



## Translation of the original operating instructions

### Trailed compact disc harrow

Catros 4003-2TS	Catros <sup>XL</sup> 4003-2TS
Catros 5003-2TS	Catros <sup>XL</sup> 5003-2TS
Catros 6003-2TS	Catros <sup>XL</sup> 6003-2TS
Catros 7003-2TS	



SmartLearning



**AMAZONE**  
 AMAZONEN-WERKE H. DREYER SE & Co. KG  
 Am Amazonenwerk 9-13 D-49205 Hasbergen

Maschinen-Nr.

Fahrzeug-Ident-Nr.

Produkt

zul. technisches Maschinengewicht kg

Modelljahr






Baujahr  
 année de fabrication  
 year of construction  
 Год изготовления



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

# 1

CMS-T-00000081-H.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-F.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-D.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-0000059-C.1

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

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# Safety and responsibility

# 2

CMS-T-00002298-N.1

## 2.1 Basic safety instructions

CMS-T-00002301-N.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 had 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 Knowing and preventing dangers

CMS-T-00002303-E.1

#### 2.1.3.1 Safety hazards on the implement

CMS-T-00002318-E.1

##### Liquids under pressure

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

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



### 2.1.3.2 Danger areas

CMS-T-00002319-C.1

#### Dangers areas on the machine

The following basic dangers are encountered in the danger areas:

The implement and its work tools move during operation.

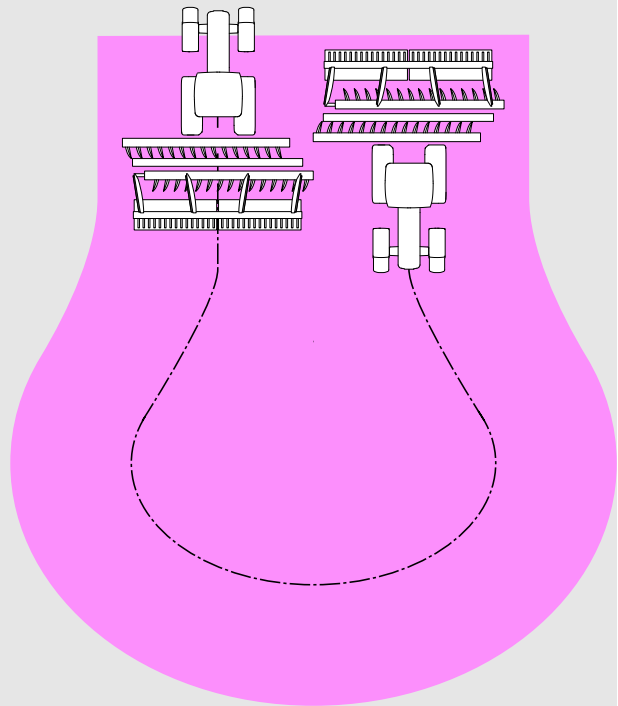
Hydraulically raised machine parts can descend unnoticed and slowly.

The tractor and implement 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 machine.
- ▶ *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 tractor and implement. This also applies for quick checking work.



CMS-I-001131

### 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-F.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-E.1

#### **Only work on the machine when it is at a standstill**

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

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

### Maintenance work

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

- ▶ *Before you adjust, maintain or clean the machine,* secure the machine.
- ▶ Repair the machine according to this operating manual.
- ▶ Only perform the work that is described in this operating manual.
- ▶ 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 3-point mounting frame, drawbars, trailer support, trailer coupling, tensioned crosspiece as well as axles and axle suspensions, lines and tanks containing flammable substances.

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

### **2.1.5.3 Operating materials**

CMS-T-00002324-C.1

#### **Unsuitable operating materials**

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

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

### **2.1.5.4 Special equipment and spare parts**

CMS-T-00002325-B.1

#### **Special equipment, accessories, and spare parts**

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

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

## 2.2 Safety routines

CMS-T-00002300-C.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 machine without using the intended access steps can slip, fall, and suffer severe injury.

- ▶ Use only the intended access steps
- ▶ *Dirt as well operating materials can impede walking safety and stability.*  
Always keep steps and platforms clean and in proper condition, so that safe stepping and standing is ensured.
- ▶ Never climb onto the machine when it is in motion.
- ▶ Climb up and down facing the machine.
- ▶ When climbing up and down, maintain 3-point contact with the access steps and handrails: always keep two hands and one foot or two feet and one hand on the machine.
- ▶ When climbing up and down, never hold onto the control elements. Accidental actuation of control elements can unintentionally activate potentially dangerous functions.
- ▶ When climbing down, never jump off of the machine.



## Intended use

# 3

CMS-T-00004230-A.1

- The implement is intended solely for professional use for soil tillage on agricultural crop lands according to Good Agricultural Practices.
- The implement is an agricultural machine to be mounted on the lower link, clevis coupling or hitch ball of a tractor that meets the technical requirements.
- The implement is suitable and intended for shallow stubble cultivation or breaking up fallow land, for seedbed preparation and incorporating catch crops or farm manure.
- The implement can be used on fields with a soil strength of up to 3.0 MPa.
- 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 machine may be used and maintained only by persons who meet the requirements. The personnel requirements are described in the section "*Personnel qualification*".
- The operating manual is part of the machine. The machine is solely intended for use in compliance with this operating manual. Uses of the machine that are not described in this operating manual can lead to serious personal injuries or even death and to machine 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

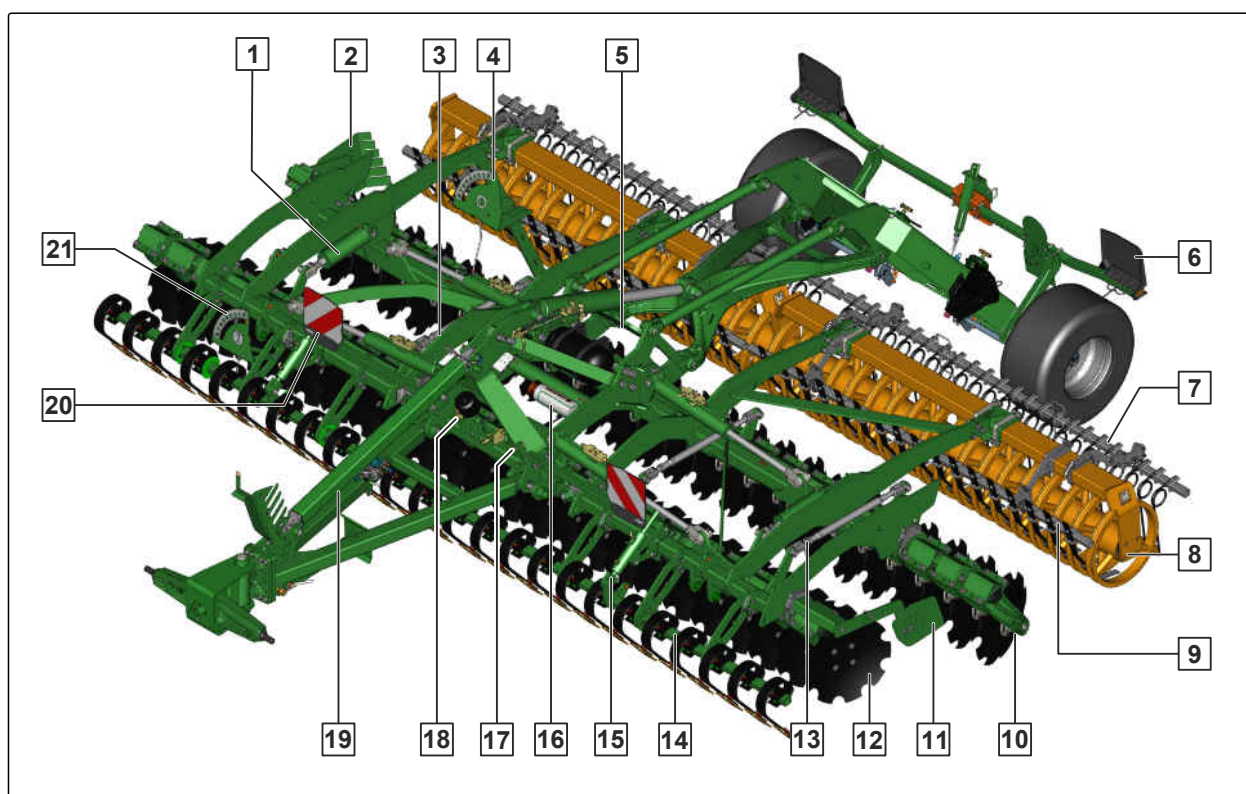
CMS-T-00004248-L.1

## 4.1 Implement overview

CMS-T-00006302-E.1

### 4.1.1 Implement with leading tools

CMS-T-00004260-F.1



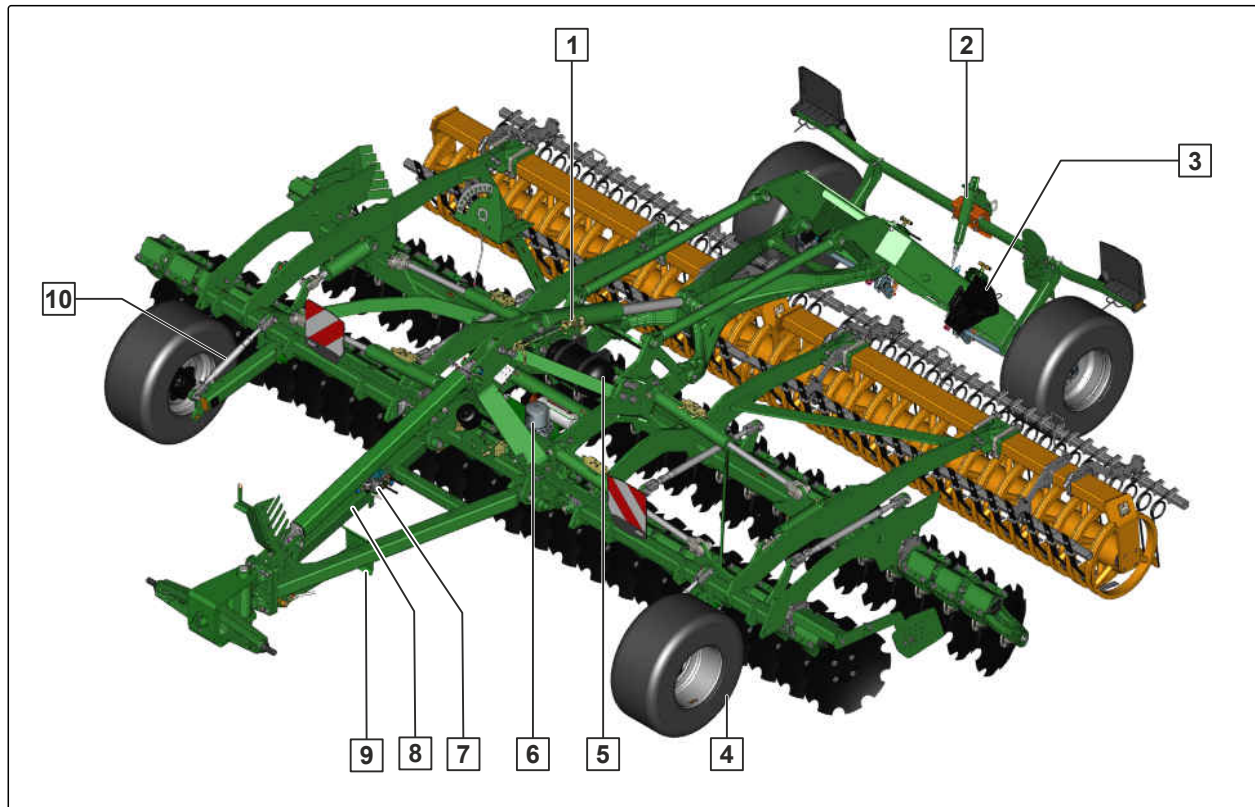
CMS-I-00003284

- |  |   |
|--|---|
| <b>1</b> Working depth adjustment                        | <b>2</b> Right side guide plate                           |
| <b>3</b> Rating plates and stamped identification number | <b>4</b> Working depth indicator for the discs            |
| <b>5</b> Rating plates and stamped identification number | <b>6</b> Rear lighting and identification for road travel |
| <b>7</b> Trailing elements                               | <b>8</b> Roller   |
| <b>9</b> Clearer system                                  | <b>10</b> Side disc                                       |
| <b>11</b> Left side guide plate                          | <b>12</b> Discs   |
| <b>13</b> Threaded spindle for aligning the disc gangs   | <b>14</b> Leading tool                                    |
| <b>15</b> Working depth adjustment for leading tool      | <b>16</b> Threaded cartridge                              |

- |  |   |
|--|---|
| <b>17</b> Spirit level                                 | <b>18</b> Stop tap  |
| <b>19</b> Hand lever                                   | <b>20</b> Front lighting and identification for road travel |
| <b>21</b> Working depth indicator for the leading tool |   |

#### 4.1.2 Implement with support wheels

CMS-T-00006303-B.1

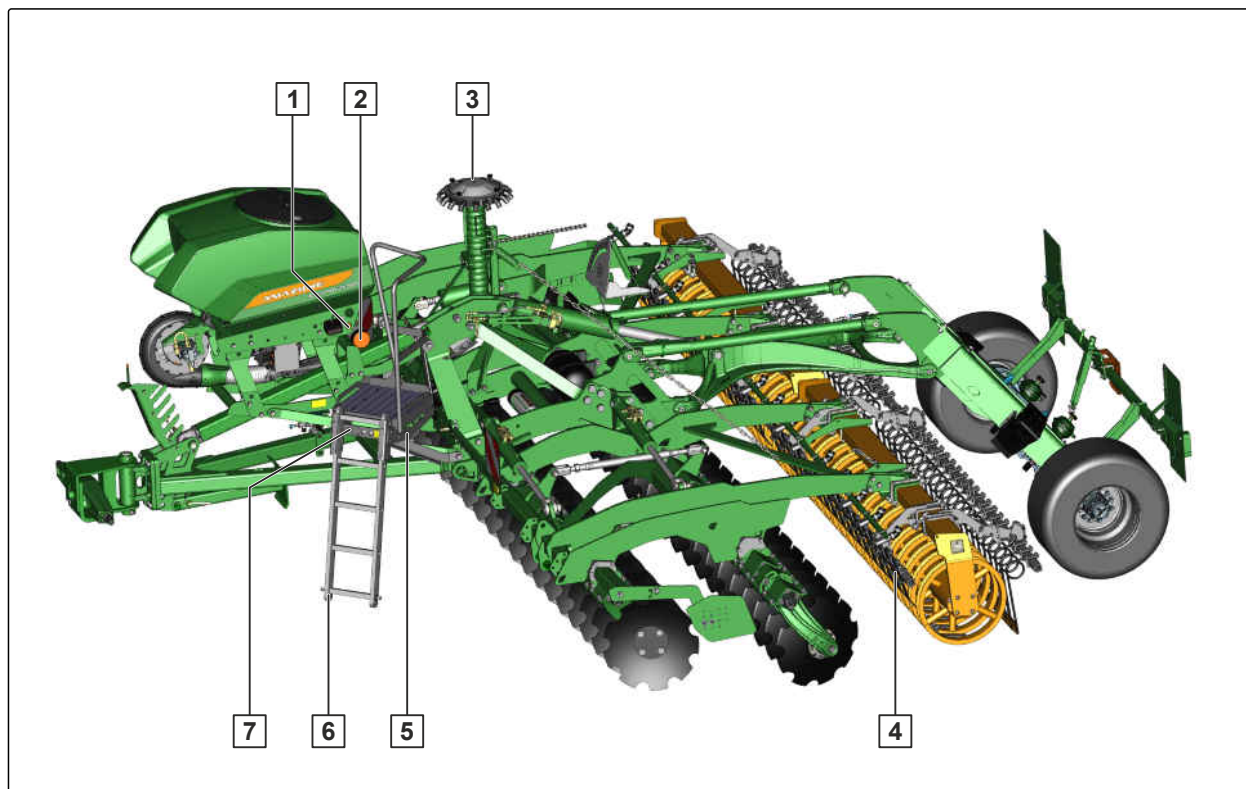


CMS-I-00004502

- |  |   |
|--|---|
| <b>1</b> Running gear hydraulic cylinder with vibration compensation | <b>2</b> Parking brake  |
| <b>3</b> Wheel chock   | <b>4</b> Support wheel  |
| <b>5</b> Compressed air tank   | <b>6</b> Central lubrication  |
| <b>7</b> Brake valve of the dual-circuit pneumatic brake system      | <b>8</b> Emergency brake valve of the single-circuit hydraulic brake system |
| <b>9</b> Jack  | <b>10</b> Threaded spindle for aligning the support wheel                   |

### 4.1.3 Implement with GreenDrill

CMS-T-00006304-B.1



CMS-I-00004511

- |                                       |                             |
|---------------------------------------|-----------------------------|
| <b>1</b> Calibration button           | <b>2</b> Threaded cartridge |
| <b>3</b> Segment distributor head     | <b>4</b> Spreading elements |
| <b>5</b> Platform                     | <b>6</b> Ladder             |
| <b>7</b> Holder for calibration scale |                             |

## 4.2 Function of the implement

CMS-T-00002712-D.1

The leading tool prepares the soil.

The disc gangs till and mix the soil.

The roller reconsolidates the soil.

The trailing element crumbles the soil and deposits cut-off plant residues on the soil surface.

## 4.3 Special equipment

CMS-T-00004254-C.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.

**The following equipment is considered special equipment:**

- GreenDrill pack top seed drill
- Lighting and identification for road travel
- Single-circuit hydraulic brake system
- Crushboard
- Cutting roller
- Spring blade system
- Clearer system
- Side guide plate
- Harrow system
- Support wheels
- Ballast weights
- Central lubrication
- Catch crop conveyor section with distributor head

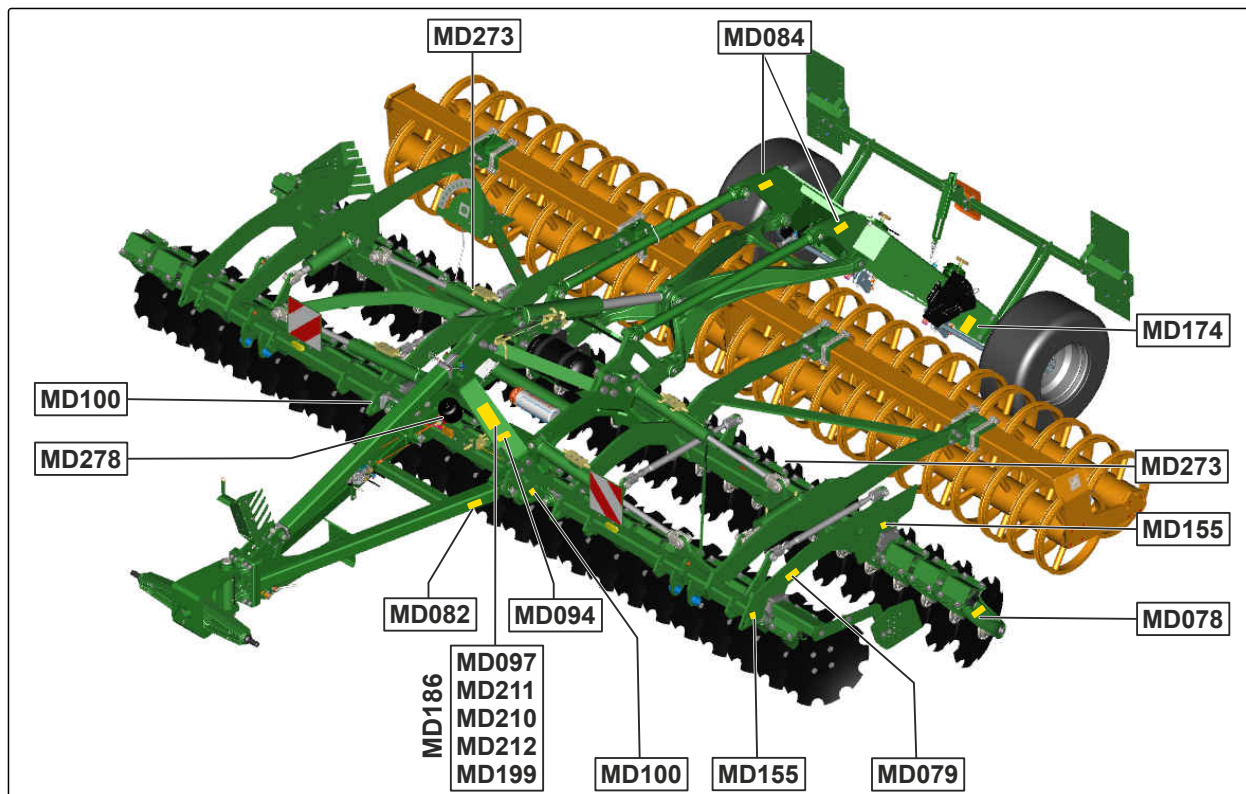


## 4.4 Warning symbols

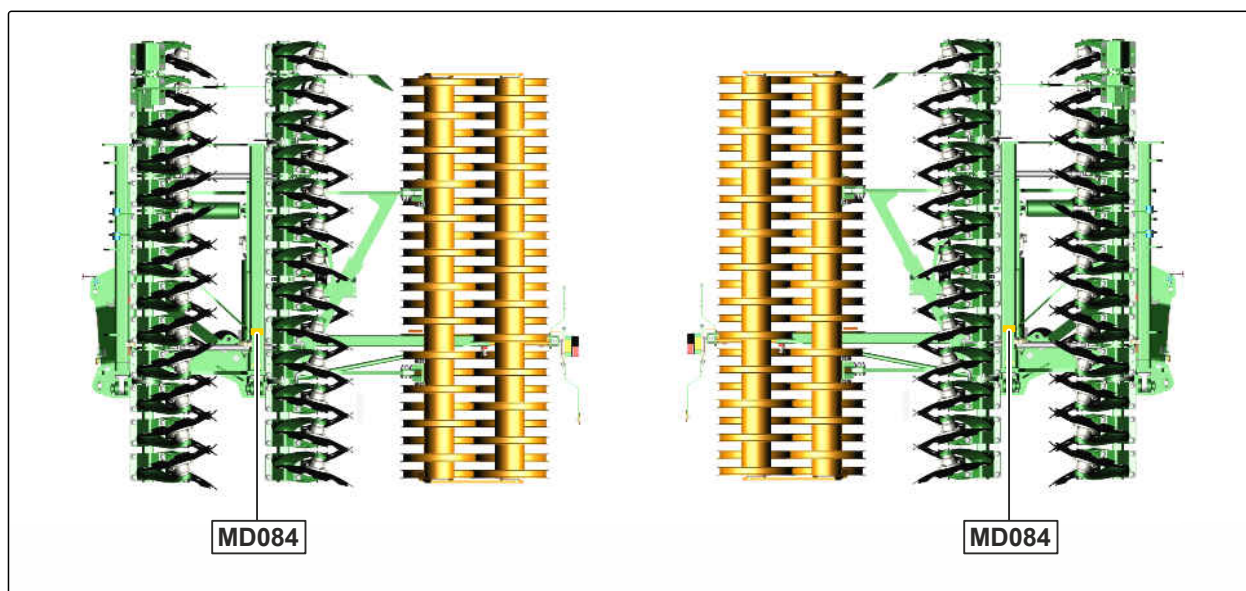
CMS-T-00004255-H.1

### 4.4.1 Positions of the warning symbols

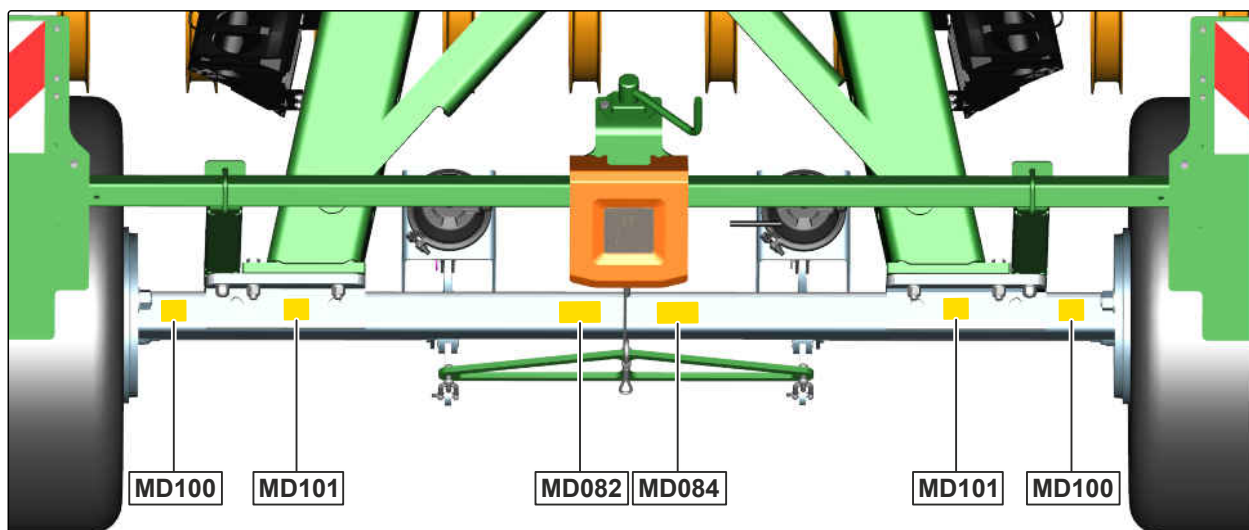
CMS-T-00004257-F.1



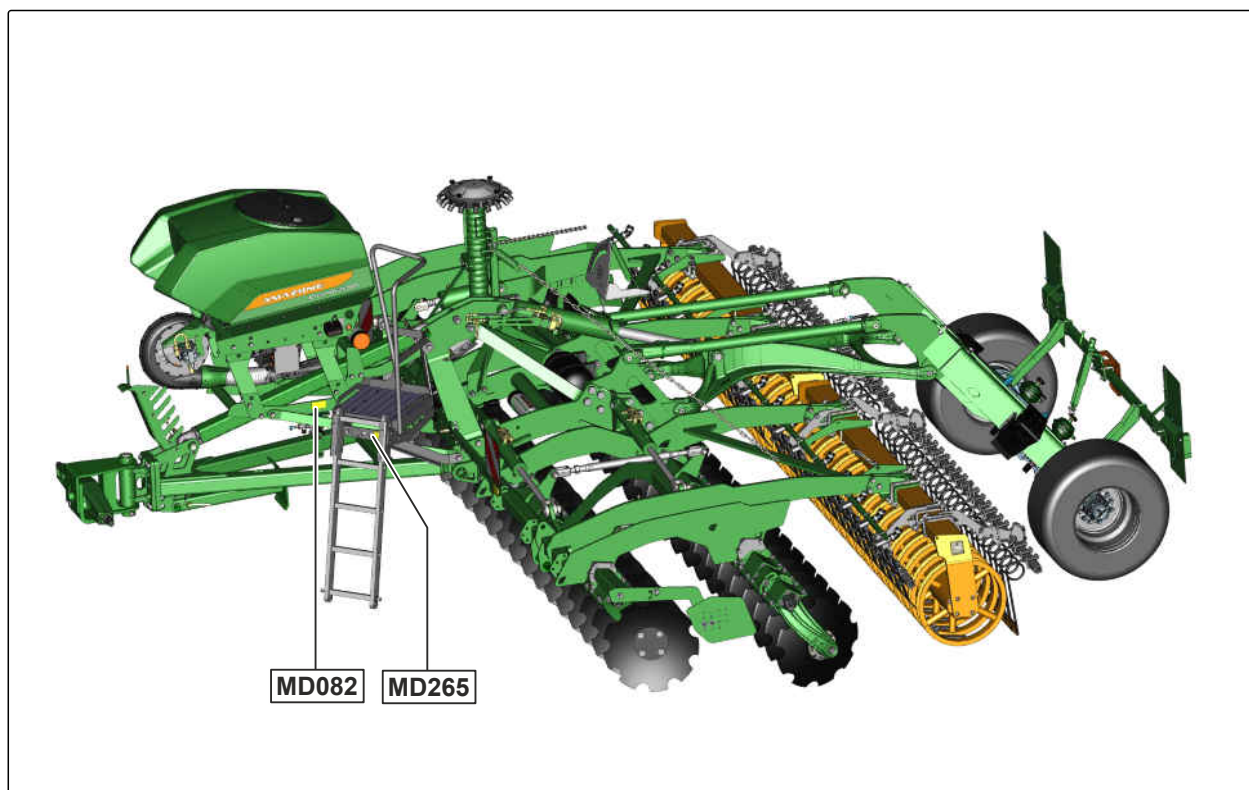
CMS-I-00003528



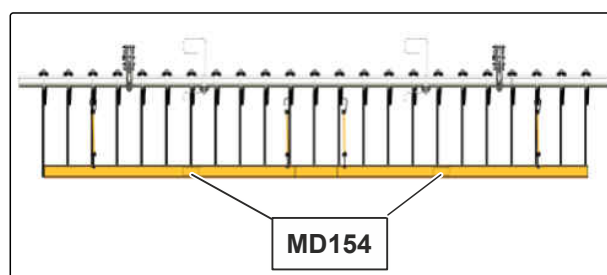
CMS-I-00003482



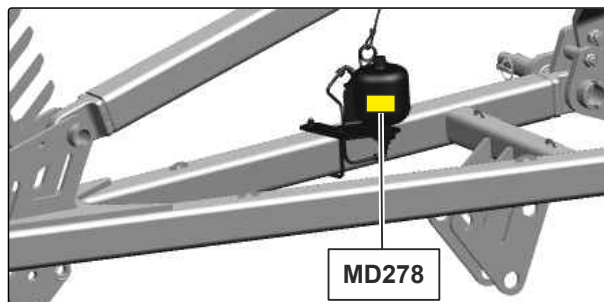
CMS-I-00003531



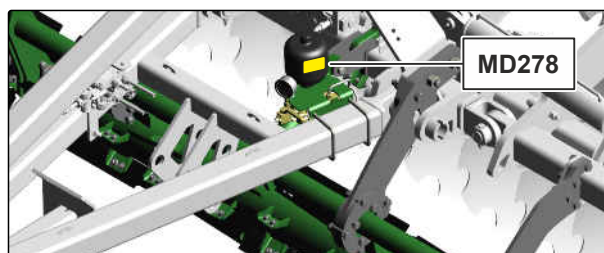
CMS-I-00004516



CMS-I-00007680



CMS-I-00007881



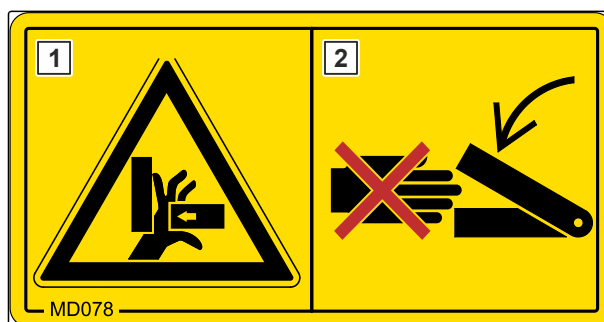
CMS-I-00007883

#### 4.4.2 Layout of the warning symbols

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-T-000141-D.1

CMS-I-00000416



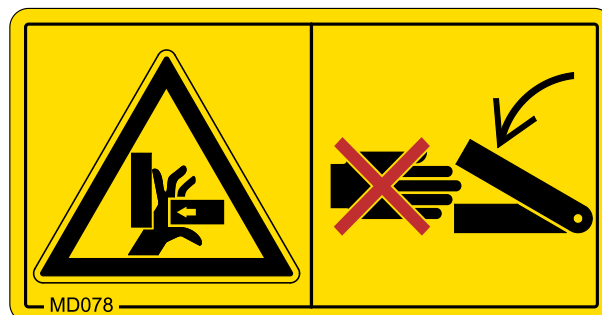
#### 4.4.3 Description of the warning symbols

CMS-T-00004256-G.1

##### MD 078

##### Risk of crushing fingers or hands

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

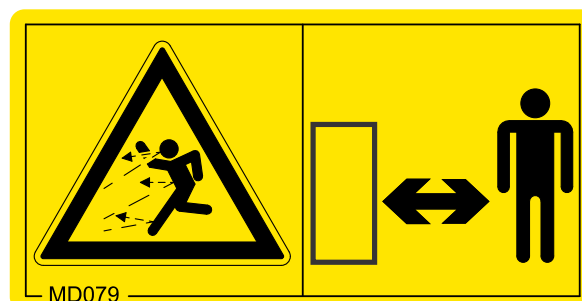


CMS-I-000074

##### MD 079

##### Danger due to ejected material

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



CMS-I-000076

##### MD 082

##### Risk of falling from tread surfaces and platforms

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



CMS-I-000081

##### MD 084

##### Risk of crushing for the whole body from lowering implement parts

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

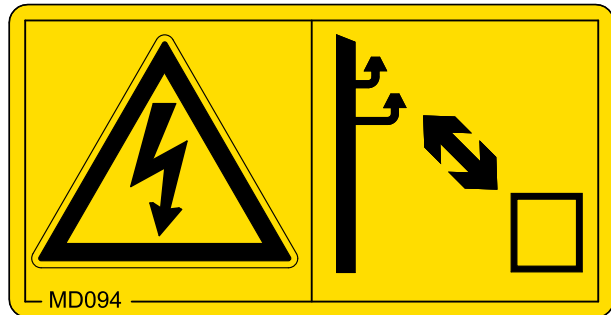


CMS-I-000454

#### MD094

##### Danger due to transmission lines

- ▶ Never touch transmission lines with the implement.
- ▶ Maintain an adequately safe distance from electrical transmission lines, especially when folding or unfolding implement parts.
- ▶ Please note that the voltage can flash over when the distance is too small.



CMS-I-000692

#### MD095

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

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



CMS-I-000138

#### MD 096

##### Risk of infection from escaping hydraulic fluid under high pressure

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

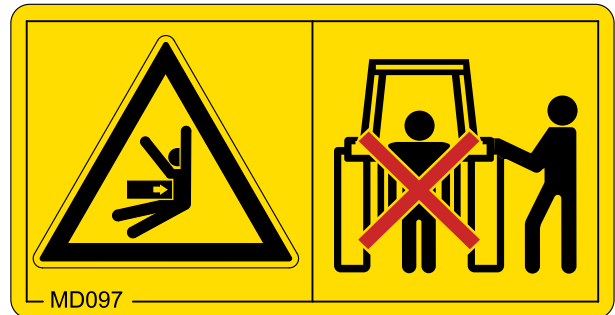


CMS-I-000216

#### MD 097

##### Risk of crushing between the tractor and the implement

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

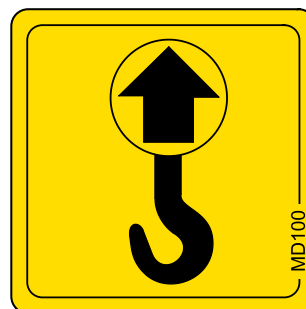


CMS-I-000139

#### MD 100

##### Risk of accidents due to improperly attached lifting gear

- ▶ Only attach the lifting gear at the marked positions.

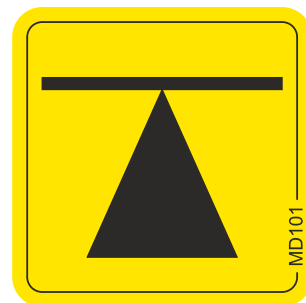


CMS-I-000089

#### MD 101

##### Risk of accidents due to improperly attached lifting equipment

- ▶ Only attach the lifting equipment at the marked positions.



CMS-I-00002252

#### MD 102

##### Risk due to unintentional starting and rolling away of the machine

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

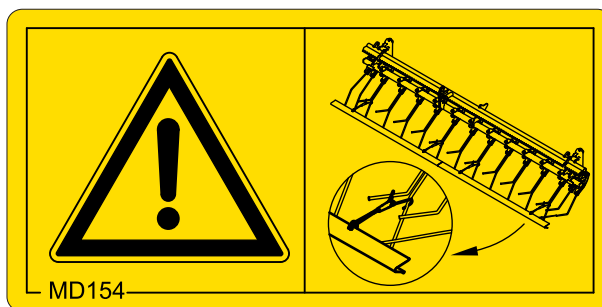


CMS-I-00002253

#### MD 154

##### Risk of injury or even death due to unprotected seeding harrow tines

- *Before driving on public roads,* put on the road safety bar as described in the operating manual.

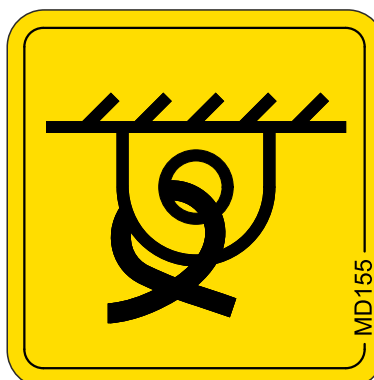


CMS-I-00003657

#### 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.

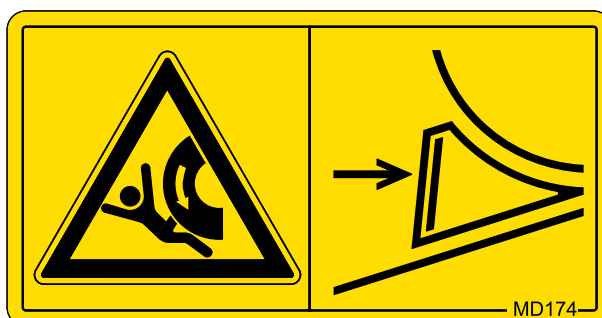


CMS-I-00000450

#### MD 174

##### Risk of rolling over due to unsecured implement

- Secure the implement against rolling away.
- To do so, use the parking brake and/or wheel chocks.

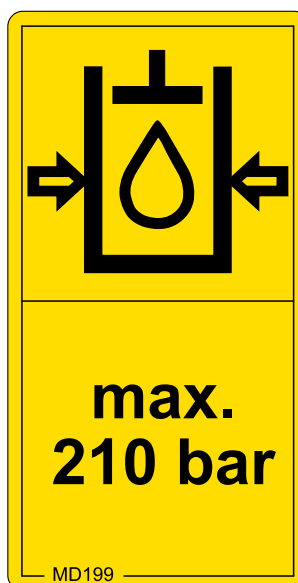


CMS-I-00000458

#### MD 199

##### Risk of accident if the hydraulic system pressure is too high

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



CMS-I-00000486

#### MD 265

##### Risk of chemical burns by dressing dust

- ▶ Do not breathe in the harmful substance.
- ▶ Avoid contact with eyes and skin.
- ▶ Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.
- ▶ Follow the manufacturer's safety instructions for handling harmful substances.



CMS-I-00003659

#### 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

#### MD 278

##### 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-00007679

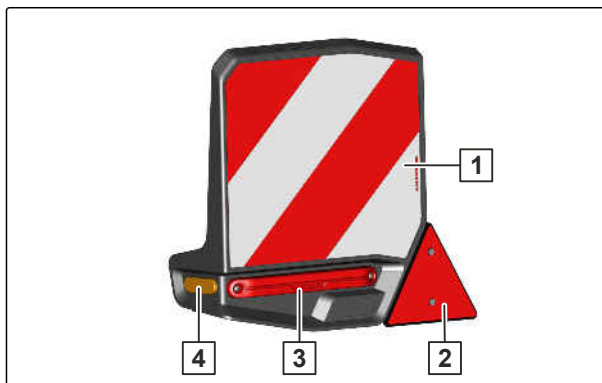
## 4.5 Lighting and identification for road travel

CMS-T-00009969-A.1

### 4.5.1 Rear lighting and identification

CMS-T-00009970-A.1

- 1 Warning signs
- 2 Reflector, red
- 3 Rear lights, brake lights, and turn indicators
- 4 Reflector, yellow



CMS-I-00003575

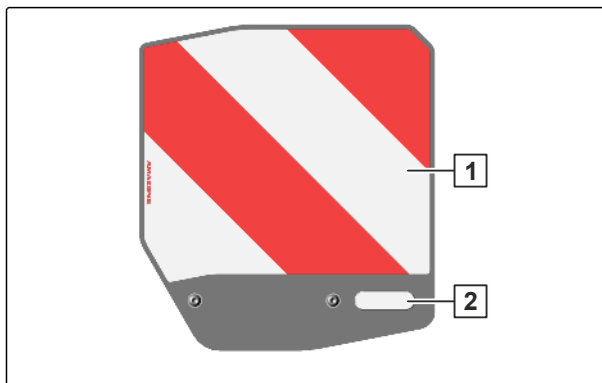
#### NOTE

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

### 4.5.2 Front lighting and identification

CMS-T-00009971-A.1

- 1 Warning signs
- 2 Reflector, white



CMS-I-00004522

#### NOTE

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

## 4.6 Threaded cartridge

CMS-T-00001776-E.1

The threaded cartridge contains the following items:

- Documents
- Aids



CMS-I-00002306

## 4.7 Rating plates

CMS-T-00004498-H.1

### 4.7.1 Rating plate on the implement

CMS-T-00004505-G.1

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

<b>AMAZONE</b>					
AMAZONEN-WERKE H. DREYER SE & Co. KG					
Am Amazonenwerk 9-13 D-49205 Hasbergen					
Maschinen-Nr.	1	[Barcode]			
Fahrzeug-Ident-Nr.	2				
Produkt	3				
zul. technisches Maschinengewicht kg		4	Modelljahr		5
CE UK CA		Baujahr année de fabrication year of construction Год изготовления		6	[Tractor Icon]

CMS-I-00004294

### 4.7.2 Additional rating plate

CMS-T-00005949-B.1

- 1 Note for type approval
- 2 Note for type approval
- 3 Vehicle identification number
- 4 Permissible technical total weight
- 5 Permissible technical trailer load for a drawbar trailer vehicle with pneumatic brake
- A0 Permissible technical drawbar load
- A1 Permissible technical axle load for axle 1
- A2 Permissible technical axle load for axle 2

<b>AMAZONEN-WERKE H. DREYER SE &amp; Co. KG</b>					
1	2		4		
3					
	T-1	T-2	T-3		
B-2	-	-	-	A-0:	kg
B-4	5	-	-	A-1:	kg

CMS-I-00005056

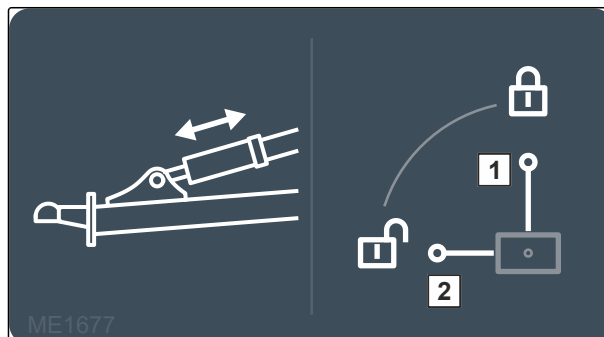
## 4.8 Other information on the implement

CMS-T-00004953-E.1

### 4.8.1 Information about the stop tap on the hydraulic drawbar

CMS-T-00004952-C.1

The figure shows that the stop tap on the hydraulic drawbar is locked in position **1** and open in position **2**.

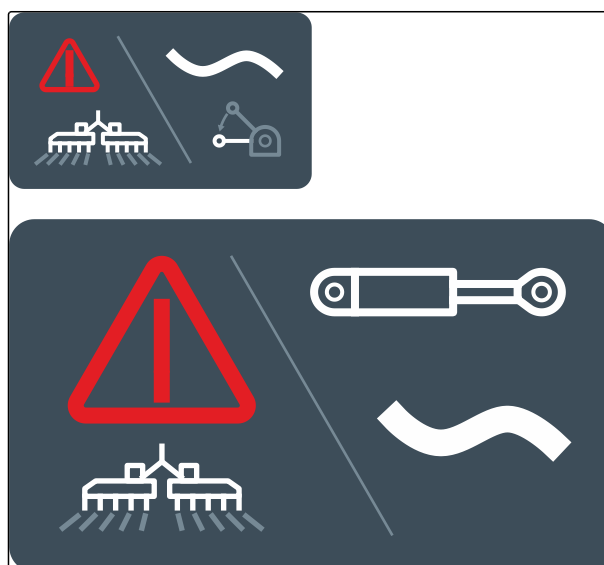


CMS-I-00003535

### 4.8.2 Information on the float position of hydraulic valves

CMS-T-00012591-A.1

The figures indicate that the marked hydraulic valves must be switched to float position when the implement is in working position.



CMS-I-00008046

### 4.8.3 Information on the switch tap for traction assistance

CMS-T-00012631-A.1

The figure indicates that the traction assistance is switched on when the switch tap is in Position "1" and is switched off when the switch tap is in Position "0".



CMS-I-00008055



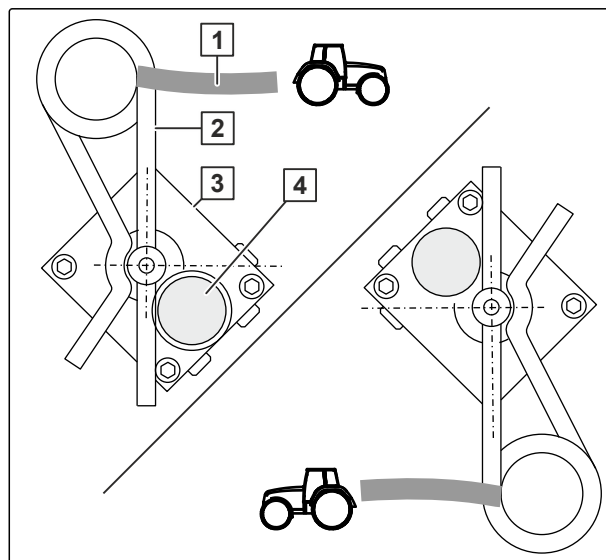
## 4.9 Single-circuit hydraulic brake system

CMS-T-00012087-A.1

The single-circuit hydraulic brake system brakes the coupled implement when the tractor brake is actuated.

If the implement is disconnected from the tractor, the brake valve brakes the implement. The brake valve is triggered by a ripcord **1**. The ripcord is fastened to the brake valve **3** via a spring cotter pin **2**. The brake valve has a hand pump **4**.

The hand pump relieves the pressure in the system, which releases the brake.



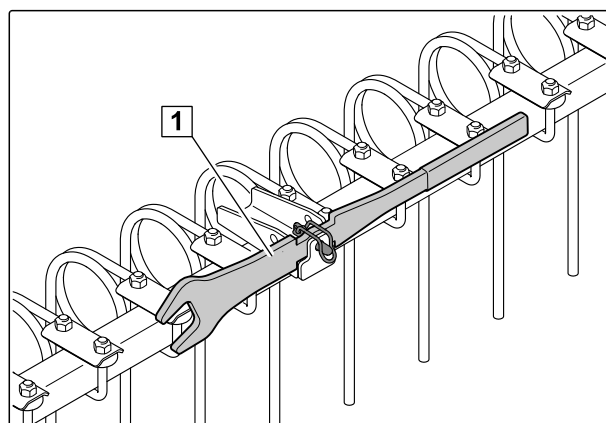
CMS-I-00007787

## 4.10 Setting lever for the trailing elements

CMS-T-00012588-A.1

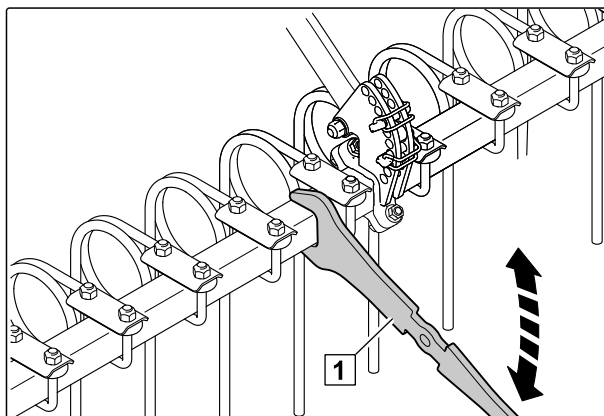
With the setting lever, the tilt of the harrow systems, the double harrow, the spring blade system and the spring clearer system can be conveniently adjusted.

### **1** Setting lever in parking position



CMS-I-00002241

- 1** Setting lever in set position



CMS-I-00007912

## Technical data

5

CMS-T-00004234-H.1

### 5.1 Dimensions

CMS-T-00004235-C.1

Catros	4003-2TS	5003-2TS	6003-2TS	7003-2TS
Transport width	3 m			
Transport height	2.7 m	3.2 m	3.7 m	4 m
Total length	6.6 m			
Working width	4 m	5 m	6 m	7
Centre of gravity distance	1.38 m			

	Catros <sup>XL</sup> 4003-2TS	Catros <sup>XL</sup> 5003-2TS	Catros <sup>XL</sup> 6003-2TS
Transport width	2.95 m	2.95 m	2.95 m
Transport height	2.7 m	3.2 m	3.7 m
Total length	2.4 m	2.4 m	2.4 m
Total length with lighting and identification for road travel	6.88 m	6.88 m	6.88 m
Working width	4 m	5 m	6 m
Centre of gravity distance without front rack	1.2 m	1.2 m	1.2 m
Centre of gravity distance with front rack	1.84 m	1.84 m	1.84 m

### 5.2 Soil tillage tool

CMS-T-00004705-F.1

Catros	4003-2TS	5003-2TS	6003-2TS	7003-2TS
Number of discs	32	40	48	56
Disc thickness	5 ml			
Disc diameter	51 cm			
Disc spacing	25 cm			

Catros	4003-2TS	5003-2TS	6003-2TS	7003-2TS
Working depth	5-14 cm			

	Catros <sup>XL</sup> 4003-2TS	Catros <sup>XL</sup> 5003-2TS	Catros <sup>XL</sup> 6003-2TS
Number of discs	32	40	48
Disc thickness	6 mm		
Disc diameter	61 cm		
Working depth	5-16 cm		

### 5.3 Permitted mounting categories

CMS-T-00004236-A.1

Lower link mounting	Category 3, Category 4N and Category K700
---------------------	---

### 5.4 Optimal working speed

CMS-T-00002294-C.1

12-18 km/h
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### 5.5 Performance characteristics of the tractor

CMS-T-00004704-F.1

Catros	4003-2TS	5003-2TS	6003-2TS	7003-2TS
Engine rating	Starting at 91 kW/ 125 hp	Starting at 110 kW/ 155 hp	Starting at 130 kW/ 180 hp	Starting at 154 kW/ 210 hp

Engine rating		
Catros <sup>XL</sup> 4003-2TS	Catros <sup>XL</sup> 5003-2TS	Catros <sup>XL</sup> 6003-2TS
Starting at 118 kW/160 hp	Starting at 147 kW/200 hp	Starting at 176 kW/240 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
Tractor pump capacity for GreenDrill	at least 30 l/min at 150 bar

Hydraulic system	
Implement hydraulic oil	HLP68 DIN51524  The hydraulic oil is suitable for the combined hydraulic oil circuits of all standard tractors.
Control units	Depending on the implement equipment  For folding sections, a lockable tractor control unit is required as a tractor-side protective device.

Brake system	
Implement	Tractor
Dual-circuit pneumatic brake system	Dual-circuit pneumatic brake system
Single-circuit hydraulic brake system	Single-circuit hydraulic brake system

## 5.6 Noise development data



CMS-T-00002296-D.1

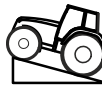

The workplace-related emission sound pressure level is lower than 70 dB(A), measured in operating condition at the ear of the tractor driver with the cab closed.

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

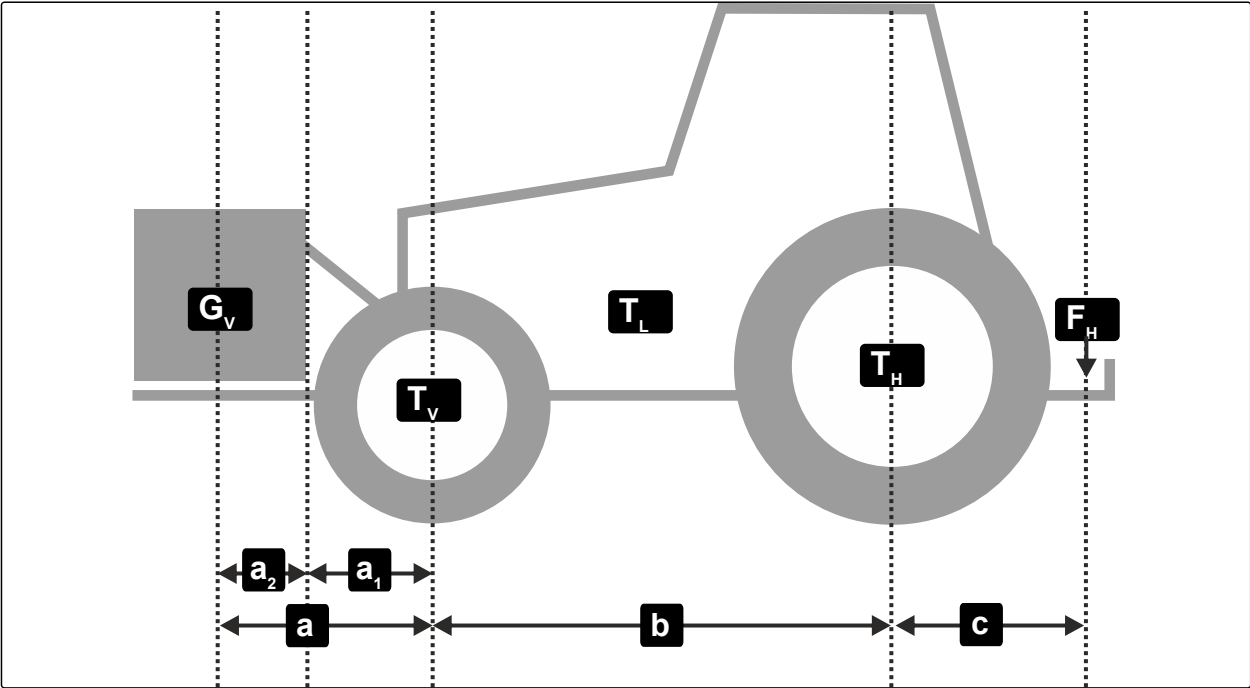
CMS-T-00004237-V.1

## 6.1 Checking the tractor suitability

CMS-T-00004592-F.1

### 6.1.1 Calculating the required tractor characteristics

CMS-I-00004868-E.1



CMS-I-00000580

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	
$F_H$	kg	Drawbar load	

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 <sub>1</sub>	m	Distance between the centre of the front axle and the centre of the lower link connection	
a <sub>2</sub>	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	

1. Calculate the minimum front ballasting.

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

$$G_{\min} = \underline{\hspace{10em}}$$

$$G_{\min} = \text{[Input Field]}$$

CMS-I-00003504

2. Calculate the actual front axle load.

$$T_{Vtat} = \frac{G \cdot (a + b) + T_V \cdot b - F_H \cdot c}{b}$$

$$T_{Vtat} = \underline{\hspace{10em}}$$

$$T_{Vtat} = \text{[Input Field]}$$

CMS-I-00005422

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

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

$$G_{tat} =$$

$$G_{tat} =$$

CMS-I-00006344

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 Determining the required coupling devices

CMS-T-00004593-D.1

Coupling device		
Tractor	AMAZONE implement	
Upper hitch		
Pin coupling, form A, B, C  A, not automatically  A, automatically, smooth pin  A, automatically, crowned pin	Drawbar eye	Bushing 40 mm
	Drawbar eye	40 mm
	Drawbar eye	50 mm, only compatible with form A
Upper hitch or lower hitch		
Ball hitch coupling 80 mm	Ball hitch coupling	80 mm
Lower hitch		
Towing hook or hitch hook	Drawbar eye	Centre hole Ø 50 mm  Eyelets Ø 30 mm
	Rotating drawbar eye	compatible only with form Y, hole Ø 50 mm
	Drawbar eye	Centre hole Ø 50 mm  Eyelets Ø 30-41 mm
Swinging drawbar, Category 2	Drawbar eye	Centre hole 50 mm  Eyelets 30 mm
		Bushing, 40 mm  40 mm
		50 mm
Swinging drawbar	Drawbar eye	
Swinging drawbar or Piton-fix	Drawbar eye	Centre hole 50 mm  Eyelets 30 mm
	Rotating drawbar eye	compatible only with form Y, hole Ø 50 mm
Non-swivel clevis coupling	Rotating drawbar eye	
Lower link hitch	Lower link traverse	

- Check whether the coupling device of the tractor is compatible with the coupling device of the implement.

### 6.1.3 Comparing the permissible DC value with actual DC value

CMS-T-00004867-B.1

Designation	Description
T	Permissible total weight of the tractor in t, including the drawbar load
C	Sum of the permissible axle loads of the implement in t

1. Calculate the  $D_c$  value.
2. Check whether the calculated  $D_c$  value is smaller or equal to the  $D_c$  values on the rating plate of the connection devices of the implement and tractor.

$$D_c = 9,81 \cdot \frac{T \cdot C}{T + C}$$

$$D_c = 9,81 \cdot \frac{\text{ } \cdot \text{ }}{\text{ } + \text{ }}$$

$$D_c = \text{ }$$

CMS-I-00003582

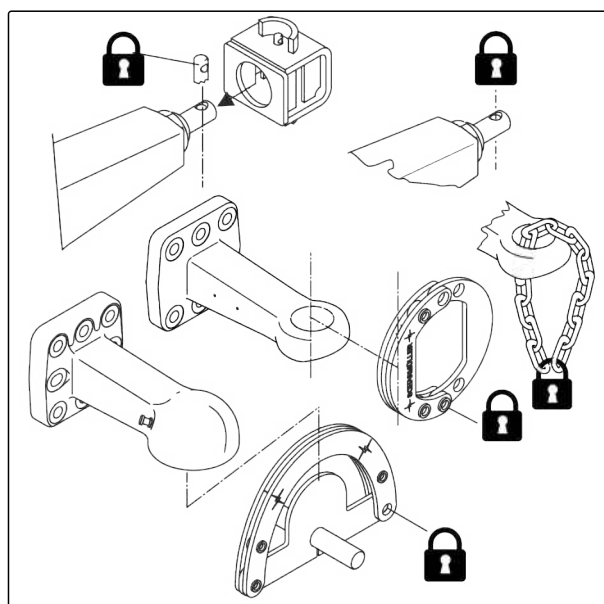
## 6.2 Coupling the implement

CMS-T-00004246-Q.1

### 6.2.1 Removing the safety device against unauthorised use

CMS-T-00005089-B.1

1. Unlock the padlock.
2. Remove the safety device against unauthorised use from the hitch device.



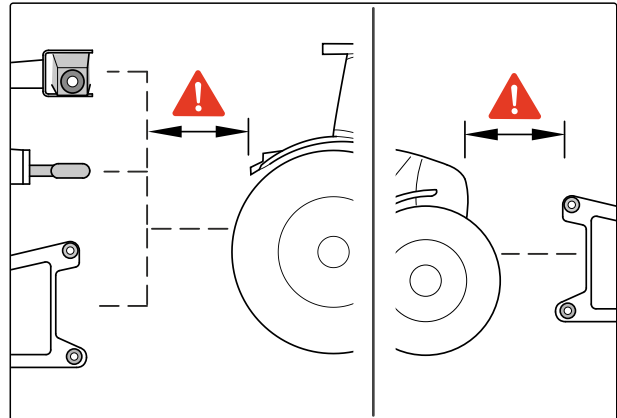
CMS-I-00003534

## 6.2.2 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.



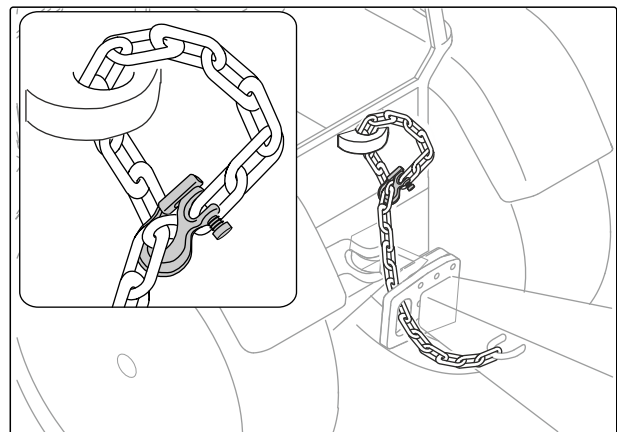
CMS-I-00004045

## 6.2.3 Fastening the safety chain

CMS-T-00004293-D.1

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

- Fasten the safety chain on the tractor as prescribed.



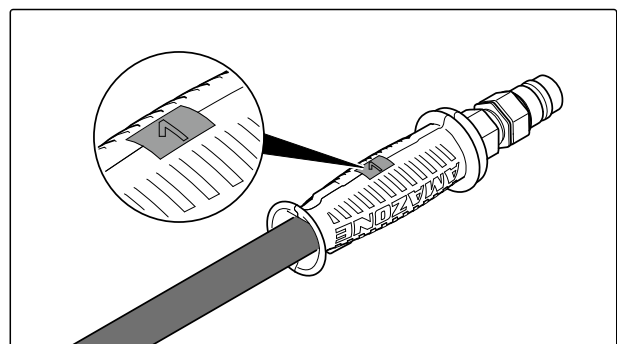
CMS-I-00007814

## 6.2.4 Coupling the hydraulic hose lines




CMS-T-00006194-F.1


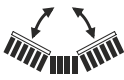







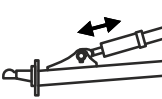














All hydraulic hoses are equipped with handles. The handles have colour markings with a code number or a code letter. The markings are assigned to the respective hydraulic functions of the pressure line of a tractor control unit. Stickers are applied on the implement for the markings, which illustrate 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	
Blue			Section	Fold	Double-acting lockable	
				Unfold		
Yellow			Running gear	Lift	Double-acting	
				Lower		
Yellow			Drawbar	Lift	Double-acting	
				Lower		
Green			Working depth of the concave discs	Increase	Double-acting	
				Reduce		
Beige			Working depth of the crushboard	Increase	Double-acting	
				Reduce		
Beige			Cutting roller	Lower	Double-acting	
				Lift		



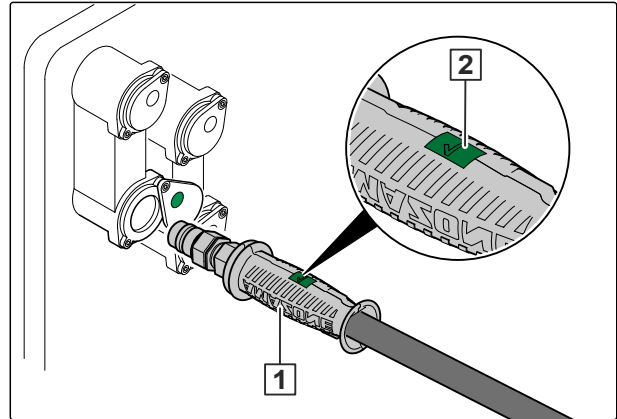
## WARNING

### Risk of injury or even death

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

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

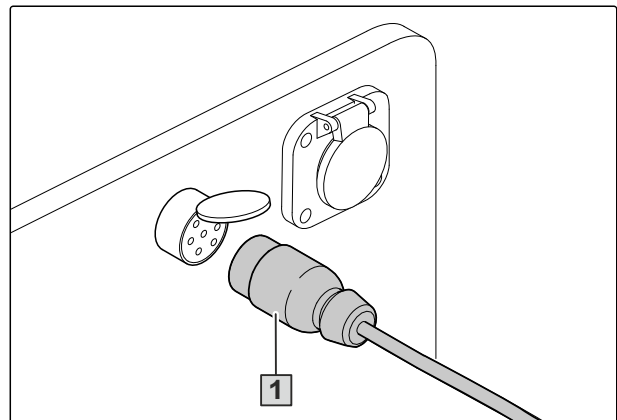
1. Depressurise the hydraulic system between the tractor and the implement using the tractor control unit.
  2. Clean the hydraulic plugs.
  3. Couple the hydraulic hose lines **1** to the hydraulic sockets of the tractor according to the marking **2**.
- ➔ The hydraulic plugs lock perceptibly.
4. Route the hydraulic hose lines with sufficient freedom of movement and without chafing points.



CMS-I-00001045

### 6.2.5 Coupling the power supply

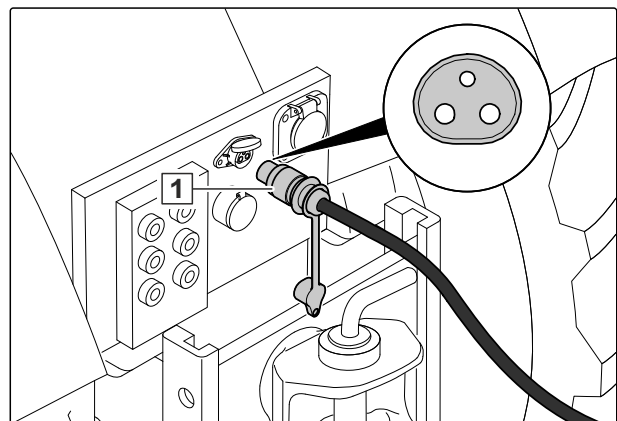
1. Insert the plug **1** for the power supply.
2. Route the power supply cable with sufficient freedom of movement and without chafing or pinching points.
3. Check the lighting on the implement for proper function.



CMS-I-00001048

### 6.2.6 Coupling the power supply for the central lubrication

1. Connect the plug **1** for the power supply to the central lubrication.



CMS-I-00004518

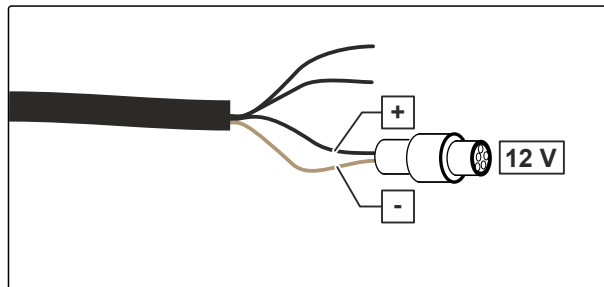
2. *If a different plug is used,*  
connected the lines as shown.



#### NOTE

- Black
- Brown

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



CMS-I-00004517

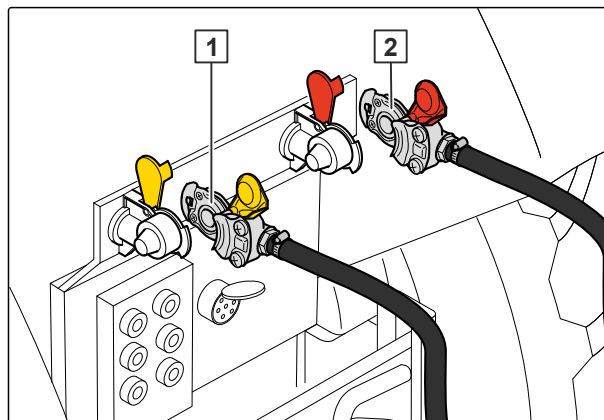
## 6.2.7 Coupling the brake system

CMS-T-00004317-F.1

### 6.2.7.1 Coupling the dual-circuit pneumatic brake system

CMS-T-00004318-F.1

1. Open the cover of the coupling heads on the tractor.
2. Clean off any dirt from the sealing rings on the coupling heads.
3. Disconnect the yellow coupling head for the brake line **1** from the parking device.
4. Connect the yellow coupling head to the coupling marked in yellow on the tractor.
5. Disconnect the red coupling head for the brake line **2** from the parking device.
6. Connect the red coupling head to the coupling marked in red on the tractor.
7. Route the brake lines with sufficient freedom of movement and without chafing or pinching points.



CMS-I-00003559

### 6.2.7.2 Coupling the single-circuit hydraulic brake system

CMS-T-00004319-D.1

1. Clean the hydraulic plug and hydraulic socket.
2. Couple the hydraulic plug and hydraulic socket.

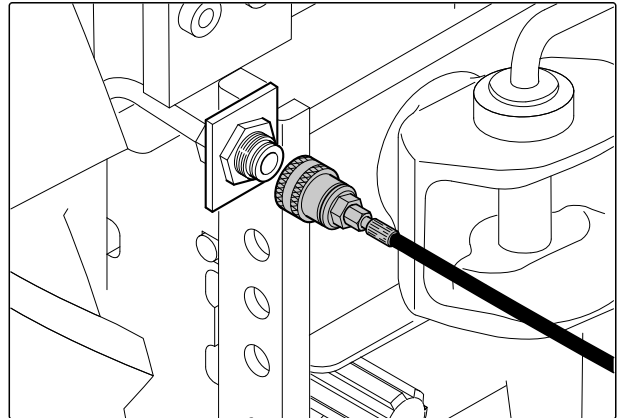


#### TROUBLESHOOTING

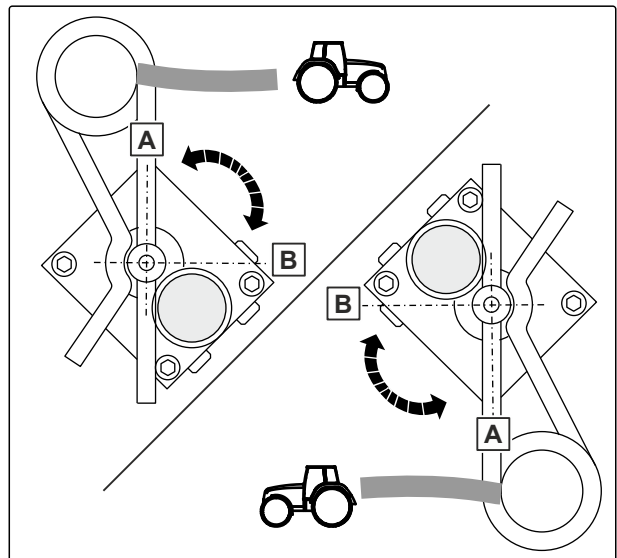
*Is it difficult to couple the hydraulic plug and hydraulic socket?*

The pressure accumulator of the emergency brake presses hydraulic oil into the hydraulic lines.

1. Relieve the hydraulic pressure using the hand pump on the brake valve of the emergency brake.
  3. Move the brake valve to position **A**.
  4. Attach the ripcord to a sturdy point on the tractor.
  5. Actuate the tractor brake several times with the tractor motor running.
- ➔ The pressure accumulator of the emergency brake will be charged.



CMS-I-00003560



CMS-I-00007789

## 6.2.8 Connecting the coupling device

CMS-T-00012208-A.1

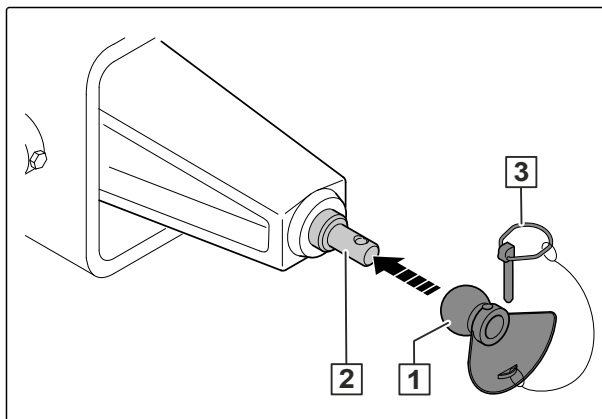
### 6.2.8.1 Coupling on the lower link hitch

CMS-T-00004301-F.1

#### 6.2.8.1.1 Attaching the backstop profiles for the lower links

CMS-T-00010330-A.1

1. Put the backstop profiles **1** on the lower link pins **2** of the lower link cross member.
2. Secure the backstop profiles with the linch pin **3**.

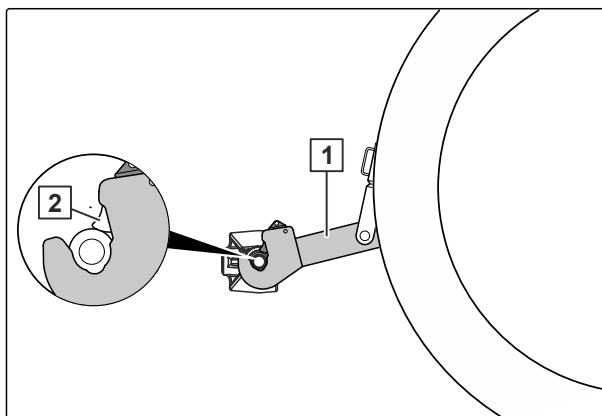


CMS-I-00007047

#### 6.2.8.1.2 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.

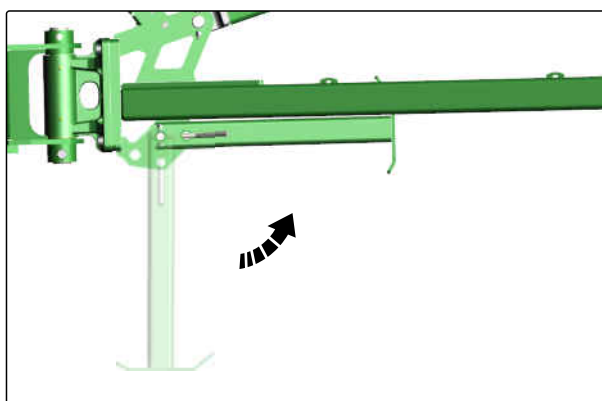


CMS-I-00003346

#### 6.2.8.1.3 Swivelling up the jack

CMS-T-00004295-C.1

1. *To unload the jack,* slightly raise the implement using the lower link.
2. Pull out the linch pin from the pin.
3. Pull out the pin.
4. Swivel up the jack.
5. Insert the pin.
6. Secure the pin with a linch pin.



CMS-I-00003350



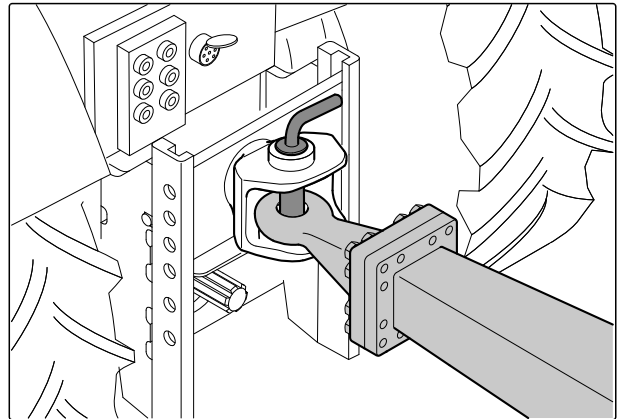
### 6.2.8.2 Coupling the ball hitch coupling or drawbar eye

CMS-T-00004302-C.1

#### 6.2.8.2.1 Coupling the drawbar eye

CMS-T-00004305-C.1

1. Open the stop tap on the hydraulic drawbar.
2. Adjust the height of the hydraulic drawbar using the "yellow" tractor control unit.
3. Drive the tractor towards the implement.
4. Couple the drawbar eye with the clevis coupling of the tractor.

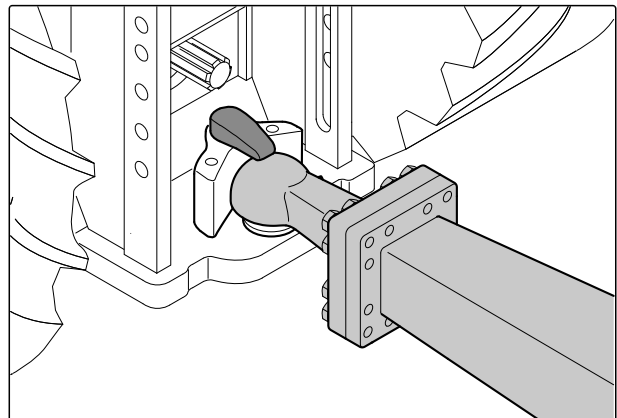


CMS-I-00003557

#### 6.2.8.2.2 Coupling the ball hitch coupling

CMS-T-00004306-C.1

1. Open the stop tap on the hydraulic drawbar.
2. Drive the tractor towards the implement.
3. *To rest the ball hitch coupling on the hitch ball, lower the hydraulic drawbar using the "yellow" tractor control unit.*

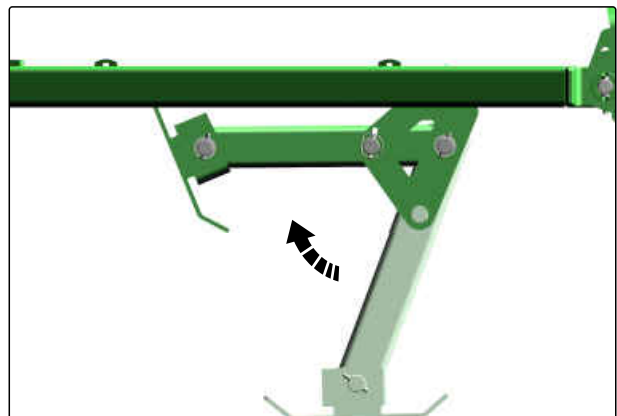


CMS-I-00003558

#### 6.2.8.2.3 Swivelling up the jack

CMS-T-00004303-C.1

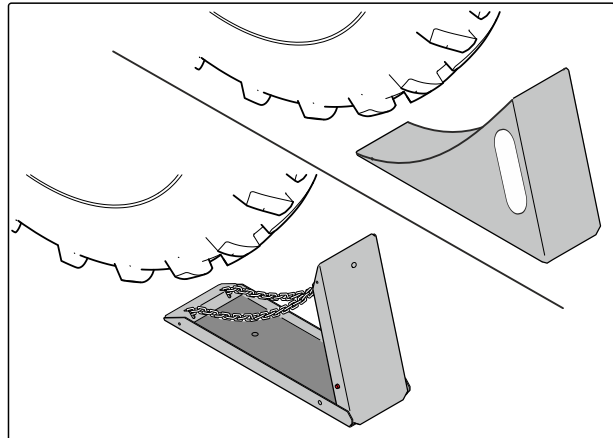
1. *To unload the jack,*  
Slightly lift the implement using the "yellow" tractor control unit.
2. Pull out the lynch pin from the pin.
3. Pull out the pin.
4. Swivel up the jack.
5. Insert the pin.
6. Secure the pin with a lynch pin.



CMS-I-00003552

### 6.2.9 Removing the wheel chocks

1. Remove wheel chocks from the wheels.
2. Fold the foldable wheel chocks.
3. Put the wheel chocks in the holder.

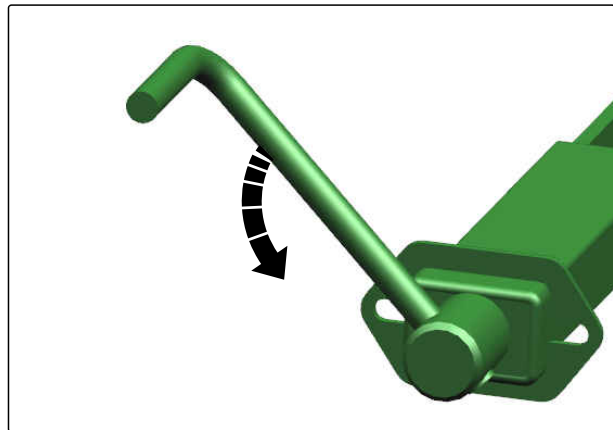


CMS-T-00004296-D.1

CMS-I-00007790

### 6.2.10 Releasing the parking brake

- Turn the hand crank counter-clockwise until the brake cable is relaxed.



CMS-T-00012108-A.1

CMS-I-00007808

## 6.3 Preparing the implement for operation

CMS-T-00004238-L.1

### 6.3.1 Unfolding the sections

1. Completely raise the implement.
  2. Actuate the "blue" tractor control unit.
- ➔ The sections unfold.
3. Unfold the sections up to the end position.

CMS-T-00004426-E.1

## 6.3.2 Adjusting the trailing elements

CMS-T-00012141-A.1

### 6.3.2.1 Adjusting the harrow system 12-125 HI

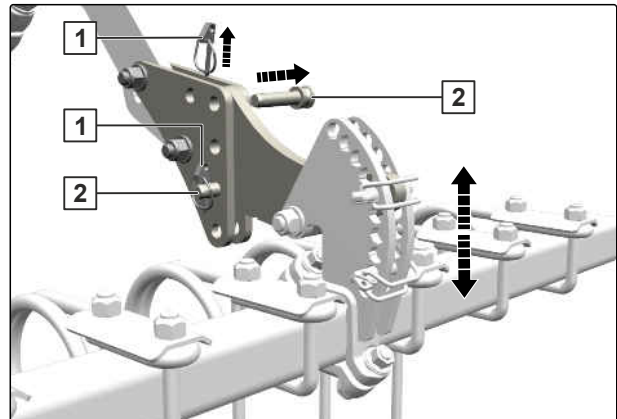
CMS-T-00012142-A.1

#### 6.3.2.1.1 Adjusting the height of the harrow system 12-125 HI

CMS-T-00012144-A.1

Four height settings can be pegged with the two pins on the adjustment units.

1. Secure the harrow with suitable lifting gear and slings against lowering.
2. Pull out the linch pins **1** from the two pins **2**.
3. Pull out the two pins.
4. Remove the pins on the second adjustment unit in the same way.
5. Lift or lower the harrow to the desired height.
6. Secure the setting with the pins.
7. Secure the pins with the linch pins.



CMS-I-00007854

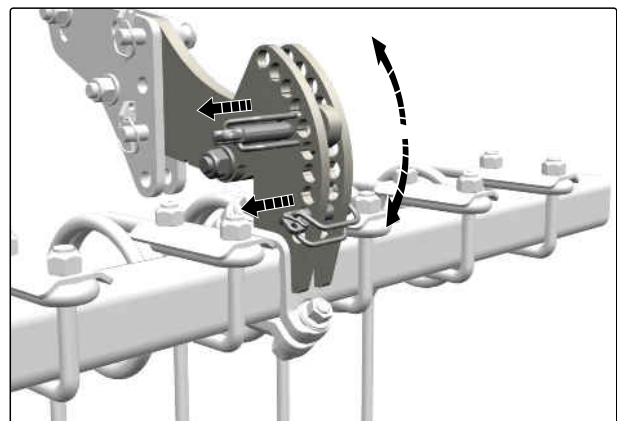
#### 6.3.2.1.2 Adjusting the tilt of the harrow system 12-125 HI

CMS-T-00012143-A.1

1. Pull out the both linch pins on both adjustment units.

The next step can also be performed with the setting lever.

2. Turn the harrow to the desired position.

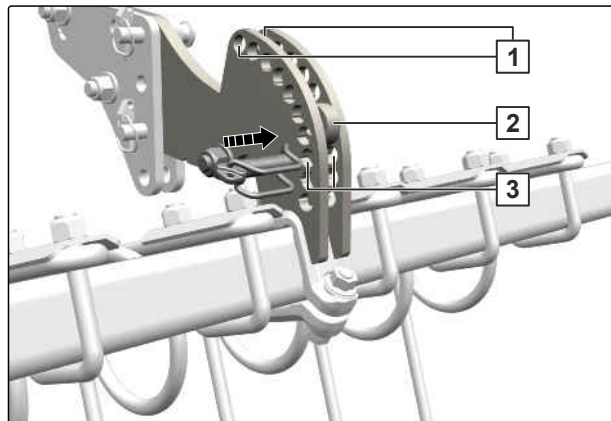


CMS-I-00007852

## 6 | Preparing the machine

### Preparing the implement for operation

3. Insert a linch pin through each of the holes **3** directly below the bracket **2**.
4. Park the second linch pin in each of the topmost holes **1**.



CMS-I-00007853

#### 6.3.2.2 Adjusting harrow system 12-125 HI KWM/DW

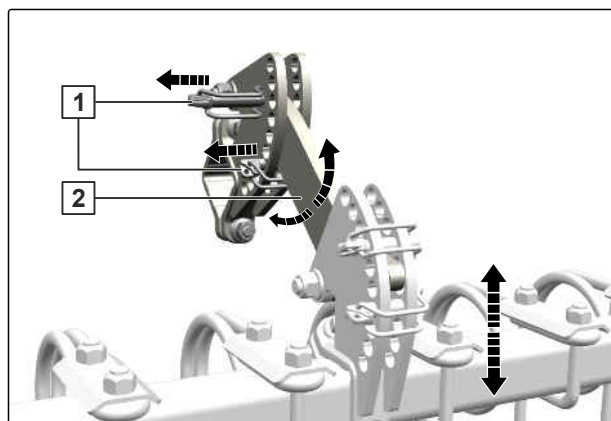
CMS-T-00012148-A.1

##### 6.3.2.2.1 Adjusting the height of harrow system 12-125 HI KWM/DW

CMS-T-00012150-A.1

Six height settings can be pegged with the two linch pins on the adjustment units.

1. Pull out the both linch pins **1** on both adjustment units.
2. Lift or lower the harrow to the desired height.
3. Insert a linch pin through each of the holes directly above the bracket **2**.



CMS-I-00007870

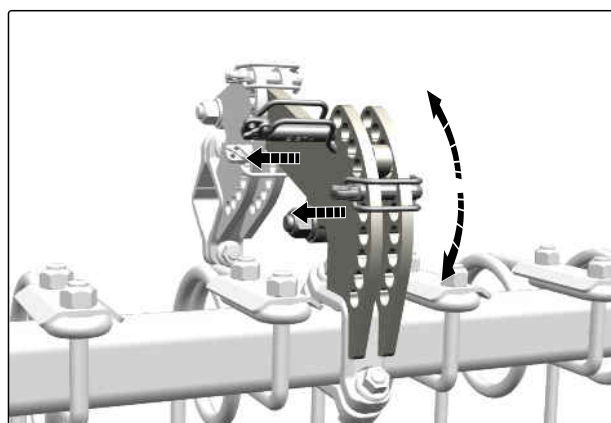
##### 6.3.2.2.2 Adjusting the tilt of harrow system 12-125 HI KWM/DW

CMS-T-00012149-A.1

1. Pull out the both linch pins on both adjustment units.

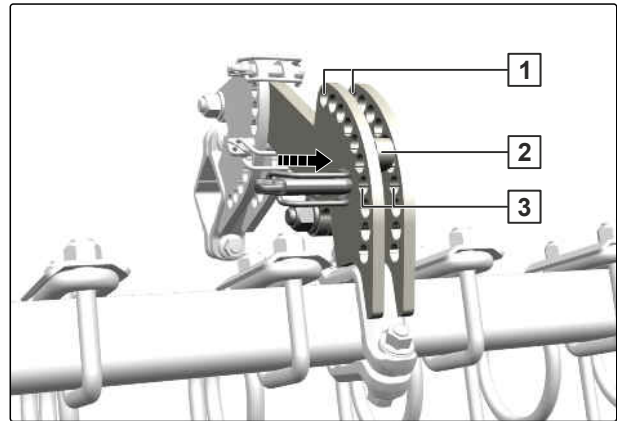
The next step can also be performed with the setting lever.

2. Turn the harrow to the desired position.



CMS-I-00007866

3. Insert a linch pin through each of the holes **3** directly below the bracket **2**.
4. Park the second linch pin in each of the topmost holes **1**.



CMS-I-00007869

### 6.3.2.3 Adjusting the harrow system 12-250 HI

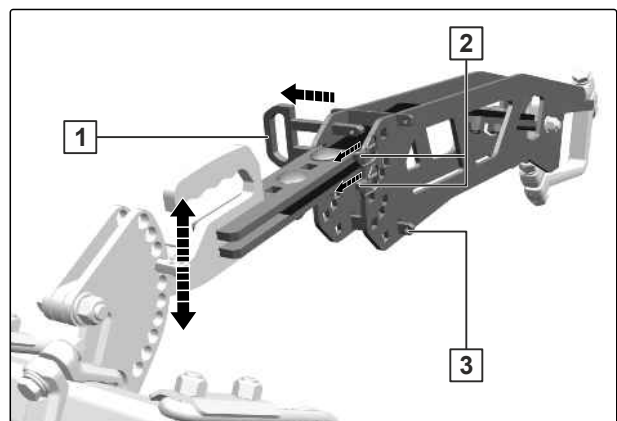
CMS-T-00012163-A.1

#### 6.3.2.3.1 Adjusting the height of the harrow system 12-250 HI

CMS-T-00012166-A.1

Five height settings can be pegged with the double pin on the adjustment units.

1. On both adjustment units, pull the two linch pins **2** out of the double pin **1** and insert them in the parking positions **3**.
2. Pull out the double pin.
3. Lift or lower the harrow to the desired height.
4. Secure the setting with the double pins.
5. Pull the linch pins out of the parking position and secure the double pin with the linch pins.



CMS-I-00007880

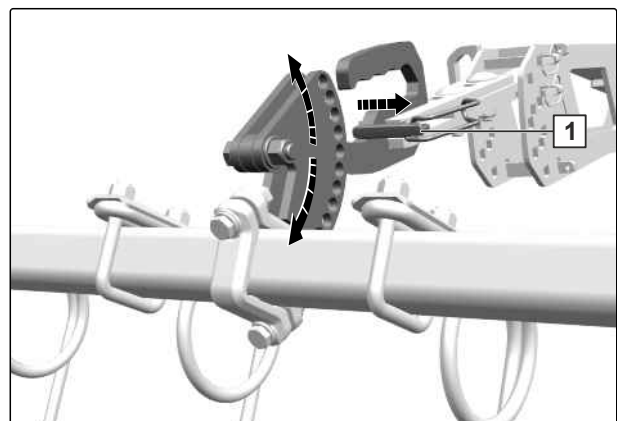
#### 6.3.2.3.2 Adjusting the tilt of the harrow system 12-250 HI

CMS-T-00012164-A.1

1. Pull out the the linch pins **1** on both adjustment units.

The next step can also be performed with the setting lever.

2. Turn the harrow to the desired position.

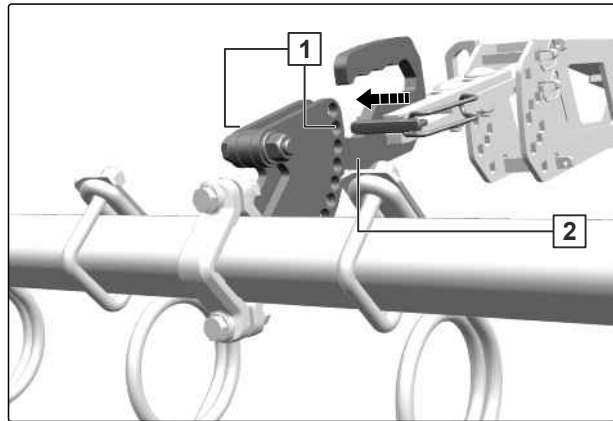


CMS-I-00007871

## 6 | Preparing the machine

### Preparing the implement for operation

3. Insert a linch pin through each of the holes **1** directly above the bracket **2**.



CMS-I-00007874

#### 6.3.2.4 Adjusting the double harrow CXS

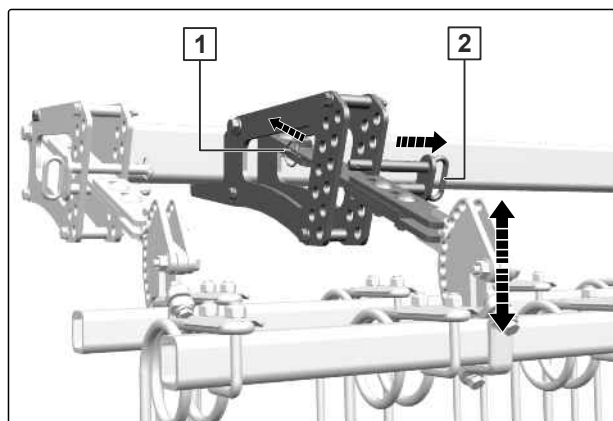
CMS-T-00012167-A.1

##### 6.3.2.4.1 Adjusting the height of the double harrow CXS

CMS-T-00012169-A.1

Nine height settings can be pegged with the double pin on the adjustment units.

1. Pull the linch pin **1** out of the double pin **2** on both adjustment units of a double harrow bar.
2. Pull out the double pin.
3. Lift or lower the harrow bar to the desired height.
4. Secure the setting with the double pins.
5. Secure the double pin with the linch pins.
6. Adjust the height of the second double harrow bar in the same way.



CMS-I-00007887

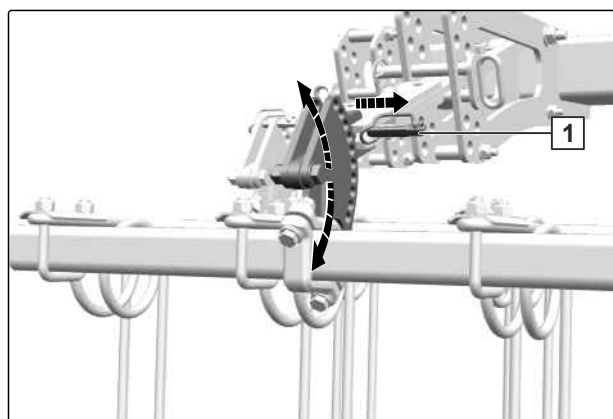
##### 6.3.2.4.2 Adjusting the tilt of the double harrow CXS

CMS-T-00012168-A.1

1. Pull out the linch pin **1** on both adjustment units of a harrow bar.

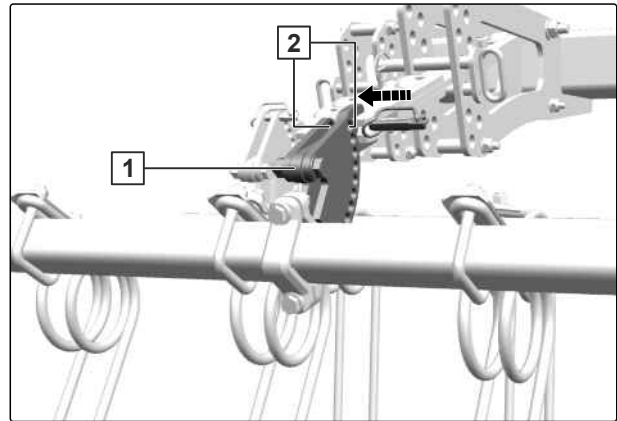
The next step can also be performed with the setting lever.

2. Turn the harrow beam to the desired position.



CMS-I-00007882

3. Insert a linch pin through each of the holes **2** directly above the bracket **1**.
4. Adjust the tilt of the second double harrow bar in the same way.



CMS-I-00007884

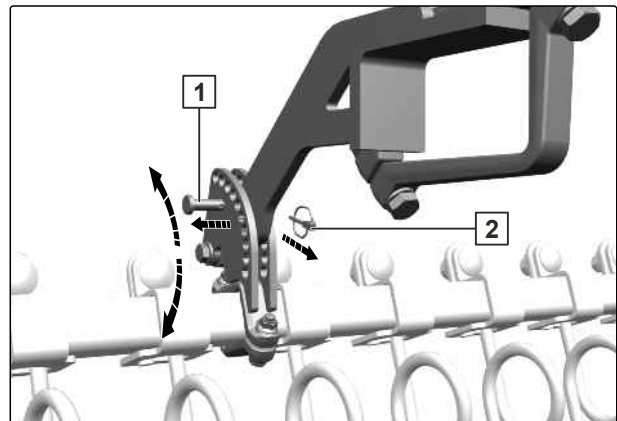
#### 6.3.2.5 Adjusting the spring blade system 142 or spring clearer system 167

CMS-T-00012170-A.1

1. Pull the linch pin **2** out of the pin **1** on both adjustment units of a spring blade bar or spring clearer bar.
2. Pull out the pin.

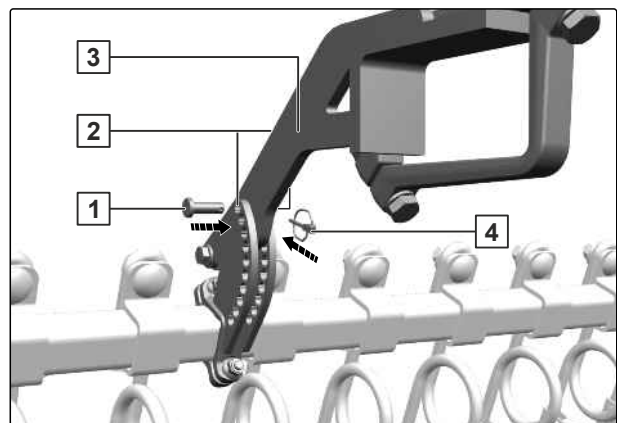
The next step can also be performed with the setting lever.

3. Turn the spring blade bar or spring clearer bar to the desired position.



CMS-I-00007888

4. Insert a pin **1** through each of the holes **2** and one of the holes in the bracket **3**.
5. Secure the pins with the linch pins **4**.



CMS-I-00007889

#### 6.3.2.6 Adjusting the scraper on the clearer system WW 142 HI

CMS-T-00012171-A.1

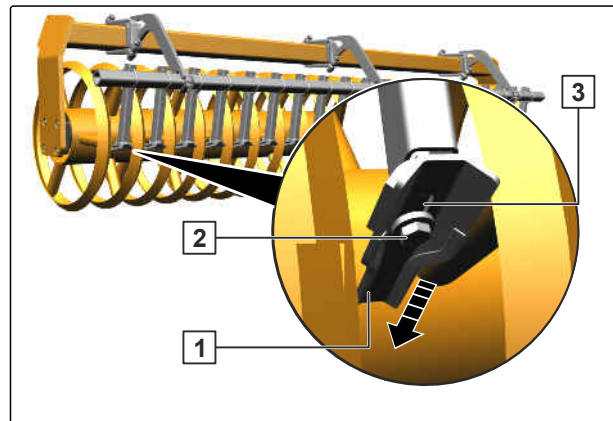
In case of wear, the scrapers on clearer system WW 142 HI can be moved closer towards the angle profile roller.



## 6 | Preparing the machine

### Preparing the implement for operation

1. Loosen the bolt **2** on the scraper **1**.
2. Move the scraper in the elongated slot **3** towards the roller.
3. Tighten the bolt.



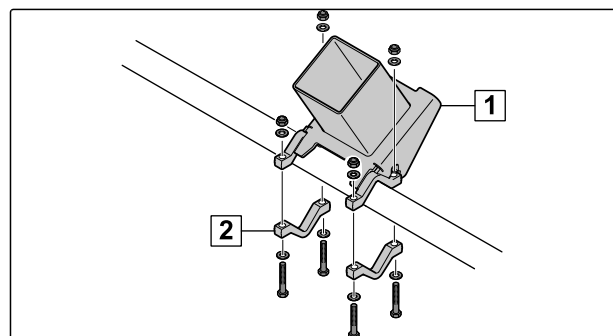
CMS-I-00007890

### 6.3.3 Installing ballast weights

CMS-T-00000069-E.1

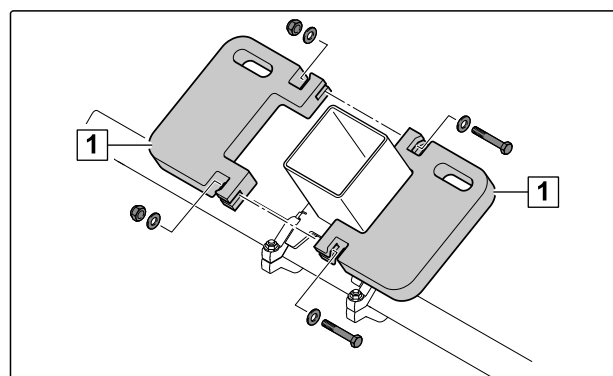
The ballast weights optimise the penetration of the discs into the soil under dry and extremely hard soil conditions. One set of ballast weights consists of 4 elements, each with a weight of 25 kg.

1. Screw on the bracket **1** for the additional weights with the clamp **2** at the centre of the rear frame carrier.



CMS-I-00000643

2. Put two ballast weights **1** on each bracket.
3. Screw two ballast weights together respectively.



CMS-I-00000533

### 6.3.4 Adjusting the scraper to the roller

CMS-T-00000076-F.1

The scrapers on the roller are set at the factory. The scrapers can be adapted to the working conditions.

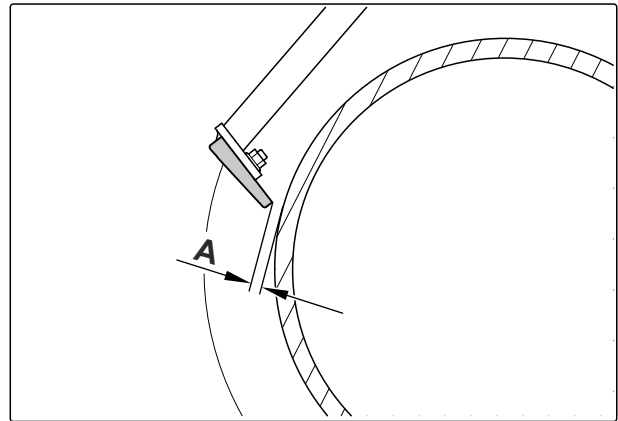




## NOTE

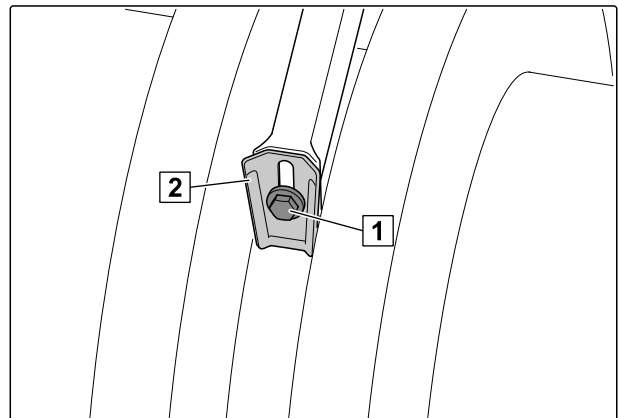
Permitted distances **A** between the roller element and scraper:

- Wedge ring roller:  $12 \text{ mm} \pm 2 \text{ mm}$
- Wedge ring roller with matrix tyre profile:  $13 \text{ mm} \pm 2 \text{ mm}$
- Tooth packer roller: at least 1 mm



CMS-I-00002071

1. Loosen the bolt **1** on the scraper **2**.
2. Move the scraper in the elongated slot.
3. Tighten the bolt **1**.
4. Check the distances when the implement is lowered.



CMS-I-00000521

## 6.3.5 Adjusting the central lubrication

CMS-T-00006314-C.1

Pause times															
Blue rotary knob	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Hours	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Lubrication times															
Red rotary knob	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Minutes	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30



#### NOTE

The rotary knob position "0" is only intended for manufacturer purposes.

#### Recommended lubrication time:

- 8 minutes

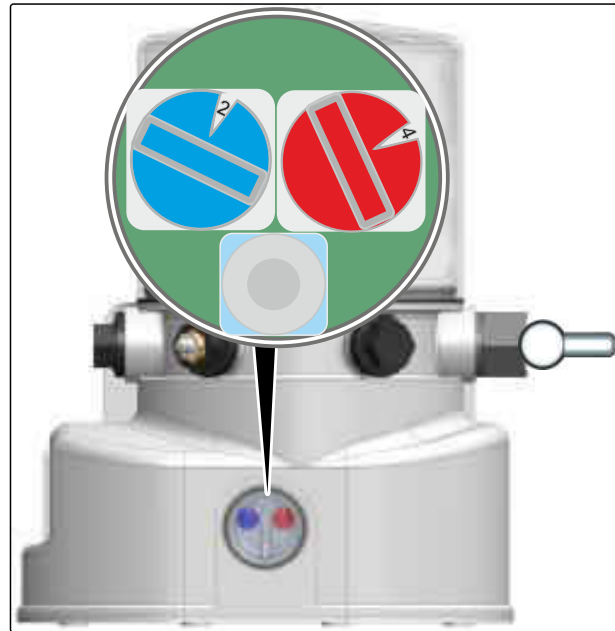
#### Recommended pause times when applying slurry:

- Initial operation: 1 hour
- Later: 1-2 hours

#### Recommended pause times without slurry:

- ensure 3 lubrication times per day of operation

When the power supply is connected, the central lubrication starts with the set pause times and lubricating times. When the power supply is interrupted during a pause time, the pause time will be continued.



CMS-I-00004514

1. Adjust the pause times using the blue rotary knob.
2. Adjust the lubricating times using the red rotary knob.

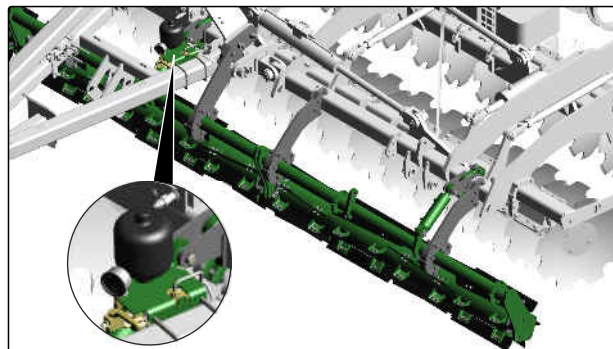
## 6.4 Preparing the machine for road travel

CMS-T-00004244-L.1

### 6.4.1 Securing the cutting roller

CMS-T-00004963-D.1

1. Lift the cutting roller using the "beige" tractor control unit.
2. Close the stop tap for the cutting roller.



CMS-I-00003326

## 6.4.2 Moving the harrow into transport position

CMS-T-00012320-A.1

### 6.4.2.1 Moving harrow system 12-125 HI into transport position

CMS-T-00012324-A.1

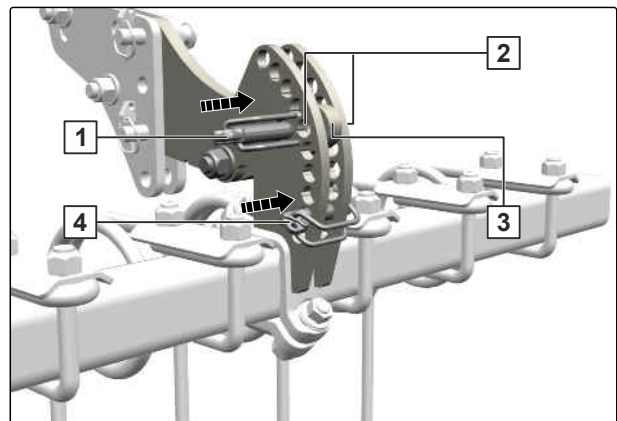
On folding implements, the harrow tines together with the road safety bars may not exceed the transport width of 3 m.

1. Pull out the both linch pins on both adjustment units.

The next step can also be performed with the setting lever.

2. *If the harrow tines exceed the transport width when the implement is folded:*  
Turn the harrow bar to a flatter tilt.

3. Insert a linch pin **1** through each of the holes **2** and the hole in the bracket **3**.
4. Park each of the second linch pins **4** below the bracket.



CMS-I-00007934

### 6.4.2.2 Moving harrow system 12-125 HI KWM/DW into transport position

CMS-T-00012322-A.1

On folding implements, the harrow tines together with the road safety bars may not exceed the transport width of 3 m.

1. Pull out the both linch pins on both adjustment units.

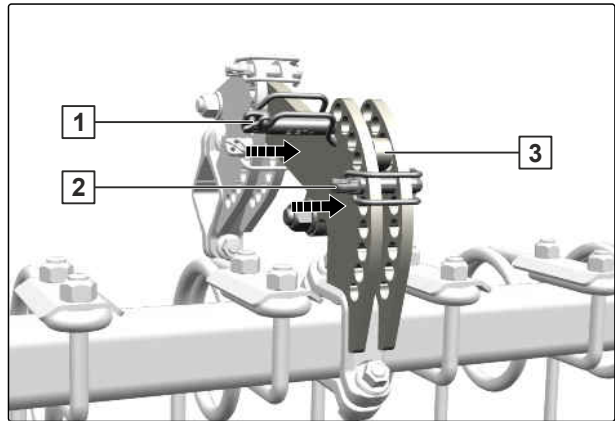
The next step can also be performed with the setting lever.

2. *If the harrow tines exceed the transport width when the implement is folded:*  
Turn the harrow bar to a flatter tilt.

## 6 | Preparing the machine

### Preparing the machine for road travel

3. Insert the linch pins **1** and **2** through each of the holes directly above and below the bracket **3**.



CMS-I-00007936

#### 6.4.2.3 Moving harrow system 12-250 HI into transport position

CMS-T-00012326-A.1

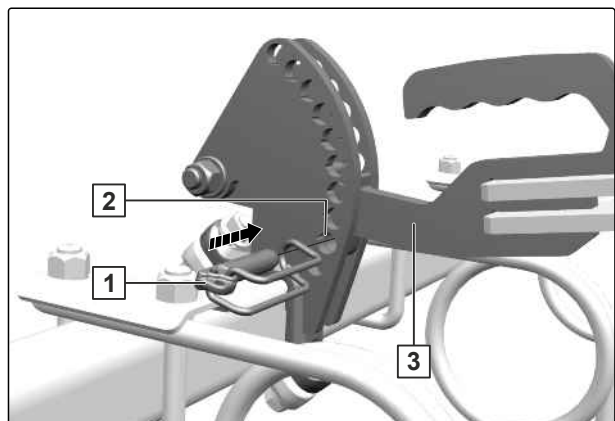
On folding implements, the harrow tines together with the road safety bars may not exceed the transport width of 3 m.

1. Pull out the the linch pins on both adjustment units.

The next step can also be performed with the setting lever.

2. *If the harrow tines exceed the transport width when the implement is folded:*  
Turn the harrow bar to a flatter tilt.

3. Insert a linch pin **1** through each of the holes **2** and the hole at the bottom of the bracket **3**.



CMS-I-00007907

#### 6.4.2.4 Moving the double harrow CXS into transport position

CMS-T-00012328-A.1

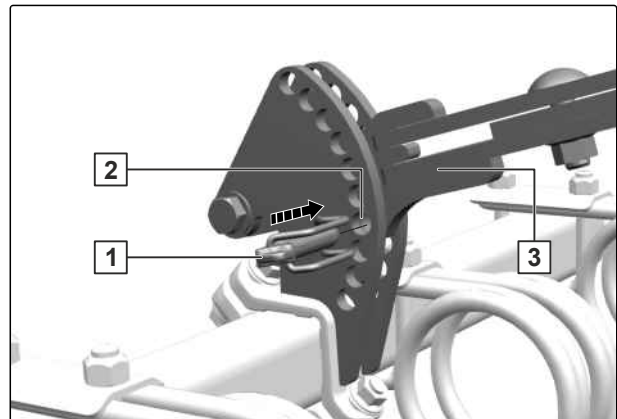
On folding implements, the harrow tines together with the road safety bars may not exceed the transport width of 3 m.

1. Pull out the linch pin on both adjustment units of a double harrow bar.

The next step can also be performed with the setting lever.

2. *If the harrow tines exceed the transport width when the implement is folded:*  
Turn the harrow bar to a flatter tilt.

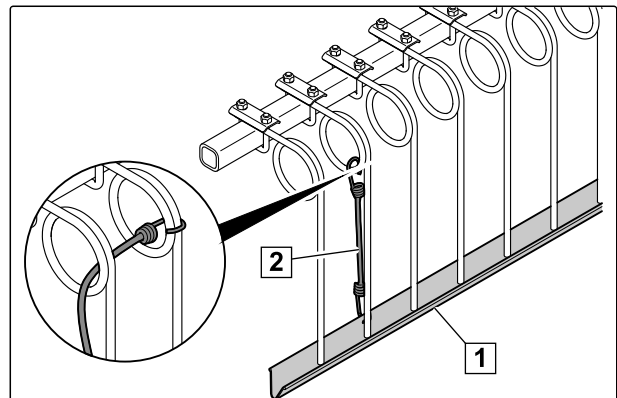
3. Insert a linch pin **1** through each of the holes **2** and the hole at the bottom of the bracket **3**.
4. Move the second double harrow bar into transport position in the same way.



CMS-I-00007908

### 6.4.3 Putting on the road safety bars

1. Remove coarse dirt from the tines.
2. Push the road safety bars **1** over the tines.
3. Secure the road safety bars with the tensioners **2**.
4. Check for firm seating.
5. *If the tensioners do not provide enough tension, guide the tensioner through the tine coils.*



CMS-I-00000517

### 6.4.4 Folding the sections

1. Set the working depth of the discs to the minimum.
2. Completely lift the implement with the lower link or the hydraulic drawbar.
3. Actuate the "blue" tractor control unit.

➔ The sections fold.

CMS-T-00004551-D.1

4. Fold the sections up to the end position.
5. Secure the "blue" tractor control unit against unintentional actuation.

#### 6.4.5 Aligning the implement at transport height

CMS-T-00009683-E.1

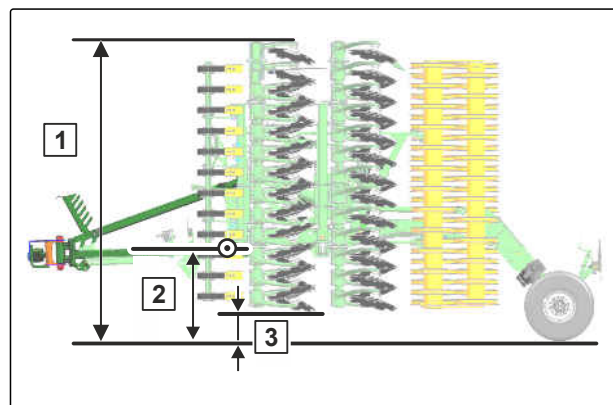
##### 6.4.5.1 Aligning the implement with lower link hitch to the transport height

CMS-T-00009682-D.1

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

A spirit level is attached to the implement frame. The spirit level shows the alignment of the implement in the direction of travel.

- 1 Maximum transport height < 4 m
- 2 Height of the drawbar pivot point: Catros = 1.15 cm and Catros <sup>XL</sup> = 1.05 cm
- 3 Height of the inner side plates of the sections  
Catros = 42 cm and Catros <sup>XL</sup> = 29 cm



CMS-I-00006665

1. Drive the tractor and implement onto a level surface.
2. *To align the implement horizontally at the transport height,*  
actuate the tractor lower link and the "yellow" tractor control unit.

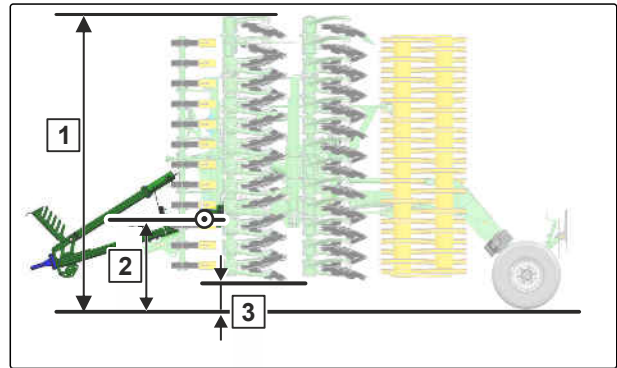
##### 6.4.5.2 Aligning the implement with hydraulic drawbar at transport height

CMS-T-00009681-D.1

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

A spirit level is attached to the implement frame. The spirit level shows the alignment of the implement in the direction of travel.

- 1 Maximum transport height < 4 m
- 2 Height of the drawbar pivot point: Catros = 1.15 m and Catros XL = 1.05 m
- 3 Height of the inner side plates of the sections  
Catros = 42 cm and Catros XL = 29 cm

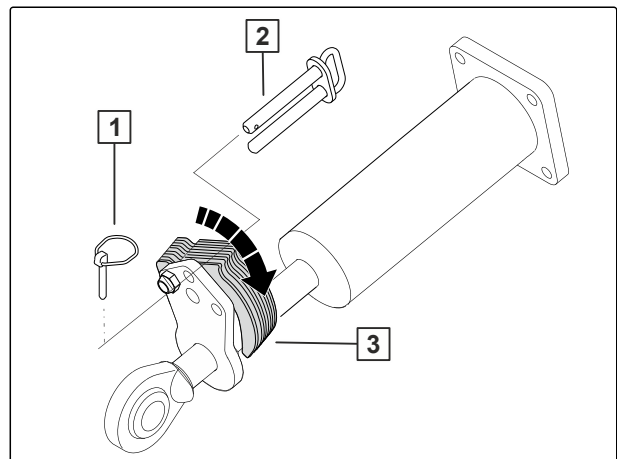


CMS-I-00006681

1. Drive the tractor and implement onto a level surface.
2. Lift the drawbar using the "yellow" tractor control unit.

The horizontal alignment of the hydraulic drawbar is secured with spacer elements.

3. Remove the lynch pin 1.
4. Pull out the pin 2.
5. Swivel down all of the spacer elements 3.
6. Lower the drawbar using the "yellow" tractor control unit.
7. Insert the pin.
8. Secure the pin with the lynch pin.
9. *To align the implement horizontally at the transport height on the running gear, actuate the "yellow" tractor control unit.*



CMS-I-00006685

#### 6.4.6 Locking the tractor control units

CMS-T-00006337-D.1

- Depending on the equipment, the tractor control units are locked mechanically or electrically.

## Using the machine

7

CMS-T-00004288-L.1

### 7.1 Unfolding the sections

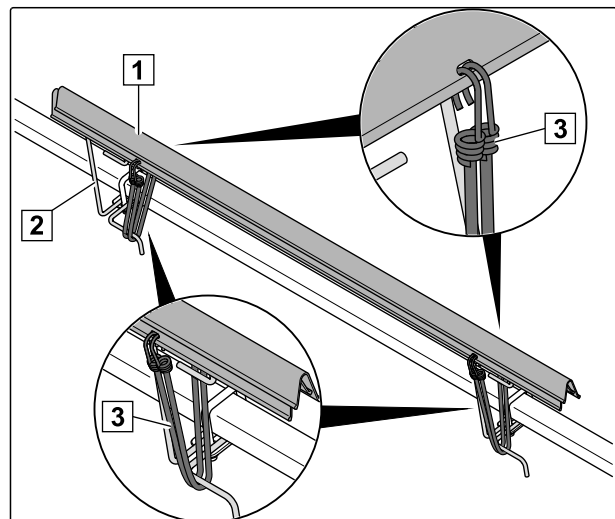
CMS-T-00004426-E.1

1. Completely raise the implement.
2. Actuate the "blue" tractor control unit.
- ➔ The sections unfold.
3. Unfold the sections up to the end position.

### 7.2 Removing the road safety bars

CMS-T-00000091-D.1

1. Remove the road safety bars from the harrow system.
2. Turn the traffic safety bars **1** by 180°, place on top of each other on the brackets **2**.
3. Secure the road safety bars with tensioners **3**.



CMS-I-00000518



## 7.3 Adjusting the working depth

CMS-T-00004239-I.1

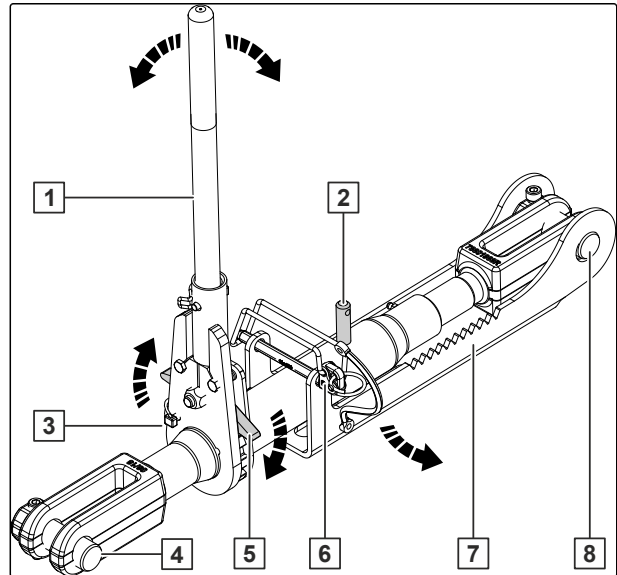
### 7.3.1 Adjusting the working depth of the discs

CMS-T-00004726-E.1

#### 7.3.1.1 Manually adjusting the working depth of the discs

CMS-T-00004404-B.1

1. Slightly raise the implement.
2. Insert the hand lever **1**.
3. Secure the hand lever with a linch pin.
4. Remove the linch pin **3**.
5. Engage the swivelling lever **5** according to the desired direction of rotation.
6. Remove the linch pin **6**.
7. Swivel down the safety clip **7**.



Adjustment spindle	Working depth
shorten	increase
lengthen	reduce

8. Set the adjustment spindle to the desired length using the hand lever.
9. Set the locking pin **2** vertically.
10. Swivel up the safety clip.
11. Secure the safety clip with a linch pin.
12. Set the swivelling lever horizontally.
13. Secure the swivelling lever with a linch pin.
14. Measure the distance between the middle of pin **4** and the middle of pin **8**.
15. Set the adjustment spindle on the second disc array to the same length.
16. Put the hand lever in parking position.
17. Secure the hand lever with a linch pin.

### 7.3.1.2 Hydraulic adjustment of the working depth of the discs

CMS-T-00004403-B.1

#### NOTE

If a uniform working depth cannot be adjusted, the hydraulic cylinders must be synchronised.

1. To synchronise the hydraulic cylinders, completely extend the hydraulic cylinders with the "green" tractor control unit.
2. Hold the "green" tractor control unit for 10 seconds.

➔ The hydraulic cylinders will be synchronised.

The arrow **1** on the scale **2** shows the set working depth.

#### NOTE

The scale value only serves for orientation. The scale value does not represent the working depth in centimetres.

3. Adjust the working depth hydraulically using the "green" tractor control unit.



CMS-I-00003201

### 7.3.1.3 Adjusting the working depth of the side discs

CMS-T-00004428-D.1

The working depth of the side discs is adjusted to prevent the formation of soil ridges during operation.

1. Raise the implement.
2. Loosen both bolts **1**.

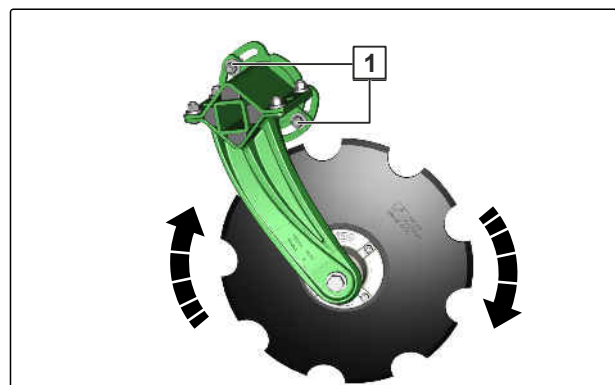
The bearing journal and the hub of the side disc serve as handles.

3. Turn the side disc up or down in the elongated slots.

#### NOTE

The specified working width is only achieved when all of the discs are set to the same working depth.

4. Tighten the bolts.



CMS-I-00003202

### 7.3.2 Hydraulic adjustment of the crushboard working depth

CMS-T-00006864-B.1

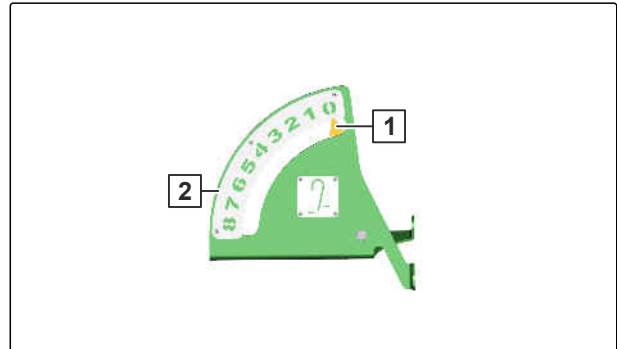
The arrow **1** on the scale **2** shows the set working depth.



#### NOTE

The scale value only serves for orientation. The scale value does not represent the working depth in centimetres.

- Adjust the working depth hydraulically using the "beige" tractor control unit.



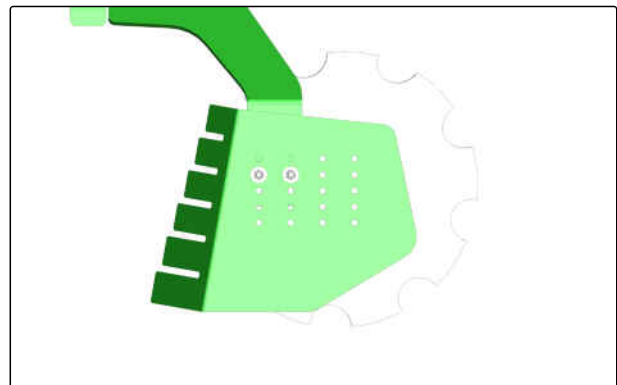
CMS-I-00003620

### 7.3.3 Adjust the working depth of the side guide plates

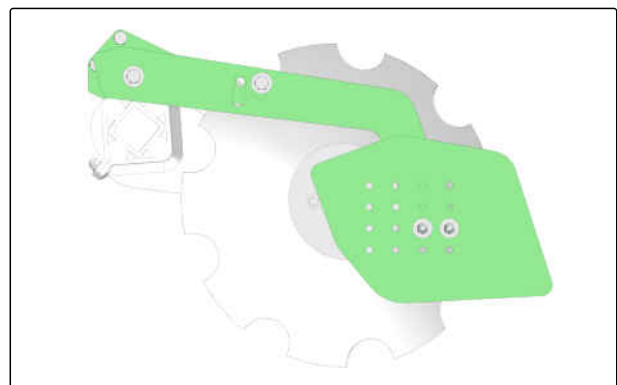
CMS-T-00004430-F.1

The side guide plates keep the displaced soil within the implement. The side guide plates must be adjusted so that the side discs do not form soil ridges and soil furrows.

The height and length of the side guide plates can be adjusted on the holding arms and via the hole patterns.



CMS-I-00003484



CMS-I-00003277



#### IMPORTANT

**Damage due to the side guide plates being set too deep**

- Set the side guide plates at a distance of at least 30 mm from the ground.

1. Slightly raise the implement.
2. Loosen the bolts on the side guide plates.
3. Adjust the height and longitudinal spacing of the side guide plates.
4. Tighten the bolts.
5. Check the setting when operating the implement.

## 7.4 Lifting the running gear and using the vibration compensation

CMS-T-00012242-A.1

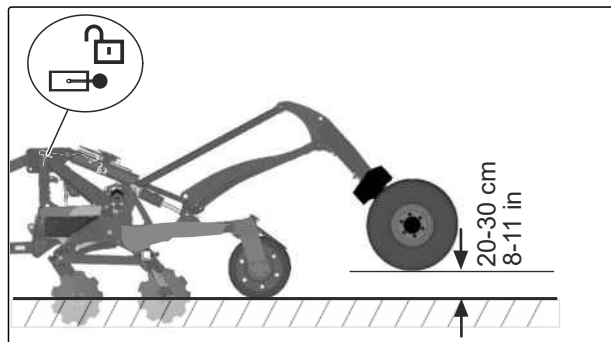
The vibration compensation prevents the implement from swinging, pitching or jumping during operation. The vibration compensation consists of a stop tap and a hydraulic valve that are connected to the hydraulic cylinder of the running gear.



### REQUIREMENTS

- ✓ Sections unfolded.

1. Open the stop tap on the hydraulic cylinder of the vibration compensation.
2. Lower the running gear down to 20-30 cm above the ground using the "yellow" tractor control unit.
3. Put the tractor control unit in float position.



CMS-I-00007913

## 7.5 Lifting the running gear and not using the vibration compensation

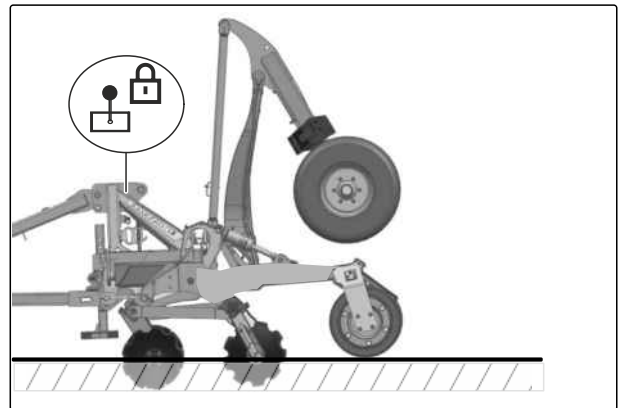
CMS-T-00012243-A.1

For optimal penetration of the tools into the soil, swivel the running gear completely in. In this case, the vibration compensation will not be used.



## REQUIREMENTS

- ☑ Sections unfolded.
- 1. Close the stop tap on the hydraulic cylinder of the vibration compensation.
- 2. Lift the running gear with the "yellow" tractor control unit.
- 3. Put the tractor control unit in float position.



CMS-I-00007914

## 7.6 Aligning the implement horizontally

CMS-T-00004955-E.1

### 7.6.1 Aligning the implement horizontally with the support wheels

CMS-T-00004956-C.1

The implement is guided horizontally by the support wheels.

A spirit level is attached to the implement frame. The spirit level shows the alignment of the implement in the direction of travel.

1. Drive the tractor and implement onto a level surface.
2. Lower the implement on the support wheels.
3. Put the lower links or hydraulic drawbar in the float position.
4. Check that the implement is aligned horizontally using a spirit level.
5. *If the implement is not standing horizontally, check the setting of the support wheels, see page 76.*

### 7.6.2 Aligning the implement horizontally with lower link hitch

CMS-T-00004957-B.1

A spirit level is attached to the implement frame. The spirit level shows the alignment of the implement in the direction of travel.

## 7 | Using the machine

### Lowering the cutting roller

1. Drive the tractor and implement onto a level surface.
2. Align the implement horizontally using the lower link.

#### 7.6.3 Aligning the implement horizontally with hydraulic drawbar

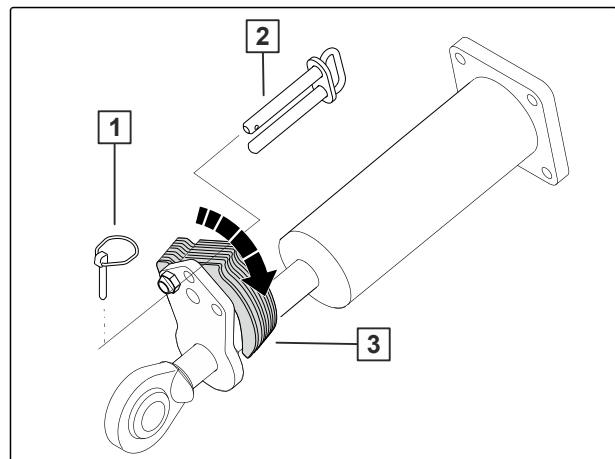
CMS-T-00004958-E.1

A spirit level is attached to the implement frame. The spirit level shows the alignment of the implement in the direction of travel.

1. Drive the tractor and implement onto a level surface.
2. Align the implement horizontally using the hydraulic drawbar.

The horizontal alignment of the hydraulic drawbar is secured with spacer elements.

3. Remove the linch pin **1**.
4. Pull out the pin **2**.
5. Swivel down the required spacer elements **3**.
6. Insert the pin.
7. Secure the pin with a linch pin.



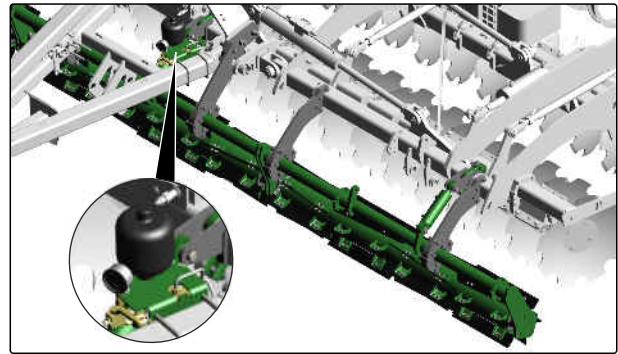
CMS-I-00006685

## 7.7 Lowering the cutting roller

CMS-T-00004707-D.1

The cutting roller chops up crop residues and catch crops. The cutting roller is automatically pre-tensioned using a hydraulic pressure accumulator. A stop tap is attached to the hydraulic pressure accumulator.

1. Open the stop tap.
2. Lower the cutting roller using the "beige" tractor control unit.
3. *To build up the hydraulic preloading,* hold the "beige" tractor control unit for 20 seconds.
4. Put the tractor control unit in float position.



CMS-I-00003326

## 7.8 Driving on the headlands

CMS-T-00009824-A.1

### 7.8.1 Turning on the roller on the headlands

CMS-T-00004606-D.1



#### IMPORTANT

##### Damage to rollers and trailing elements due to overload

- ▶ Do not turn the implement on the tandem roller or the angle profile roller.
- ▶ *If the implement has trailing elements,* turn the implement on the running gear.
- ▶ Use the running gear for road transport or longer driving on the headlands.

1. *To prevent lateral loads when driving in curves on the headlands,* lift with the lower link or with the "yellow" tractor control unit.
- ➔ The roller supports the implement.
2. *When the direction of the implement matches that of the direction of travel,* lower with the lower link or with the "yellow" tractor control unit.

## 7.8.2 Turning on the running gear on the headlands

1. *To prevent lateral loads when driving in curves on the headlands,*  
Lift the lower links and actuate the "yellow" tractor control unit

or

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

2. *When the direction of the implement matches that of the direction of travel,*  
Lower the lower link and actuate the "yellow" tractor control unit

or

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



## Eliminating faults

# 8

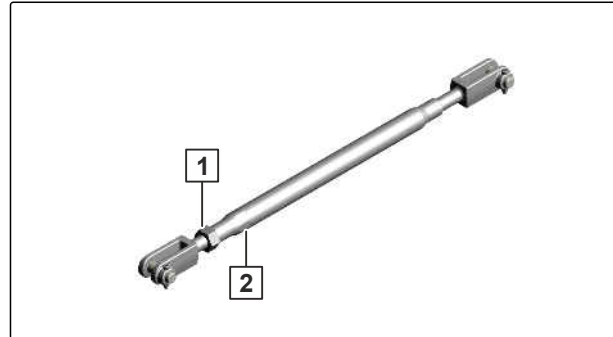
CMS-T-00004986-C.1

Errors	Cause	Solutions
Implement with support wheels is not standing horizontally	The tyre inflation pressure of the support wheels is incorrect.	► Correct the tyre inflation pressure.
	The tyres of the support wheels are worn.	► Have worn tyres replaced.
	The wheels are incorrectly set.	see page 76
The working depth is uneven across the entire implement width	The hydraulic cylinders have different lengths	see page 76
Grease emerging on the pump for the central lubrication	Incorrect power supply to the lubrication pump	► Ensure a power supply of 9.6 V – 15.6 V.
	Pause times that are too long and lubricating times that are too short	► Adjust the pause times and lubricating times, see <i>"Adjusting the central lubrication"</i> .
	Grease nipple blocked	see page 76
An implement with single-circuit hydraulic brake system is braked by the emergency brake.	The spring cotter pin is in the horizontal brake position.	see page 77

### Implement with support wheels is not standing horizontally

CMS-T-00004987-B.1

1. Align the implement horizontally with the lower link or hydraulic drawbar.
2. Loosen the lock nuts **1** on the adjustment spindles.
3. Adjust the support wheels using the hexagonal profile **2**.
4. Tighten the lock nut.



CMS-I-00003204

### Different working depths across the working width

CMS-T-00005120-A.1

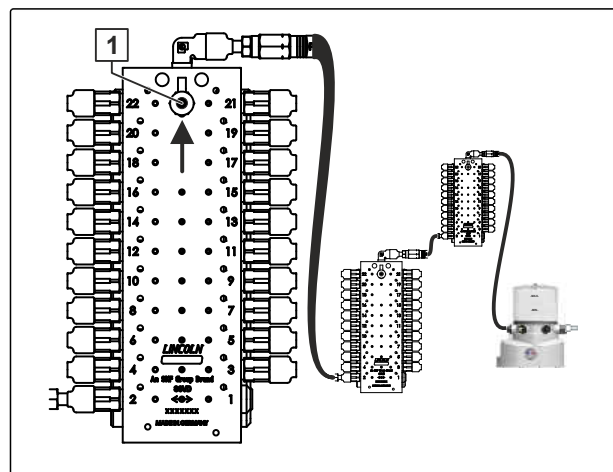
1. completely extend the hydraulic cylinders with the "green" tractor control unit.
  2. Hold the "green" tractor control unit for 10 seconds.
- ➔ The hydraulic cylinders will be synchronised.

### Grease emerging on the pump for the central lubrication

CMS-T-00006312-C.1

Depending on the equipment, the central lubrication system consists of several distributors that are connected to each other.

1. Pump in the grease through the grease nipple **1** on the last distributor as seen from the pump.
2. Check for grease emerging from the lubrication points belonging to the distributor.
3. *If no grease emerges from a lubrication point, remove the grease nipple from the faulty lubrication point and clean it.*
4. Clean faulty lubrication points.
5. Reinstall the grease nipple on the faulty lubrication point.
6. Pump in grease again through the grease nipple **1**.

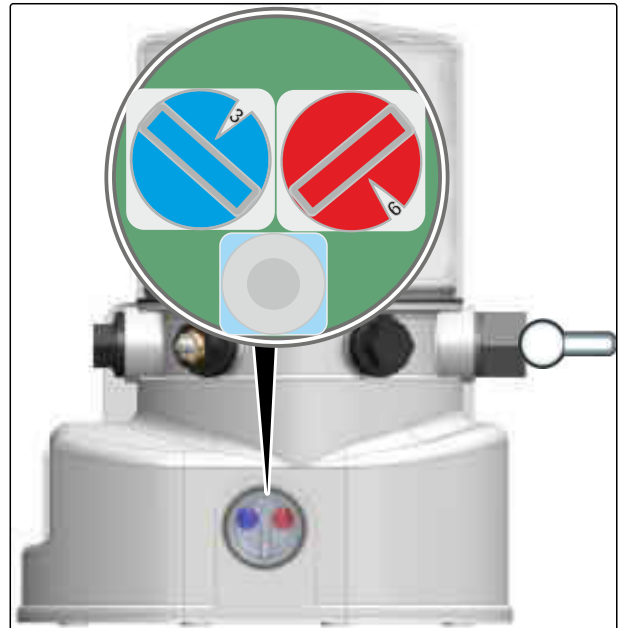


CMS-I-00004521

7. Check the cleaned lubrication points for emerging grease.
8. Repeat the procedure on all of the distributors.

When all of the faulty lubrication points have been cleaned, the central lubrication system can be tested over a longer period of time as follows:

9. Set the blue rotary knob on the pump at "3" and the red rotary knob at "9".
10. Supply the central lubrication system with power for 12 hours.
11. *If grease emerges on the pump after 12 hours, repeat the fault repair.*

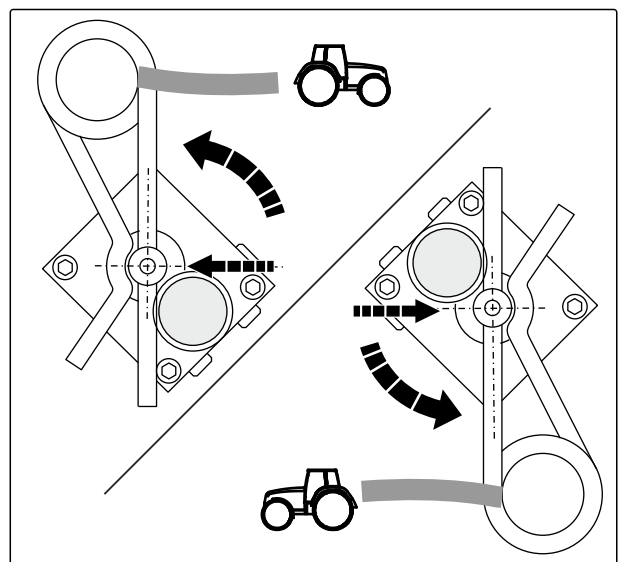


CMS-I-00004520

#### An implement with single-circuit hydraulic brake system is braked by the emergency brake

CMS-T-00012111-A.1

1. Insert the spring cotter pin into the brake valve from the front.
2. Position the spring cotter pin vertically.
3. Relieve the brake pressure using the hand pump.



CMS-I-00007786

## Parking the machine

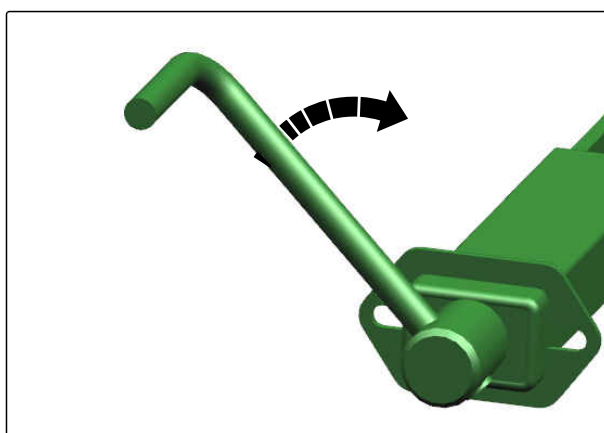
9

CMS-T-00004264-L.1

### 9.1 Applying the parking brake

CMS-T-00012112-A.1

- Turn the hand crank clockwise until the brake cable is tensioned.

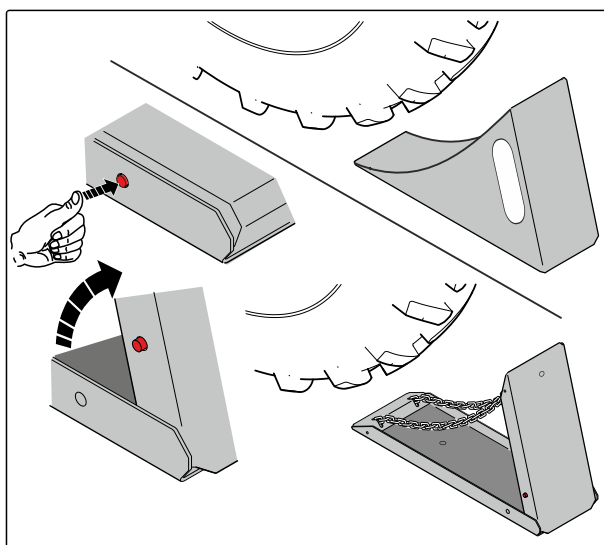


CMS-I-00007857

### 9.2 Placing the wheel chocks

CMS-T-00004316-C.1

1. Take the wheel chocks out from the holder.
2. For folding wheel chocks, actuate the press button and unfold the wheel chock.
3. Place the wheel chocks under the wheels.



CMS-I-00007809

## 9.3 Disconnecting the coupling device

CMS-T-00012207-B.1

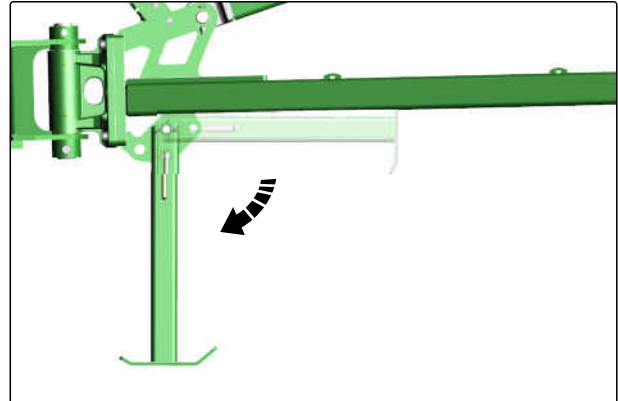
### 9.3.1 Uncoupling the lower link hitch

CMS-T-00004572-G.1

#### 9.3.1.1 Swivelling down the jack

CMS-T-00004573-D.1

1. Lift the implement using the lower link.
2. Pull out the lynch pin from the pin.
3. Pull out the pin.
4. Swivel down the jack.
5. Insert the pin.
6. Secure the pin with a lynch pin.



CMS-I-00003351

#### 9.3.1.2 Uncoupling the tractor's lower link

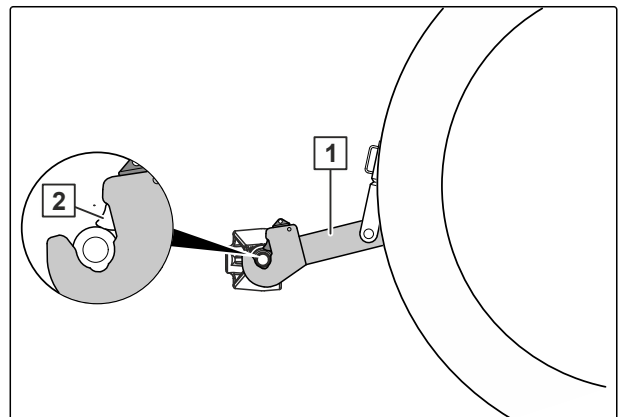
CMS-T-00004574-G.1

1. Relieve the tractor's lower link **1**.

#### **i** NOTE

Leave the implement slightly raised to be able to release the lower link catch hooks.

2. Release the lower link catch hook **2**.
3. Uncouple the tractor lower links from the implement.



CMS-I-00003346

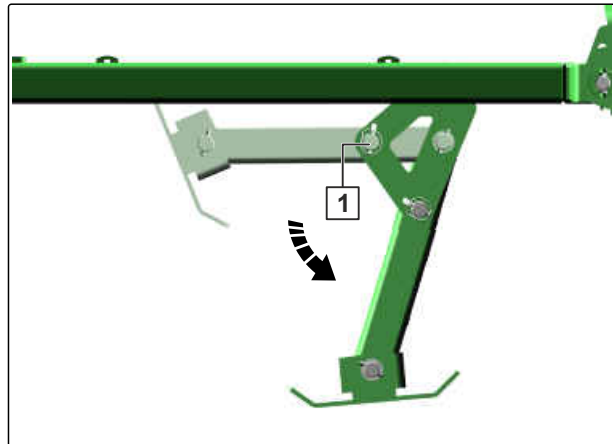
### 9.3.2 Uncoupling the ball coupling or drawbar eye

CMS-T-00004576-D.1

#### 9.3.2.1 Swivelling down the jack

CMS-T-00004577-C.1

1. Open the stop tap on the hydraulic drawbar.
2. Lift the implement using the "yellow" tractor control unit.
3. Pull out the linch pin from the pin **1**.
4. Pull out the pin.
5. Swivel down the jack.
6. Insert the pin.
7. Secure the pin with a linch pin.

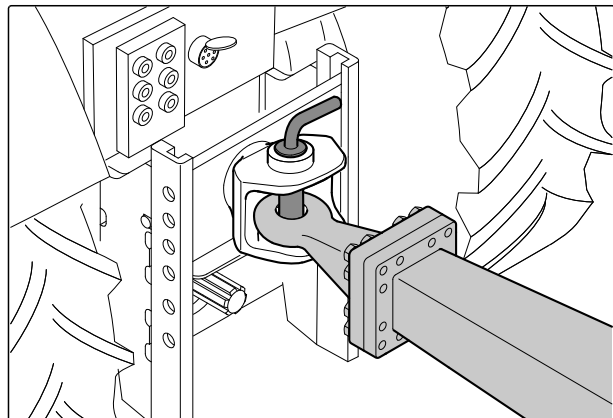


CMS-I-00003551

#### 9.3.2.2 Uncoupling the drawbar eye

CMS-T-00004578-B.1

1. Open the stop tap on the hydraulic drawbar.
2. Relieve the drawbar eye using the "yellow" tractor control unit.
3. Uncouple the drawbar eye from the clevis coupling of the tractor.

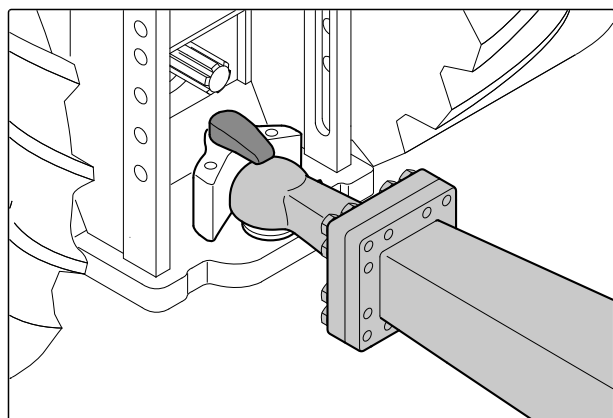


CMS-I-00003557

#### 9.3.2.3 Uncoupling the ball coupling

CMS-T-00004579-C.1

- *To lift the ball hitch coupling from the hitch ball:*  
Lift the hydraulic drawbar using the "yellow" tractor control unit.



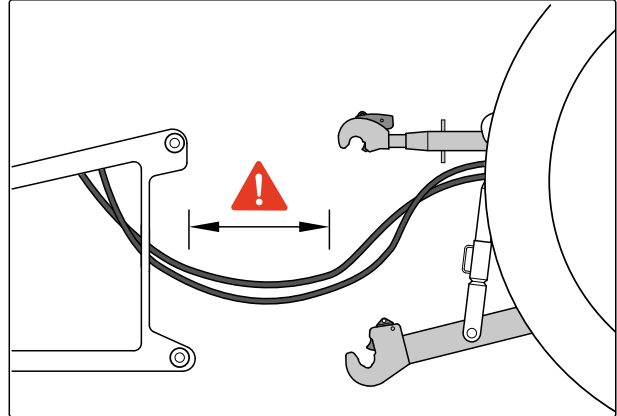
CMS-I-00003558

## 9.4 Driving the tractor away from the implement

CMS-T-00012195-A.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-00004044

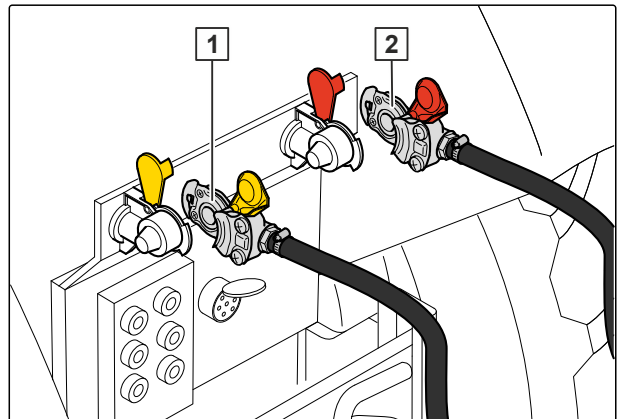
## 9.5 Uncoupling the brake system

CMS-T-00004569-E.1

### 9.5.1 Uncoupling the dual-circuit pneumatic brake system

CMS-T-00004570-D.1

1. Uncouple the red coupling head of the brake line **2** from the tractor.
2. Couple the red coupling head with the empty coupling on the implement.
3. Uncouple the yellow coupling head of the brake line **1** from the tractor.
4. Couple the yellow coupling head with the empty coupling on the implement.
5. Close the tractor coupling head caps.

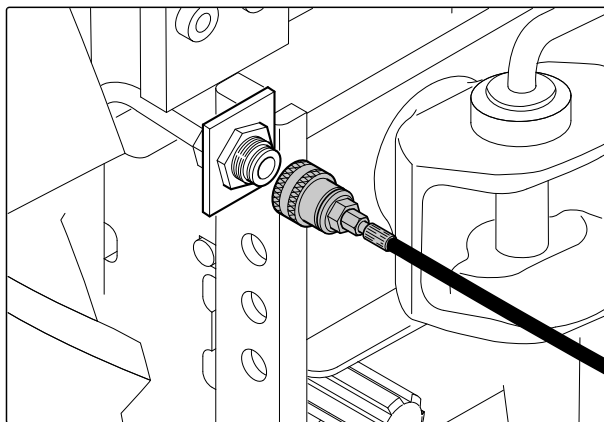


CMS-I-00003559

### 9.5.2 Uncoupling the single-circuit hydraulic brake system

CMS-T-00004571-D.1

1. Disconnect the ripcord of the emergency brake from the tractor.
2. Uncouple the hydraulic plug from the hydraulic socket.

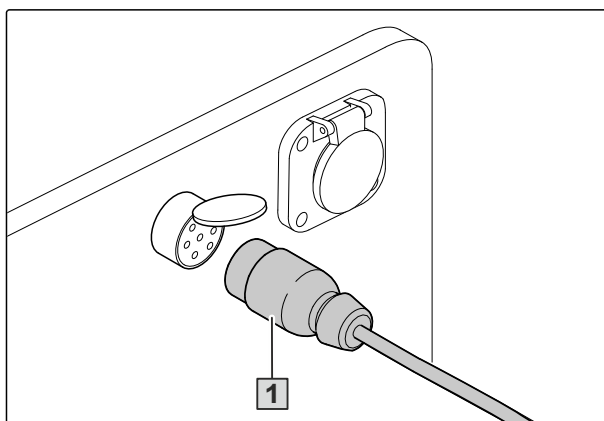


CMS-I-00003560

## 9.6 Uncoupling the power supply

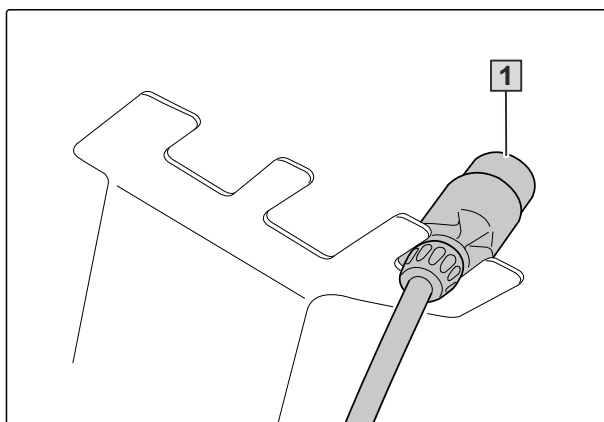
CMS-T-00001402-H.1

1. Pull out the plug **1** for the power supply.



CMS-I-00001048

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



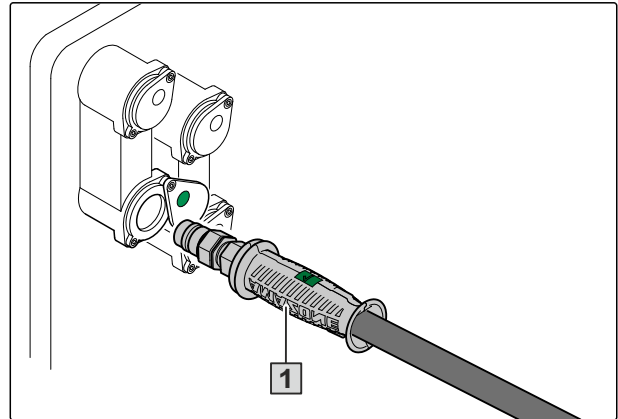
CMS-I-00001248



## 9.7 Disconnecting the hydraulic hose lines

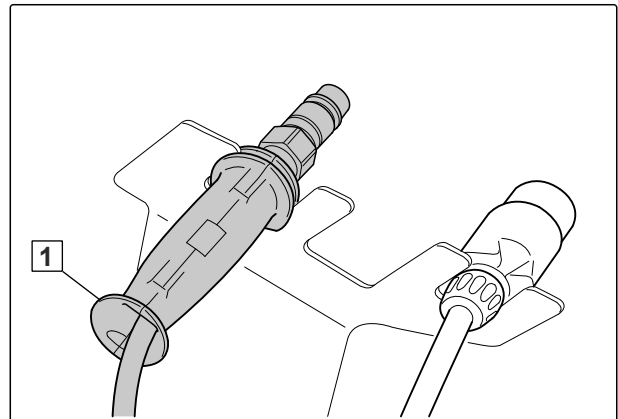
CMS-T-00000277-F.1

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.

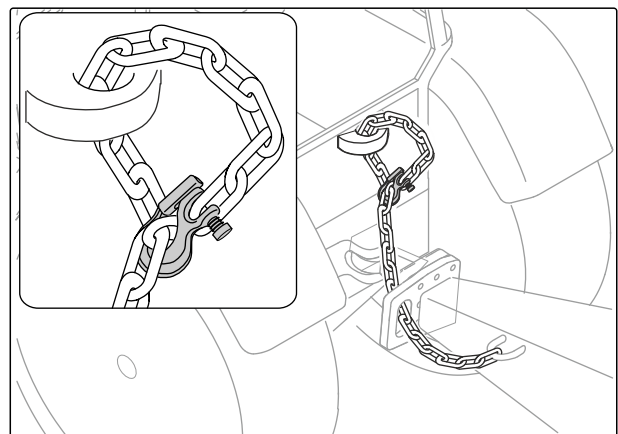


CMS-I-00001250

## 9.8 Releasing the safety chain

CMS-T-00004315-C.1

- Release the safety chain from the tractor.

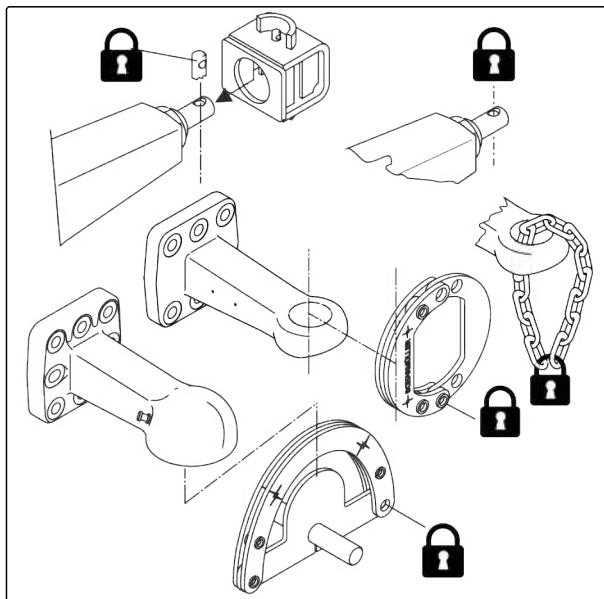


CMS-I-00007814

## 9.9 Putting on the safety device against unauthorised use

CMS-T-00005090-B.1

1. Put the safety device against unauthorised use on the hitch device.
2. Put on the padlock.



CMS-I-00003534

# Repairing the machine

# 10

CMS-T-00004231-O.1

## 10.1 Maintaining the implement

CMS-T-00004232-O.1

### 10.1.1 Maintenance schedule

<b>After initial operation</b>		
Checking the disc carrier connection	see page 87	
Checking the rollers	see page 88	
Checking the hydraulic hose lines	see page 89	
<b>as required</b>		
Replacing the discs	see page 86	
Aligning the disc gangs relative to each other	see page 87	<b>WORKSHOP WORK</b>
<b>daily</b>		
Draining the compressed air tank	see page 92	
Checking the compressed air tank	see page 92	
Checking the central lubrication	see page 96	
<b>Every 50 operating hours</b>		
Checking the lower link hitch	see page 94	
Checking the ball hitch coupling	see page 95	
Checking the drawbar eye	see page 95	
<b>Every 10 operating hours / daily</b>		
Checking the lower link pins	see page 88	
<b>Every 50 operating hours / weekly</b>		
Checking the hydraulic hose lines	see page 89	
Checking the wheels	see page 90	

Every 200 operating hours / Every 3 months		
Checking the rollers	see page 88	
Checking the brake pads	see page 91	
Checking the pneumatic brake system	see page 91	
Cleaning the compressed air line filter	see page 93	
Checking the axle bolts	see page 94	

Every 1000 operating hours / Every 12 months		
Checking the hub bearing	see page 90	<b>WORKSHOP WORK</b>

### 10.1.2 Replacing the discs

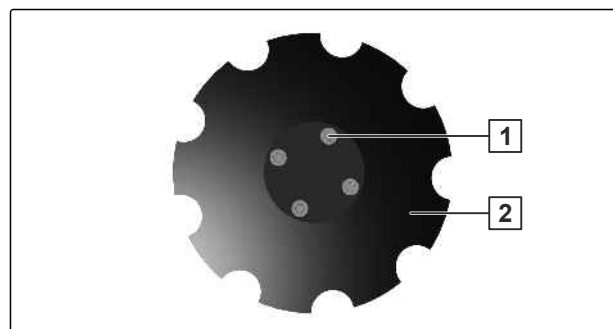
CMS-T-00002327-I.1

#### **INTERVAL**

- as required

Original disc diameter	Wear limit
46 cm	36 cm
48 cm	40 cm
51 cm	36 cm
61 cm	43 cm
66 cm	46 cm

1. Slightly raise the implement.



CMS-I-00002450

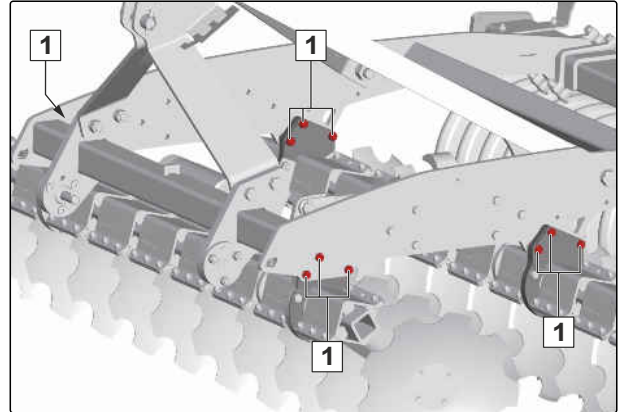
2. Loosen the 4 bolts **1** for the disc fastening.
3. Remove the washer **2**.
4. Fasten the new disc with the 4 bolts.

### 10.1.3 Checking the disc carrier connection

CMS-T-00002328-E.1

#### INTERVAL

- After initial operation
- Check the bolts for tightness.



CMS-I-00000531

### 10.1.4 Aligning the disc gangs relative to each other

CMS-T-00013988-A.1

#### WORKSHOP WORK

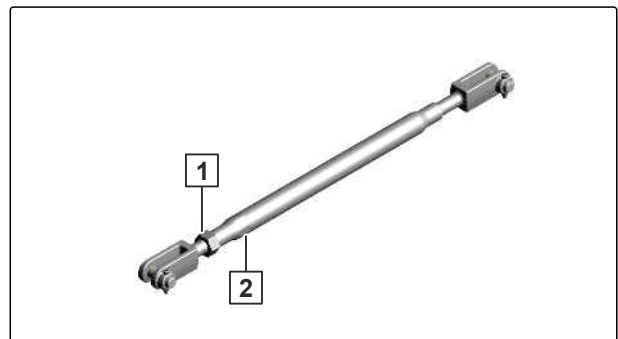
- as required

The disc gangs are aligned relative to each other using adjustment spindles.

**The alignment of the disc gangs is suitable for the following:**

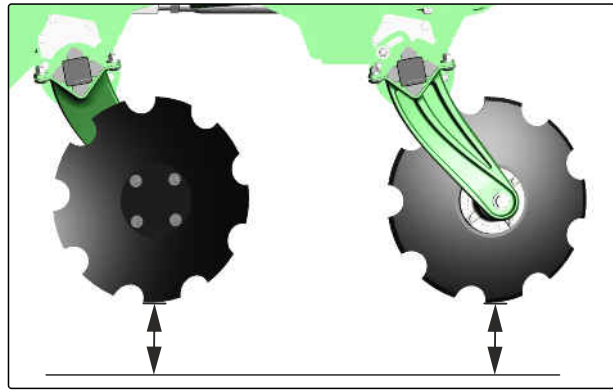
- Optimising the working depth of the disc gangs relative to each other
- Correcting lateral pull of the implement
- Preventing uneven wear of the discs

1. Align the implement horizontally.
  2. Set the working depth of the disc gangs to the smallest value.
- ➔ The discs are not standing on the ground.
3. Loosen the lock nuts **1** on all of the adjustment spindles.
  4. Align the disc gangs using the hexagonal profile **2** on the adjustment spindle.



CMS-I-00003204

5. Check that all of the disc carriers are aligned evenly.
6. Tighten the lock nuts.



CMS-I-00003385

### 10.1.5 Checking the rollers

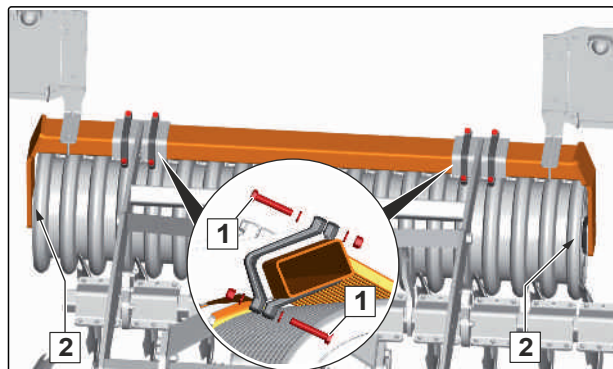
CMS-T-00002329-D.1



#### INTERVAL

- After initial operation
- Every 200 operating hours
- or
- Every 3 months

- ▶ Check the bolts **1** for tightness.
- ▶ *If the bolts need to be replaced,* pay attention to the alignment of the bolts.
- ▶ Check the roller bearing **2** for ease of movement.



CMS-I-00000099

### 10.1.6 Checking the lower link pins

CMS-T-00004233-C.1



#### INTERVAL

- Every 10 operating hours
- or
- daily

#### Criteria for visual inspection of the lower link pins:

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

1. Check the lower link pins for the listed criteria.
2. Replace worn pins.

### 10.1.7 Checking the hydraulic hose lines

CMS-T-00002331-F.1

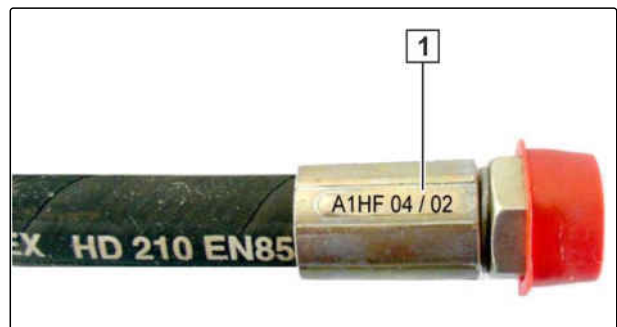


#### INTERVAL

- 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.

### 10.1.8 Checking the wheels

CMS-T-00009668-C.1



#### INTERVAL

- Every 50 operating hours  
or  
weekly

Tyres	Tightening torque	
Running gear wheel / support wheel	M18 x 1.5	270 Nm (-0/+20)
	M20 x 1.5	350 Nm (-0/+30)
	M22 x 1.5	450 Nm (-0/+60)

1. Check the tyre pressure according to the specifications on the stickers.
2. Check the bolted connections.

### 10.1.9 Checking the hub bearing

CMS-T-00013989-A.1



#### WORKSHOP WORK

- Every 1000 operating hours  
or  
Every 12 months

- Have the hub bearing checked and adjusted.



### 10.1.10 Checking the brake pads

CMS-T-00004984-D.1

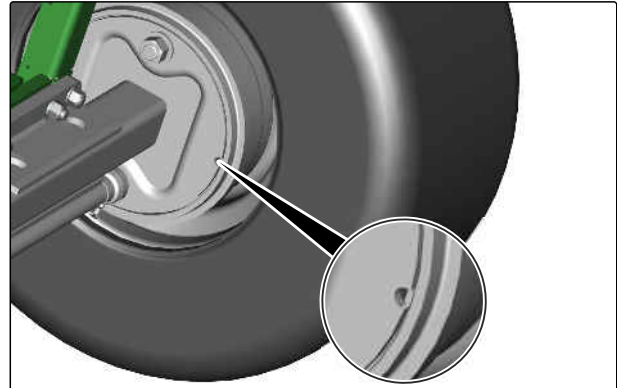


#### INTERVAL

- Every 200 operating hours  
or  
Every 3 months

#### Test criteria:

- Wear limit: 2 mm
  - Damage
  - Coarse dirt
1. Check the brake pads through the inspection holes.



CMS-I-00003599



#### WORKSHOP WORK

2. Replace the brake pads if they are worn, damaged or soiled.

### 10.1.11 Checking the pneumatic brake system

CMS-T-00004985-F.1



#### INTERVAL

- Every 200 operating hours  
or  
Every 3 months

1. Check the compressed air lines and bellows for damage.



#### WORKSHOP WORK

2. Replace damaged components.

Test criteria	Setpoints
Pressure drop in the pneumatic brake system	maximum of 0.15 bar in 10 minutes
Air pressure in the compressed air tank	6 bar-8.2 bar
Brake cylinder pressure	0 bar when the brake is not actuated

3. Check the specified test criteria.

### 10.1.12 Draining the compressed air tank

CMS-T-00004588-E.1



#### INTERVAL

- daily

1. *To fill the compressed air tank,*  
run the tractor engine for 3 minutes.
2. Switch off the tractor engine.
3. *To drain the water,*  
Pull the drainage valve to the side using the ring.



CMS-I-00003555

### 10.1.13 Checking the compressed air tank

CMS-T-00004589-D.1



#### INTERVAL

- daily

1. Check the compressed air tank for damage and corrosion.
2. Check the tensioning belts of the compressed air tank.
3. *If the tensioning belts are loose,*  
tighten the tensioning belts with nuts.



#### WORKSHOP WORK

4. Replace the compressed air tank if damaged or corroded.
5. *If the tensioning belts are damaged or cannot be tightened,*  
replace the tensioning belts.

### 10.1.14 Cleaning the compressed air line filter

CMS-T-00004590-D.1



#### INTERVAL

- Every 200 operating hours  
or  
Every 3 months



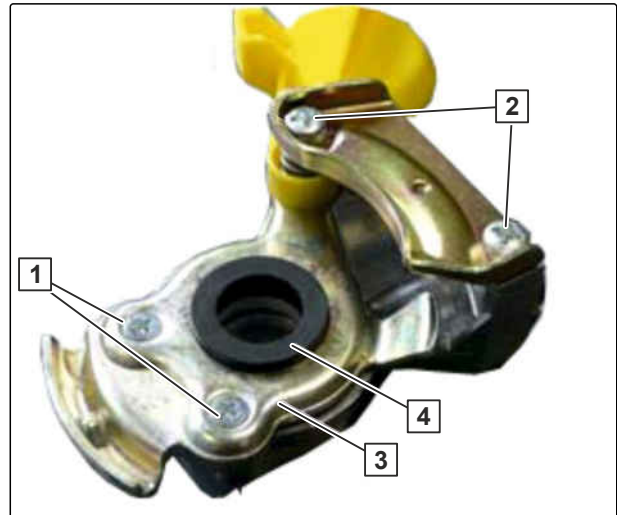
#### NOTE

The coupling head contains a tensioned spring.

#### Bolt tightening torques:

- **1** 2.5 Nm
- **2** 7 Nm

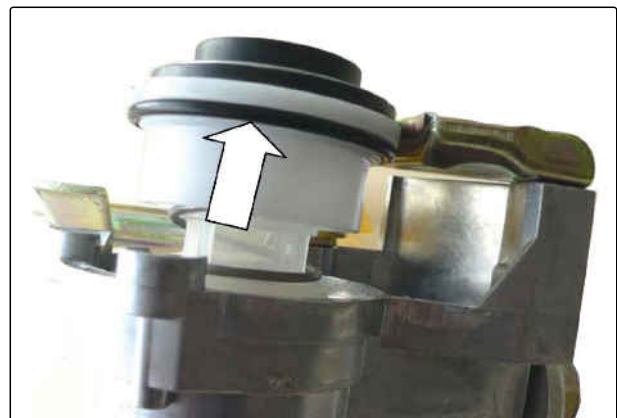
1. Unscrew the bolts **1**.
2. Loosen the bolts **2** by a few turns.
3. Lift the housing plate **3** and turn it to the side over the rubber seal **4**.
4. Remove the rubber seal.
5. Replace damaged parts.
6. Clean the sealing surfaces, seal ring and compressed air line filter.
7. Grease the sealing surfaces, seal ring and compressed air line filter.
8. Check the position of the seal ring.
9. Reassemble in the reverse sequence.



CMS-I-00003574



CMS-I-00003573



CMS-I-00003572

### 10.1.15 Checking the axle bolts

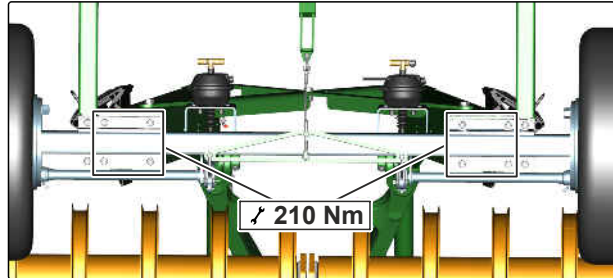
CMS-T-00004966-B.1



#### INTERVAL

- Every 200 operating hours  
or  
Every 3 months

- Check the bolts for tightness.



CMS-I-00003556

### 10.1.16 Checking the lower link hitch

CMS-T-00004973-F.1



#### INTERVAL

- Every 50 operating hours

Lower link hitch	Wear dimension	Fixing bolts	Quantity	Bolt tightening torques
Category 3	34.5 mm	M20 8.8	8	420 Nm
Category 4	48 mm	M20 8.8	8	420 Nm
Category 4 N	48 mm	M20 8.8	8	420 Nm
Category K700	56 mm	M20 8.8	8	420 Nm

1. Check the bolt tightening torques.
2. Check the lower link hitch for damage, deformation, cracks and wear.



#### WORKSHOP WORK

3. Replace the lower link hitch if damaged.

### 10.1.17 Checking the ball hitch coupling

CMS-T-00006968-G.1



#### INTERVAL

- Every 50 operating hours

Ball hitch coupling	Wear dimension	Fixing bolts	Quantity	Bolt tightening torque
K80 (LI009)	82 mm	M16 10.9	8	300 Nm
K80 (LI040)	82 mm	M20 10.9	8	560 Nm
K80 (LI015)	82 mm	M20 10.9	12	560 Nm

1. Check the bolt tightening torques.
2. Check the ball hitch coupling for damage, deformation, cracks and wear.



#### WORKSHOP WORK

3. Replace the ball hitch coupling if damaged.

### 10.1.18 Checking the drawbar eye

CMS-T-00006969-F.1



#### INTERVAL

- Every 50 operating hours

Drawbar eye	Wear dimension	Fixing bolts	Quantity	Bolt tightening torque
D35 (LI038)	42 mm	M16 12.9	6	340 Nm
D40 (LI017)	41.5 mm	M16 10.9	6	300 Nm
D40 (LI006)	42.5 mm	M20 8.8	8	395 Nm
D46 (LI034)	48 mm	M20 10.9	12	550 Nm
D50 (LI037)	60 mm	M16 12.9	4	340 Nm
D50 (LI010)	51.5 mm	M16 10.9	8	300 Nm
D50 (LI059)	51.5 mm	M20 10.9	4	560 Nm
D50 (LI011)	51.5 mm	M20 8.8	8	410 Nm
D50 (LI060)	52.5 mm	M20 10.9	8	560 Nm
D51 (LI039)	53 mm	M20 10.9	12	600 Nm
D51 (LI059)	53 mm	M16 10.9	6	290 Nm
D58 (LI031)	60 mm	M20 10.9	12	550 Nm
D62 (LI007)	63.5 mm	M20 10.9	8	590 Nm
D79 (LI021)	81 mm	M20 10.9	12	550 Nm

1. Check the bolt tightening torques.
2. Check the drawbar eye for damage, deformation, cracks and wear.



### WORKSHOP WORK

3. Replace the drawbar eye if damaged.

#### 10.1.19 Checking the central lubrication

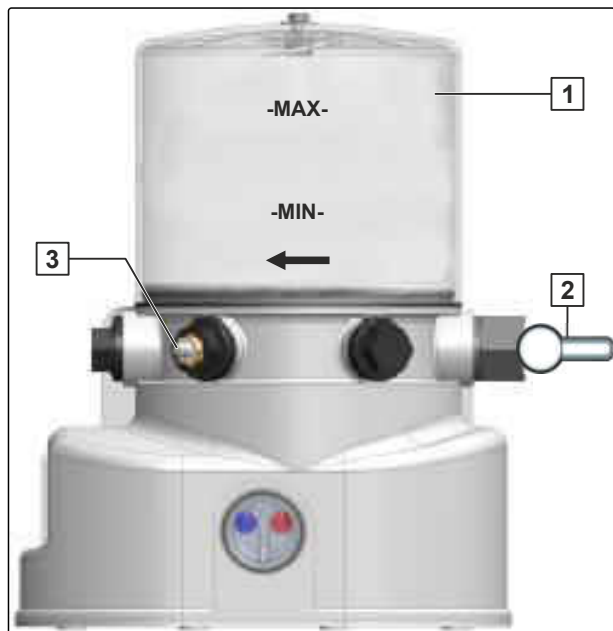
CMS-T-00006317-B.1



### INTERVAL

- daily

1. *If the fill level is low in the tank* **1**,  
fill in grease through the filling nipple **3** until just  
below the "MAX" mark.
2. *If grease emerged on the pressure relief valve*  
**2**,  
see "Eliminating faults".



CMS-I-00004515

## 10.2 Cleaning the implement

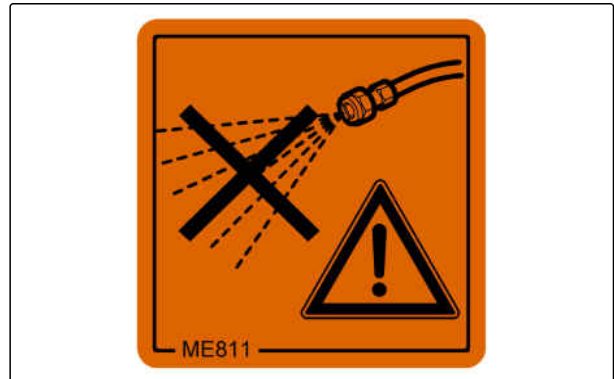
CMS-T-00000593-F.1



### IMPORTANT

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

- ▶ 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 30 cm between the high-pressure nozzle and the implement.
  - ▶ Do not exceed a water pressure of 120 bar.
- 
- ▶ Clean the machine with a high-pressure cleaner or a hot water high-pressure cleaner.



CMS-I-00002692

## 10.3 Lubricating the implement

CMS-T-00004967-E.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.

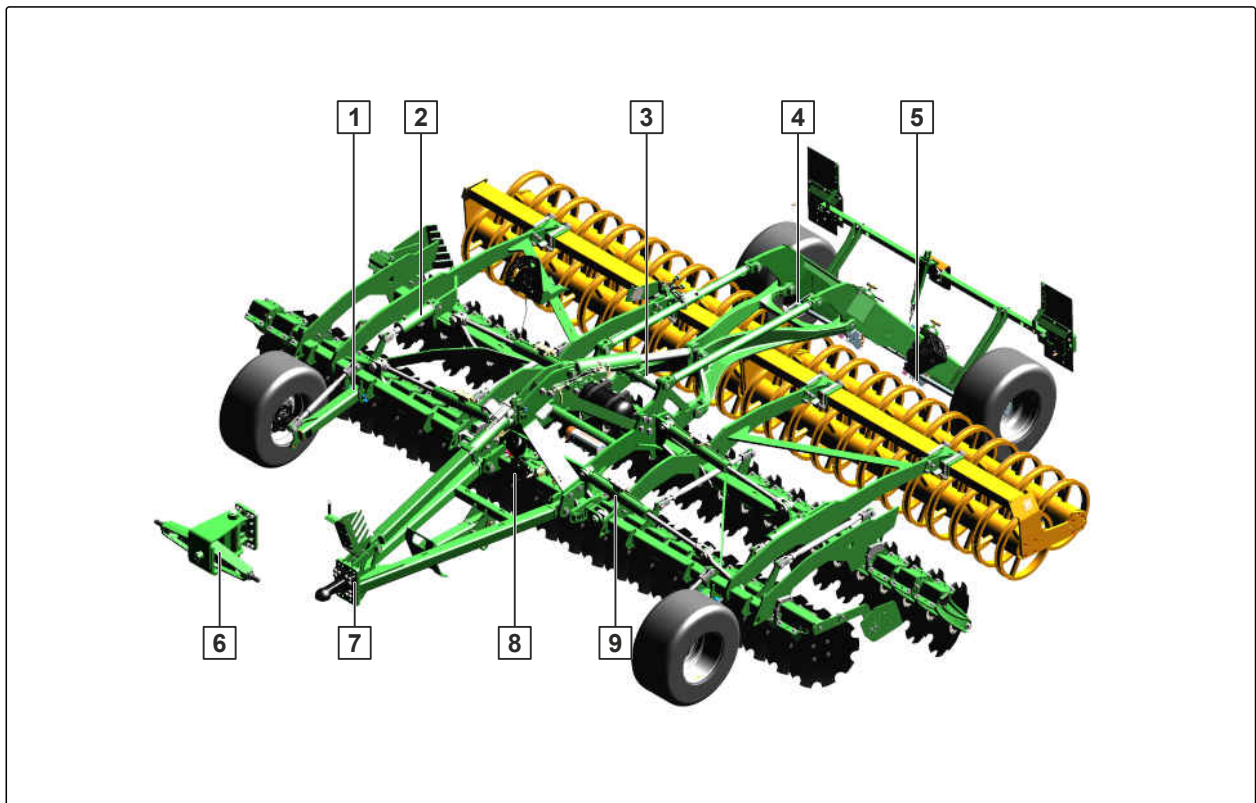


CMS-I-00002270



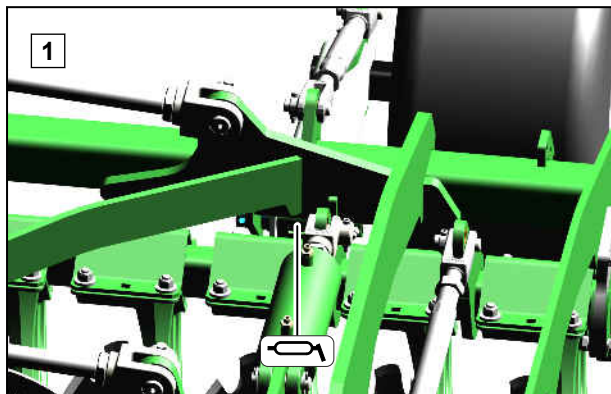
### 10.3.1 Overview of lubrication points

CMS-T-00004969-C.1

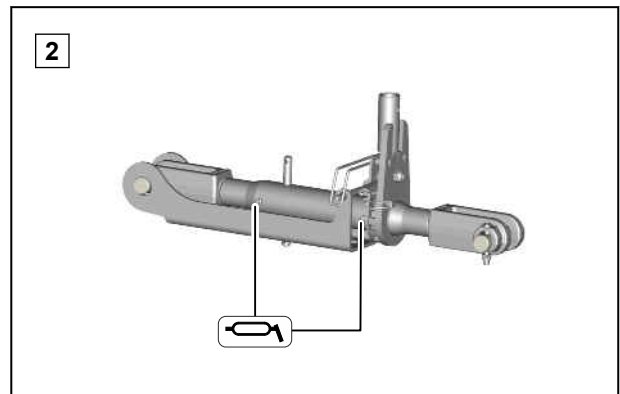


CMS-I-00003571

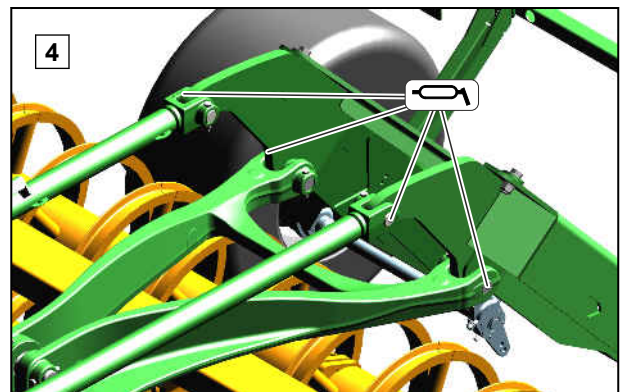
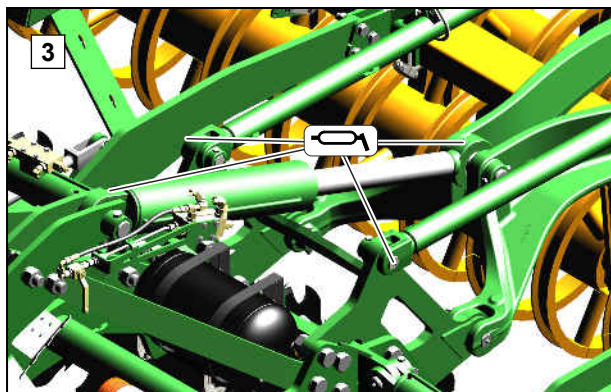
#### Every 50 operating hours



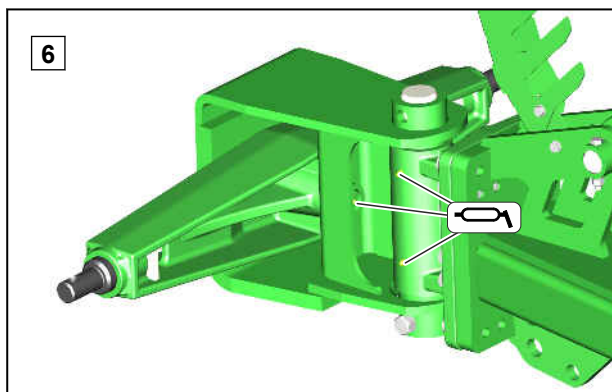
CMS-I-00003569



CMS-I-00002245

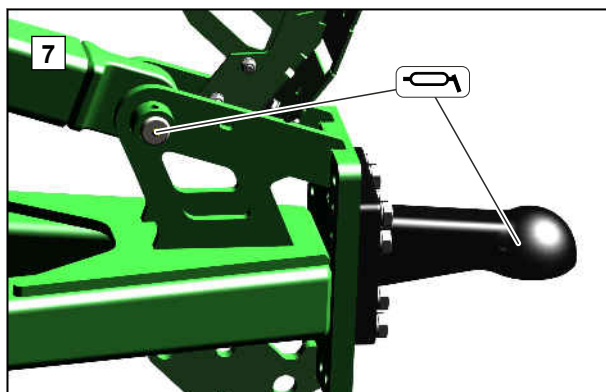


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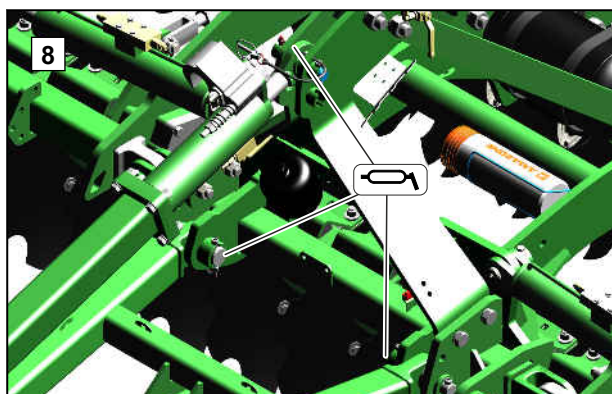


CMS-I-00003563

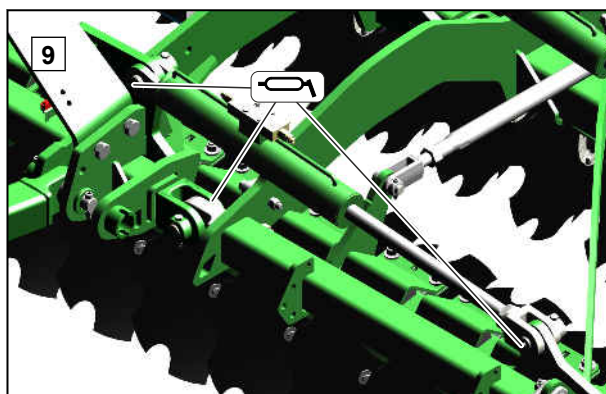
CMS-I-00003567



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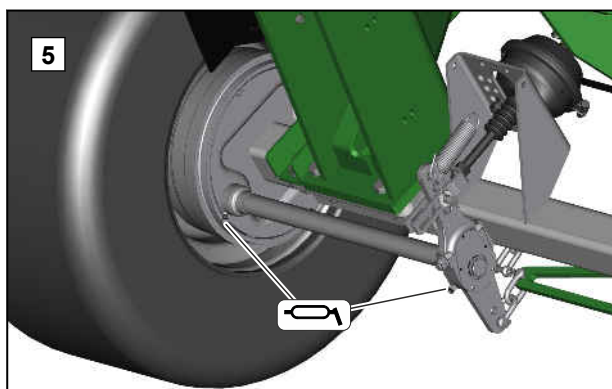


CMS-I-00003566



CMS-I-00003564

### Every 200 operating hours



CMS-I-00004519

### 10.3.2 Lubricating the wheel hubs

CMS-T-00004970-B.1



#### INTERVAL

- Every 500 operating hours
1. Remove the wheel hub cap from the wheel hub.
  2. Fill up the wheel hub cap with grease.
  3. Put the wheel hub cap on the wheel hub.

# Manoeuvring the implement

11

CMS-T-00012147-A.1

## 11.1

### Manoeuvring the implement with dual-circuit pneumatic brake system

CMS-T-00006898-D.1

If the implement is uncoupled from the tractor, the compressed air from the compressed air tank acts on the brakes and the wheels are blocked. To be able to move the uncoupled implement, the compressed air must be vented with the release valve on the brake valve.



#### WARNING

**Risk of accident due to unbraked implement**

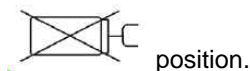
- ▶ *To manoeuvre the implement:*  
Couple the implement to a suitable tractor using the coupling device.
- ▶ Manoeuvre the implement only at walking speed.

There are two versions of brake valves.

1. Press in the control knob **1** of the release valve up to the stop

or

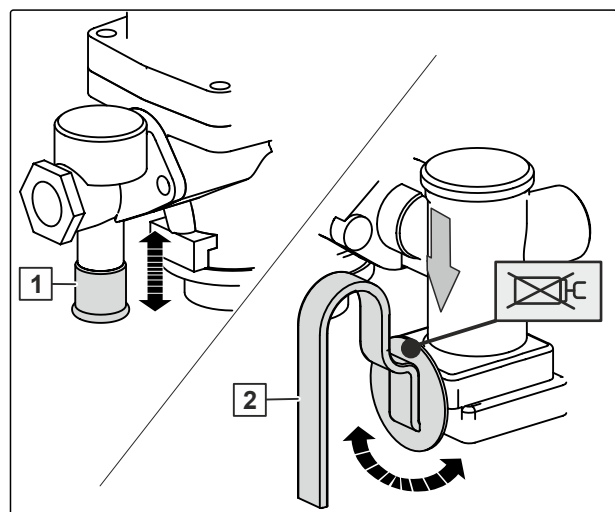
Turn the hand lever **2** of the brake valve to the



position.

- ➔ The compressed air that acts on the brakes escapes.

2. Manoeuvre the implement.



CMS-I-00007826

3. Pull out the control knob of the release valve up to the stop

or

Adjust the hand lever of the brake valve to the load status.

- ➔ Compressed air flows back out of the compressed air tank to the brakes. The wheels are blocked again.



#### NOTE

To brake the implement again, there must be enough compressed air in the compressed air tank.

4. *If there is not enough compressed air:*  
Couple the dual-circuit pneumatic brake system to a tractor.

## 11.2

### Manoeuvring an implement with single-circuit hydraulic brake system

CMS-T-00005208-C.1



#### WARNING

**Risk of accident due to unbraked implement**

- ▶ *To manoeuvre the implement:*  
Couple the implement to a suitable tractor using the coupling device.
- ▶ Manoeuvre the implement only at walking speed.

The single-circuit hydraulic brake system can block the uncoupled implement.

1. *When the single-circuit hydraulic brake system blocks the implement:*

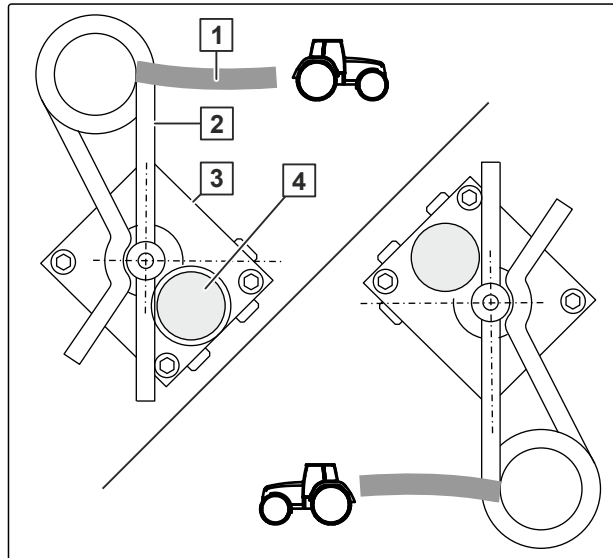
Relieve the pressure in the brake system using the hand pump **4** on the brake valve **3**.



#### NOTE

The hydraulic cylinders of the hydraulic brakes must be completely retracted. The required pumping time is several minutes.

2. Manoeuvre the implement.



CMS-I-00007787



## Loading the machine

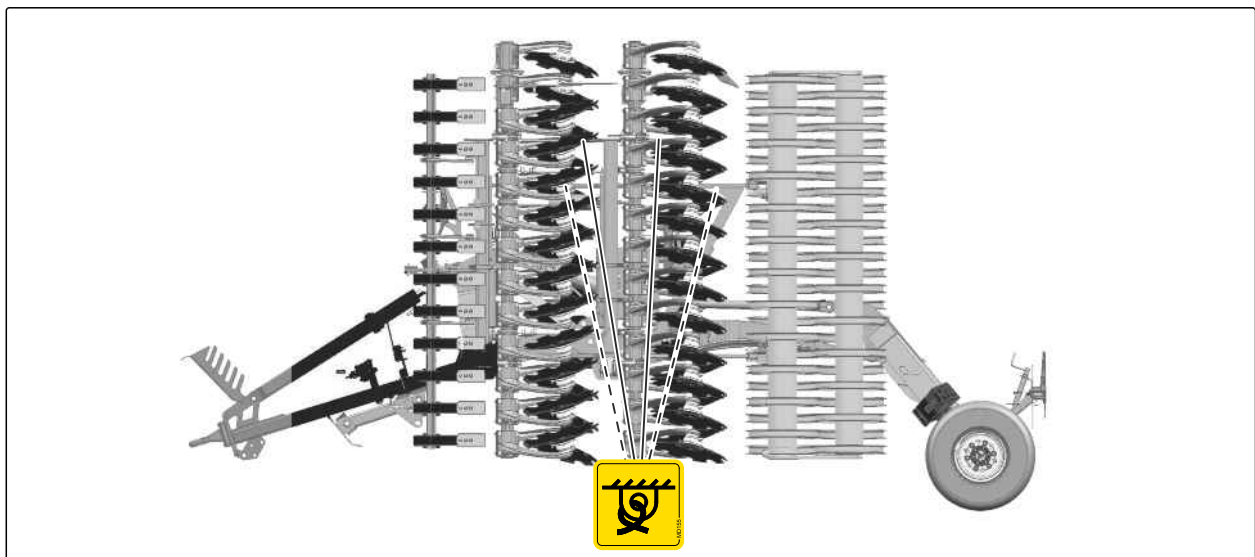
# 12

CMS-T-00004262-F.1

### 12.1 Lashing the implement

CMS-T-00010508-B.1

The implement has 4 lashing points for lashing straps.



CMS-I-00007179



#### **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.

## Disposing of the implement

13

CMS-T-00010906-B.1

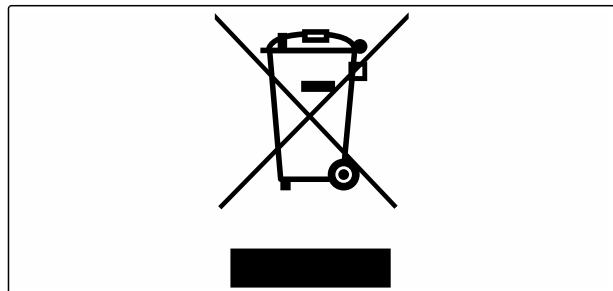


### ENVIRONMENTAL INFORMATION

#### Environmental damage due to improper disposal

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

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



CMS-I-00007999

2. Return batteries to the distributor  
or  
Dispose of batteries at a collection point.
3. Put recyclable materials in the recycling.
4. Treat operating materials like hazardous waste.



### WORKSHOP WORK

5. Dispose of the coolant.



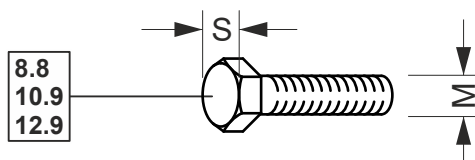
# Appendix

# 14

CMS-T-00000372-D.1

## 14.1 Bolt tightening torques

CMS-T-00000373-E.1



CMS-I-000260

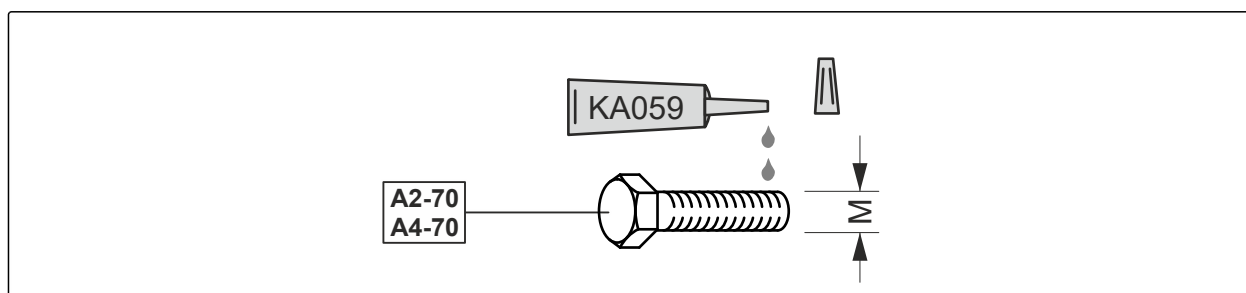


### NOTE

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

## 14.2 Other applicable documents

CMS-T-00000615-A.1

- Tractor operating manual
- Operating manual for the GreenDrill 200-E

# Directories

# 15

## 15.1 Glossary

CMS-T-00000513-B.1

### M

#### Machine

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

### O

#### Operating materials

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

### T

#### Tractor

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

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