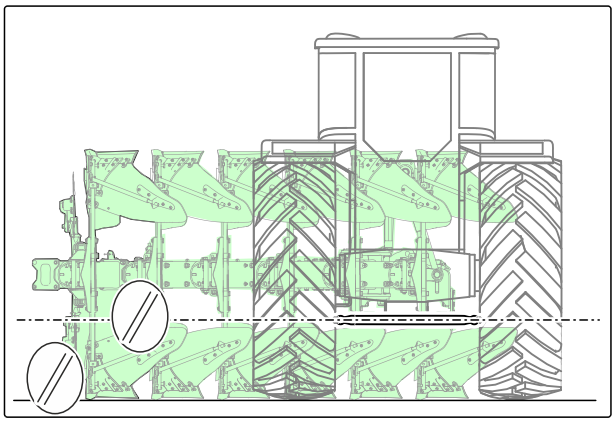
CMS-I-00005142

9.3 Aligning the implement horizontally

CMS-T-00008034-A.1

Aligning the lower link horizontally makes it easier to couple the implement.

► *To align the implement horizontally,* set the tilt angle on the right at 90° before swivelling the plough bodies into working position, see page 62.



CMS-I-00005560

9.4 Moving the plough bodies into working position

CMS-T-00007839-A.1

The implement is parked in working position on the plough bodies and parking supports.

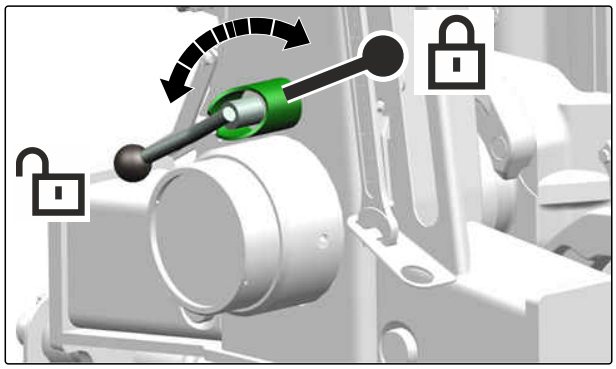
NOTE

Before swivelling the plough bodies into working position, set the tilt angle on the right from 90° back to the working value if necessary, see page 62.

REQUIREMENTS

✓ Implement in transport position

1. Unlock the transport lock using the hand lever.
2. Lift the implement using the 3-point hitch enough so that there is enough ground clearance to swivel the implement.
3. *To swivel the plough bodies into working position,*
   Actuate the *"green"* tractor control unit.
4. Swivel the plough body to the right so that the control elements of the wheel are accessible.



CMS-I-00005500

NOTE

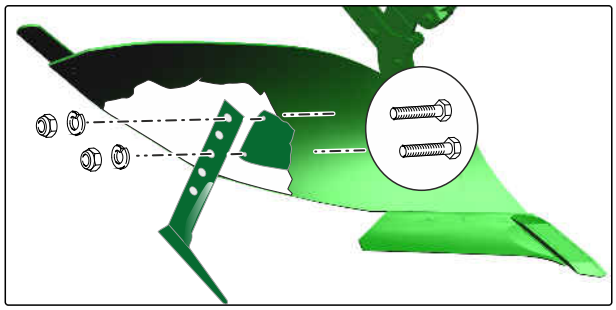
If necessary, release the transport lock by actuating the *"green"* tractor control unit on both sides.

9.5 Removing the subsoiler point

CMS-T-00008047-A.1

To park the plough in working position, the subsoiler points on the lower plough body pairs must be removed.

1. Loosen the bolts.
2. Remove the subsoiler point.

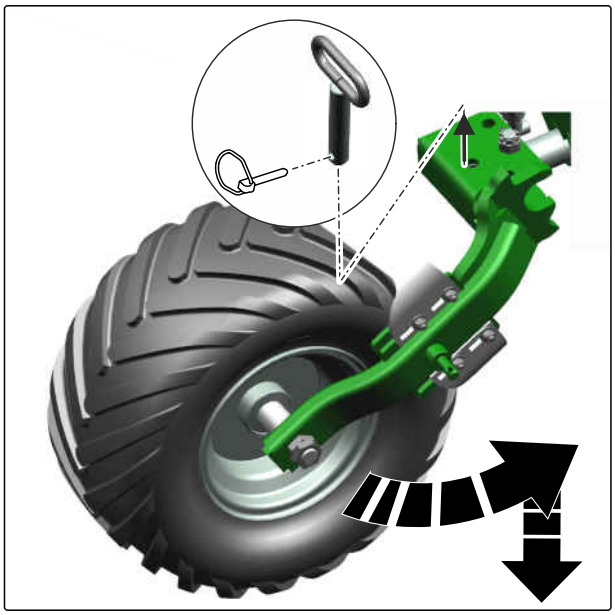


CMS-I-00005567

9.6 Swivelling the depth and transport wheel into working position

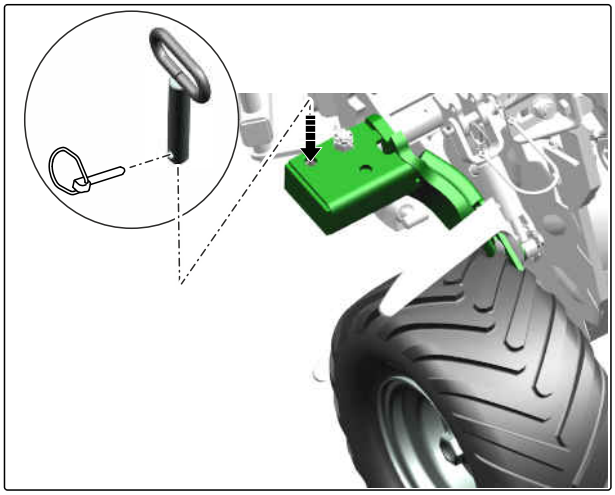
CMS-T-00007819-A.1

1. Pull out the pin.
2. Swivel the depth and transport wheel into working position.



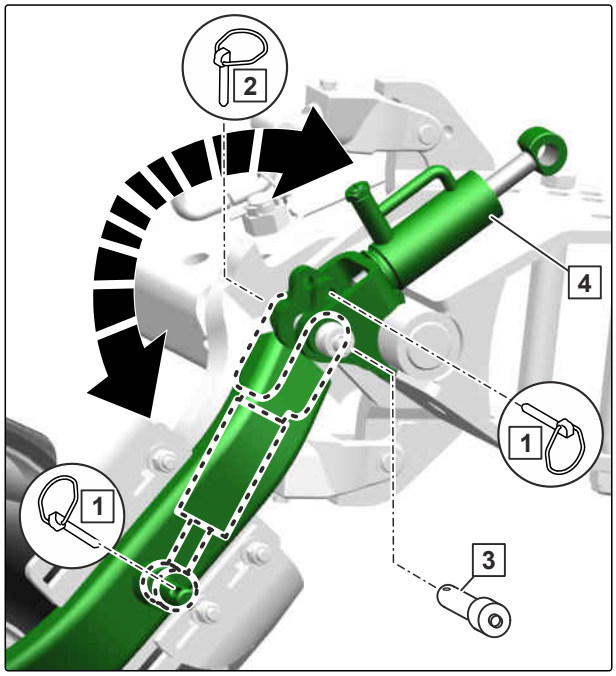
CMS-I-00005509

3. Secure the depth and transport wheel with the pin.
4. Secure the pin with a linch pin.



CMS-I-00005508

5. Remove the linch pin **1**.
6. Remove the linch pin **2**.
7. Pull out the pin **3**.
8. Fasten the damping cylinder **4** onto the wheel linkage.
9. Fix the position of the damping cylinder with the pin and secure using the linch pin **1**.



CMS-I-00005556

9.7 Uncoupling the top link

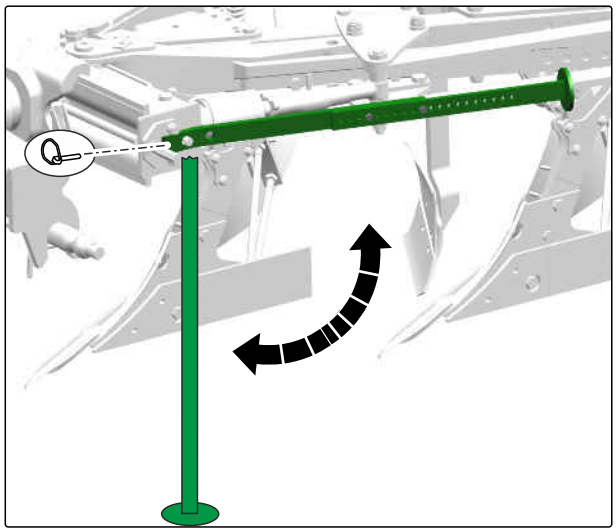
CMS-T-00007492-B.1

1. *To relieve the top link,*
   lower the implement.
2. Uncouple the top link.

9.8 Lowering the parking support

CMS-T-00007841-A.1

1. Slightly lift the implement slightly via the tractor lower link.
2. Remove the linch pin.
3. Lower the parking support.
4. Secure the parking support with the linch pin.



CMS-I-00005496

9.9 Uncoupling the lower link

CMS-T-00007351-B.1

1. Relieve the tractor's lower link.

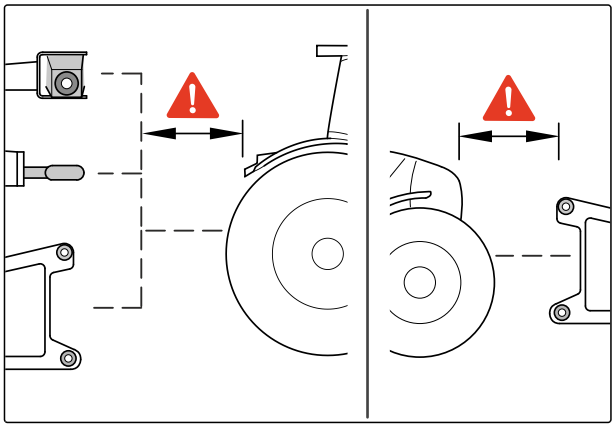
2. Uncouple the tractor lower links from the implement from the tractor seat.

9.10 Driving the tractor away from the implement

CMS-T-00005795-D.1

There must be enough space between the tractor and implement so that the supply lines can be uncoupled without obstructions.

► Drive the tractor away from the implement, leaving a sufficient distance.

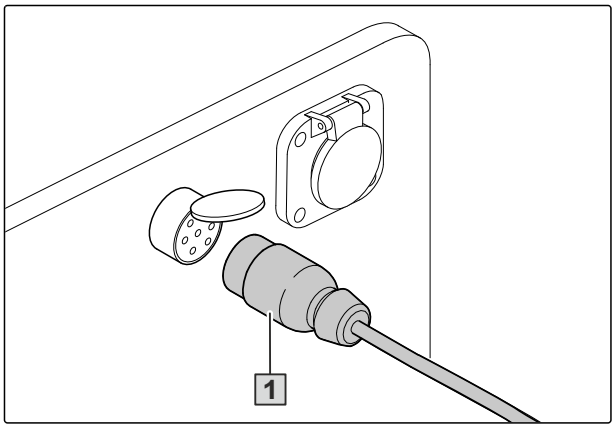


CMS-I-00004045

9.11 Uncoupling the power supply

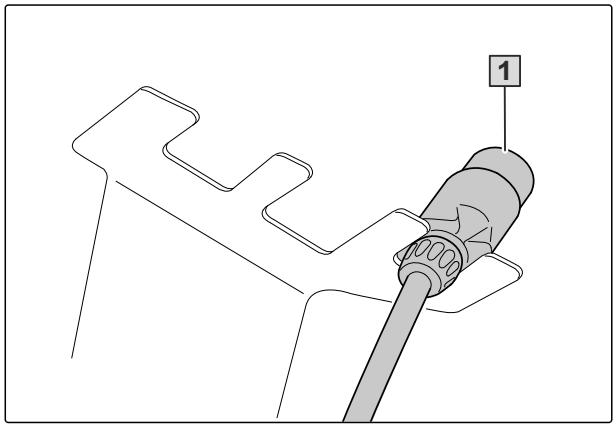
CMS-T-00001402-H.1

1. Pull out the plug [1] for the power supply.



CMS-I-00001048

2. Hang the plugs [1] in the hose cabinet.

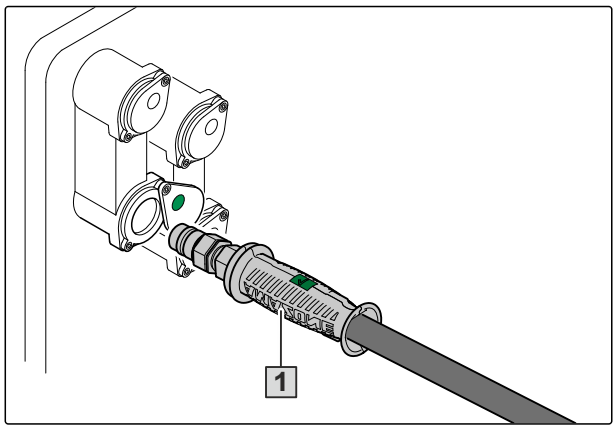


CMS-I-00001248

9.12 Disconnecting the hydraulic hose lines

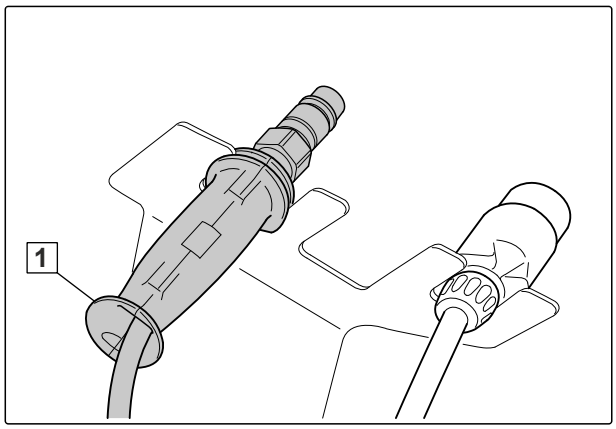
CMS-T-00000277-F.1

1. Secure the tractor and implement.
2. Put the control lever on the tractor control unit in float position.
3. Disconnect the hydraulic hose lines [1].
4. Put the dust caps on the hydraulic sockets.



CMS-I-00001065

5. Hang the hydraulic hose lines [1] in the hose cabinet.



CMS-I-00001250

Repairing the implement 10

CMS-T-00008036-B.1

10.1 Maintaining the implement

CMS-T-00008038-B.1

10.1.1 Maintenance schedule

After initial operation	
Checking the hydraulic hose lines	see page 99
Checking the bolted connections	see page 101

as required	
Checking the wheel	see page 101

daily	
Checking the condition of wear parts	see page 100
Checking the top link pin and lower link pin	see page 102

Every 50 operating hours / weekly	
Checking the hydraulic hose lines	see page 99
Checking the bolted connections	see page 101
Checking the hydraulic overload safety	see page 103

Every 1000 operating hours / Every 12 months	
Checking the hub bearing	see page 102
Checking the semi-automatic overload safety	see page 103
Checking the pressure on the hydraulic accumulator of the hydraulic overload safety	see page 103

10.1.2 Checking the hydraulic hose lines

CMS-T-00002331-C.1

INTERVAL

- After initial operation
- Every 50 operating hours

  or

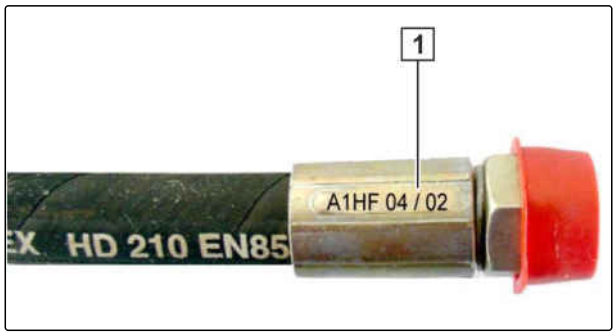
  weekly

1. Check the hydraulic hose lines for damage, such as chafing point, cuts, tears and deformation.

2. Check the hydraulic hose lines for leaks.

Hydraulic hose lines must not be more than 6 years old.

3. Check the manufacturing date 1.



CMS-I-00000532

4. Have any worn, damaged or aged hydraulic hose lines immediately replaced at a specialist workshop.

5. Retighten loose bolted connections.

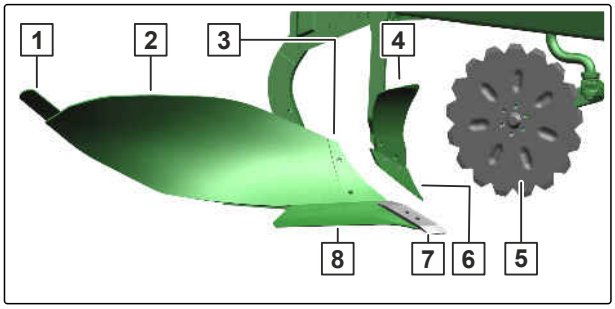
10.1.3 Checking the condition of wear parts

CMS-T-00005230-B.1

INTERVAL

- daily

Wear parts include:



CMS-I-00004513

1 Mouldboard tailpiece

2 Mouldboard

3 Mouldboard front section

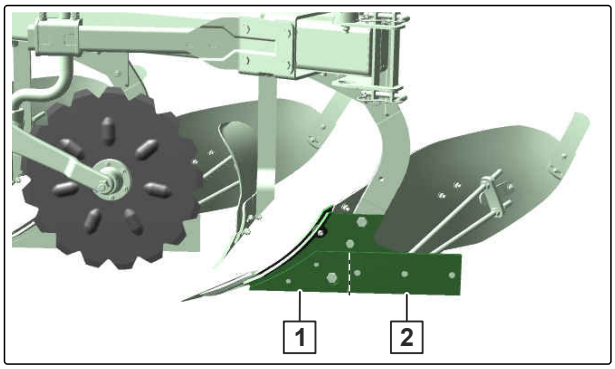
4 Skimmer

5 Disc coulter

6 Skimmer share

7 Exchange coulter tip

8 Wing



CMS-I-00004531

1 Landside point

2 Landside

Not illustrated:

- Trashboard
- Deflector plate
- Subsoiler point

1. Check the condition of wear parts.

2. Replace wear parts that are worn.

10.1.4 Checking the bolted connections

CMS-T-00005233-C.1

INTERVAL

- After initial operation
- Every 50 operating hours

  or

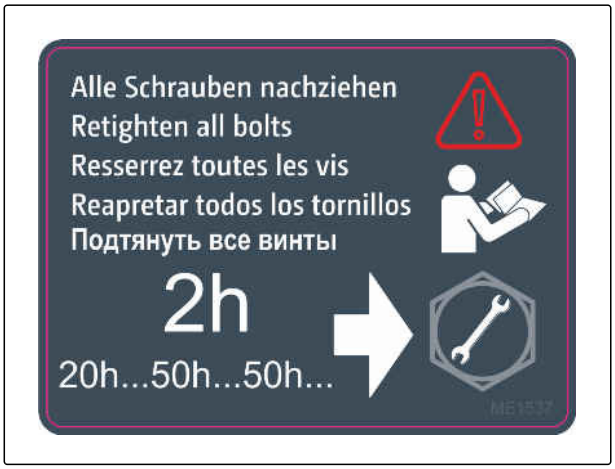
  weekly

CAUTION

Risk due to loosening of the bolted connections

After a short period of operation, the bolted connections lose preload force and can become loose.

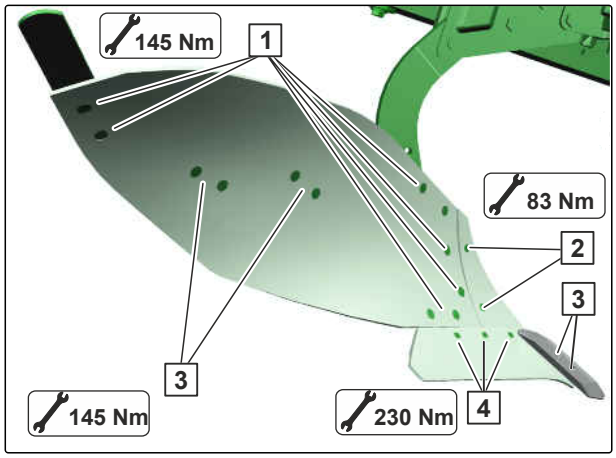
▶ Tighten the bolts once after 2 hours and then according to the specifications on the sticker.



CMS-I-00003762

1. Check all bolts on the plough for tight fit.
2. Check all bolts on the plough body as specified for tight fit.

1	M12x35 12.9
2	M10x35 12.9
3	M12x40 12.9
4	M14x39 12.9



CMS-I-00003760

10.1.5 Checking the wheel

CMS-T-00008042-B.1

INTERVAL

- as required

There are stickers attached in the rim of the wheels, which specify the required tyre inflation pressure.

Depth and transport wheel at the rear	Single or double shaft		
Diameter	600 mm	680 mm	690 mm
Tyre inflation pressure	5 bar	3.9 bar	4 bar
Tightening torque	260 Nm	260 Nm	260 Nm

1. Check the tyre inflation pressure according to the specifications on the stickers.

2. Check the tightening torque of the bolts.

10.1.6 Checking the hub bearing

CMS-T-00005288-C.1

INTERVAL

- Every 1000 operating hours

  or

  Every 12 months

▶ Have the wheel hub bearing checked by a qualified specialist workshop.

10.1.7 Checking the top link pin and lower link pin

CMS-T-00002330-H.1

INTERVAL

- daily

1. Check the top link pins and lower link pins for cracks or broken areas.

Permissible wear	2 mm

2. Replace the pins if there is significant wear.

10.1.8 Checking the semi-automatic overload safety

CMS-T-00008040-A.1

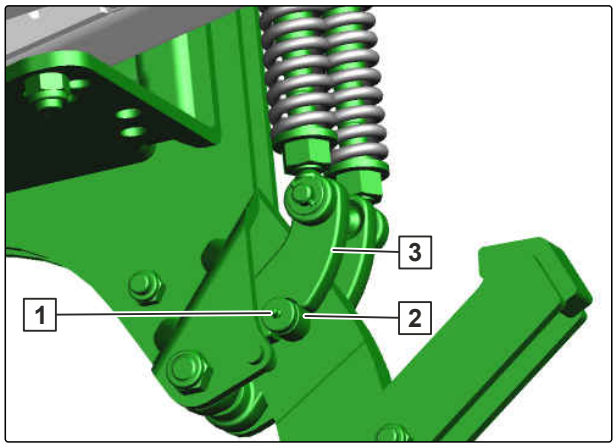
INTERVAL

- Every 1000 operating hours

  or

  Every 12 months

1. Check the condition of the roll pins 1, bearing rollers 2 and latches 3.
2. Replace worn parts.



CMS-I-00005562

10.1.9 Checking the hydraulic overload safety

CMS-T-00008041-A.1

INTERVAL

- Every 50 operating hours

  or

  weekly

▶ Check the cylinders, hydraulic accumulator, hose lines and piping of the hydraulic overload safety for leaks.

10.1.10 Checking the pressure on the hydraulic accumulator of the hydraulic overload safety

CMS-T-00008052-B.1

INTERVAL

- Every 1000 operating hours

  or

  Every 12 months

▶ Have the pressure on the hydraulic accumulator of the hydraulic overload safety checked by a qualified specialist workshop.

➥ Preload pressure: 100 bar

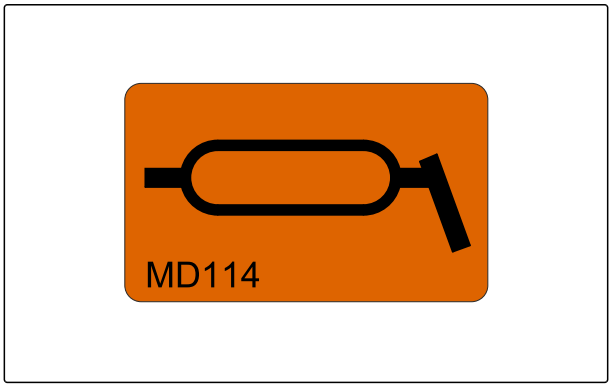
10.2 Lubricating the implement

CMS-T-00008074-A.1

IMPORTANT

Implement damage due to improper lubrication

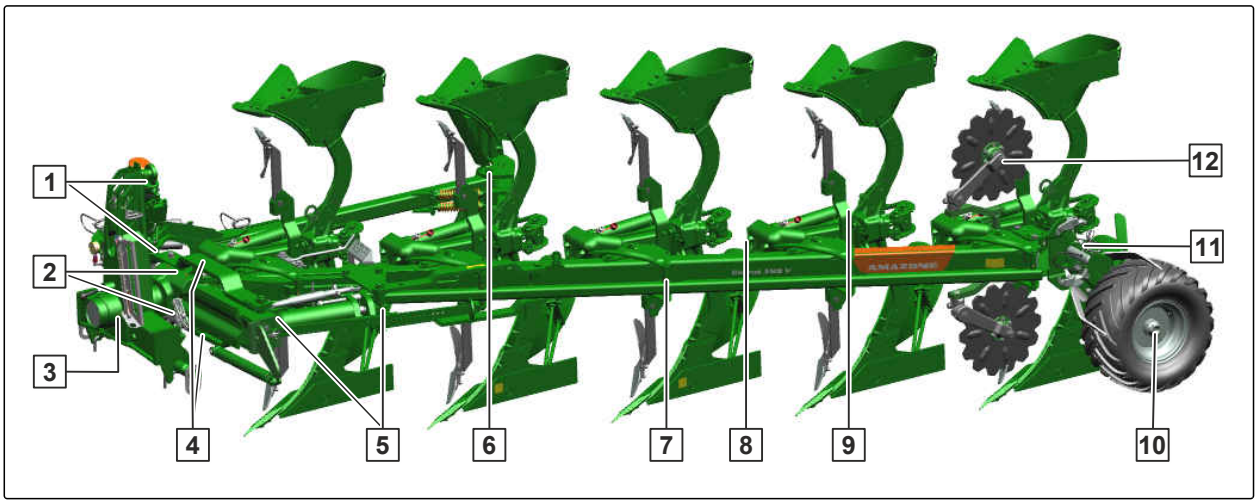
- Grease the implement at the marked lubrication points according to the lubrication schedule.
- *To ensure that dirt is not pressed into the lubrication points,*
  thoroughly clean the grease nipples and the grease gun.
- Only grease the implement with the lubricants listed in the technical data.
- Press the dirty grease completely out of the bearings.



CMS-I-00002270

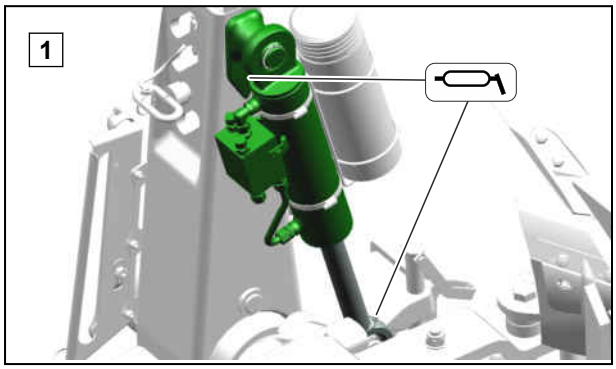
10.2.1 Overview of lubrication points

CMS-T-00008076-A.1

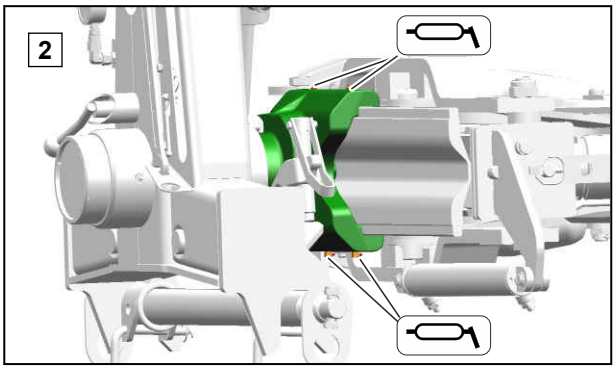


CMS-I-00005570

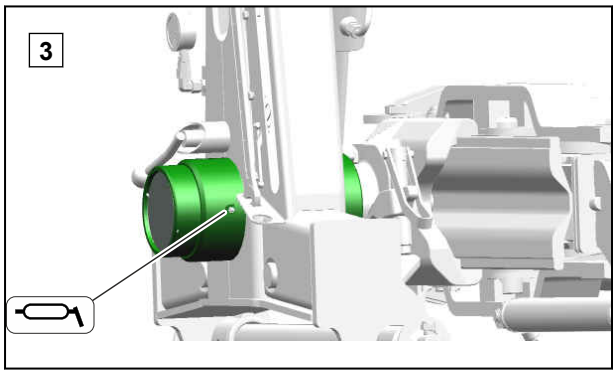
Every 50 operating hours



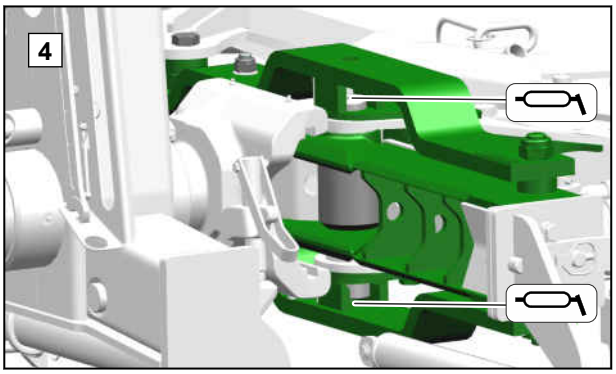
CMS-I-00005580



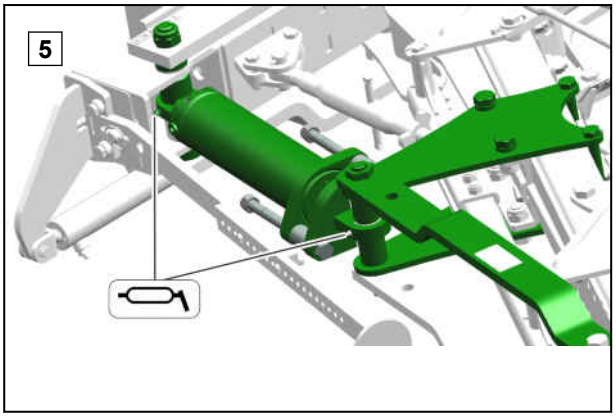
CMS-I-00005578



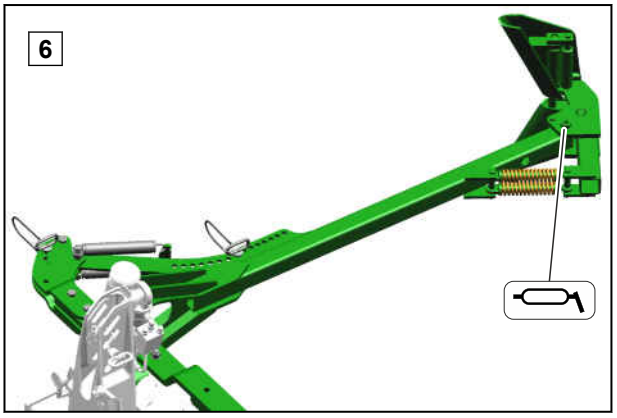
CMS-I-00005579



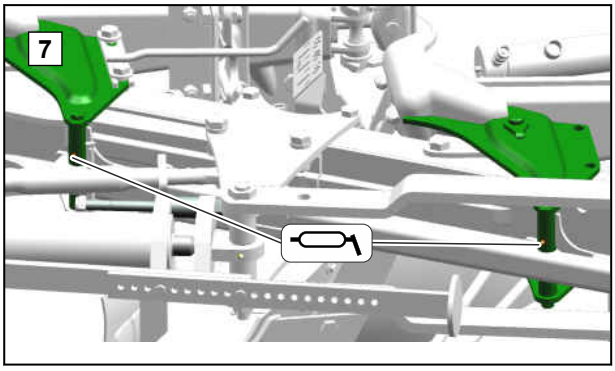
CMS-I-00005596



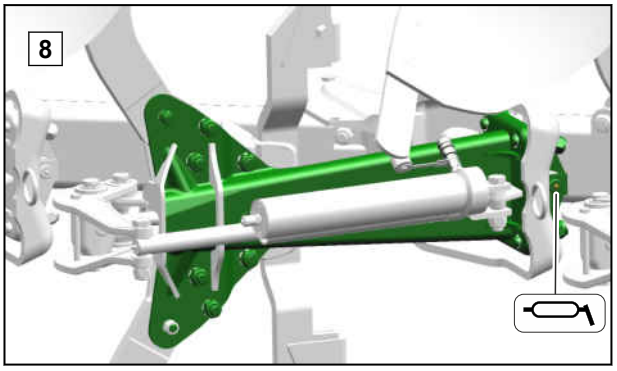
CMS-I-00005576



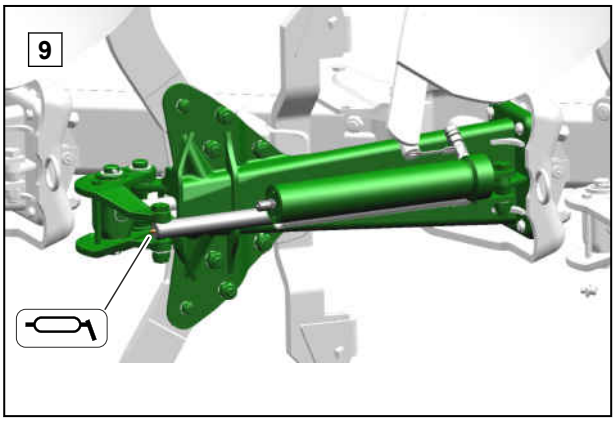
CMS-I-00005597



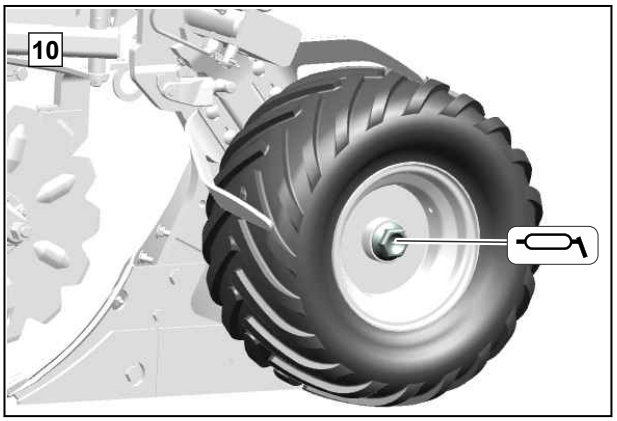
CMS-I-00005577



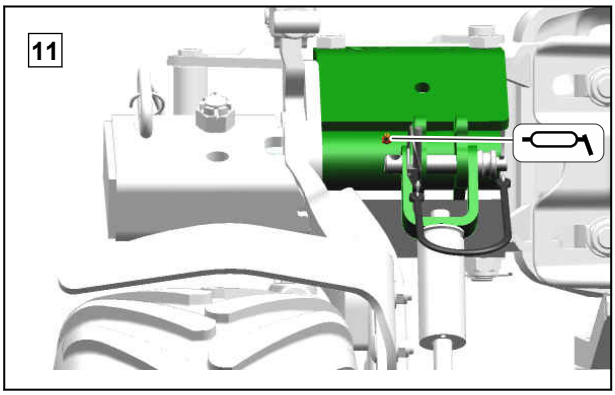
CMS-I-00005575



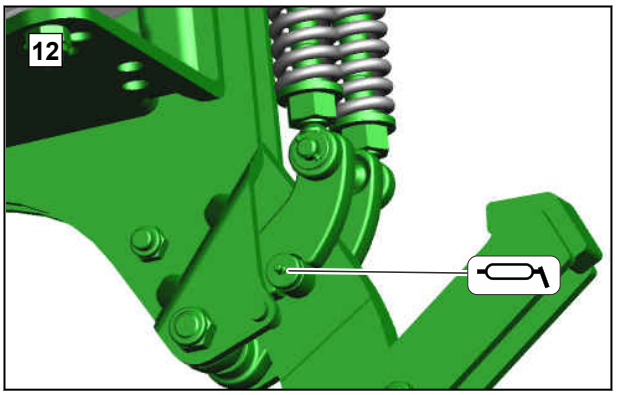
CMS-I-00005574



CMS-I-00005598



CMS-I-00005573



CMS-I-00005581

10.3 Cleaning the implement

CMS-T-00005229-B.1

ENVIRONMENTAL INFORMATION

Risk of environmental contamination due to improper use of oil

- Clean the implement in a cleaning area with oil separator.

IMPORTANT

Risk of implement damage due to cleaning jet of the high-pressure nozzle

- Do not clean the implement with a high-pressure cleaner during the first 6 weeks.
- *To prevent paint damage,* observe the instructions for cleaning and care.
- Never direct the cleaning jet of the high-pressure cleaner or hot water high-pressure cleaner onto the marked components.
- Never aim the cleaning jet of high-pressure cleaners or hot water high-pressure cleaners on electrical or electronic components.
- Never aim the cleaning jet of the high pressure cleaner directly on lubrication points, bearings, rating plates, warning signs, and stickers.
- Always maintain a minimum distance of 500 mm between the high-pressure nozzle and the implement.
- Do not exceed a water pressure of 100 bar.

CMS-I-00002692

- Clean the machine with a high-pressure cleaner or a hot water high-pressure cleaner.

10.4 Storing the implement

CMS-T-00005282-A.1

IMPORTANT

Implement damage due to corrosion

Dirt attracts moisture and leads to corrosion.

- Store the implement only in a clean state and protected from the weather.

1. Clean the machine.

2. Protect unpainted components from corrosion using a suitable corrosion inhibitor.

3. Grease all lubrication points. Remove excess grease.

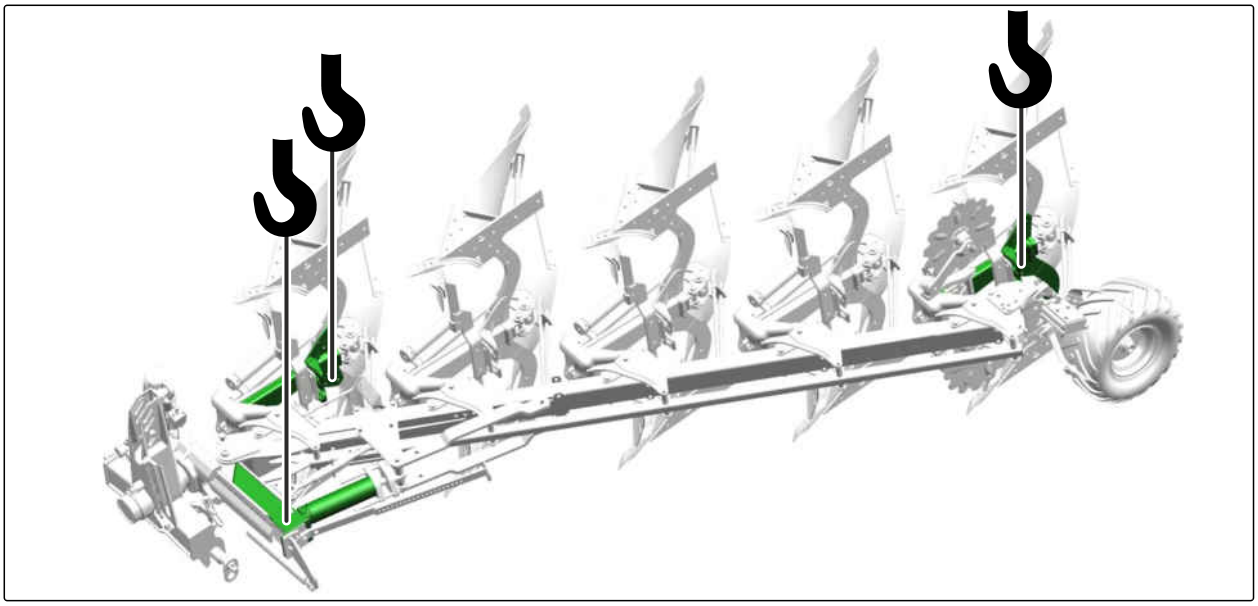
4. Park the implement in a sheltered place.

Loading the implement 11

CMS-T-00008166-C.1

11.1 Maschine mit Kran verladen

CMS-T-00008490-C.1



CMS-I-00005762

Die Maschine hat 3 Anschlagpunkte für Anschlagmittel zum Heben.

WARNING

Risk of accidents due to improperly attached slings for lifting

If the slings are not attached at the marked lashing points, the implement can be damaged during lifting and endanger safety.

- ▶ Only attach the slings for lifting at the marked lashing points.

REQUIREMENTS

Cayros mit hydraulischer Überlastsicherung

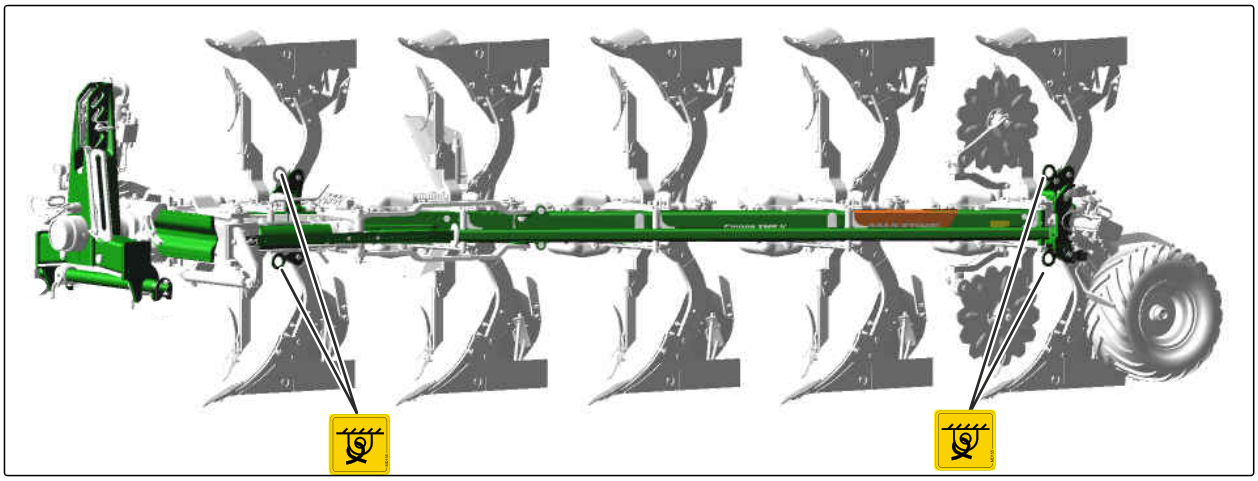
✓ Der Auslösedruck der Überlastsicherung muss mindestens auf Standardwert 100 bar eingestellt sein.

1. Anschlagmittel zum Heben an den vorgesehenen Anschlagpunkten befestigen.

2. Maschine langsam anheben.

11.2 Lashing the implement

CMS-T-00008167-B.1



CMS-I-00005633

The implement has 6 lashing points for lashing straps.

WARNING

Risk of accidents due to improperly attached lashing straps

If the lashing straps are not attached at the marked lashing points, the implement can be damaged during lashing and endanger safety.

► Attach the lashing straps only at the marked lashing points.

1. Put the implement on the transport vehicle.

2. Attach the lashing straps at the marked points.

3. Lash down the implement in compliance with the national regulations for load securing.

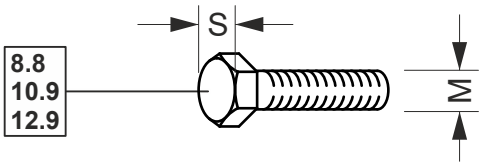
Appendix

12

CMS-T-00006212-C.1

12.1 Bolt tightening torques

CMS-T-00000373-E.1



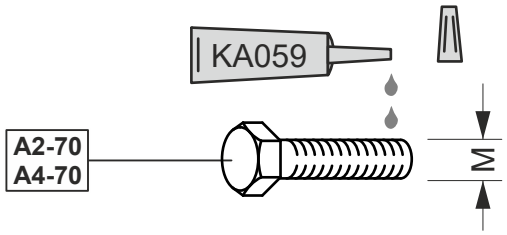
CMS-I-000260

NOTE

Unless specified otherwise, the bolt tightening torques listed in the table apply.

M	S	Strength classes		
		8.8	10.9	12.9
M8	13 mm	25 Nm	35 Nm	41 Nm
M8x1		27 Nm	38 Nm	41 Nm
M10	16(17) mm	49 Nm	69 Nm	83 Nm
M10x1		52 Nm	73 Nm	88 Nm
M12	18(19) mm	86 Nm	120 Nm	145 Nm
M12x1.5		90 Nm	125 Nm	150 Nm
M14	22 mm	135 Nm	190 Nm	230 Nm
M 14x1.5		150 Nm	210 Nm	250 Nm
M16	24 mm	210 Nm	300 Nm	355 Nm
M16x1.5		225 Nm	315 Nm	380 Nm
M18	27 mm	290 Nm	405 Nm	485 Nm
M18x1.5		325 Nm	460 Nm	550 Nm
M20	30 mm	410 Nm	580 Nm	690 Nm
M20x1.5		460 Nm	640 Nm	770 Nm

M	S	Strength classes		
		8.8	10.9	12.9
M22	32 mm	550 Nm	780 Nm	930 Nm
M22x1.5		610 Nm	860 Nm	1,050 Nm
M24	36 mm	710 Nm	1,000 Nm	1,200 Nm
M24x2		780 Nm	1,100 Nm	1,300 Nm
M27	41 mm	1,050 Nm	1,500 Nm	1,800 Nm
M27x2		1,150 Nm	1,600 Nm	1,950 Nm
M30	46 mm	1,450 Nm	2,000 Nm	2,400 Nm
M30x2		1,600 Nm	2,250 Nm	2,700 Nm



CMS-I-00000065

M	Tightening torque	M	Tightening torque
M4	2.4 Nm	M14	112 Nm
M5	4.9 Nm	M16	174 Nm
M6	8.4 Nm	M18	242 Nm
M8	20.4 Nm	M20	342 Nm
M10	40.7 Nm	M22	470 Nm
M12	70.5 Nm	M24	589 Nm

12.2 Other applicable documents

CMS-T-00006213-A.1

- Tractor operating manual

Disposing of the implement

13

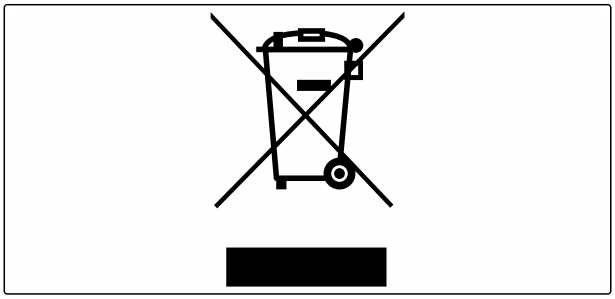
CMS-T-00010906-A.1

ENVIRONMENTAL INFORMATION

Environmental damage due to improper disposal

- Observe the regulations of the local authorities.
- Observe the symbols on the implement regarding disposal.
- Observe the following instructions.

1. Components with this symbol should not be disposed of with household waste.



CMS-I-00007999

2. Return batteries to the distributor

   or

   Dispose of batteries at a collection point.

3. Put recyclable materials in the recycling.

4. Treat operating materials like hazardous waste.

5. Have coolants disposed of by a specialist workshop.

Directories 14

14.1 Glossary

CMS-T-00000513-B.1

M

Machine

Mounted implements are accessory parts of the tractor. However, mounted implements are always referred to as the implement in this operating manual.

O

Operating materials

Operating materials serve to ensure operational readiness. Operating materials include e.g. cleaning agents and lubricants such as lubricating oil, greases or cleaners.

T

Tractor

In this operating manual, the designation tractor is always used, even for other agricultural tractor units. Implements are mounted on the tractor or towed by the tractor.

14.2 Index

M

O

P

R

S

T

V

W

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