Original operating manual

Mounted reversible plough

Teres 300 with depth and transport wheel

Teres 300 V with depth and transport wheel

SmartLearning

www.amazone.de

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-J.1

1.1 Copyright

CMS-T-00012308-A.1

Reprinting, translation and reproduction in any form, including excerpts, require the written approval of AMAZONEN-WERKE.

1.2 Diagrams

CMS-T-005676-G.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-E.1

1.2.3.1 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

1.2.3.2 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

1.2.3.3 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

1.2.3.4 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

1.2.3.5 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

1.2.3.6 Workshop work

CMS-T-00013932-B.1

WORKSHOP WORK

▶ Identifies maintenance work that must be performed at a workshop that is adequately equipped in terms of agricultural technology, safety and environmental technology by specialist personnel with appropriate training.

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 Digital operating manual

CMS-T-00002024-B.1

The digital operating manual and e-learning can be downloaded from the Info Portal on the AMAZONE website.

1.5 Your opinion is important

CMS-T-000059-D.1

Dear reader, our documents are updated on a regular basis. Your suggestions for improvement help us to create ever more user-friendly documents. Please send us your suggestions by post, fax or email.

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CMS-I-00000638

Safety and responsibility 2

CMS-T-00005276-G.1

2.1 Basic safety instructions

CMS-T-00005277-G.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-D.1

2.1.2.1 Personnel qualification

CMS-T-00002306-B.1

2.1.2.1.1 Requirements for persons working with the implement

CMS-T-00002310-B.1

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

the implement must meet the following minimum requirements:

- The person is physically and mentally capable of checking the implement.
- 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-D.1

2.1.2.4.1 Perfect technical condition

CMS-T-00002314-D.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 machine.
- Repair safety-relevant damage immediately.
- Fix the damage according to this operating manual.
- *If you are not able to fix the damage according to this operating manual yourself:*
  Have the damage repaired 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-C.1

2.1.3.1 Safety hazards on the implement

CMS-T-00002318-F.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.

Risk of injury on the universal joint shaft

Persons can be caught, pulled in and severely injured by the universal joint shaft and driven components. If the universal joint shaft is overloaded, the implement can be damaged, parts can be ejected at high speed, and persons can be injured.

- Maintain sufficient coverage of the profile tube, universal joint shaft guard and PTO shaft protective cap.
- Maintain the direction of rotation and the permissible speed of the universal joint shaft.
- *If the universal joint shaft is angled down too strongly:*
  Switch off the universal joint shaft drive.
- *If you do not need the universal joint shaft:*
  Switch off the universal joint shaft drive.

Risk of injury on the PTO shaft

Persons can be caught, pulled in and severely injured by the PTO shaft and driven components. If the PTO shaft is overloaded, the implement can be damaged, parts can be ejected at high speed, and persons can be injured.

- Maintain sufficient coverage of the profile tube, universal joint shaft guard and PTO shaft protective cap.
- Allow the locks on the PTO shaft to engage.
- *To secure the universal joint shaft guard against rotating:*
  Hook on the safety chains.
- *To secure the coupled hydraulic pump against rotating:*
  Put on the torque support.
- Maintain the direction of rotation and the permissible speed of the PTO shaft.
- *To prevent implement damage due to torque peaks:*
  Slowly couple the PTO shaft at low tractor engine speed.

Danger due to machine parts still running

When the drives are switched off, machine parts can continue running and cause serious personal injury or death.

- Before approaching the machine, wait until any machine parts that are still running have come to a stop.
- Only touch machine parts that are standing still.

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.

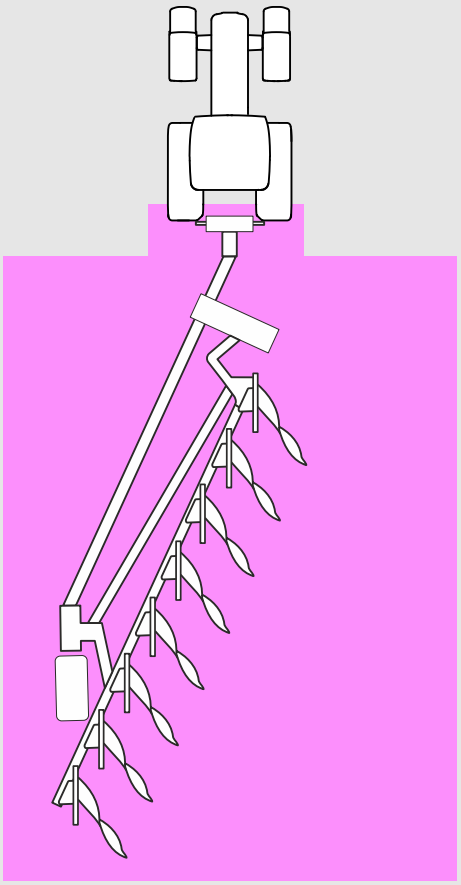
Hydraulically raised implement parts can descend unnoticed and slowly.

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-J.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-I.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.

- *If you have to work on or under raised loads:*
  Lower the loads or secure the loads 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.
- 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.
- Have maintenance work that is labelled as *"WORKSHOP WORK"* performed at a workshop that is adequately equipped in terms of agricultural technology, safety and environmental technology by specialist personnel with appropriate training.
- 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 three-point mounting frame, drawbar, trailer support, trailer coupling or 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.
- Do not weld close to a crop protection sprayer that was previously used to spread liquid fertiliser.

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.

2.2 Safety routines

CMS-T-00002300-D.1

Securing the tractor and implement

If the tractor and implement are not secured against unintentional starting and rolling away, the tractor and implement can be set in motion in an uncontrolled manner, and can run over, crush and kill people.

- Lower the raised implement or raised implement parts.
- Relieve pressure in the hydraulic hose lines by actuating the operating devices.
- *If you have to stand under the raised implement or components,* secure the raised implement and components against lowering with a mechanical safety support or hydraulic locking device.
- Switch off the tractor.
- Apply the tractor's parking brake.
- Remove the ignition key.

Securing the machine

After uncoupling, the implement has to be secured. If the implement and implement parts are not secured, there is a risk of personal injury due to crushing and cutting.

- Only park the implement on stable and level ground.
- *Before you depressurise the hydraulic hose lines and disconnect them from the tractor,* move the implement into working position.
- Protect people against direct contact with sharp-edged or protruding implement parts.

Make sure that the protective equipment is functional

If protective equipment is missing, damaged or removed, implement parts can cause serious personal injury or even death.

- Check the implement at least once a day for damage, proper installation, and functioning of the protective equipment.
- *If you are not sure if the protective equipment is properly installed and functional,* have the protective equipment checked by a qualified specialist workshop.
- Make sure that the protective devices are properly installed and functional before any work on the implement.
- Replace damaged protective equipment.

Climbing on and off

Negligent behaviour while climbing on and off can cause people to fall off the ladder. People who climb onto the implement without using the intended access steps can slip, fall, and suffer severe injury. Dirt and operating materials can impair stepping and standing safety. Accidental actuation of control elements can unintentionally activate potentially dangerous functions.

- Use only the intended access steps.
- *To ensure safe stepping and standing:* Always keep steps and platforms clean and in proper condition.
- *When the implement is moving:* Never climb onto or off of the implement.
- Climb up and down facing the implement.
- When climbing up and down, maintain contact with at least 3 points on the steps and handrails: always keep 2 hands and one foot or 2 feet and one hand on the implement.
- When climbing up and down, never hold onto the control elements.
- When climbing down, never jump off of the implement.

Intended use

3

CMS-T-00006508-B.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 three-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.

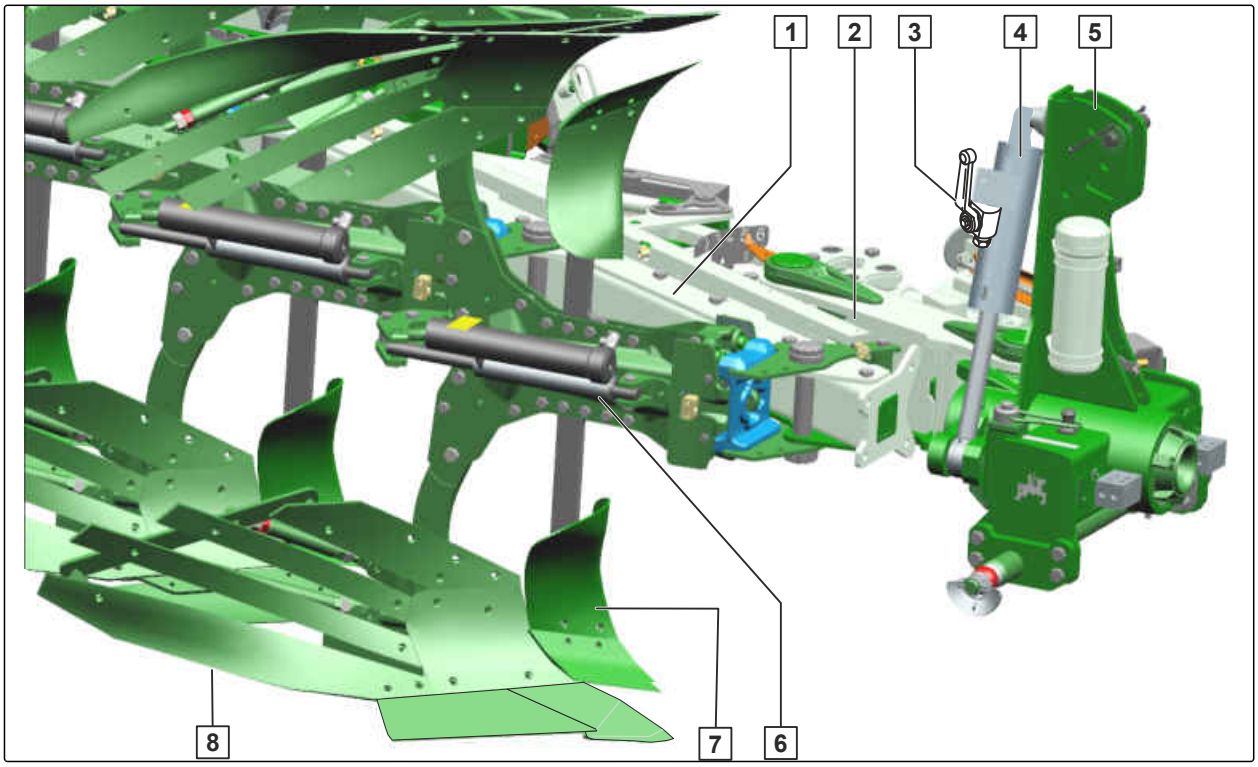
Product description

4

CMS-T-00006493-E.1

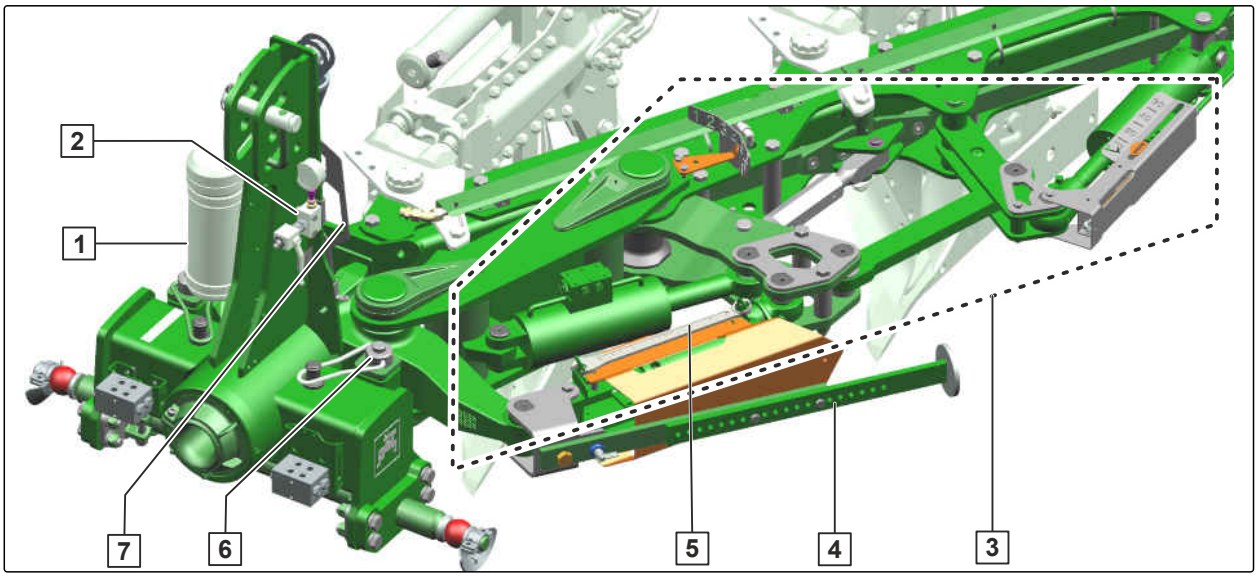
4.1 Implement overview

CMS-T-00007357-C.1



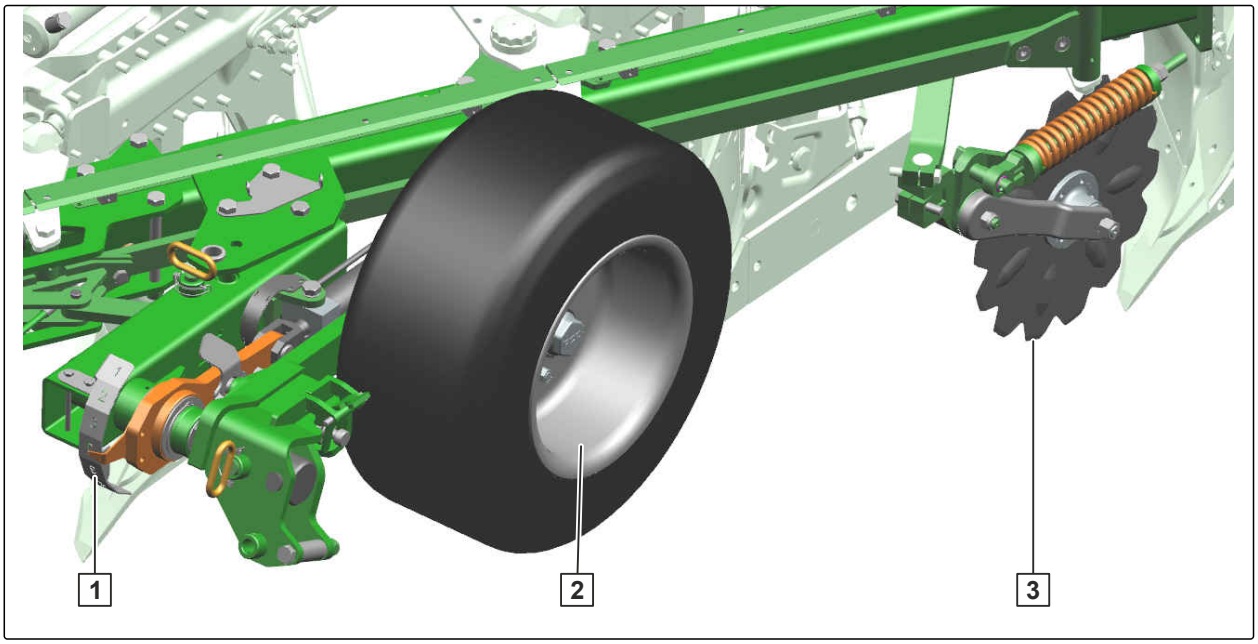
CMS-I-00005129

1	Beam	2	Implement rating plate
3	Depth and transport wheel hydraulic system stop tap	4	Turning cylinder
5	Headstock	6	Overload safety
7	Skimmer	8	Plough body



CMS-I-00005128

1 Document box
2 Overload safety adjustment
3 Adjustment Centre
4 Parking support
5 Hexagon spanner
6 Tilt adjustment
7 Hose cabinet



CMS-I-00005127

1 Hydraulic working depth adjustment display
2 Depth and transport wheel
3 Disc coulter

4.2 Function of the implement

CMS-T-00014920-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 hydraulically adjustable.
- The working width can be manually adjusted in stages or, with the Teres V, infinitely adjusted hydraulically.
- The front furrow width is hydraulically or manually adjustable.
- The working width can be adjusted manually in increments, or variably hydraulically on the Tyrok V.
- The working depth is hydraulically or manually adjustable using the depth and transport wheel.
- For road transport, the depth and transport wheel is used as a transport running gear.

4.3 Special equipment

CMS-T-00006500-B.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:

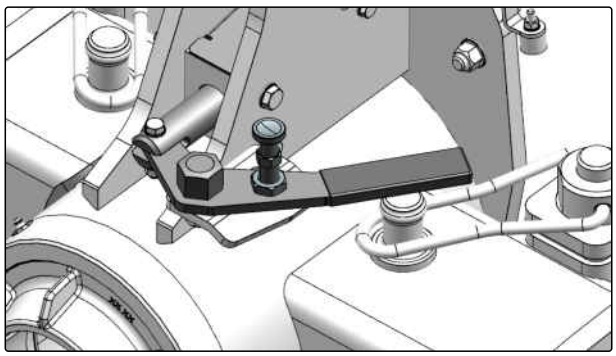
- Scraper
- Landside protector
- Wide furrow share
- ComfortClick
- Trashboard
- Packer arm for catch hooks
- Beam extension
- Disc coulter
- Subsoiler point
- Skimmer

- LED rear lighting for road travel
- Lateral warning signs for France

4.4 Protective device

CMS-T-00007358-B.1

The turn-over bracket locking mechanism secures the implement in transport position.



CMS-I-00007076

4.5 Rear lighting and identification for road travel

CMS-T-00009148-B.1

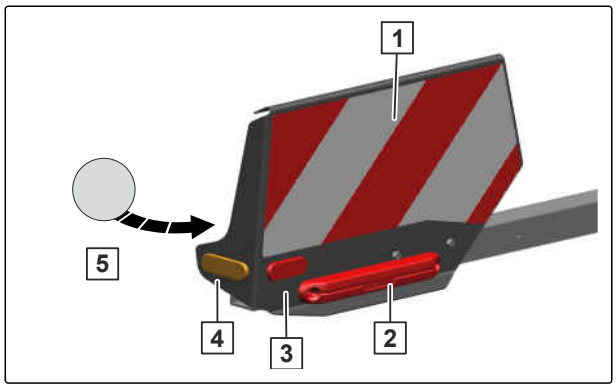
1 Warning signs to the front and rear

2 Rear lights, brake lights, and turn indicators

3 Reflector, red

4 Reflector, yellow

5 Reflector, white



CMS-I-00006282

NOTE

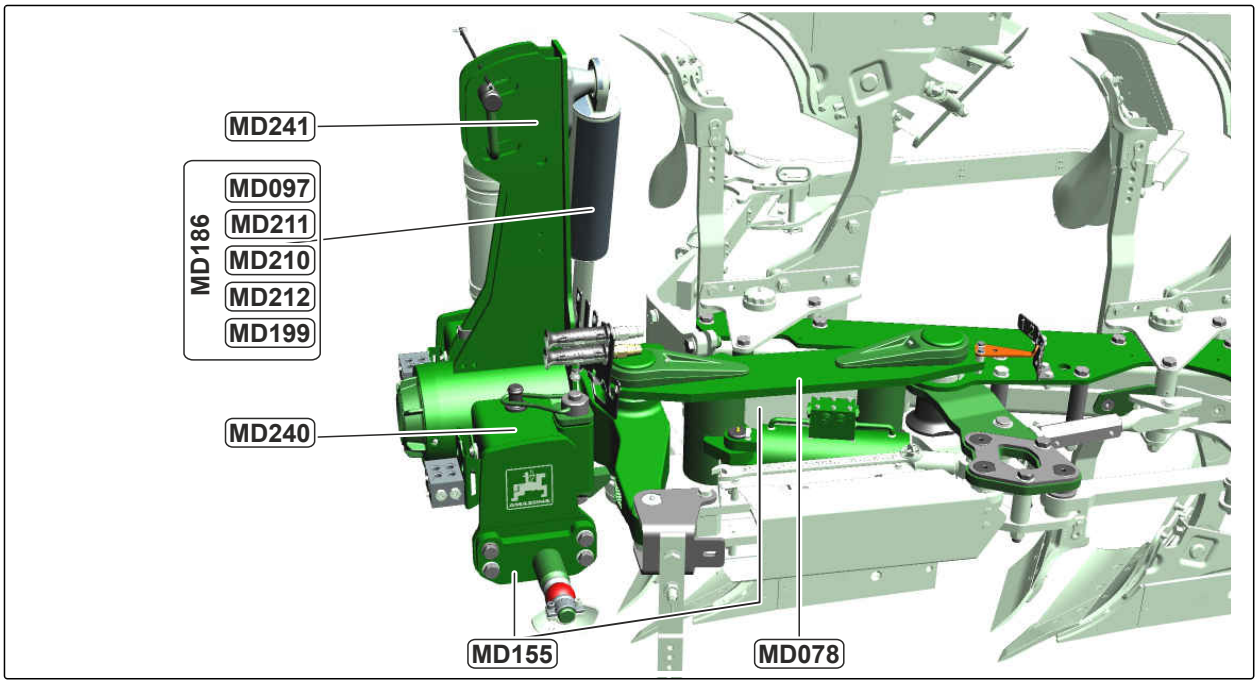
The lighting and identification for road travel can vary depending on the national regulations.

4.6 Warning symbols

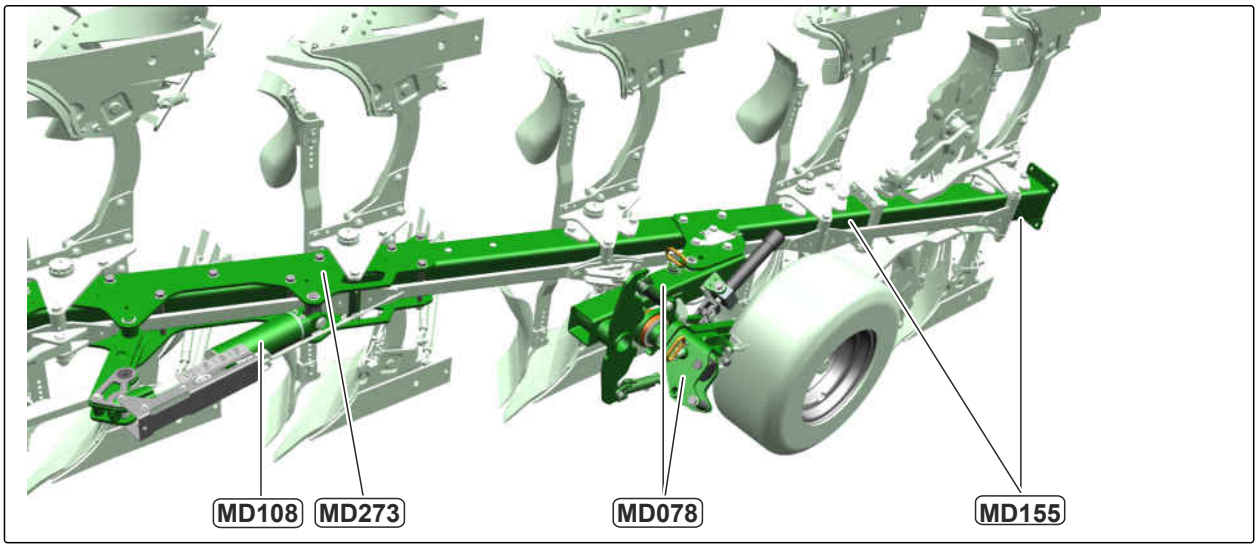
CMS-T-00006496-C.1

4.6.1 Positions of the warning symbols

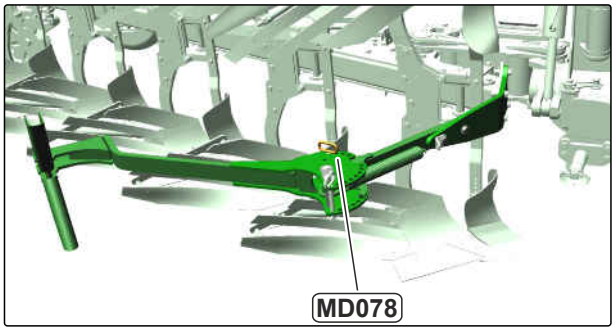
CMS-T-00007220-B.1



CMS-I-00005132



CMS-I-00005131



CMS-I-00005139

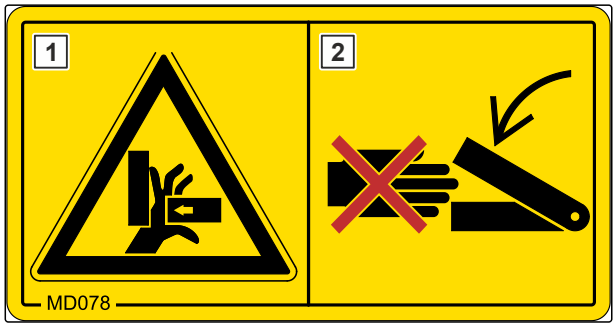
4.6.2 Layout of the warning symbols

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

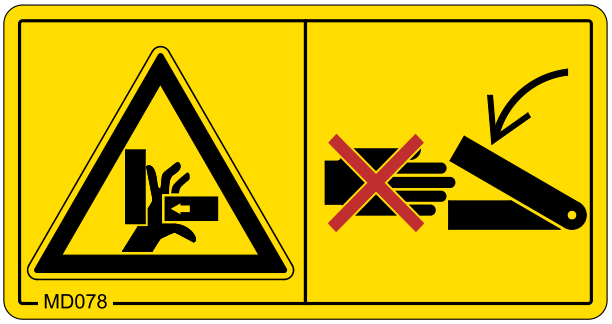
4.6.3 Description of the warning symbols

CMS-T-00007221-B.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.

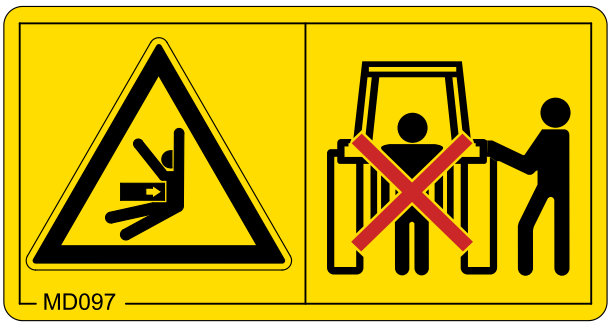


CMS-I-000074

MD 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.

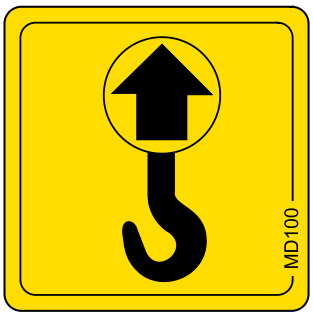


CMS-I-000139

MD 100

Risk of accidents due to improperly attached lifting gear

- Only attach the lifting gear at the marked positions.

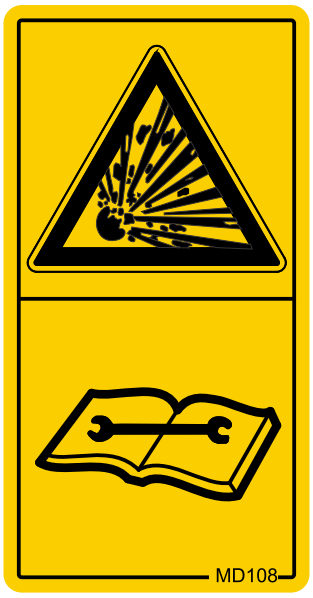


CMS-I-000089

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.

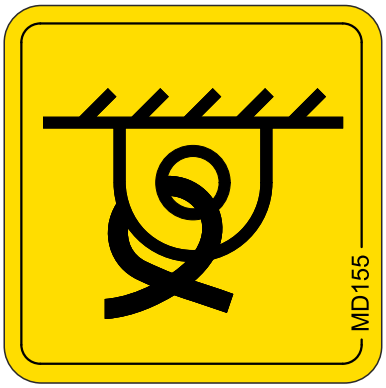


CMS-I-00004027

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.

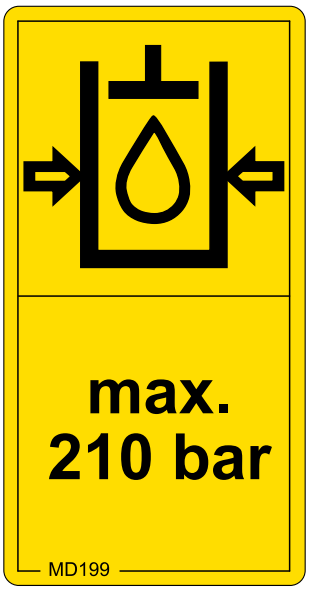


CMS-I-00000450

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.

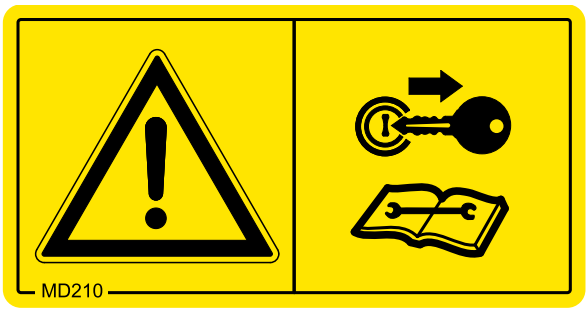


CMS-I-00000486

MD210

Risk due to unintentional starting and unintentional rolling away of the implement

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



CMS-I-00002251

MD211

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

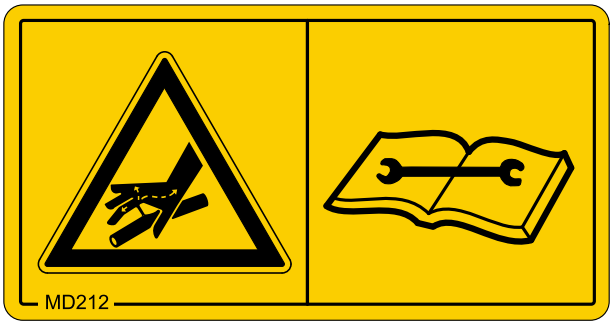
- Before your work on or with the implement, read and understand the operating manual.

CMS-I-00003658

MD212

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.

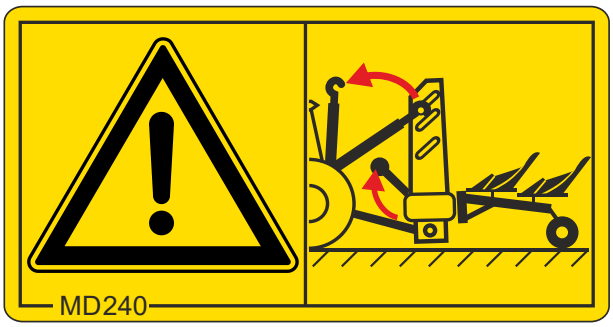


CMS-I-00004384

MD 240

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

- ▶ Prepare the implement properly for road travel.

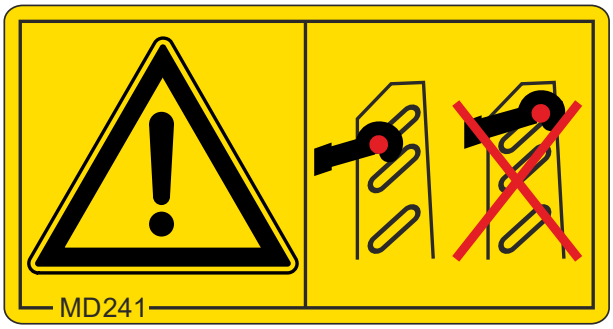


CMS-I-00004805

MD 241

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

- ▶ Prepare the implement properly for operation.

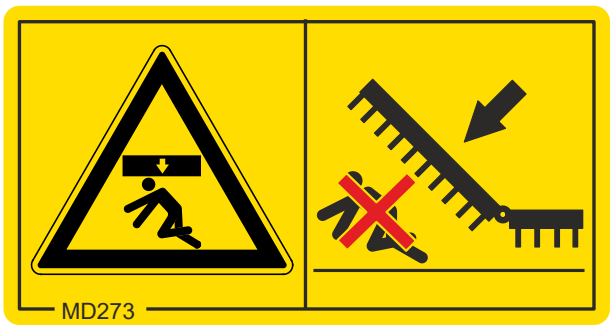


CMS-I-00004804

MD 273

Risk of crushing for the whole body from lowering implement parts

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



CMS-I-00004833

4.7 Rating plate on the implement

CMS-T-00004505-H.1

1 Implement number

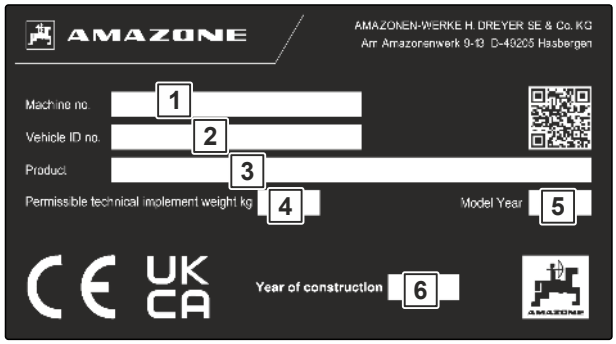
2 Vehicle ID number

3 Product

4 Permissible technical implement weight

5 Model year

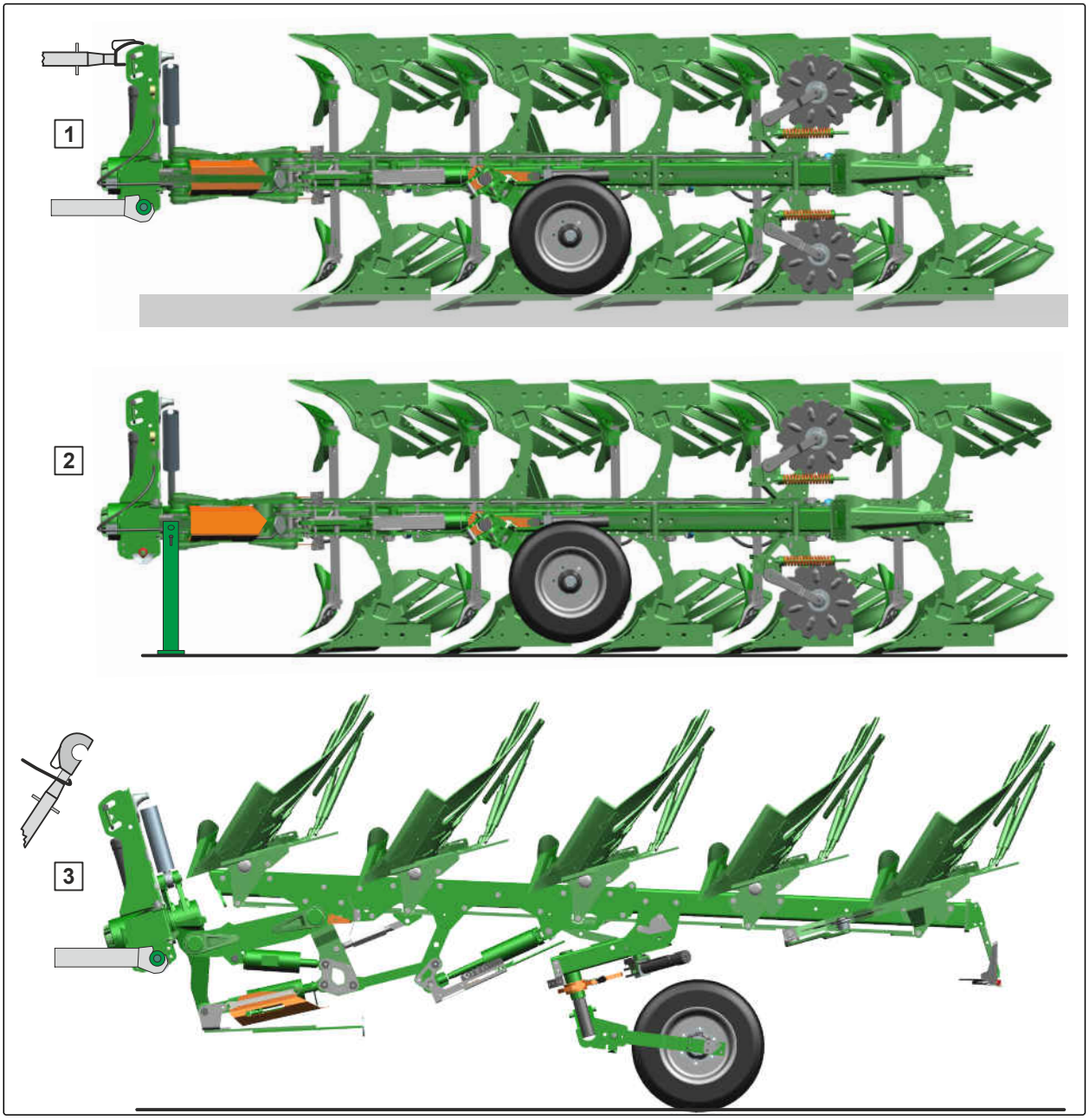
6 Year of manufacture



CMS-I-00004294

4.8 Implement positions

CMS-T-00006495-A.1



CMS-I-00005130

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

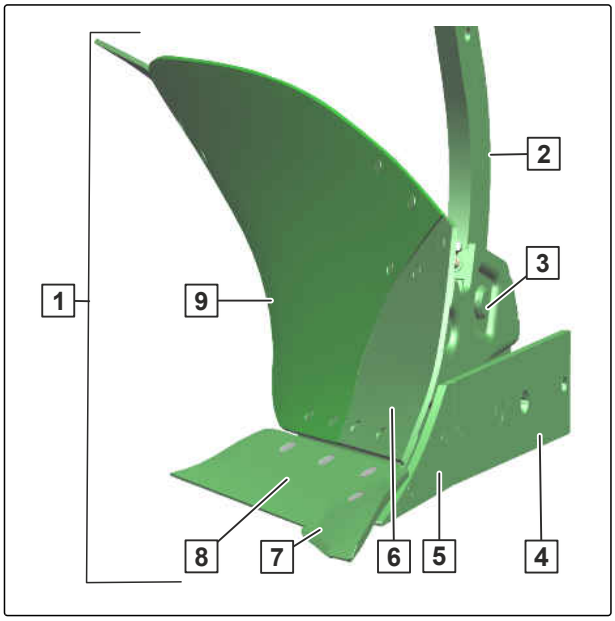
5 Landside point

6 Mouldboard front section

7 Share tip

8 Wing

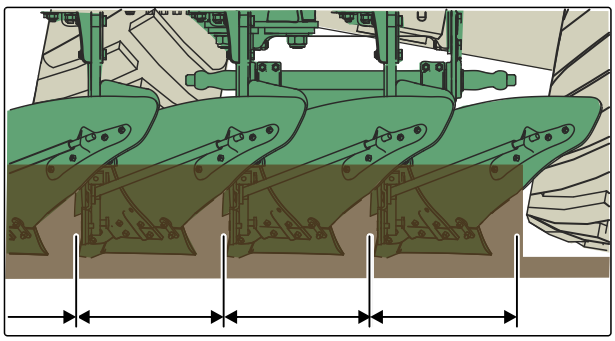
9 Mouldboard



CMS-I-00004826

Working width of the plough body

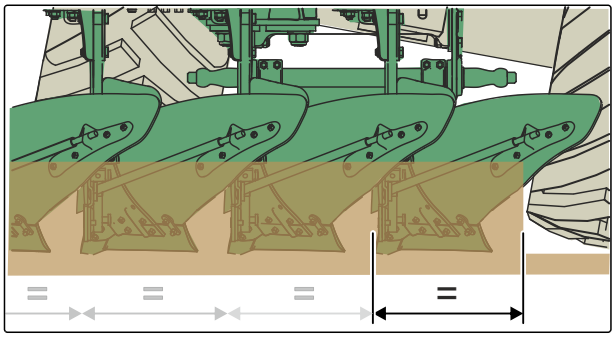
The working width is the actual cutting width of a plough body, measured at 90° to the direction of travel.



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



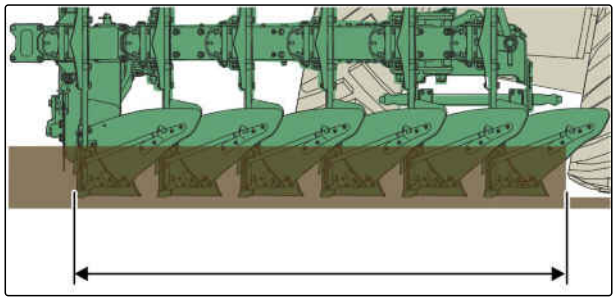
CMS-I-00002674

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

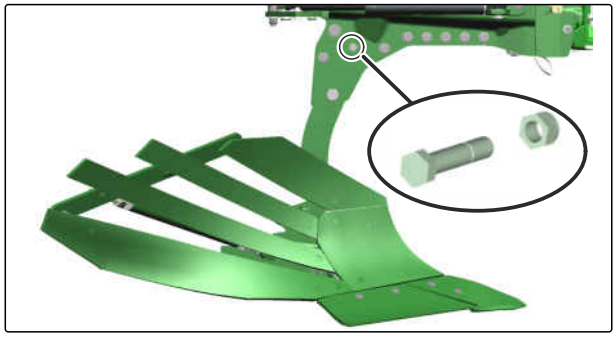
CMS-T-00009210-B.1

4.10.1 Shear bolt overload safety

CMS-T-00006871-B.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-00004970

4.10.2 Hydraulic overload safety

CMS-T-00006507-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 for different soils through the hydraulic pressure.

A shear bolt serves as an additional overload safety.

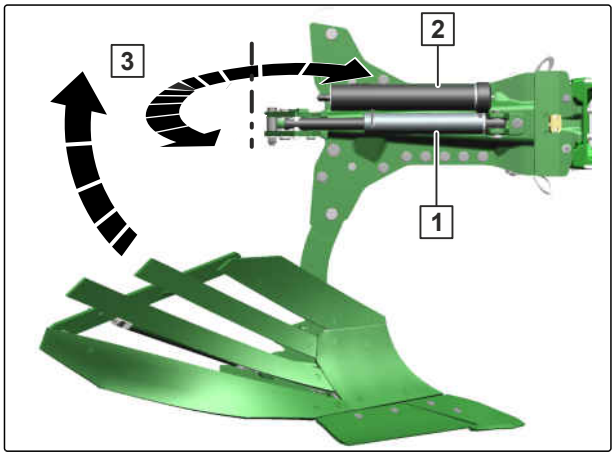
The hydraulic overload safety is available in two versions:

- 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-00005725

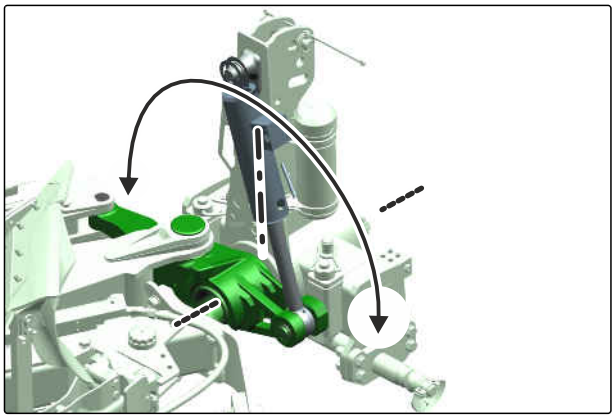
4.11 Turn-over bracket

CMS-T-00007223-A.1

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



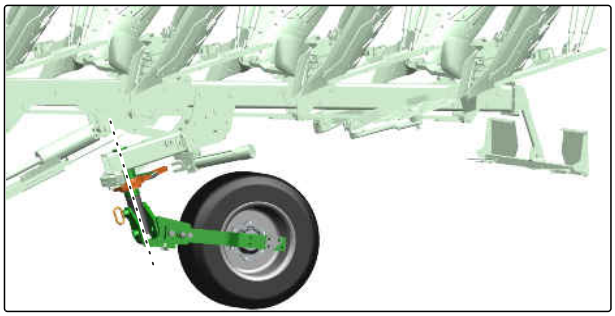
CMS-I-00005138

4.12 Depth and transport wheel

CMS-T-00007224-A.1

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

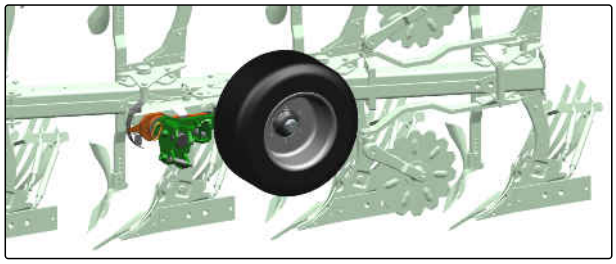
In transport position, the depth and transport wheel can be rotated around the vertical axis.



CMS-I-00005136

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

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



CMS-I-00005137

4.13 Adjustment Centre

CMS-T-00007313-C.1

Functions of the Adjustment Centre:

- The displayed values on the scale only serve for orientation.
- Standard length of the threaded spindle: 449 mm. The pull point is automatically adjusted to changes in the working width. It is not necessary to change the length.
- The transmission pull controls the stroke of the swivel-in cylinder when turning the plough bodies.
- Before turning the plough bodies, the swivel-in cylinder swivels the beam into the turning position to achieve sufficient ground clearance.

Teres V

1 Adjustment of the front furrow width

2 Display of the front furrow width

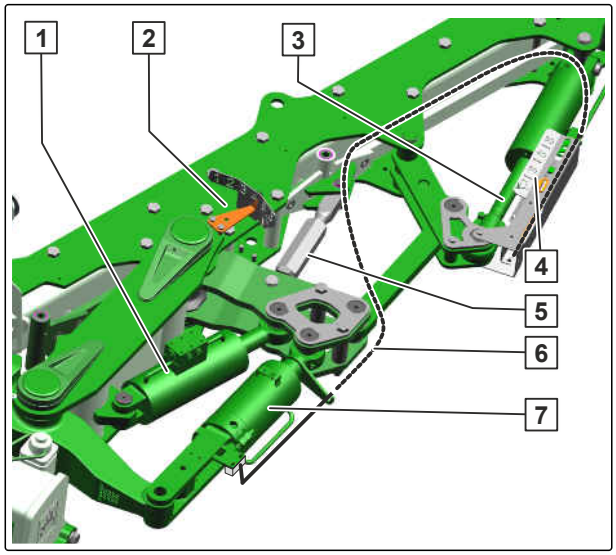
3 Hydraulic working width adjustment

4 Display of the working width

5 Threaded spindle for the pull point

6 Transmission pull

7 Swivel-in cylinder



CMS-I-00005135

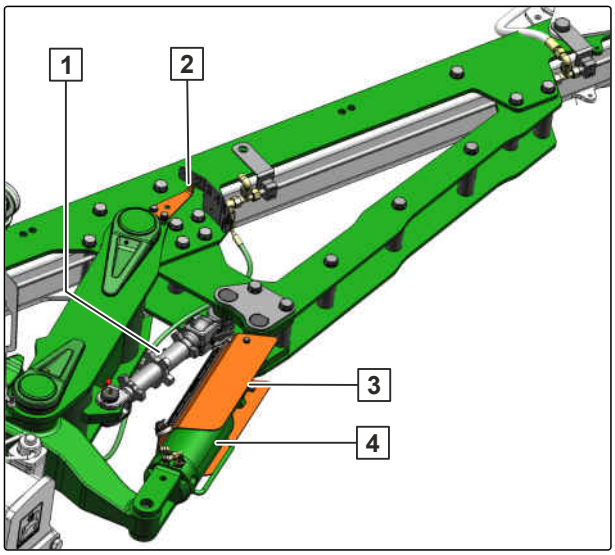
Teres with manual adjustment

1 Threaded spindle for front furrow width adjustment

2 Display of the front furrow width

3 Pull point adjustment

4 Swivel-in cylinder



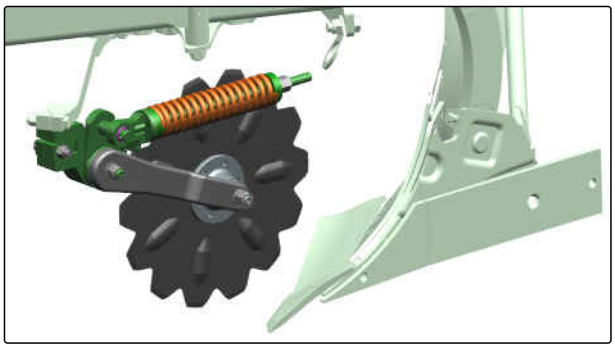
CMS-I-00009835

4.14 Disc coulter

CMS-T-00006962-A.1

The disc coulter produces a defined furrow edge.

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



CMS-I-00004873

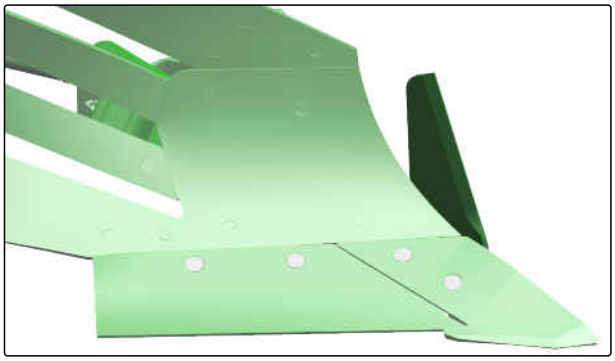
4.15 Landside coulter

CMS-T-00006963-D.1

The landside coulter can be mounted 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.



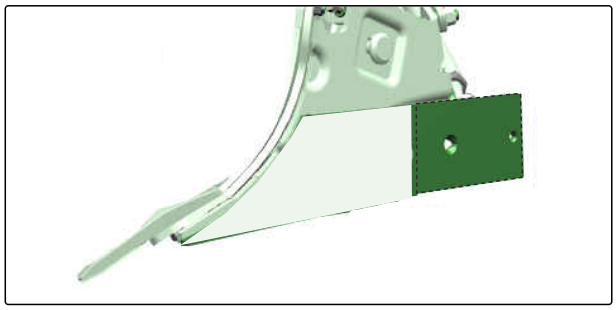
CMS-I-00004876

4.16 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.

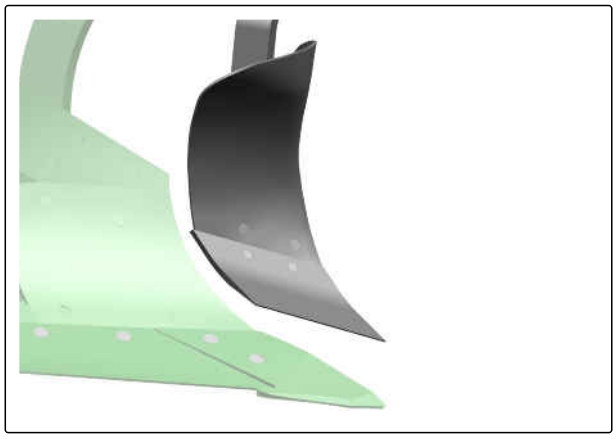


CMS-I-00004882

4.17 Skimmer

CMS-T-00006964-B.1

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



CMS-I-00004875

4.18 Trashboards

CMS-T-00006965-B.1

Trashboards prevent or reduce clogging.

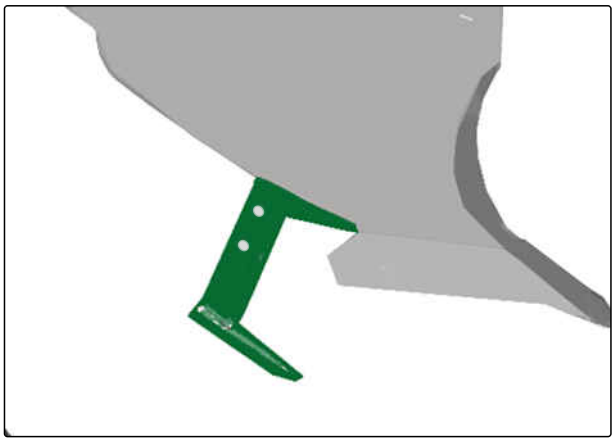
CMS-I-00004874

4.19 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

4.20 Packer arm

CMS-T-00006977-B.1

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

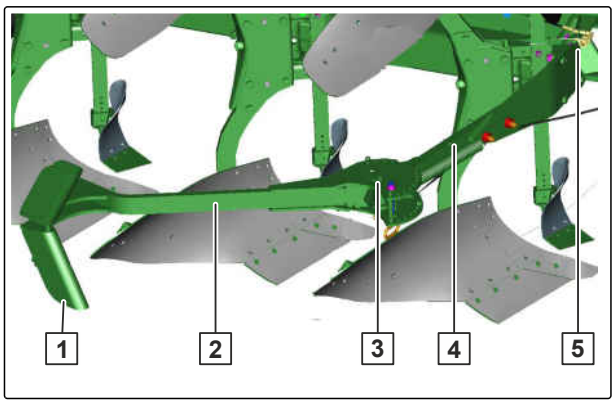
1 Packer catch hook with guidance and hydraulic release device

2 Packer arm in traction position

3 Adjustment bracket

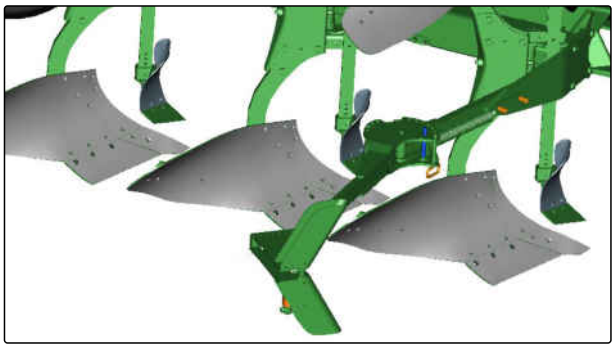
4 Packer arm holder

5 Hydraulic coupling



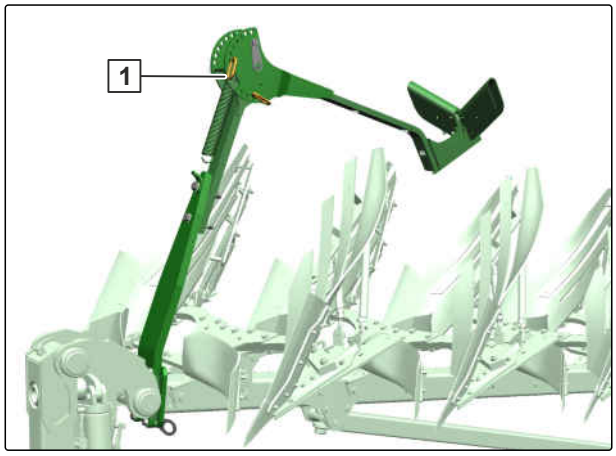
CMS-I-00004894

Packer arm in catch position



CMS-I-00004895

Packer arm in transport position, secured with pin 1.



CMS-I-00005108

4.21 Document box

CMS-T-00015201-A.1

The document box contains the following items:

- Documents
- Hand lever
- Aids

CMS-I-00009836

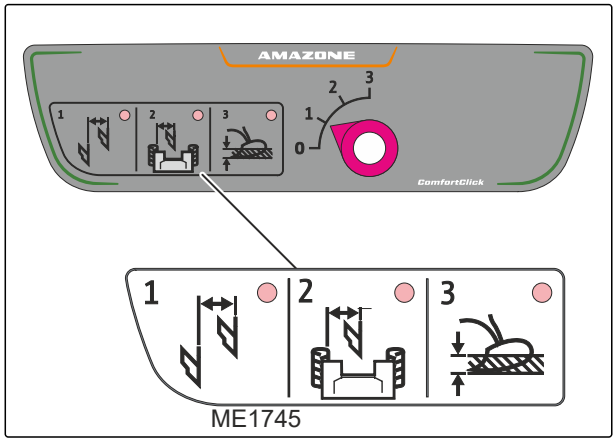
4.22 ComfortClick

CMS-T-00015088-A.1

The ComfortClick control box enables operation of the following hydraulic functions using the *"red"* tractor control unit:

- Switch position 1 – Adjusting the working width
- Switch position 2 – Adjusting the front furrow width
- Switch position 3 – Adjusting the working depth

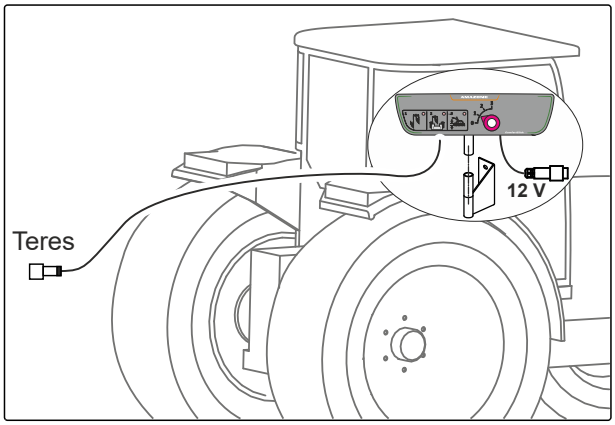
An LED indicates the set function.



CMS-I-00009781

The ComfortClick is attached in the tractor cab and is supplied with a voltage of 12 volts.

The ComfortClick is connected to the Teres with the wiring harness.



CMS-I-00009780

Technical data

5

CMS-T-00006509-D.1

5.1 Dimensions

CMS-T-00006510-C.1

Longitudinal interbody clearance	90 cm or 100 cm
Underbeam clearance	80 cm or 85 cm
Working width	33-55 cm per plough body

Centre of gravity distance d		
Overload safety	**Shear bolt**	**Hydraulic**
4 shares	1,750 mm	2,020 mm
5 shares	2,100 mm	2,480 mm
6 shares	2,500 mm	3,050 mm

5.2 Depth and transport wheel

CMS-T-00007314-B.1

Wheel size	350/45 17.5
	340/55 16.0
	10/75 15.3
	10/75 15

5.3 Permitted mounting categories

CMS-T-00006514-A.1

Lower link mounting	Category 3 Category 3N Category 4N

5.4 Optimal working speed

CMS-T-00006513-B.1

8-10 km/h

5.5 Performance characteristics of the tractor

CMS-T-00006511-B.1

Engine rating
118 kW/160 hp to 221 kW/300 hp

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

5.6 Noise development data

CMS-T-00002296-D.1

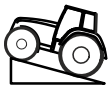
The workplace-related emission sound pressure level is lower than 70 dB(A), measured in operating condition at the ear of the tractor driver with the cab closed.

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

5.7 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

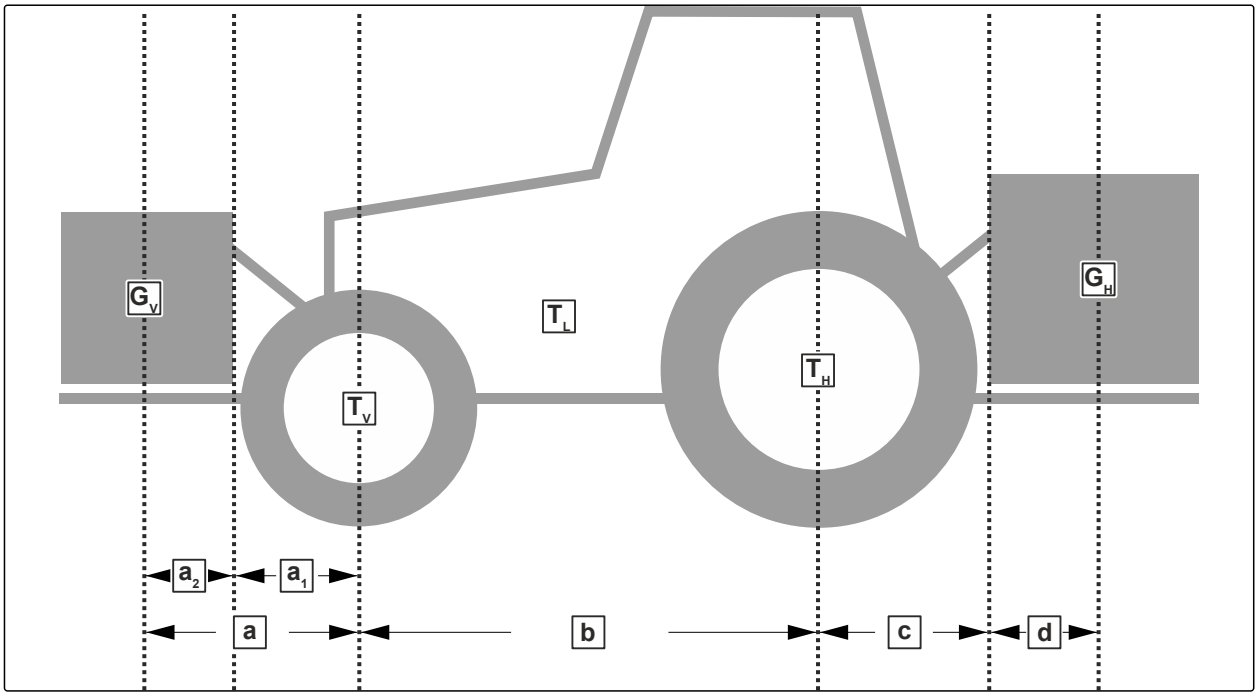
CMS-T-00006472-F.1

6.1 Preparing for initial operation

CMS-T-00009340-E.1

6.1.1 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	

Designation	Unit	Description	Calculated values
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.

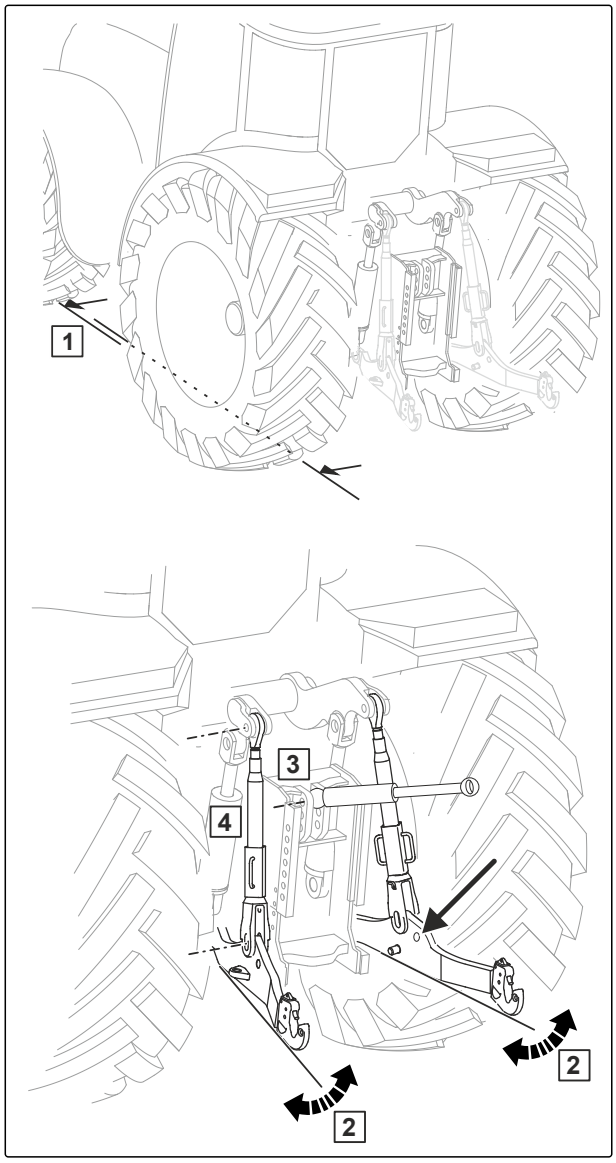
	Actual value according to calculation			Permitted value according to tractor operating manual			Tyre load capacity for two tractor tyres	
Minimum front ballasting		kg	≤		kg		-	-
Total weight		kg	≤		kg		-	-
Front axle load		kg	≤		kg	≤		kg
Rear axle load		kg	≤		kg	≤		kg

6.1.2 Preparing the tractor

CMS-T-00015089-A.1

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

1. Select a tractor on which the track width **1** at the front and rear differs by no more than 10 cm.
2. Select a tractor on which the lateral play of the lower links **2** can be adjusted by 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. Set the maximum lifting height of the rear hydraulic system on the tractor.
5. Install the top link on the tractor as high **3** as possible.
6. Due to the risk of collision, remove the clevis coupling.
7. Set the lifting struts **4** so that they are as short as possible.
8. Adjust the lifting struts to the same length.
9. Set the lifting struts as far as possible to the rear on the tractor lower links.
10. Use adequately-dimensioned front weight.
11. Adjust the tyre inflation pressure of the front wheels equally on both sides.
12. Adjust the tyre inflation pressure of the rear wheels equally on both sides.



CMS-I-00009782

NOTE

The required tyre load capacity must be ensured.

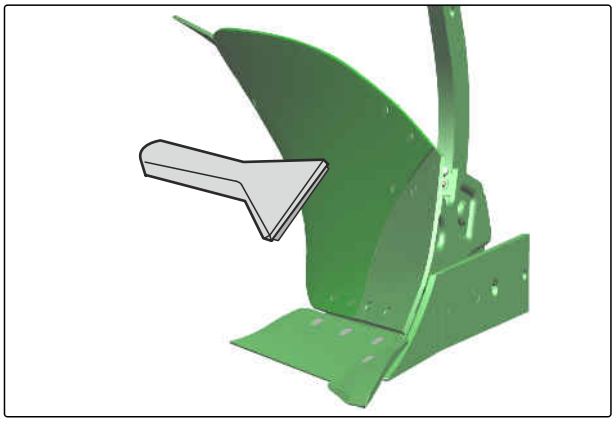
13. Switch off the front axle suspension if possible.

6.1.3 Removing the protective varnish

CMS-T-00005238-B.1

The paint scraper can be found in the threaded cartridge.

▶ Before initial operation of the implement, remove the protective varnish from the plough bodies using the paint scraper.



CMS-I-00003763

6.1.4 Adjusting the position of the lower link axle to the tractor

CMS-T-00015090-A.1

The lower link axle can be installed in a front and a rear position.

Lower link axle in the front position:

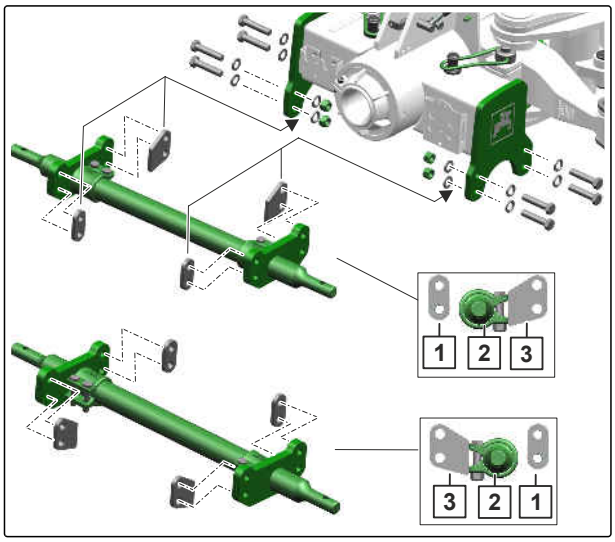
- Higher lifting force requirement
- Greater lifting height
- Advantageous for short top links

Lower link axle in rear position:

- Lower lifting force requirement
- Smaller lifting height

1. Remove the 4 bolts on both sides of the headstock.
2. Take out the lower link axle and turn by 180°.
3. Fasten the lower link axle with 4 bolts, the lug 3 and the plate 1 on both sides of the headstock.

➡ The lug must rest on the clamping ring 2.



CMS-I-00009783

6.1.5 Activating the central overload safety

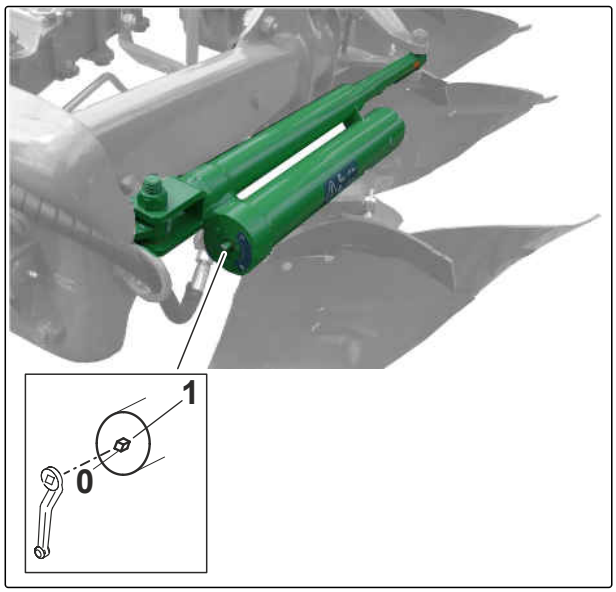
CMS-T-00009190-C.1

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°.

1. Take the hand lever out of the document box.
2. Put the hand lever on the hydraulic accumulator.
3. *To activate the overload safety:*
   turn the hand lever by 180°.
4. Put the hand lever in the document box.



CMS-I-00004743

6.2 Coupling the implement

CMS-T-00007315-D.1

6.2.1 Locking the tractor lower links laterally

CMS-T-00007550-C.1

- *To prevent uncontrolled lateral motions of the implement:*
  Lock the tractor lower links before road travel.

6.2.2 Checking the pre-tension of the overload safety

CMS-T-00009200-A.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 100 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

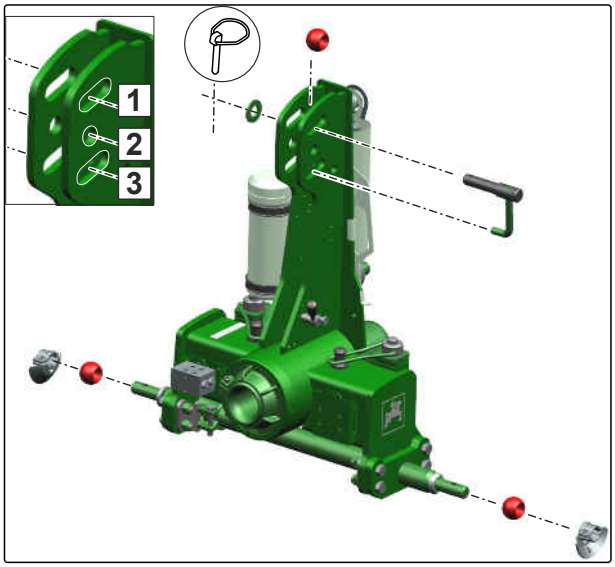
CMS-T-00007316-B.1

Criteria for selecting the top link coupling point

1 Top elongated slot: large lifting height, high lifting force requirement. On some tractors, the lifting gear kinematics limit the maximum lifting height.

2 Round hole: heavy soils, medium lifting force requirement.

3 Bottom elongated slot: small lifting height, low lifting force requirement.



CMS-I-00005140

1. Put the ball sleeve on the lower link pin.

NOTE

Use a ball sleeve without integrated catch profile.

2. Put the catch profile on the lower link pin and secure it.

3. Insert the top link pin with the ball sleeve in the mount.

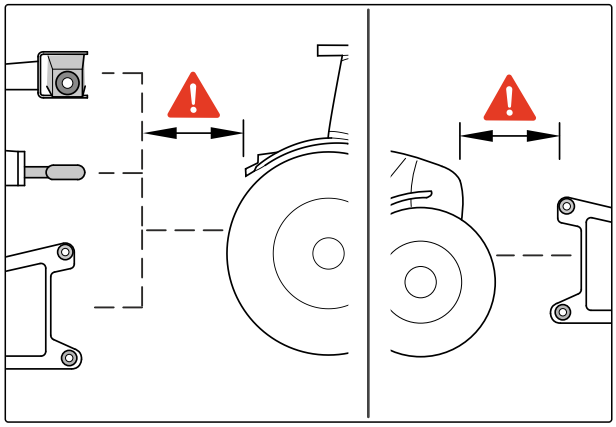
4. Secure the top link pin with the linch pin.

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.



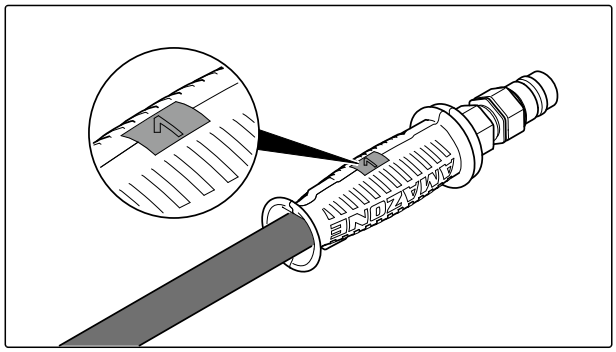
CMS-I-00004045

6.2.5 Coupling the hydraulic hose lines

CMS-T-00007367-E.1

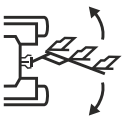
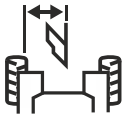
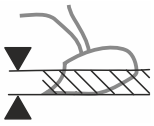
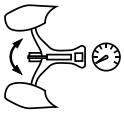
All hydraulic hoses are equipped with handles. The handles have colour markings with a code number or a code letter. The markings are assigned to the respective hydraulic functions of the pressure line of a tractor control unit. Stickers are applied on the implement for the markings, which illustrate 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	1		Plough turn-over	Right	Double-acting	
	2			Left		
Yellow	1		Front furrow width	Greater	Double-acting	
	2			Smaller		
Red	1		Working width	Greater	Double-acting	
	2			Smaller		
Red	1	ComfortClick	Higher intensity		Double-acting	
	2		Lower intensity			
	T		Leakage oil			
Blue	1		Working depth	Greater	Double-acting	
	2			Smaller		
Beige	1		Pre-tensioning of the overload safety		Single-acting	

NOTE

When the adjustment of the front furrow width and 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.

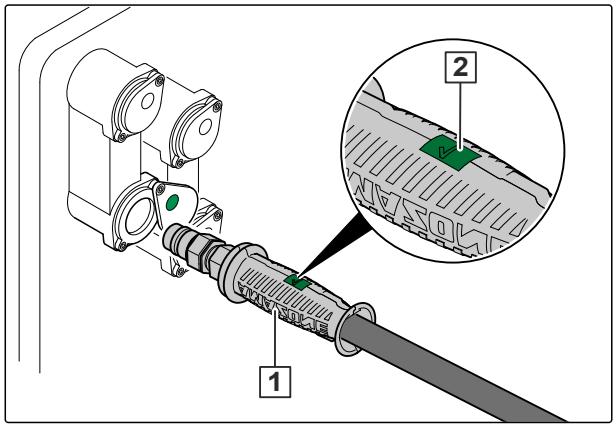
1. Depressurise the hydraulic system between the tractor and the implement using the tractor control unit.

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.

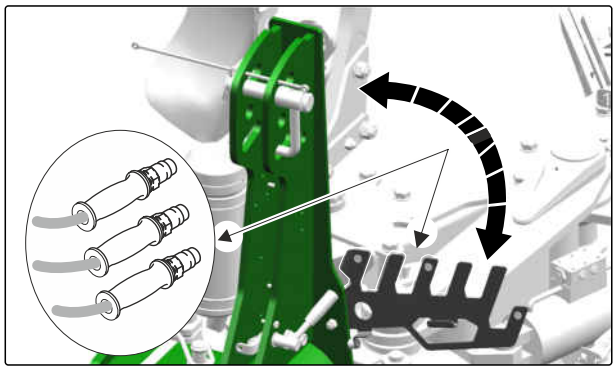


CMS-I-00001045

IMPORTANT

Damage to the hydraulic hose lines when turning the plough bodies

- Before turning the plough bodies, remove all of the hydraulic hose lines from the hose cabinet.
- Swivel the hose cabinet into transport position.



CMS-I-00006338

5. Swivel up the hose cabinet.

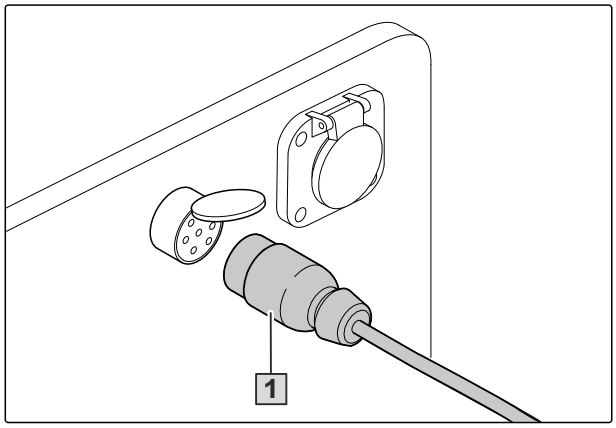
6.2.6 Coupling the power supply

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.

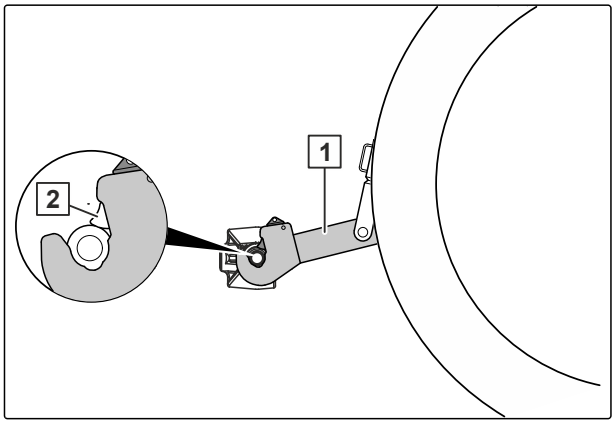


CMS-I-00001048

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.

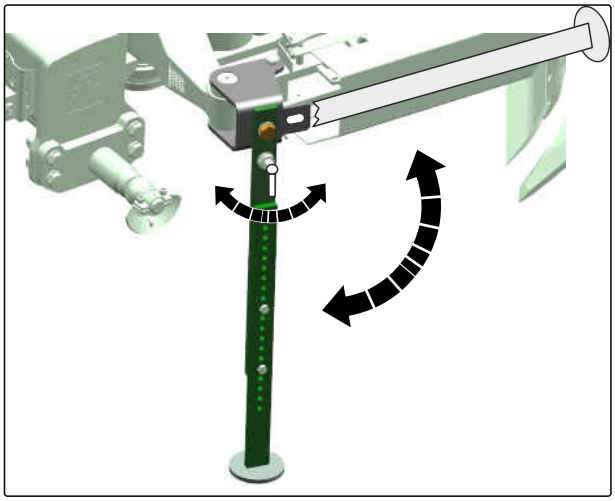


CMS-I-00003346

6.2.8 Lifting the parking support

CMS-T-00007318-C.1

1. Lift the implement slightly via the tractor lower link.
2. Unlock the parking support with the locking pin.
3. Lift the parking support.
4. Lock the parking support with the locking pin.

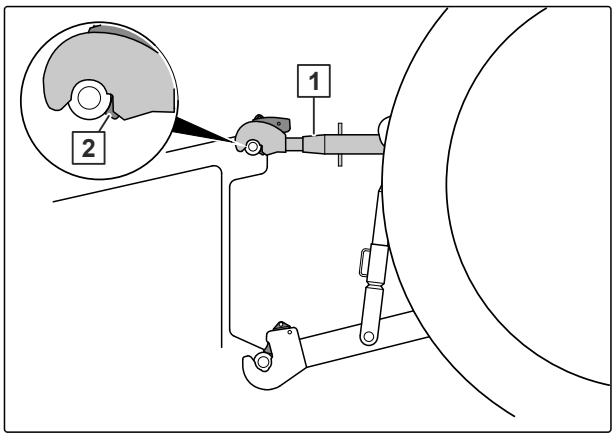


CMS-I-00005141

6.2.9 Coupling the top link

CMS-T-00007319-C.1

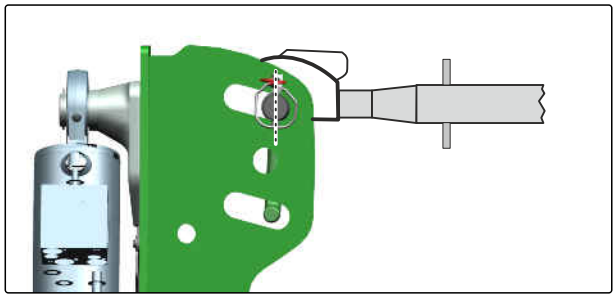
1. Lower the implement using the tractor's lower link.
2. Select the top link coupling point.
3. Couple the top link **1**.
4. Check whether the top link catch hooks **2** is correctly locked.



CMS-I-00003706

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

6. Raise the implement using the three-point hitch.



CMS-I-00005142

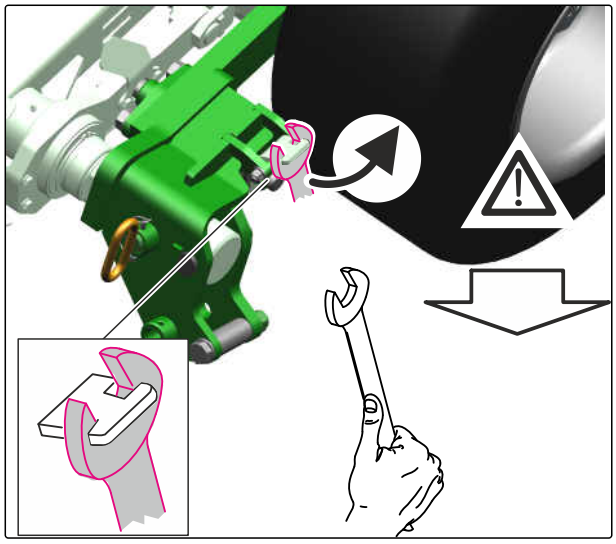
6.2.10 Swivelling the depth and transport wheel into transport position

CMS-T-00007337-B.1

WARNING

Risk of injury from crushing and impacts due to rapid lowering of the unlocked depth and transport wheel

▶ *When you unlock the depth and transport wheel:*
Step back as far as possible.



CMS-I-00005204

1. Put the wrench on the depth and transport wheel locking mechanism.

2. Turn the wrench to unlock the depth and transport wheel.

➡ The depth and transport wheel drops into transport position.

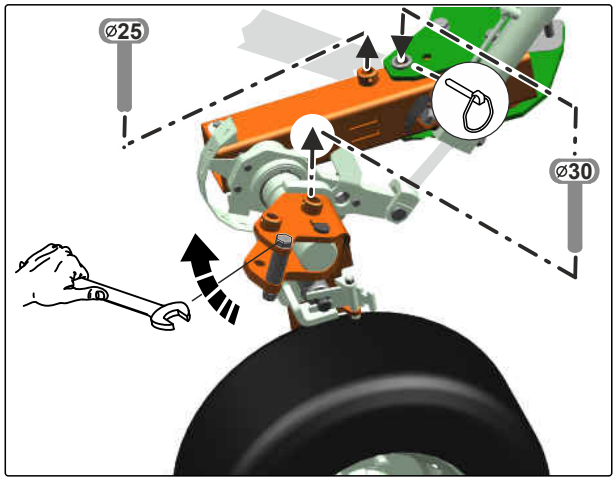
3. Pull out the 30 mm pin from the depth and transport wheel.

4. Pull out the 25 mm pin from the wheel carrier.

5. Insert the 30 mm pin through the wheel carrier and the beam plate.

6. Secure the 30 mm pin with the linch pin.

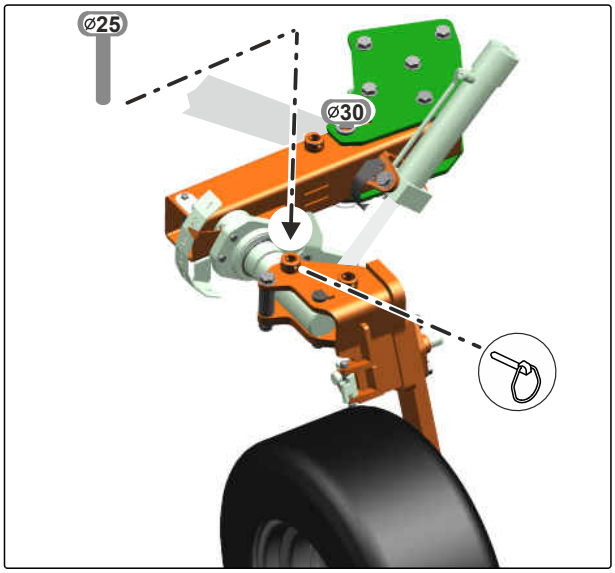
7. Put the wrench on the hexagon and swivel the depth and transport wheel.



CMS-I-00005203

8. Insert the 25 mm pin into the depth and transport wheel.

9. Secure the 25 mm pin with the linch pin.

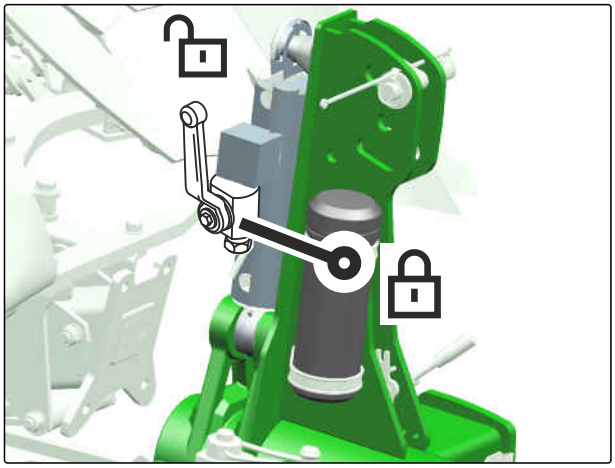


CMS-I-00005202

6.2.11 Locking the depth and transport wheel hydraulic system

CMS-T-00007321-B.1

► Close the stop tap of the depth and transport wheel hydraulic system.



CMS-I-00005222

6.2.12 Swivelling the plough body into transport position

CMS-T-00007322-C.1

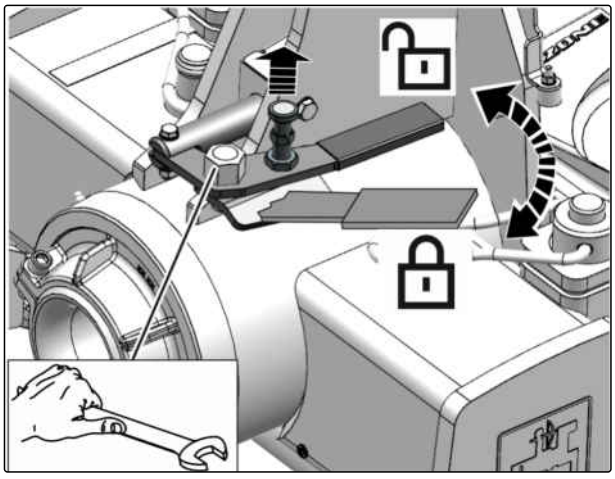
1. Firmly grasp the transport locking lever and pull out the locking pin at the same time.

2. Swing the transport locking lever into *"locked position"*.

3. Raise the implement using the three-point hitch.

4. *To swivel the plough bodies:*
Actuate the *"green"* tractor control unit.

➡ Transport locking secures the transport position.



CMS-I-00005221

NOTE

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

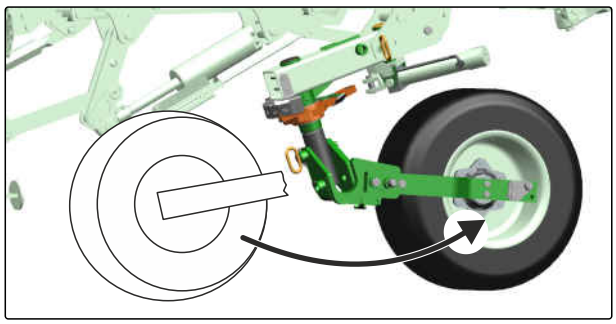
5. *To park the implement on the depth and transport wheel:*
   Lower the three-point hitch.

➡ The top link is relieved.

6. *To align the depth and transport wheel:*
   Drive the tractor forward in a small curve.

7. Uncouple the top link.

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



CMS-I-00005220

6.2.13 Installing the rear lighting

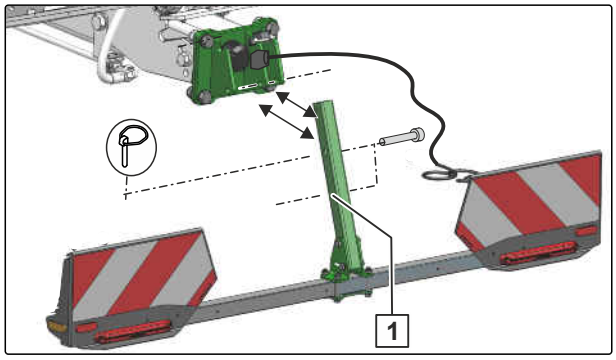
CMS-T-00007479-B.1

1. Place the rear lighting in the device.

2. Take the pin from the parking position 1.

3. Fix the rear lighting with the pin and secure.

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



CMS-I-00005219

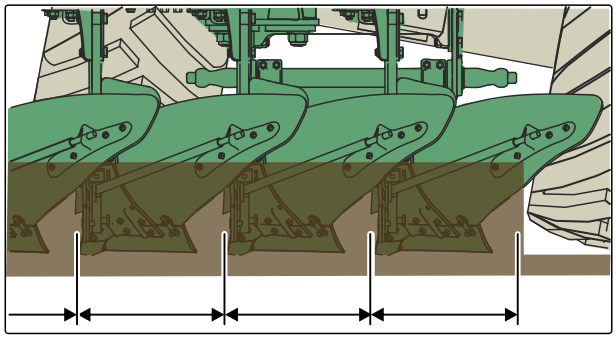
6.3 Preparing the implement for operation

CMS-T-00006477-G.1

6.3.1 Manual adjustment of the working width of the plough bodies

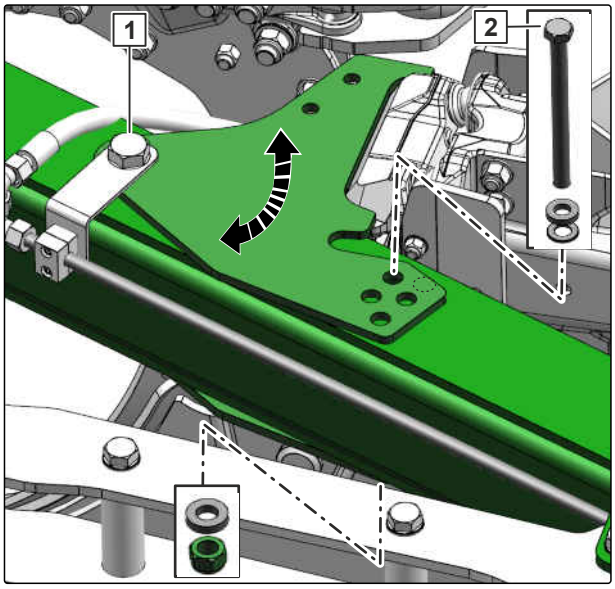
CMS-T-00015137-A.1

The working width is separately adjusted on each plough body pair.



CMS-I-00002675

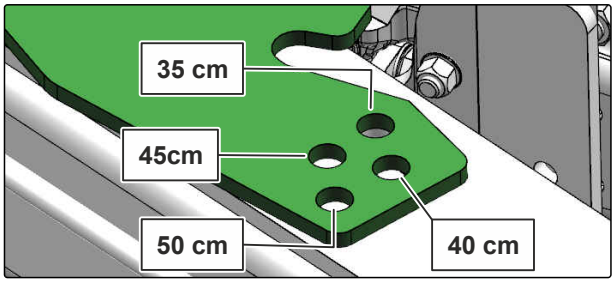
1. Slightly raise the implement using the three-point hitch.
2. Loosen the bolt 1.
3. Release and remove the bolt 2.



CMS-I-00009797

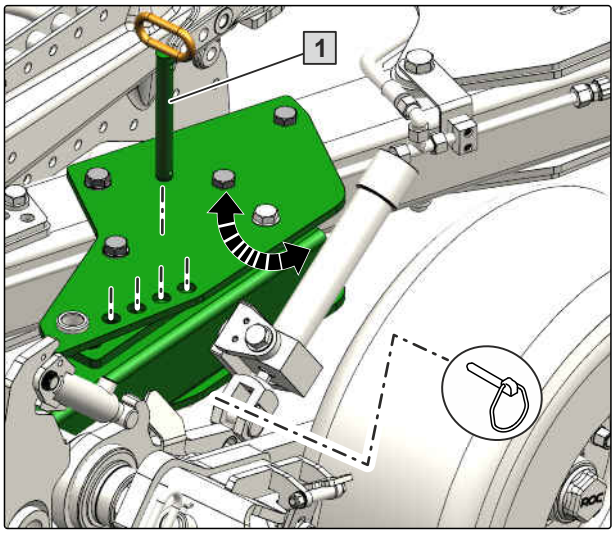
4. Select the working width on the plough leg carrier via the screw hole.
5. Swivel the plough leg carrier according to the selected working width.
6. Reinsert the bolt in the selected screw hole and tighten it.

➡ Tightening torque: 300 Nm



CMS-I-00009795

7. Repeat the procedure for all of the plough body pairs.
8. Take out the pin 1 for the working width adjustment element on the running gear.

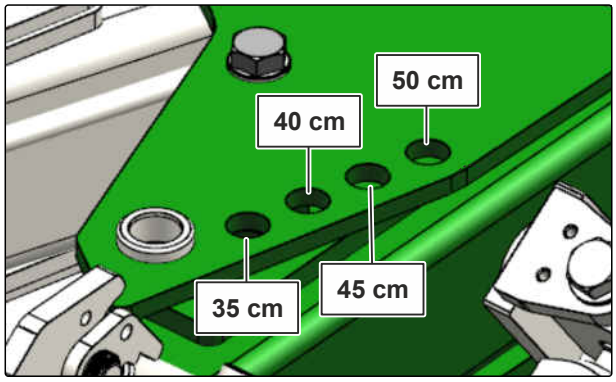


CMS-I-00009794

9. Select the working width on the running gear via the screw hole.

10. Swivel the running gear according to the selected working width.

11. Insert the pin in the selected pegging hole and secure with the linch pin.



CMS-I-00009796

6.3.2 Adjusting the pull point

CMS-T-00015138-A.1

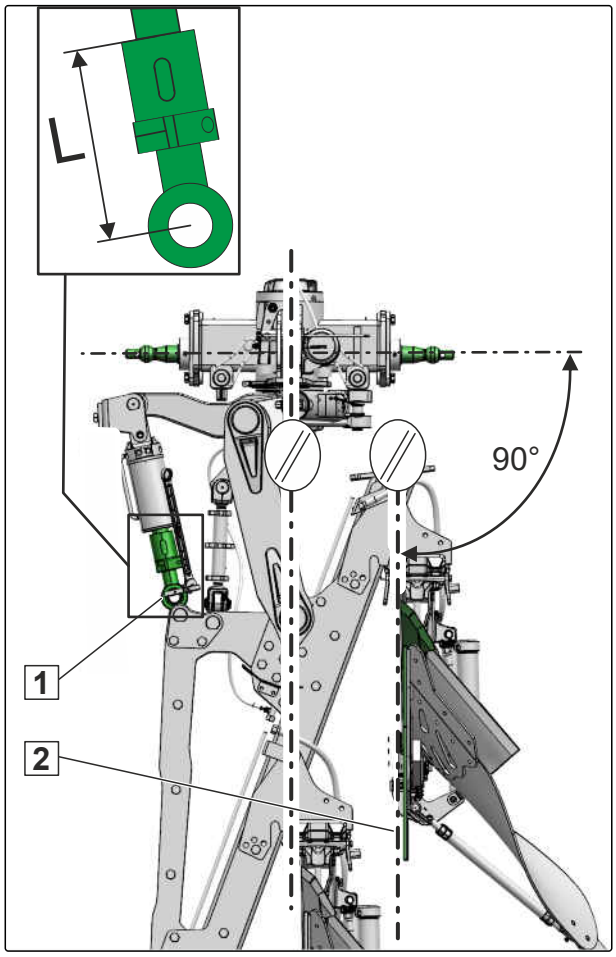
The pull point is adjusted via the threaded spindle 1 such that there is no lateral pull on the tractor. To prevent lateral pull, the landside 2 of the plough body must be aligned with the direction of travel.

The pull point is adjusted after manual adjustment of the working width.

- If the tractor pulls towards the ploughed side of the field: reduce the threaded spindle length.
- If the tractor pulls towards the unploughed side of the field: increase the threaded spindle length.

The standard measurements for *"L"* are theoretical dimensions and can deviate from the real dimensions.

Working width	Standard measurement *"L"*
35 cm	31.5 cm
40 cm	29.4 cm
45 cm	27.2 cm
50 cm	24.9 cm

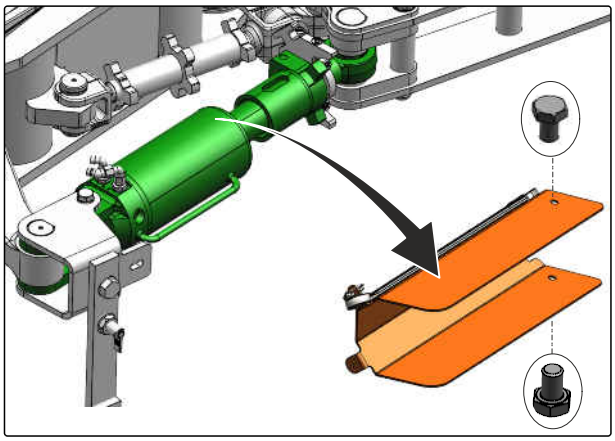


CMS-I-00009793

REQUIREMENTS

✓ The implement is in working position

1. Loosen the bolts on the cover.
2. Take off the cover.

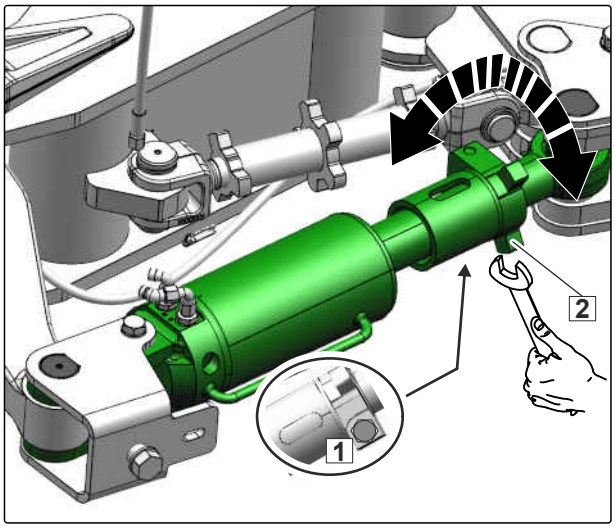


CMS-I-00009792

3. Slightly lift the implement out of the working position.
4. *To relieve the threaded spindle:*
   Briefly actuate the *"green"* tractor control unit.
5. Remove the bolt 1.
6. *To adjust the threaded spindle length:*
   Turn the setting nut 2.

➡ Use the enclosed wrench.

7. Tighten the bolt.
8. Put on the cover.
9. Fasten the cover with bolts.



CMS-I-00009791

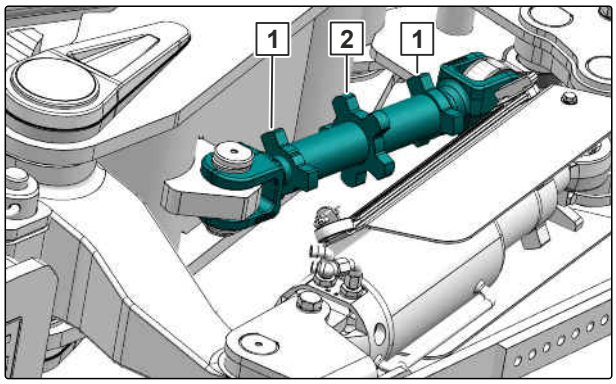
6.3.3 Manual adjustment of the front furrow width

CMS-T-00015139-B.1

REQUIREMENTS

✓ The implement is in working position

1. Slightly raise the implement using the three-point hitch.
2. *To loosen the lock nut* **1**:
   Use the supplied wrench.
3. *To adjust the front furrow width:*
   Turn the threaded spindle **2** until it corresponds to the working width of the plough bodies.
4. Tighten the lock nuts.



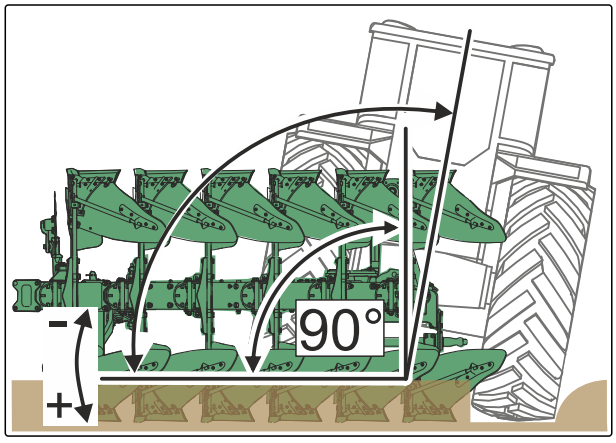
CMS-I-00009790

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

CMS-T-00007323-C.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 spindles serve as a stop for the plough in working position.
- Adjust the tilt angle with the spindle on both sides consecutively.
- The tilt angle depends on the adjusted working depth.

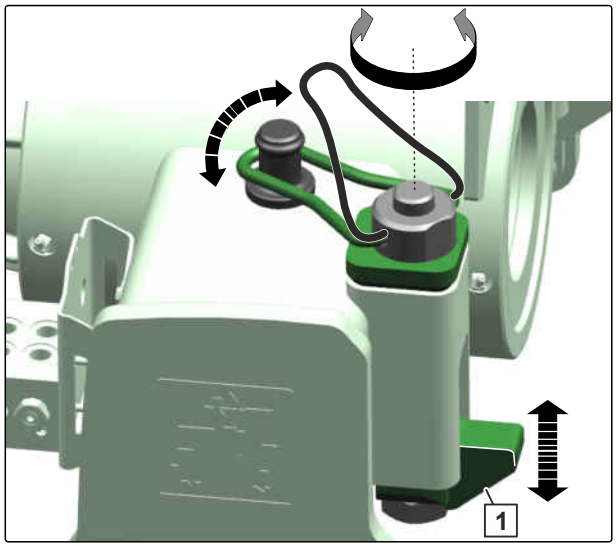


CMS-I-00003708

1. Lift the safety clip.
2. *To increase the tilt angle:*
   Turn the stop **1** up with the safety clip.

   or

   To reduce the tilt angle:
   Turn the stop **1** down with the safety clip.
3. Lower the safety clip again over the locking pin.
4. Adjust the tilt angle in the same way on both sides.



CMS-I-00005226

6.3.5 Hydraulic adjustment of the plough body working depth

CMS-T-00007324-B.1

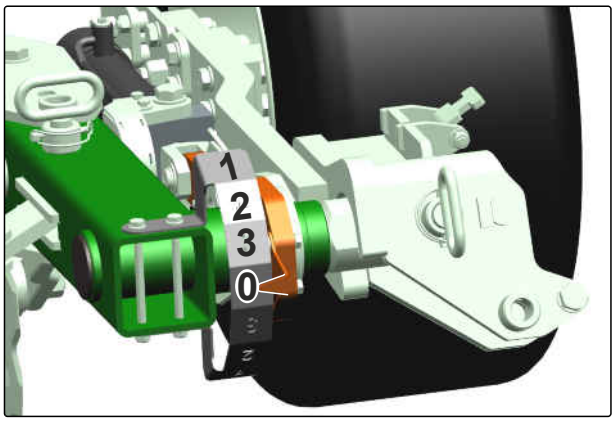
REQUIREMENTS

- ✓ The implement is in working position

1. *To adjust the working depth:*
   Actuate the *"blue"* tractor control unit.

   or

   Set the ComfortClick to Position 3 and actuate the *"red"* tractor control unit.



CMS-I-00005225

NOTE

The scale serves as orientation during adjustment.

2. Correct the adjustment during operation if necessary.

6.3.6 Manual adjustment of the plough body working depth

CMS-T-00007325-C.1

The working depth can be adjusted equally on both sides with the threaded spindle length on the support wheel.

REQUIREMENTS

- ✓ The implement is in working position

1. Slightly lift the implement using the tractor lower link.

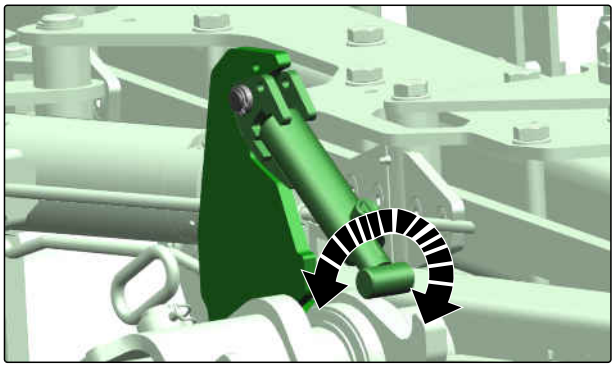
2. *To adjust the working depth:*
   Turn the top threaded spindle and change its length.

3. Completely raise the implement using the three-point hitch.

4. *To turn the plough bodies:*
   Actuate the *"green"* tractor control unit.

5. Adjust the second spindle to the same length.

6. Correct the adjustment during operation if necessary.



CMS-I-00005224

6.3.7 Preparing the disc coulter for operation

CMS-T-00006529-D.1

6.3.7.1 Adjusting the working depth of the disc coulter

CMS-T-00007005-B.1

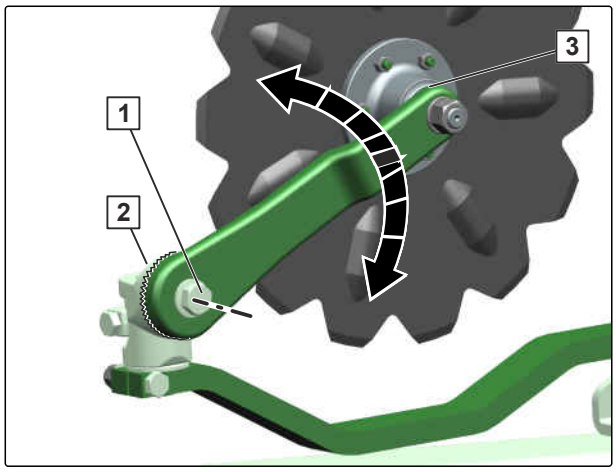
REQUIREMENTS

- ⊘ 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

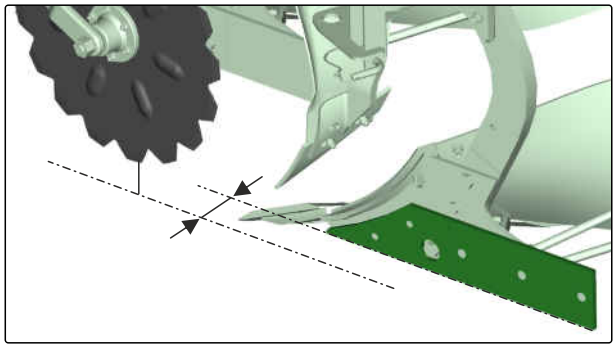
1. Loosen the bolt 1 until the teeth 2 are released. At the same time, hold the disc coulter by the bearing journal 3.
2. Swivel the disc coulter up or down.
3. Retighten the bolted connection.
4. Check that the teeth are properly seated.
5. Adjust both disc coulters at the same working depth.

6.3.7.2 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.

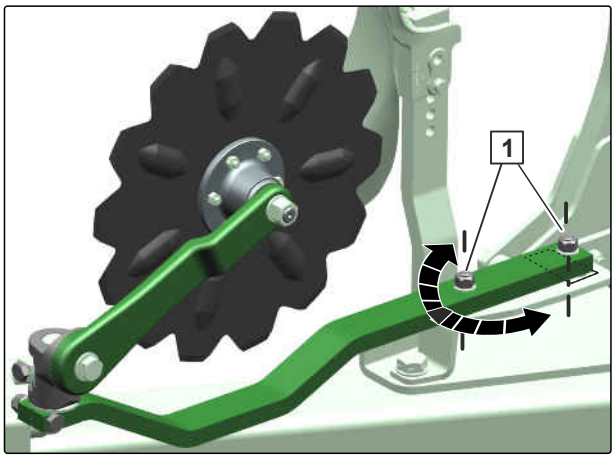


CMS-I-00003712

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

6.3.7.3 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.

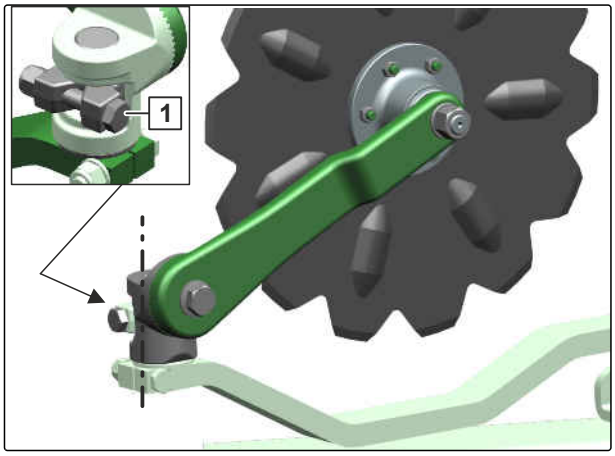
REQUIREMENTS

- ⊘ 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

6.3.8 Preparing the skimmers for operation

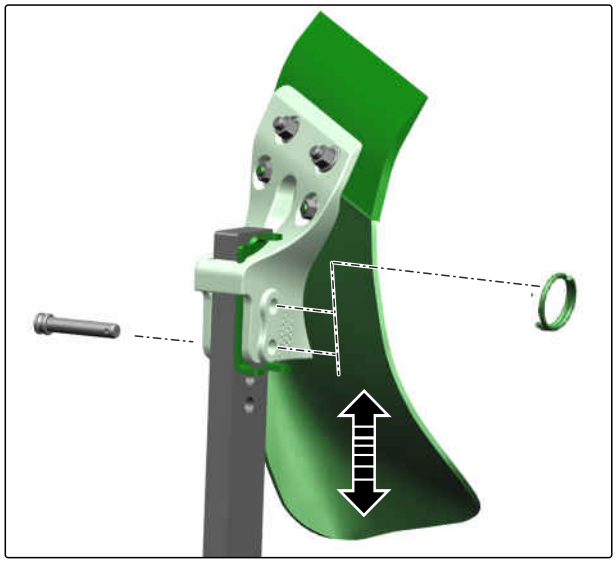
CMS-T-00006526-D.1

6.3.8.1 Adjusting the working depth of the skimmers

CMS-T-00007384-B.1

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

1. Pull the pin and hold the skimmer.
2. Adjust the working depth.
3. Insert the pin and secure with a locking ring.
4. Adjust all skimmers to the same working depth.



CMS-I-00005160

6.3.8.2 Adjusting the overlap of the skimmers

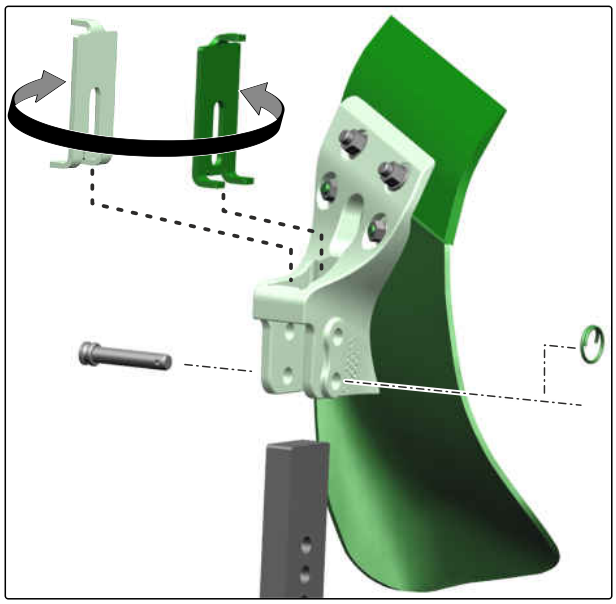
CMS-T-00007385-C.1

The overlap is a measurement with which the skimmer works in front of the plough body.

1. Pull the pin and hold the skimmer.
2. Remove the skimmer upwards.
3. Turn the setting plate by 180° and place it on the other side of the skimmer bracket.

➡ The overlap increases or decreases by 6 mm.

4. Fasten the skimmer with the pin and secure with the locking ring.



CMS-I-00005159

6.3.9 Tripping force of the hydraulic overload safety

CMS-T-00007590-E.1

6.3.9.1 Setting the tripping force for the central overload safety

CMS-T-00005170-H.1

REQUIREMENTS

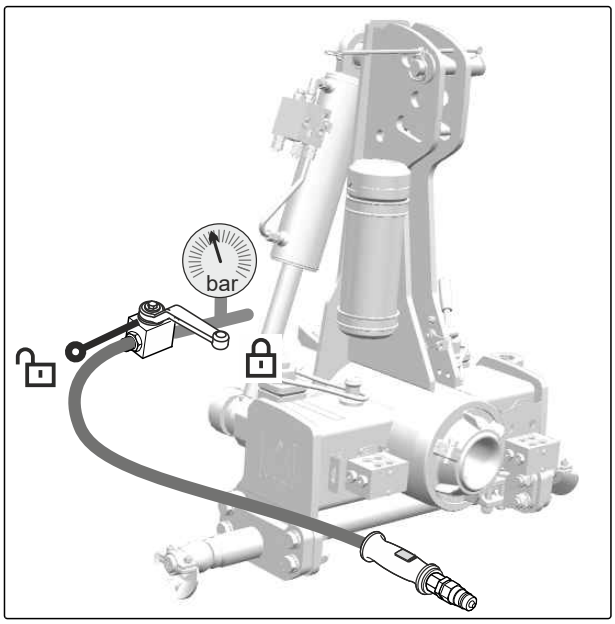
- ✓ The implement is coupled.
- ✓ *"Beige"* hydraulic connection is coupled.

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 preload of at least 100 bar for the overload safety.
- ▶ Always maintain pressure on the overload safety.

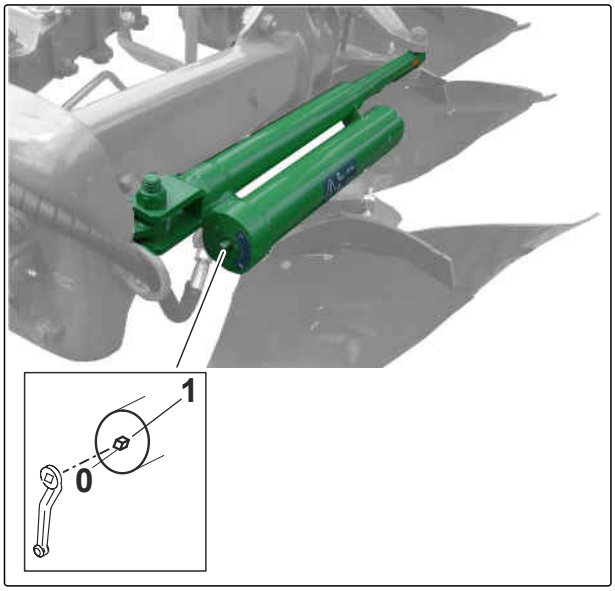


CMS-I-00009799

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 preload between 100 bar and 200 bar.
Default value: 120 bar.

3. Close the stop tap.
4. Depressurise and uncouple the *"beige"* hydraulic connection.



CMS-I-00004743

NOTE

To increase operational reliability, the hydraulic accumulator on each plough body can be closed with the hand lever. The hand lever is in the document box.

Central adjustment of the preload is then no longer possible.

When individual hydraulic accumulators are closed, the tripping force can be adjusted differently on the plough bodies.

6.3.9.2 Adjusting the tripping force of the decentralised overload safety

CMS-T-00005171-H.1

REQUIREMENTS

- ✓ The implement is coupled.
- ✓ *"Beige"* hydraulic connection is coupled.

WARNING

Risk of injury due to components under high pressure being thrown

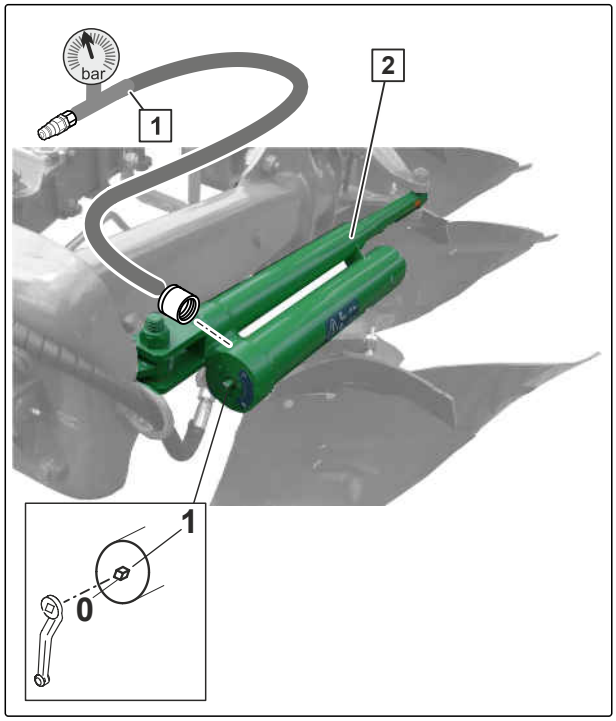
- ▶ Open the bolted connection on the hydraulic accumulator up to a maximum of 180°.

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 preload of at least 100 bar for the overload safety.
- ▶ Always maintain pressure on the overload safety.



CMS-I-00004347

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.
3. Take the hand lever out of the document box.
4. Put the hand lever on the hydraulic accumulator.
5. *To open the hydraulic accumulator:* turn the hand lever by 180°.
6. *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 100 and 170 bar. Default value: 120 bar.

7. Close the hydraulic accumulator with the hand lever.

8. Depressurise the hydraulic unit.

9. Disconnect the hydraulic unit from the hydraulic accumulator.

10. Adjust all hydraulic accumulators of the hydraulic overload safety the same way.

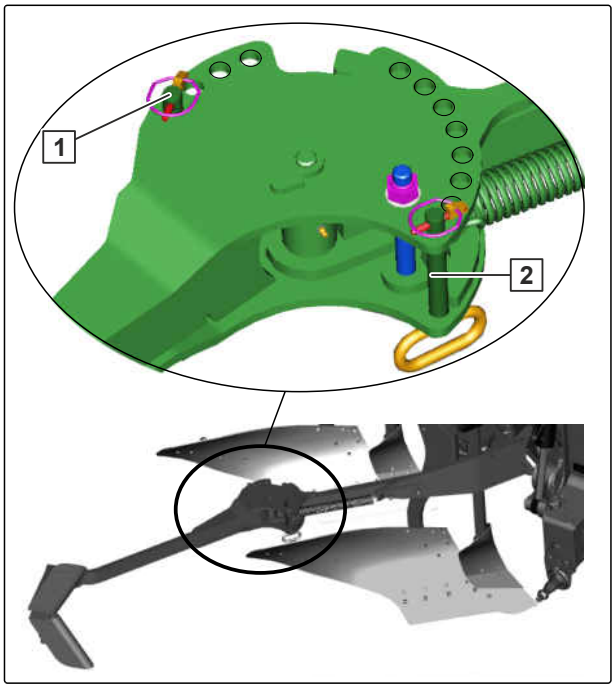
11. Put the hand lever in the document box.

6.3.10 Adjusting the packer arm with packer catch hooks

CMS-T-00007009-C.1

On the packer arm, a pin **1** limits the distance of the packer to the plough. Adjustment depends on the width of the packer.

A bolt connection **2** brings the packer catch arm into an optimal position to mount the packer.



CMS-I-00004934

1. Hold packer arm on boom.

2. Pull out the pin.

3. Peg pin at a different position in the hole group.

4. Secure the pin with the linch pin.

6.4 Preparing the machine for road travel

CMS-T-00007333-D.1

6.4.1 Locking the tractor lower links laterally

CMS-T-00007550-C.1

► *To prevent uncontrolled lateral motions of the implement:*
Lock the tractor lower links before road travel.

6.4.2 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.

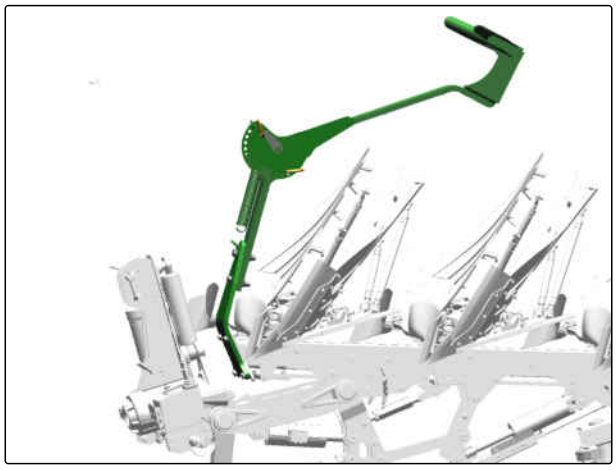
- Select a pre-tension of at least 80 bar for the overload safety.
- Always maintain pressure on the overload safety.
- Keep the stop tap of the hydraulic overload safety closed.

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

6.4.3 Moving the packer arm into transport position

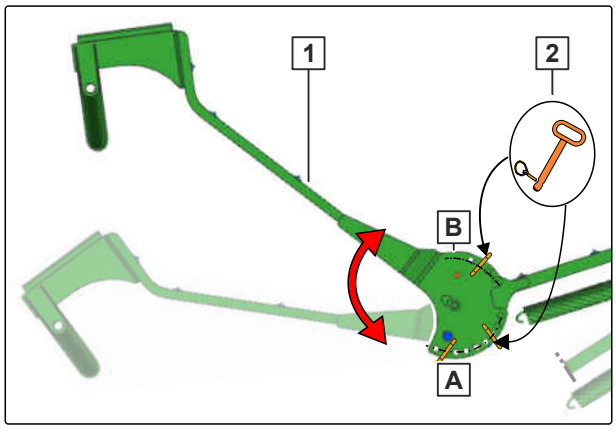
CMS-T-00010177-C.1

Transport position



CMS-I-00006947

1. Take the pin **2** out of the group of holes **B**.
2. Swivel in the packer arm **1** completely.
3. Secure the packer arm free of play with the pin **2** in the hole group **A**.
4. Secure the pin with the linch pin.

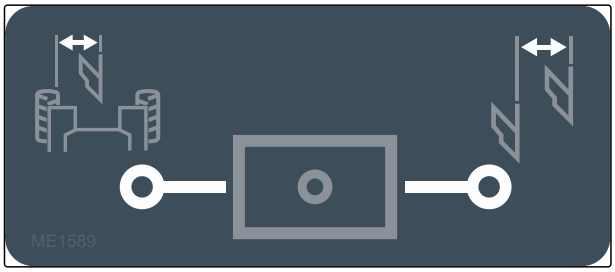


CMS-I-00004937

6.4.4 Setting the smallest working width for the plough bodies

CMS-T-00007335-B.1

1. Depending on the equipment, set the switch tap on the headstock to *"Working width"*.



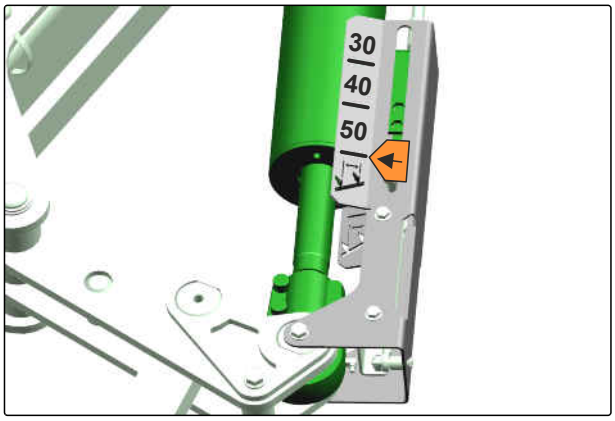
CMS-I-00005232

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

3. *To adjust the working width:*
   Actuate the *"red"* tractor control unit.

   or

   Set the ComfortClick to Position *"1"* and actuate the *"red"* tractor control unit.



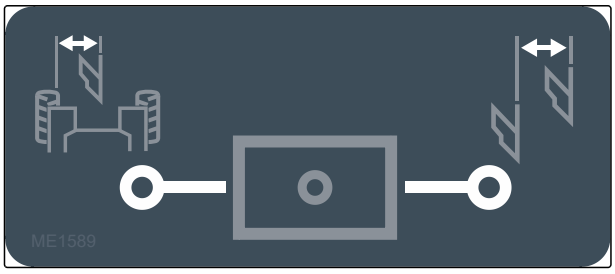
CMS-I-00005234

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

6.4.5 Setting the smallest front furrow width

CMS-T-00007485-B.1

1. Depending on the equipment, set the switch tap on the headstock to *"Front furrow"*.



CMS-I-00005232

2. Slightly lift the implement using the tractor lower link.

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

   or

   Set the ComfortClick to Position *"2"* and actuate the *"red"* tractor control unit.

CMS-I-00005230

NOTE

The scale serves as orientation during adjustment.

6.4.6 Removing the scraper for the depth and transport wheel

CMS-T-00007336-B.1

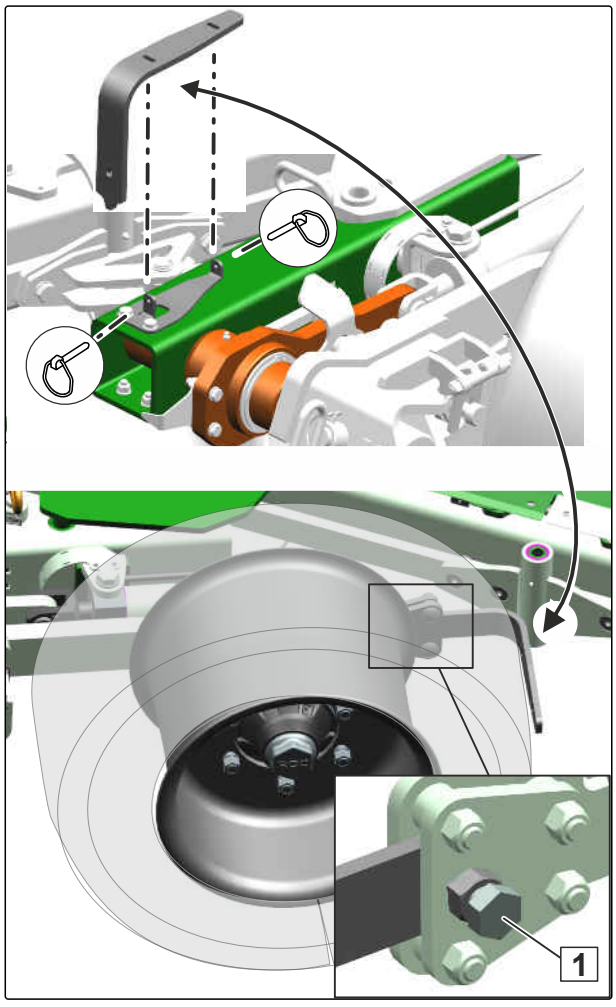
IMPORTANT

Risk of implement damage during road transport

The scrapers must be removed before road transport. Otherwise, the implement cannot be parked on the wheel and can be damaged.

▶ Remove the scraper before transport.

1. Loosen the bolt 1.
2. Remove the scraper for the depth and transport wheel.
3. Tighten the bolt.
4. Put the scraper for the depth and transport wheel in parking position.
5. Secure the scraper for the depth and transport wheel with a linch pin.



CMS-I-00005231

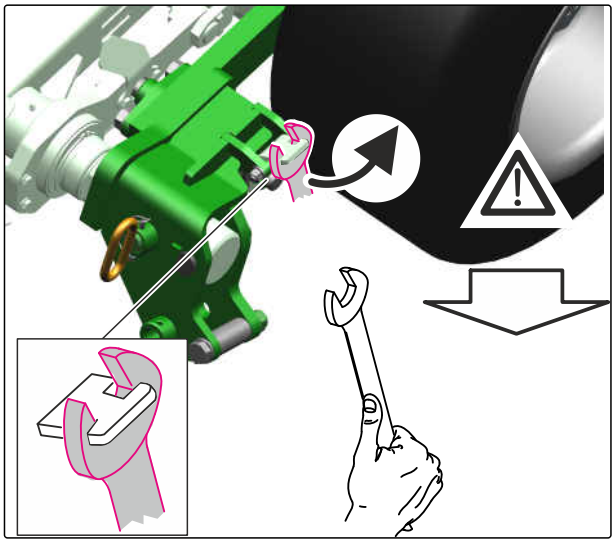
6.4.7 Swivelling the depth and transport wheel into transport position

CMS-T-00007337-B.1

WARNING

Risk of injury from crushing and impacts due to rapid lowering of the unlocked depth and transport wheel

► *When you unlock the depth and transport wheel:*
Step back as far as possible.

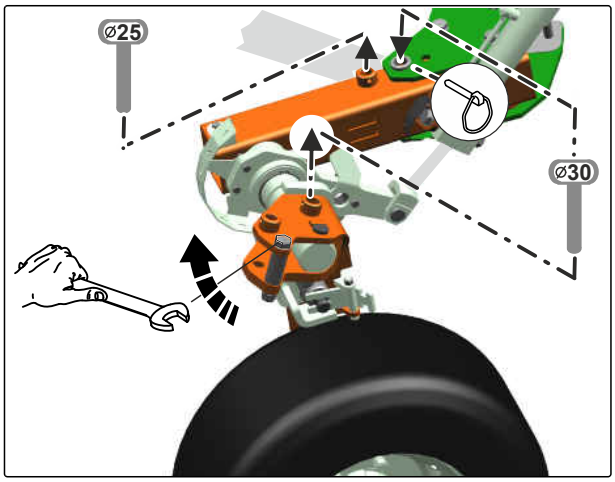


CMS-I-00005204

1. Put the wrench on the depth and transport wheel locking mechanism.
2. Turn the wrench to unlock the depth and transport wheel.

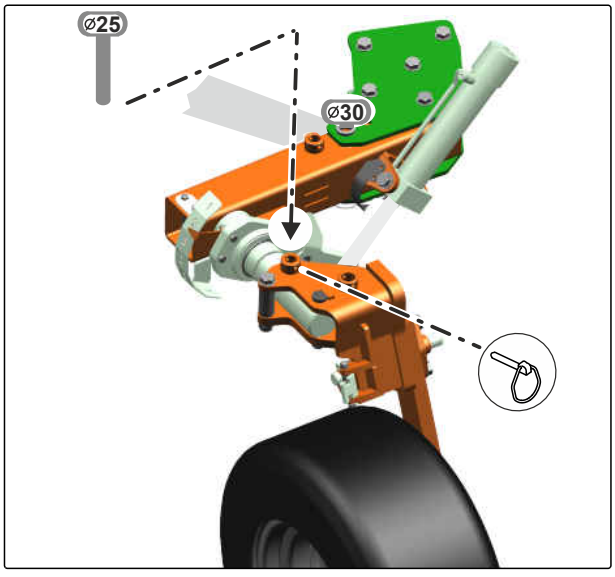
➡ The depth and transport wheel drops into transport position.

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



CMS-I-00005203

8. Insert the 25 mm pin into the depth and transport wheel.
9. Secure the 25 mm pin with the linch pin.

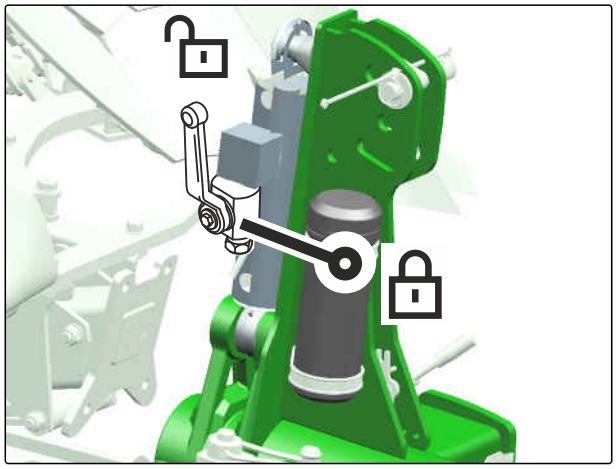


CMS-I-00005202

6.4.8 Locking the depth and transport wheel hydraulic system

CMS-T-00007321-B.1

► Close the stop tap of the depth and transport wheel hydraulic system.



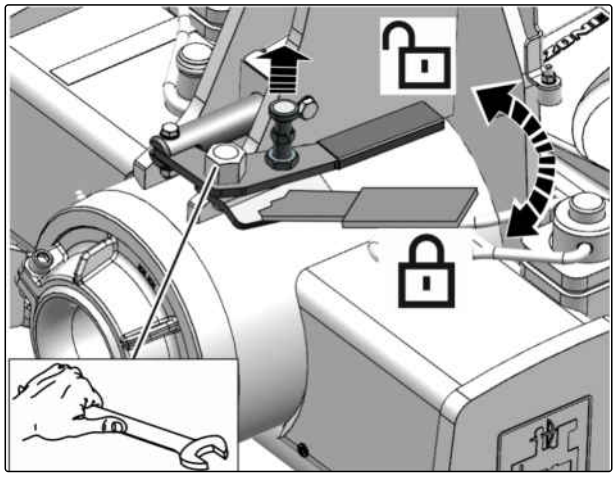
CMS-I-00005222

6.4.9 Swivelling the plough body into transport position

CMS-T-00007322-C.1

1. Firmly grasp the transport locking lever and pull out the locking pin at the same time.
2. Swing the transport locking lever into *"locked position"*.
3. Raise the implement using the three-point hitch.
4. *To swivel the plough bodies:*
   Actuate the *"green"* tractor control unit.

➥ Transport locking secures the transport position.



CMS-I-00005221

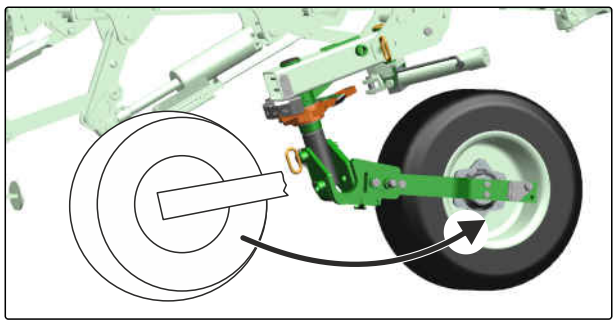
NOTE

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

5. *To park the implement on the depth and transport wheel:*
   Lower the three-point hitch.

➥ The top link is relieved.

6. *To align the depth and transport wheel:*
   Drive the tractor forward in a small curve.
7. Uncouple the top link.
8. For road transport, lift the implement as far as it goes using the tractor lower links.

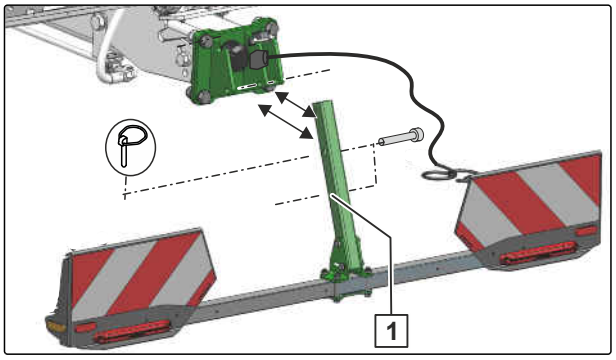


CMS-I-00005220

6.4.10 Installing the rear lighting

CMS-T-00007479-B.1

1. Place the rear lighting in the device.
2. Take the pin from the parking position 1.
3. Fix the rear lighting with the pin and secure.
4. Insert the plug for the power supply into the socket.



CMS-I-00005219

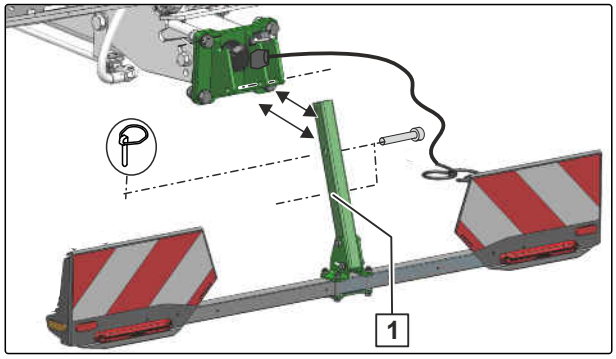
Using the implement 7

CMS-T-00007340-J.1

7.1 Removing the rear lighting

CMS-T-00009139-B.1

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

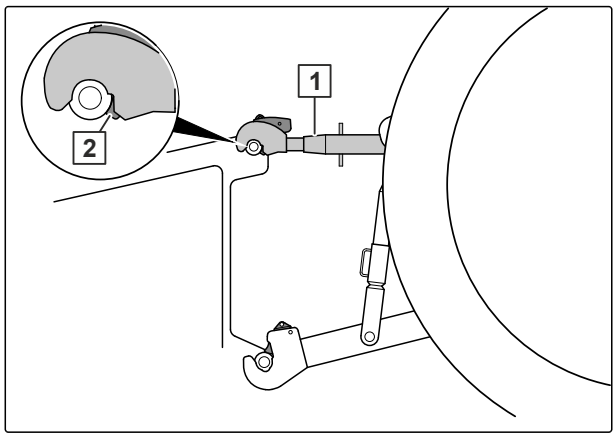


CMS-I-00005219

7.2 Coupling the top link

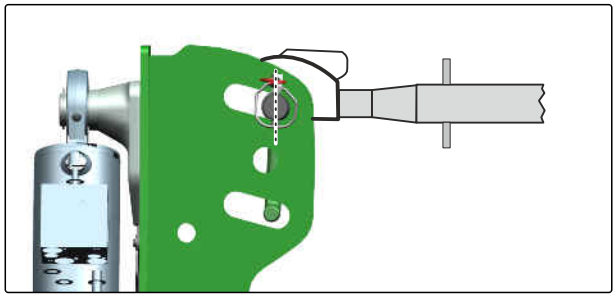
CMS-T-00007319-C.1

1. Lower the implement using the tractor's 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

5. Adjust the top link length so that the pin rests at the front of the slot.
6. Raise the implement using the three-point hitch.

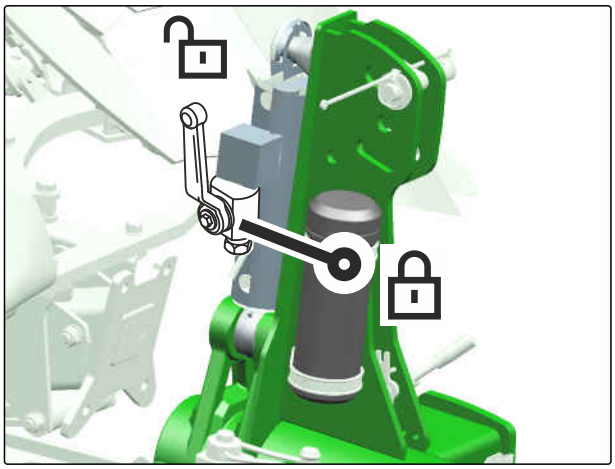


CMS-I-00005142

7.3 Unlocking the depth and transport wheel hydraulic system

CMS-T-00010384-B.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-C.1

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

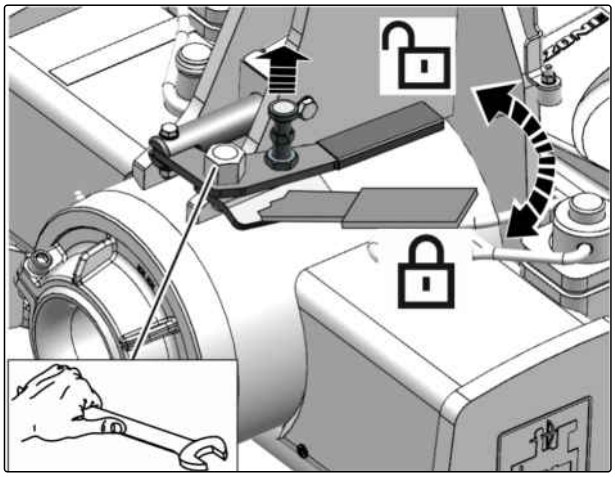
NOTE

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

2. Completely raise the implement using the three-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

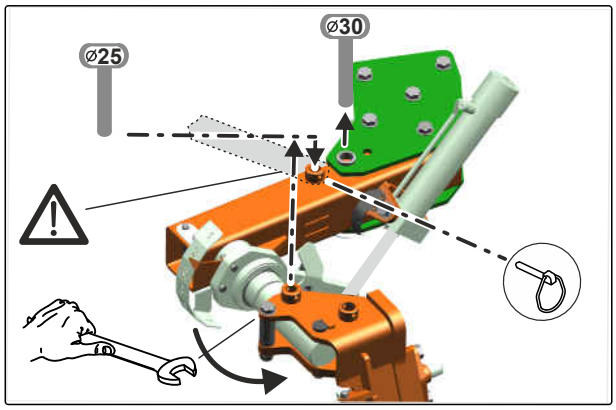
NOTE

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

7.5 Swivelling the depth and transport wheel into working position

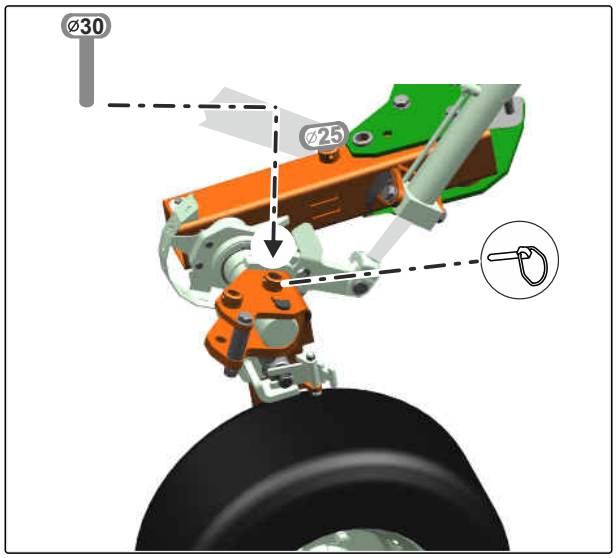
CMS-T-00007330-C.1

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 the 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 the linch pin.

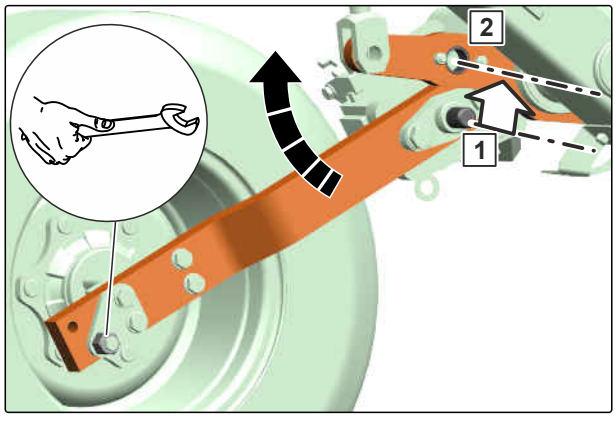


CMS-I-00005228

8. Lower the implement into working position using the three-point hitch.
9. *To align the depth and transport wheel correctly:*
   Drive the implement slightly forwards.
10. *To lock the depth and transport wheel:*
    Set the maximum working depth hydraulically

    or

    Lift the depth and transport wheel using the wrench.



CMS-I-00005229

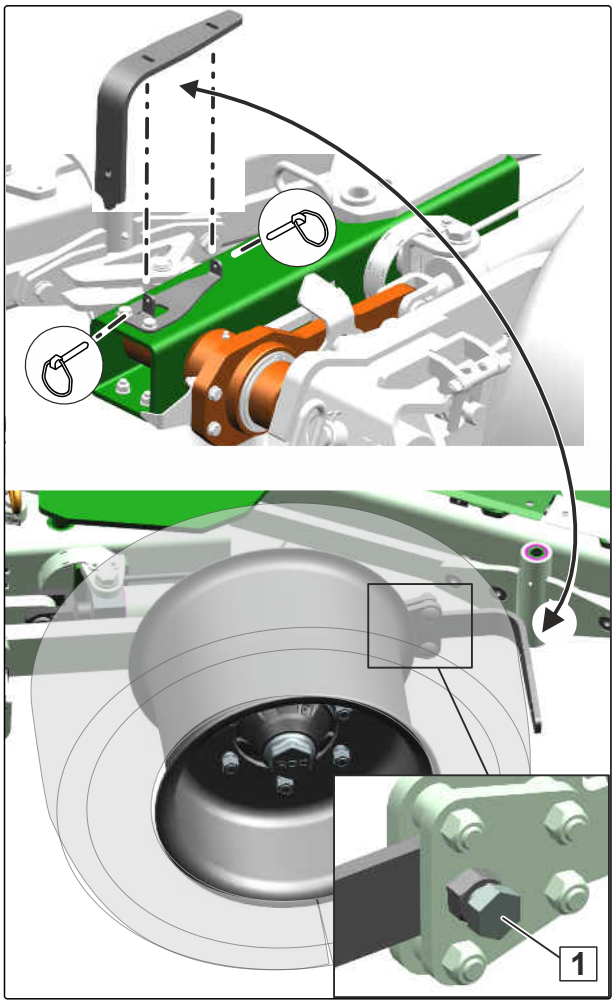
11. Check the locking mechanism.

➡ The pin **1** must engage in the hole **2**.

7.6 Mounting the scraper for the depth and transport wheel

CMS-T-00007331-B.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.

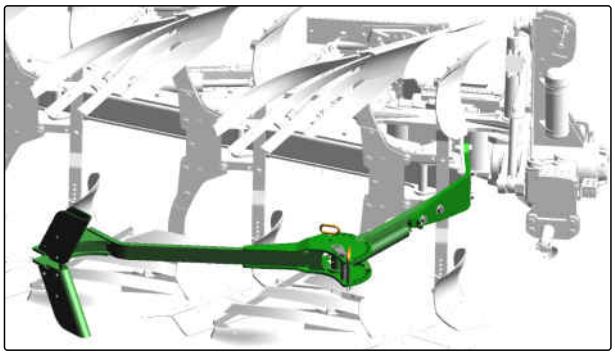


CMS-I-00005231

7.7 Bring packer arm into working position

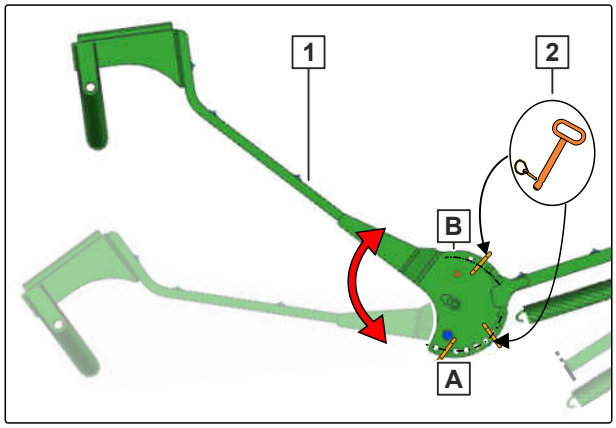
CMS-T-00010178-C.1

Working position



CMS-I-00006946

1. Take the pin **2** out of the group of holes **A**.
2. Completely swivel out the packer arm **1**.
3. Secure the packer arm free of play with the pin **2** in the hole group **B**.
4. Secure the pin with the linch pin.



CMS-I-00004937

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.

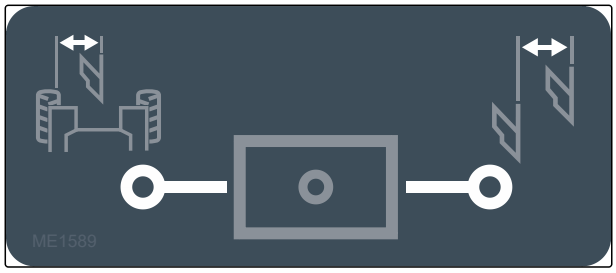
7.9 Hydraulic adjustment of the plough body working width

CMS-T-00007484-B.1

REQUIREMENTS

✓ The implement is in working position

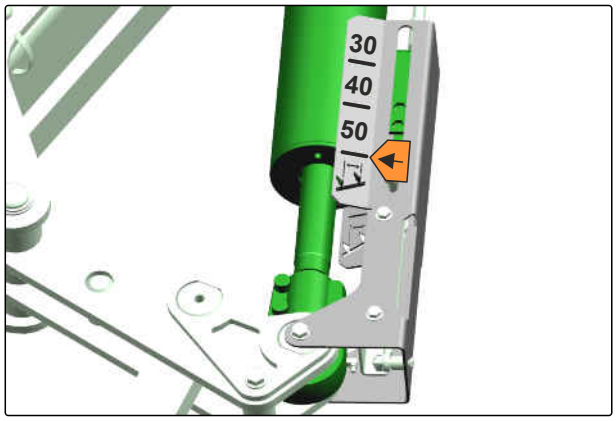
1. Depending on the equipment, set the switch tap on the headstock to the *"Working width"* position.
2. Slightly lift the implement using the tractor lower link.



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 working width of the plough bodies with ComfortClick

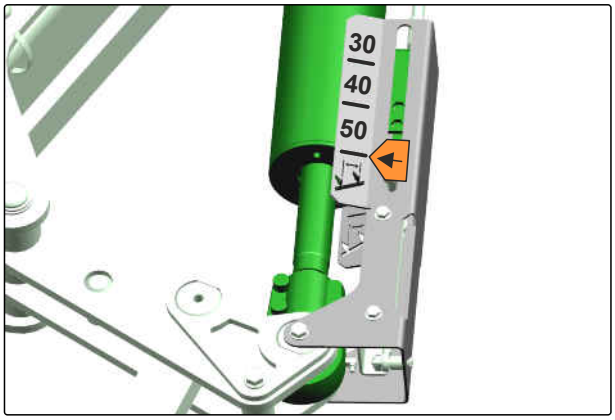
CMS-T-00015149-A.1

REQUIREMENTS

- ✓ The implement is in working position

1. Slightly lift the implement using the tractor lower link.
2. *To adjust the working width:*
   Set the ComfortClick to Position *"1"* and actuate the *"red"* tractor control unit.

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



CMS-I-00005234

7.11 Hydraulic adjustment of the front furrow width

CMS-T-00007481-B.1

IMPORTANT

Risk of implement damage due to collision of components when turning

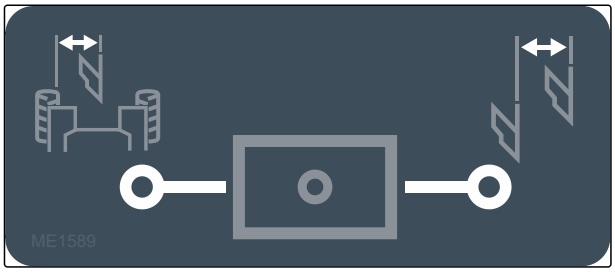
When turning with the maximum front furrow width, the plough bodies can collide with the beam.

▶ *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.

CMS-I-00005230

NOTE

The scale serves as orientation during adjustment.

4. Correct the adjustment during operation if necessary.

7.12 Adjusting the front furrow width with ComfortClick

CMS-T-00015150-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. Slightly lift the implement using the tractor lower link.

2. *To adjust the front furrow width:*
   Set the ComfortClick to Position *"2"* and actuate the *"red"* tractor control unit.

CMS-I-00005230

NOTE

The scale serves as orientation during adjustment.

3. Correct the adjustment during operation if necessary.

7.13 Using the implement

CMS-T-00007341-G.1

1. Lower the implement on the field.
2. Start ploughing.
3. Align the implement horizontally using the three-point hitch.
4. Correct the settings.
5. *To relieve the support wheel and to reduce slippage:*
   Insert the top link pin at the front of the elongated slot

   or

   To adapt the support wheel to ground contour:
   Insert 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.

7.14 Turning on the headlands

CMS-T-00007342-C.1

1. Raise the implement using the three-point hitch.
2. *To turn the plough bodies:*
   Actuate the *"green"* tractor control unit.
3. After the headland, lower the implement using the three-point hitch.
4. Align the implement horizontally using the three-point hitch.
5. Check the adjustment after the second furrow.

Eliminating faults

8

CMS-T-00007343-E.1

Errors	Cause	Solution
The plough pulls to the side	The packer pulls the plough to the side, therefore the landsides have the wrong angle.	► see page 83
	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.
High centre of gravity and unfavourable position of the support wheel in transport position	Incorrect switching times for time-controlled tractor control units when turning.	► Move the implement into working position. ► Set the smallest working width. ► Swivel the plough body into transport position.
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.
When turning, the swivel-in cylinder cannot perform the full stroke	When turning, the implement is abruptly braked by the stop on the turn-over bracket. Front furrow width is incorrectly adjusted.	► Reduce the front furrow width.
The plough bodies do not turn	Insufficient ground clearance when turning.	► Adjust the top link coupling point.
	The hydraulic system is not working properly.	► Clean the hydraulic plugs. ► Check the connection on the hydraulic socket ► Check the transmission pull.
	Hydraulic hoses are bent.	► Check the position of the hydraulic hoses.

Errors	Cause	Solution
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 plough bodies are worn.	► Replace the plough bodies.
	The wrong plough body 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 83
Plough body not working	The shear bolt of the overload safety is broken.	► see page 84

The plough pulls to the side

CMS-T-00007486-B.1

1. Correct the angle of the landsides by adjusting the pull point.
2. Shorten the threaded spindle, default length: 449 mm.
3. Adjust the length of the working width cylinder.

➡ The working width corresponds to the displayed value.

The implement does not reach the desired working depth

CMS-T-00007296-F.1

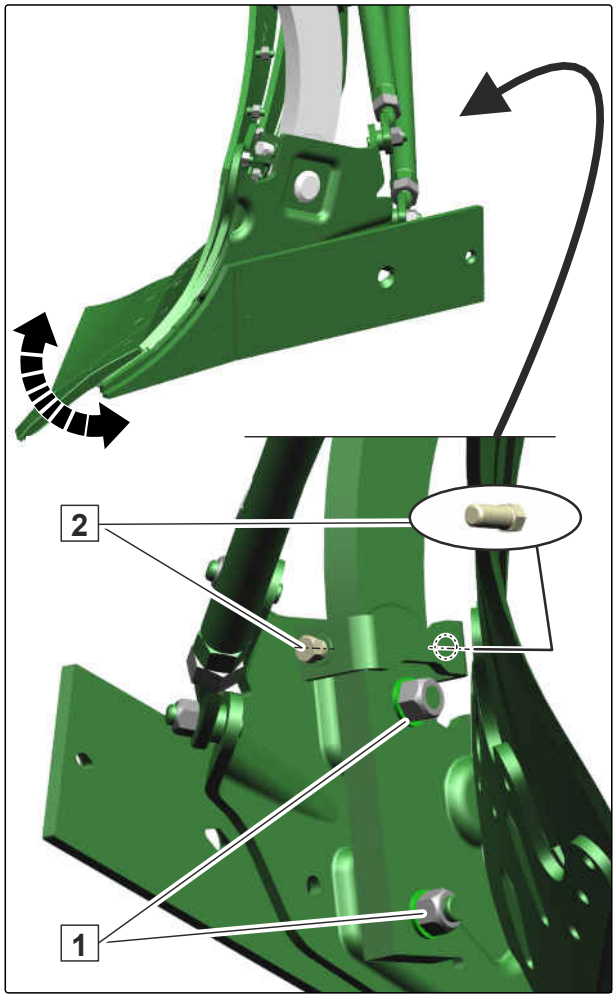
Not possible for all plough bodies

1. Park the implement on a level surface in working position.
2. Lift the implement out of the working position until the plough bodies are lifted from the ground.
3. Loosen the plough leg bolts 1 on the lower plough body.
4. If necessary, set a steeper pitch on the plough bodies using the bolts 2.

NOTE

The steeper the plough body, the better the penetration behaviour and the higher the pulling force requirement and wear.

5. Check that all plough bodies have the same distance from the plough beam.
6. Tighten the plough leg bolts 1 with 580 Nm.
7. After turning, set the plough bodies on the other side steeper to the same degree.



CMS-I-00007933

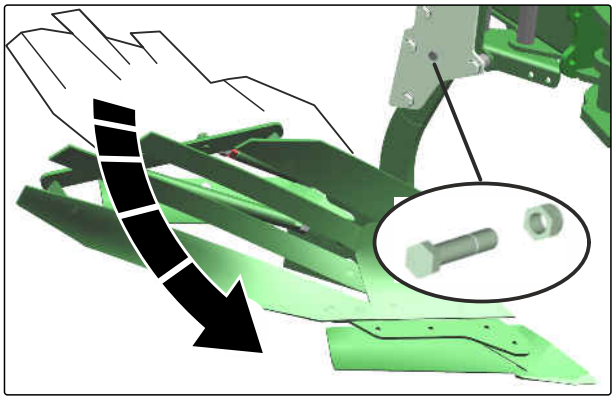
Plough body not working

CMS-T-00007183-B.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.



CMS-I-00005021

1. Swivel the plough body back into working position.
2. Tighten the bolt on the pivot point.
3. Insert and tighten the shear bolt and self-locking nut.

NOTE

Additional shear bolts and nuts can be found in the transport box.

Parking the implement 9

CMS-T-00006488-E.1

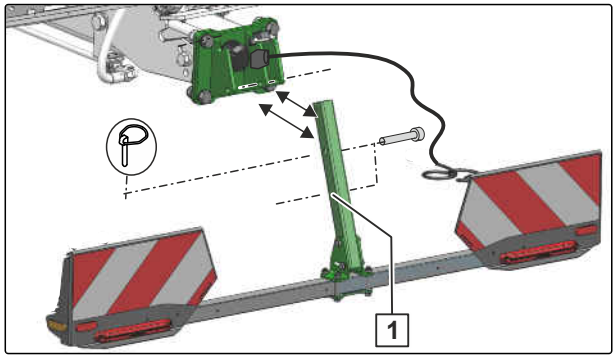
9.1 Removing the rear lighting

CMS-T-00007480-B.1

IMPORTANT

Risk of implement damage due to collision of components

- ▶ *Before you swivel the plough bodies into working position,*
  remove the rear lighting for road travel.



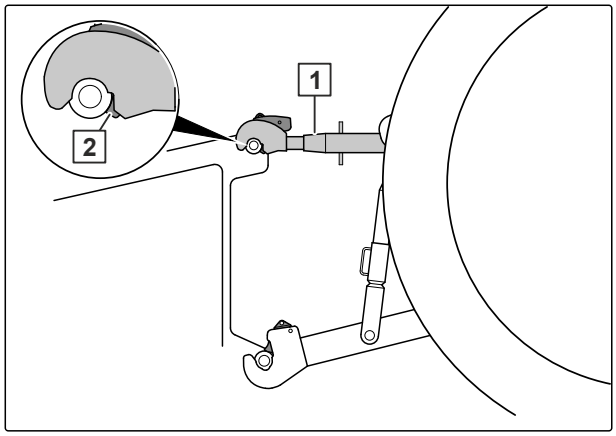
CMS-I-00005219

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

9.2 Coupling the top link

CMS-T-00007319-C.1

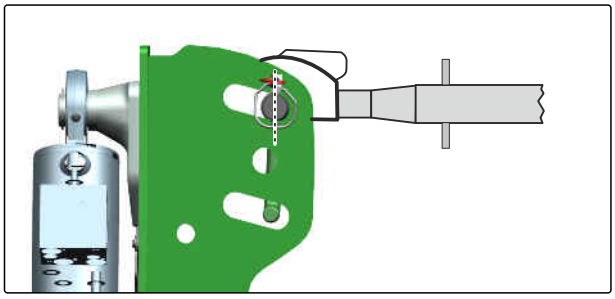
1. Lower the implement using the tractor's lower link.
2. Select the top link coupling point.
3. Couple the top link **1**.
4. Check whether the top link catch hooks **2** is correctly locked.



CMS-I-00003706

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

6. Raise the implement using the three-point hitch.

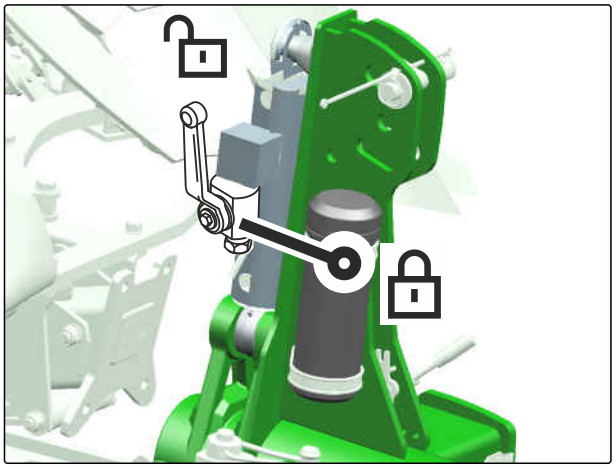


CMS-I-00005142

9.3 Unlocking the depth and transport wheel hydraulic system

CMS-T-00010384-B.1

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



CMS-I-00005222

9.4 Moving the plough bodies into working position

CMS-T-00007347-C.1

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

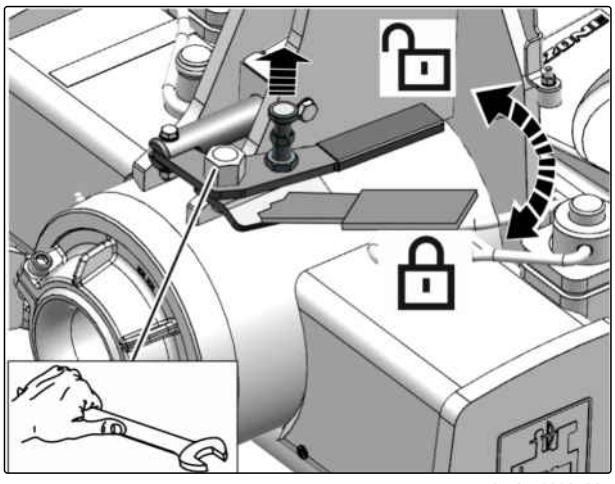
REQUIREMENTS

✓ Implement in transport position

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

NOTE

If the actuation is stiff, use the wrench as an auxilliary tool.



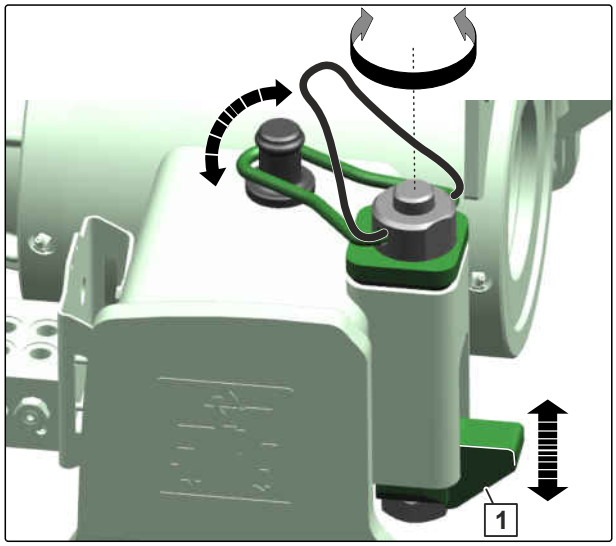
CMS-I-00005221

2. Adjust the tilt angle on the right to the maximum. To do so, turn the stop down using the spindle.

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

4. *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-00005226

NOTE

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

9.5 Swivelling the depth and transport wheel into working position

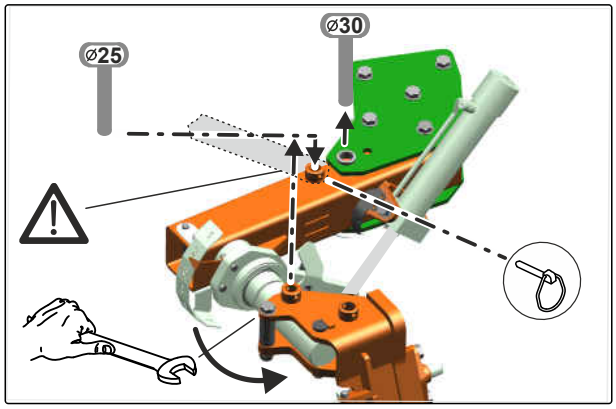
CMS-T-00007348-B.1

1. Pull out the 25 mm pin from the depth and transport wheel.

2. Insert the 25 mm pin through the wheel carrier and the beam plate.

3. Secure the 25 mm pin with the linch pin.

4. Put the wrench on the hexagon and swivel the depth and transport wheel.

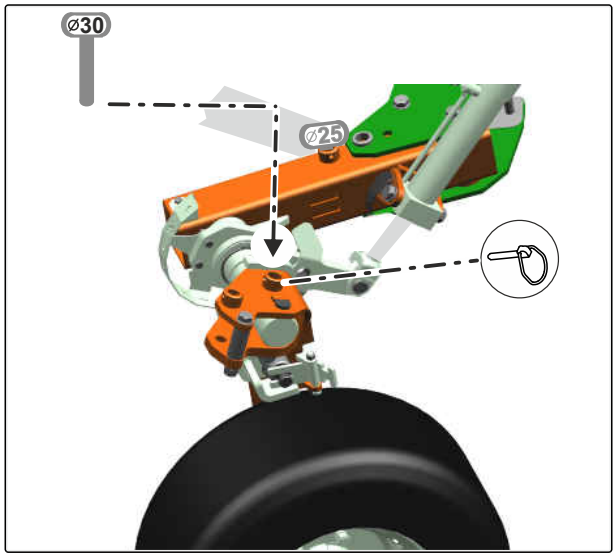


CMS-I-00005227

5. Pull out the 30 mm pin from the wheel carrier.

6. Pull out the 30 mm pin from the depth and transport wheel.

7. Secure the 30 mm pin with the linch pin.



CMS-I-00005228

8. Lower the implement into working position using the three-point hitch.

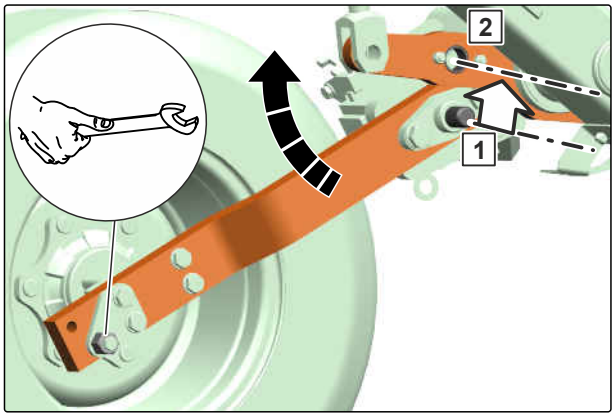
9. *To align the depth and transport wheel correctly:*
Drive the implement slightly forwards.

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

or

Lift the depth and transport wheel using the wrench until the depth and transport wheel is locked.

11. Check the locking mechanism.



CMS-I-00005229

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

9.6 Uncoupling the top link

CMS-T-00007492-B.1

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

2. Uncouple the top link.

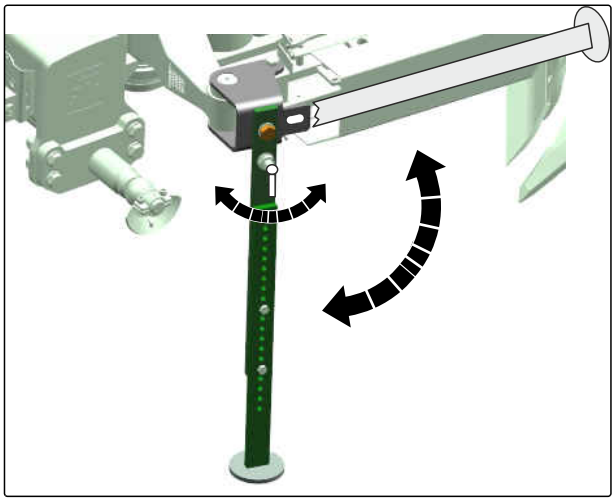
9.7 Lowering the parking support

CMS-T-00007350-B.1

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

2. Unlock the parking support with the locking pin.

3. Lower the parking support.



CMS-I-00005141

9.8 Uncoupling the lower link

CMS-T-00007351-B.1

1. Relieve the tractor's lower link.

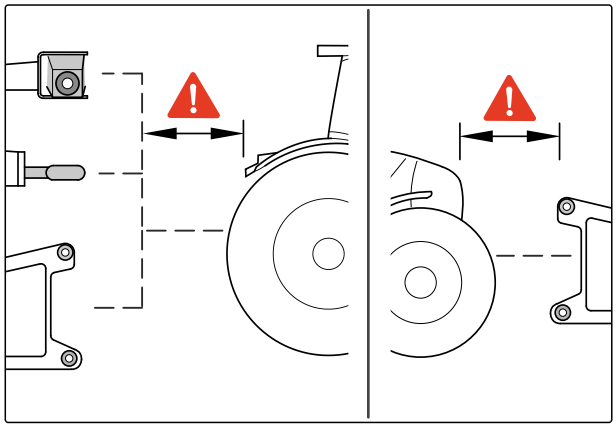
2. Uncouple the tractor lower links from the implement from the tractor seat.

9.9 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.

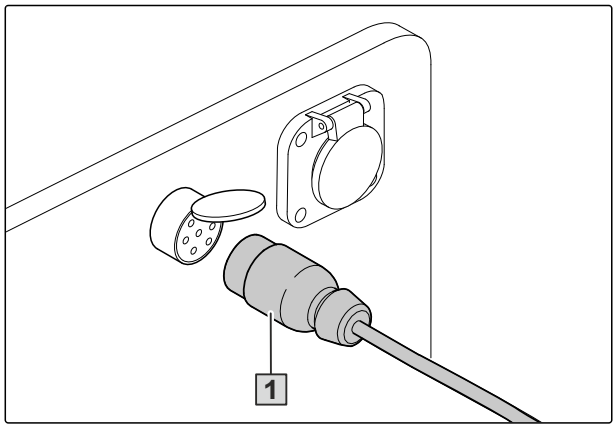


CMS-I-00004045

9.10 Uncoupling the power supply

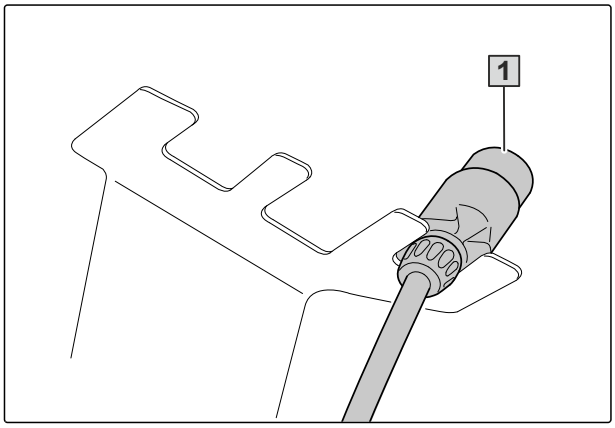
CMS-T-00001402-H.1

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



CMS-I-00001048

2. Hang the plugs **1** in the hose cabinet.

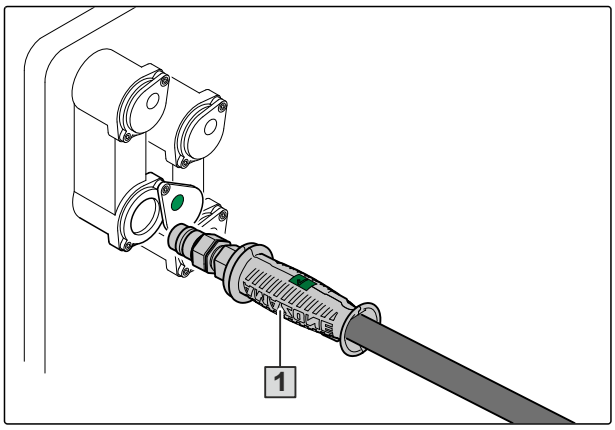


CMS-I-00001248

9.11 Disconnecting the hydraulic hose lines

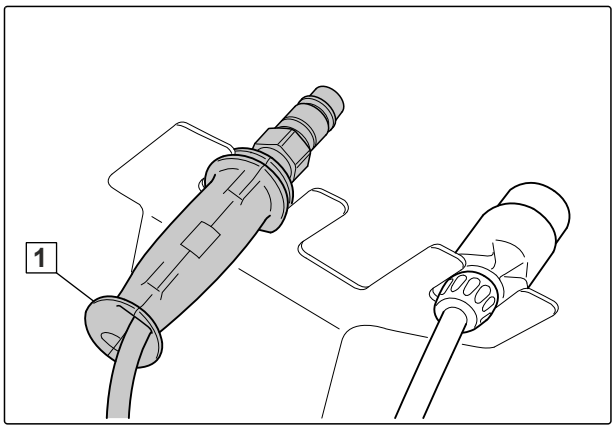
CMS-T-00000277-F.1

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 machine 10

CMS-T-00006467-E.1

10.1 Maintaining the machine

CMS-T-00006470-E.1

10.1.1 Maintenance schedule

After initial operation		
Checking the hydraulic hose lines	see page 92	

As required		
Checking the wheels	see page 94	

Daily		
Checking the condition of wear parts	see page 93	
Checking the lower link pins and top link pins	see page 95	

Every 50 operating hours / Weekly		
Checking the hydraulic hose lines	see page 92	
Checking the bolted connections	see page 94	

Every 1000 operating hours / Every 12 months		
Checking the wheel bearing	see page 95	**WORKSHOP WORK**

10.1.2 Checking the hydraulic hose lines

CMS-T-00002331-F.1

INTERVAL

- After initial operation
- Every 50 operating hours

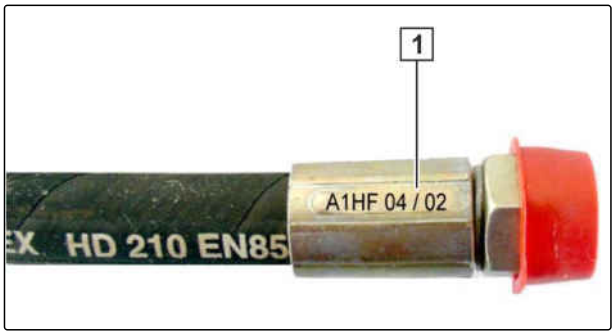
  or

  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.
3. Retighten loose bolted connections.

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

4. Check the manufacturing date **1**.



CMS-I-00000532

WORKSHOP WORK

5. Replace worn, damaged or aged hydraulic hose lines.

10.1.3 Checking the condition of wear parts

CMS-T-00006535-B.1

INTERVAL

- Daily

Wear parts include:

1 Mouldboard slats

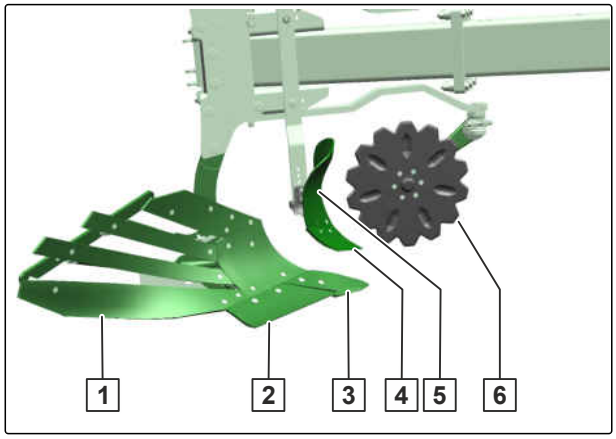
2 Wing

3 Share tip

4 Skimmer share

5 Skimmer mouldboard

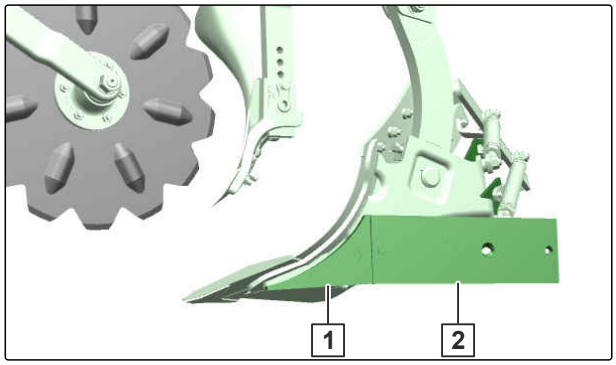
6 Disc coulter



CMS-I-00005065

1 Landside point

2 Landside

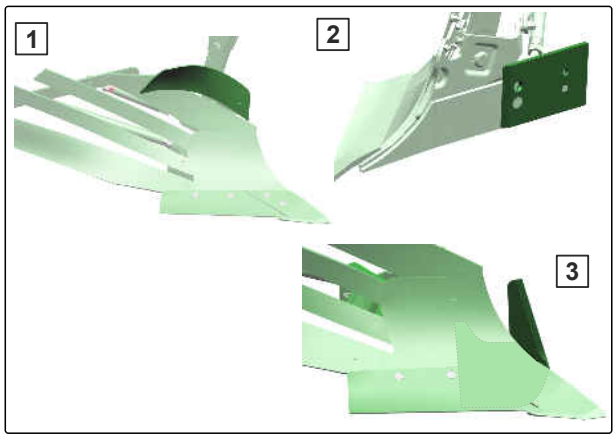


CMS-I-00005066

1 Trashboard

2 Landside protector

3 Landside coulter



CMS-I-00005068

1. Check the condition of wear parts.
2. Replace wear parts that are worn.

10.1.4 Checking the bolted connections

CMS-T-00007566-B.1

INTERVAL

- 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.

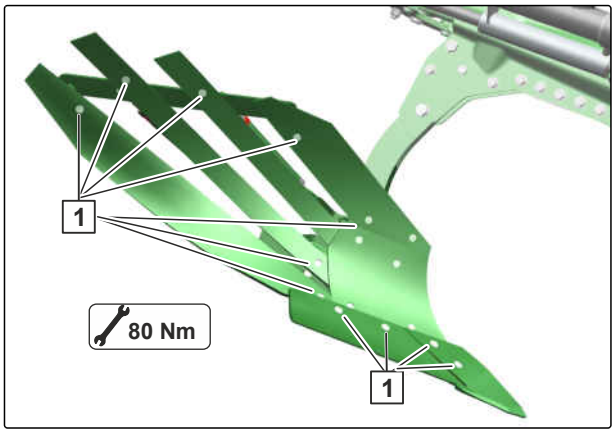
▶ Tighten the bolts once after 2 hours and then according to the specifications on the sticker.

CMS-I-00003762

Bolted connections on the plough body:

1	M12x30/35 10.9

▶ Check all bolts for tight fit.



CMS-I-00005322

10.1.5 Checking the wheels

CMS-T-00007561-B.1

INTERVAL

- As required

Tyres	Tyre inflation pressure	Tightening torque
360/45-17.5	4.0 bar	600 Nm
340/55-16.0	4.0 bar	600 Nm
10.0/75-15.3	4.0 bar	600 Nm

Tyres	Tyre inflation pressure	Tightening torque
10.0/75-15	4.0 bar	600 Nm

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

2. Check the bolted connections.

10.1.6 Checking the wheel bearing

CMS-T-00014967-A.1

WORKSHOP WORK

- Every 1000 operating hours

  or

  Every 12 months

1. Check bearing clearance.

2. Replace the grease in the wheel bearings.

10.1.7 Checking the lower link pins and top link pins

CMS-T-00002330-J.1

INTERVAL

- Daily

Criteria for visual inspection of lower link pins and top link pins:

- Cracks
- Fractures
- Permanent deformations
- Permissible wear: 2 mm

1. Check the lower link pins and top link pins for the listed criteria.

2. Replace worn pins.

10.2 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.

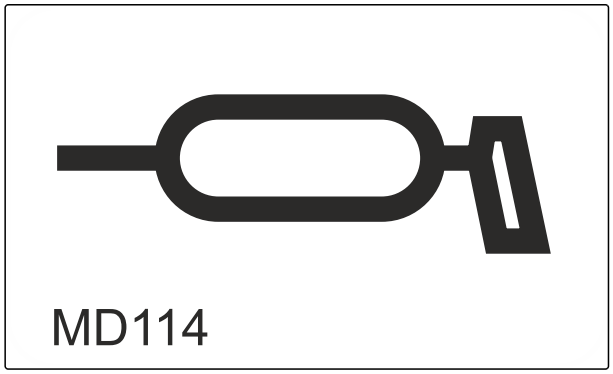
10.3 Lubricating the implement

CMS-T-00006468-B.1

IMPORTANT

Implement damage due to improper lubrication

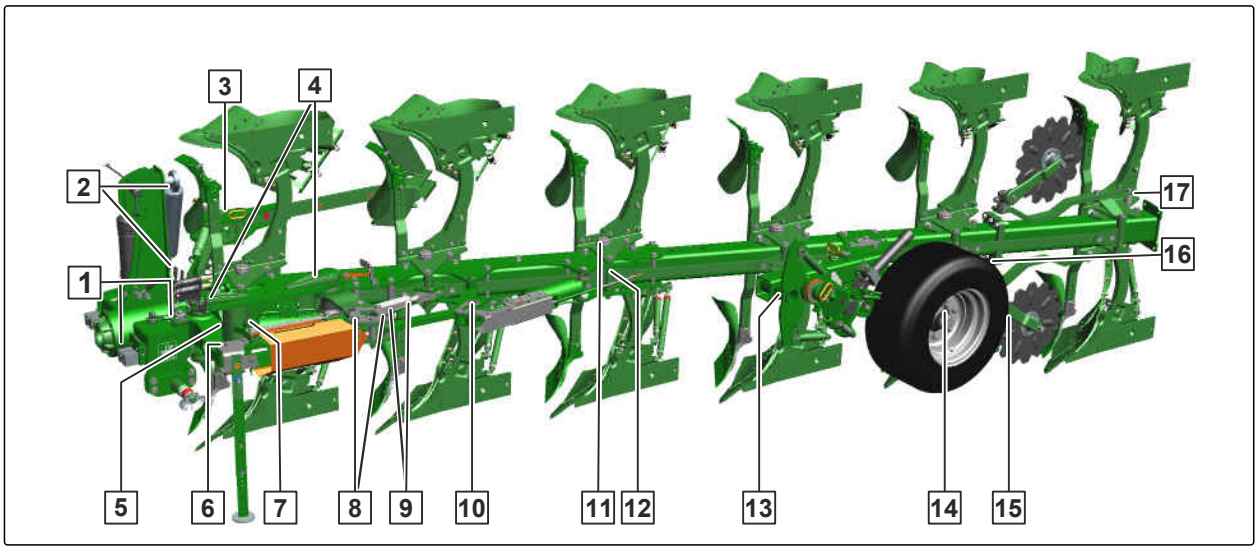
- Grease the implement at the marked lubrication points according to the lubrication schedule.
- *To ensure that dirt is not pressed into the lubrication points,*
  thoroughly clean the grease nipples and the grease gun.
- Only grease the implement with the lubricants listed in the technical data.
-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



CMS-I-00002270

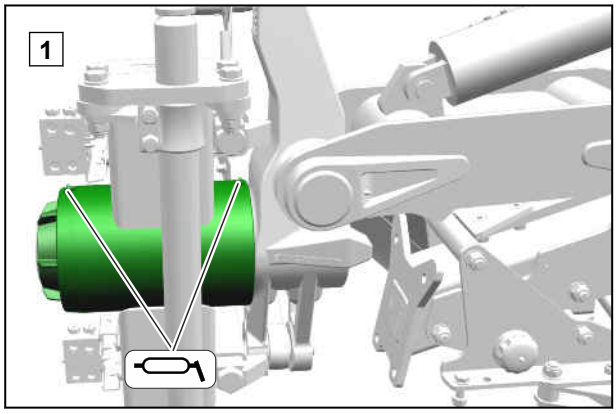
10.3.1 Overview of lubrication points

CMS-T-00007527-A.1

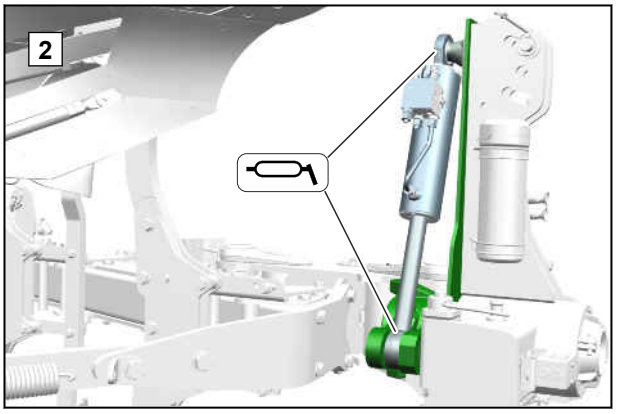


CMS-I-00005282

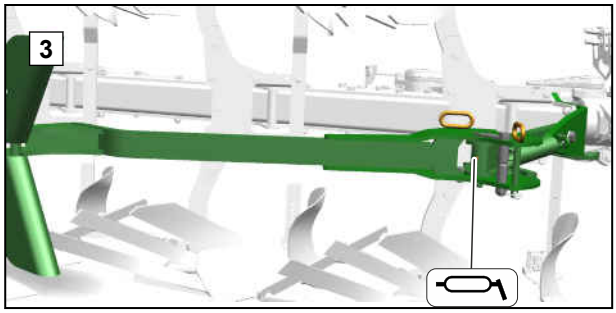
Every 50 operating hours



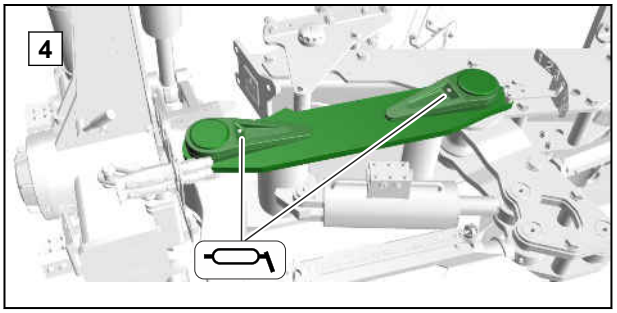
CMS-I-00005284



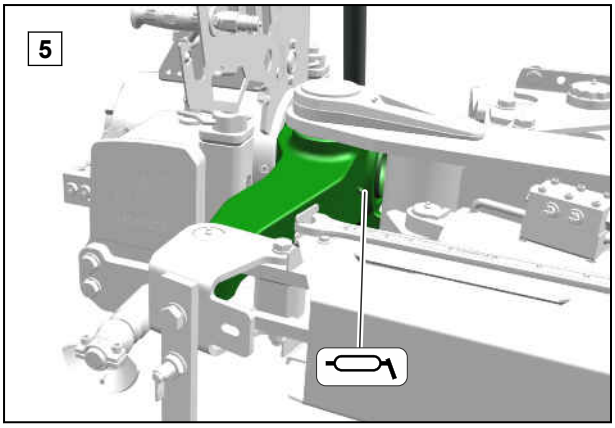
CMS-I-00005294



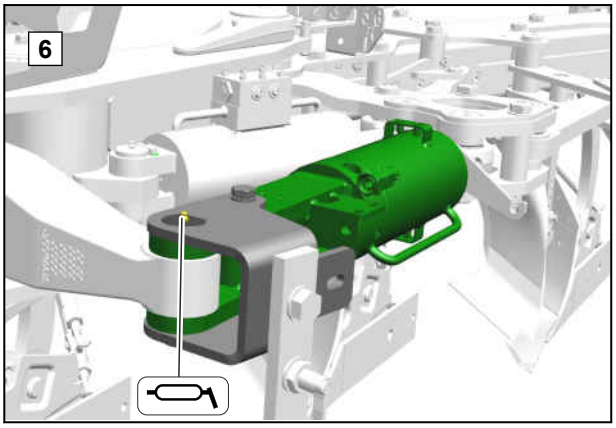
CMS-I-00005293



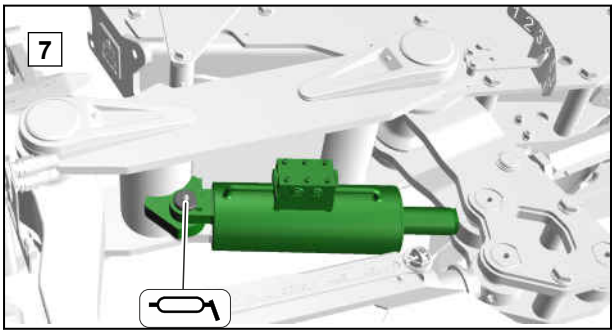
CMS-I-00005292



CMS-I-00005291



CMS-I-00005297



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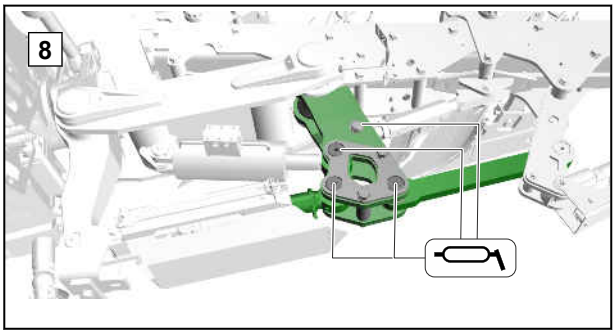
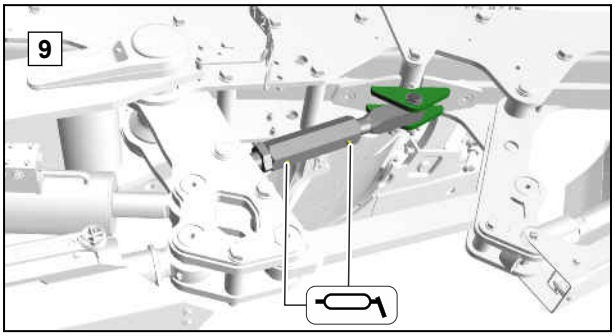
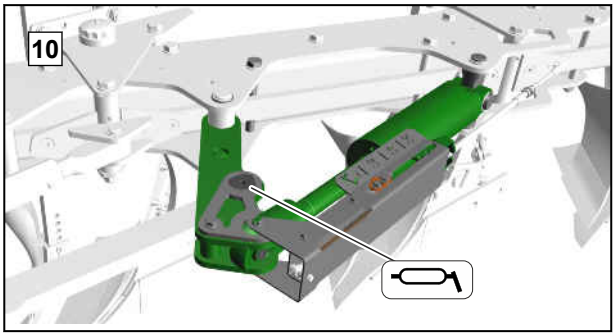


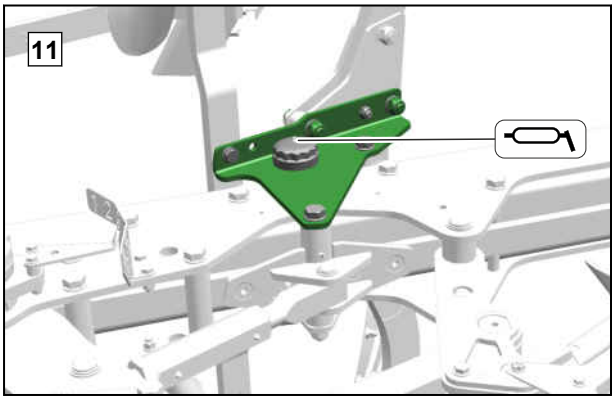
CMS-I-00005290



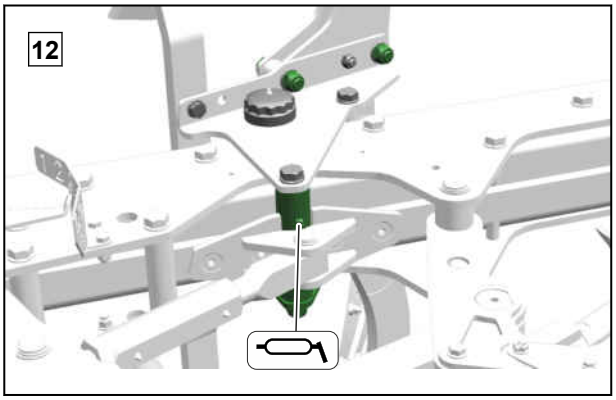
CMS-I-00005288



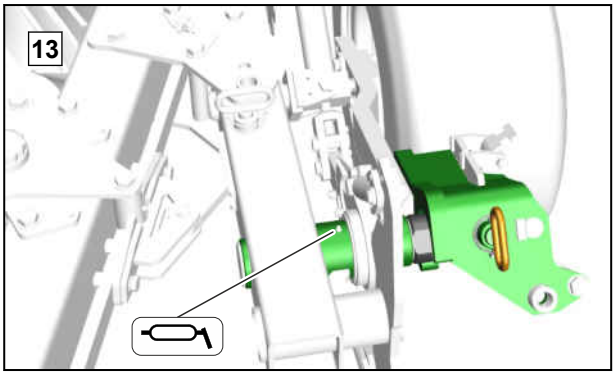
CMS-I-00005287



CMS-I-00005296



CMS-I-00005295



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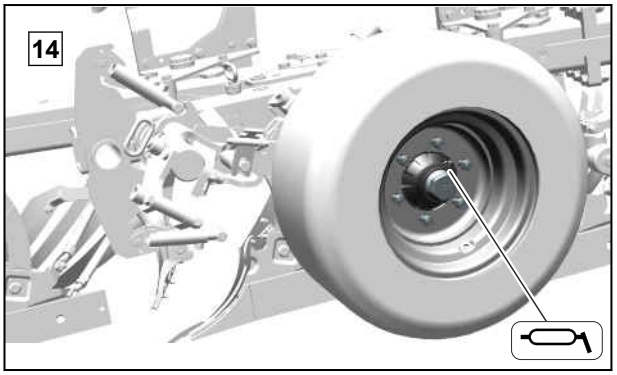
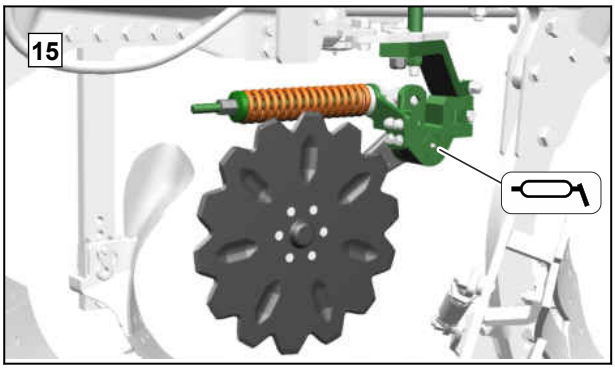
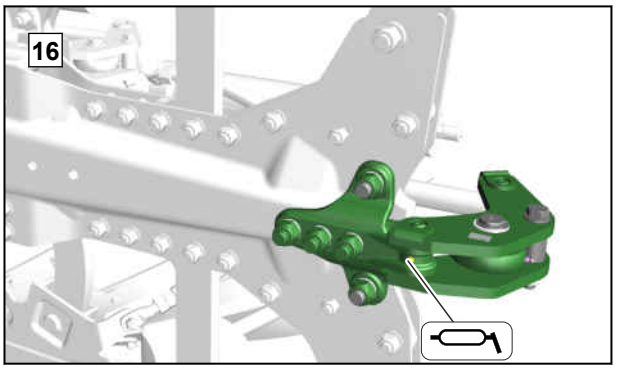


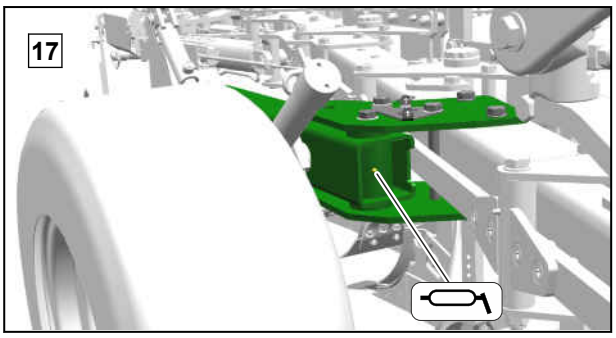
CMS-I-00005286



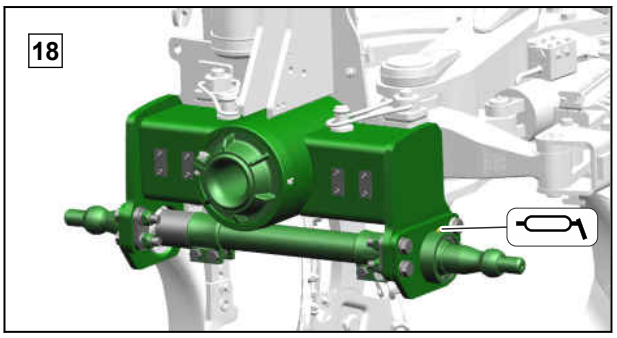
CMS-I-00005283



CMS-I-00005304



CMS-I-00005303



CMS-I-00005310

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.

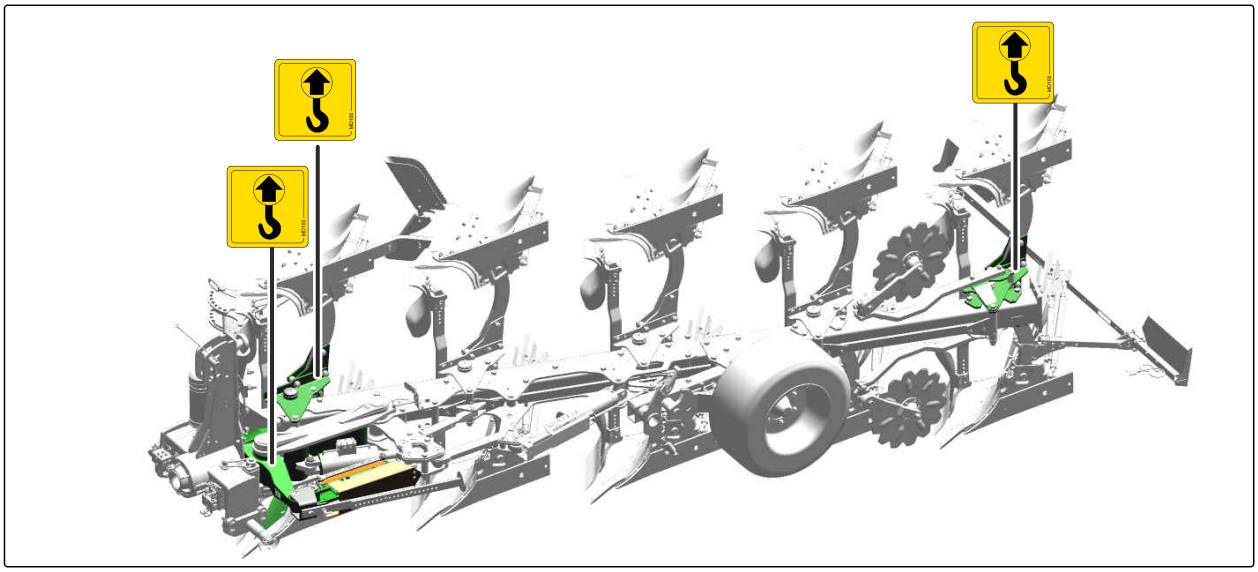
4. Park the implement in a sheltered place.

Loading the implement 11

CMS-T-00006465-F.1

11.1 Loading the implement with a crane

CMS-T-00009164-E.1



CMS-I-00006291

The implement has 3 lashing points for slings for lifting.

WARNING

Risk of accidents due to improperly attached slings for lifting

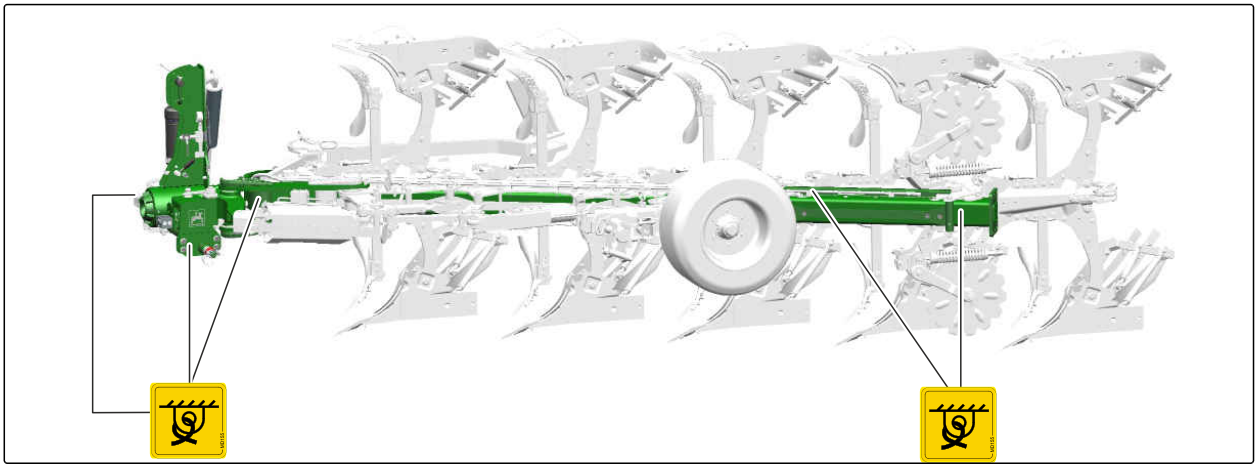
If the slings are not attached at the marked lashing points, the implement can be damaged during lifting and endanger safety.

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

1. Attach the slings for lifting on the intended lashing points.
2. Slowly lift the implement.

11.2 Lashing the implement

CMS-T-00007519-C.1



CMS-I-00005270

The implement has 5 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.

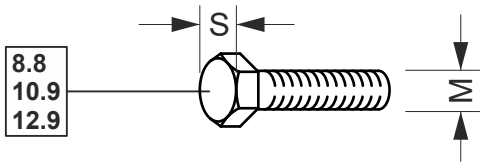
1. Put the implement on the transport vehicle.
2. Attach the lashing straps at the marked points.
3. Lash down the implement in compliance with the national regulations for load securing.

Appendix 12

CMS-T-00006212-C.1

12.1 Bolt tightening torques

CMS-T-00000373-E.1



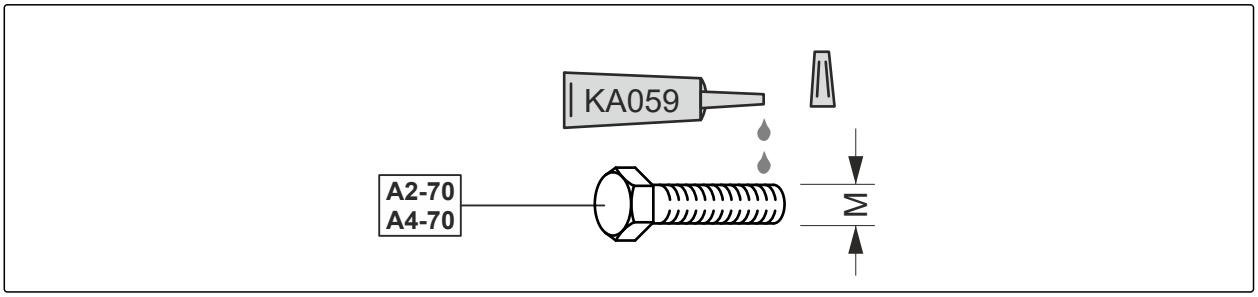
CMS-I-000260

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

Directories 13

13.1 Index

W

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