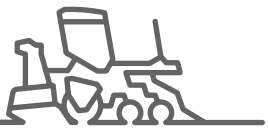
Translation of the original operating instructions

Mechanical pack top seed drill

Cataya 3000 Special



SmartLearning

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

TABLE OF CONTENTS

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-000059-C.1

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

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Safety and responsibility 2

CMS-T-00014340-A.1

2.1 Basic safety instructions

CMS-T-00014341-A.1

2.1.1 Meaning of the operating manual

CMS-T-00006180-A.1

Observe the operating manual

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

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

2.1.2 Safe operating organisation

CMS-T-00002302-D.1

2.1.2.1 Personnel qualification

CMS-T-00002306-B.1

2.1.2.1.1 Requirements for persons working with the implement

CMS-T-00002310-B.1

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

the implement must meet the following minimum requirements:

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

2.1.2.1.2 Qualification levels

CMS-T-00002311-A.1

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

- Farmer
- Agricultural helper

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

2.1.2.1.3 Farmer

CMS-T-00002312-A.1

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

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

Farmers can be e.g.:

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

Activity example:

- Safety training for agricultural helpers

2.1.2.1.4 Agricultural helpers

CMS-T-00002313-A.1

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

Agricultural helpers can be e.g.:

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

Activity examples:

- Driving the machine
- Adjusting the working depth

2.1.2.2 Workplaces and passengers

CMS-T-00002307-B.1

Passengers

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

► Do not let anybody ride on the machine.

► Do not let anybody climb onto the driving machine.

2.1.2.3 Danger for children

CMS-T-00002308-A.1

Danger for children

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

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

2.1.2.4 Operational safety

CMS-T-00002309-D.1

2.1.2.4.1 Perfect technical condition

CMS-T-00002314-D.1

Only use properly prepared machines

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

- Prepare the machine according to this operating manual.

Danger due to damage to the machine

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

- *If you suspect or observe damage:*
  Secure the tractor and machine.
- Repair safety-relevant damage immediately.
- Fix the damage according to this operating manual.
- *If you are not able to fix the damage according to this operating manual yourself:*
  Have the damage repaired by a qualified specialist workshop.

Observe the technical limit values

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

- Comply with the technical limit values.

2.1.2.4.2 Personal protective equipment

CMS-T-00002316-B.1

Personal protective equipment

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

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

Wear suitable clothing

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

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

2.1.2.4.3 Warning symbols

CMS-T-00002317-B.1

Keep warning symbols legible

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

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

2.1.3 Knowing and preventing dangers

CMS-T-00014342-A.1

2.1.3.1 Safety hazards on the machine

CMS-T-00004924-B.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-00011167-A.1

Dangers areas on the implement

The following basic dangers are encountered in the danger areas:

The implement and its work tools move during operation.

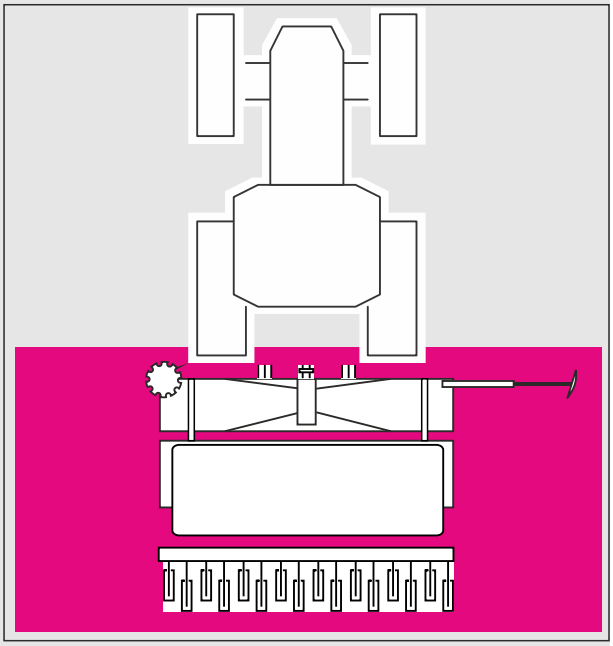
Hydraulically raised implement parts can descend unnoticed and slowly.

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



CMS-I-00007485

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-G.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-F.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, drawbar, trailer support, trailer coupling or tensioned crosspiece as well as axles and axle suspensions, lines and tanks containing flammable substances.

- Allow only qualified specialist workshops with suitably approved personnel to perform welding work on safety-related components.
- Only allow qualified personnel to perform welding work on all other components.
- *If you have doubts as to whether a component can be welded:*
  Ask a qualified specialist workshop.
- *Before welding on the implement:*
  Uncouple the implement from the tractor.
- Do not weld close to a crop protection sprayer that was previously used to spread liquid fertiliser.

2.1.5.3 Operating materials

CMS-T-00002324-C.1

Unsuitable operating materials

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

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

2.1.5.4 Special equipment and spare parts

CMS-T-00002325-B.1

Special equipment, accessories, and spare parts

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

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

2.2 Safety routines

CMS-T-00002300-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-00007168-B.1

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

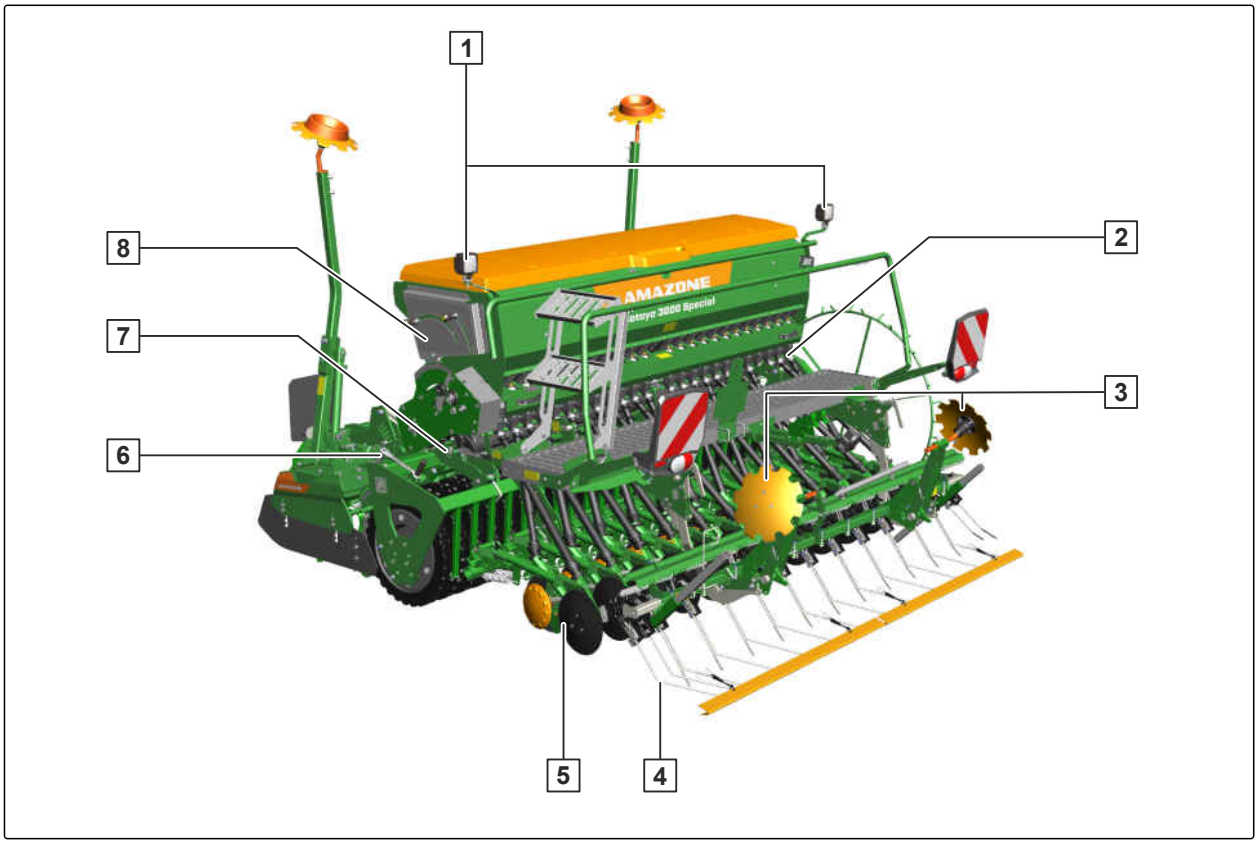
Product description

4

CMS-T-00008712-B.1

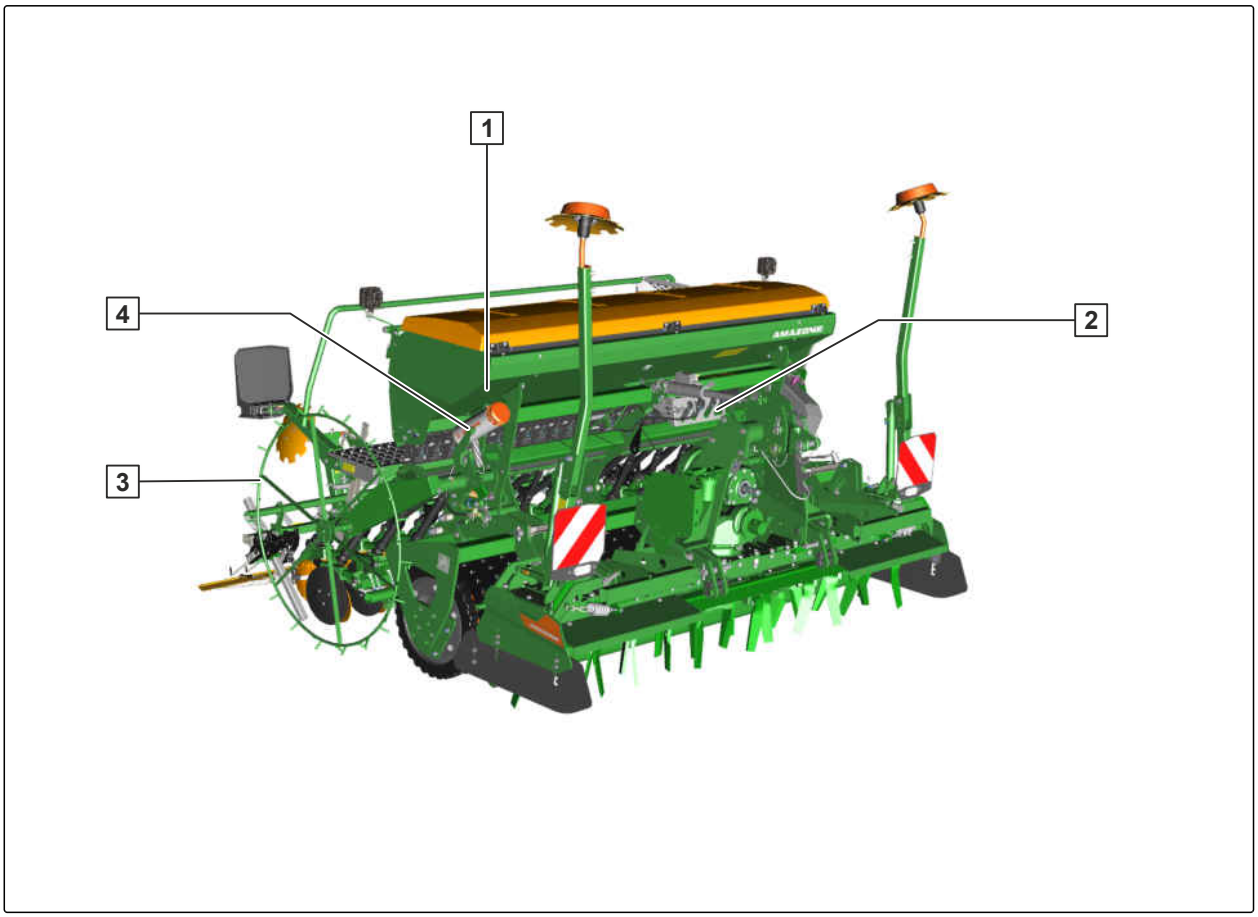
4.1 Implement overview

CMS-T-00008713-A.1



CMS-I-00005890

1	Work floodlights	2	Metering unit
3	Tramline marker	4	Exact following harrow or seed harrow
5	Seeding coulter	6	Universal operating tool
7	QuickLink catching sockets	8	SmartCenter

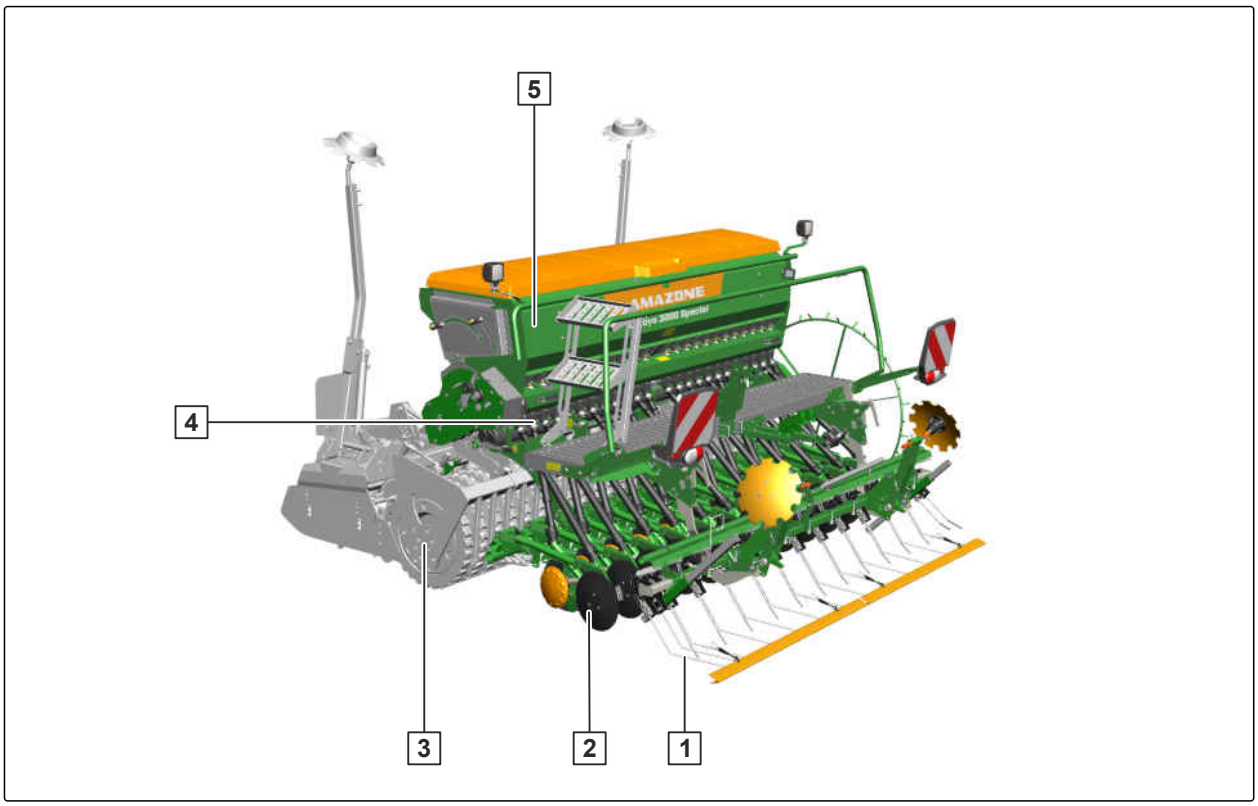


CMS-I-00005891

1	Rating plate	2	Cabinet for hydraulic hose lines, lines for the power supply and ISOBUS line
3	Star wheel	4	Threaded cartridge

4.2 Function of the implement

CMS-T-00008714-A.1



CMS-I-00005892

The implement can only be used with a suitable soil tillage implement 2. The combination enables seedbed preparation and seeding in one field pass.

The metered material is carried in the hopper 5 and is metered by the metering wheels in the seed housings 4. The seeding coulter 2 forms a seed furrow and deposits the metered material in the seedbed. The harrow 1 covers the seed with soil.

4.3 Special equipment

CMS-T-00008715-A.1

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

- Hopper charging sieve
- Handrail on the loading board
- Seed guide elements
- Standard rear lighting for road travel
- Number plate holder with lighting for road travel

- LED work lights, integrated
- LED work lights for the coulters, integrated
- LED work lights, autonomous
- Mechanical top link (long)
- Double chain wheel, short and long gear ratio
- Hydraulic star wheel lift
- Electric tramline control for one-sided metering drive
- Control valve and hydraulic set for tramline marker
- Connection unit for tramline marker (when no track marker is installed)
- Seed metering wheel for peas and beans
- Coulter pressure sensor for seed rate adjustment
- Additional electronic low level sensor
- AmaLog⁺ wiring harness for Cataya
- Radar sensor mounting kit Cataya Special

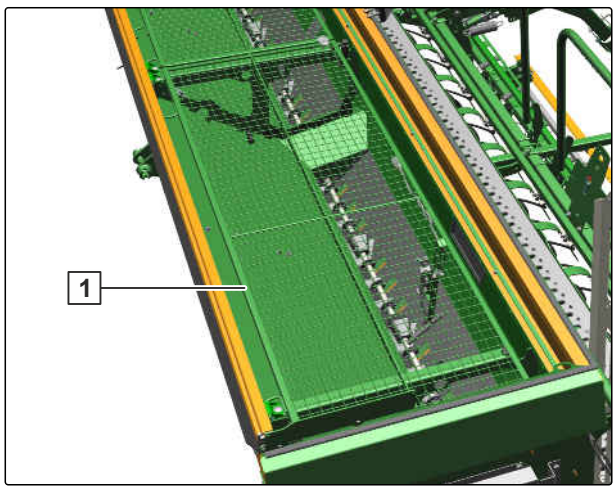
4.4 Protective equipment

CMS-T-00008716-A.1

4.4.1 Charging sieve

CMS-T-00007928-A.1

The charging sieve 1 in the hopper prevents contact with the running agitator shaft.

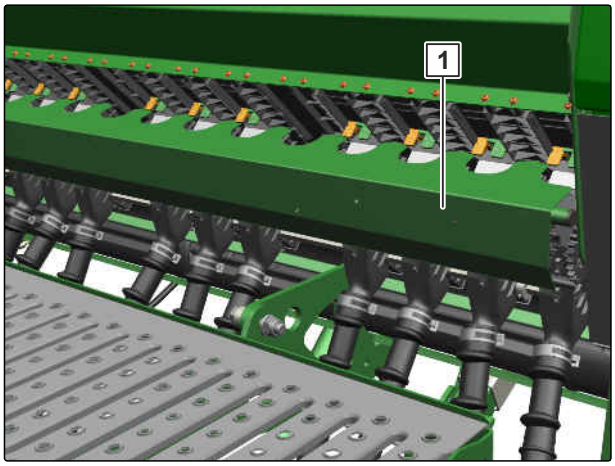


CMS-I-00005523

4.4.2 Metering unit cover

CMS-T-00007936-A.1

The metering unit cover 1 prevents contact with rotating shafts and gear wheels and protects the shafts and gear wheels from dust and dirt.

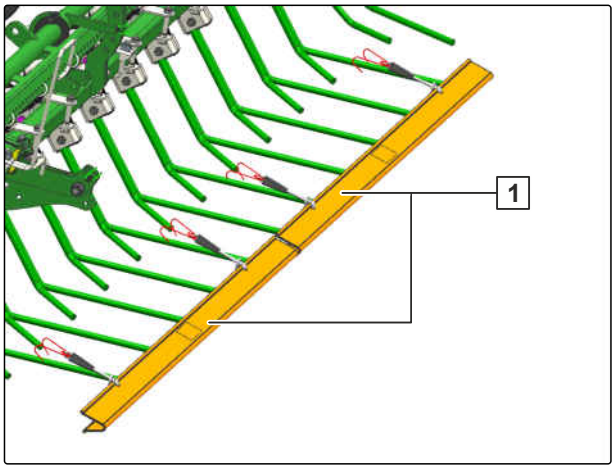


CMS-I-00005526

4.4.3 Road safety bars

CMS-T-00007937-C.1

The road safety bars 1 cover the tines of the exact following harrow or seed harrow during road travel to protect against injury and damage.

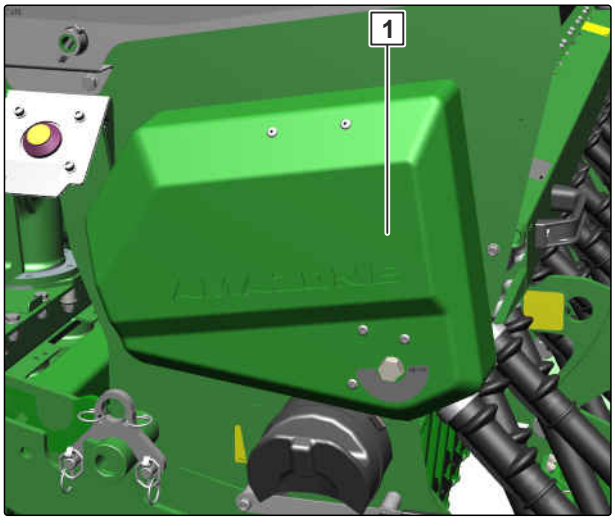


CMS-I-00005527

4.4.4 Metering drive cover

CMS-T-00008717-A.1

The cover 1 prevents contact with the chain drive of the agitator shaft and seeding shaft.



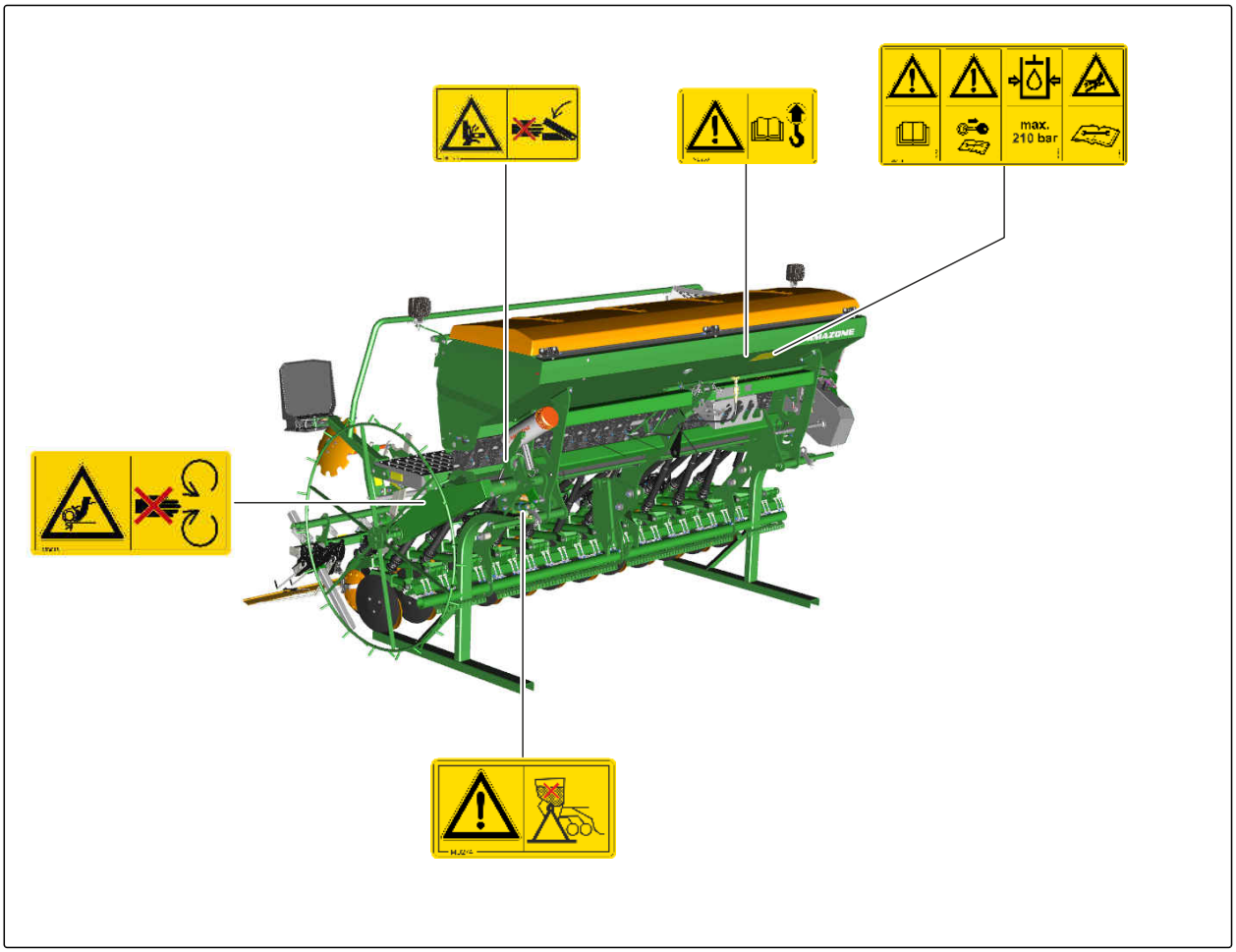
CMS-I-00005893

4.5 Warning symbols

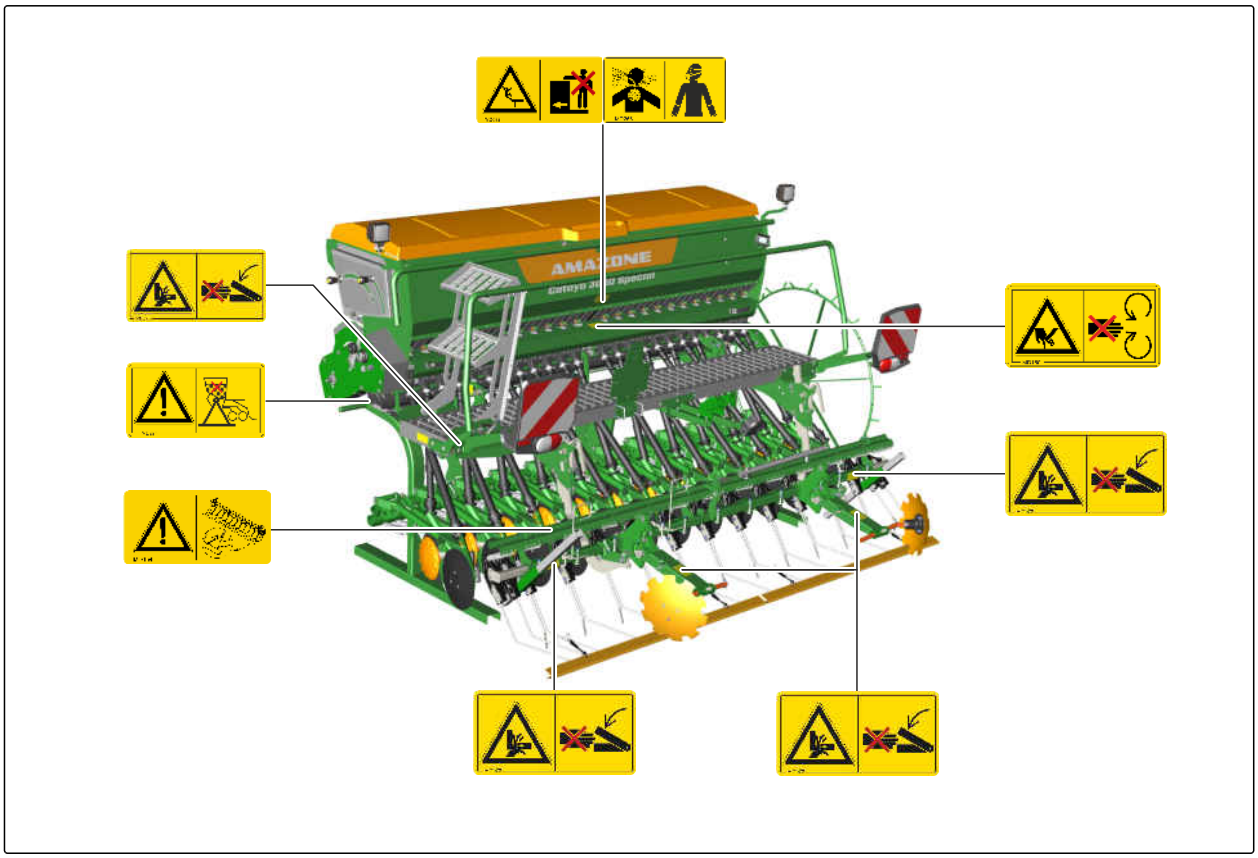
CMS-T-00008718-B.1

4.5.1 Positions of the warning symbols

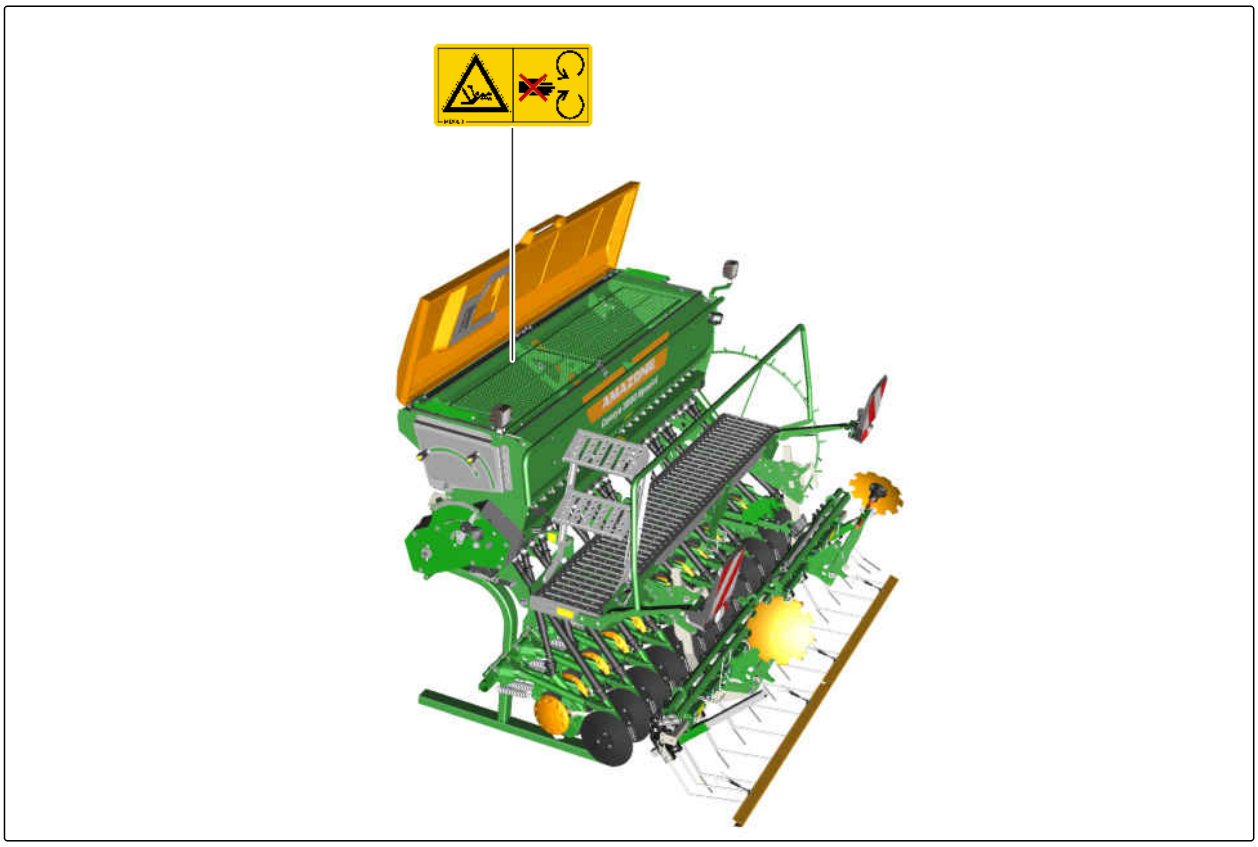
CMS-T-00008720-B.1



CMS-I-00005894



CMS-I-00005895



CMS-I-00005896

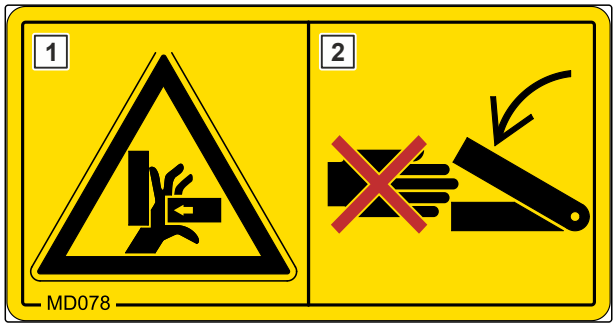
4.5.2 Layout of the warning symbols

CMS-T-000141-D.1

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

A warning symbol consists of two fields:

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



CMS-I-00000416

4.5.3 Description of the warning symbols

CMS-T-00008719-B.1

MD 076

Risk of being drawn in or caught

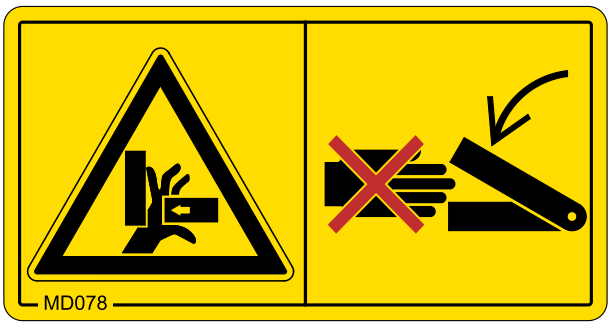
- ▶ *As long as engine of the tractor or machine is running,*
  stay away from the danger area.
- ▶ *As long as engine of the tractor or machine is running,*
  do not remove any protective equipment.
- ▶ Make sure that there is nobody standing in the danger area.

CMS-I-00000419

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.

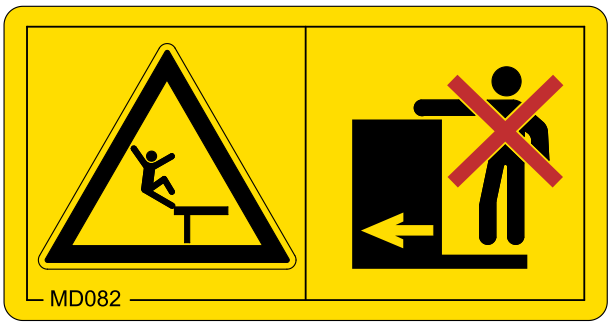


CMS-I-000074

MD 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.

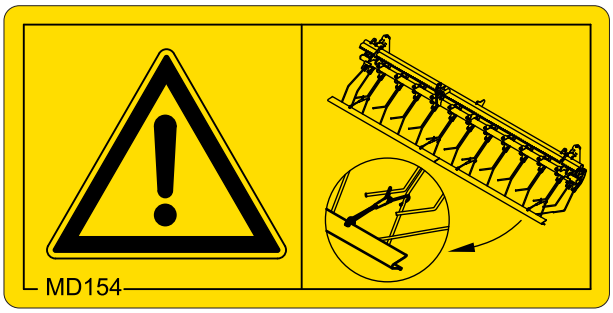


CMS-I-000081

MD 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.

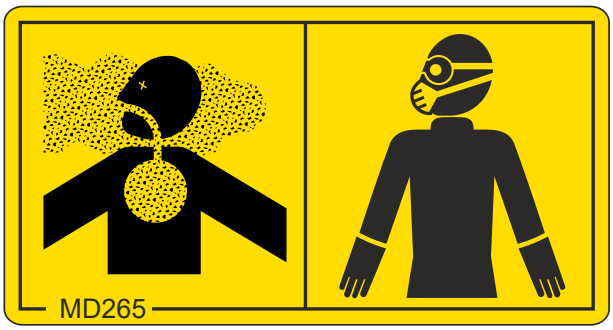


CMS-I-00003657

MD 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

MD095

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

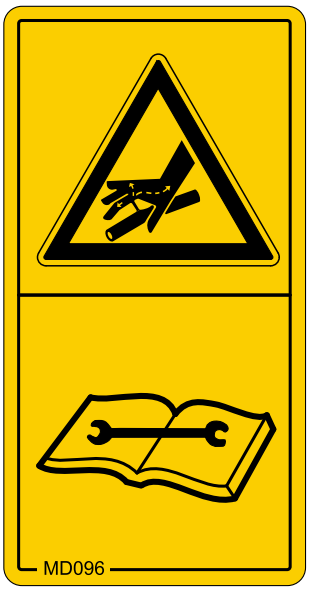
- Before your work on or with the implement, read and understand the operating manual.

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.

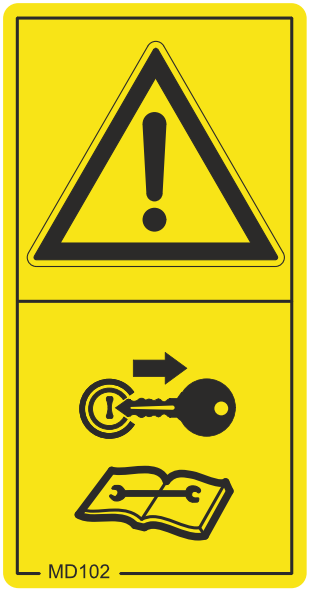


CMS-I-000216

MD 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.

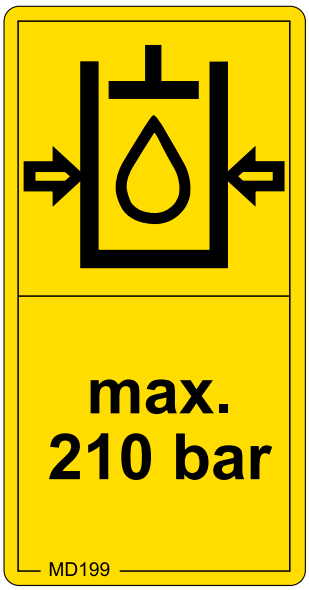


CMS-I-00002253

MD 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 150

Risk of cuts for fingers, hands, and arms

- Disconnect the power supply from the implement before approaching the danger zone.
- Wait until all moving parts are at a standstill before removing the protective equipment and reaching into the danger area.
- Make sure that there is nobody standing in the danger area or close to the moving parts.

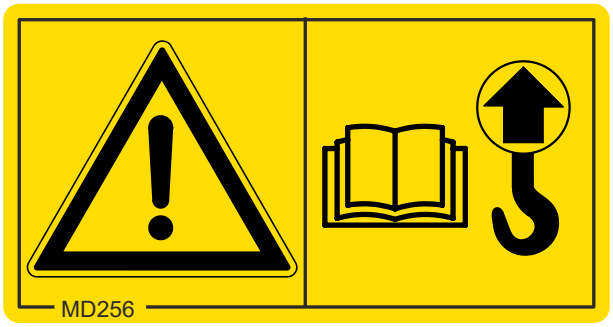
CMS-I-00005538

MD 256

Risk of accidents due to improperly attached slings for lifting

If the slings are attached to unsuitable lashing points for lifting, the implement can be damaged during lifting and endanger safety.

- Only attach the slings for lifting at the suitable lashing points.
- The suitable lashing points can be found in the operating manual, see Transporting the implement.
- *To determine the required load-bearing capacity of the slings,* observe the specifications in the following table.



CMS-I-00005075

MD 274

Risk of crushing due to the implement falling over

- Empty the seed hopper.
- *Before you park the empty pack top implement,* install the parking supports.

CMS-I-00004664

4.6 Rating plate on the implement

CMS-T-00004505-G.1

1 Implement number

2 Vehicle ID number

3 Product

4 Permissible technical implement weight

5 Model year

6 Year of manufacture

CMS-I-00004294

4.7 Threaded cartridge

CMS-T-00001776-E.1

The threaded cartridge contains the following items:

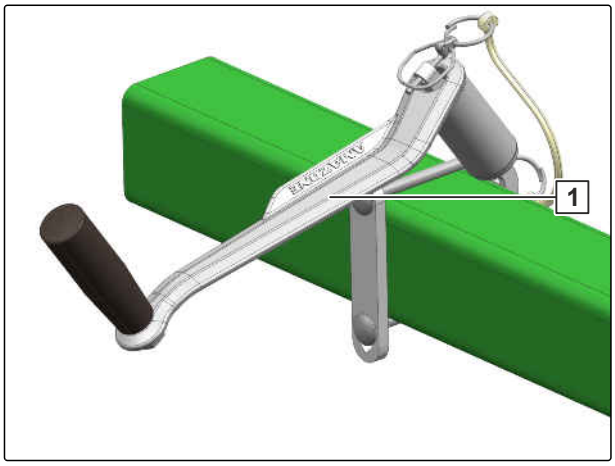
- Documents
- Aids

CMS-I-00002306

4.8 Universal operating tool

CMS-T-00001735-C.1

Setting work on the implement is performed with the universal operating tool 1. The universal operating tool is parked in a holder on the implement frame.



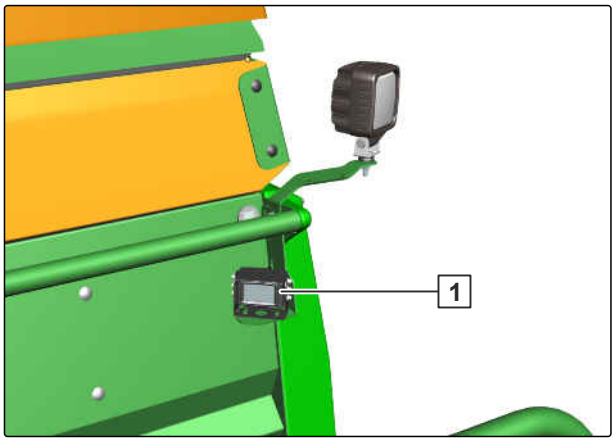
CMS-I-00001082

4.9 Camera system

CMS-T-00008580-B.1

The camera 1 at the rear of the pack top seed drill increases safety when manoeuvring.

The monitor can display several camera images simultaneously.



CMS-I-00005836

4.10 Radar sensor

CMS-T-00001778-C.1

On electric drives, the radar sensor records the working speed. The working speed is used to determine the worked area and the required speed for the metering drives.

CMS-I-00002221

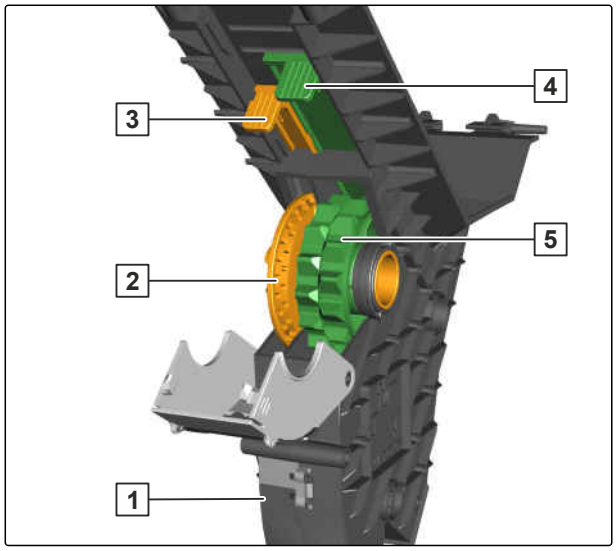
4.11 Metering system

CMS-T-00008573-A.1

The seed goes into the metering housing **1** through adjustable openings.

Each metering housing has 2 openings. The openings are adjusted with the coarse metering wheel sliding shutter **4** and the fine metering wheel sliding shutter **3**.

The seed is metered by the coarse metering wheel **5** or the fine metering wheel **2**.

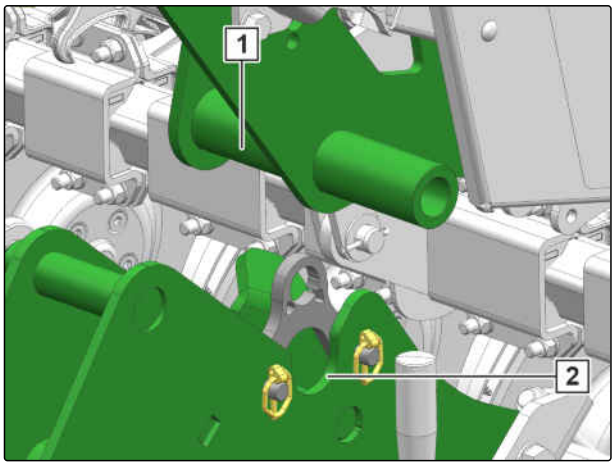


CMS-I-00005829

4.12 Mounting frame

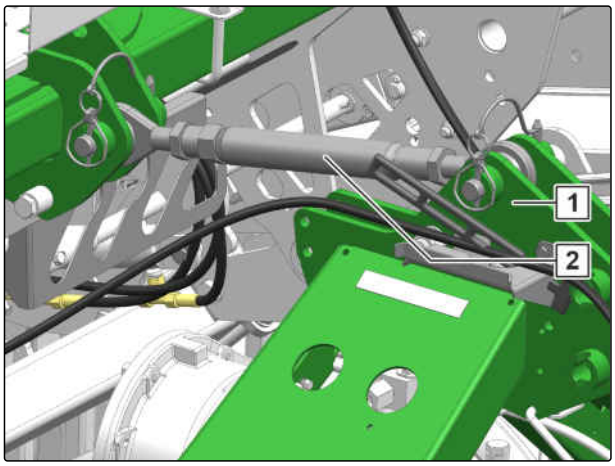
CMS-T-00004881-C.1

The pack top seed drill is fastened on the soil tillage implement [2] with 2 mounts [1].



CMS-I-00003592

In addition, the pack top seed drill is connected to the soil tillage implement [1] with a top link [2].



CMS-I-00004568

4.13 Lighting

CMS-T-00008727-A.1

4.13.1 Rear lighting and identification for road travel

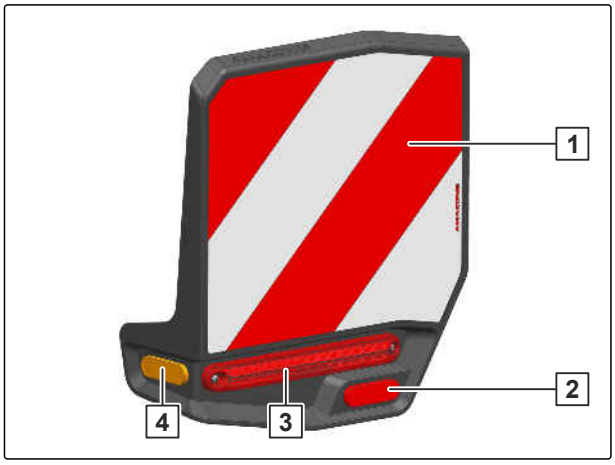
CMS-T-00001498-F.1

[1] Warning signs

[2] Reflector, red

[3] Rear lights, brake lights, and turn indicators

[4] Reflector, yellow



CMS-I-00004545

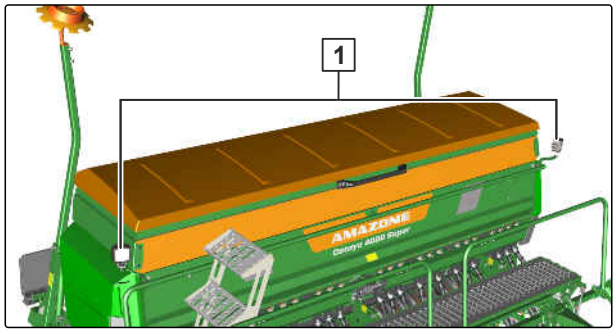
NOTE

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

4.13.2 Work lights

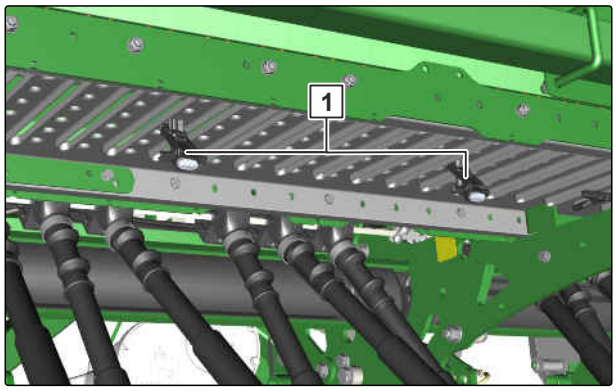
CMS-T-00008301-A.1

The work floodlights [1] make the working area more visible in the dark. The work floodlights are switched via the control terminal or the control computer.



CMS-I-00005665

The coulter array lighting [1] enables better visibility of the seeding coulters in the dark. The coulter array lighting is switched together with the work floodlights via the control terminal or control computer.



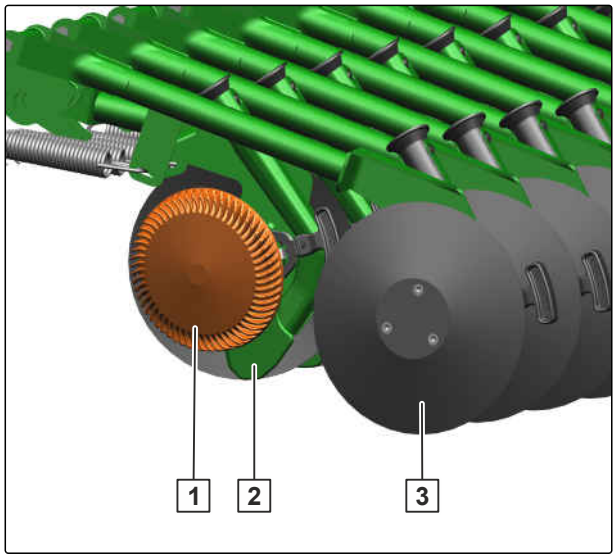
CMS-I-00005664

4.14 RoTeC coulter

CMS-T-00006297-B.1

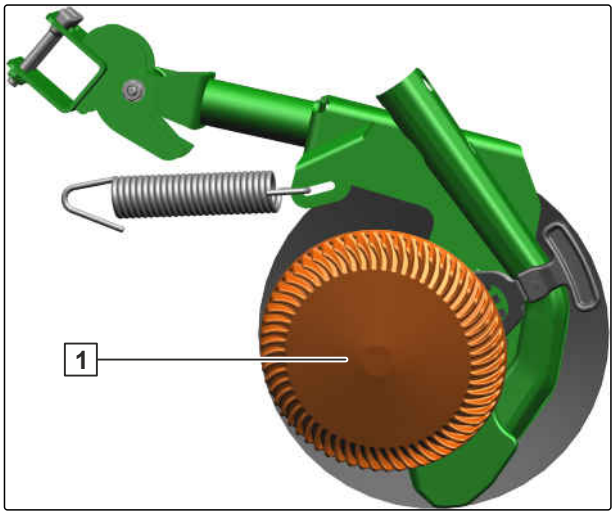
The RoTeC coulter is a single disc coulter and it deposits seed and fertiliser on ploughed or mulched soil. The furrow former [2] and the cutting discs [3] shape the seed furrow, into which the metered material is dropped. The depth control discs and depth control wheel [1] limit the placement depth and clean the cutting discs. The coulter pressure and the placement depth can be adjusted.

For soil tillage without seeding, the coulters can be lifted.



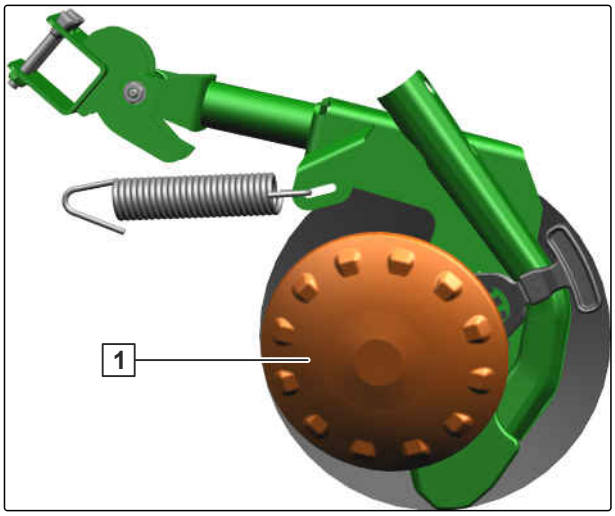
CMS-I-00004578

The Control 25 depth control wheel 1 has a 25 mm wide contact area and enables shallow seeding with increased coulter pressure on light soils.



CMS-I-00004586

The Control 10 depth control disc 1 has a 10 mm wide contact area and is used on heavy soils.

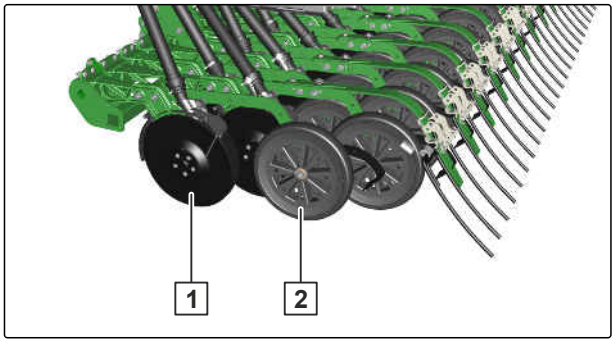


CMS-I-00004585

4.15 TwinTeC Special coulter

CMS-T-00008728-A.1

The TwinTeC Special coulter is a double-disc coulter that deposits seed and fertiliser on ploughed or mulched soil. The cutting discs 1 form the seed furrow. The metered material is guided between the concave discs and falls into the seed furrow. The depth control wheel 2 guides the double disc coulter at the set placement depth and ensures soil closure over the metered material. The coulter pressure and the placement depth can be adjusted.



CMS-I-00005976

For soil tillage without seeding, the coulters can be lifted.

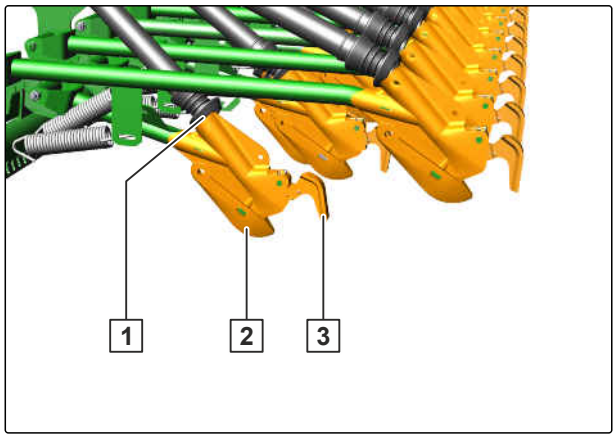
4.16 WS drag coulter

CMS-T-00008748-A.1

Pack top seed drill with the WS drag coulters are used for plough seeding.

A guide funnel [1] delivers the seed immediately behind the share tip [2].

The swivelling coulter support [3] prevents the coulter outlet from clogging when the seeding combination is set down.



CMS-I-00005985

4.17 Exact following harrow

CMS-T-00006330-C.1

The harrow tines [2] of the exact following harrow rest horizontally on the ground and cover the deposited metered material evenly with loose soil.

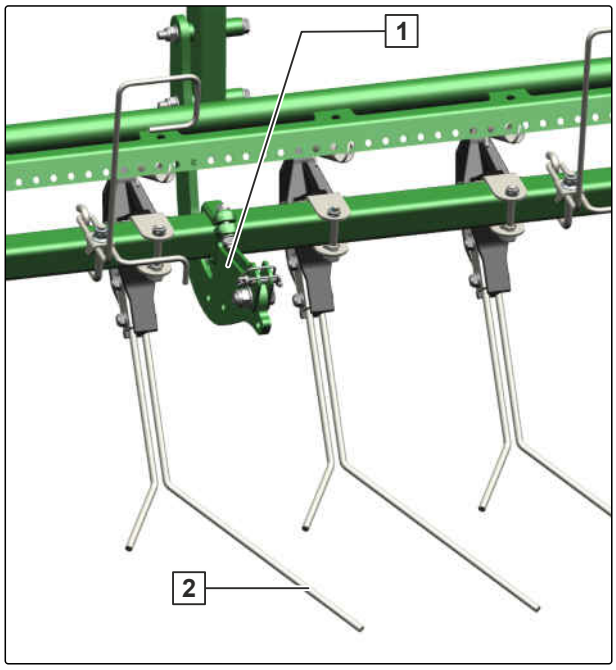
The position of the harrow tines can be adjusted.

The exact following harrow pressure determines the tillage intensity of the exact following harrow. The pressure can be adjusted mechanically or hydraulically. With hydraulic adjustment, the exact following harrow pressure is adjusted together with the coulter pressure.

For seed drills with exact following harrow lift, the exact following harrow can be lifted independently of the position of the coulters.

There is a bracket [1] that is secured with a linch pin on each side of the exact following harrow. The bracket prevents the harrow tines from folding over when driving in reverse and entering the coulters.

If a slight collision occurs when driving in reverse, the harrow tines deflect on the obstacle without being damaged. When driving forwards, the harrow tines return to working position.



CMS-I-00004589

4.18 Seed harrow

CMS-T-00012185-A.1

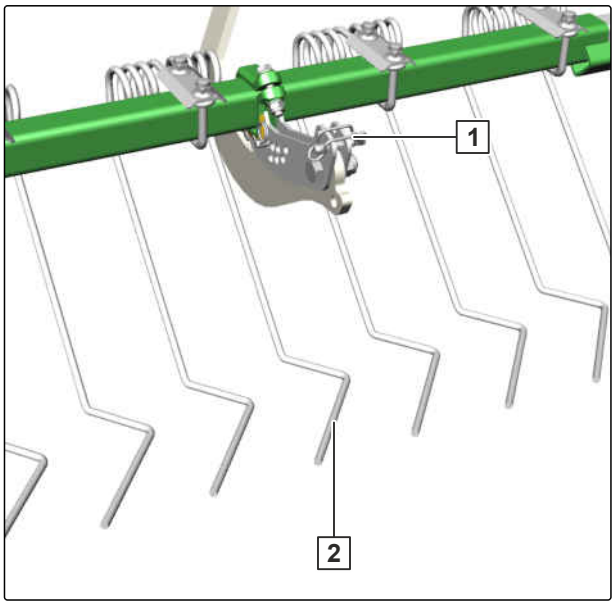
The harrow tines 2 of the seed harrow rest horizontally on the ground and cover the deposited metered material evenly with loose soil.

The position of the harrow tines can be adjusted.

The seed harrow pressure determines the tillage intensity of the seed harrow. The pressure can be adjusted mechanically.

There is a bracket 1 that is secured with a linch pin on each side of the seed harrow. The bracket prevents the harrow tines from folding over when driving in reverse and entering the coulters.

If a slight collision occurs when driving in reverse, the harrow tines deflect on the obstacle without being damaged. When driving forwards, the harrow tines return to working position.



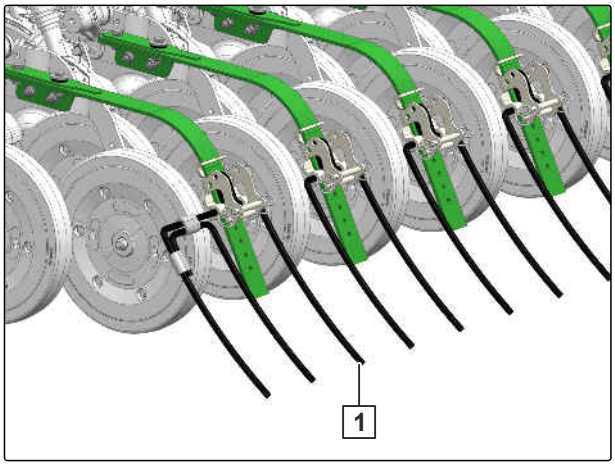
CMS-I-00007862

4.19 Coulter harrow

CMS-T-00006648-C.1

The harrow tines 1 of the coulter harrow cover the deposited metered material evenly with loose soil.

The pitch and the height of the harrow tines can be adjusted.



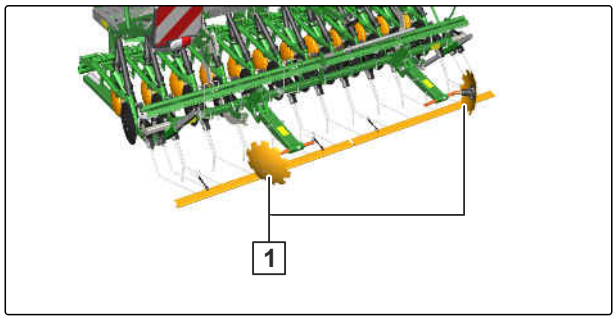
CMS-I-00004734

4.20 Tramline marker

CMS-T-00008736-A.1

When creating tramlines, the tramline marker automatically lowers the discs 1 and makes tracks. These tracks make the tramlines visible before the seed has germinated. The discs are raised if no tramline is created.

Depending on the implement equipment, a different number of discs can be installed on the implement. The track width and the pitch of the track discs can be adjusted.



CMS-I-00005978

4.21 Track marker

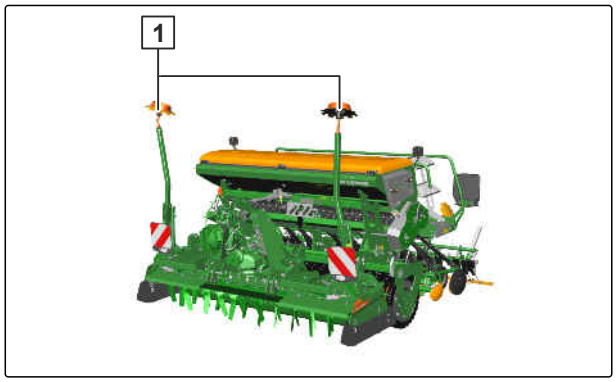
CMS-T-00008729-A.1

The track markers 1 dig into the ground alternately beside the implement.

The next bout is automatically connected when the tractor driver passes over the centre of the created track.

The length and scope of action of the track marker can be adjusted.

When the track markers pass an obstacle or the tractor turns around, the track markers must be lifted.



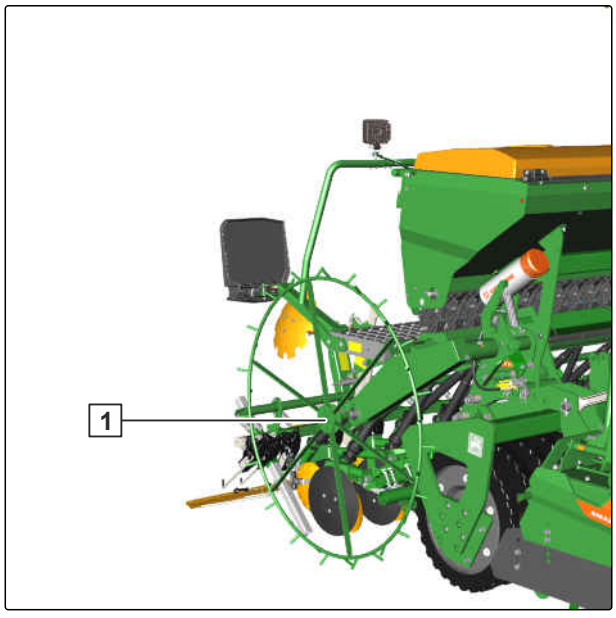
CMS-I-00005977

4.22 Star wheel

CMS-T-00009003-A.1

The star wheel 1 drives the seeding shaft with the metering wheels on implements with mechanical drive.

The pulses from the star wheel serve to calculate the working speed and the area to be worked.



CMS-I-00006222

Technical data

5

CMS-T-00008737-B.1

5.1 Hopper volume

CMS-T-00008739-A.1

Implement version	Hopper volume
Cataya 3000 Special (without extension)	650 l
Cataya 3000 Special (with extension)	850 l

5.2 Dimensions

CMS-T-00008740-A.1

Dimensions	Cataya 3000 Special
Transport width	3 m
Working width	3 m

5.3 QuickLink quick-coupling system

CMS-T-00003190-D.1

Working width of the implement	Distance of the QuickLink catching sockets
2.5 m	1,529 mm ± 3 mm
3 m	2,029 mm ± 3 mm
3.5 m	2,529 mm ± 3 mm
4 m	3,029 mm ± 3 mm

5.4 Forward speed

CMS-T-00008742-B.1

Optimal working speed TwinTeC Special coulter	8 km/h to 12 km/h
Optimal working speed RoTeC coulter	6 km/h to 12 km/h
Optimal working speed WS coulter	5 km/h to 8 km/h
Permissible transport speed	60 km/h

5.5 Soil tillage implement

CMS-T-00008749-A.1

Dimensions	Cataya 3000 Special				
	with TwinTeC Special coulters		with RoTeC coulters		with WS coulters
Number of rows	24	20	32	26	24
Row spacing	12.5 cm	15 cm	12.5 cm	15.4 cm	12.5 cm

5.6 Permitted mounting categories

CMS-T-00008751-A.1

Type	Mounting frame for the seed drill	3-point mounting frame of the carrying implement
Cataya 3000 Special	QuickLink	Category 3

5.7 Permissible payload

CMS-T-00011018-E.1

Permissible payload for operation
Permissible payload = G_Z - G_L = _____ kg

- G_Z: Permissible technical implement weight according to the rating plate [kg]
- G_L: Determined tare weight [kg]

5.8 Noise development data

CMS-T-00008752-A.1

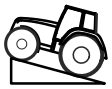
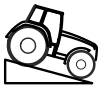
The details for the workplace-related emission values (sound pressure level) can be found the operating manual of your soil tillage implement.

The noise level mainly depends on the tractor used.

5.9 Drivable slope inclination

CMS-T-00004990-A.1

Across the slope		
On left in direction of travel	10%	
On right in direction of travel	10%	

Up the slope and down the slope		
Up the slope	10%	
Down the slope	10%	

5.10 Performance characteristics of the tractor

CMS-T-00008754-A.1

Type	Engine rating
Cataya 3000 Special	Starting at 81 kW / 110 hp

Electrical system	
Battery voltage	12 V
Lighting socket	7-pin

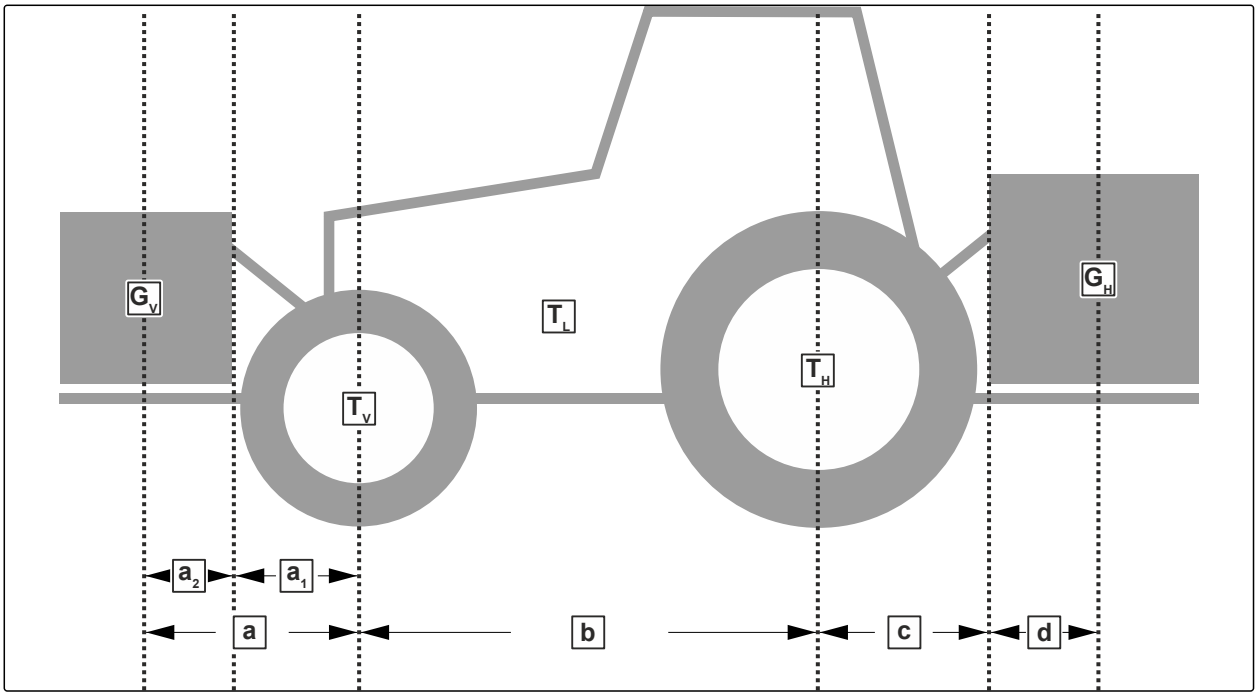
Hydraulic system	
Maximum operating pressure	210 bar
Tractor pump output	At least 10 l /min at 150 bar
Implement hydraulic oil	HLP68 DIN51524 The hydraulic oil is suitable for the combined hydraulic oil circuits of all standard tractor manufacturers.
Control units	Depending on the implement equipment

Preparing the implement 6

CMS-T-00008755-C.1

6.1 Calculating the required tractor characteristics

CMS-T-00000063-F.1



CMS-I-00000581

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

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

1. Calculate the minimum front ballasting.

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

G_{Vmin} = _____

G_{Vmin} =

CMS-I-00000513

2. Calculate the actual front axle load.

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

T_{Vtat} = _____

T_{Vtat} =

CMS-I-00000516

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

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

$$G_{tat} =$$

$$G_{tat} =$$

CMS-I-00000515

4. Calculate the actual rear axle load.

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

$$T_{Htat} =$$

$$T_{Htat} =$$

CMS-I-00000514

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

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

IMPORTANT

Danger of accident due to implement damage caused by excessive loads

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

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

6.2 Coupling the implement

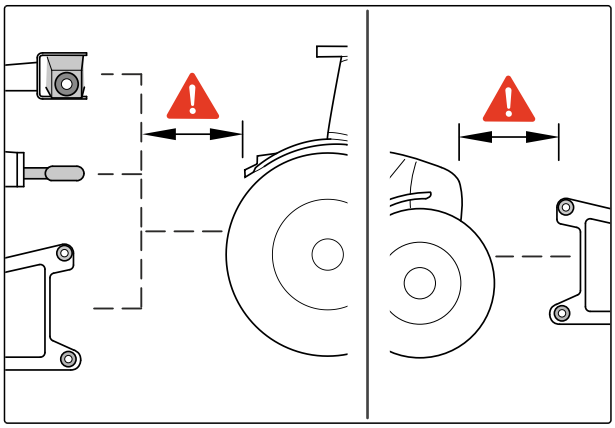
CMS-T-00008756-B.1

6.2.1 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.



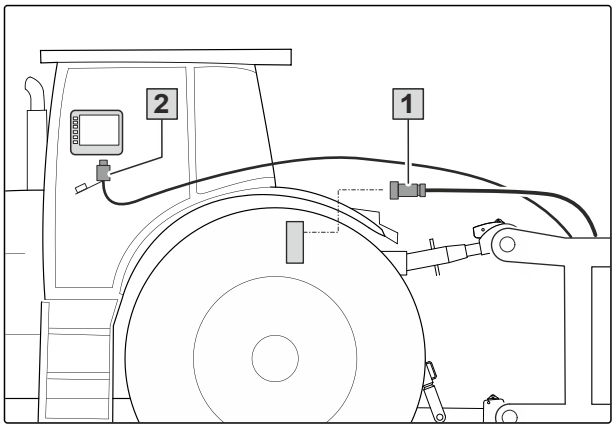
CMS-I-00004045

6.2.2 Coupling the ISOBUS or control computer

CMS-T-00003611-F.1

1. Insert the plug of the ISOBUS line **1** or control computer line **2**.

2. Route the ISOBUS line with sufficient freedom of movement and without chafing or pinching points.



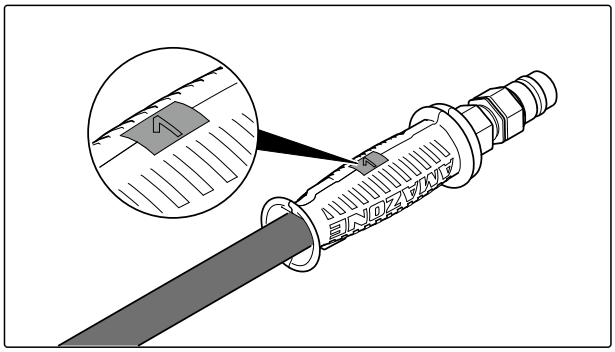
CMS-I-00006891

6.2.3 Coupling the hydraulic hose lines

CMS-T-00008760-B.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	
Yellow			Tramline marker	Lifting	Single-acting	
Green			Coulter pressure Seed rate increase Exact following harrow pressure	Increase	Single-acting	
			Coulter lift (via the top link)	Lifting	Double-acting	
				Lowering		

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.

IMPORTANT

Implement damage due to insufficient hydraulic oil return flow

- Only use lines of size DN16 or larger for the pressureless hydraulic oil return flow.
- Select short return paths.
- Connect the pressureless hydraulic return flow to the intended coupling.
- *Depending on the implement equipment:* couple the leakage oil line in the intended coupling.
- Install the supplied coupling sleeve on the pressureless hydraulic oil return.

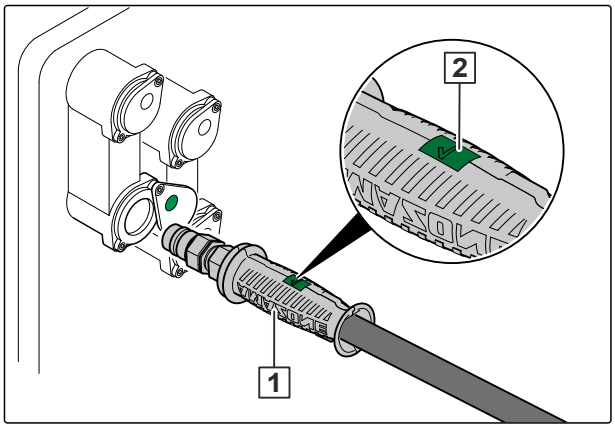
1. Depressurise the hydraulic system between the tractor and the implement using the tractor control unit.

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

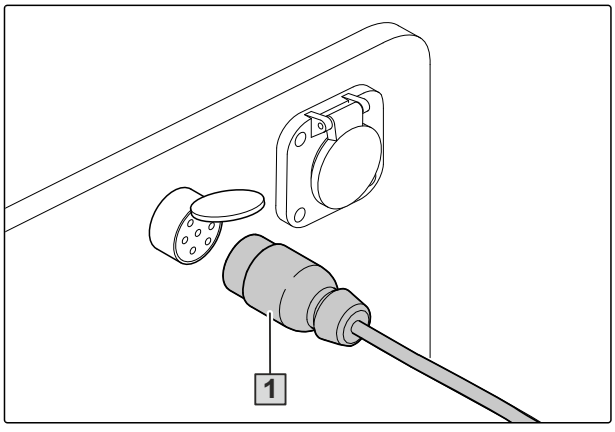
6.2.4 Coupling the power supply

CMS-T-00001399-G.1

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

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

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



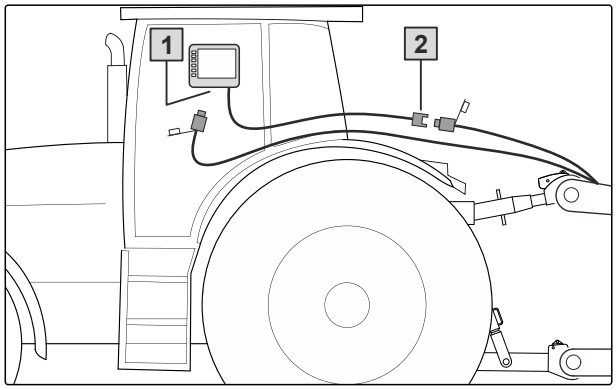
CMS-I-00001048

6.2.5 Connecting the camera system

CMS-T-00007677-B.1

1. Depending on the implement equipment, insert the plug for the camera system into the control terminal **1** or into an extension cable **2** at the rear of the tractor.

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



CMS-I-00007453

6.2.6 Coupling the 3-point mounting frame

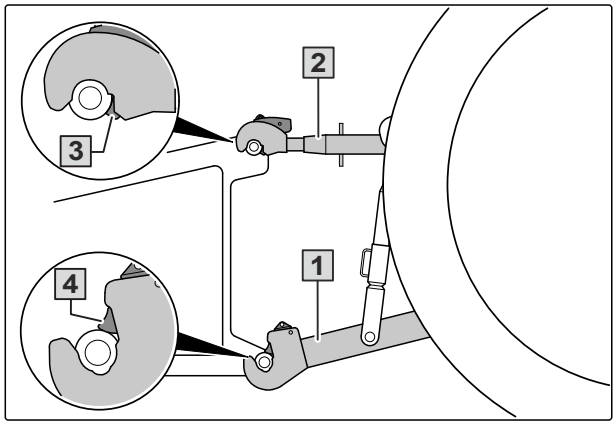
CMS-T-00001400-G.1

1. Set the tractor lower links **1** to the same height.

2. Couple the lower links **1** from the tractor seat.

3. Couple the top link **2**.

4. Check whether the top link catch hooks **3** and lower link catch hooks **4** are correctly locked.



CMS-I-00001225

6.2.7 Coupling the Cataya pack top seed drill

CMS-T-00008761-A.1

CMS-I-00007637

On the KE/KX/KG rotary cultivator with 1-tube roller frame, the top link is adjusted to a length of 620 mm.

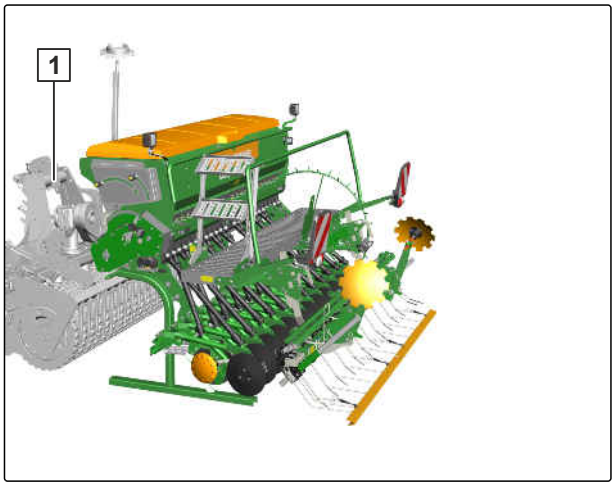
On the KE/KX/KG rotary cultivator with 2-tube roller frame, the top link is adjusted to a length of 680 mm.

On the CombiDisc 3000 compact disc harrow, the top link is adjusted to a length of 1,015 mm.

WARNING

Risk of accident due to parking supports falling down

- ▶ *The parking supports do not have a locking device,*
  remove the parking supports before setting off.



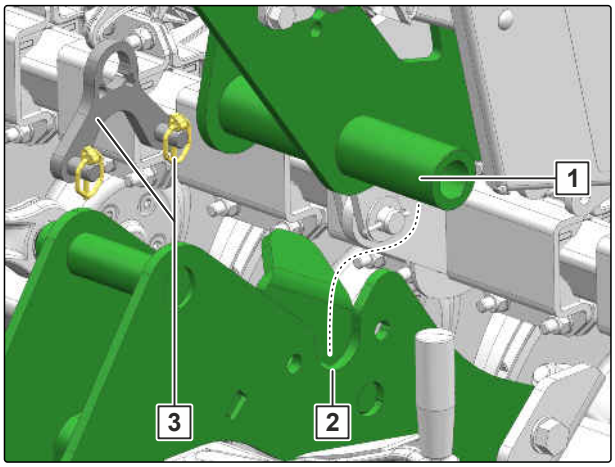
CMS-I-00005991

1. Slowly drive the tractor with the coupled soil tillage implement 1 under the pack top seed drill.

2. Remove the safety clip 3.

3. Slowly lift the soil tillage implement.

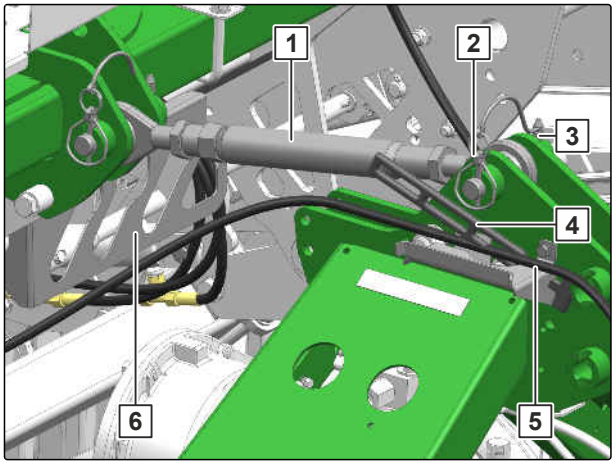
➡ The pack top seed drill 1 rests in the catching sockets 2 of the soil tillage implement.



CMS-I-00003590

NOTE

The top edge of the hopper must be level when coupling on level ground.



CMS-I-00004526

4. Attach the top link 1 with the pin 3.

5. Secure the pin with the linch pin 2.

6. Place the hydraulic hose lines from the hose cabinet 6 in the guide 5.

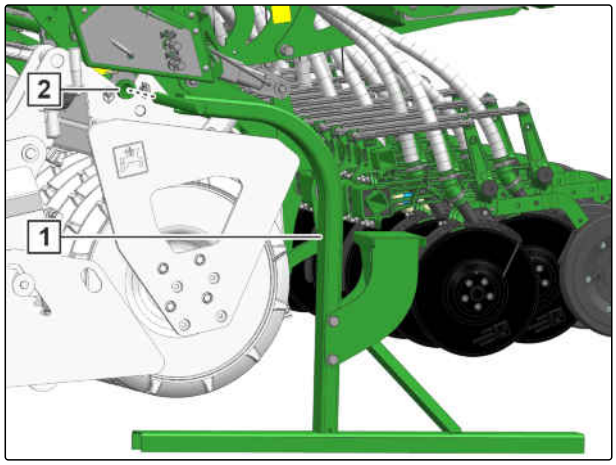
7. Route the supply line for the job computer over the centre frame to the interface on the tractor.

8. Fasten the hydraulic hose lines and supply line with the holder 4.

9. Adjust the top link to the desired length.

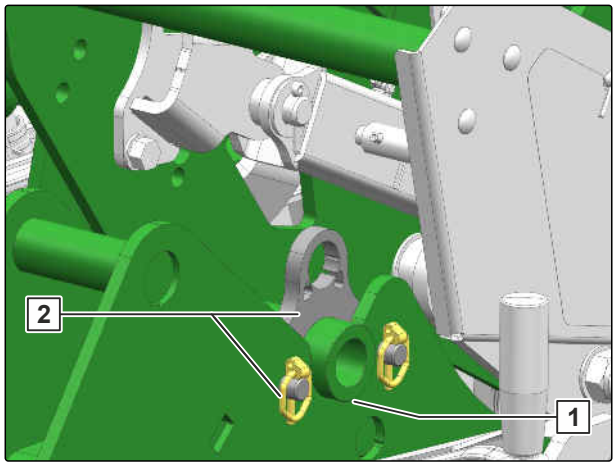
10. Lift the soil tillage implement with the coupled seed drill.

11. Remove the parking supports [1] from the implement [2] on both sides.



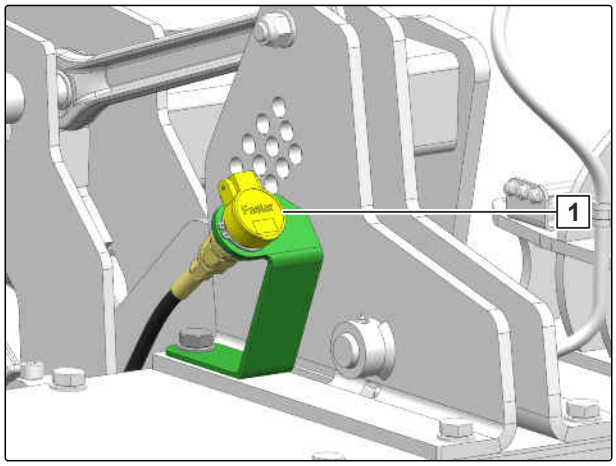
CMS-I-00004938

12. Install the safety clips [2] on all of the brackets [1].



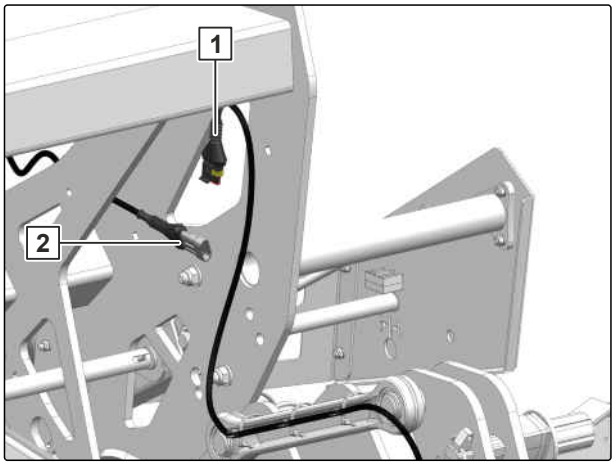
CMS-I-00003593

13. *If the seed drill has a tramline marker,* connect the supply line of the seed drill to the soil tillage implement [1].



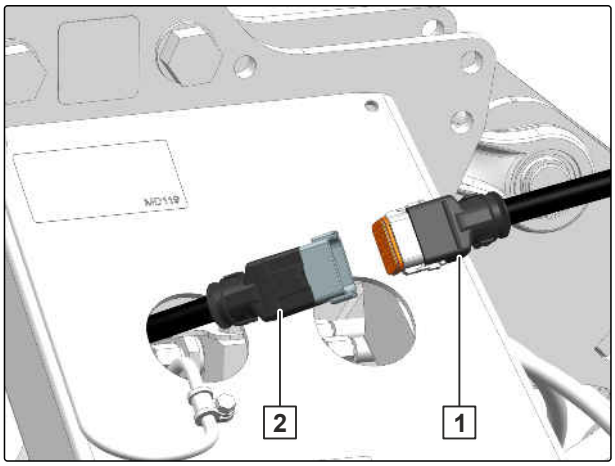
CMS-I-00003485

14. Connect the supply line 2 for the rear lighting and identification to the soil tillage implement 1.



CMS-I-00004527

15. Connect the supply line 1 to the soil tillage implement 2.



CMS-I-00004528

6.3 Preparing the implement for operation

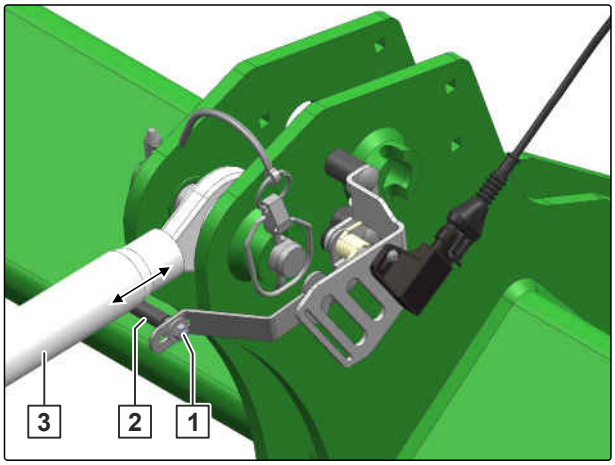
CMS-T-00008762-C.1

6.3.1 Adjusting the working position sensor

CMS-T-00003625-E.1

The working position sensor monitors the implement position in the three-point hydraulic system and switches the metering drives. The lever length is adjustable.

1. loosen the nut 1.
2. Place the lever 2 on an level contact surface on the top link 3.
3. Tighten the nut.
4. *To ensure that the working position sensor is resting on a level surface,*
   completely lift and lower the implement.



CMS-I-00002608

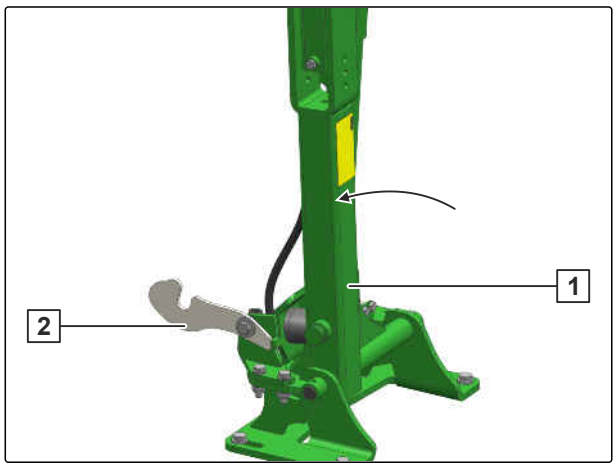
5. *To configure the working position sensor,*
   refer to the ISOBUS software operating manual,
   "Configuring the working position sensor"

   or

   see *"control computer"* operating manual.

6.3.2 Using the hopper cover

CMS-T-00008764-A.1



CMS-I-00000952

IMPORTANT

Risk of damage to the hopper cover

When opening the hopper cover, the discs of the track marker can collide with the hopper cover.

▶ Unlock the track markers.

1. Put the *"yellow"* tractor control unit in the neutral position.

2. Press the track marker **1** against the rubber block.

➡ The transport lock **2** is relieved.

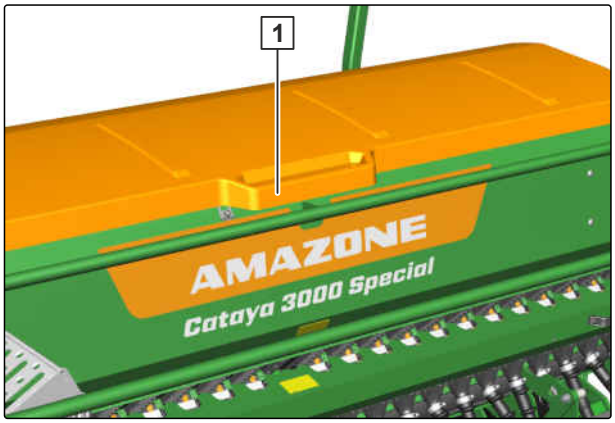
3. Swivel back the transport lock.

The track markers are guided into the parking position by the spring pressure.

4. Slowly swivel the track markers into the parking position.

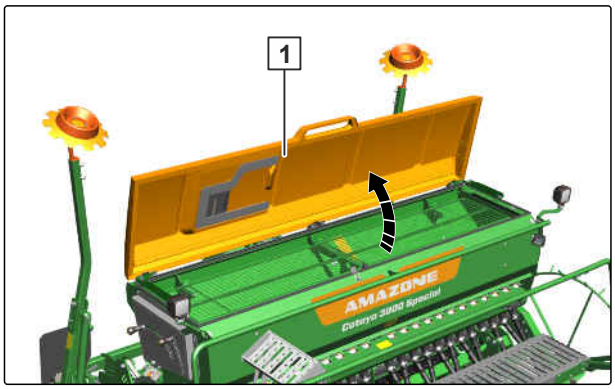
5. Repeat the procedure for the opposite side of the implement.

6. Pull up the handle 1 on the hopper cover.



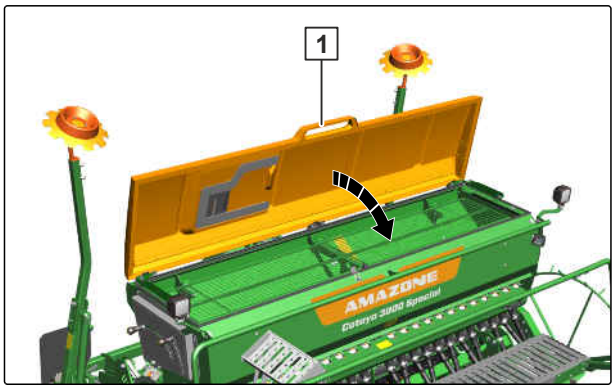
CMS-I-00005993

➡ The hopper cover 1 opens automatically.



CMS-I-00005994

7. *To close the hopper cover:*
Pull on the handle 1.

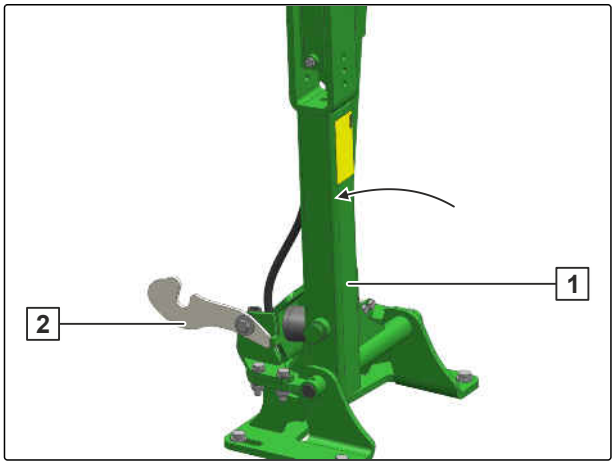


CMS-I-00005995

8. Press the track marker 1 against the rubber block.

9. Lock the transport lock 2.

10. Repeat the procedure for the opposite side of the implement.



CMS-I-00000952

6.3.3 Setting the fill level sensor

CMS-T-00008765-A.1

The fill level sensor monitors the seed level in the hopper.

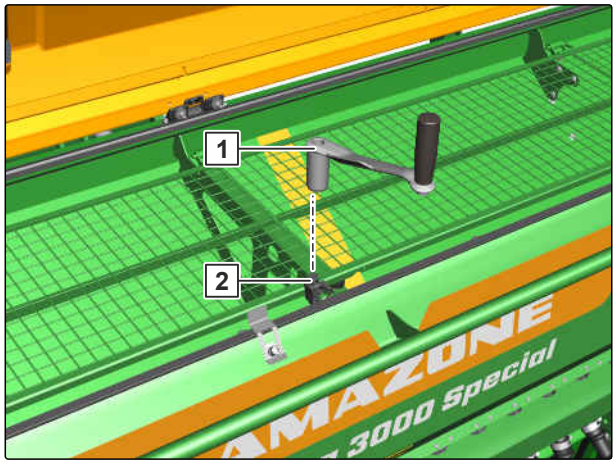
The number of fill level sensors can vary depending on the implement equipment.

At lower spread rates, the fill level sensor must be attached in the lower area of the hopper.

At higher spread rates, the fill level sensor must be attached in the upper area of the hopper.

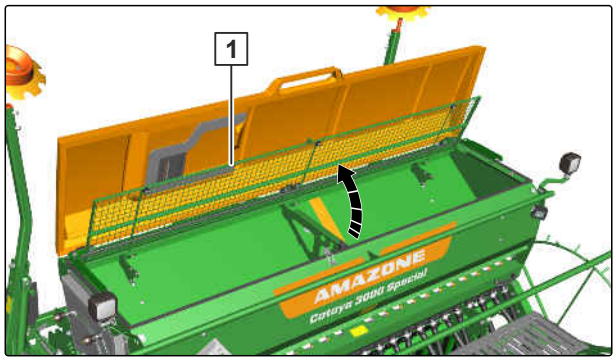
1. Open the hopper cover.

2. Release the locking mechanism **2** for the charging sieve with the universal operating tool **1**.



CMS-I-00005996

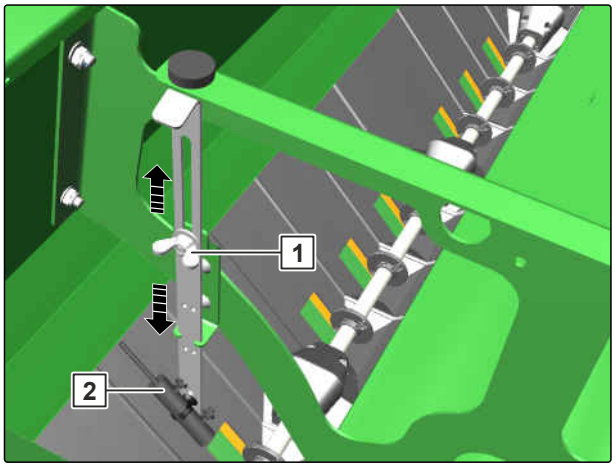
3. Fold up the charging sieve **1**.



CMS-I-00005997

4. *To adjust the fill level sensor* **2**:
   Loosen the wing nut **1**.

5. Tighten the wing nut.



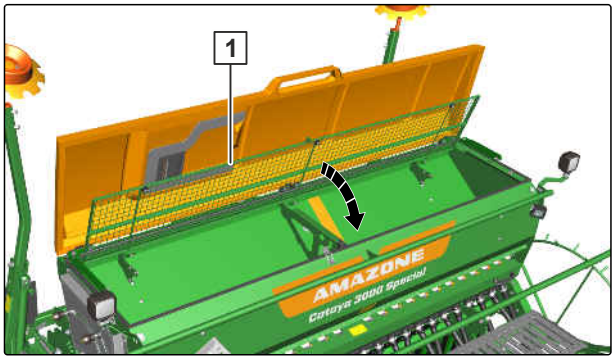
CMS-I-00005568

NOTE

As soon as the fill level sensor is no longer covered, a warning message appears on the control terminal or control computer.

6. Fold down the charging sieve **1**.

7. close the hopper cover.

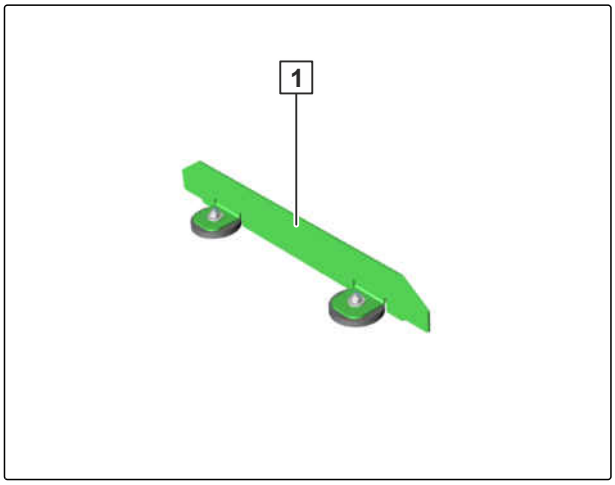


CMS-I-00006243

6.3.4 Installing the seed guide elements

CMS-T-00009085-A.1

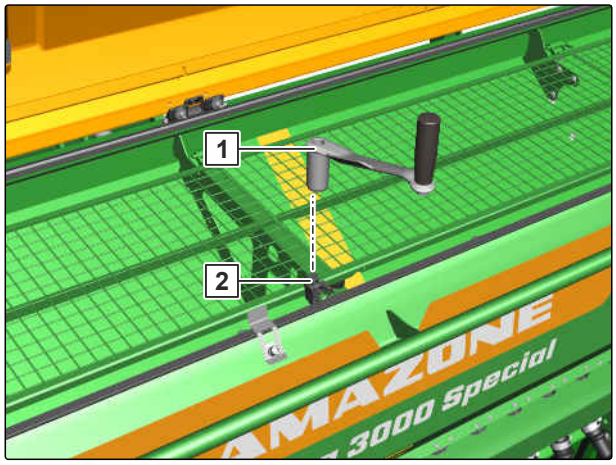
Depending on the implement version, 4 or 6 seed guide elements **1** are required for the hopper.



CMS-I-00006245

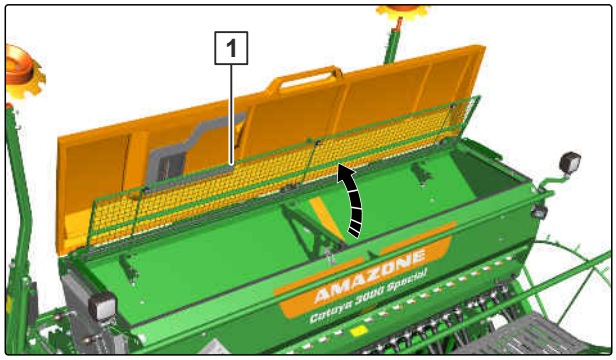
1. Open the hopper cover.

2. Release the locking mechanism **2** for the charging sieve with the universal operating tool **1**.



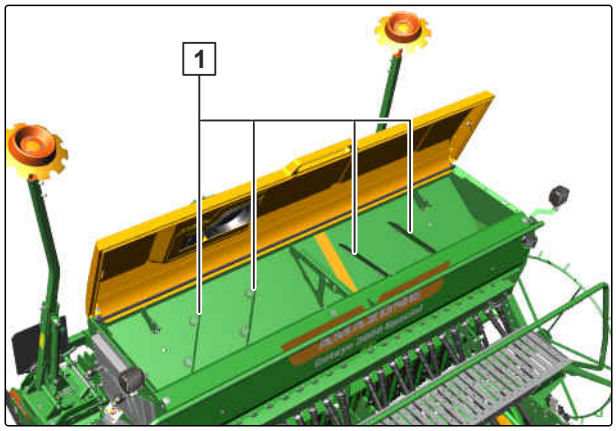
CMS-I-00005996

3. Fold up the charging sieve **1**.



CMS-I-00005997

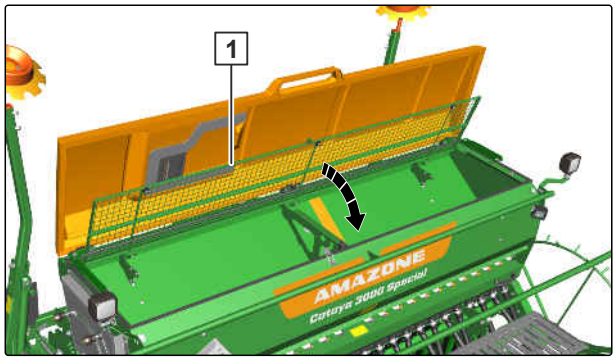
4. Position the seed guide elements **1** in the hopper.



CMS-I-00006241

5. Fold down the charging sieve **1**.

6. close the hopper cover.

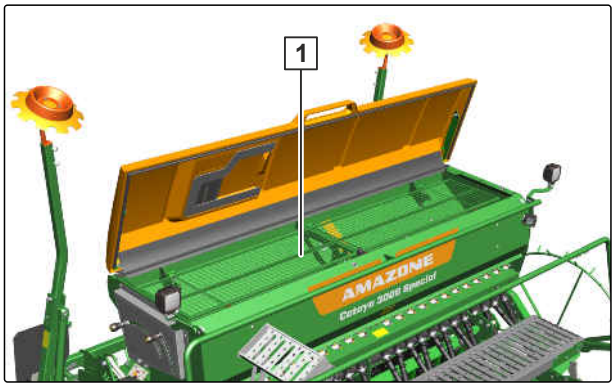


CMS-I-00006243

6.3.5 Filling the hopper

CMS-T-00008766-A.1

1. lower the implement.
2. Open the hopper cover.
3. Fill the hopper via the charging sieve 1.
4. close the hopper cover.



CMS-I-00006000

6.3.6 Adjusting the scraper on the TwinTeC coulter

CMS-T-00013069-B.1

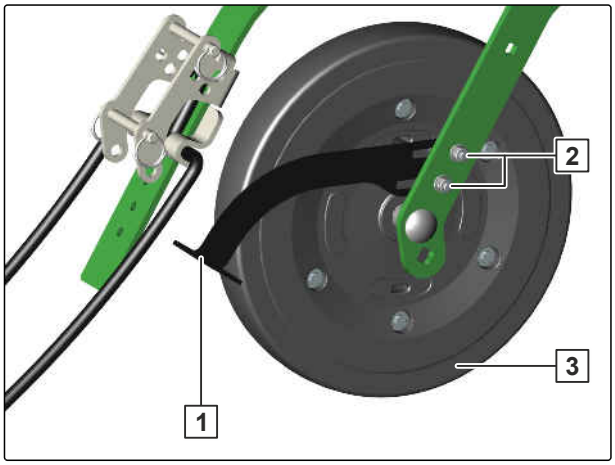
IMPORTANT

Damage to the wheel due to abrasion by the scraper

► *To check the distance:*
rotate the wheel.

The scrapers enable smooth running of the coulters on soils with sticky surface structures.

1. Lift the implement.
2. Secure the tractor and implement.
3. Loosen the nuts 2.
4. Adjust the scraper 1 to a distance of 2 ml.
5. *To check the distance:*
rotate the depth control wheel 3.
6. Tighten the nuts.
7. *To check the setting:*
drive for 30 m at working speed and then check the work pattern.



CMS-I-00008294

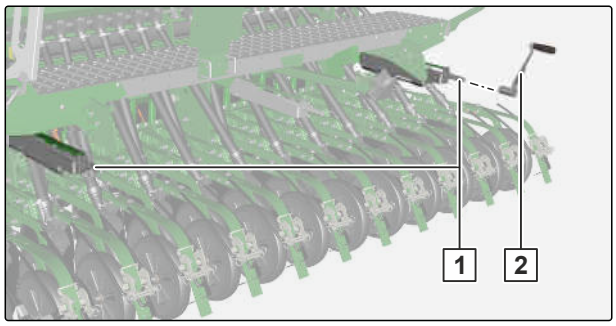
6.3.7 Adjusting the placement depth on the TwinTeC Special coulter

CMS-T-00008767-A.1

REQUIREMENTS

- ✓ Coulter pressure adjusted

1. Put the universal operating tool 2 on the adjustment spindle 1.

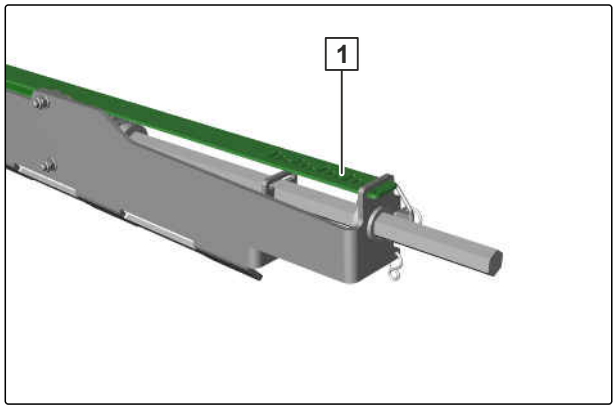


CMS-I-00006158

The scale 1 serves as orientation.

NOTE

The adjustment of the seed placement depth must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation.



CMS-I-00006159

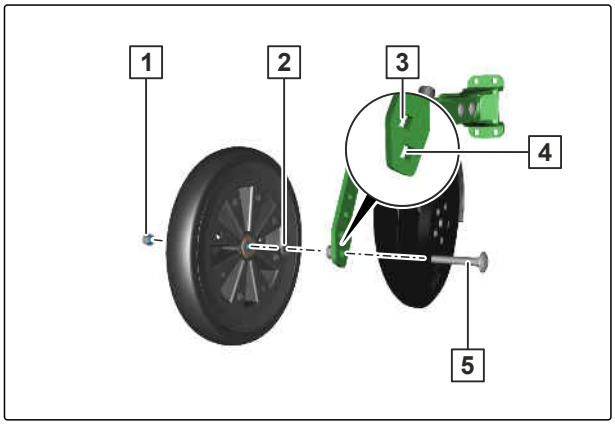
2. *To reduce the seed placement depth:*
   Turn the universal operating tool counter-clockwise -

   or

   To increase the placement depth:
   Turn the universal operating tool clockwise +.

3. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.

For fine seeds, cereals or legumes, the press roller must be installed at different positions.



CMS-I-00006162

4. Remove the nut 1.
5. Remove the washer 2.
6. Remove the bolt 5.
7. *To spread fine seeds or cereals:*
   Install the press rollers in the position 4.

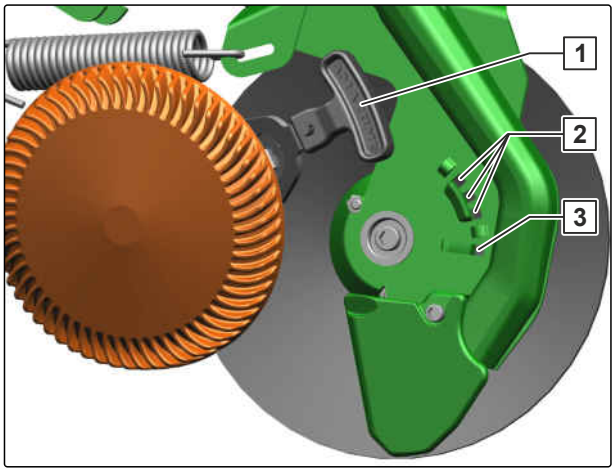
   or

   To spread legumes:
   Install the press rollers in the position 3.
8. Install the bolt 5.
9. Install the washer 2.
10. Install the nut 1 and tighten it.

6.3.8 Adjusting the placement depth on the RoTeC coulter

CMS-T-00006301-C.1

The placement depth can be adjusted in three stages 2. The higher the position of the depth control discs or depth control wheels, the greater the placement depth. The adjustment of the seed placement depth must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation. The greatest placement depth is achieved by removing the depth control discs or depth control wheels.



CMS-I-00004587

1. Pull on the lever **1** for the depth control disc or depth control wheel, move it up or down and engage it in the desired position

   or

   To completely remove the depth control disc or depth control wheel:
   move the lever all the way down and push it to the rear in the elongated slot **3** until the depth control disc or depth control wheel can be removed.

2. Set all of the depth control discs or depth control wheels at the same height or remove them completely.

3. *To check the adjustment of the placement depth on the field:*
   seed for approx. 30 m at working speed and then check the work pattern, see *"Checking the placement depth"*.

4. If the required placement depth has not yet been reached, the coulter pressure must also be adjusted, see *"Adjusting the coulter pressure manually"* or *"Adjusting the coulter pressure hydraulically"*.

6.3.9 Adjusting the coulter pressure on the TwinTeC Special coulter

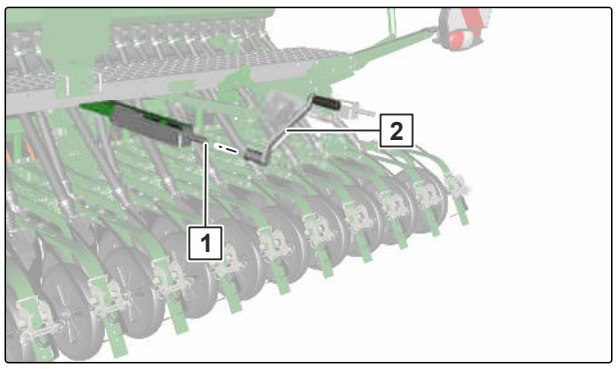
CMS-T-00011191-A.1

6.3.9.1 Adjusting the coulter pressure manually

CMS-T-00011277-A.1

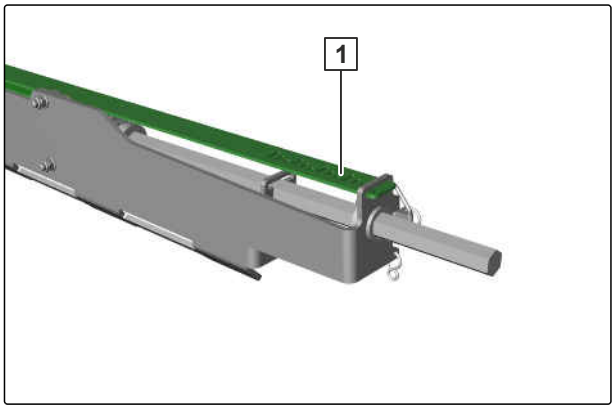
1. Lift the implement.

2. Put the universal operating tool **2** on the adjustment spindle **1**.



CMS-I-00006007

The scale 1 serves as orientation.



CMS-I-00006159

NOTE

The adjustment of the coulter pressure must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation.

3. *To reduce the coulter pressure:*
   Turn the universal operating tool counter-clockwise -

   or

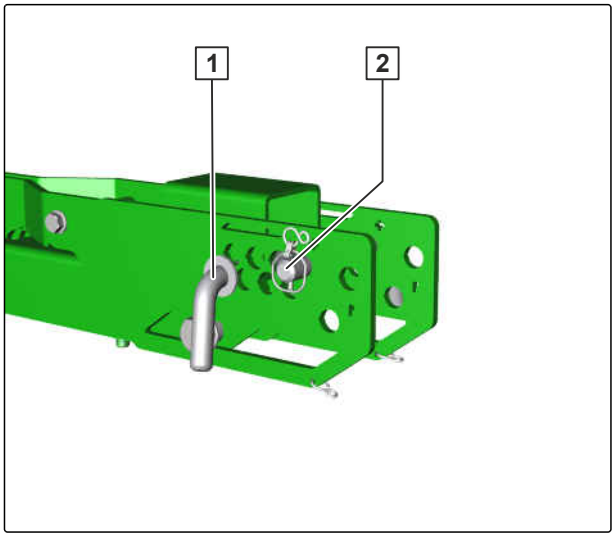
   To increase coulter pressure:
   Turn the universal operating tool clockwise +.

4. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.

6.3.9.2 Adjusting the coulter pressure hydraulically

CMS-T-00011278-A.1

The coulter pressure can be adapted to the soil during operation when changing to heavy or soft soil. 2 pins in an adjuster segment act as the stop for the hydraulic cylinder.



CMS-I-00007487

1. *To define the maximum coulter pressure:*
   Insert the pin 2 in the top row in the desired position.

2. *To define the minimum coulter pressure:*
   Insert the pin 1 in the bottom row in the desired position.

WARNING Unexpected movement of the coulter and exact following harrow

The hydraulic cylinders for the coulter pressure adjustment and the exact following harrow pressure adjustment are actuated simultaneously.

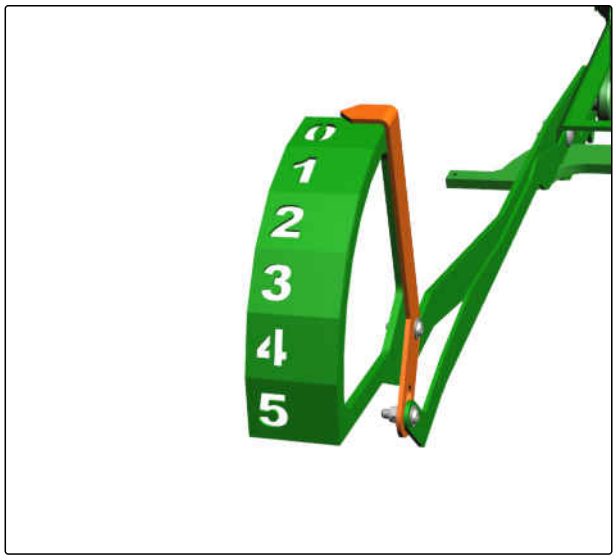
- *Before you actuate the tractor control unit,*
  direct people out of the danger area.

3. *To increase coulter pressure:*
   actuate the *"green 1"* tractor control unit

   or

   To reduce the coulter pressure:
   put the *"green"* tractor control unit into float position.

➡ The mechanical coulter pressure display on the implement shows the set coulter pressure.



CMS-I-00007486

NOTE

The adjustment of the coulter pressure must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation.

4. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.

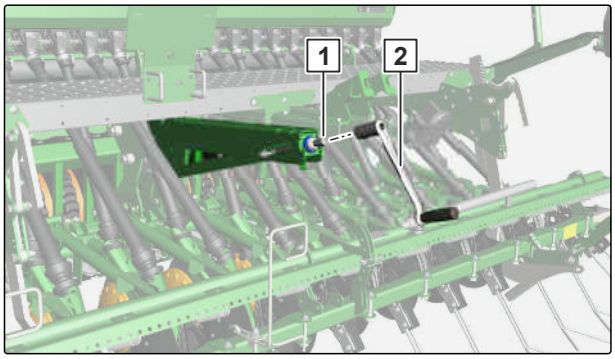
6.3.10 Adjusting the coulter pressure on the RoTeC coulter and WS drag coulter

CMS-T-00008942-A.1

6.3.10.1 Adjusting the coulter pressure manually

CMS-T-00008917-B.1

1. Put the universal operating tool 2 on the adjustment spindle 1.



CMS-I-00006157

NOTE

The adjustment of the coulter pressure must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation.

2. *To reduce the coulter pressure:*
   Turn the universal operating tool counter-clockwise -

   or

   To increase coulter pressure:
   Turn the universal operating tool clockwise +.

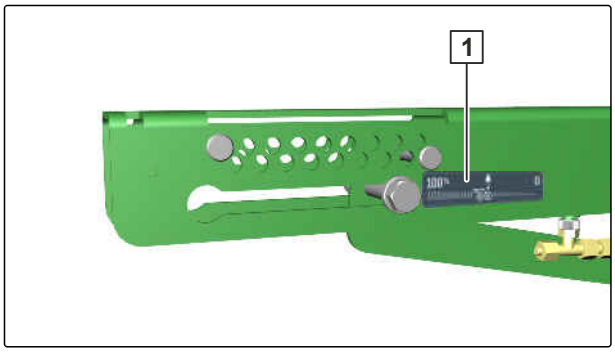
3. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.

6.3.10.2 Adjusting the coulter pressure hydraulically

CMS-T-00008940-B.1

On a field with light (sand) and heavy (clay/loam) soils, the coulter pressure can be adjusted during operation. Two pins in an adjuster segment act as the stop for the hydraulic cylinder.

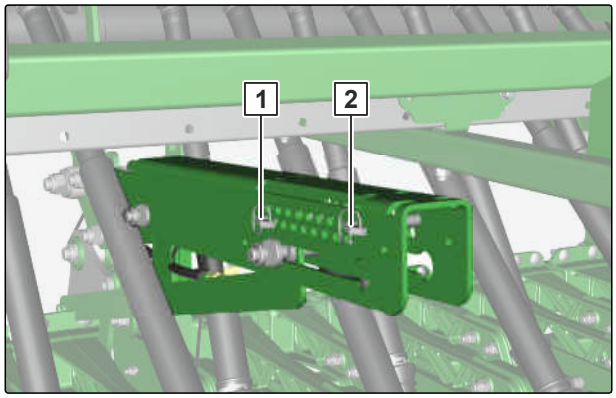
The scale 1 serves as orientation for adjusting the pins.



CMS-I-00006171

1. *To define the maximum coulter pressure:*
   Insert the pin **2** in the top row in the desired position.

2. *To define the minimum coulter pressure:*
   Insert the pin **1** in the bottom row in the desired position.



CMS-I-00006168

WARNING Unexpected movement of the coulter and exact following harrow

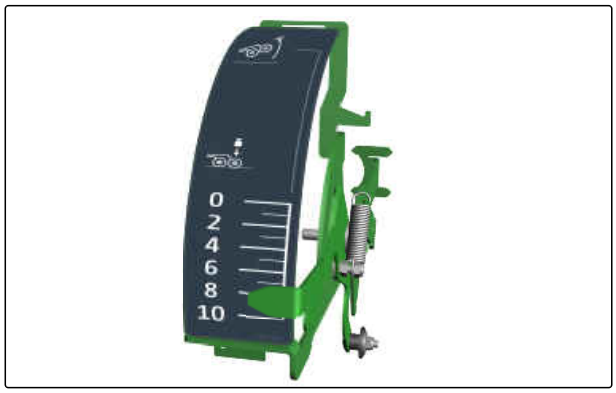
The hydraulic cylinders for the coulter pressure adjustment and the exact following harrow pressure adjustment are actuated simultaneously.

▶ *Before you actuate the tractor control unit,*
direct people out of the danger area.

3. *To increase coulter pressure:*
   actuate the *"green 1"* tractor control unit

   or

   To reduce the coulter pressure:
   put the *"green"* tractor control unit into float position.



CMS-I-00005586

➥ The mechanical coulter pressure display on the implement shows the set coulter pressure.

4. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.

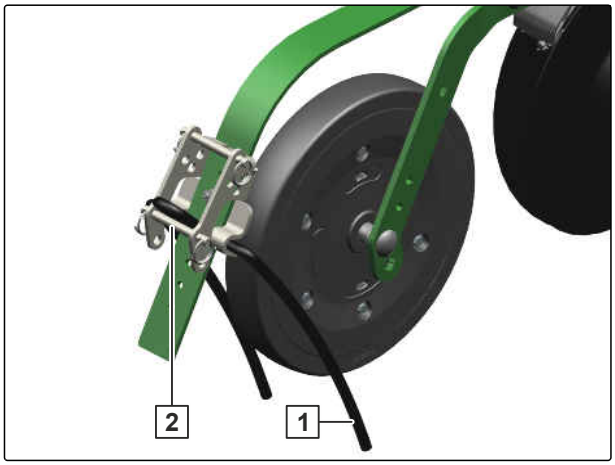
6.3.11 Adjusting the coulter harrow

CMS-T-00008775-B.1

6.3.11.1 Adjusting the harrow angle

CMS-T-00004372-F.1

The locking pin **2** serves as a reverse driving safety. The locking pin prevents the coulter harrow **1** from folding into the adjacent coulters.



CMS-I-00003184

1. Lift the implement.
2. *To set the harrow tine **5** for working at an angle of 40 degrees:*
   install the pin in position **1**

   or

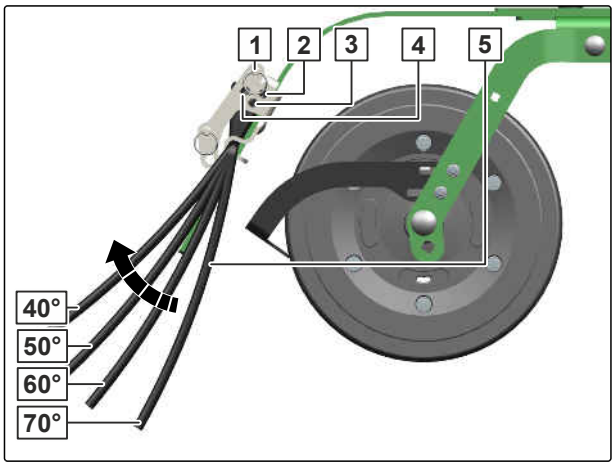
   To set the harrow tine for working at an angle of 50 degrees:
   install the pin in position **2**

   or

   To set the harrow tine for working at an angle of 60 degrees:
   install the pin in position **3**

   or

   To set the harrow tine for working at an angle of 70 degrees:
   install the pin in position **4**.
3. *To check the setting:*
   Seed for 30 m at working speed and then check the work pattern.

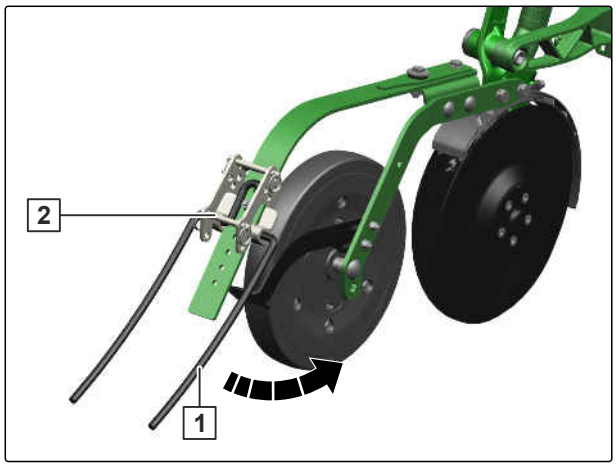


CMS-I-00003187

6.3.11.2 Deactivating the coulter harrow

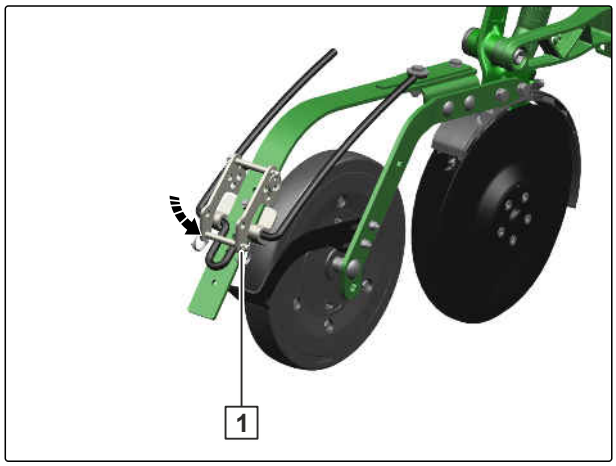
CMS-T-00004370-D.1

1. Lift the implement.
2. Remove the pin **2**.
3. Fold up the coulter harrow **1**.



CMS-I-00003188

4. Install the pin in parking position **1**.

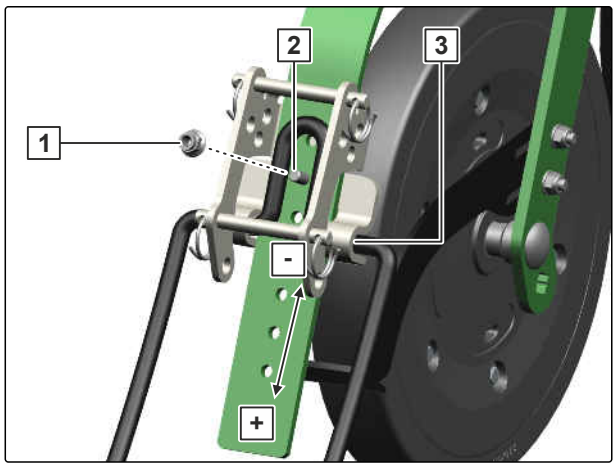


CMS-I-00003183

6.3.11.3 Adjusting the harrow height

CMS-T-00006457-D.1

1. Remove the nut **1**.
2. Remove the bolt **3**.
3. Move the harrow bracket **2** to the desired position.
4. Install the bolt.
5. Install the nut and tighten it.
6. *To check the setting:*
   Seed for 30 m at working speed and then check the work pattern.



CMS-I-00003182

6.3.12 Adjusting the exact following harrow

CMS-T-00008776-B.1

6.3.12.1 Adjusting the position of the harrow tines

CMS-T-00011510-A.1

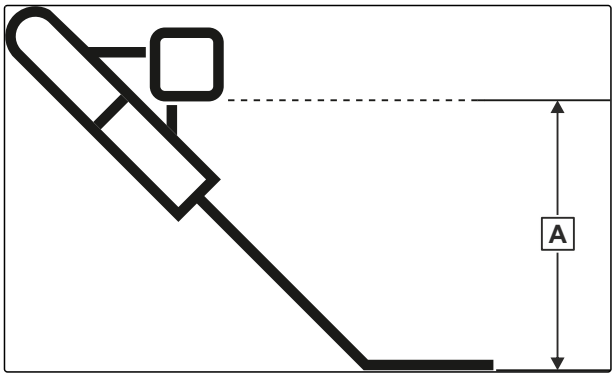
6.3.12.1.1 Adjusting by removing the bolts

CMS-T-00011511-A.1

When the exact following harrow is correctly set, the harrow tines should lie horizontally on the soil.

To ensure that the seed is covered with fine soil even when the ground is undulating, the harrow tines can deflect downwards by 50 mm to 80 mm.

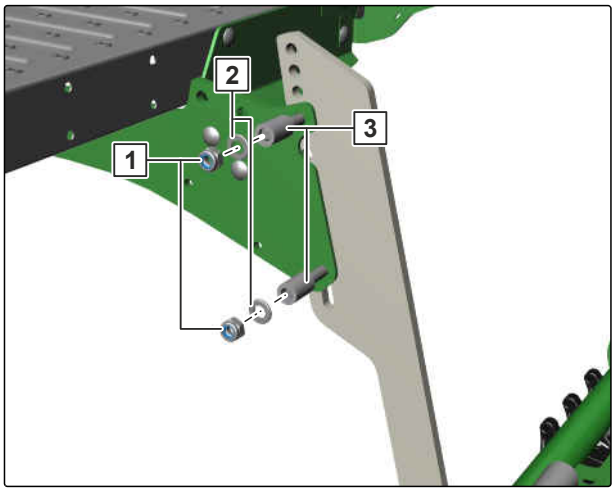
The distance **A** between the carrier tube and the ground is adjusted. The distance must be between 230 mm and 280 mm.



CMS-I-00004668

Depending on the equipment, the harrows can be adjusted with removable bolts or using the universal operating tool.

1. *To be able to remove the bolts:*
   Loosen the nuts **1**.
2. Remove the washers **2**.
3. Remove the bushes **3**.

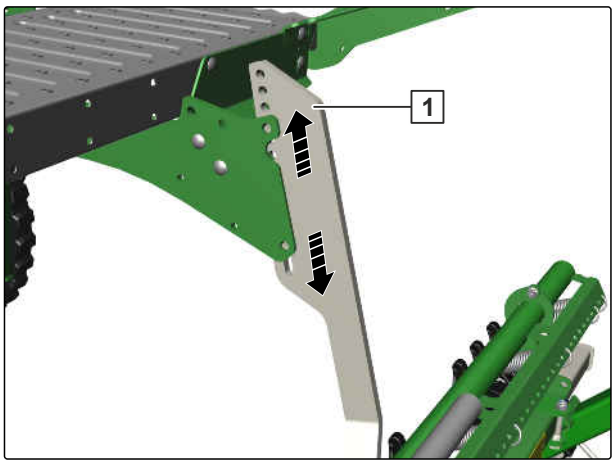


CMS-I-00006021

4. *To set the exact following harrow higher:*
   move the holding arm **1** up

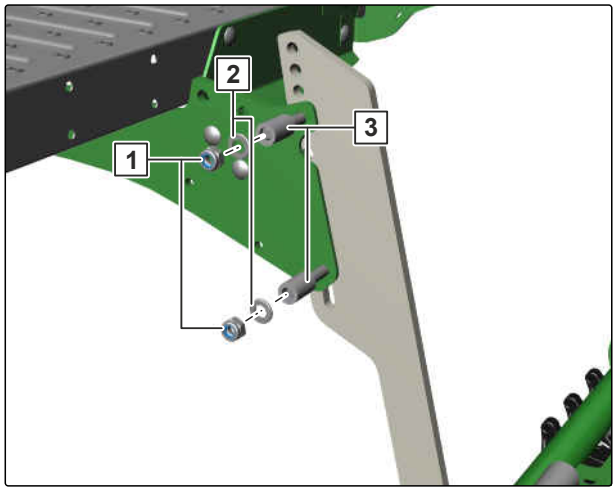
   or

   To set the exact following harrow deeper:
   move the holding arm **1** down.



CMS-I-00006022

5. Install the bushes 3.
6. Install the washers 2.
7. Install the bolts 1.
8. Tighten the bolts.
9. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.



CMS-I-00006021

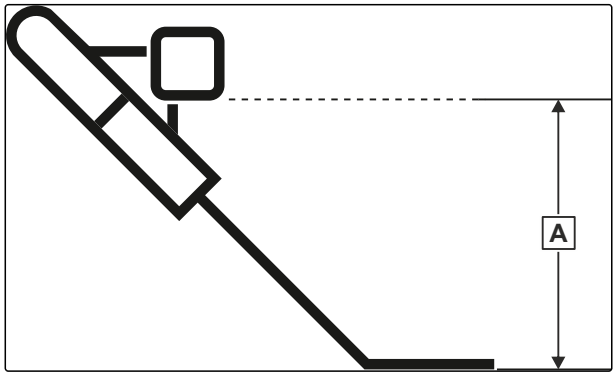
6.3.12.1.2 Adjustment with universal operating tool

CMS-T-00011515-A.1

When the exact following harrow is correctly set, the harrow tines should lie horizontally on the soil.

To ensure that the seed is covered with fine soil even when the ground is undulating, the harrow tines can deflect downwards by 50 mm to 80 mm.

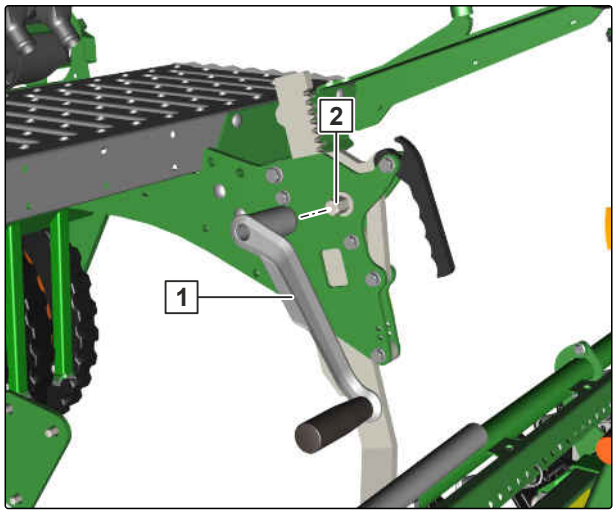
The distance A between the carrier tube and the ground is adjusted. The distance must be between 230 mm and 280 mm.



CMS-I-00004668

Depending on the equipment, the exact following harrows can be adjusted with removable bolts or using the universal operating tool.

1. Put the universal operating tool 1 on the adjustment spindle 2.



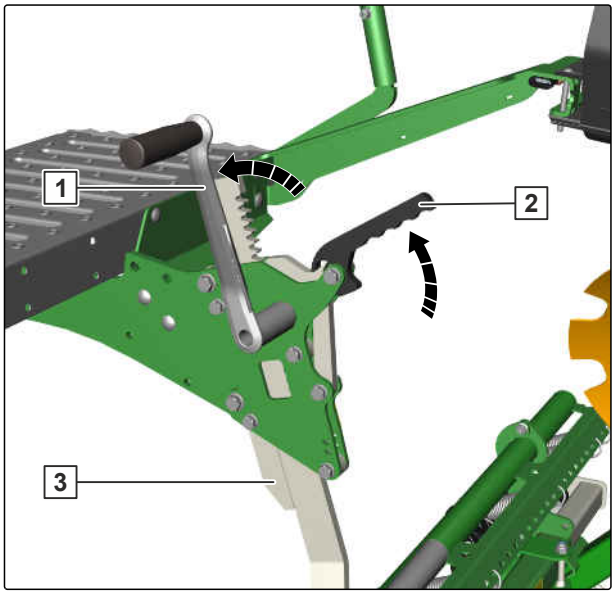
CMS-I-00006028

2. *To unlock the holding arm* **3**:
   pull the handle **2** up and hold it.

3. *To set the exact following harrow deeper:*
   turn the universal operating tool counter-clockwise

   or

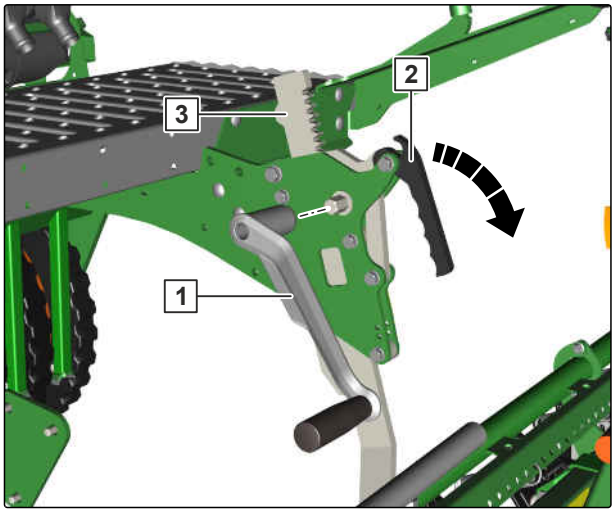
   To set the exact following harrow higher:
   turn the universal operating tool clockwise.



CMS-I-00006062

4. *To lock the holding arm* **3**:
   fold the handle **2** down.

5. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.



CMS-I-00006063

6.3.12.2 Adjusting the exact following harrow pressure

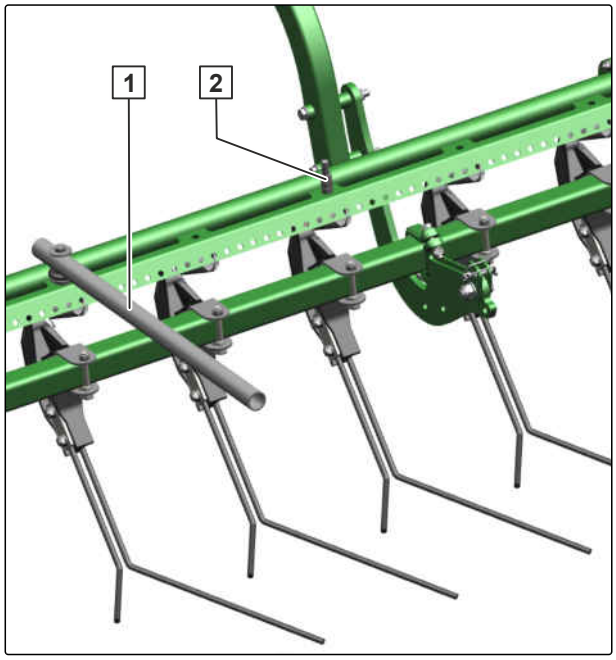
CMS-T-00010528-B.1

6.3.12.2.1 Adjusting the exact following harrow pressure hydraulically

CMS-T-00008781-B.1

The exact following harrow pressure must be adjusted such that all seed rows are evenly covered with earth. On heavy soils, the pressure must be higher than on light soils.

1. Take the lever [1] out of the transport lock [2] and pull it up.



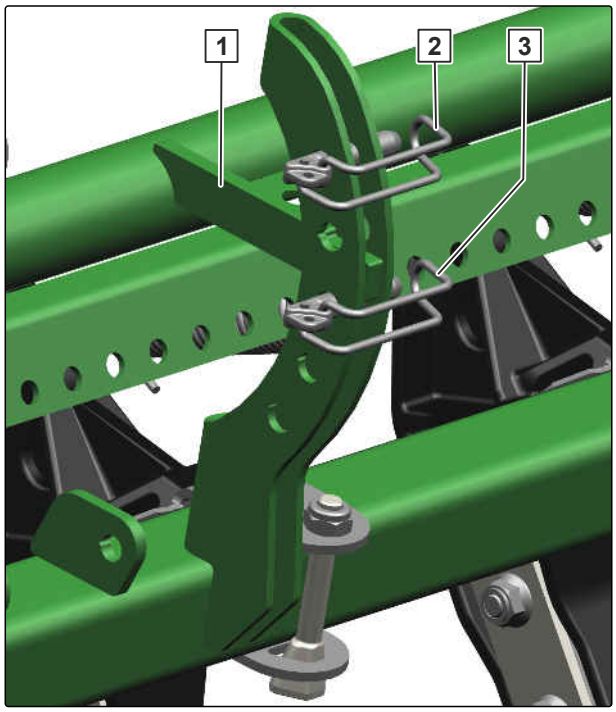
CMS-I-00004673

2. *To define the minimum pressure of the exact following harrow:*
   Remove the linch pin [3] and insert it in a the desired hole under the stop [1]. The higher the hole, the greater the minimum pressure of the exact following harrow.

3. Relieve the lever and fasten it in the transport lock.

4. *To define the maximum pressure:*
   Remove the linch pin [2] and insert it in the desired hole above the stop [1].

➡ The higher the hole, the greater the maximum pressure of the exact following harrow.



CMS-I-00004672

NOTE

The adjustment of the exact following harrow pressure must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation.

5. *To set a higher exact following harrow pressure:*
   actuate the *"green 1"* tractor control unit

   or

   To set a lower exact following harrow pressure:
   put the *"green"* tractor control unit into float position.

➡ The exact following harrow pressure is hydraulically adjusted together with the coulter pressure. With higher coulter pressure, higher exact following harrow pressure is also set at the same time.

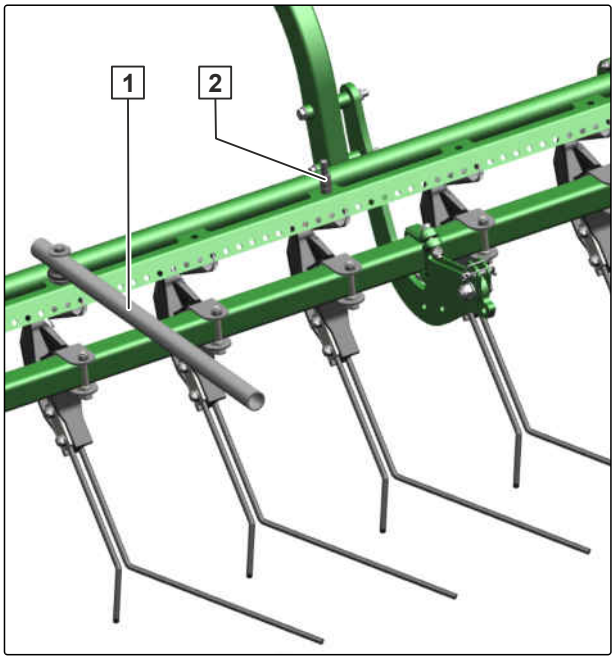
6. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.

6.3.12.2.2 Adjusting the exact following harrow pressure manually

CMS-T-00006333-E.1

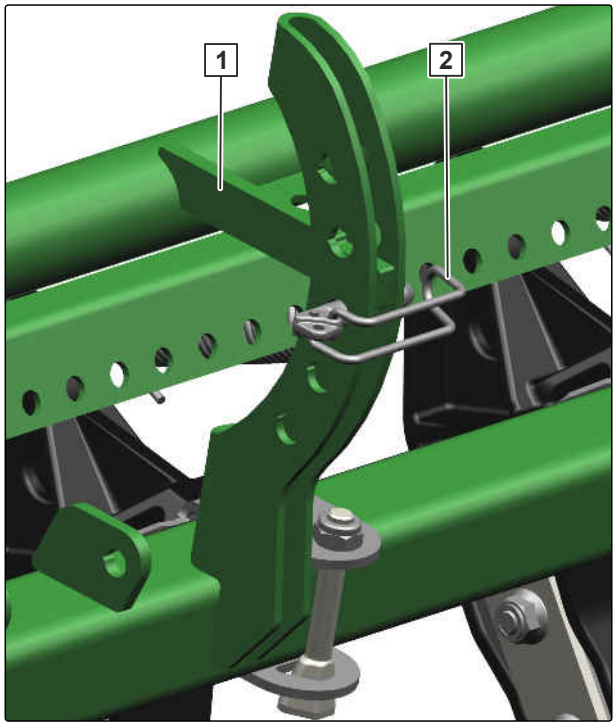
The exact following harrow pressure must be adjusted such that all seed rows are evenly covered with earth. On heavy soils, the pressure must be higher than on light soils.

1. Turn the lever **1** out of the transport lock **2** and pull it up.



CMS-I-00004673

The exact following harrow pressure is determined by tension springs, which are attached to a rotating tube. To adjust the pressure, a stop is pegged onto the tube. The higher the position of the stop, the greater the exact following harrow pressure.



CMS-I-00004671

NOTE

The adjustment of the exact following harrow pressure must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation.

2. *To increase the exact following harrow pressure:*
   Remove the linch pin **2** and insert it in a higher hole under the stop **1**

   or

   To reduce the exact following harrow pressure:
   Remove the linch pin **2** and insert it in a lower hole under the stop **1**.

3. Relieve the lever and fasten it in the transport lock.

4. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.

6.3.13 Adjusting the seed harrow

CMS-T-00012204-A.1

6.3.13.1 Adjusting the position of the harrow tines

CMS-T-00011510-A.1

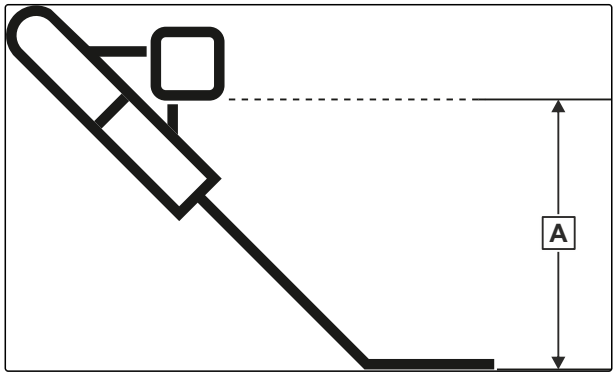
6.3.13.1.1 Adjusting by removing the bolts

CMS-T-00011511-A.1

When the exact following harrow is correctly set, the harrow tines should lie horizontally on the soil.

To ensure that the seed is covered with fine soil even when the ground is undulating, the harrow tines can deflect downwards by 50 mm to 80 mm.

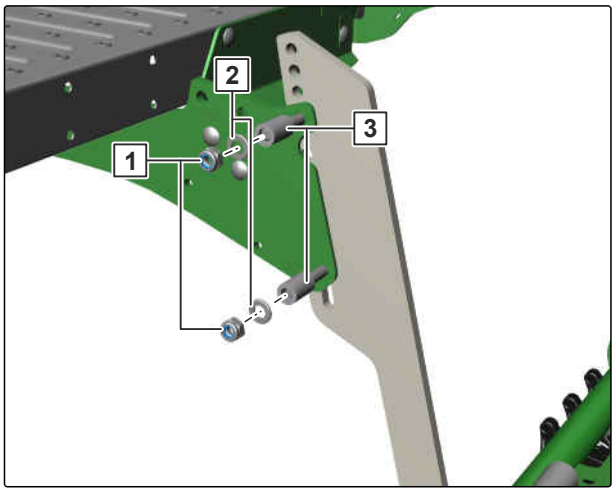
The distance **A** between the carrier tube and the ground is adjusted. The distance must be between 230 mm and 280 mm.



CMS-I-00004668

Depending on the equipment, the harrows can be adjusted with removable bolts or using the universal operating tool.

1. *To be able to remove the bolts:*
   Loosen the nuts **1**.
2. Remove the washers **2**.
3. Remove the bushes **3**.

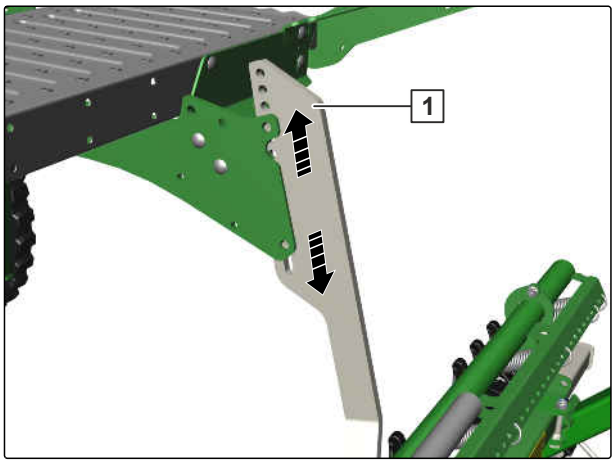


CMS-I-00006021

4. *To set the exact following harrow higher:*
   move the holding arm **1** up

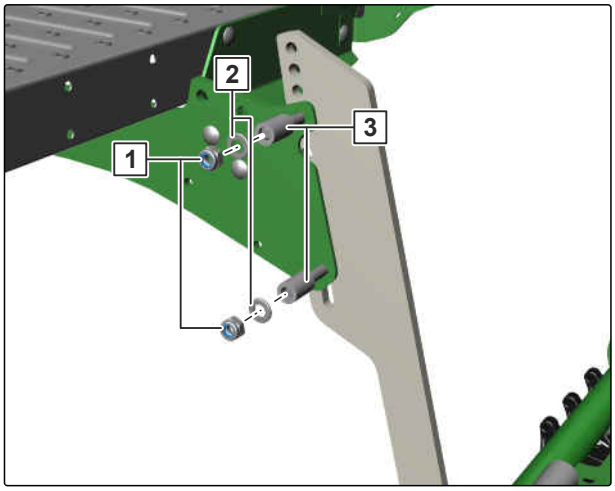
   or

   To set the exact following harrow deeper:
   move the holding arm **1** down.



CMS-I-00006022

5. Install the bushes **3**.
6. Install the washers **2**.
7. Install the bolts **1**.
8. Tighten the bolts.
9. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.



CMS-I-00006021

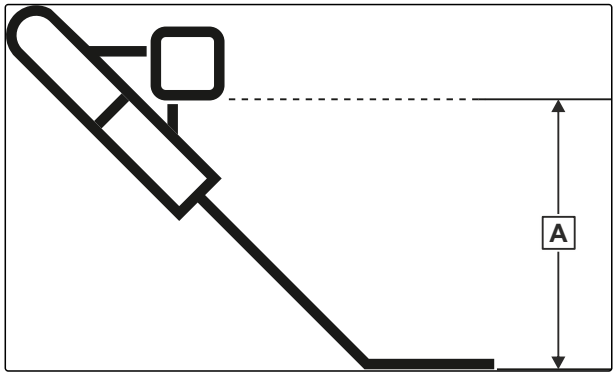
6.3.13.1.2 Adjustment with universal operating tool

CMS-T-00011515-A.1

When the exact following harrow is correctly set, the harrow tines should lie horizontally on the soil.

To ensure that the seed is covered with fine soil even when the ground is undulating, the harrow tines can deflect downwards by 50 mm to 80 mm.

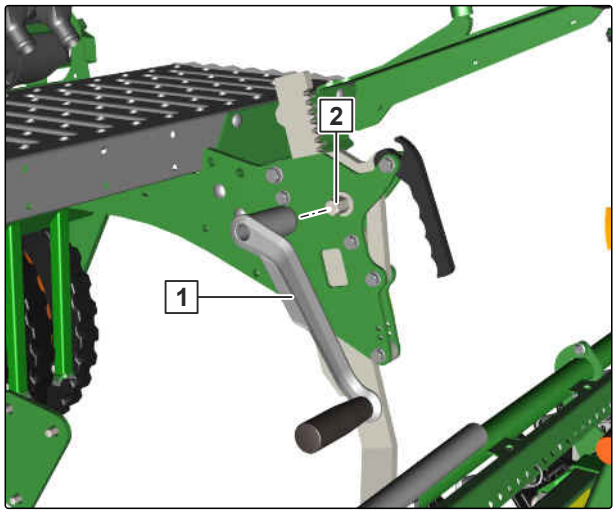
The distance **A** between the carrier tube and the ground is adjusted. The distance must be between 230 mm and 280 mm.



CMS-I-00004668

Depending on the equipment, the exact following harrows can be adjusted with removable bolts or using the universal operating tool.

1. Put the universal operating tool **1** on the adjustment spindle **2**.



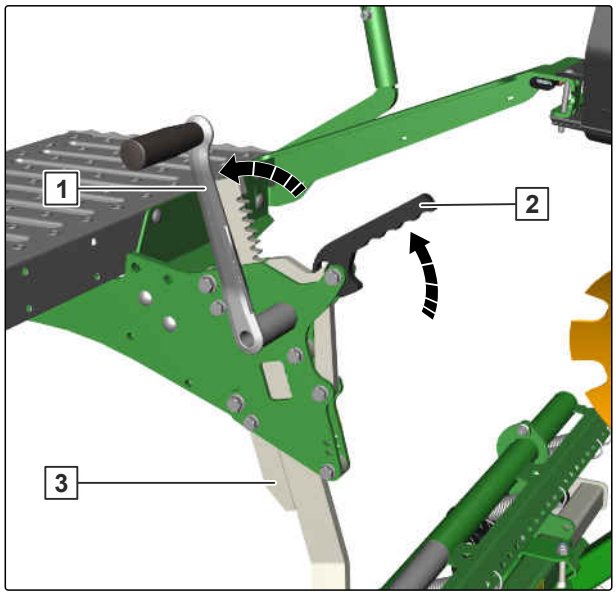
CMS-I-00006028

2. *To unlock the holding arm* ***3****:* pull the handle **2** up and hold it.

3. *To set the exact following harrow deeper:* turn the universal operating tool counter-clockwise

   or

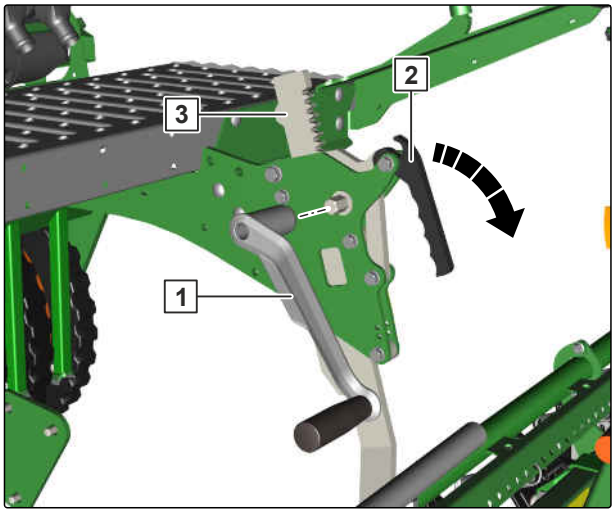
   To set the exact following harrow higher: turn the universal operating tool clockwise.



CMS-I-00006062

4. *To lock the holding arm* **3**:
   fold the handle **2** down.

5. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.



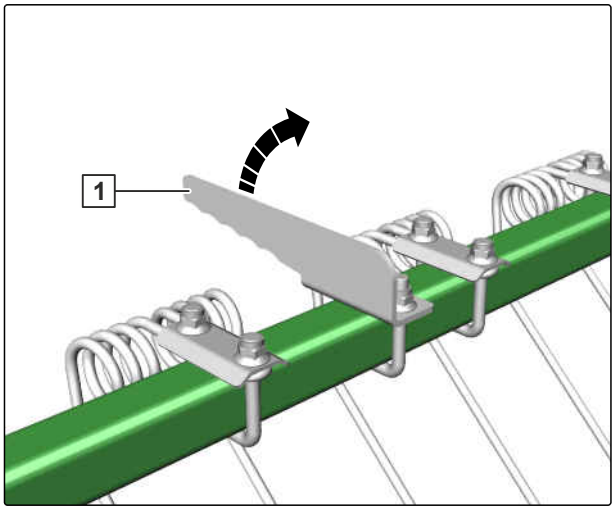
CMS-I-00006063

6.3.13.2 Adjusting the seed harrow pressure

CMS-T-00012205-A.1

The seed harrow pressure must be adjusted such that all seed rows are evenly covered with earth. On heavy soils, the pressure must be higher than on light soils.

1. *To relieve the linch pin of the seed harrow:*
   Pull the handle **1** up.



CMS-I-00007860

NOTE

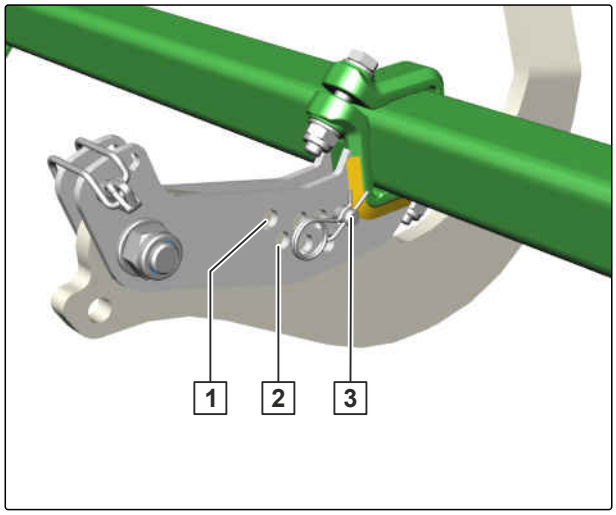
The adjustment of the seed harrow pressure must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation.

2. *To increase the seed harrow pressure:*
   Remove the linch pin [3] and insert it in a hole in the top row [1].

   or

   To reduce the seed harrow pressure:
   Remove the linch pin [3] and insert it in one of the holes in the bottom row [2].

3. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.



CMS-I-00007859

6.3.14 Adjusting the tramline rhythm

CMS-T-00008809-C.1

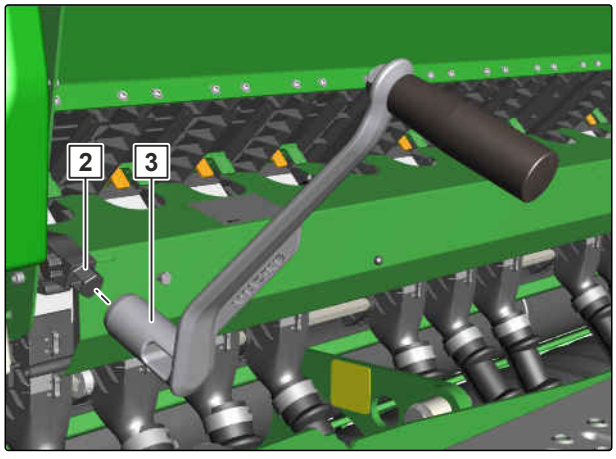
6.3.14.1 Creating a tramline metering wheel

CMS-T-00008231-B.1

Depending on the wheelmark width, a different number of tramline metering wheels are created next to each other.

Depending on the track width, the tramline metering wheels created next to each other are positioned differently.

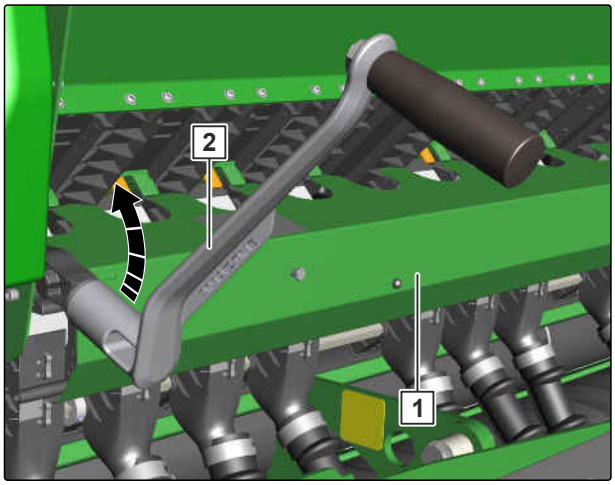
1. Put the universal operating tool [3] on the locking mechanism [2].



CMS-I-00005742

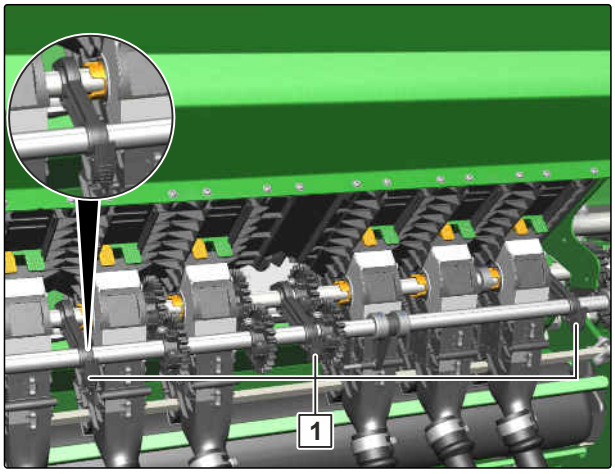
2. *To open the locking mechanism:*
   Move the universal operating tool 2 up.

➡ The metering unit cover 1 can be opened.



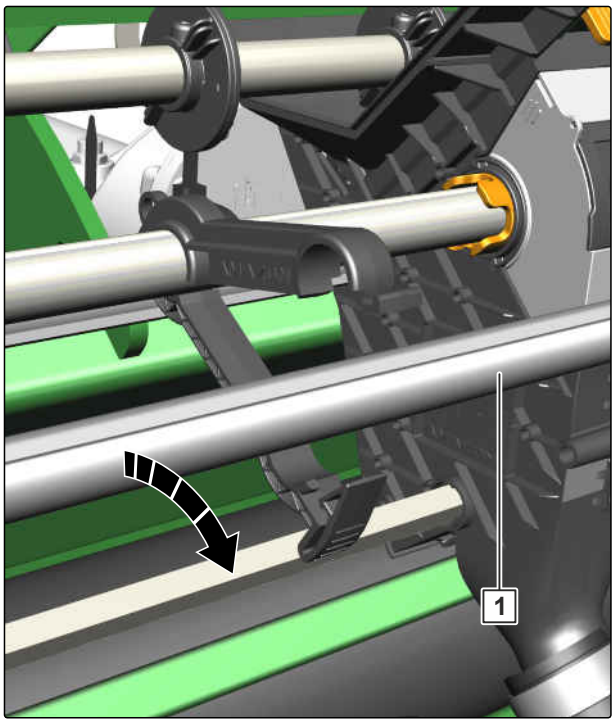
CMS-I-00005740

3. Open the lay shaft bearings 1.



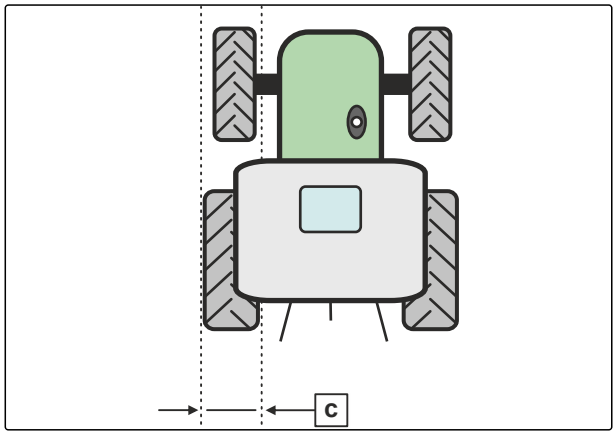
CMS-I-00005651

4. fold down the lay shaft 1.



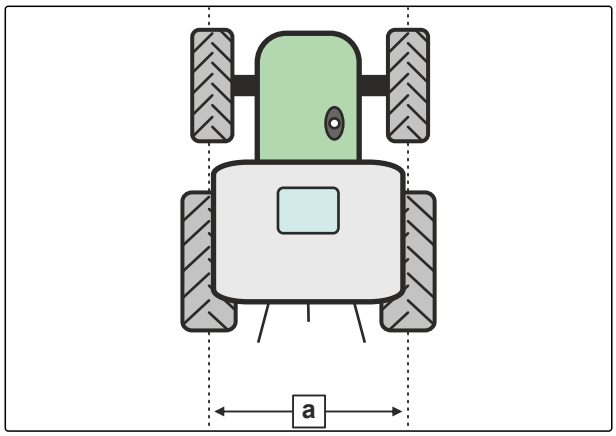
CMS-I-00005652

5. Determine the wheelmark width **c** of the cultivating implement.



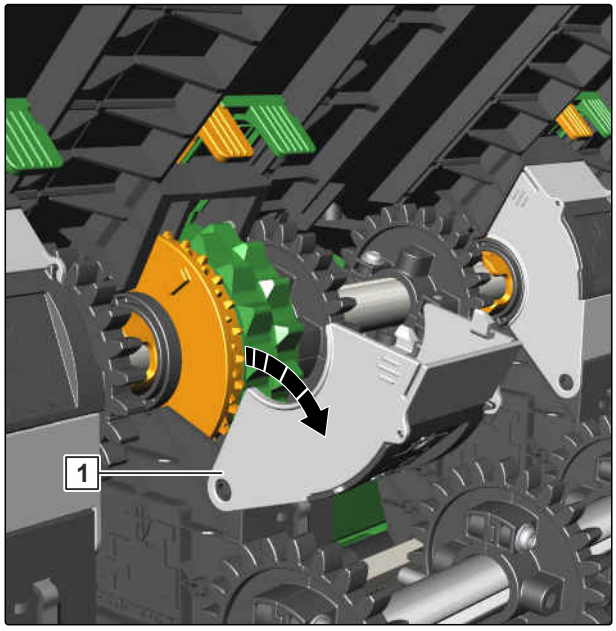
CMS-I-00003196

6. Determine the track width **a** of the cultivating implement.



CMS-I-00003195

7. Fold down the metering wheel cover **1**.



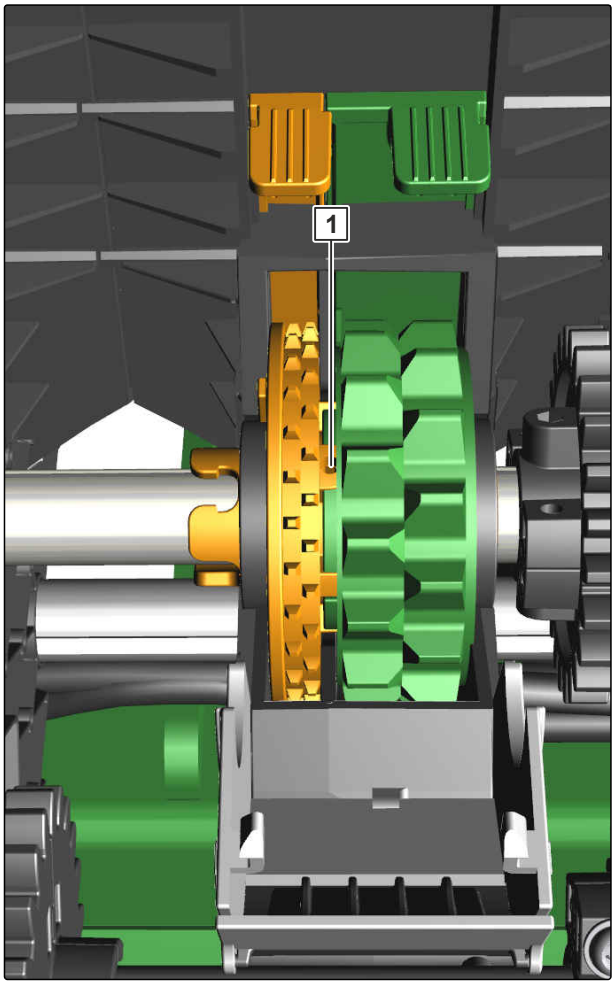
CMS-I-00005653

IMPORTANT

Damage to the seed housing due to protruding bolt

- Do not unscrew the hexagon socket screw too far.

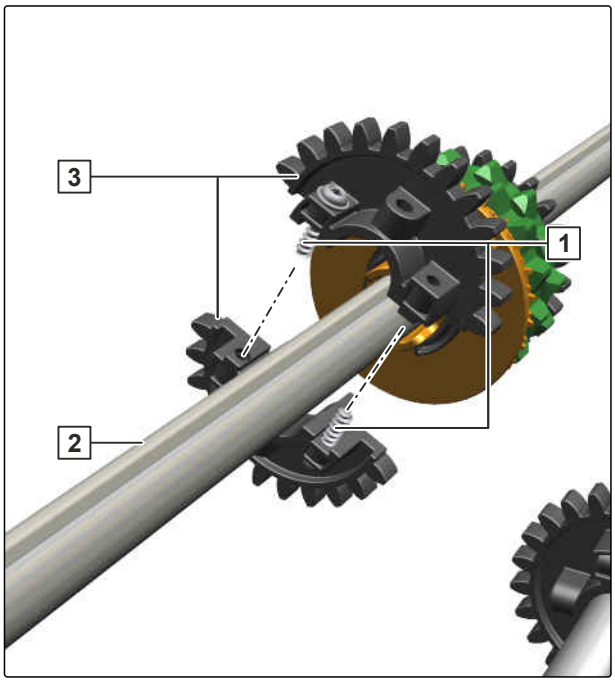
8. Loosen the hexagon socket screw 1 on the metering wheel until the metering wheel can rotate freely on the seeding shaft.



CMS-I-00005654

9. Put the spur gear 3 on the seeding shaft 2.

10. Tighten the bolts 1.

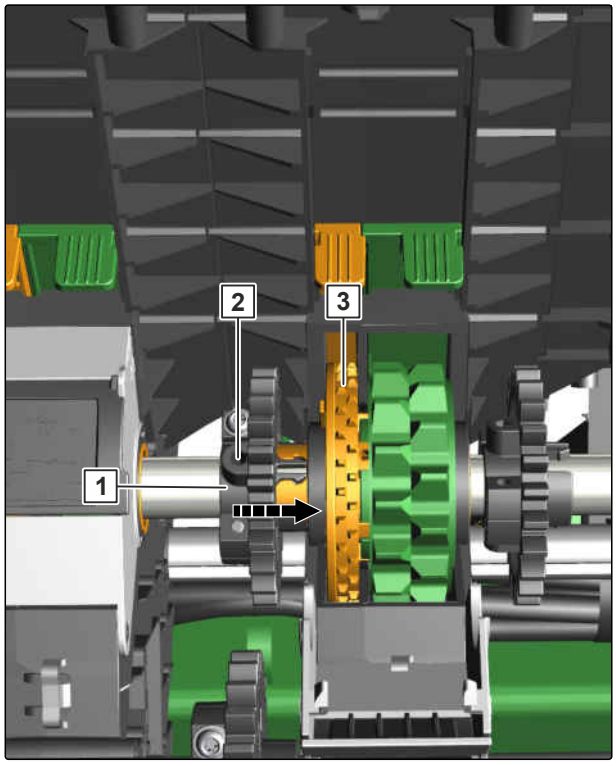


CMS-I-00005655

11. Fasten the spur gear [1] on the metering wheel [3].

12. Loosen the hexagon socket screw [2] on the spur gear until the spur gear can rotate freely on the seeding shaft.

➡ The spur gear moves together with the metering wheel on the seeding shaft.



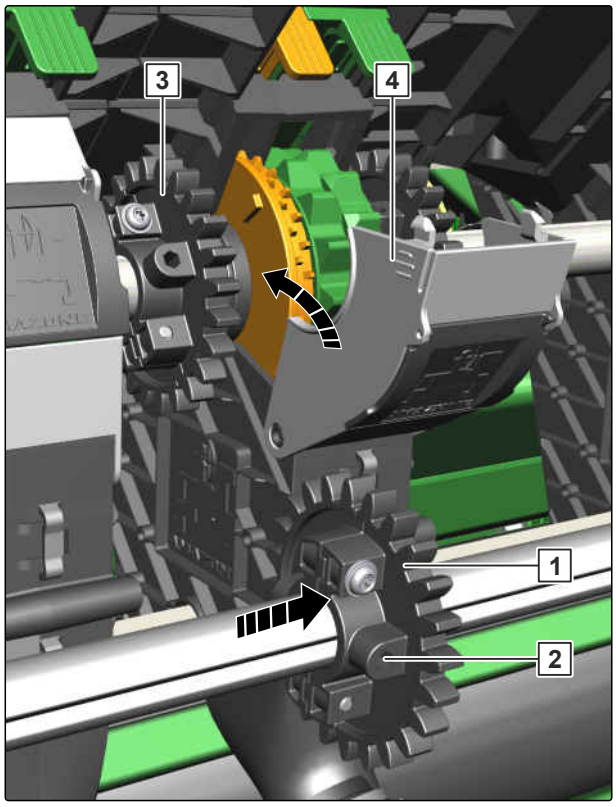
CMS-I-00005658

13. Fold up the metering wheel cover [4].

14. Loosen the hexagon socket screw [2].

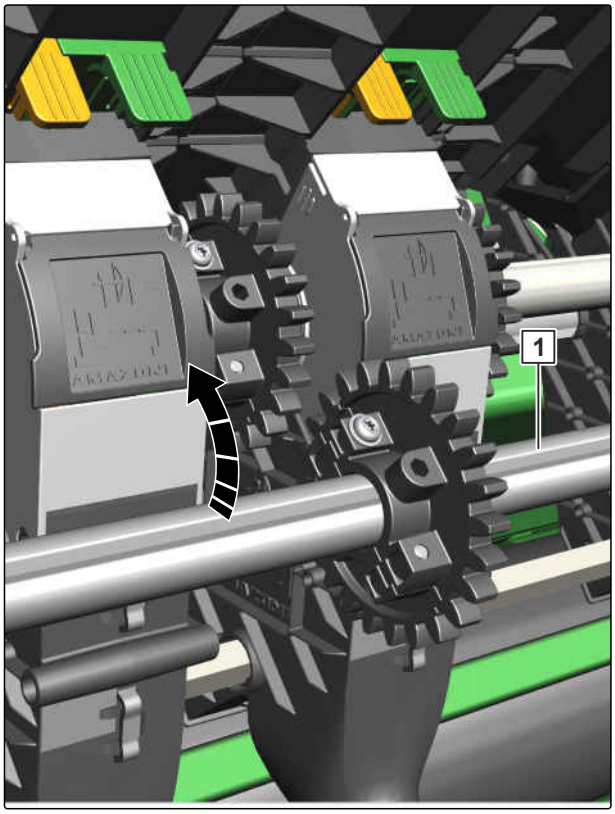
15. Position the spur gear [1] on the lay shaft under the spur gear [3] of the seeding shaft.

16. Tighten the hexagon socket screw [2].



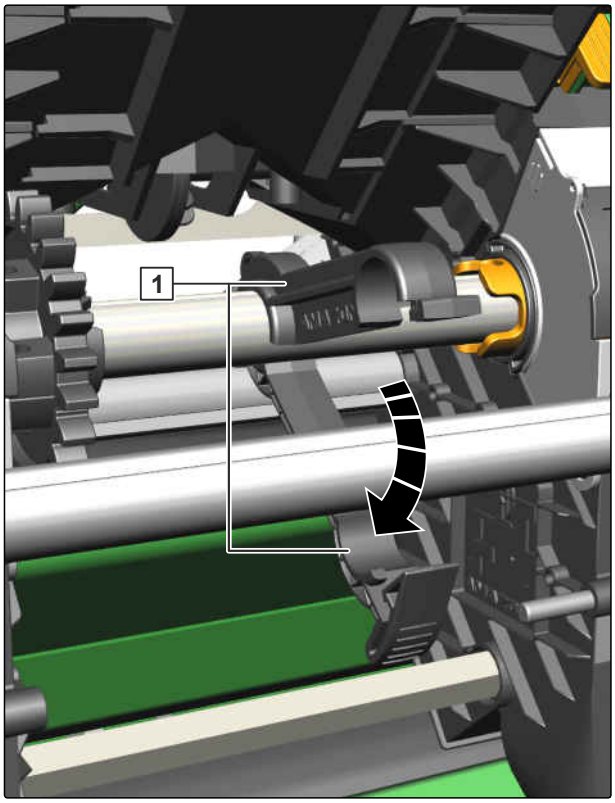
CMS-I-00005659

17. Fold up the lay shaft 1.



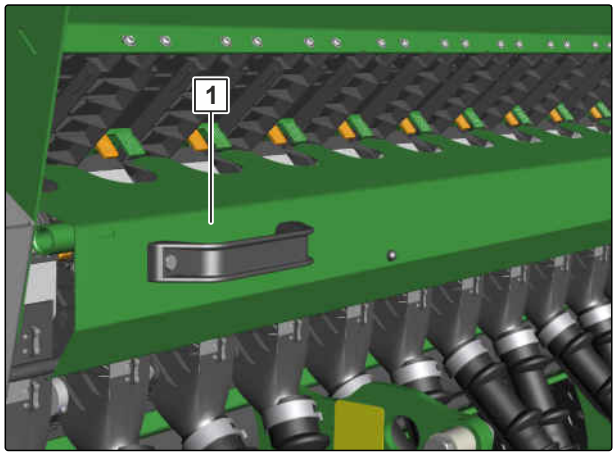
CMS-I-00005660

18. Close the lay shaft bearings 1.



CMS-I-00005661

19. Attach the metering unit cover 1.



CMS-I-00006114

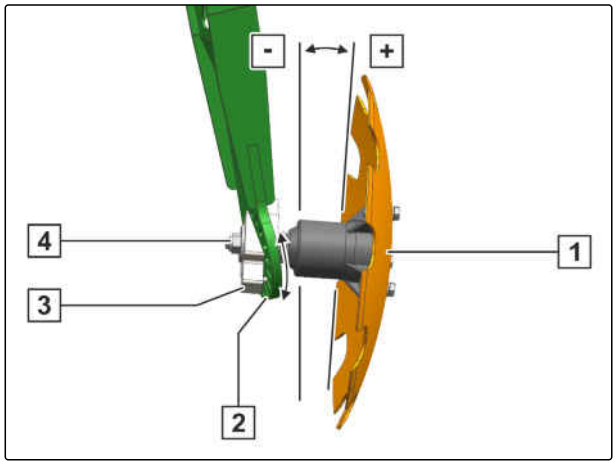
6.3.14.2 Adjusting the track disc pitch

CMS-T-00004377-D.1

1. loosen the nut 4.
2. *To increase the effect of the track disc 1:*
   increase the pitch

   or

   To reduce the effect of the track disc:
   reduce the pitch.
3. Move the clamping part 3 in the grid 2 to the desired position.
4. Tighten the nut.
5. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.



CMS-I-00003171

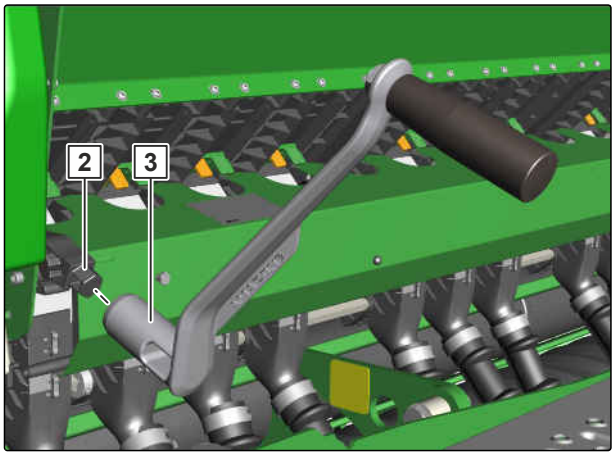
6.3.15 Operating the one-sided switching

CMS-T-00008811-A.1

Implements with a seeding shaft drive motor or star wheel have a lay shaft coupling at the centre of the implement and a lay shaft coupling for one-sided switching on and off of the seeding shaft and lay shaft at the centre of the implement.

On implements with 2 electric metering drives, each half of the seeding shaft is driven by one metering drive.

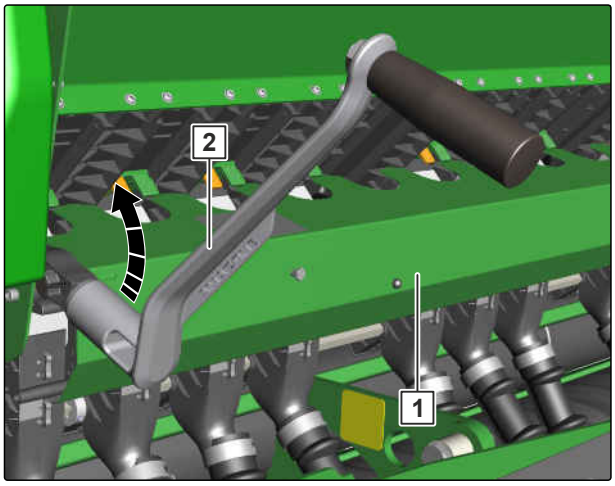
1. Put the universal operating tool 3 on the locking mechanism 2.



CMS-I-00005742

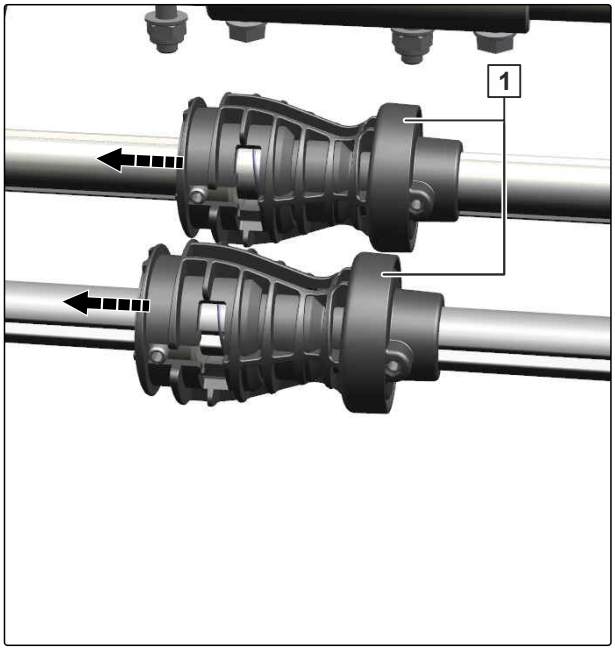
2. *To open the locking mechanism,*
move the universal operating tool 2 up.

➡ The metering unit cover 1 can be opened.



CMS-I-00005740

3. Pull the handles 1 for the couplings to the left side.



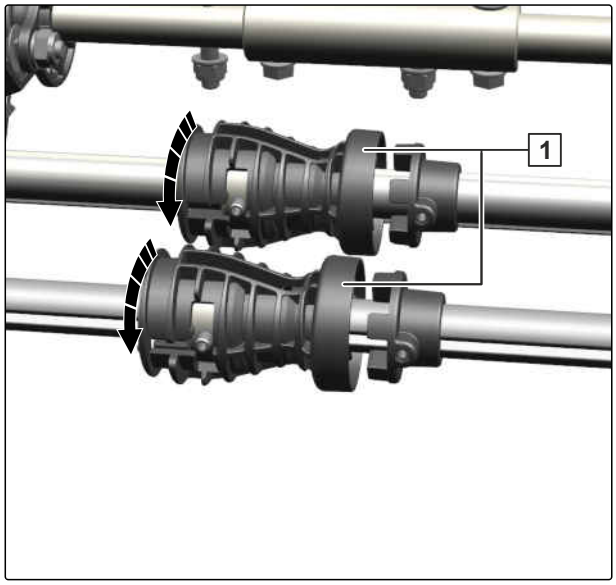
CMS-I-00005662

4. Turn the handles [1] for the couplings downwards.

➡ The one-sided switching is active.

➡ On implements with a seeding shaft drive motor, the side of the implement opposite to the motor is always switched off.

➡ On implements with star wheel, the left side of the implement is always switched off.



CMS-I-00005663

5. *To activate one-sided switching for implements with 2 electric metering drives:*
See *"ISOBUS software"* operating manual

or

see *"control computer"* operating manual.

6. Close the metering unit cover.

6.3.16 Using the loading board steps

CMS-T-00007020-C.1

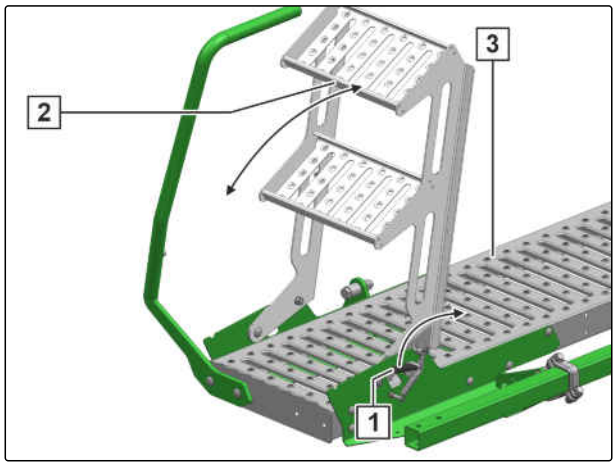
REQUIREMENTS

✓ The seed drill is coupled to the soil tillage implement

1. Hold the steps [2] in position.
2. *To unfold the steps,*
release the transport lock [1].
3. Swivel the steps down.
4. Climb onto the loading board [3] using the steps.
5. After use, swivel the steps up and put them in the parking position.

➡ The transport lock locks automatically.

6. Check whether the transport lock is properly locked.



CMS-I-00004942

6.3.17 Preparing the metering unit for operation

CMS-T-00008812-B.1

6.3.17.1 Selecting the setting values

CMS-T-00008305-A.1

Seed	Metering wheel	Sliding shutter position	Bottom flap position		Agitator shaft
			Thousand grain weight (TGW) less than 6 g (rapeseed), 50 g (cereals)	Thousand grain weight (TGW) more than 6 g (rapeseed), 50 g (cereals)	
Rye	Coarse	Open	1	2	Driven
Triticale	Coarse	3/4 open	1	2	Driven
Barley	Coarse	Open	1	2	Driven
Wheat	Coarse	3/4 open	1	2	Driven
Spelt	Coarse	Open	2		Driven
Oats	Coarse	Open	2		Driven
Rapeseed	Fine	3/4 open	1	2	Standstill
Caraway	Fine	3/4 open	1		Standstill
Mustard / fodder radish	Fine	3/4 open	1		Standstill
Phacelia	Coarse/fine	3/4 open	1		Driven
Turnips	Fine	3/4 open	1		Standstill
Grass	Coarse	Open	2		Driven
Beans, small (TGW > 400 g)	Coarse	3/4 open	4		Driven
Beans, large (TGW up to 600 g)	Beans	3/4 open	3		Driven
Beans, large (TGW < 600 g)	Beans	3/4 open	4		Driven
Peas (TGW up to 440 g)	Coarse	3/4 open	4		Driven
Peas (TGW < 440 g)	Coarse	3/4 open	4		Driven
Flax (dressed)	Coarse	3/4 open	1		Driven
Millet	Coarse	3/4 open	1		Driven
Lupines	Coarse	3/4 open	4		Driven
Lucerne	Coarse/fine	3/4 open	1		Driven
Oilseed (moist dressing)	Coarse/fine	3/4 open	1		Standstill
Red clover	Fine	3/4 open	1		Standstill

Seed	Metering wheel	Sliding shutter position	Bottom flap position		Agitator shaft
			Thousand grain weight (TGW) less than 6 g (rapeseed), 50 g (cereals)	Thousand grain weight (TGW) more than 6 g (rapeseed), 50 g (cereals)	
Soya	Coarse	3/4 open	4		Driven
Sunflowers	Coarse	3/4 open	2		Driven
Vetches	Coarse	3/4 open	2		Driven
Rice	Coarse	3/4 open	3		Driven

1. The metering wheel according to the spreading material can be found in the table.

2. *To install the desired metering wheel,*
see section *"Changing the metering wheel"*.

3. *To perform the calibration,*
see *"Calibrating the metering unit"*.

6.3.17.2 Changing the metering wheels

CMS-T-00008816-B.1

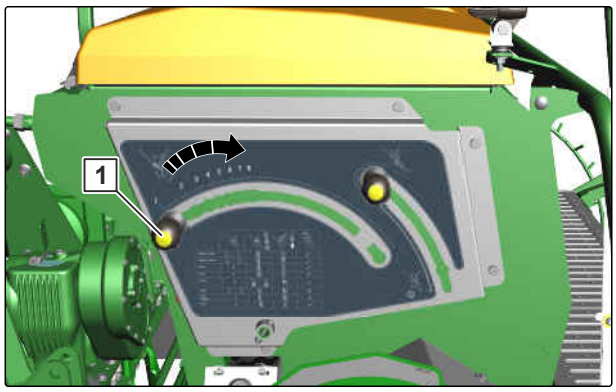
6.3.17.2.1 Removing the seeding shaft halves on implements with electric drive

CMS-T-00008853-A.1

NOTE

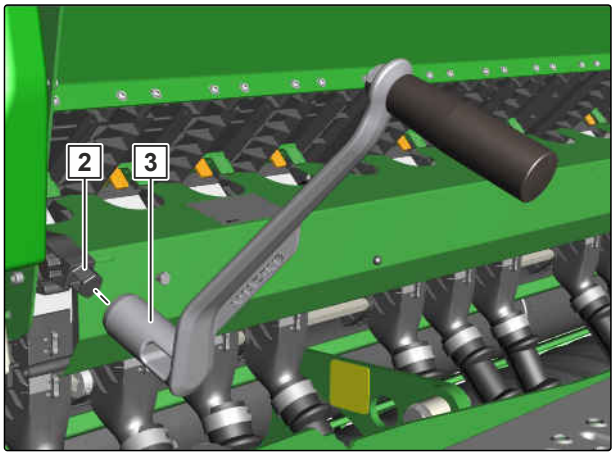
The lay shaft is only equipped on implements with tramline control.

1. Use the lever 1 to set the bottom flap to scale value 8.



CMS-I-00006093

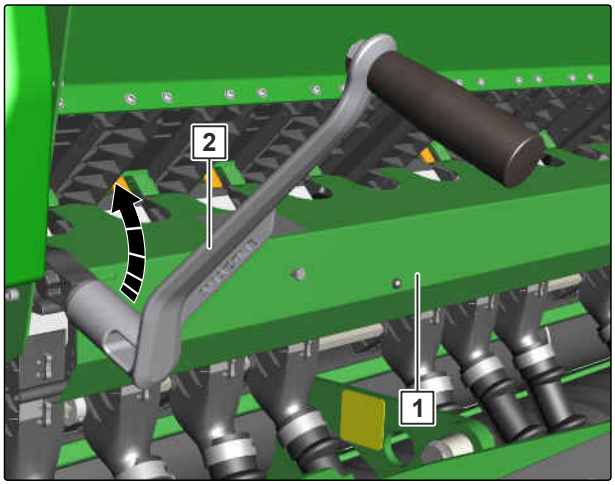
2. Put the universal operating tool 3 on the locking mechanism 2.



CMS-I-00005742

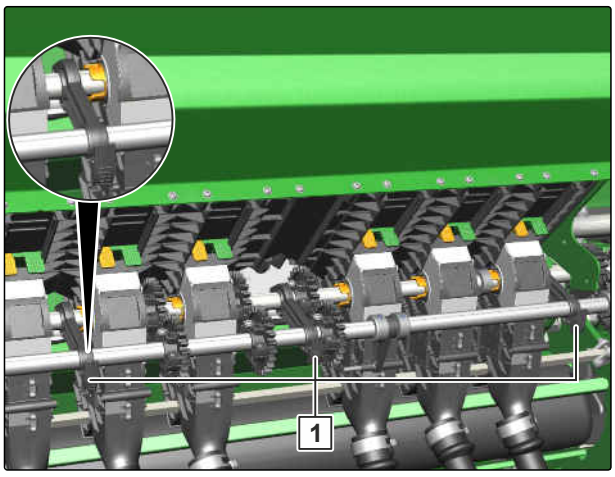
3. *To open the locking mechanism,*
move the universal operating tool 2 up.

➡ The metering unit cover 1 can be opened.



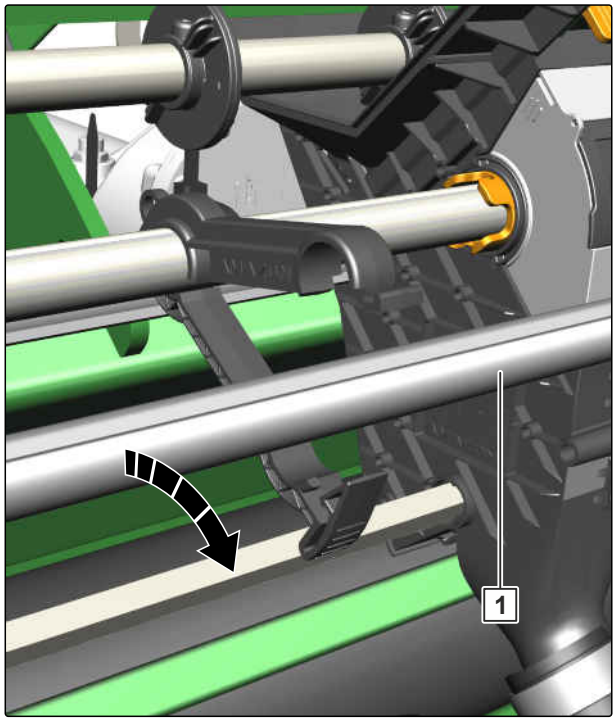
CMS-I-00005740

4. Open the lay shaft bearings 1.



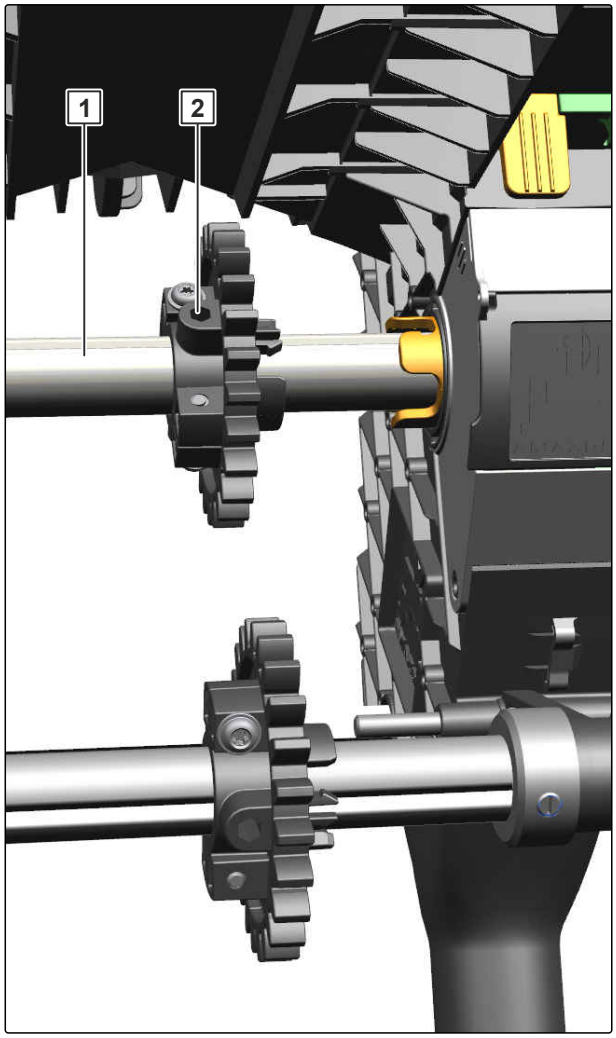
CMS-I-00005651

5. Fold down the lay shaft 1.



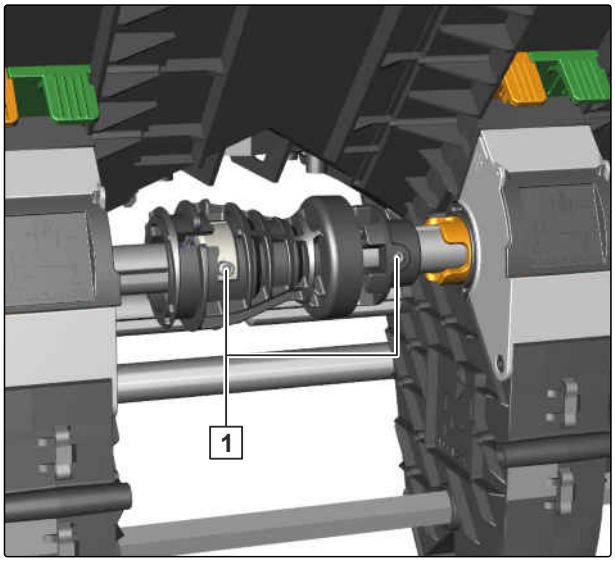
CMS-I-00005652

6. Loosen the bolt 2 on the gear wheels on the seeding shaft 1.



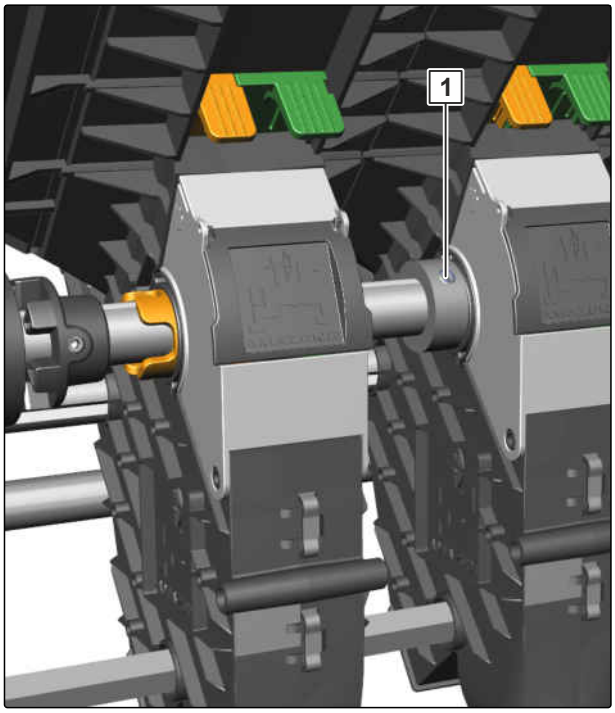
CMS-I-00005744

7. Loosen the bolts 1 on the seeding shaft coupling.



CMS-I-00006104

8. Loosen the bolts 1 of the adjusting rings on both halves of the seeding shaft.

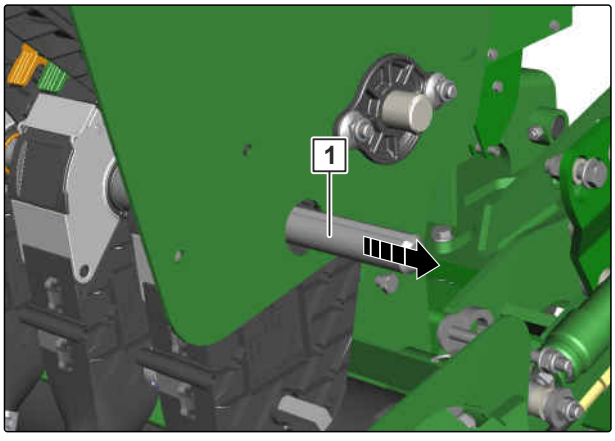


CMS-I-00006109

NOTE

When pulling out the seeding shaft halves, make sure that the adjusting rings or coupling parts do not fall into the implement.

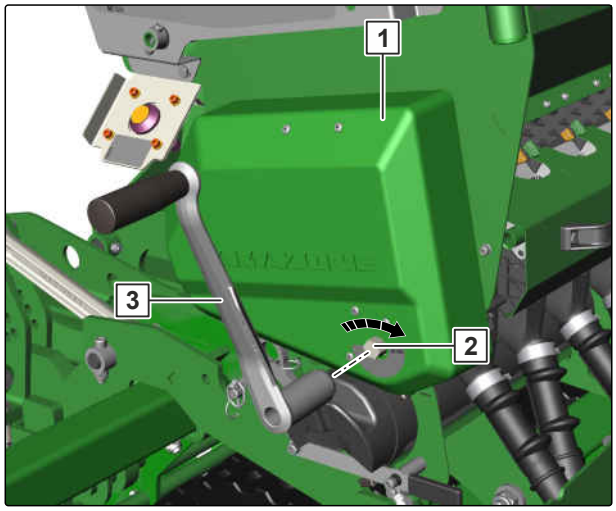
9. Pull out the right half of the seeding shaft 1.



CMS-I-00006111

10. *To open the cover* **1**:
    Put the universal operating tool **3** on the adjustment spindle **2** and turn it clockwise.

11. Fold up the cover.

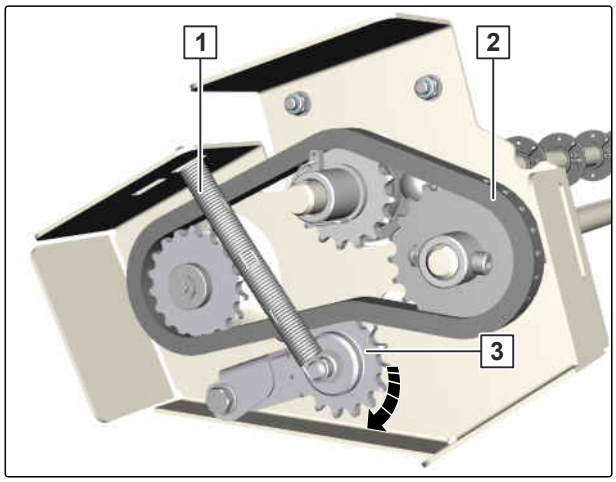


CMS-I-00006078

12. Take off the tension spring **1**.

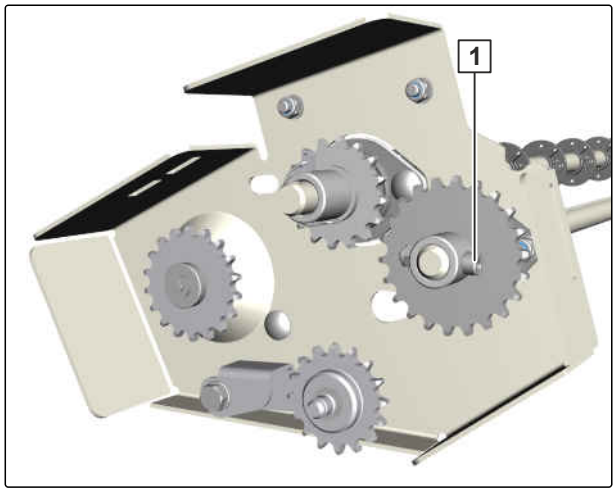
13. Fold down the chain sprocket **3**.

14. Remove the drive chain **2**.



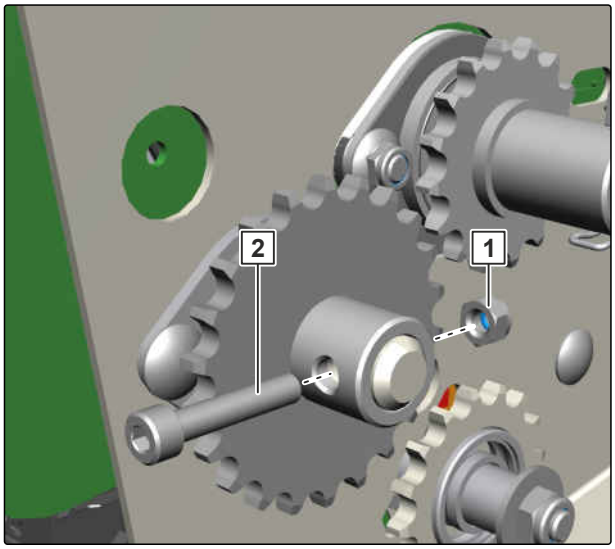
CMS-I-00005810

15. Remove the bolt **1**.



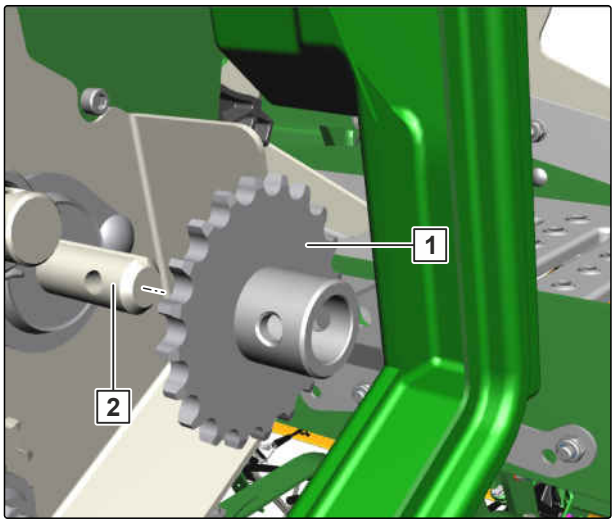
CMS-I-00005812

16. Remove the bolt 2 and nut 1.



CMS-I-00005748

17. Take the gear wheel 1 off of the seeding shaft 2.

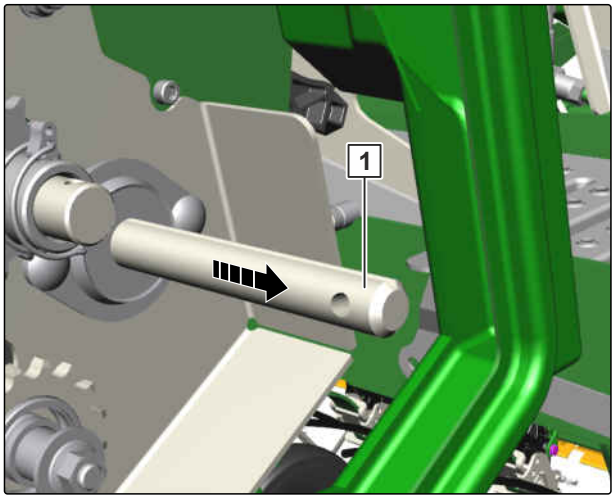


CMS-I-00005813

NOTE

When pulling out the seeding shaft halves, make sure that the adjusting rings or coupling parts do not fall into the implement.

18. Pull out the seeding shaft 1.



CMS-I-00005814

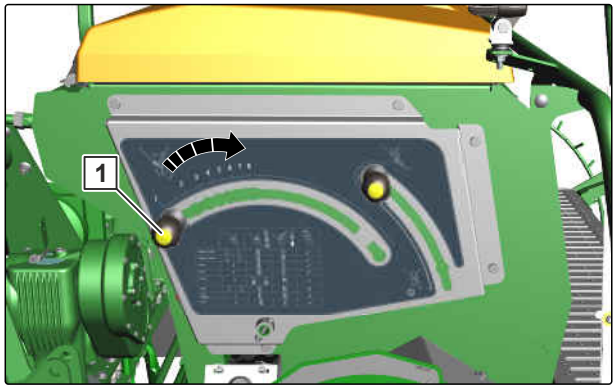
6.3.17.2.2 Removing the seeding shaft halves on implements with star wheel

CMS-T-00008851-A.1

NOTE

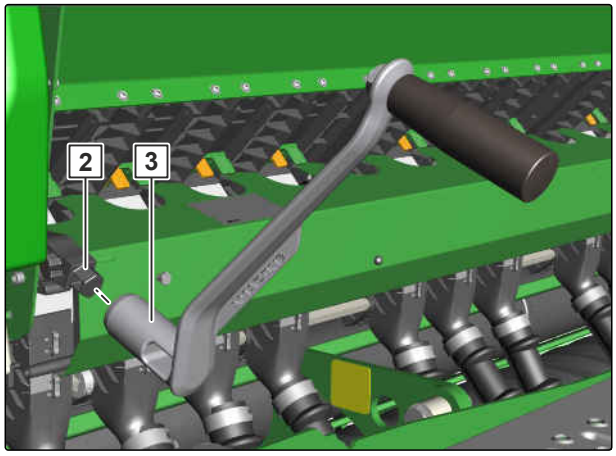
The lay shaft is only equipped on implements with tramline control.

1. Use the lever [1] to set the bottom flap to scale value 8.



CMS-I-00006093

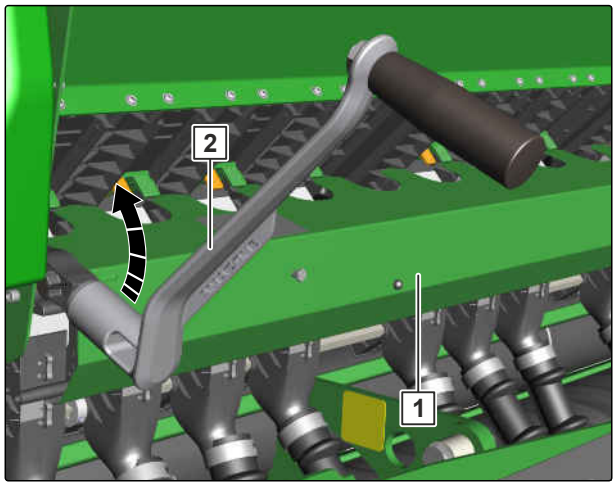
2. Put the universal operating tool [3] on the locking mechanism [2].



CMS-I-00005742

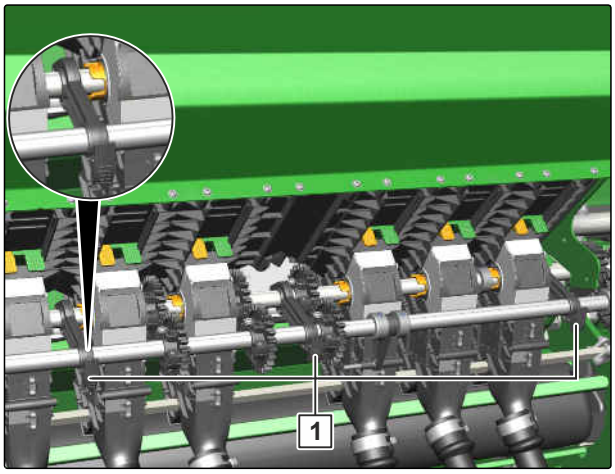
3. *To open the locking mechanism:*
   Move the universal operating tool [2] up.

➡ The metering unit cover [1] can be opened.



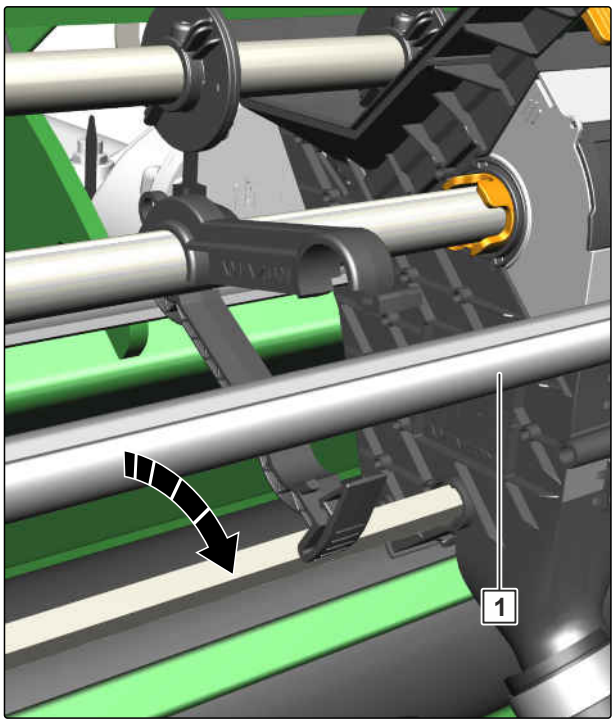
CMS-I-00005740

4. Open the lay shaft bearings 1.



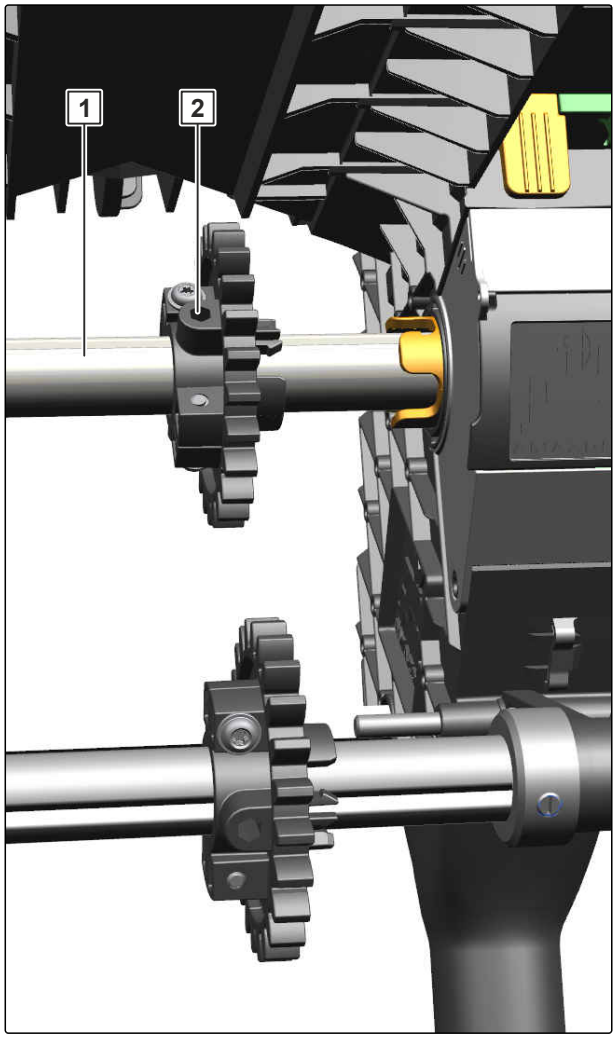
CMS-I-00005651

5. Fold down the lay shaft 1.



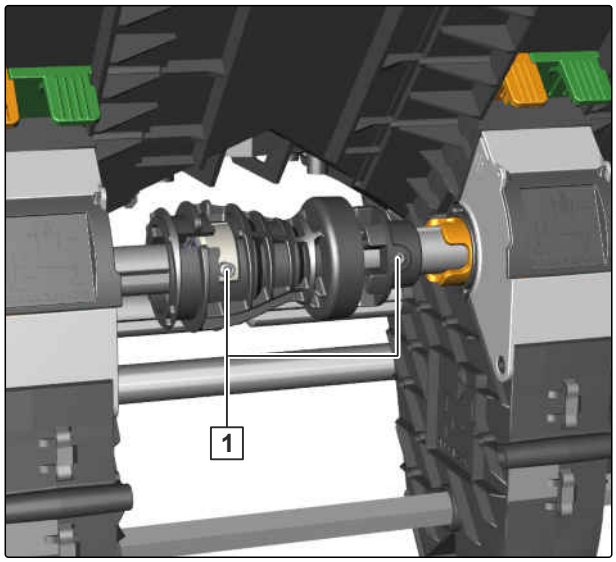
CMS-I-00005652

6. Loosen the bolt **2** on the gear wheels on the seeding shaft **1**.



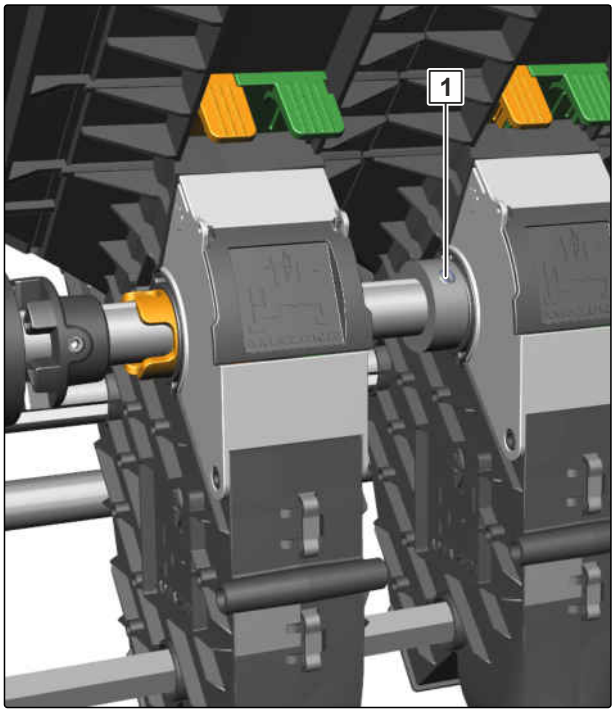
CMS-I-00005744

7. Loosen the bolts **1** on the seeding shaft coupling.



CMS-I-00006104

8. Loosen the bolts [1] of the adjusting rings on both halves of the seeding shaft.

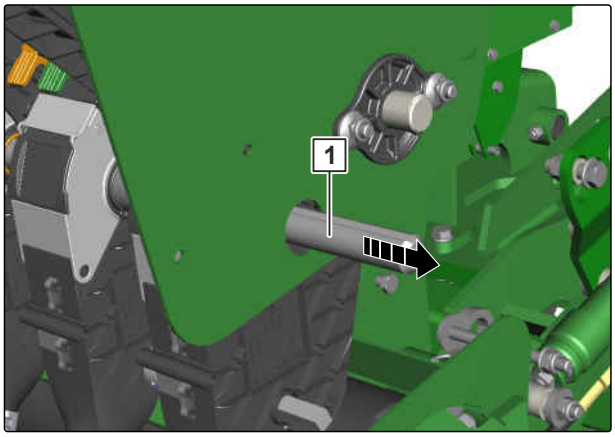


CMS-I-00006109

NOTE

When pulling out the seeding shaft halves, make sure that the adjusting rings or coupling parts do not fall into the implement.

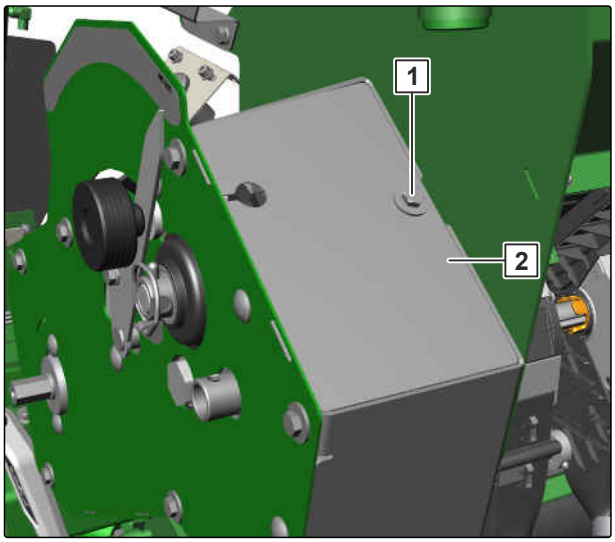
9. Pull out the right half of the seeding shaft [1].



CMS-I-00006111

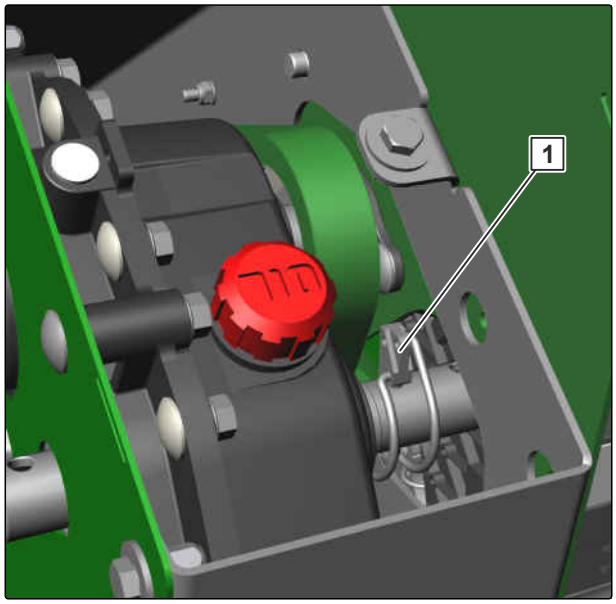
10. Loosen the bolt [1] with a suitable wrench.

11. Take off the chain guard [2].



CMS-I-00006098

12. Remove the linch pin 1.

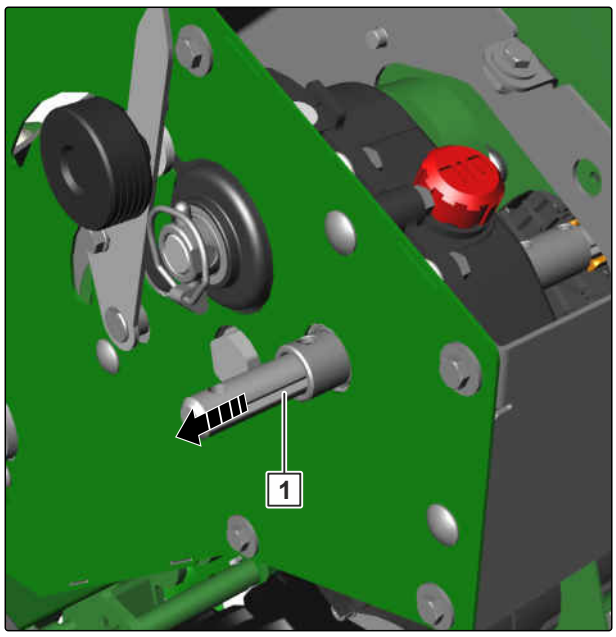


CMS-I-00006099

NOTE

When pulling out the seeding shaft halves, make sure that the adjusting rings or coupling parts do not fall into the implement.

13. Pull out the right half of the seeding shaft 1.

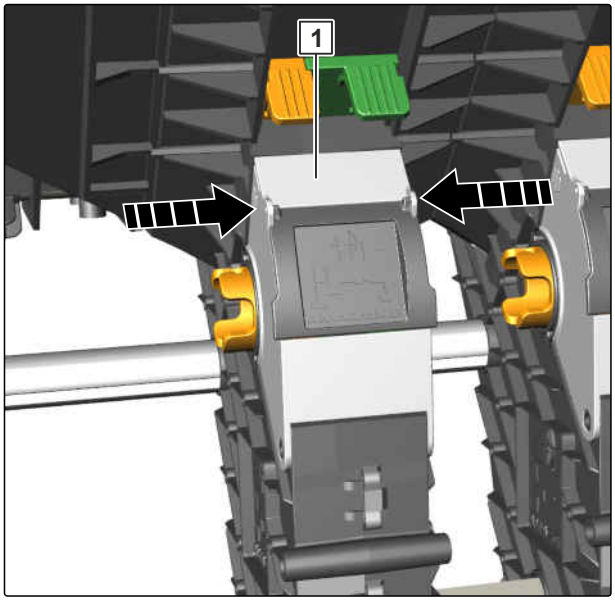


CMS-I-00006100

6.3.17.2.3 Inserting the bean metering wheel

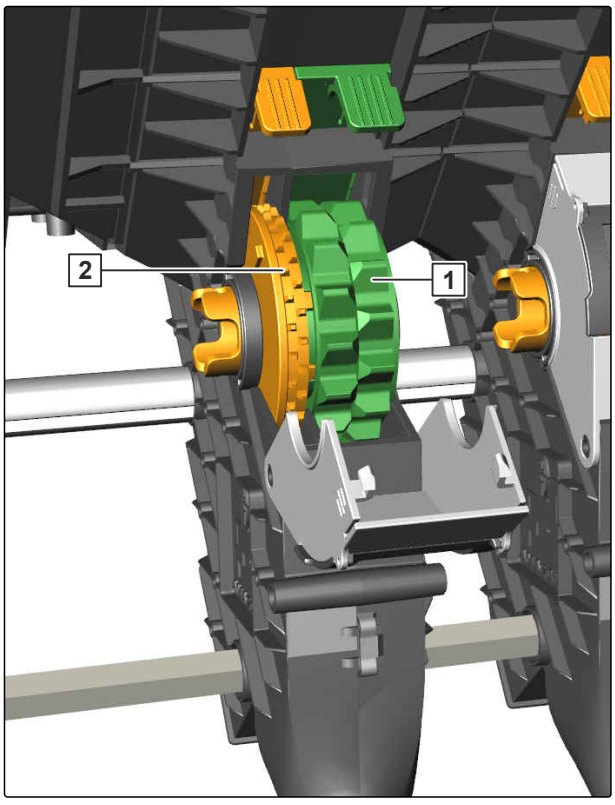
CMS-T-00008567-B.1

1. *To open the metering wheel cover* **1**:
   Slightly press in the metering wheel cover on the sides.



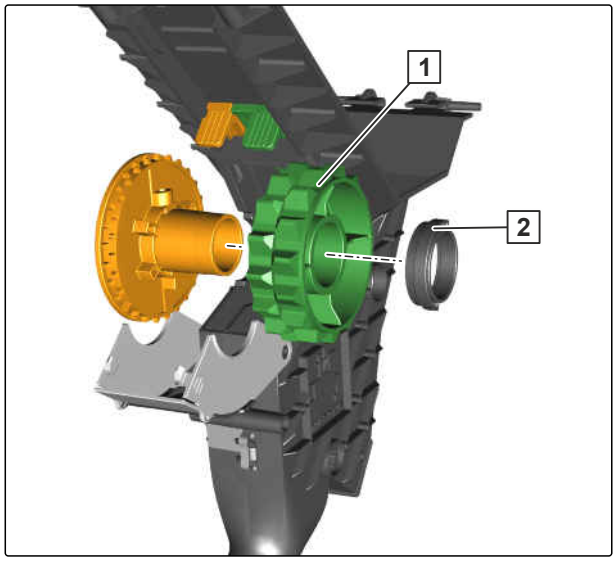
CMS-I-00005800

2. Take the fine metering wheel **2** and coarse metering wheel **1** out of the metering unit.



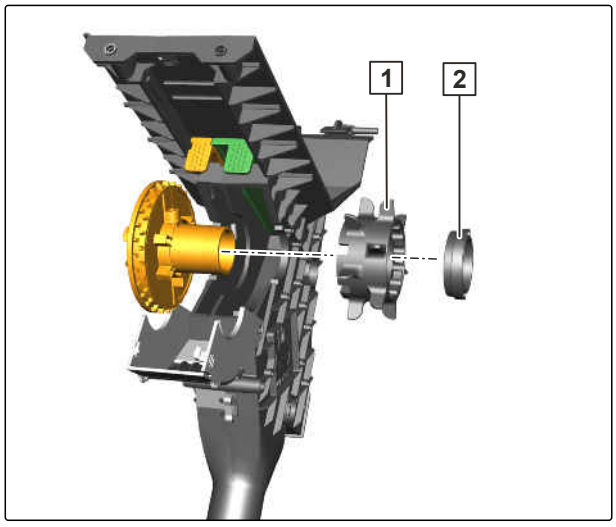
CMS-I-00005801

3. Take off the metering wheel bearing [2] and coarse metering wheel [1].



CMS-I-00005803

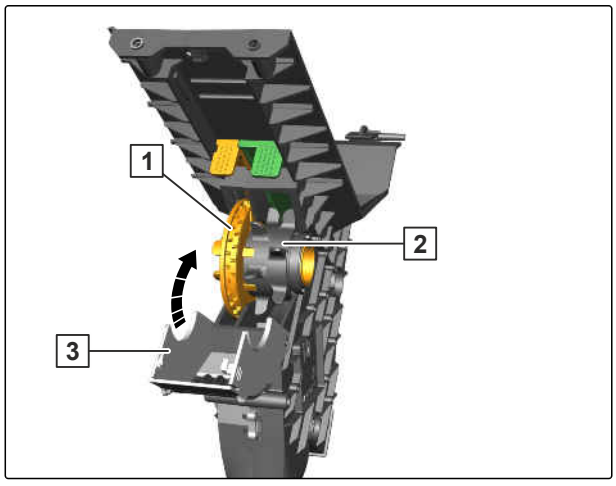
4. Install the bean metering wheel [1] and metering wheel bearing [2].



CMS-I-00005804

5. Insert the bean metering wheel [2] and fine metering wheel [1] into the seed housing.

6. Close the metering wheel cover [3].



CMS-I-00005805

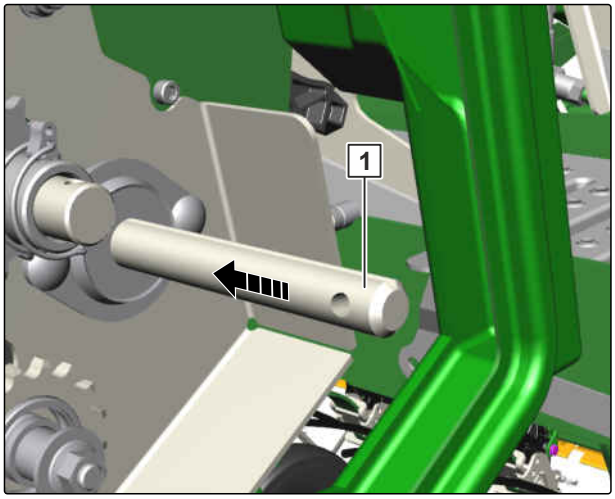
6.3.17.2.4 Installing the seeding shaft halves on implements with electric drive

CMS-T-00008878-A.1

NOTE

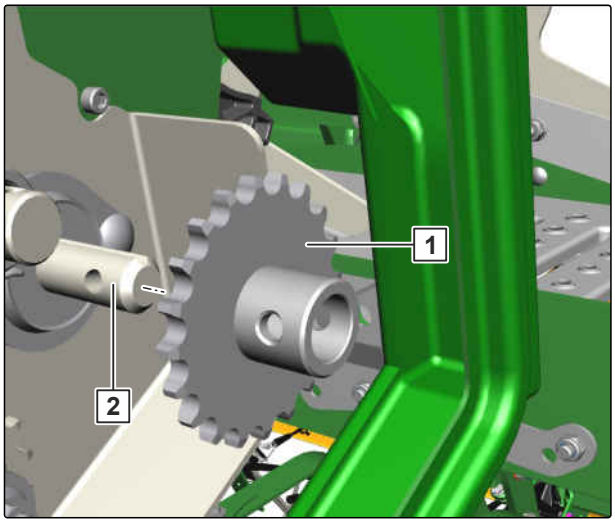
When installing the seeding shaft, make sure that all adjusting rings, gear wheels and coupling parts are positioned in their original places.

1. Install the left half of the seeding shaft **1**.



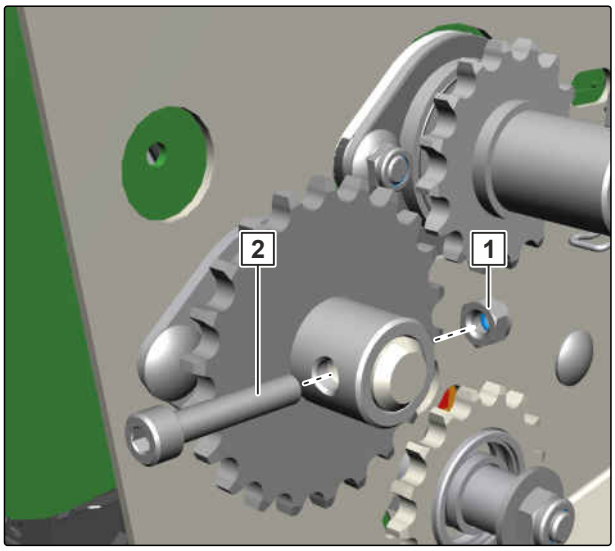
CMS-I-00005815

2. Put the gear wheel **1** on the seeding shaft **2**.



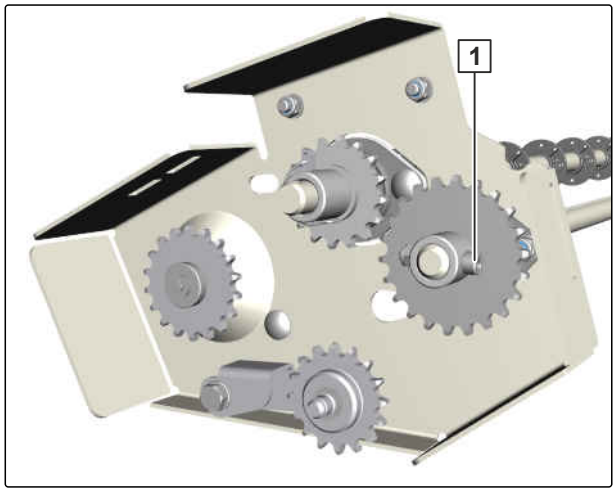
CMS-I-00005813

3. Install the bolt **2** and nut **1**.



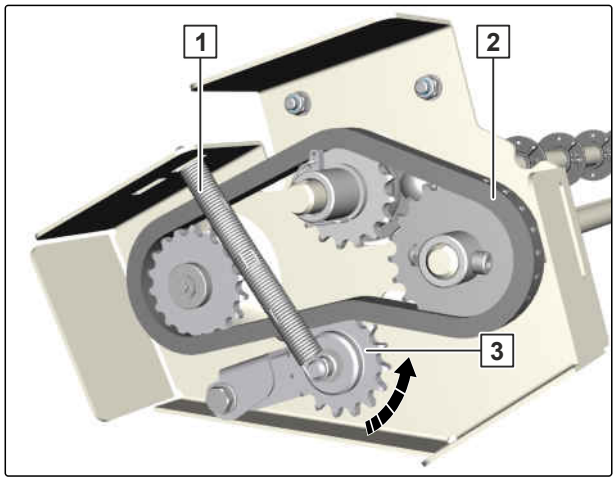
CMS-I-00005748

4. Tighten the bolt 1.



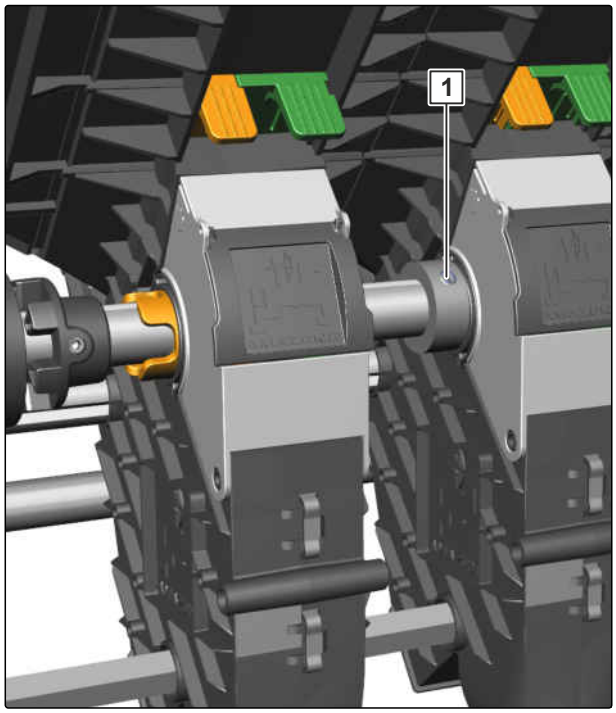
CMS-I-00005812

5. Install the drive chain 2.
6. Fold up the chain sprocket 3.
7. Install the tension spring 1.
8. Close the cover for the chain drive.



CMS-I-00006263

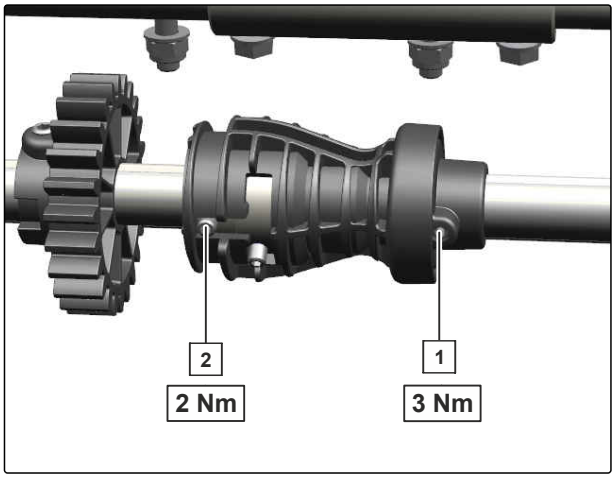
9. Tighten the bolts 1 of the adjusting rings on both halves of the seeding shaft.



CMS-I-00006109

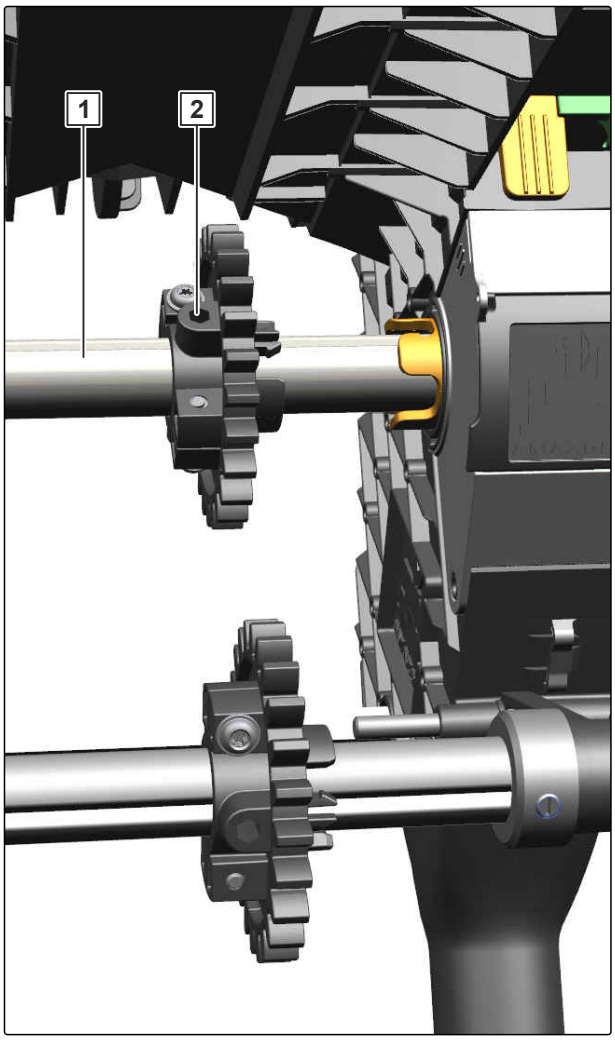
10. Tighten the bolt 2.

11. Tighten the bolt 1.



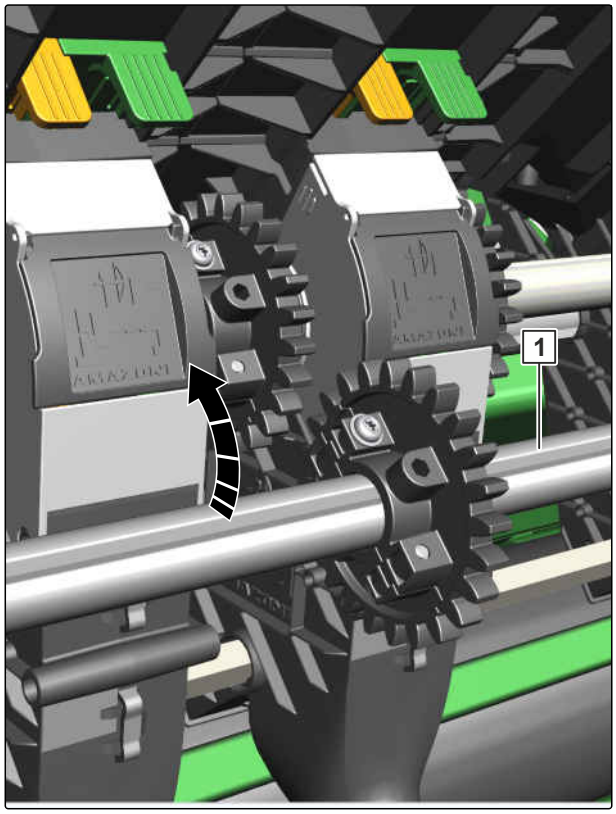
CMS-I-00005863

12. Tighten the bolt 2 on the gear wheels on the seeding shaft 1.



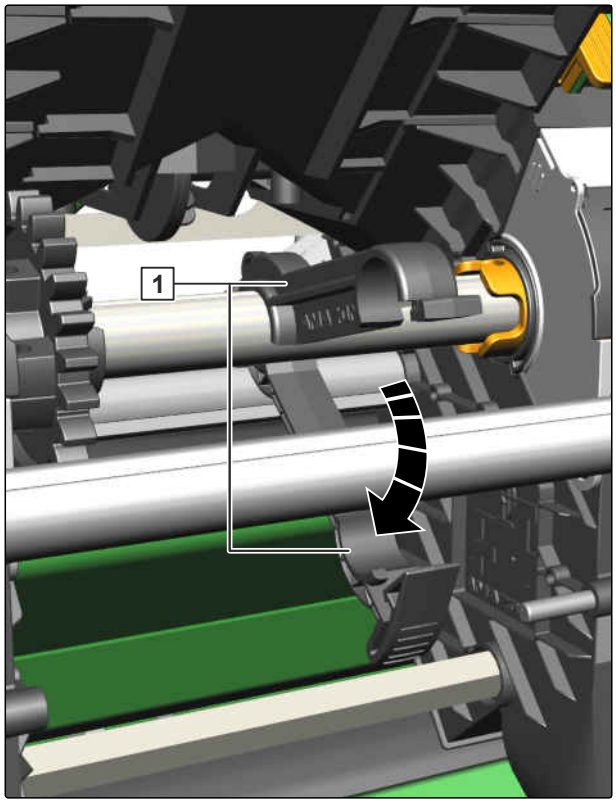
CMS-I-00005744

13. Fold up the lay shaft 1.



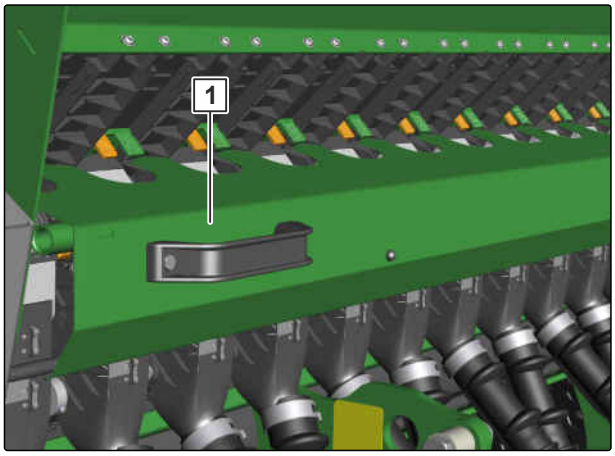
CMS-I-00005660

14. Close the lay shaft bearings 1.



CMS-I-00005661

15. Attach the metering unit cover 1.



CMS-I-00006114

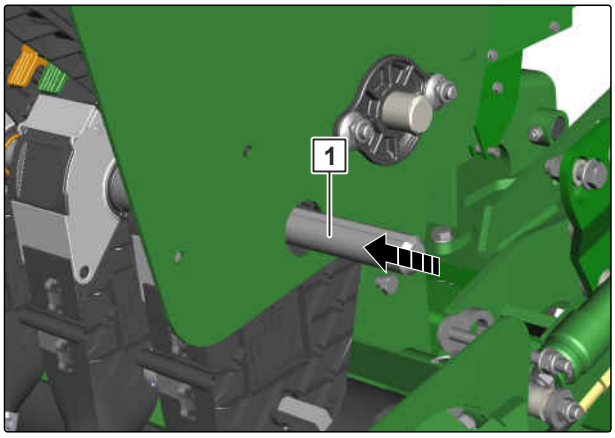
6.3.17.2.5 Installing the seeding shaft halves on implements with star wheel

CMS-T-00008879-A.1

NOTE

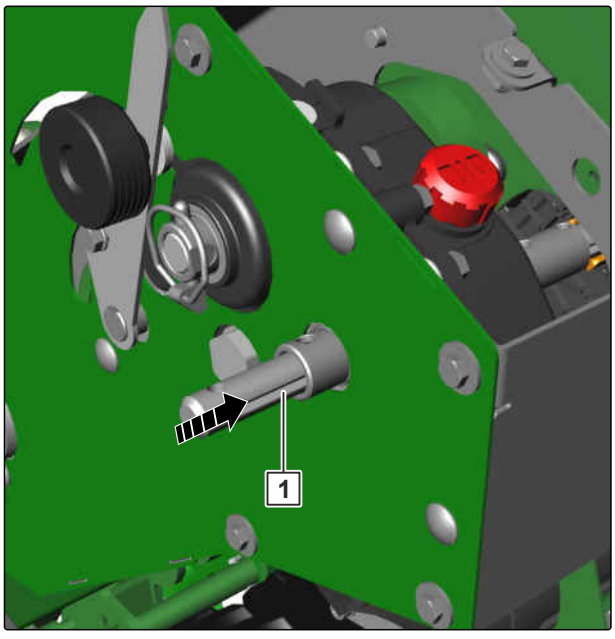
When installing the seeding shaft, make sure that all adjusting rings, gear wheels and coupling parts are positioned in their original places.

1. Install the right half of the seeding shaft 1.



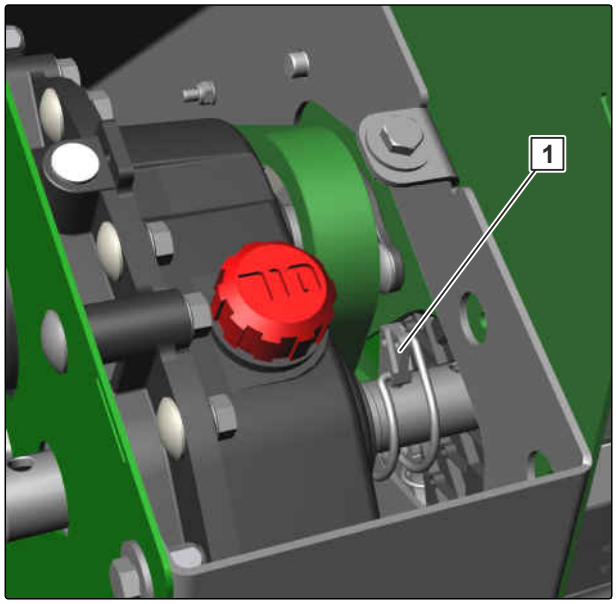
CMS-I-00006112

2. Install the left half of the seeding shaft 1.



CMS-I-00006113

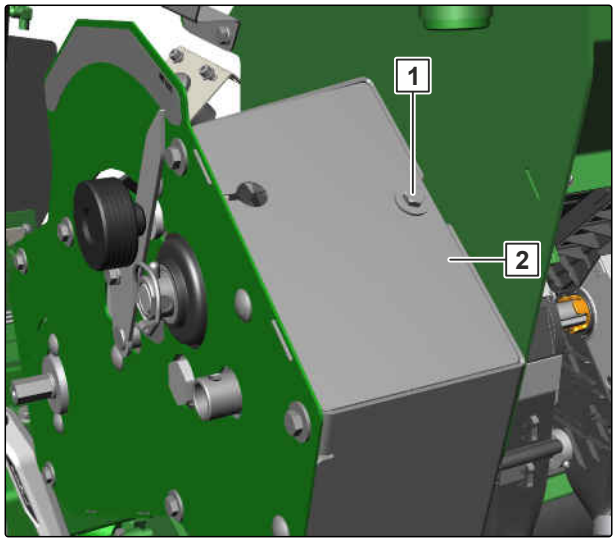
3. Put on the linch pin 1 and secure it with the bracket.



CMS-I-00006099

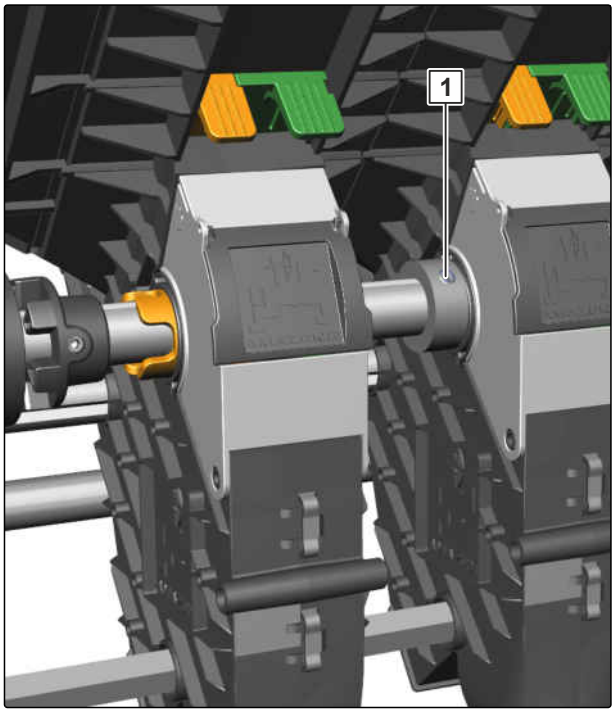
4. Install the chain guard 2.

5. Tighten the bolt 1 with a suitable wrench.



CMS-I-00006098

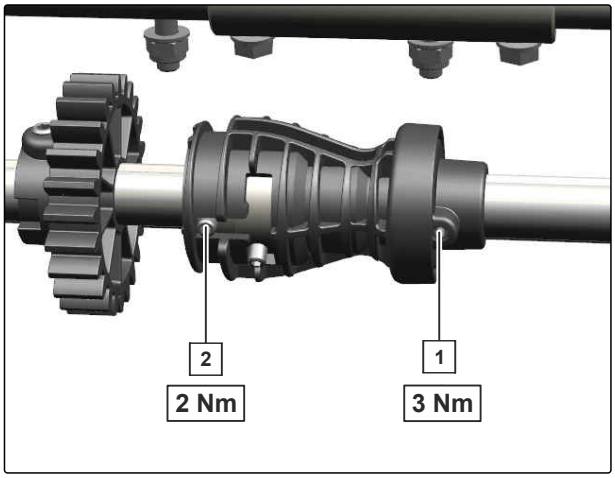
6. Tighten the bolts 1 of the adjusting rings on both halves of the seeding shaft.



CMS-I-00006109

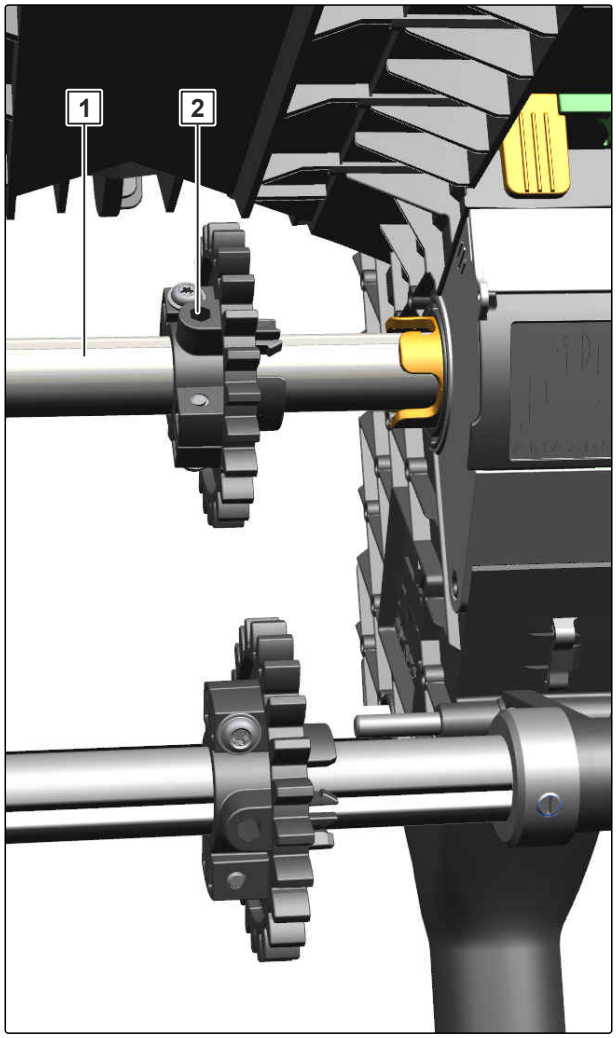
7. Tighten the bolt 2.

8. Tighten the bolt 1.



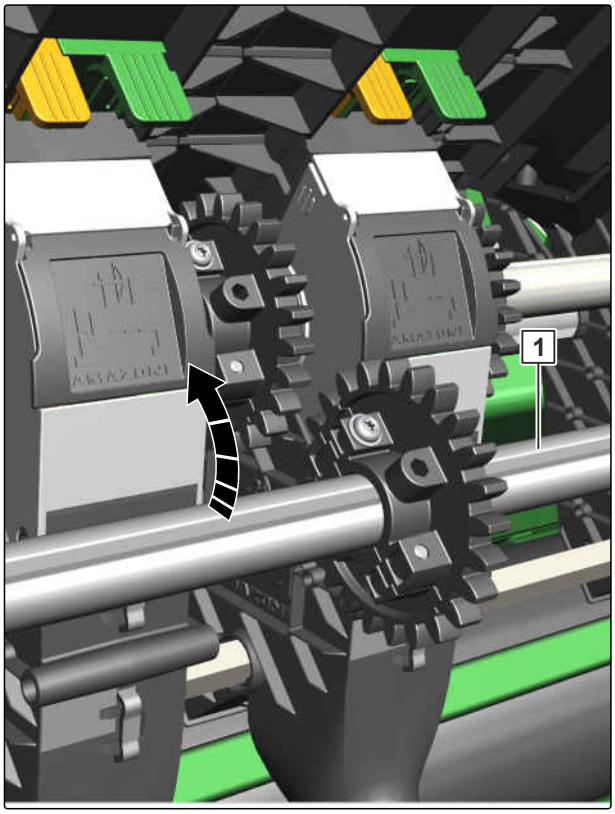
CMS-I-00005863

9. Tighten the bolt 2 on the gear wheels on the seeding shaft 1.



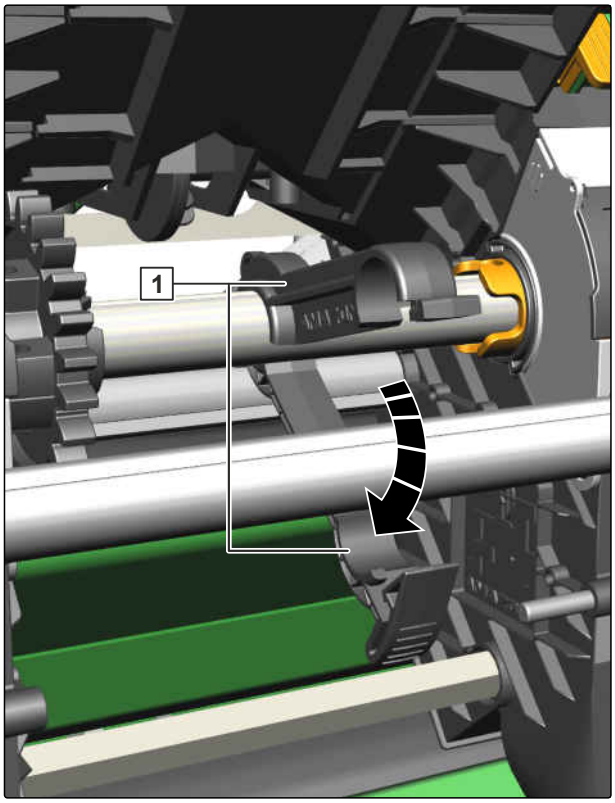
CMS-I-00005744

10. Fold up the lay shaft 1.



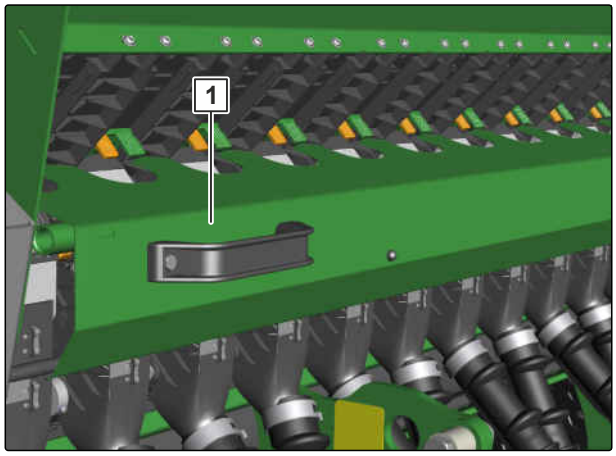
CMS-I-00005660

11. Close the lay shaft bearings 1.



CMS-I-00005661

12. Attach the metering unit cover 1.



CMS-I-00006114

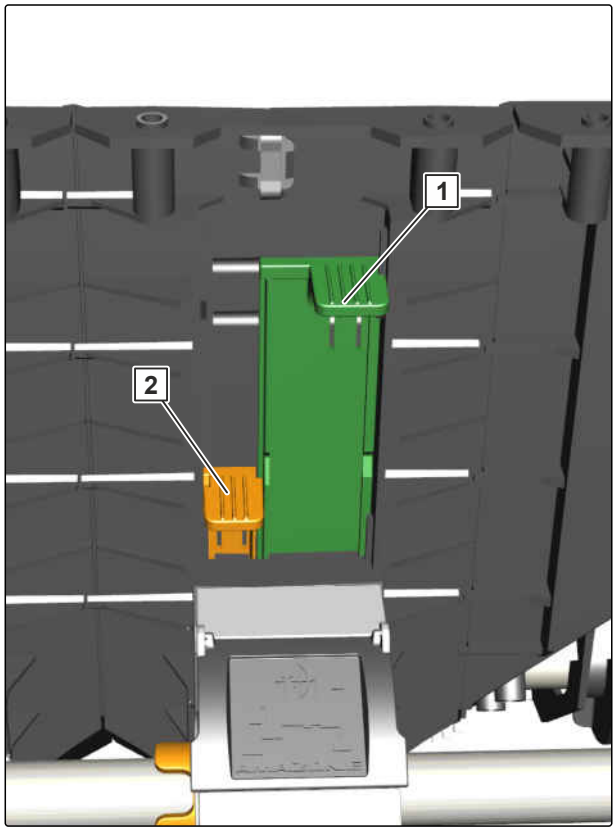
6.3.17.3 Adjusting the sliding shutter

CMS-T-00008518-A.1

▶ *To spread seed with coarse metering wheels or bean metering wheels:*
Set the coarse metering wheel sliding shutter 1 to the desired position and close the fine metering wheel sliding shutter

or

To spread seed with fine metering wheels:
Set the fine metering wheel sliding shutter 2 to the desired position and close the coarse metering wheel sliding shutter.



CMS-I-00005781

6.3.17.4 Adjusting the bottom flap

CMS-T-00008901-A.1

NOTE

This setting affects the seed rate.

Calibrate the metering unit after the adjustment.

1. Read the required bottom flap position from the *"Selecting the setting values"* section.
2. Set the bottom flap lever 1 to the desired position.

➡ The bottom flap lever is locked in the desired position.

CMS-I-00006145

6.3.17.5 Activating or deactivating the agitator shaft support

CMS-T-00008824-A.1

6.3.17.5.1 Activating or deactivating the agitator shaft support on implements with electric drive

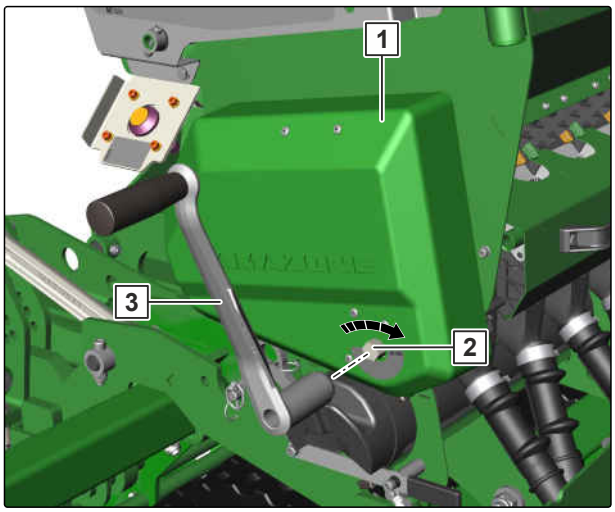
CMS-T-00008825-A.1

NOTE

This setting affects the seed rate.

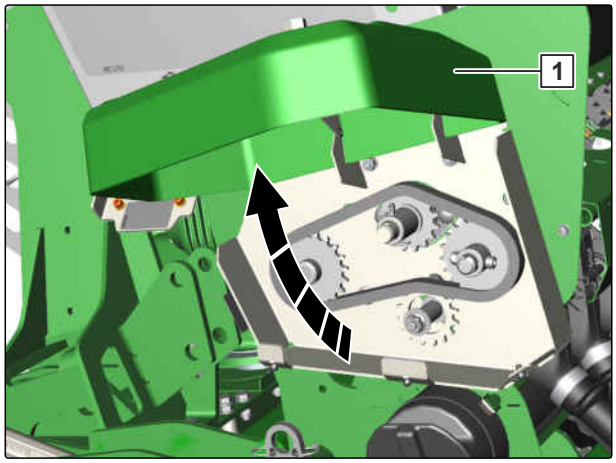
Calibrate the metering unit after the adjustment.

1. *To open the cover* 1*:*
   Put the universal operating tool 3 on the adjustment spindle 2 and turn it clockwise.



CMS-I-00006078

2. Fold up the cover 1.

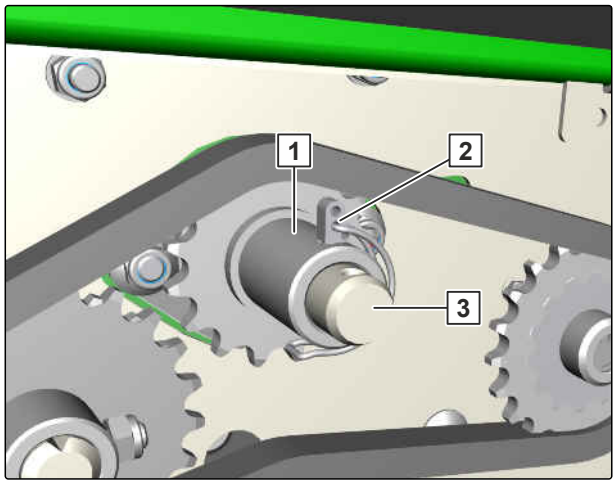


CMS-I-00006079

3. *To activate the agitator shaft:*
   Insert the linch pin 2 in the hollow drive shaft 1 and secure it.

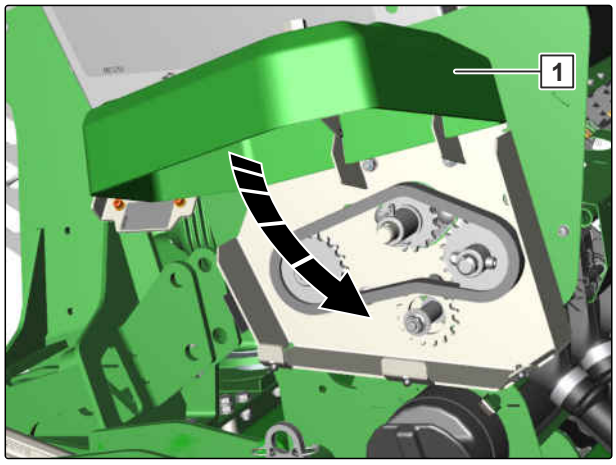
   or

   To deactivate the agitator shaft:
   Insert the linch pin 2 in the agitator shaft 3 and secure it.



CMS-I-00005778

4. Close the cover 1.



CMS-I-00006081

6.3.17.5.2 Activating or deactivating the agitator shaft support on implements with mechanical drive

CMS-T-00008826-A.1

NOTE

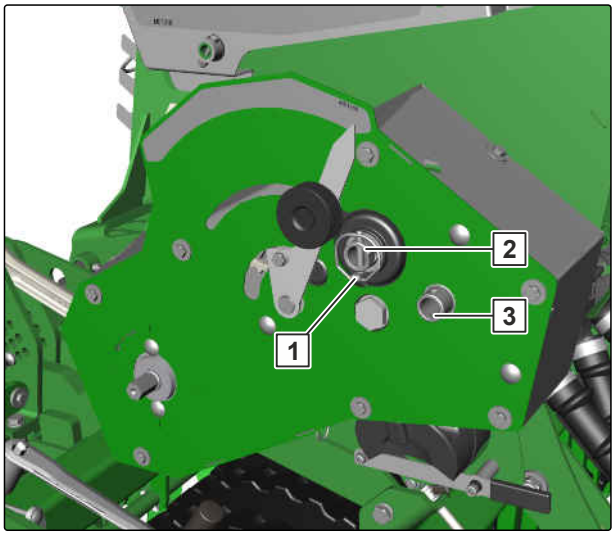
This setting affects the seed rate.

Calibrate the metering unit after the adjustment.

► *To activate the agitator shaft support:*
Insert the linch pin 1 in the hole of the input shaft 2 and secure it

or

To deactivate the agitator shaft support:
Insert the linch pin 1 in the hole of the output shaft 3 and secure it.



CMS-I-00006077

6.3.17.6 Extending the setting range of the Vario gearbox

CMS-T-00009201-A.1

6.3.17.6.1 Extending the setting range by moving the double chain wheel

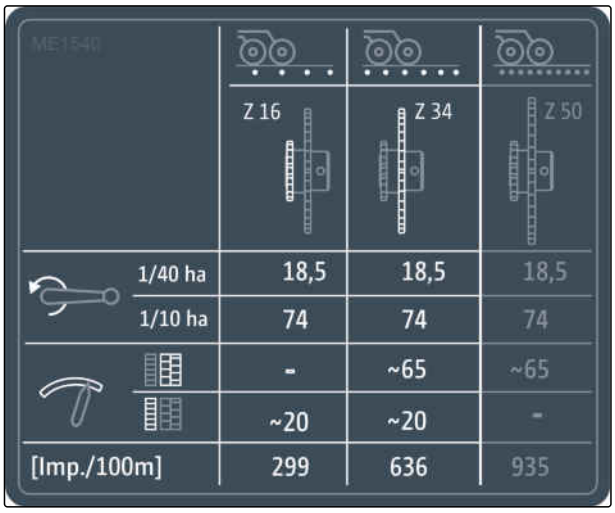
CMS-T-00009191-A.1

To spread a higher seed rate, the setting range of the Vario gearbox can be extended or reduced with different types of gear wheels.

The installation position of the roller chain is marked with the numbers Z16 and Z34.

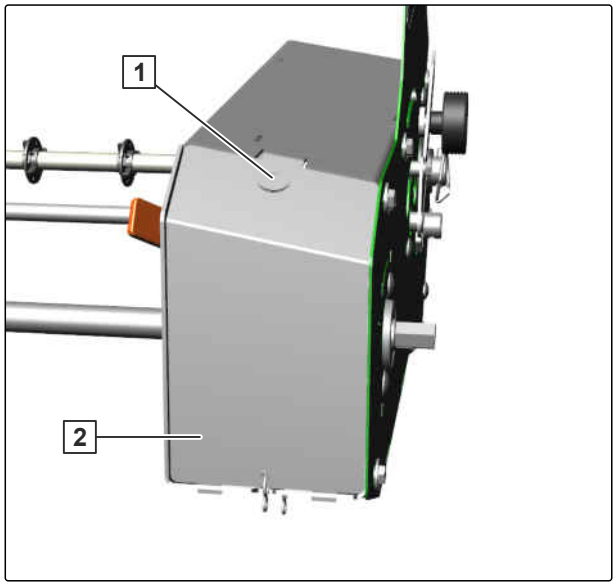
The roller chain runs either on chain wheel Z16 or Z34.

For certain seed rates, the double chain wheel Z16/34 can be replaced by the double chain wheel Z16/50.



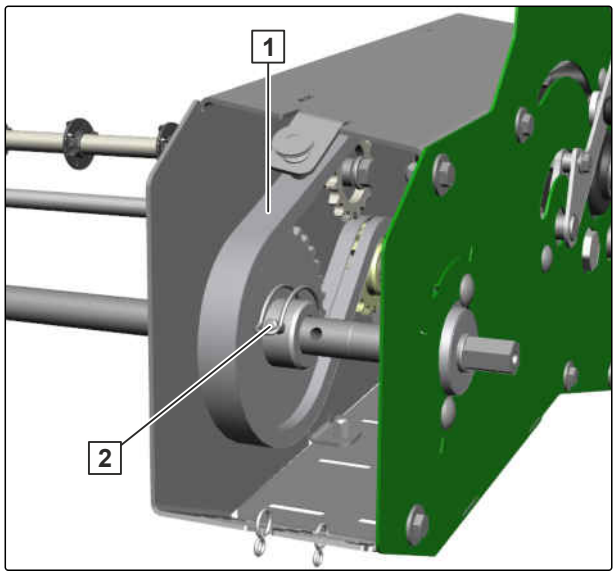
CMS-I-00006310

1. *To take off the front chain guard* **2**:
   Remove the bolt **1**.



CMS-I-00006312

2. *To relieve the roller chain* **1**:
   Remove the linch pin **2**.

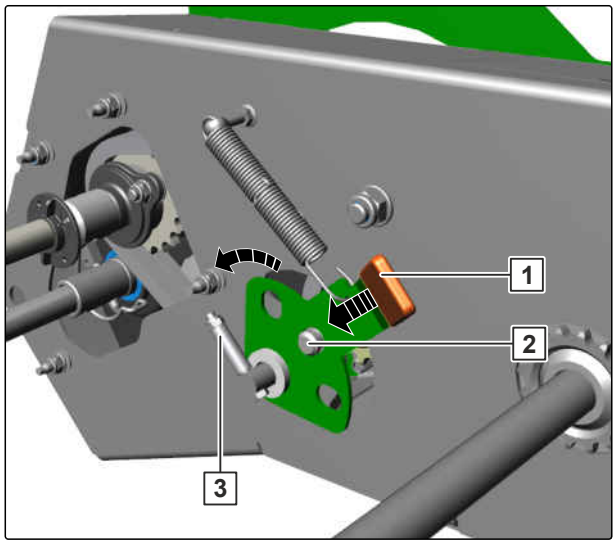


CMS-I-00006315

3. Hold onto the shaft with the dowel pin **3**.

4. *To release the pin* **2**:
   Pull the lever **1** forwards.

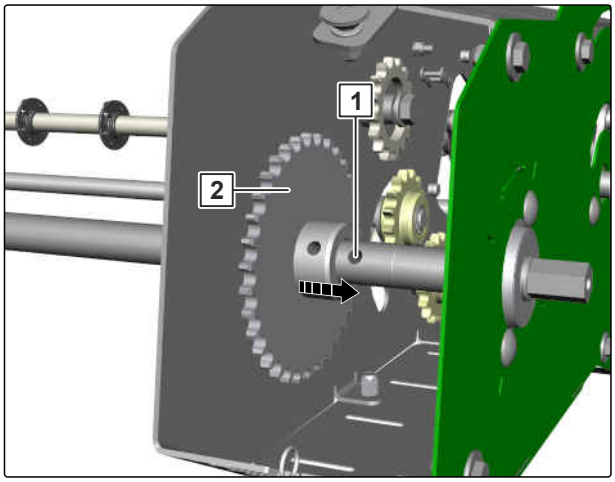
5. Push the lever **1** to the rear.



CMS-I-00006316

6. Slide the double chain wheel 2 far enough so that the holes of the double chain wheel and the shaft are aligned.

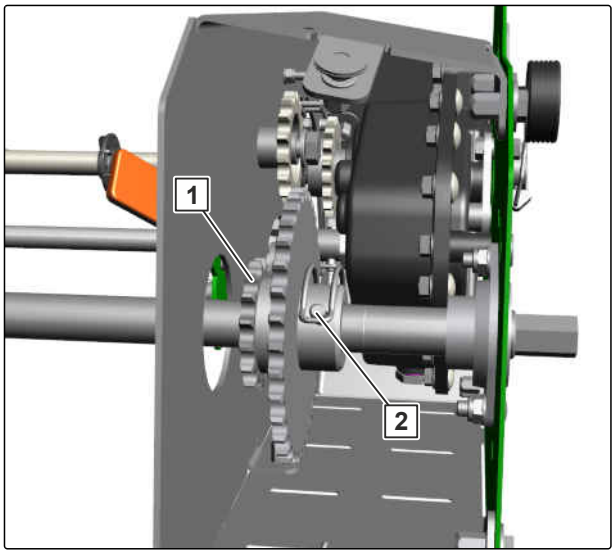
7. *To fix the double chain wheel 2:*
Install the linch pin in the hole 1.



CMS-I-00006317

8. Put the roller chain on the smaller gear wheel 1.

9. Install the linch pin 2.



CMS-I-00006327

10. Turn the shaft with the dowel pin 3 counterclockwise.

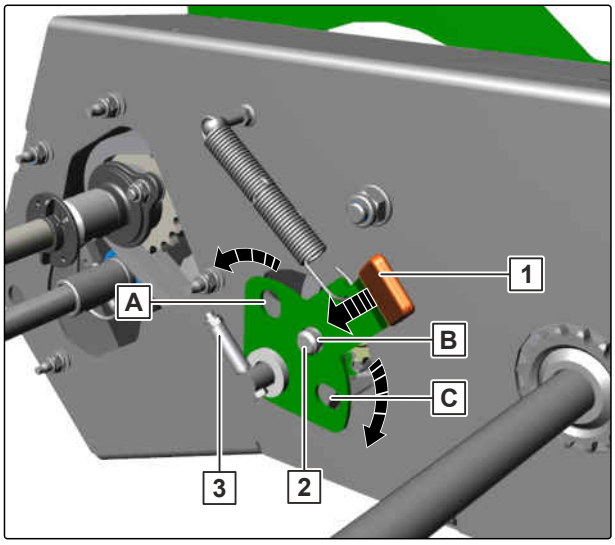
If gear wheel Z16 is used, use hole A.

If gear wheel Z34 is used, use hole B.

If gear wheel Z50 is used, use hole C.

11. Pull the lever 1 forwards.

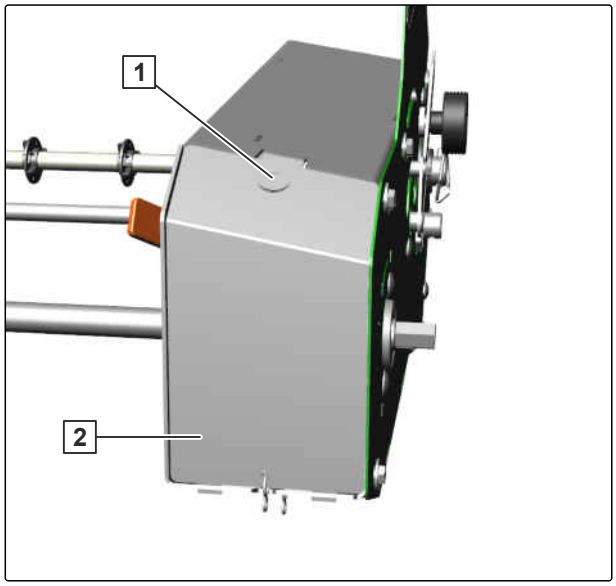
12. Allow the pin 2 to engage in the intended hole.



CMS-I-00006328

13. Install the chain guard **2**.

14. Tighten the bolt **1**.



CMS-I-00006312

6.3.17.6.2 Extending the setting range by replacing the double chain wheel

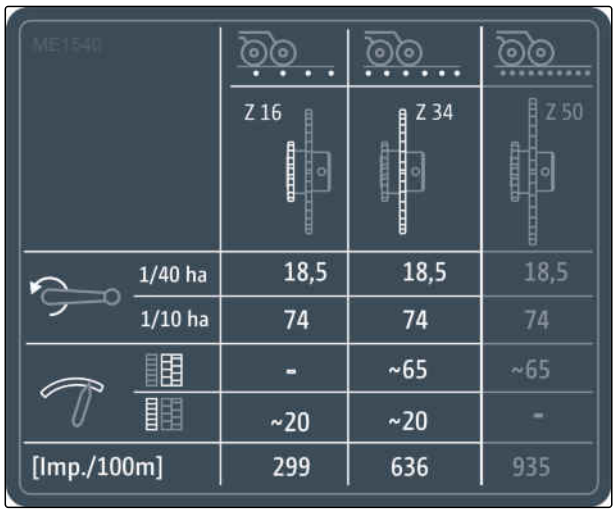
CMS-T-00009202-A.1

To spread a higher seed rate, the setting range of the Vario gearbox can be extended or reduced with different types of gear wheels.

The installation position of the roller chain is marked with the numbers Z16 and Z34.

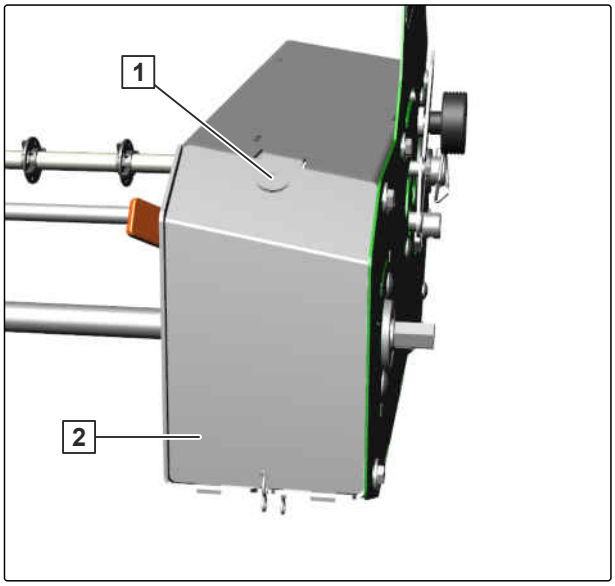
The roller chain runs either on chain wheel Z16 or Z34.

For certain seed rates, the double chain wheel Z16/34 can be replaced by the double chain wheel Z16/50.



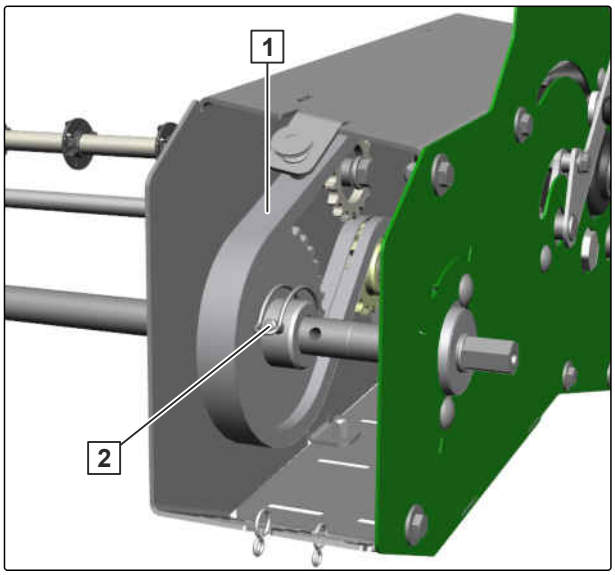
CMS-I-00006310

1. *To take off the front chain guard* **2**:
   Remove the bolt **1**.



CMS-I-00006312

2. *To relieve the roller chain* **1**:
   Remove the linch pin **2**.

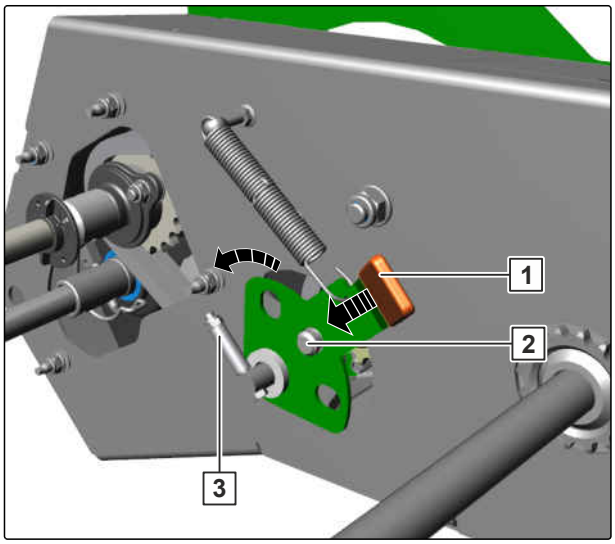


CMS-I-00006315

3. Hold onto the shaft with the dowel pin **3**.

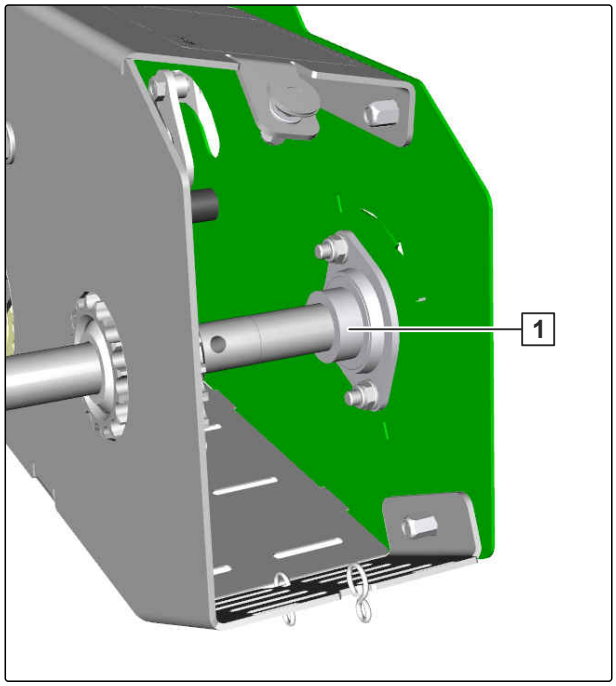
4. *To release the pin* **2**:
   Pull the lever **1** forwards.

5. Push the lever **1** to the rear.



CMS-I-00006316

6. Remove the bolt 1.

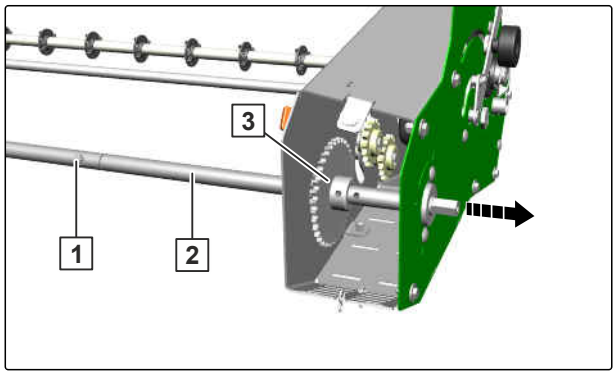


CMS-I-00006329

7. Remove the bolt 1.

NOTE

When pulling out the shaft, make sure that the double chain wheel 3 does not fall into the drive housing.



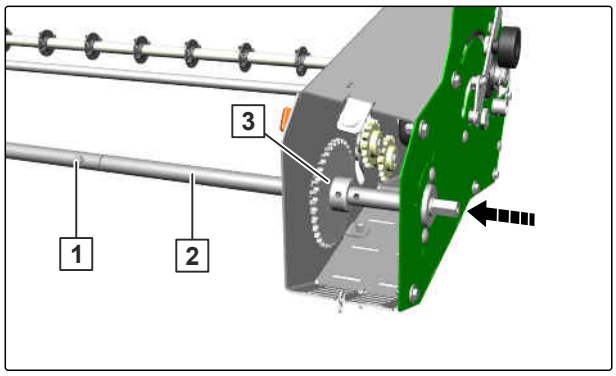
CMS-I-00006330

8. Pull out the shaft 2.

9. Take off the double chain wheel 3.

10. *To install the new double chain wheel 3 on the shaft:*
    Move the double chain wheel 3 into position and install the shaft 2.

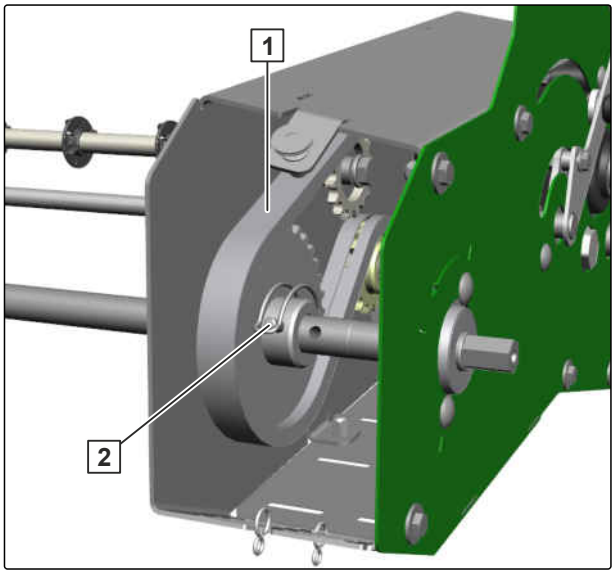
11. Insert the bolt 1 and tighten it.



CMS-I-00006332

12. Attach the roller chain 1.

13. Install the linch pin 2.



CMS-I-00006315

14. Turn the shaft with the dowel pin 3 counterclockwise.

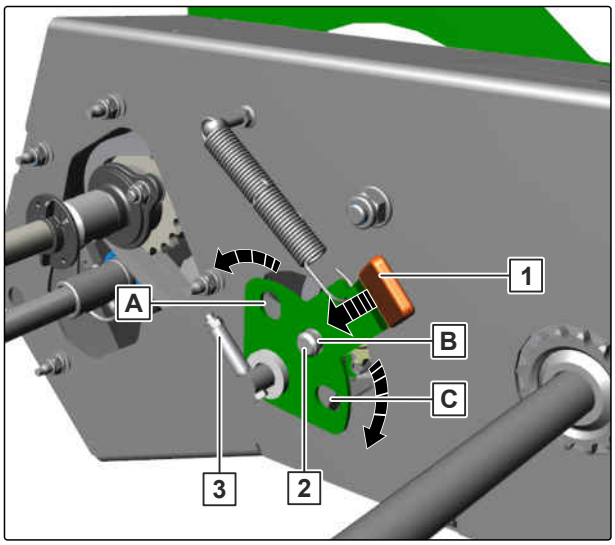
If gear wheel Z16 is used, use hole A.

If gear wheel Z34 is used, use hole B.

If gear wheel Z50 is used, use hole C.

15. Pull the lever 1 forwards.

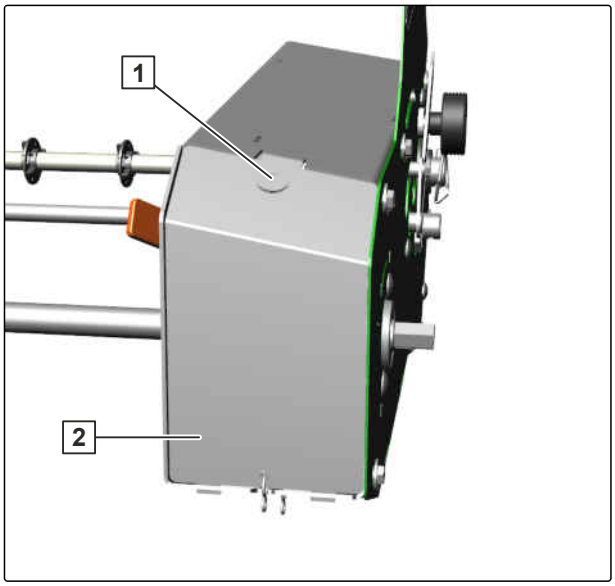
16. Allow the pin 2 to engage in the intended hole.



CMS-I-00006328

17. Install the chain guard 2.

18. Tighten the bolt 1.



CMS-I-00006312

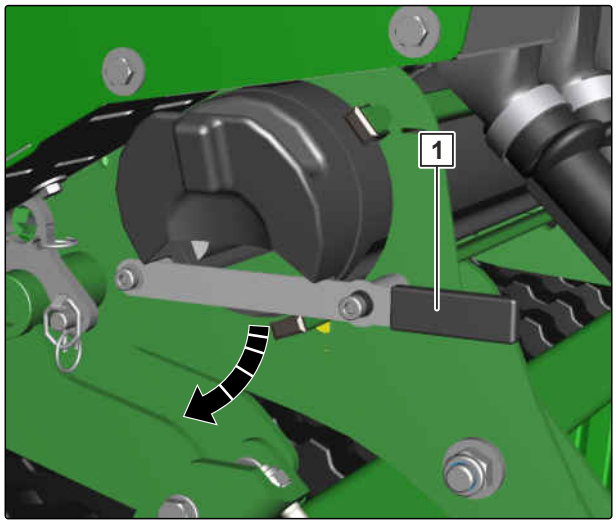
6.3.17.7 Calibrating the metering unit

CMS-T-00008881-A.1

6.3.17.7.1 Calibrating implements with mechanical drive

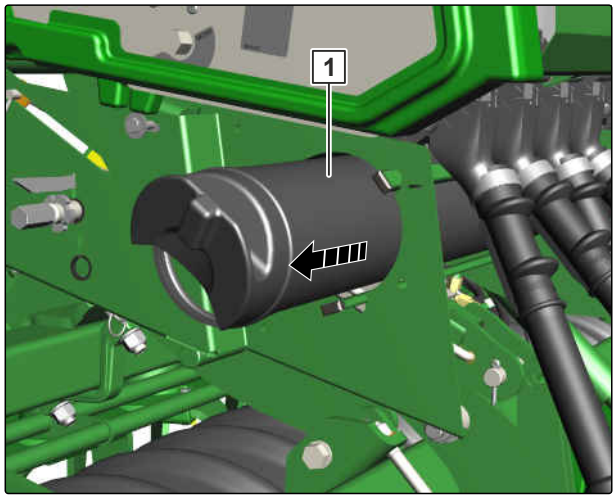
CMS-T-00008880-A.1

1. *To pull out the calibration trough:*
   Fold down the bracket **1**.



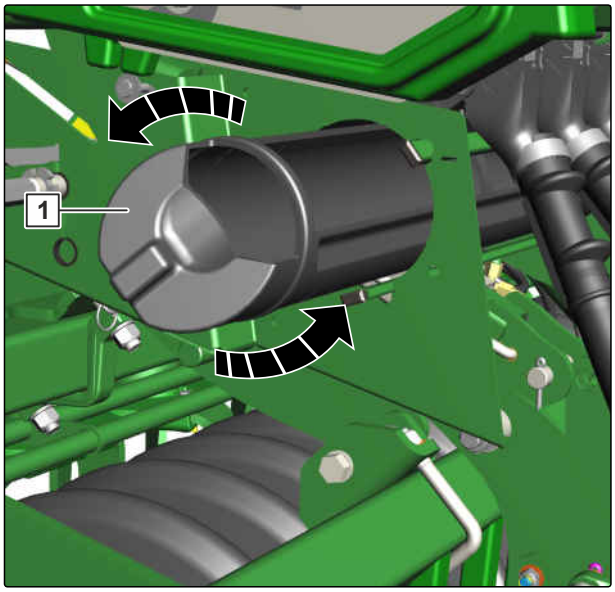
CMS-I-00006115

2. Pull out the calibration trough **1**.



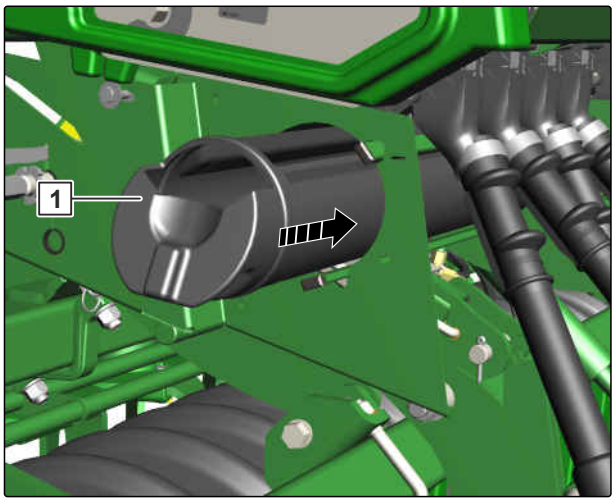
CMS-I-00005707

3. *To collect the seed in the calibration trough* **1**:
Turn the calibration trough with the opening facing up.



CMS-I-00005708

4. Slide in the calibration trough **1**.



CMS-I-00005709

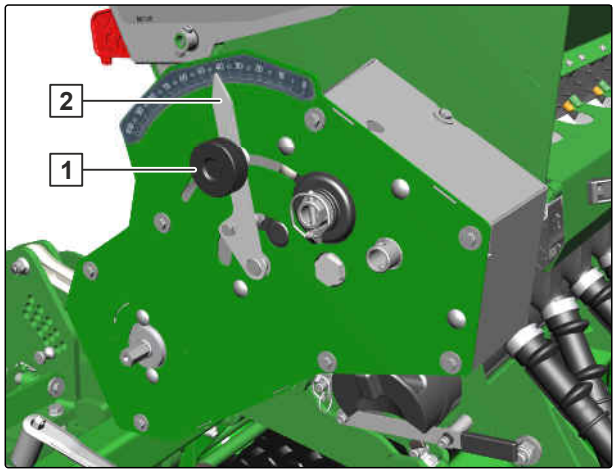
5. *To guide the seed into the calibration trough:*
Move the calibration lever **1** beyond the latch to the end position.

6. Push the calibration lever back and let it engage in the calibration position.

➡ The flag **2** indicates that the calibration lever **1** is in calibration position.

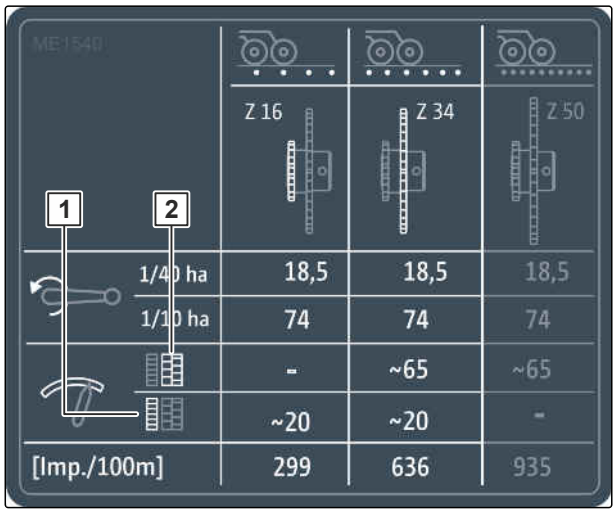
CMS-I-00006120

7. *To release the locking mechanism of the gearbox setting lever:*
   Turn the lock button **1** counterclockwise.



CMS-I-00006123

This sticker shows the values for setting the gearbox setting lever when using coarse metering wheels **2** and fine metering wheels **1**.

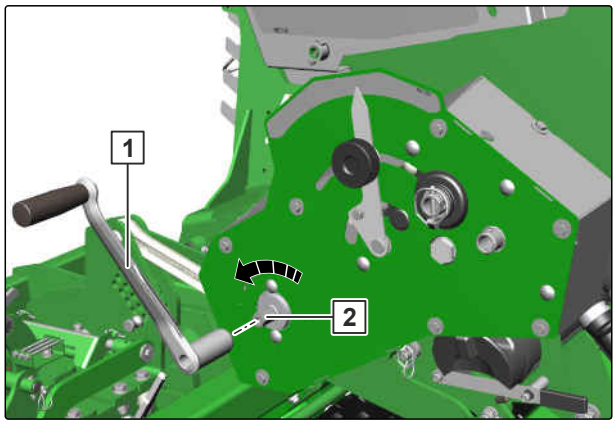


CMS-I-00006126

8. *To move the gearbox setting lever in the correct position:*
   Read the required value from the table.

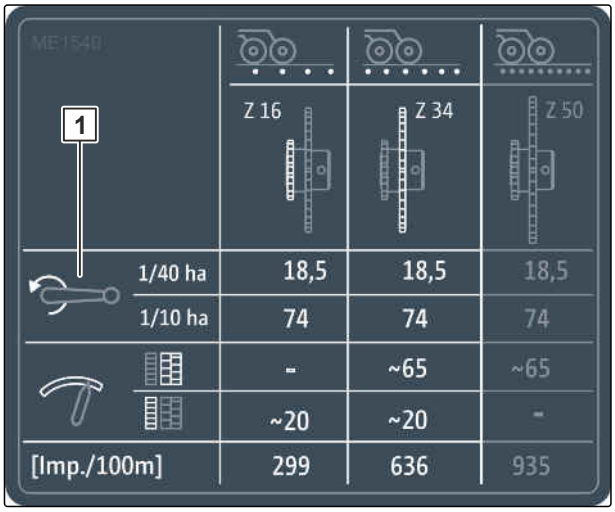
9. *To lock the gearbox setting lever:*
   Turn the locking button **1** clockwise.

10. Put the universal operating tool **1** on the adjustment spindle **2**.



CMS-I-00006124

The respective number of turns for the calibration can be found on line 1 of the table.



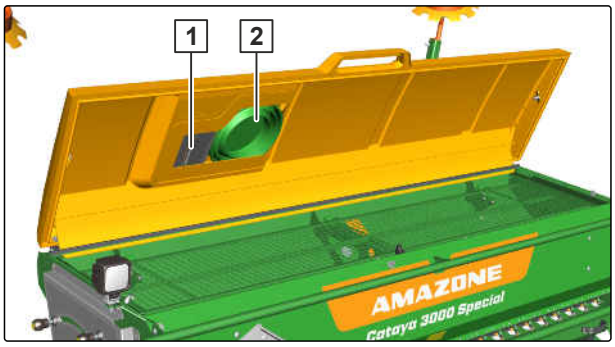
CMS-I-00006127

11. Read the number of turns for the calibration from line 1 of the table.

12. *To guide seed into the calibration trough:*
Turn the universal operating tool counterclockwise 1.

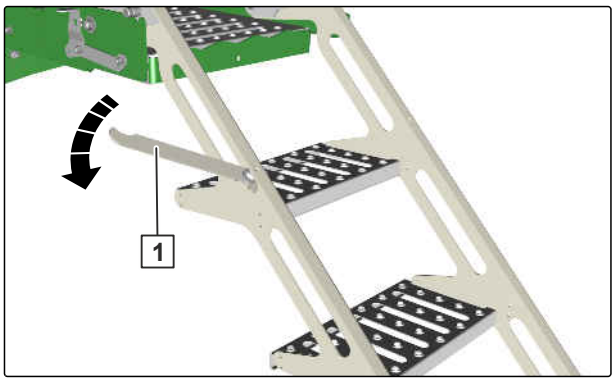
13. Open the hopper cover.

14. Take the scale 1 and collapsible bucket 2 from the hopper cover.



CMS-I-00006125

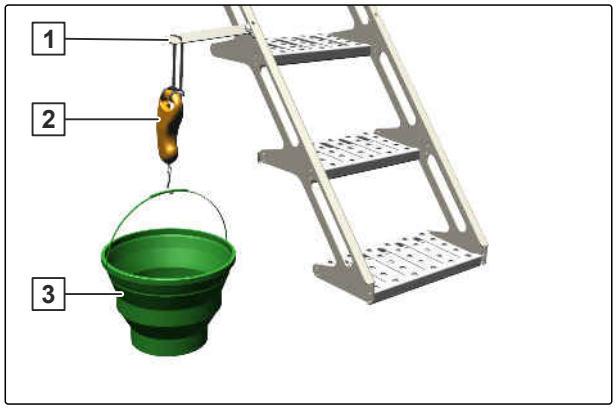
15. Fold down the bracket 1 on the ascent.



CMS-I-00005700

16. Hang the scale 2 on the bracket 1 on the ascent.

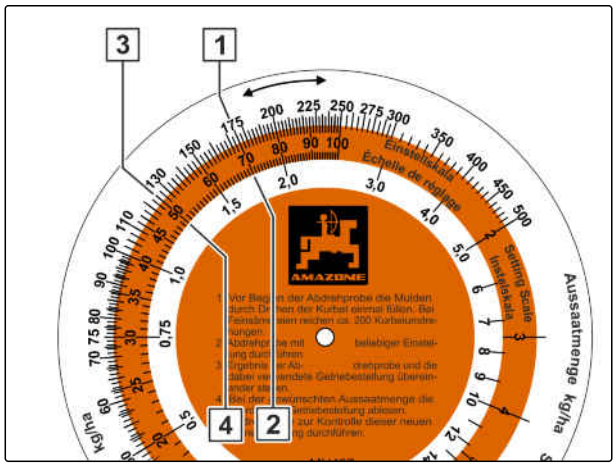
17. *To weigh the collected seed from the calibration trough:*
Hang the collapsible bucket 3 on the scale and pour in the seed.



CMS-I-00005716

The desired seed rate is generally not achieved with the first calibration. To achieve the desired seed rate, the calculator disc and the calibration factor from the first calibration must be used to determine the desired seed rate.

- Determined spread rate 175 kg/ha 1
- Utilised gearbox position 70 2
- Desired spread rate 125 kg/ha 3
- Gearbox position 50 4 for the desired spread rate



CMS-I-00002787

18. Align the determined seed rate 1 with the utilised gearbox position 2 on the calculator disc.

19. Read the gearbox position 4 for the desired spread rate 3 from the calculator disc.

20. *To set the gearbox setting lever below the scale value of 20 or above the scale value of 80:*
See section *"Extending the setting range of the Vario gearbox"*

or

Set the gearbox setting lever between the scale values 20 and 80.

21. Repeat the calibration.

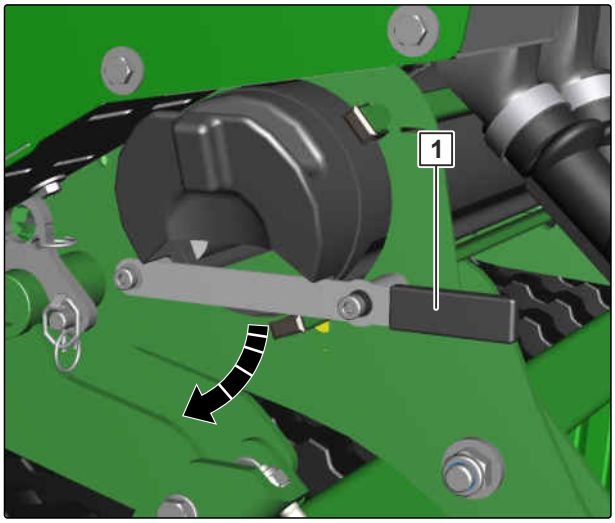
6.3.17.7.2 Calibrating implements with electric drive

CMS-T-00008882-A.1

1. *To select the correct bottom flap position for the calibration:*
   Read the bottom flap position from the table 2 and move the lever 1 to the desired position.

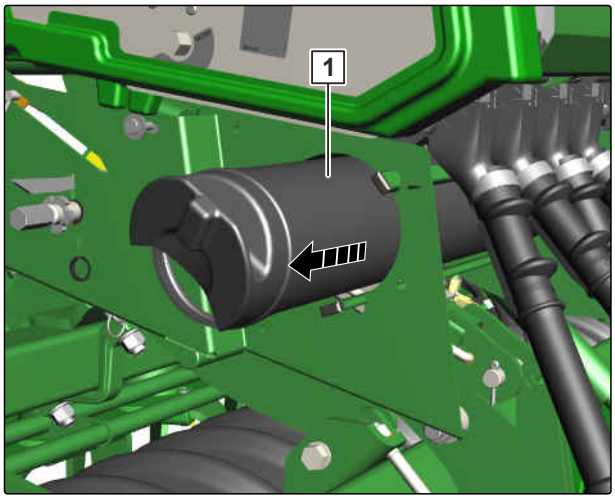
CMS-I-00006144

2. *To pull out the calibration trough:*
   Fold down the bracket 1.



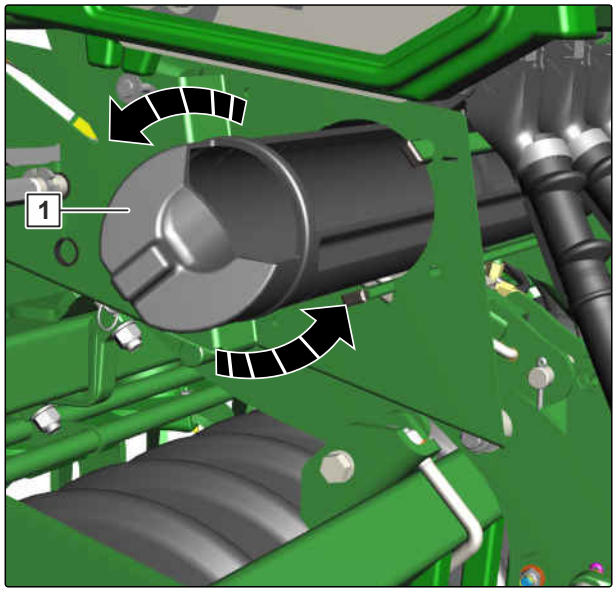
CMS-I-00006115

3. Pull out the calibration trough 1.



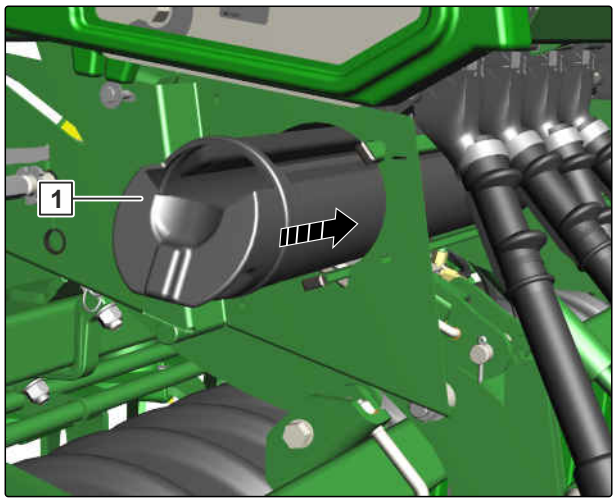
CMS-I-00005707

4. *To collect the seed in the calibration trough* **1**:
   Turn the calibration trough with the opening facing up.



CMS-I-00005708

5. Slide in the calibration trough **1**.



CMS-I-00005709

6. *To guide the seed into the calibration trough:*
   Move the calibration lever **1** beyond the latch to the end position.

7. Push the calibration lever back and let it engage in the calibration position.

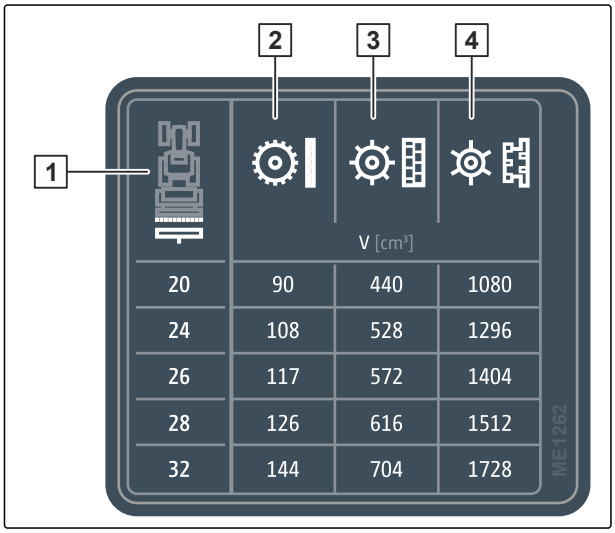
➡ The flag **2** indicates that the calibration lever **1** is in calibration position.

CMS-I-00006120

The volume of the metering roller depends on the number of rows 1 and on the selected metering wheels:

- Fine metering wheel 2
- Coarse metering wheel 3
- Bean metering wheel 4

8. Enter the metering volume on the control terminal or control computer, see *"ISOBUS software"* operating manual or *"Control computer"* operating manual.



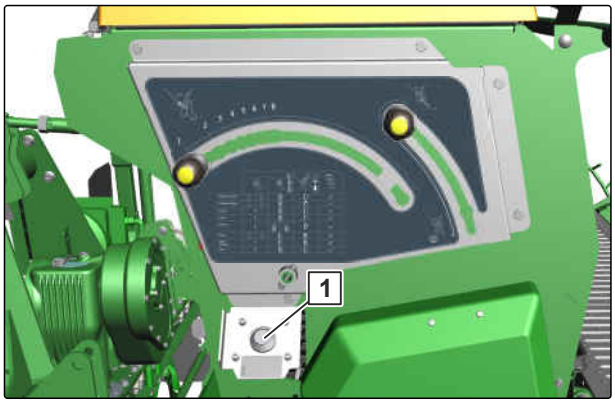
CMS-I-00007483

9. *To start the calibration via the calibration button 1 or the TwinTerminal:*
Refer to the ISOBUS software operating manual, *"Calibration menu"*

10. *To start the calibration via the control terminal or the control computer:*
Refer to the ISOBUS software operating manual, *"Calibration menu"*

or

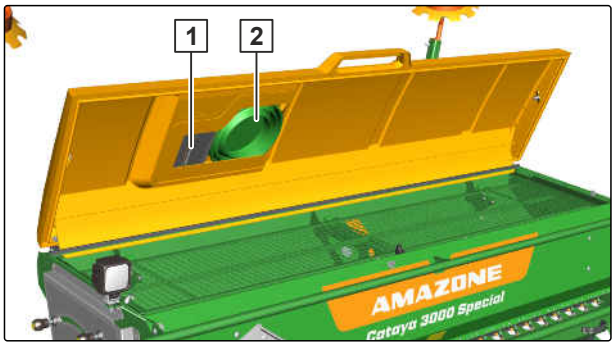
see *"control computer"* operating manual.



CMS-I-00006134

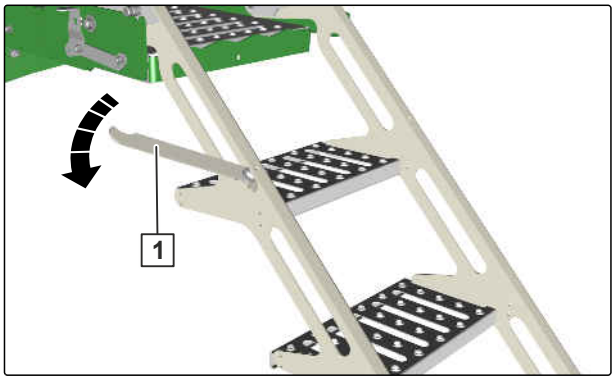
11. Open the hopper cover.

12. Take the scale 1 and collapsible bucket 2 from the hopper cover.



CMS-I-00006125

13. Fold down the bracket 1 on the ascent.



CMS-I-00005700

14. Hang the scale 2 on the bracket 1 on the ascent.

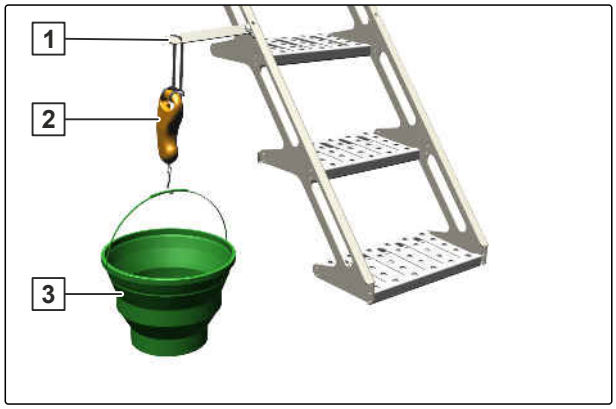
15. Hang the collapsible bucket 3 on the scale and read the weight of the collected seed.

The desired seed rate is generally not achieved with the first calibration. The achieve the desired seed rate, the calibration must be repeated several times.

16. *To enter the weight of the collected seed on the TwinTerminal, control terminal or control computer:*
Refer to the ISOBUS software operating manual, *"Calibration menu"*

or

see *"control computer"* operating manual.

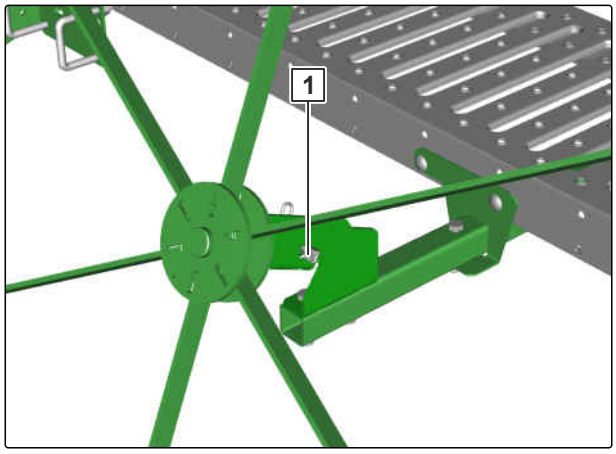


CMS-I-00005716

6.3.18 Installing the star wheel

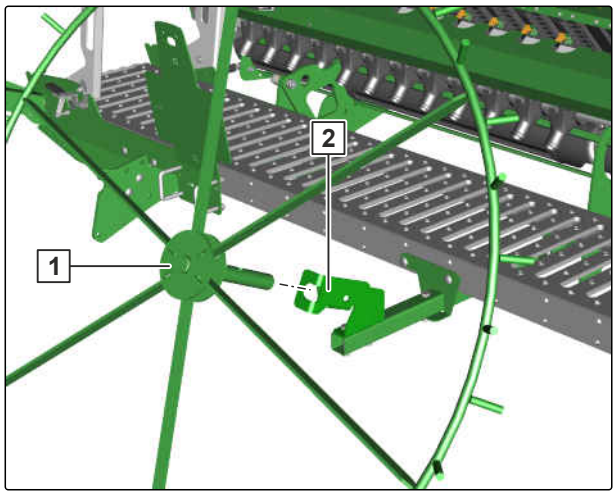
CMS-T-00008964-A.1

1. *To unlock the star wheel:*
Remove the linch pin 1 from the transport bracket.



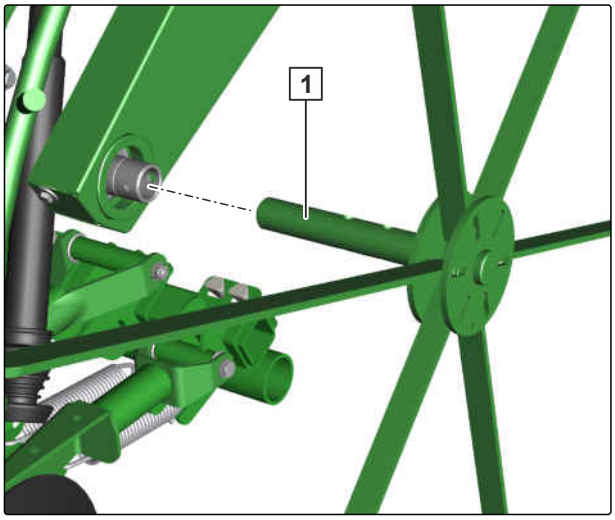
CMS-I-00006189

2. Take the star wheel 1 out of the transport bracket 2.



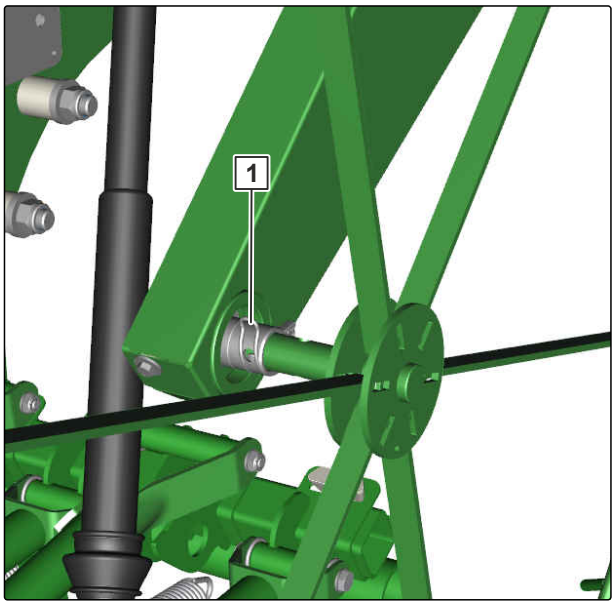
CMS-I-00006187

3. Attach the star wheel 1 to the holding arm.



CMS-I-00006181

4. *To secure the star wheel:*
   Install the linch pin 1.

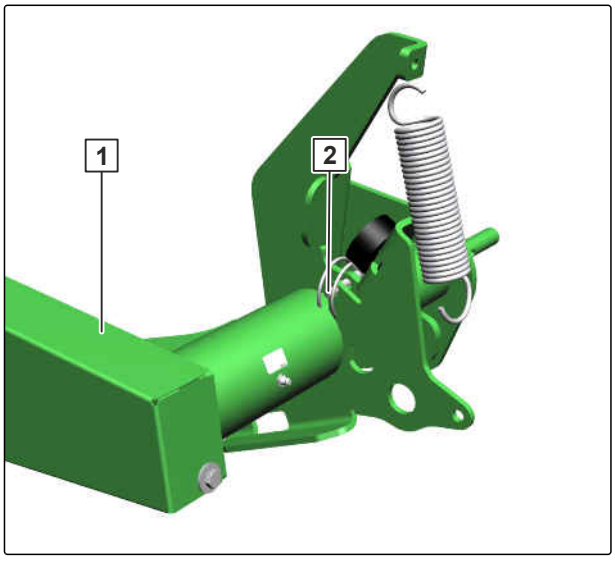


CMS-I-00006180

The following instructions are only for implements with mechanical star wheel lift. On implements with hydraulic star wheel left, the star wheel is lifted using the top link pin.

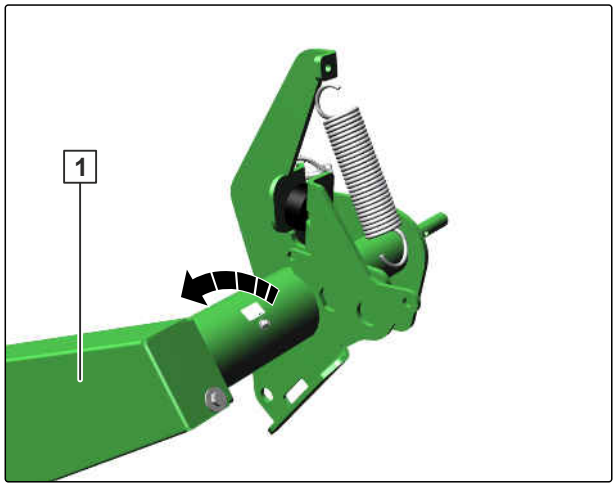
5. Hold the holding arm 1 in position.

6. *To release the holding arm from the position and unlock it:*
   Remove the linch pin 2.



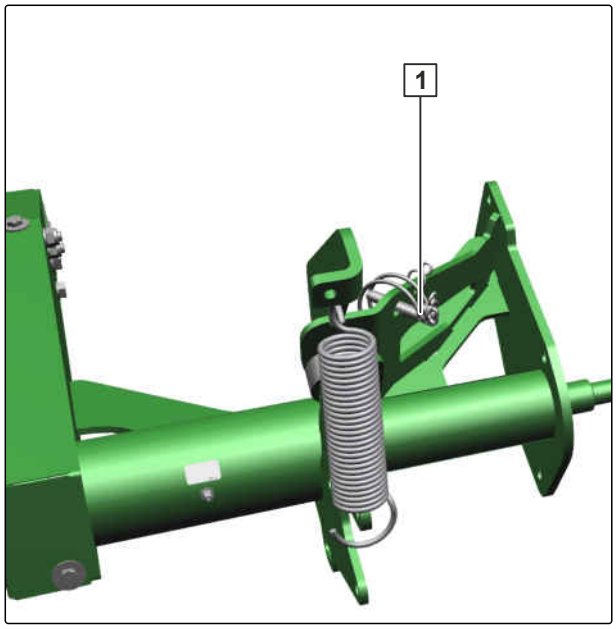
CMS-I-00006204

7. Fold down the holding arm 1.



CMS-I-00006210

8. Insert the linch pin 1 in parking position.



CMS-I-00007537

6.4 Preparing the implement for road travel

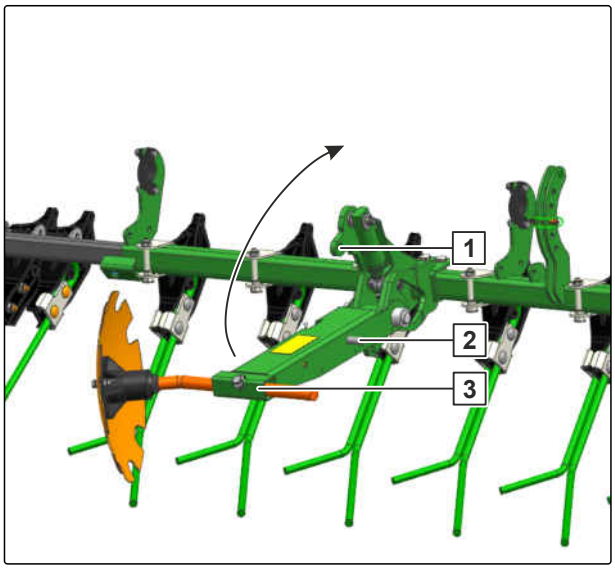
CMS-T-00008902-A.1

6.4.1 Folding the tramline marker on the exact following harrow

CMS-T-00007448-C.1

NOTE

To be able to move the tramline marker into transport position, no tramlines may be created on the control terminal or on the control computer.



CMS-I-00005176

1. *To deactivate tramline control:*
   See ISOBUS software operating manual

   or

   see control computer operating manual.

2. *To lift the tramline marker from the ground:*
   actuate the *"yellow 1"* tractor control unit.

➡ The tramline marker is hydraulically lifted and can be moved into transport position.

3. Raise the track disc carrier **3**.

4. Secure the track disc carrier in the transport bracket **1** with a pin **2**.

6.4.2 Folding the tramline marker onto the implement frame

CMS-T-00010967-A.1

6.4.2.1 Folding the TwinTeC Special coulter tramline marker

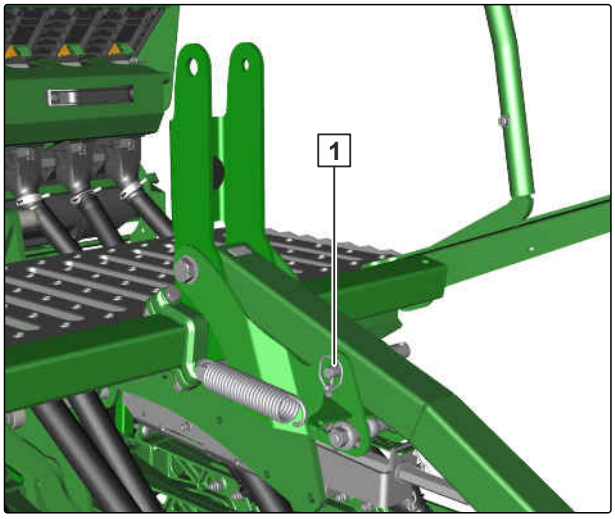
CMS-T-00008904-A.1

1. *To deactivate tramline control:*
   See ISOBUS software operating manual

   or

   see control computer operating manual.

2. Remove the linch pin **1**.

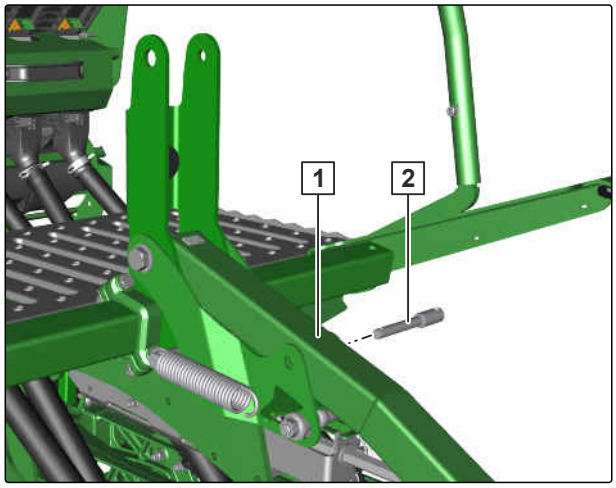


CMS-I-00006146

3. Remove the pin **2**.

4. *To lift the tramline marker from the ground:* actuate the *"yellow"* tractor control unit.

➡ The swivel arm **1** of the tramline marker is folded up.

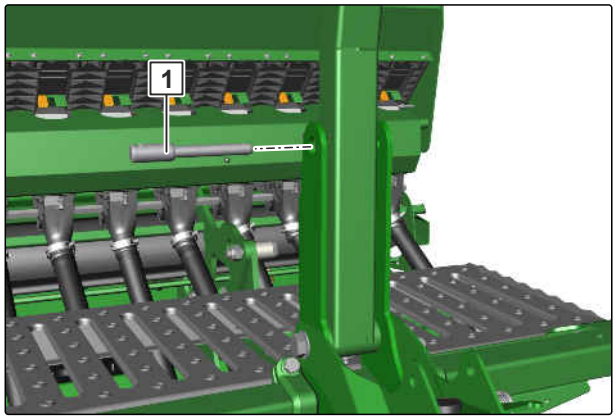


CMS-I-00006147

5. Put the *"yellow"* tractor control unit in the neutral position.

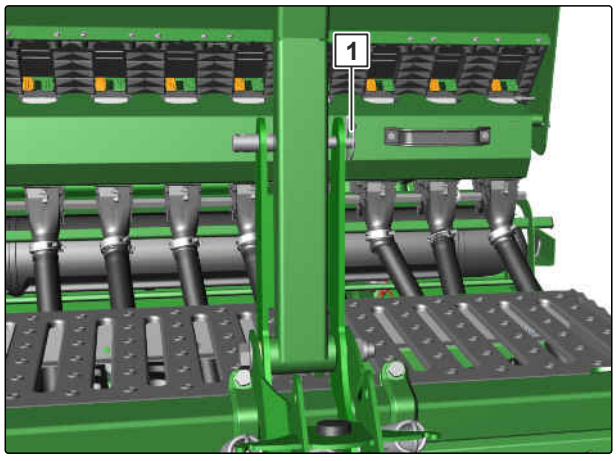
6. Press the swivel arm against the rubber block.

7. Install the pin **1**.



CMS-I-00006149

8. Install the linch pin **1**.

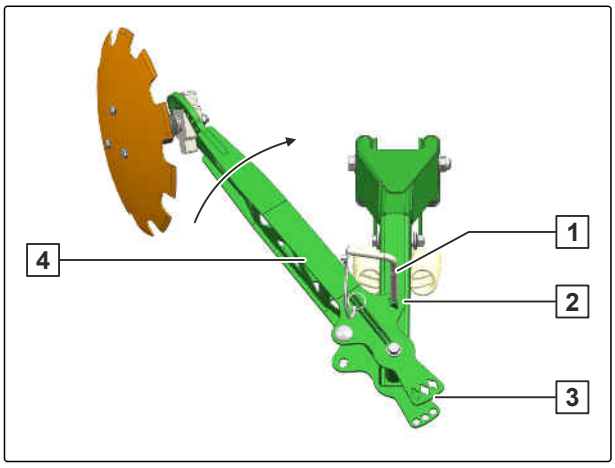


CMS-I-00006150

6.4.2.2 Folding the RoTeC coulter or WS drag coulter tramline marker

CMS-T-00011279-A.1

1. *To move the track disc out of the ground:*
   slightly lift the implement.
2. Remove the pin **1** from the pegging hole **3**.
3. Put the swivel arm **4** into transport position.
4. Peg the swivel arm in transport position **2**.
5. *To secure the pin in the adjuster segment:*
   turn the pin down.

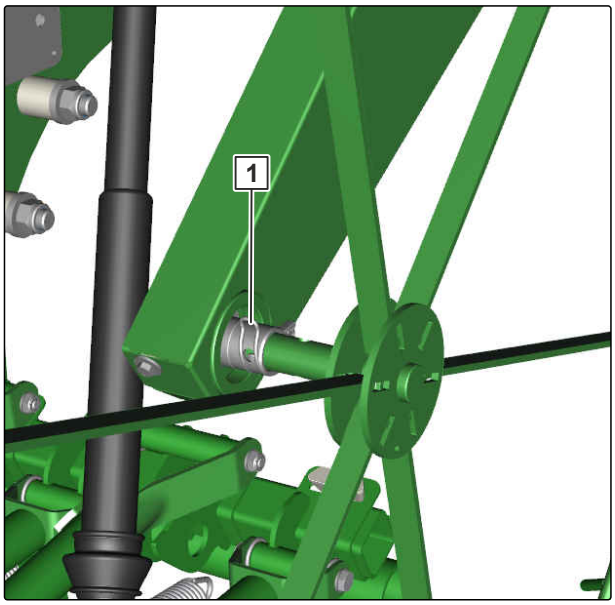


CMS-I-00003216

6.4.3 Moving the star wheel to the transport position

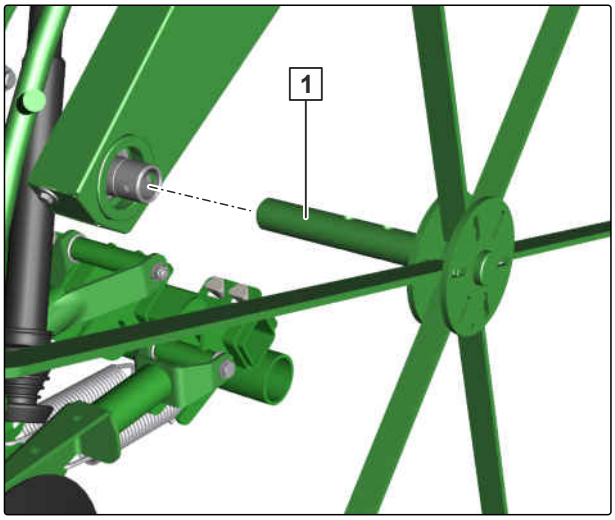
CMS-T-00008961-A.1

1. *To take off the star wheel:*
   Take off the linch pin **1**.



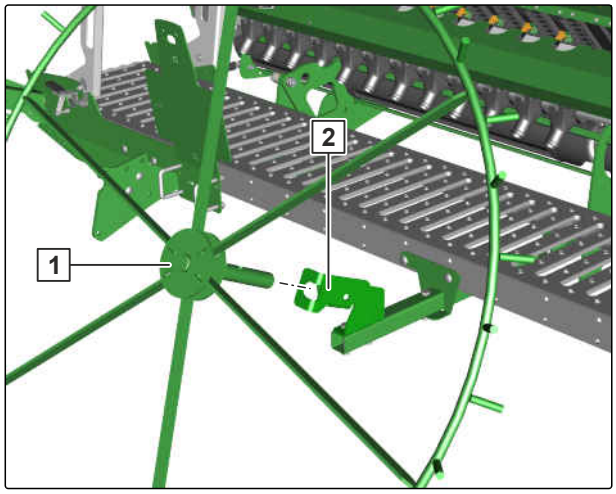
CMS-I-00006180

2. Take off the star wheel **1**.



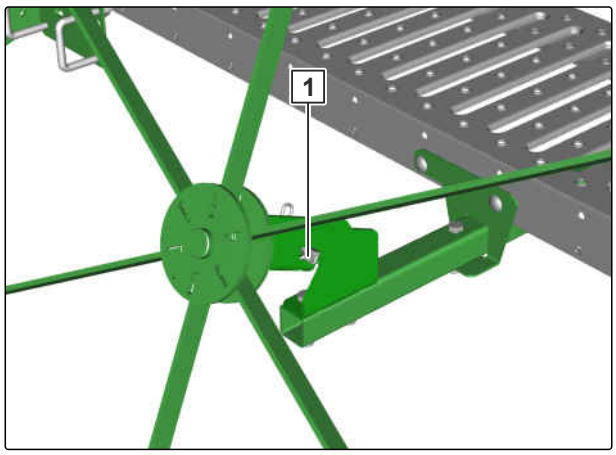
CMS-I-00006181

3. Insert the star wheel 1 in the transport bracket 2.



CMS-I-00006187

4. *To secure the star wheel:*
   Install the linch pin 1 on the transport bracket.



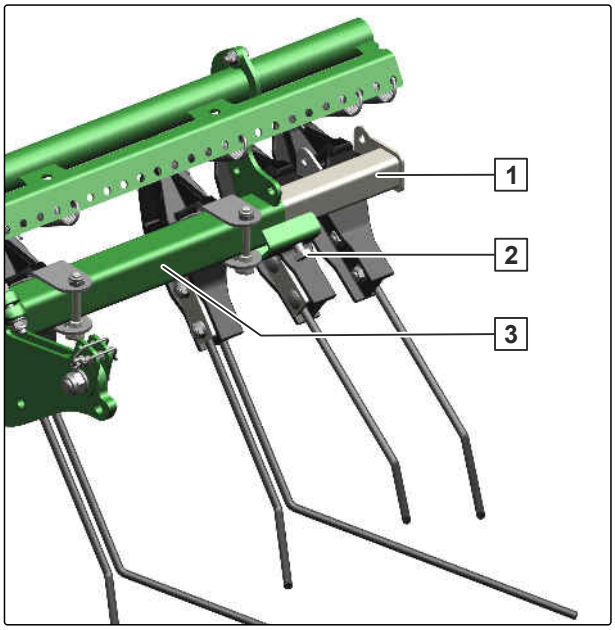
CMS-I-00006189

6.4.4 Moving the exact following harrow or seed harrow into transport position

CMS-T-00006417-B.1

The outer harrow elements can exceed the permissible transport width during transport. To avoid exceeding the permitted transport width, the exact following harrow or seed harrow must be moved into transport position before road transport.

1. Loosen the bolt 2 with the universal operating tool.
2. Push the sliding element 1 into the carrier tube 3 up to the stop.
3. Tighten the bolt 2 with the universal operating tool.
4. Make the same setting for the other side of the implement.

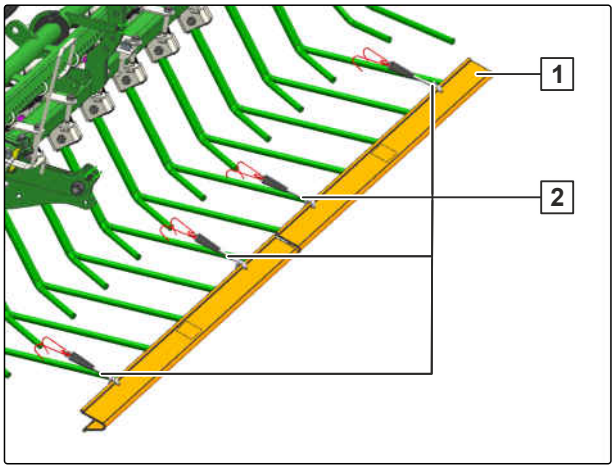


CMS-I-00004675

6.4.5 Putting the road safety bars on the exact following harrow

CMS-T-00007449-D.1

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.

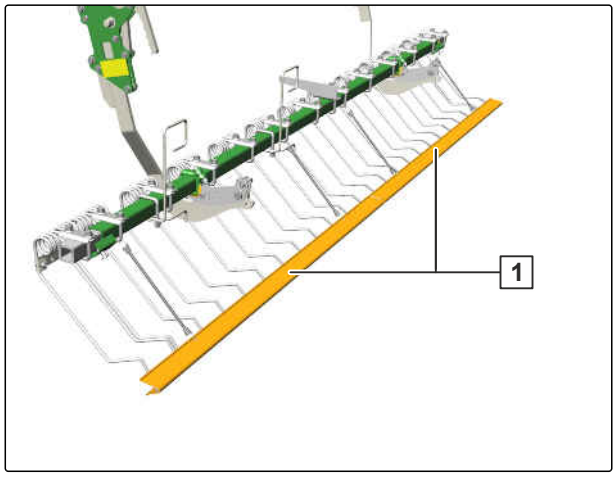


CMS-I-00005185

6.4.6 Attaching the road safety bars to the seed harrow

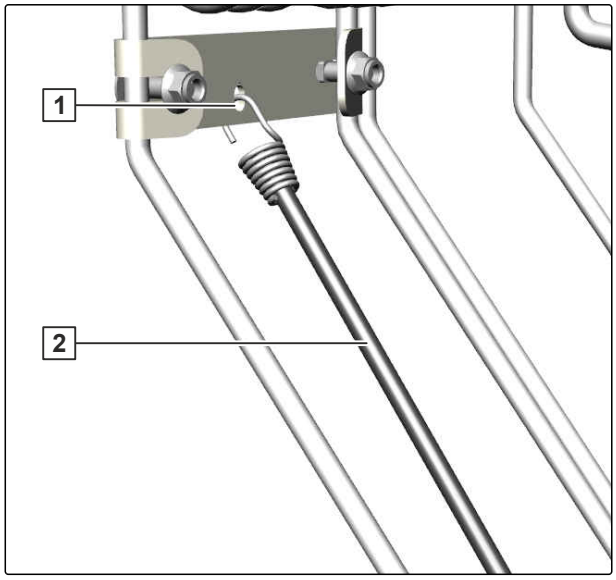
CMS-T-00012209-A.1

1. Remove coarse dirt from the tines.
2. Push the road safety bars [1] over the tines.



CMS-I-00007864

3. Secure the road safety bars with the tensioners [2] on the clips [1].
4. Check for firm seating.



CMS-I-00007865

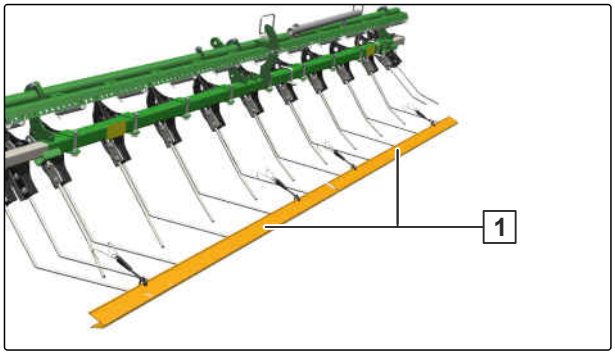
Using the implement 7

CMS-T-00008910-B.1

7.1 Removing the road safety bars

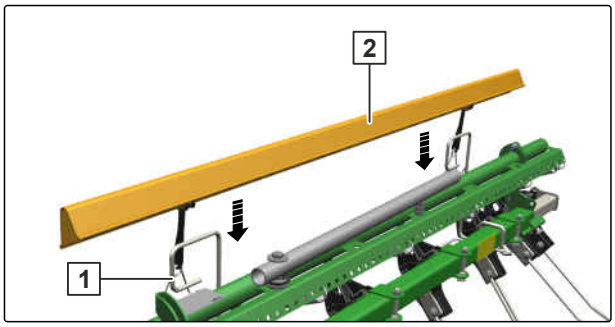
CMS-T-00011601-A.1

1. Remove the road safety bars [1] from the exact following harrow.



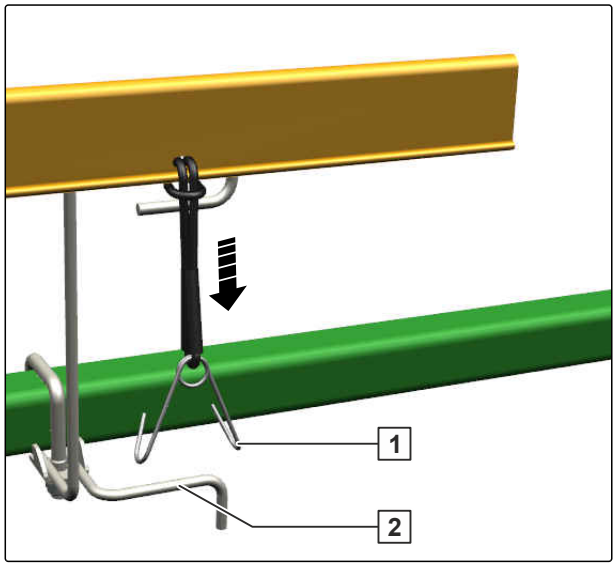
CMS-I-00007544

2. Turn the road safety bars [2] by 180°, place on top of each other on the holders [1].



CMS-I-00007545

3. *To fix the road safety bar:*
   Stretch the hook 1 and fasten it on the holder 2.



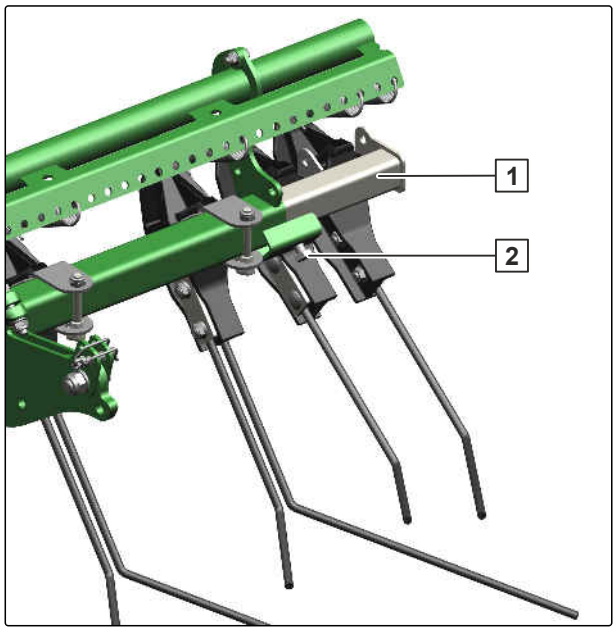
CMS-I-00007546

7.2 Moving the exact following harrow or seed harrow into working position

CMS-T-00006334-D.1

The roller and the coulters force the soil outwards to different extents depending on the forward speed and the soil properties. The outer harrow elements must be adjusted such that the soil is guided back and a trackless seedbed is created. The greater the forward speed, the further the outer harrow elements have to be set outwards.

1. Loosen the bolt 2 with the universal operating tool.
2. Push the sliding element 1 outwards.
3. Tighten the bolt 2 with the universal operating tool.
4. Make the same setting for the other side of the implement.
5. *To check the setting:*
   Seed for 30 m at working speed and then check the work pattern.



CMS-I-00004674

7.3 Unfolding the tramline marker

CMS-T-00011841-A.1

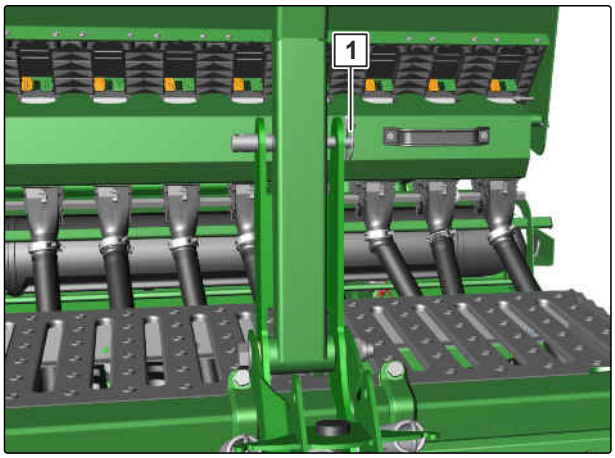
7.3.1 Unfolding the tramline marker on the implement frame

CMS-T-00010978-A.1

7.3.1.1 Unfolding the TwinTeC Special coulter tramline marker

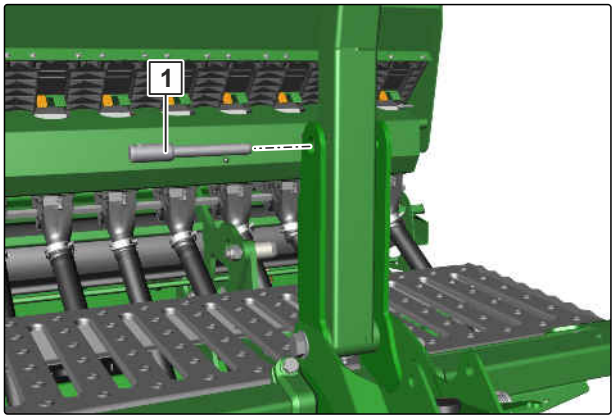
CMS-T-00010979-A.1

1. Remove the linch pin **1**.



CMS-I-00006150

2. Put the *"yellow"* tractor control unit in the neutral position.
3. Press the swivel arm against the rubber block.
4. Pull out the pin **1**.

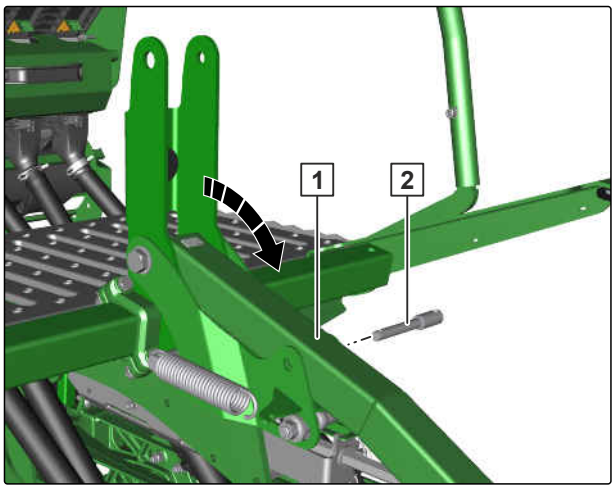


CMS-I-00006149

5. Put the *"yellow"* tractor control unit in float position.

➡ The swivel arm **1** of the tramline marker folds into working position.

6. Install the pin **2**.
7. Install the linch pin.

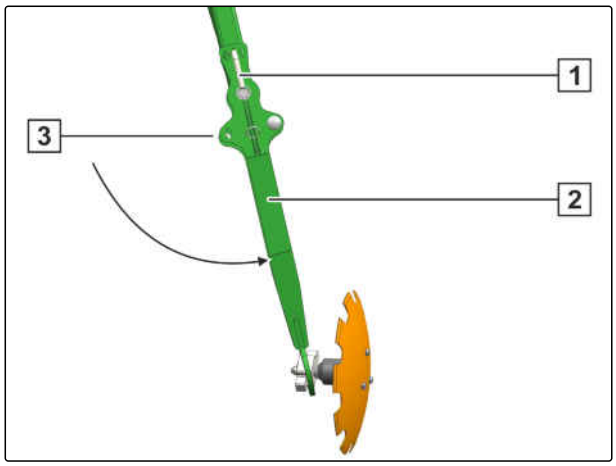


CMS-I-00007465

7.3.1.2 Unfolding the RoTeC coulter or WS drag coulter tramline marker

CMS-T-00010984-A.1

1. Remove the pin **1** from the pegging hole **3**.
2. Move the swivel arm **2** into working position.
3. Insert the pin in the middle hole.
4. *To secure the pin in the adjuster segment:* turn the pin down.



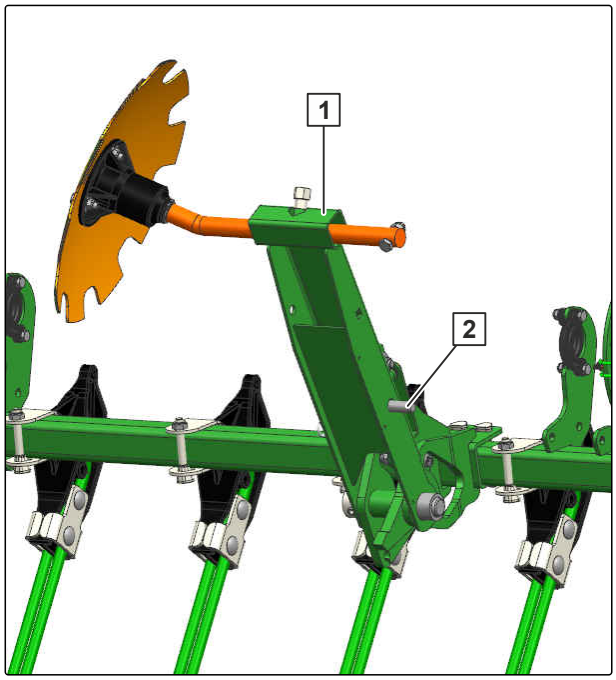
CMS-I-00003168

7.3.2 Unfolding the tramline marker on the harrow frame

CMS-T-00010990-A.1

1. Set the implement down on the field.
2. Take hold of the track disc carrier **1**.
3. Put the *"yellow"* tractor control unit in the neutral position.
4. Pull out the pin **2**.
5. Put the *"yellow"* tractor control unit in float position.

➡ The tramline marker folds into working position.



CMS-I-00005174

7.4 Using the implement

CMS-T-00008414-A.1

1. Align the implement parallel to the ground.
2. Lower the implement on the field.
3. Move the hydraulic system of the 3-point power lift into float position.

4. Switch on the tractor PTO shaft. Slowly couple the tractor PTO shaft only at an idle or at low tractor engine speed.

5. *To check the settings of the implement:*
seed for 30 m at working speed and then check the work pattern.

NOTE

Make use of an implement standstill, e.g. after loading with seed, to make a visual check of the implement:

- Placement depth
- Coulters
- Metering unit

7.5 Checking the placement depth

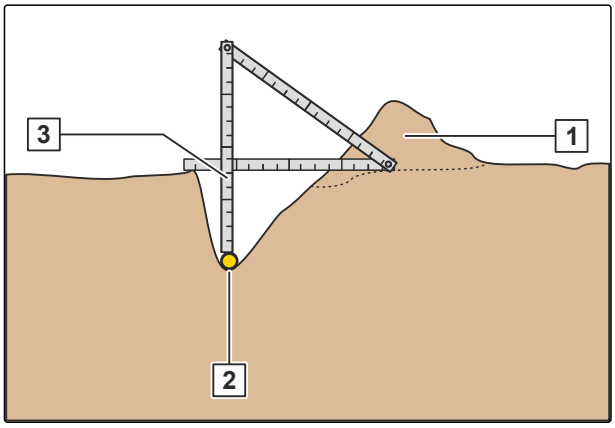
CMS-T-00004517-D.1

1. Remove the fine soil 1 over the seed 2.

2. Determine the placement depth 3.

3. Cover the seed with fine soil again.

4. Check the placement depth in several places in a longitudinal and transverse direction relative to the implement.



CMS-I-00003257

7.6 Turning on the headlands

CMS-T-00008416-A.1

NOTE

When the implement is lifted, the metering unit is switched off.

1. *To prevent lateral loads when driving in curves on the headlands:*
Lift the implement.

2. *To avoid damage to the implement:*
   Pay attention to obstacles when turning.

3. *When the direction of the implement matches that of the direction of travel:*
   lower the implement.

Eliminating faults

8

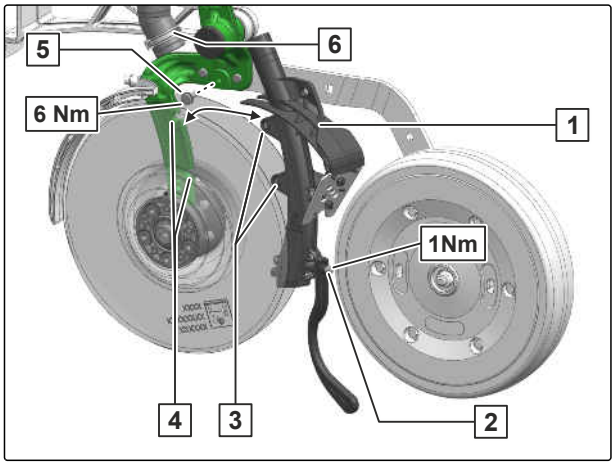
CMS-T-00008930-A.1

Errors	Cause	Solutions
The TwinTeC coulter does not fix the seed sufficiently in the furrow	When the seed catcher is worn, the seed is not fixed in the furrow.	see page 144
The TwinTeC coulter does not guide the seed precisely into the furrow	When the guide extension is worn, the seed is not guided into the furrow.	see page 144
The TwinTeC coulter is not spreading seed	The seed outlet is slightly blocked.	► Raise the implement. ► Clean the seed outlet from below.
	The seed outlet is strongly blocked.	see page 145
TwinTeC cutting discs are blocked	If the inner scraper is worn, the cutting discs are blocked by adhering soil.	see page 145
The RoTeC coulter is not spreading seed	The seed outlet is slightly blocked.	► Raise the implement. ► Clean the seed outlet from below.
	The seed outlet is strongly blocked.	see page 146
The coulter harrow does not cover the seed sufficiently with fine soil	The angle of the coulter harrow is incorrectly set.	► See *"Adjusting the TwinTeC coulter" > "Adjusting the harrow angle"*
	The height of the coulter harrow is incorrectly set.	► See *"Adjusting the TwinTeC coulter" > "Adjusting the harrow height"*
	The harrow tines of the coulter harrow are worn.	see page 146

Errors	Cause	Solutions
The exact following harrow does not cover the seed sufficiently with fine soil	On seed drills without exact following harrow lift, the overload safety is triggered.	see page 147
	The harrow tines are not aligned parallel to the ground.	► See *"Adjusting the exact following harrow" > "Adjusting the position of the exact following harrow tines"*
	The exact following harrow pressure is incorrectly set.	► See *"Adjusting the exact following harrow" > "Adjusting the exact following harrow pressure manually"* or *"Adjusting the exact following harrow pressure hydraulically"*
	The harrow tines are worn.	see page 147
The seed harrow does not cover the seed sufficiently with fine soil	The overload safety is triggered.	see page 148
	The harrow tines are not aligned parallel to the ground.	► See *"Adjusting the seed harrow" > "Adjusting the position of the harrow tines"*
	The seed harrow pressure is incorrectly set.	► See *"Adjusting the seed harrow" > "Adjusting the seed harrow pressure"*
	The harrow tines are worn.	see page 148
The electric drives do not run or start running at the wrong time.	The switch points of the working position sensor are wrong.	► *To configure the working position sensor,* see *"Configuring the working position sensor"*.
The lighting for road travel has a malfunction.	Lamp or lighting supply line is damaged.	► Replace the lamp. ► Replace the lighting supply line.

The TwinTeC coulter does not fix the seed sufficiently in the furrow

CMS-T-00006593-E.1

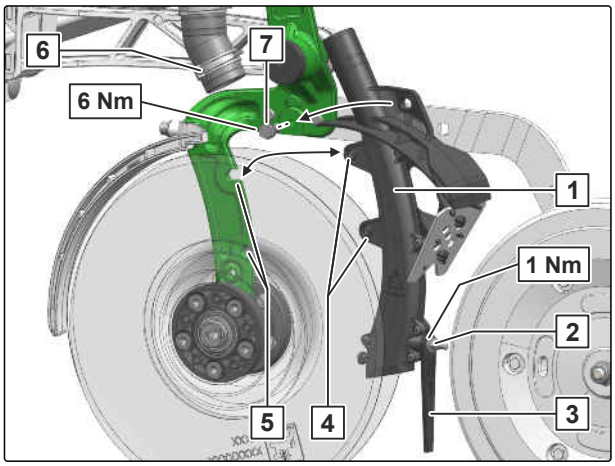


CMS-I-00003260

1. *Depending on the implement equipment,* remove the hose **6** or Y-piece.
2. Remove the bolt **5**.
3. Remove the TwinTeC seed outlet **1**.
4. Remove the bolt **2**.
5. Replace the seed catcher **3**.
6. Install the bolt **2**.
7. *To install the TwinTeC seed outlet:* place the guides **3** in the coulter bodies **4**.
8. Install the bolt **5**.
9. Install the hose.

The TwinTeC coulter does not guide the seed precisely into the furrow

CMS-T-00006594-D.1



CMS-I-00003242

1. *Depending on the implement equipment,* remove the hose **6** or Y-piece.
2. Remove the bolt **7**.
3. Remove the TwinTeC seed outlet **1**.
4. Remove the bolt **2**.
5. Replace the guide extension **3**.
6. Install the bolt **2**.
7. *To install the TwinTeC seed outlet:* place the guides **4** in the coulter bodies **5**.
8. Install the bolt **7**.
9. Install the hose.

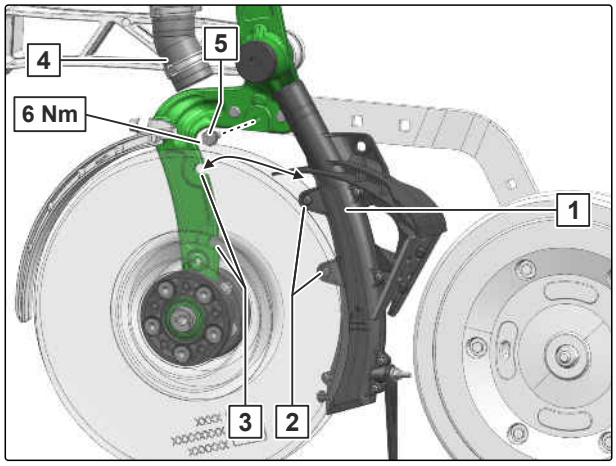
The TwinTeC coulter is not spreading seed

CMS-T-00006601-C.1

1. *If the blockage cannot be removed from below,*
   Remove the hose 4

   or

   Remove the Y-piece.
2. Remove the bolt 5.
3. Remove the seed outlet 1.
4. Clean the seed outlet.
5. *To install the seed outlet:*
   place the guides 2 in the coulter bodies 3.
6. Install the bolt 5.
7. Install the hose.

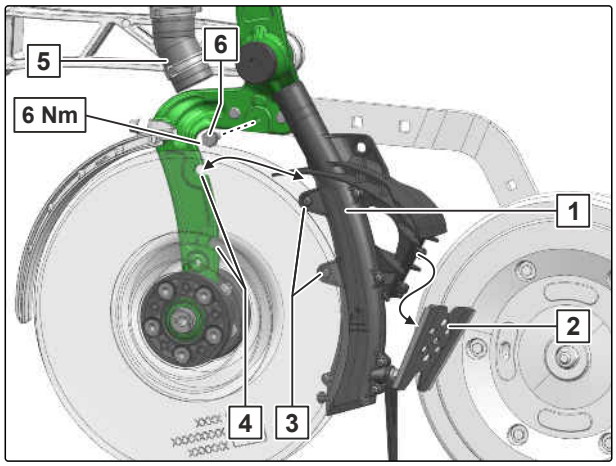


CMS-I-00003246

TwinTeC cutting discs are blocked

CMS-T-00006595-D.1

1. *Depending on the implement equipment,*
   remove the hose 5 or Y-piece.
2. Remove the bolt 6.
3. Remove the TwinTeC seed outlet 1.
4. Replace the inner scraper 2.
5. Install the bolt.
6. *To install the TwinTeC seed outlet:*
   place the guides 3 in the coulter bodies 4.
7. Install the bolt.
8. Install the hose.

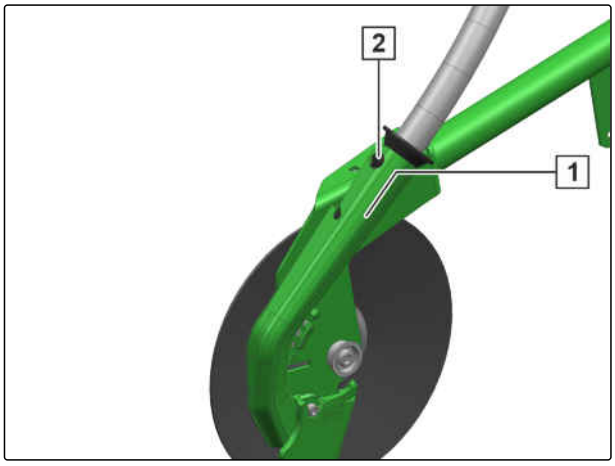


CMS-I-00003245

The RoTeC coulter is not spreading seed

CMS-T-00007580-A.1

1. *If the blockage cannot be removed from below,*
   Remove the conveyor hose **2**.
2. Clean the seed outlet **1** from above.
3. Install the conveyor hose.

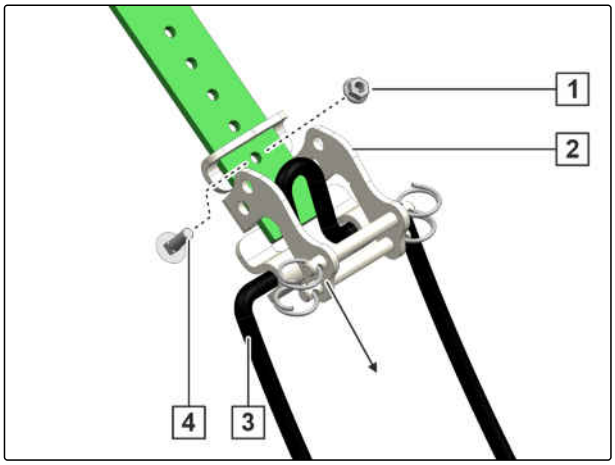


CMS-I-00004767

The coulter harrow does not cover the seed sufficiently with fine soil

CMS-T-00006604-B.1

1. Remove the nut **1**.
2. Remove the bolt **4**.
3. Remove the harrow bracket **2**.
4. Replace the harrow tines **3**.
5. Move the harrow bracket to the desired position.
6. Install the bolt.
7. Install the nut and tighten it.
8. *To check the setting:*
   seed for 30 m at working speed and then check the work pattern.



CMS-I-00004632

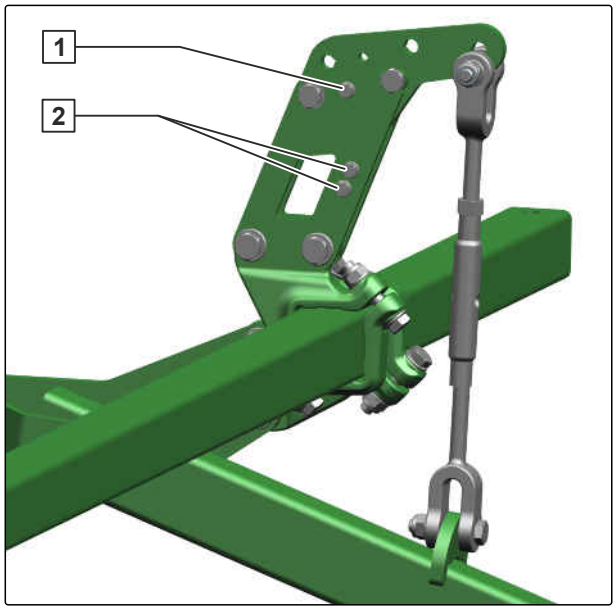
The exact following harrow does not cover the seed sufficiently with fine soil

CMS-T-00007581-B.1

On seed drills without exact following harrow lift, the overload safety is triggered.

The following actions must be performed to replace worn shear bolts 1.

1. *To position the exact following harrow correctly:*
   Lift the implement.
2. Remove the remainders of the torn shear bolt 1.
3. Take out one of the spare shear bolts 2.
4. Install the spare shear bolt with washers and nut at position 1.

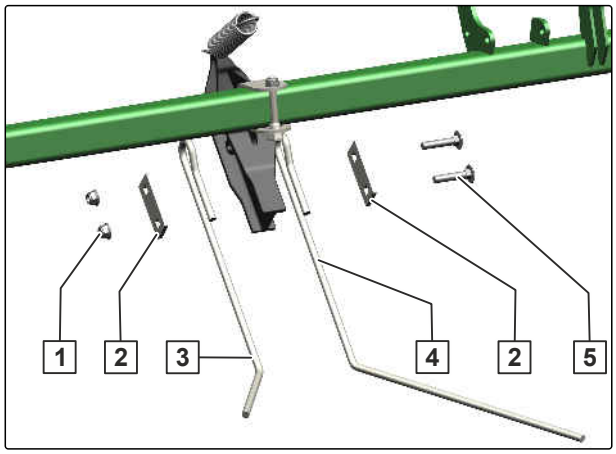


CMS-I-00004678

The harrow tines are worn.

The following actions must be performed when the harrow tines are worn.

1. Remove the nuts 1.
2. Remove the bolts 5 and plates 2.
3. Replace the harrow tines 3 and 4.
4. Install the plates and bolts.
5. Install the nuts and tighten them.



CMS-I-00004677

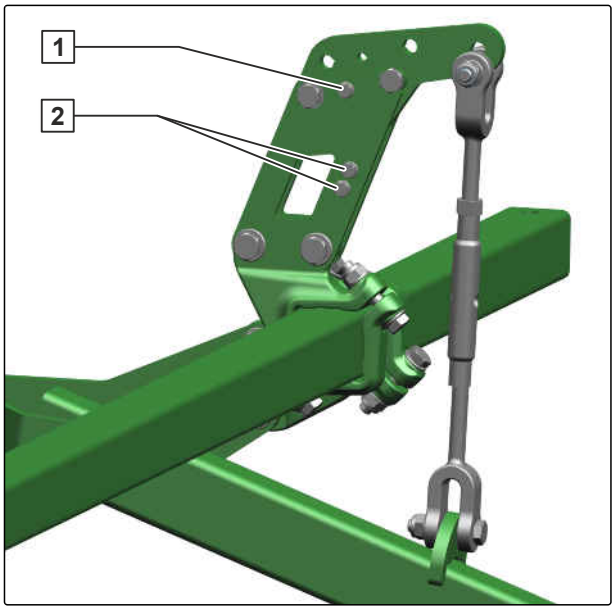
The seed harrow does not cover the seed sufficiently with fine soil

CMS-T-00012210-A.1

The overload safety is triggered.

The following actions must be performed to replace worn shear bolts 1.

1. *To position the seed harrow correctly:*
   Lift the implement.
2. Remove the remainders of the torn shear bolt 1.
3. Take out one of the spare shear bolts 2.
4. Install the spare shear bolt with washers and nut at position 1.

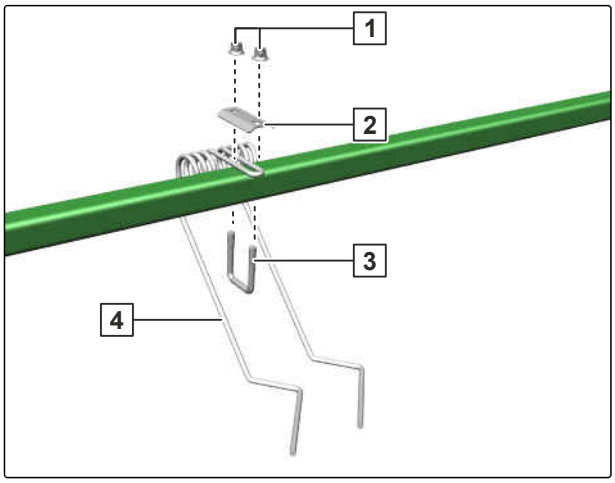


CMS-I-00004678

The harrow tines are worn.

The following actions must be performed when the harrow tines are worn.

1. Remove the nuts 1.
2. Remove the U-bolt 3 and plate 2.
3. Replace the harrow tines 4.
4. Install the plate and bracket.
5. Install the nuts and tighten them.



CMS-I-00007915

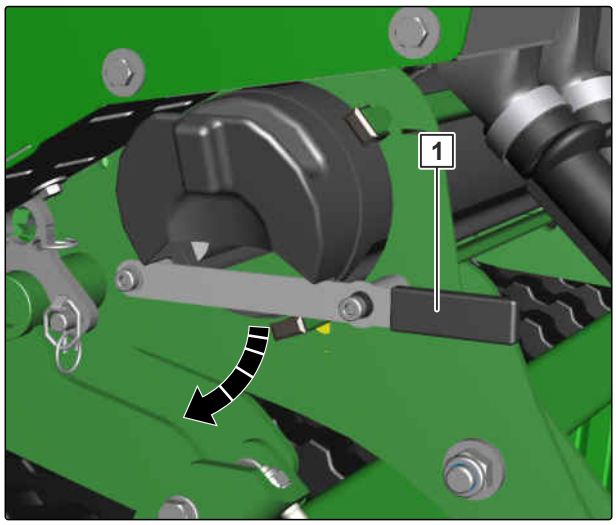
Parking the implement 9

CMS-T-00008911-B.1

9.1 Emptying the hopper and metering unit

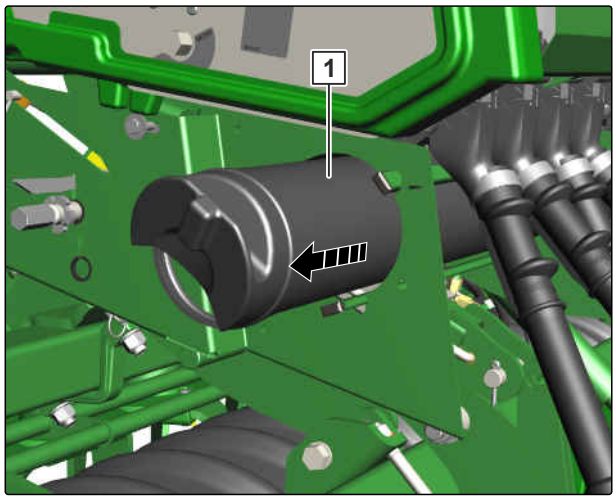
CMS-T-00011716-A.1

1. *To pull out the calibration trough:*
   Fold down the bracket **1**.



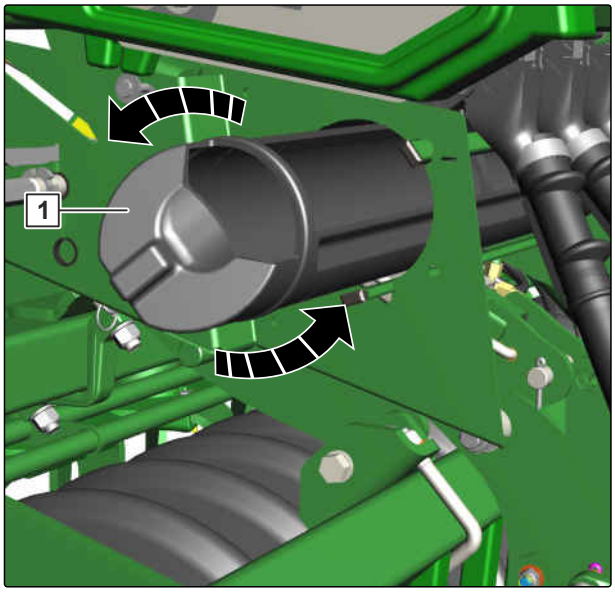
CMS-I-00006115

2. Pull out the calibration trough **1**.



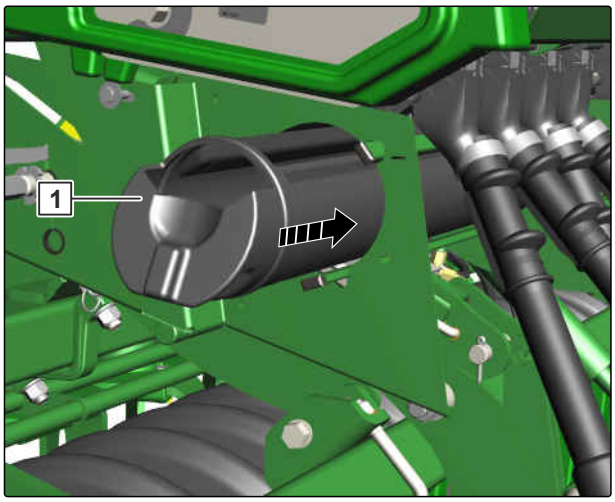
CMS-I-00005707

3. *To be able to collect the seed in the calibration trough* **1**:
Turn the calibration trough with the opening facing up.



CMS-I-00005708

4. Slide in the calibration trough **1**.



CMS-I-00005709

5. Move the bottom flap lever **2** to the position from the last seeding operation.

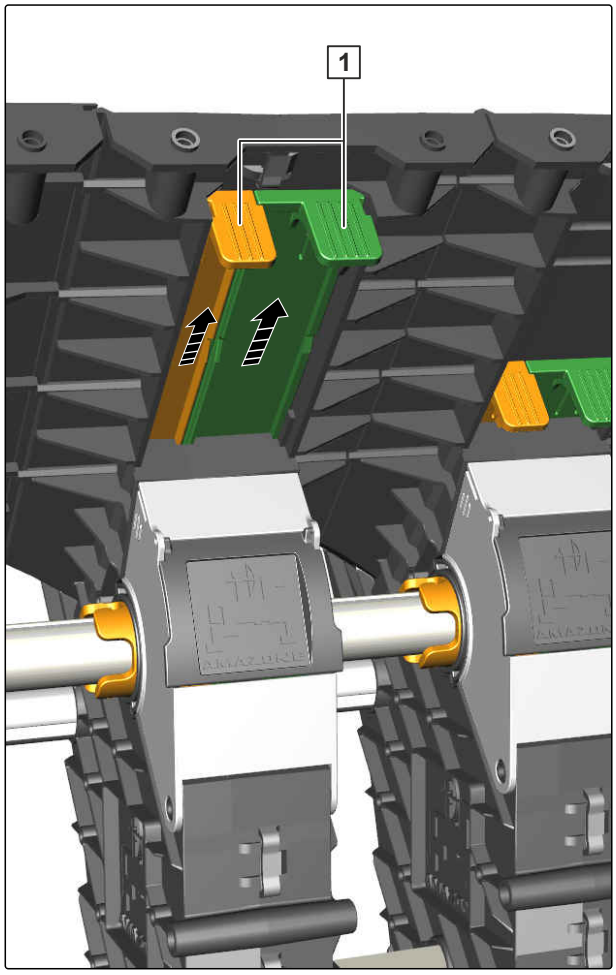
6. *To guide the seed into the calibration trough:*
Move the calibration lever **1** beyond the latch to the end position.

➡ The flag **3** indicates that the calibration lever **1** is in the correct position.

7. Push the calibration lever back and let it engage in the calibration position.

CMS-I-00006153

8. Completely open both sliding shutters [1] on the metering units.



CMS-I-00005759

9. *To empty the hopper:*
   Move the bottom flap lever [1] to the end position.

IMPORTANT Risk of implement damage due to seed jammed in the metering housing

► Slowly actuate the bottom flap lever.

10. *To interrupt the emptying procedure:*
    Move the bottom flap lever to the position from the last seeding operation.

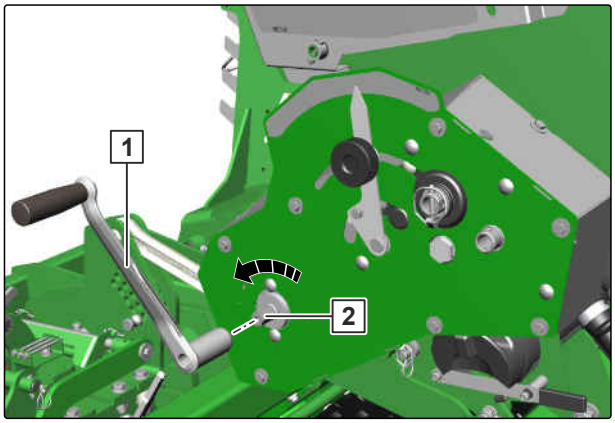
CMS-I-00007494

11. Put the universal operating tool [1] on the adjustment spindle [2].

12. *To empty the metering wheels:*
Turn the universal operating tool counterclockwise [1]

or

To start emptying via the calibration button or the TwinTerminal:
Refer to the ISOBUS software operating manual, *"Emptying menu"*.

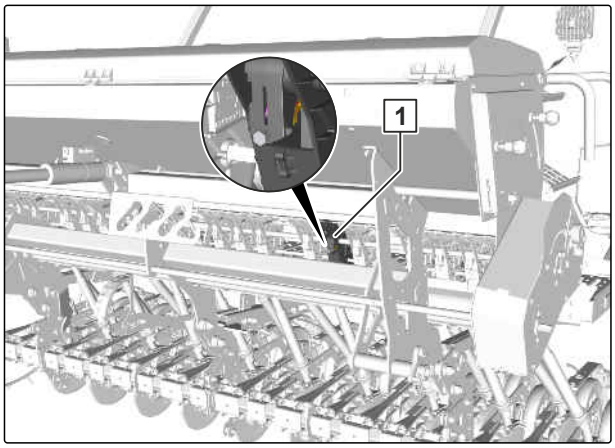


CMS-I-00006124

13. *To remove seed remaining in the metering housing [1]:*
Move the bottom flap lever in both directions several times.

When the bottom flaps are correctly set, the bolts of the metering housing are lined up.

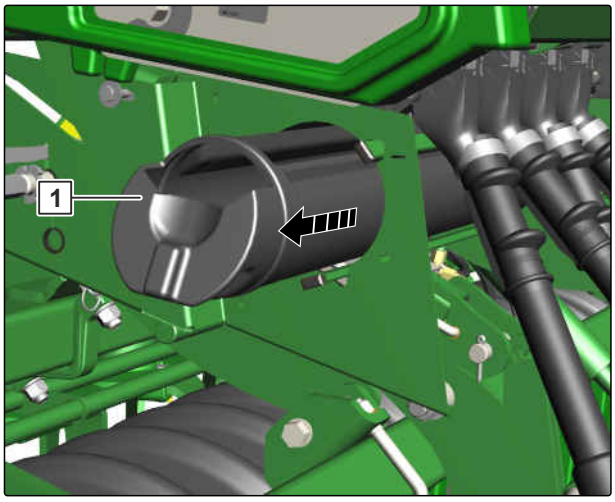
14. *If a bolt on the metering housing deviates from the line,*
correct the bottom flap setting, see section *"Checking the basic setting of the bottom flaps"*.



CMS-I-00007493

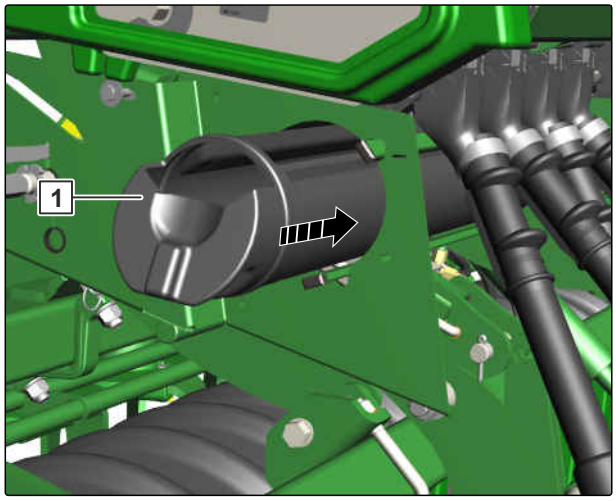
15. Pull out the calibration trough [1].

16. Empty the calibration trough.



CMS-I-00005760

17. Slide in the calibration trough 1.

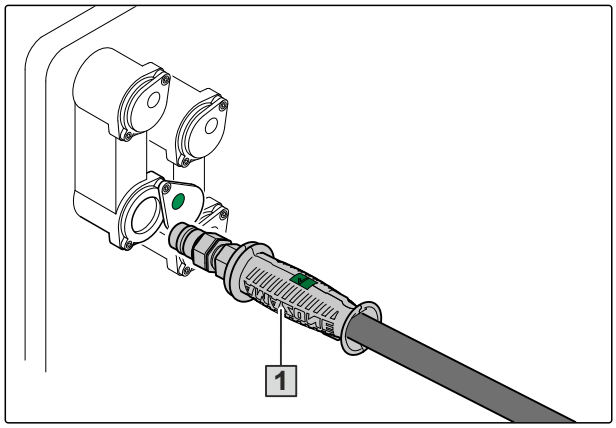


CMS-I-00005709

9.2 Disconnecting the hydraulic hose lines

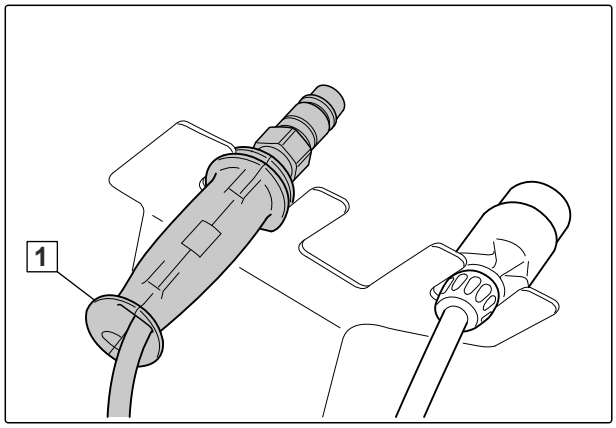
CMS-T-00000277-F.1

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.

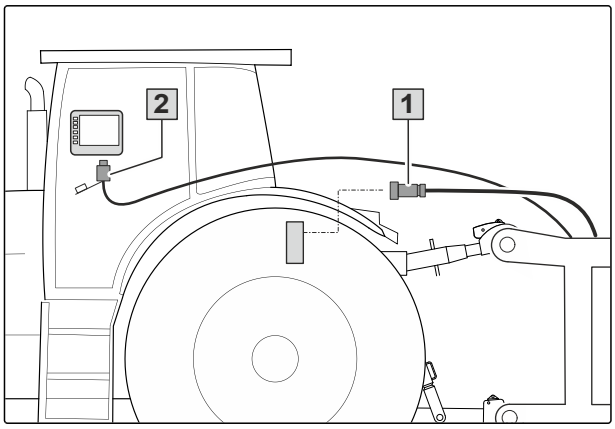


CMS-I-00001250

9.3 Uncoupling the ISOBUS or control computer

CMS-T-00006174-D.1

1. Unplug the connector of the ISOBUS line **1** or the control computer line **2**.
2. Protect the plug with a dust cap.
3. Hang the plug in the hose cabinet.

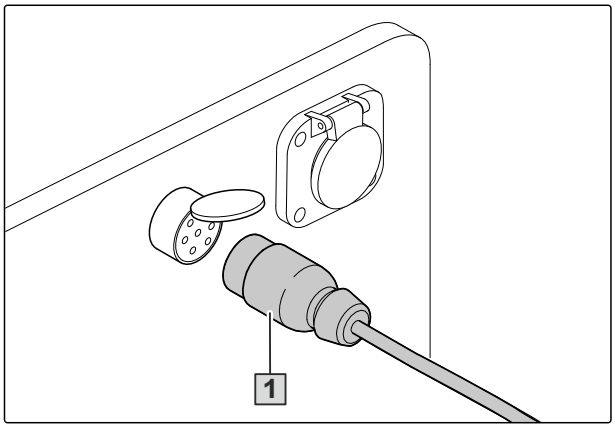


CMS-I-00006891

9.4 Uncoupling the power supply

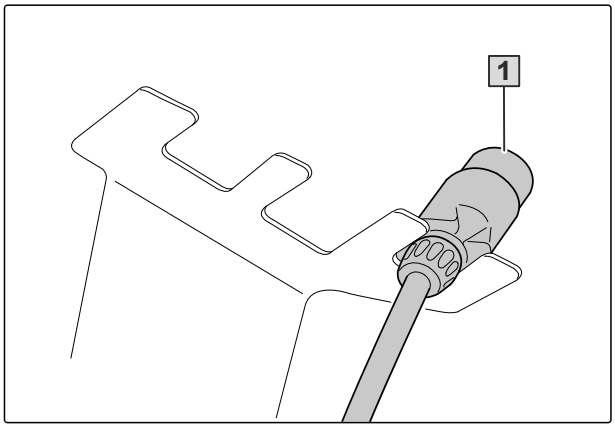
CMS-T-00001402-H.1

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



CMS-I-00001048

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



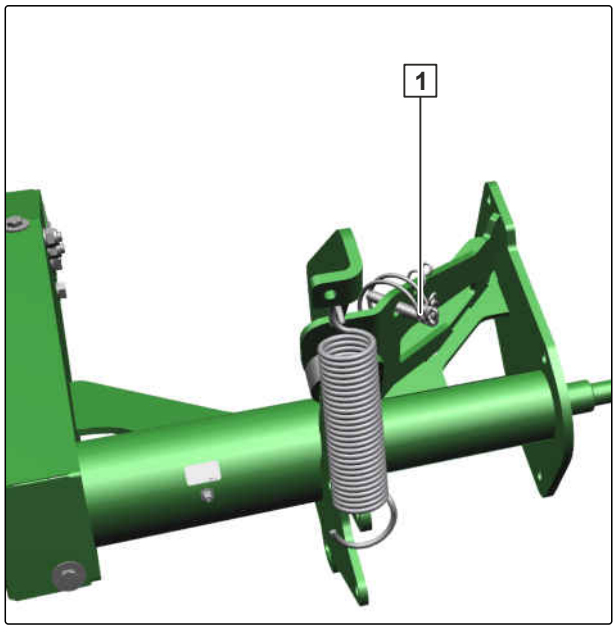
CMS-I-00001248

9.5 Folding the star wheel

CMS-T-00008971-A.1

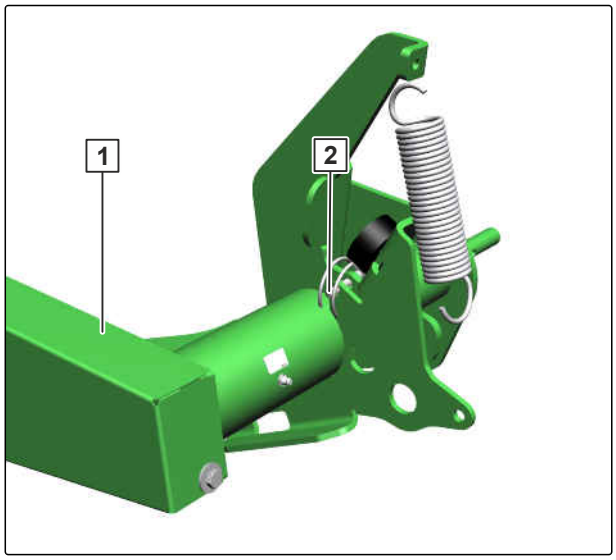
The following instructions are only for implements with mechanical star wheel lift. On implements with hydraulic star wheel left, the star wheel is lifted using the top link pin hydraulic system.

1. Take the linch pin **1** from the parking position.



CMS-I-00007537

2. Fold up the holding arm **1**.
3. Hold the holding arm in position.
4. *To fix the holding arm in the position and secure it:*
   Install the linch pin **2**.



CMS-I-00006204

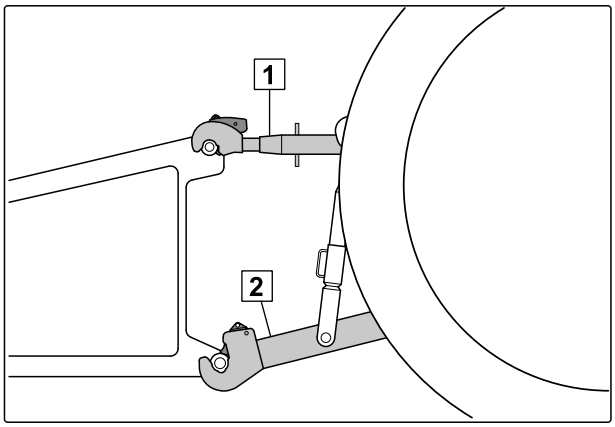
9.6 Uncoupling the seeding combination

CMS-T-00008488-A.1

WARNING

Risk of injury or even death due to tipping over of the seeding combination

- ▶ *Since the parking supports are not designed for the coupled seeding combination,*
  do not park the seeding combination on the parking supports.



CMS-I-00001249

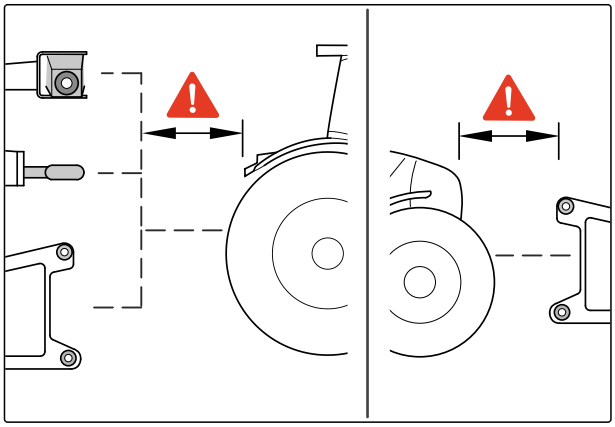
1. Release the top link 1.
2. Disconnect the top link 1 from the implement from the tractor seat.
3. Release the lower links 2.
4. *To secure the seeding combination against rolling away:*
   Put 2 pieces of squared timber with a size of at least 80 mm x 80 mm in front of and behind the roller of the soil tillage implement.
5. Uncouple the lower link 2 from the implement from the tractor seat.
6. Drive the tractor forward.

9.7 Driving the tractor away from the implement

CMS-T-00005795-D.1

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

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



CMS-I-00004045

9.8 Parking the Cataya pack top seed drill

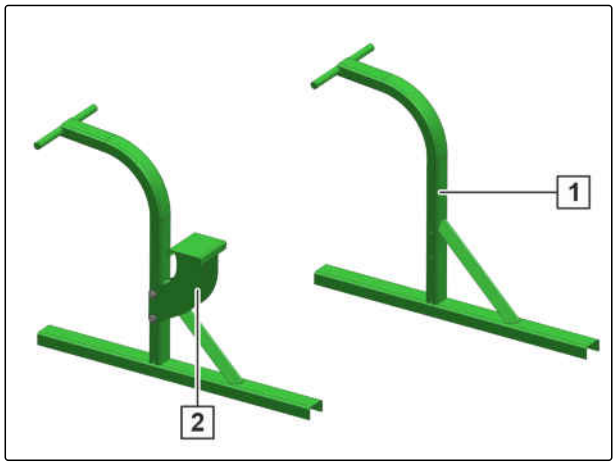
CMS-T-00008916-A.1

WARNING

Risk of injury or even death due to tipping over of the implement

- ▶ Park the implement on stable and even ground.

Parking support 1 for implements with RoTeC coulters. Parking support 2 for implements with TwinTeC Special coulters.



CMS-I-00004939

1. *To set the coulter pressure to 0:*
   See section "Adjusting the coulter pressure hydraulically"

   or

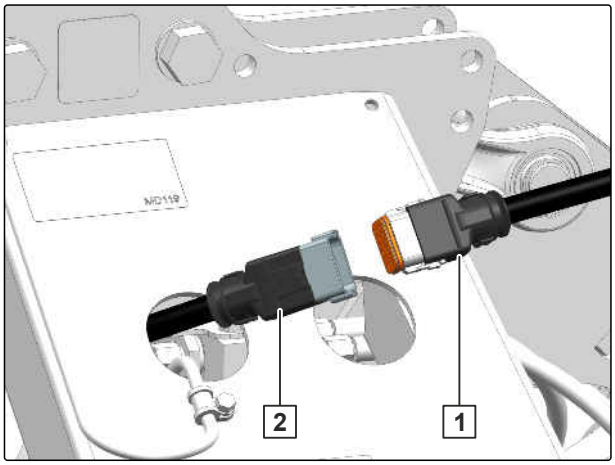
   Section "Adjusting the coulter pressure manually".

2. *To set the maximum placement depth on the TwinTeC Special coulter:*
   See section "Adjusting the placement depth on the TwinTeC Special coulter"

   or

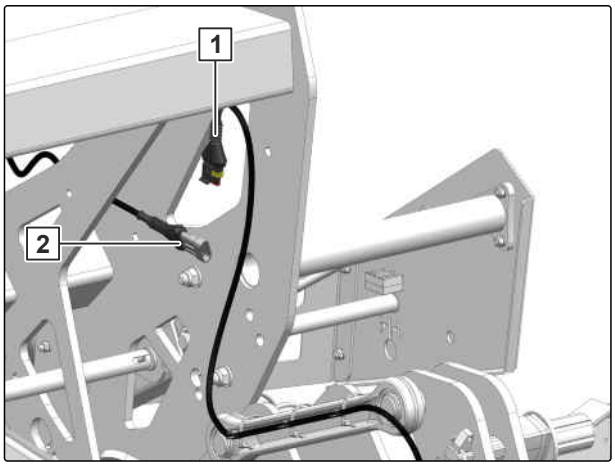
   To set placement depth 0 on the RoTeC coulter:
   See section "Adjusting the placement depth on the RoTeC coulter".

3. Disconnect the supply line 1 from the soil tillage implement 2.



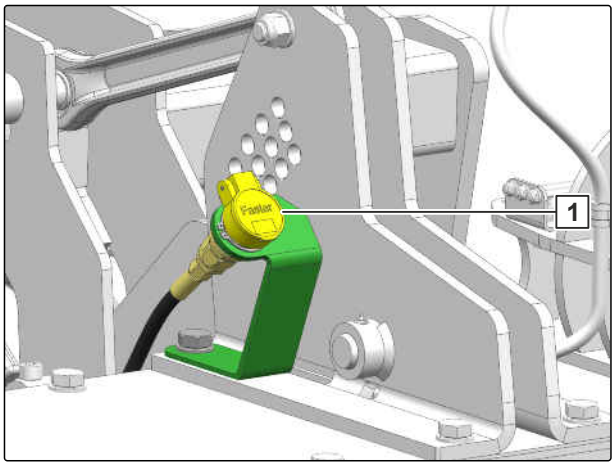
CMS-I-00004528

4. Disconnect the supply line 2 for the rear lighting and identification from the soil tillage implement 1.



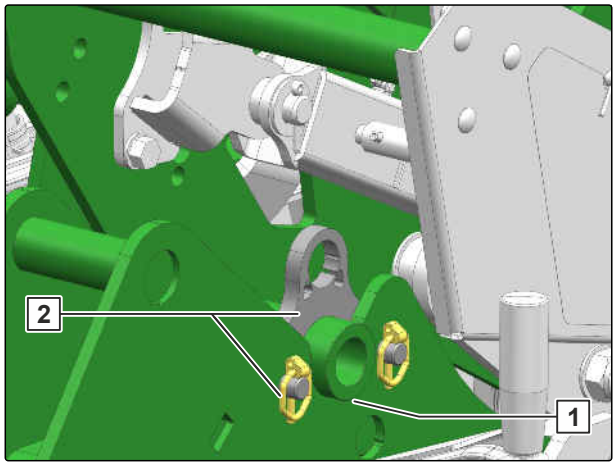
CMS-I-00004527

5. *If the pack top seed drill has a tramline marker:* Disconnect the supply line of the pack top seed drill from the soil tillage implement 1.



CMS-I-00003485

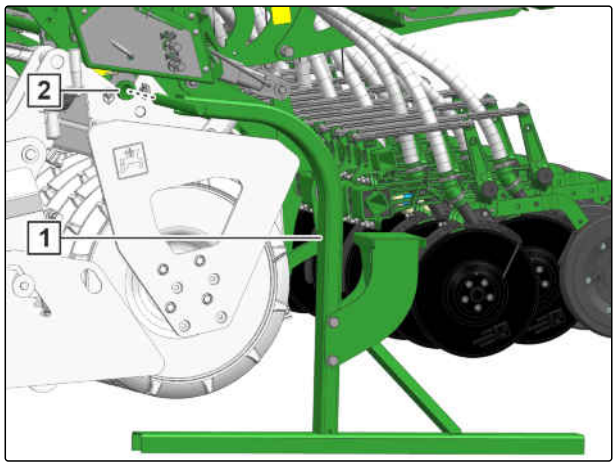
6. Remove the safety clips 2 from all of the brackets 1.



CMS-I-00003593

7. Install the parking supports 1 on the implement 2 on both sides.

8. Park the soil tillage implement with the coupled pack top seed drill.



CMS-I-00004938

9. Remove the linch pin 2.

10. Remove the pin 3.

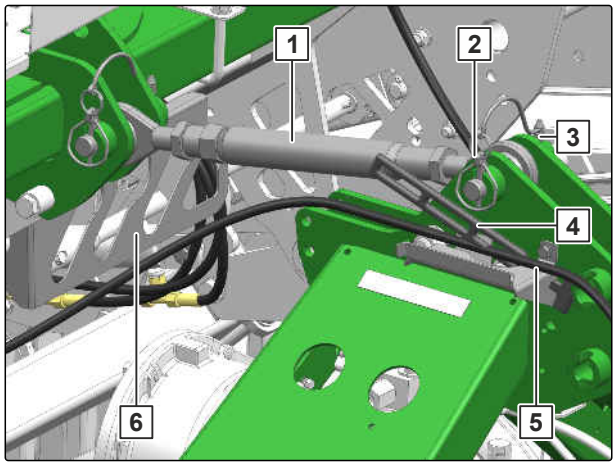
11. Disconnect the top link 1 from the soil tillage implement.

12. Release the holder 4.

13. Take the hydraulic hose lines out of the guide 5 and place them in the hose cabinet 6.

14. Disconnect the supply line for the job computer from the hose package and place it in the hose cabinet.

15. Disconnect the supply line for the job computer from the tractor and place it in the hose cabinet.



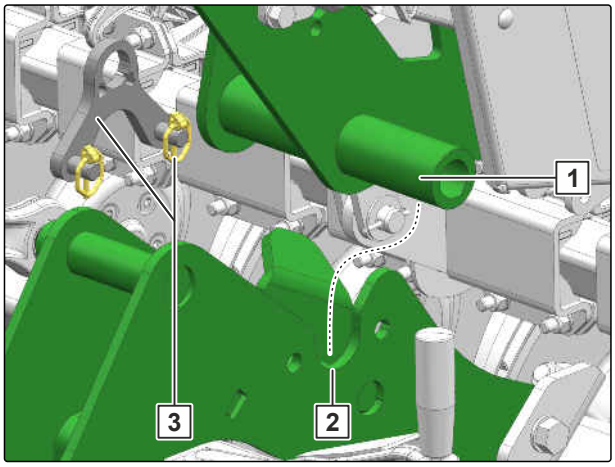
CMS-I-00004526

16. Slowly lower the soil tillage implement.

➡ The catching sockets 2 of the soil tillage implement are lowered.

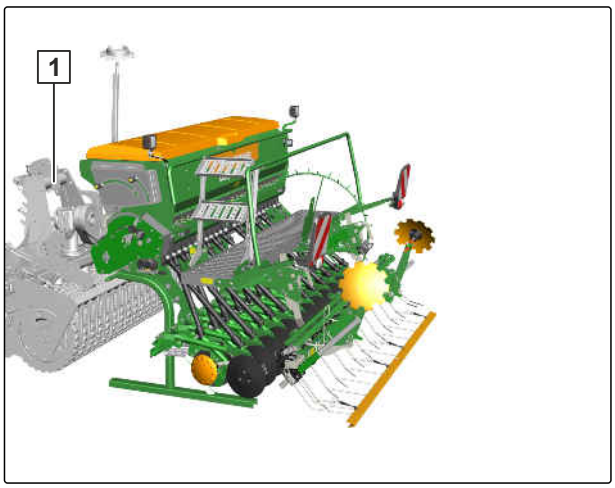
➡ The pack top seed drill 1 is standing on the parking supports.

17. Install the safety clips 3 on the soil tillage implement.



CMS-I-00003590

18. Slowly drive the tractor with the coupled soil tillage implement 1 forward.



CMS-I-00005991

Repairing the implement 10

CMS-T-00008929-B.1

10.1 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.

CMS-I-00002692

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

10.2 Maintaining the implement

CMS-T-00008931-B.1

10.2.1 Maintenance schedule

After initial operation		
Checking the tightening torque for the radar sensor bolts	see page 168	
Checking the gear oil level	see page 170	
Checking the hydraulic hose lines	see page 172	

After the first 50 operating hours		
Cleaning the hopper	see page 169	

at the end of the season		
Checking the RoTeC depth control discs and RoTeC depth control wheels	see page 166	

as required		
Cleaning the hopper	see page 169	
Refilling the gear oil	see page 171	

daily		
Checking the lower link pins and top link pins	see page 172	

Every 12 months		
Checking the tightening torque for the radar sensor bolts	see page 168	

Every 50 operating hours / weekly		
Checking the TwinTeC cutting disc distance	see page 163	
Checking the TwinTeC cutting discs	see page 164	
Checking the TwinTeC depth control wheel	see page 165	
Checking the RoTeC furrow former	see page 168	
Checking the cutting discs	see page 169	
Checking the hydraulic hose lines	see page 172	
Checking the furrow former on the WS drag coulter	see page 173	

Every 50 operating hours / Every 3 years		
Checking the TwinTeC depth control wheel scraper	see page 165	

Every 100 operating hours / Every 12 months		
Checking the gear oil level	see page 170	

Every 500 operating hours / Every 3 months		
Check the basic setting of the bottom flaps	see page 174	

10.2.2 Checking the TwinTeC cutting disc distance

CMS-T-00004447-E.1

INTERVAL

- Every 50 operating hours

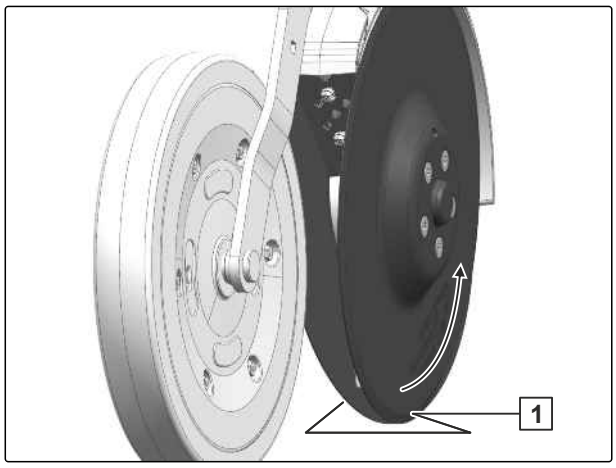
  or

  weekly

1. Rotate the TwinTeC cutting disc 1.

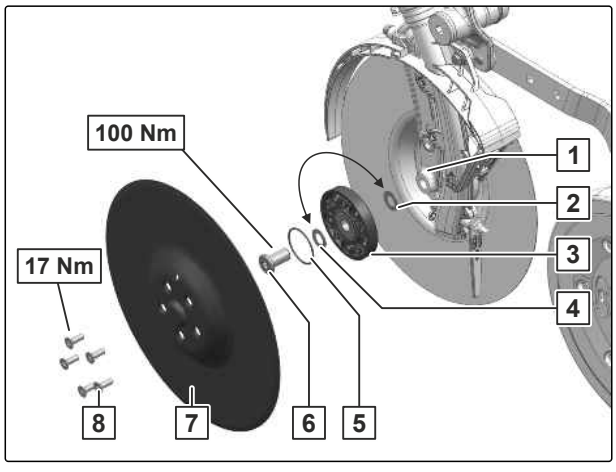
➡ The opposite disc rotates along. The spacing is correctly set.

2. *If the opposite disc does not rotate along,* adjust the cutting disc distance.



CMS-I-00003244

3. Remove the bolts 8.
4. Remove the TwinTeC cutting disc 7.
5. Remove the sealing ring 5.
6. Remove the central bolts 6.



CMS-I-00003234

NOTE

The central bolts have different threads:

- The right central bolt has right-hand thread
- The left central bolt has left-hand thread

7. *To ensure that the TwinTeC cutting discs touch slightly:*
   Adjust the spacing of the TwinTeC cutting discs with the spacer discs 4 and 2.

8. Install spacer discs that are not required on the opposite side of the cutting disc bearing 3 with the central bolt.

9. Install the cutting disc bearing on the coulter 1.

10. Install the central bolt.

11. *If the sealing ring is damaged,*
replace it.

12. Install the sealing ring.

13. Install the TwinTeC cutting disc.

14. Install the bolts.

10.2.3 Checking the TwinTeC cutting discs

CMS-T-00004452-E.1

INTERVAL

- Every 50 operating hours
  or
  weekly

Original disc diameter	Wear limit
340 mm	300 mm

1. Slightly raise the implement.

2. Determine the cutting disc diameter.

3. *If the diameter of a cutting disc is smaller than the wear limit from the table,*
replace the TwinTeC cutting disc.

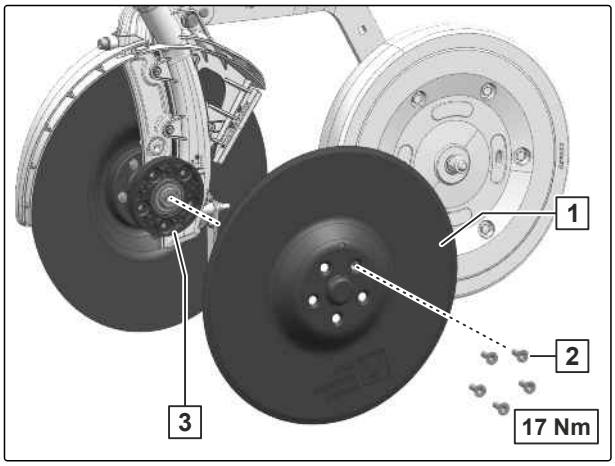
4. Remove the bolts 2.

5. Remove worn TwinTeC cutting discs 1.

6. Pay attention to the orientation of the sealing ring 3.

7. Install new TwinTeC cutting discs.

8. *To ensure that the TwinTeC cutting discs touch slightly:*
See section *"Checking the TwinTeC cutting disc distance"*.



CMS-I-00003233

10.2.4 Checking the TwinTeC depth control wheel

CMS-T-00004451-D.1

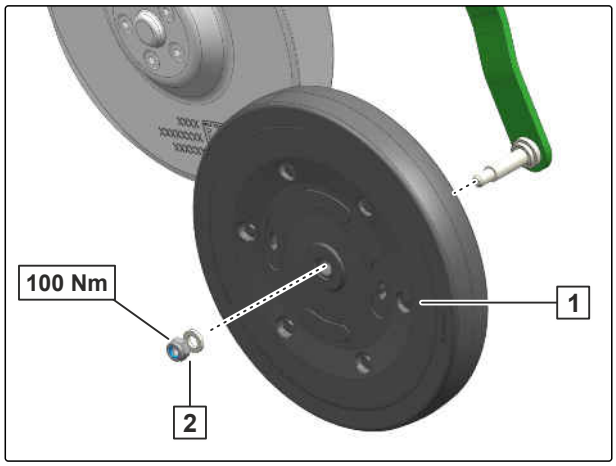
INTERVAL

- Every 50 operating hours

  or

  weekly

1. Check the TwinTeC depth control wheel **1**.
2. *If the TwinTeC depth control wheel has cracks or fractures,*
   replace the depth control wheel.
3. Remove the nut and washer **2**.
4. Replace the damaged TwinTeC depth control wheel.
5. Install the nut and washer.



CMS-I-00003243

10.2.5 Checking the TwinTeC depth control wheel scraper

CMS-T-00008936-C.1

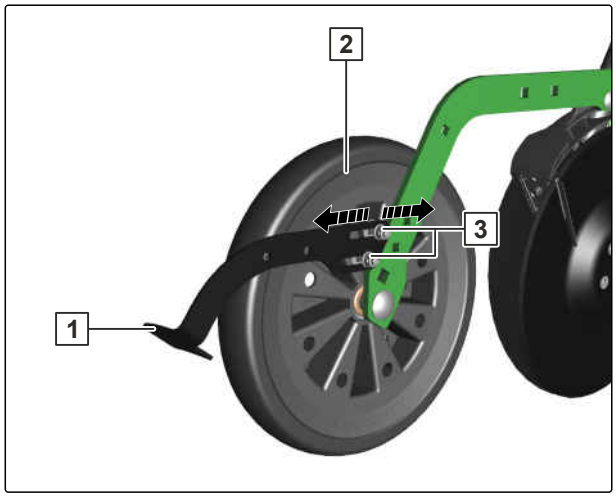
INTERVAL

- Every 50 operating hours

  or

  Every 3 years

1. Lift the implement.



CMS-I-00006164

IMPORTANT

Damage to the wheel due to abrasion by the scraper

► *To check the distance:*
rotate the wheel.

2. *If the distance is larger or smaller than 3 mm,*
Loosen the nuts **3**.

3. Adjust the depth control wheel scraper **1**.

4. Tighten the nut.

5. *To check the distance:*
Rotate the depth control wheel again.

6. *If the depth control wheel scraper cannot be readjusted any further,*
replace the press roller scraper.

7. Remove the nut and washer.

8. Replace the depth control wheel scraper.

9. Install the washer and nut.

10. *To check the distance:*
rotate the wheel.

10.2.6 Checking the RoTeC depth control discs and RoTeC depth control wheels

CMS-T-00006349-D.1

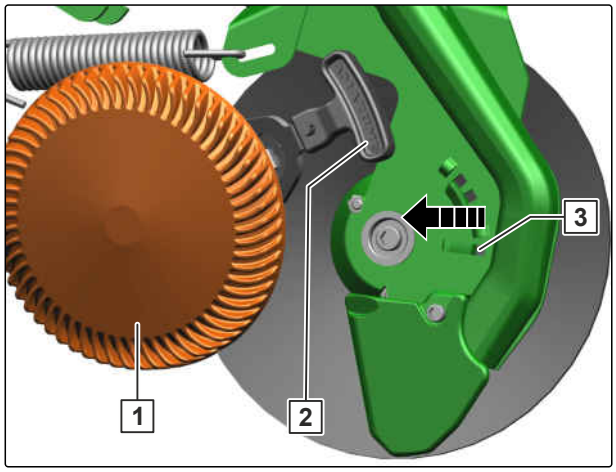
INTERVAL

- at the end of the season

1. Check the RoTeC depth control discs or RoTeC depth control wheels for damage such as cracks or fractures.

2. *If a RoTeC depth control disc or RoTeC depth control wheel is damaged,*
replace the RoTeC depth control disc or RoTeC depth control wheel.

3. *To remove the damaged RoTeC depth control disc or RoTeC depth control wheel* **1** *from the coulter:*
   Move the lever all the way down and push it to the rear in the elongated slot **3** until the RoTeC depth control disc or RoTeC depth control wheel can be removed.



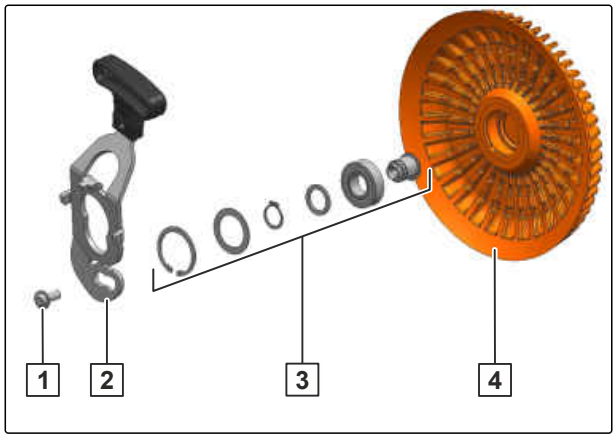
CMS-I-00004665

The removed unit consisting of RoTeC depth control disc or RoTeC depth control wheel **4** and lever **2** can be replaced as a whole or further disassembled. If only the RoTeC depth control disc or RoTeC depth control wheel should be replaced, the unit must be further disassembled as described in the following.

4. Remove the bolt **1**.

5. Take the axle, ball bearing, locking rings and locking washers **3** out of the worn RoTeC depth control disc or RoTeC depth control wheel and insert them in the new RoTeC depth control disc or RoTeC depth control wheel.

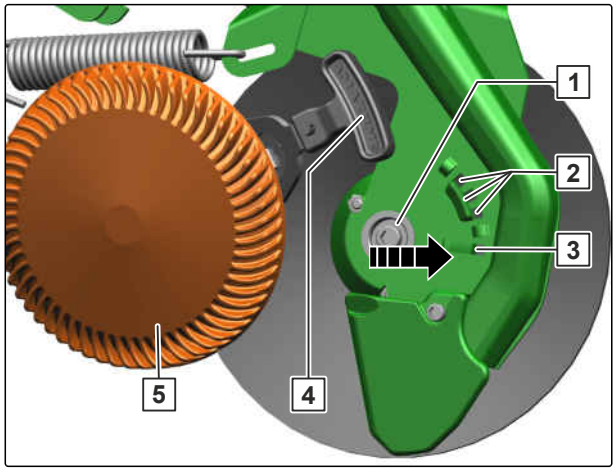
6. Install the lever **2** with the bolt **1** on the new RoTeC depth control disc or RoTeC depth control wheel **4**.



CMS-I-00004802

7. *To install the new RoTeC depth control disc or RoTeC depth control wheel* **5** *on the coulter:*
   Set the notch of the lever **4** on the bearing seat **1** of the cutting disc, press it firmly against the RoTeC depth control disc or RoTeC depth control wheel and pull the lever towards the front in the elongated slot **3** until the RoTeC depth control disc or RoTeC depth control wheel engages.

8. *To adjust the placement depth:*
   Pull on the lever for the RoTeC depth control disc or RoTeC depth control wheel, move it up and engage it in the desired hole **2**.



CMS-I-00004836

10.2.7 Checking the RoTeC furrow former

CMS-T-00006374-C.1

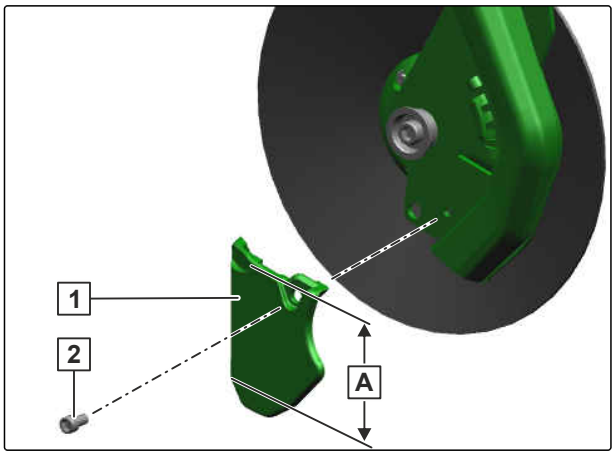
INTERVAL

- Every 50 operating hours

  or

  weekly

1. Remove the depth control disc or depth control wheel.
2. *When the indicated measurement* **A** *on a furrow former is smaller than 98 mm,* replace the furrow former.
3. *To replace the furrow former:* Remove the bolt **2** and dispose of it.
4. Replace the worn furrow former **1**.



CMS-I-00004667

NOTE

The bolts for the furrow former are coated and may not be reused.

5. Install the a new bolt **2**.

10.2.8 Checking the tightening torque for the radar sensor bolts

CMS-T-00002383-E.1

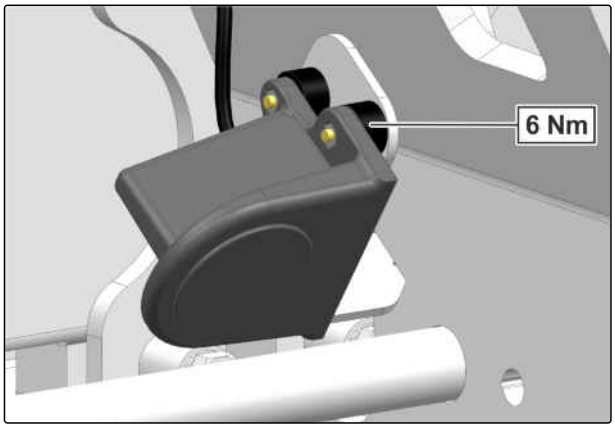
INTERVAL

- After initial operation
- Every 12 months

NOTE

When the tightening torque is too high, the spring-suspended sensor mount is warped and the radar sensor does not work properly.

► Check the tightening torque on the radar sensor.



CMS-I-00002600

10.2.9 Checking the cutting discs

CMS-T-00007567-B.1

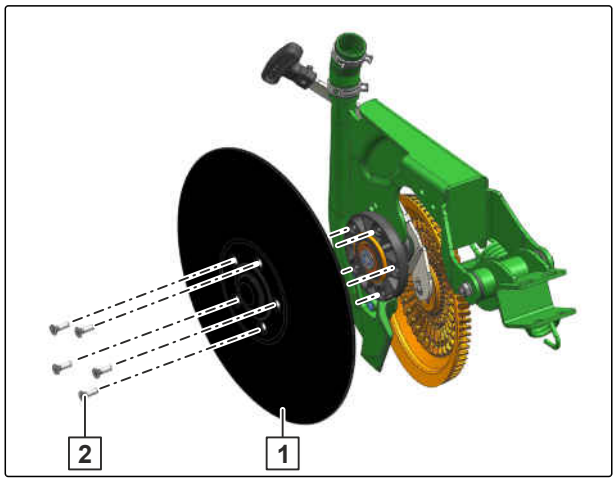
INTERVAL

- Every 50 operating hours

  or

  weekly

1. Determine the diameter of the cutting discs.
2. *If the diameter of a cutting disc is smaller than 365 mm,*
   replace the cutting disc.
3. *To replace the cutting disc:*
   remove the bolts 2 on the front side of the cutting disc.
4. Replace the worn cutting disc 1.
5. Install the bolts.



CMS-I-00005324

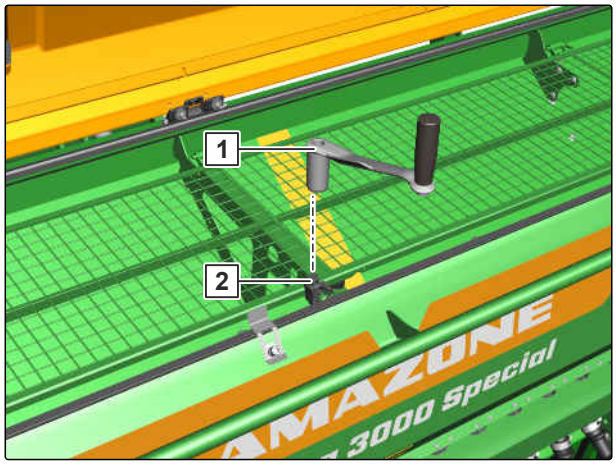
10.2.10 Cleaning the hopper

CMS-T-00008933-A.1

INTERVAL

- After the first 50 operating hours
- as required

1. Open the hopper cover.
2. Release the locking mechanism 2 with the universal operating tool 1.



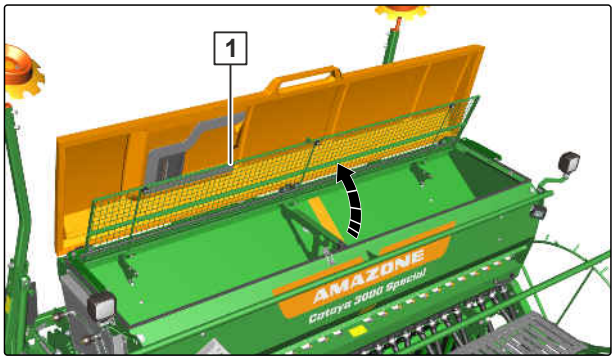
CMS-I-00005996

3. Fold up the charging sieve 1.

4. Clean the hopper.

5. Close the charging sieve.

6. Close the hopper.



CMS-I-00005997

10.2.11 Checking the gear oil level

CMS-T-00008937-A.1

INTERVAL

- After initial operation
- Every 100 operating hours

  or

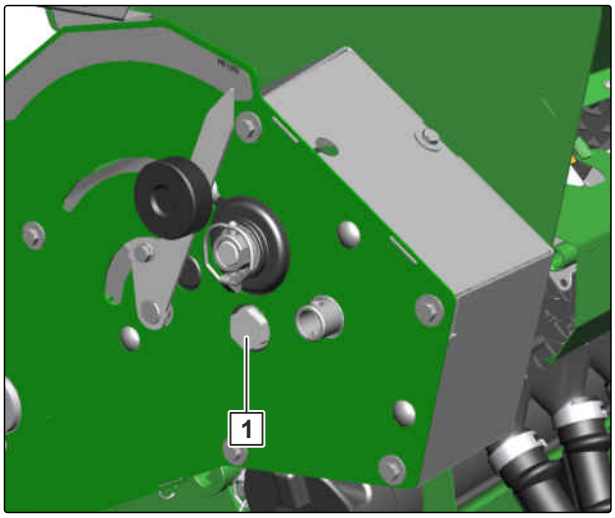
  Every 12 months

NOTE

There is no need to change the oil.

1. Position the implement on a horizontal surface.

2. *If the oil level is not visible in the oil sight glass 1,*
   see *"Refilling the gear oil"*.



CMS-I-00006165

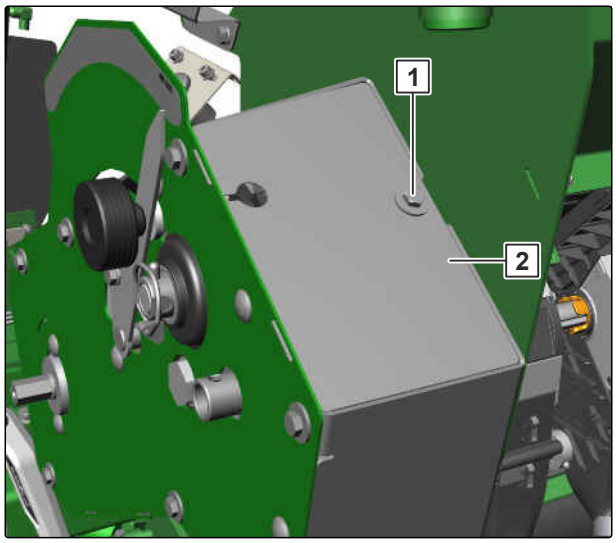
10.2.12 Refilling the gear oil

CMS-T-00008938-A.1

INTERVAL

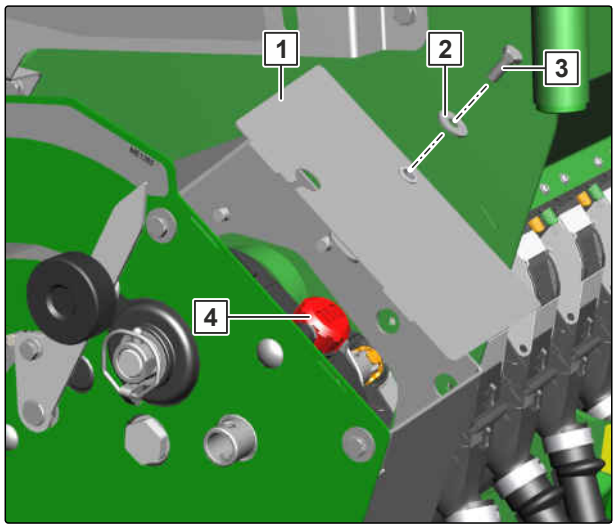
- as required

1. *To take off the chain guard* 2:
   Loosen the bolt 1 with a suitable wrench.



CMS-I-00006098

2. Remove the bolt 3.
3. Remove the washer 2.
4. Take off the chain guard 1.
5. *To refill gear oil:*
   Open the oil filler neck 4.
6. Refill the gear oil.
7. Close the oil filler neck 4.
8. Install the chain guard 1.
9. Install the washer 2.
10. Insert the bolt 3 and tighten it.



CMS-I-00006166

10.2.13 Checking the lower link pins and top link pins

CMS-T-00002330-J.1

INTERVAL

- daily

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

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

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

2. Replace worn pins.

10.2.14 Checking the hydraulic hose lines

CMS-T-00002331-F.1

INTERVAL

- After initial operation
- Every 50 operating hours

  or

  weekly

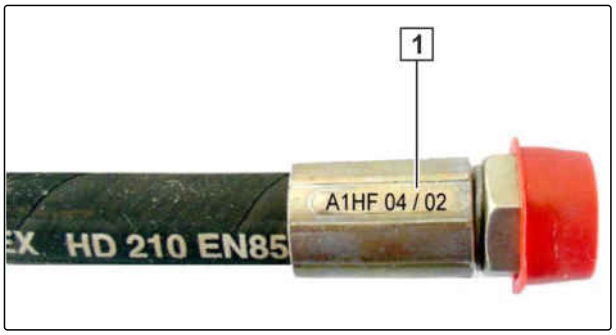
1. Check the hydraulic hose lines for damage, such as chafing point, cuts, tears and deformation.

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.

10.2.15 Checking the furrow former on the WS drag coulter

CMS-T-00009214-A.1

INTERVAL

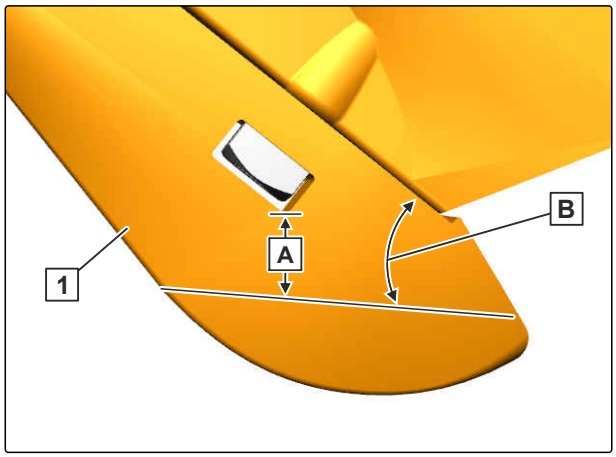
- Every 50 operating hours

  or

  weekly

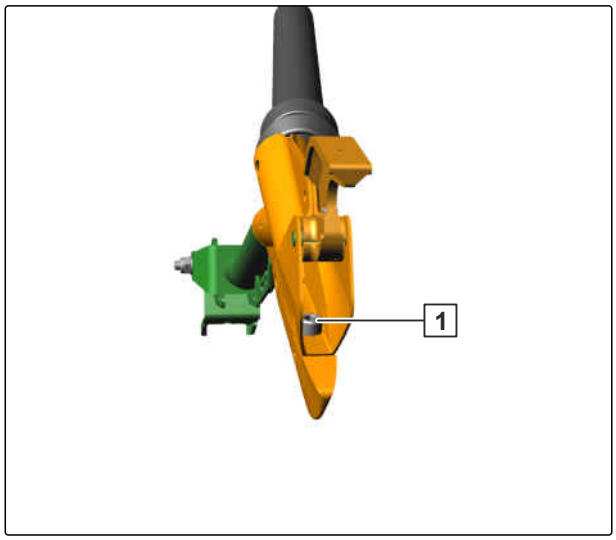
1. *To determine the dimension* **A**:
   Set the angle **B** to 40 degrees.

2. *When the indicated measurement* **A** *on a furrow former is smaller than 14 mm,*
   replace the furrow former.



CMS-I-00006340

3. *To replace the furrow former:*
   Remove the bolt **1**.

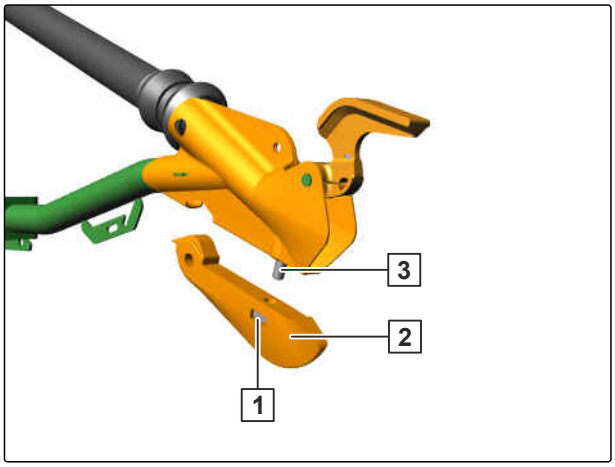


CMS-I-00006341

4. remove the bolt 3 and dispose of it.

5. Replace the worn furrow former 2 and nut 1.

6. Insert the new bolt 3 and tighten it.



CMS-I-00006342

10.2.16 Check the basic setting of the bottom flaps

CMS-T-00011410-A.1

INTERVAL

- Every 500 operating hours

  or

  Every 3 months

1. *If the hopper is full,*
   close all of the sliding shutters.

2. Empty the metering wheels, see section *"Emptying the hopper and metering unit"*.

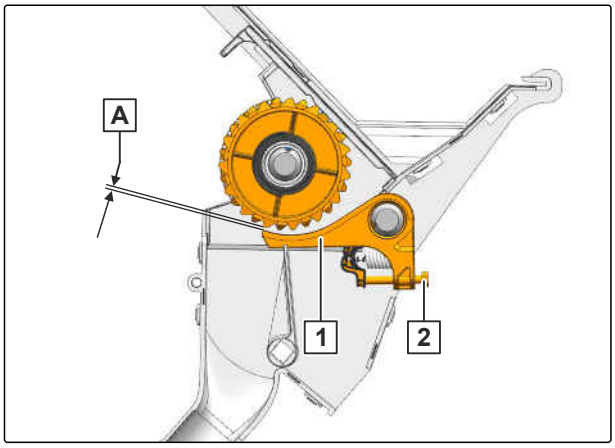
3. Set the bottom flap lever 1 at scale value 1.

CMS-I-00006145

The distance A between the bottom flap and the metering wheel must be between 0.1 mm and 0.5 mm.

4. Check the distance between the bottom flap and metering wheel.

5. *If the distance between the bottom flap and the metering wheel is not in the range of distance A,*
   set the prescribed distance with the bolt 2.



CMS-I-00007513

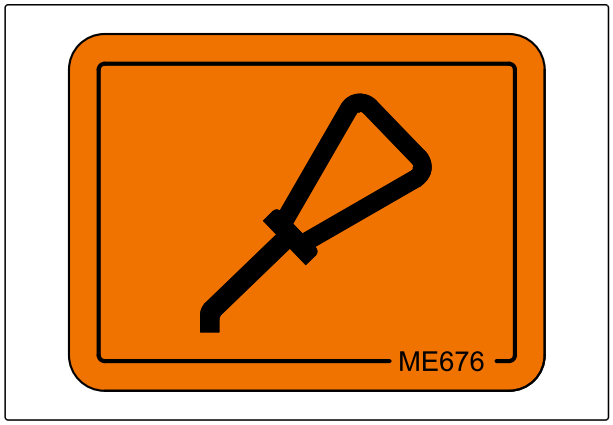
10.3 Lubricating the drive chains

CMS-T-00009168-A.1

IMPORTANT

Implement damage due to improper lubrication

- ▶ Grease the implement at the marked lubrication points according to the lubrication schedule.
- ▶ Before lubrication, clean the chain with only a penetrating oil and a brush.
- ▶ Only grease the implement with the lubricants listed in the technical data.
- ▶ Do not let the lubricants drip off of the chain.



CMS-I-00001879

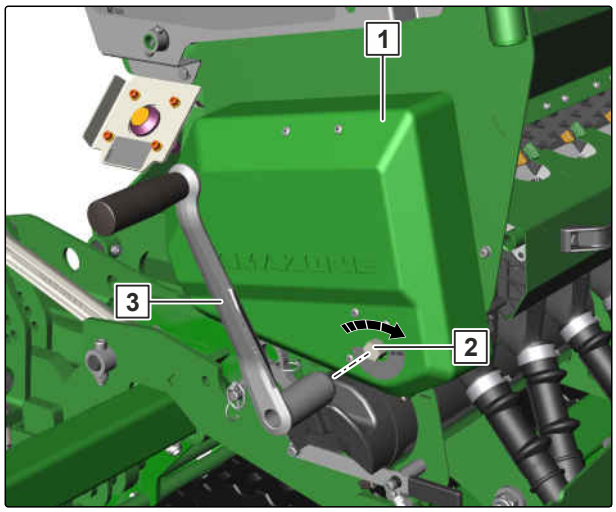
10.3.1 Lubricating the drive chain on the electric metering drive

CMS-T-00009171-A.1

INTERVAL

- Every 500 operating hours

1. *To open the cover* **1**:
   Put the universal operating tool **3** on the adjustment spindle **2** and turn it clockwise.

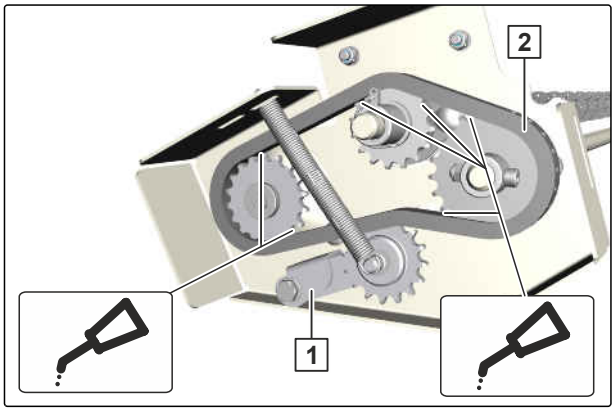


CMS-I-00006078

2. Lubricate the drive chain 2 from the inside going out.

3. Check chain tensioner 1 for ease of movement.

4. Close the cover for the chain drive.



CMS-I-00006269

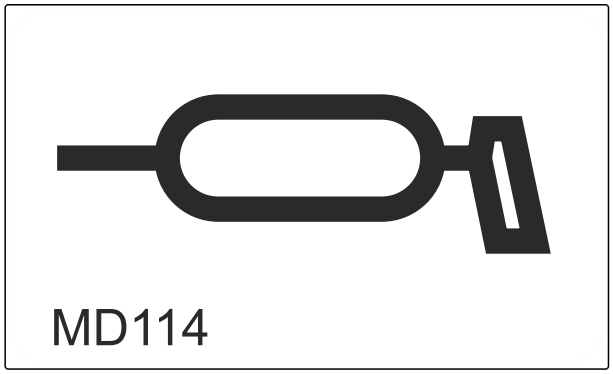
10.4 Lubricating the implement

CMS-T-00008934-A.1

IMPORTANT

Implement damage due to improper lubrication

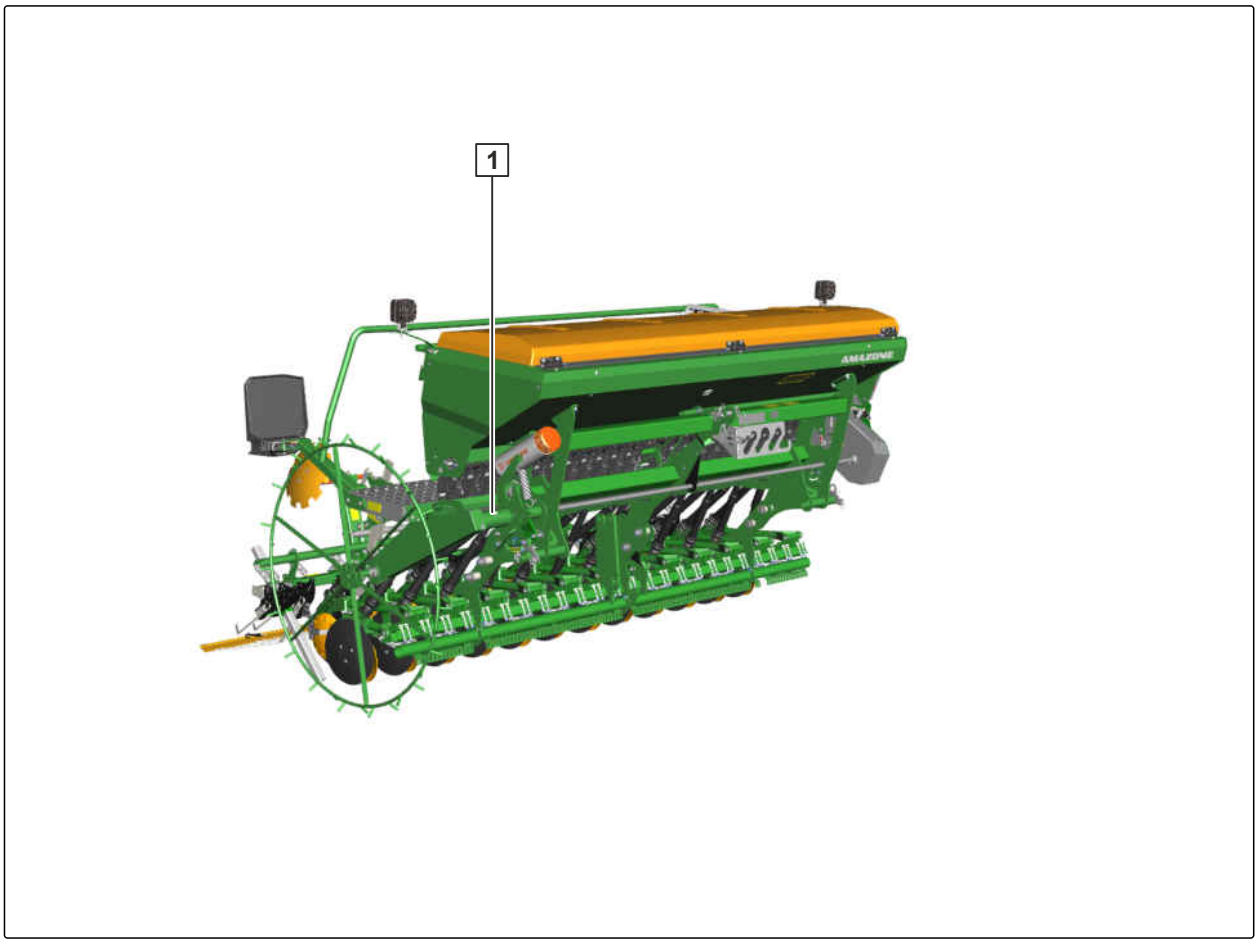
- Grease the implement at the marked lubrication points according to the lubrication schedule.
- *To ensure that dirt is not pressed into the lubrication points,*
  thoroughly clean the grease nipples and the grease gun.
- Only grease the implement with the lubricants listed in the technical data.
-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



CMS-I-00002270

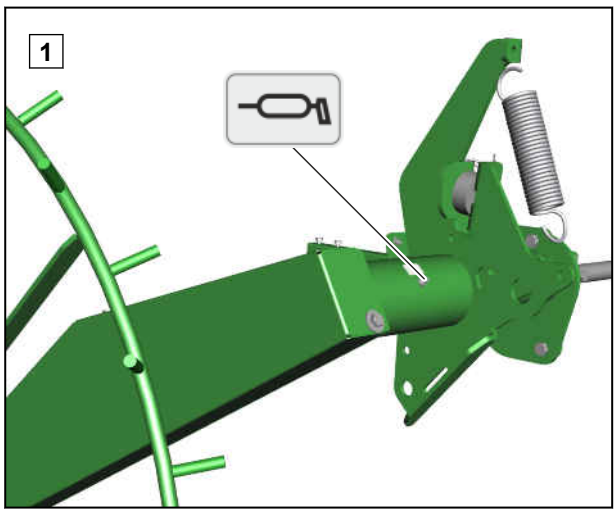
10.4.1 Overview of lubrication points 1

CMS-T-00008935-A.1



CMS-I-00006236

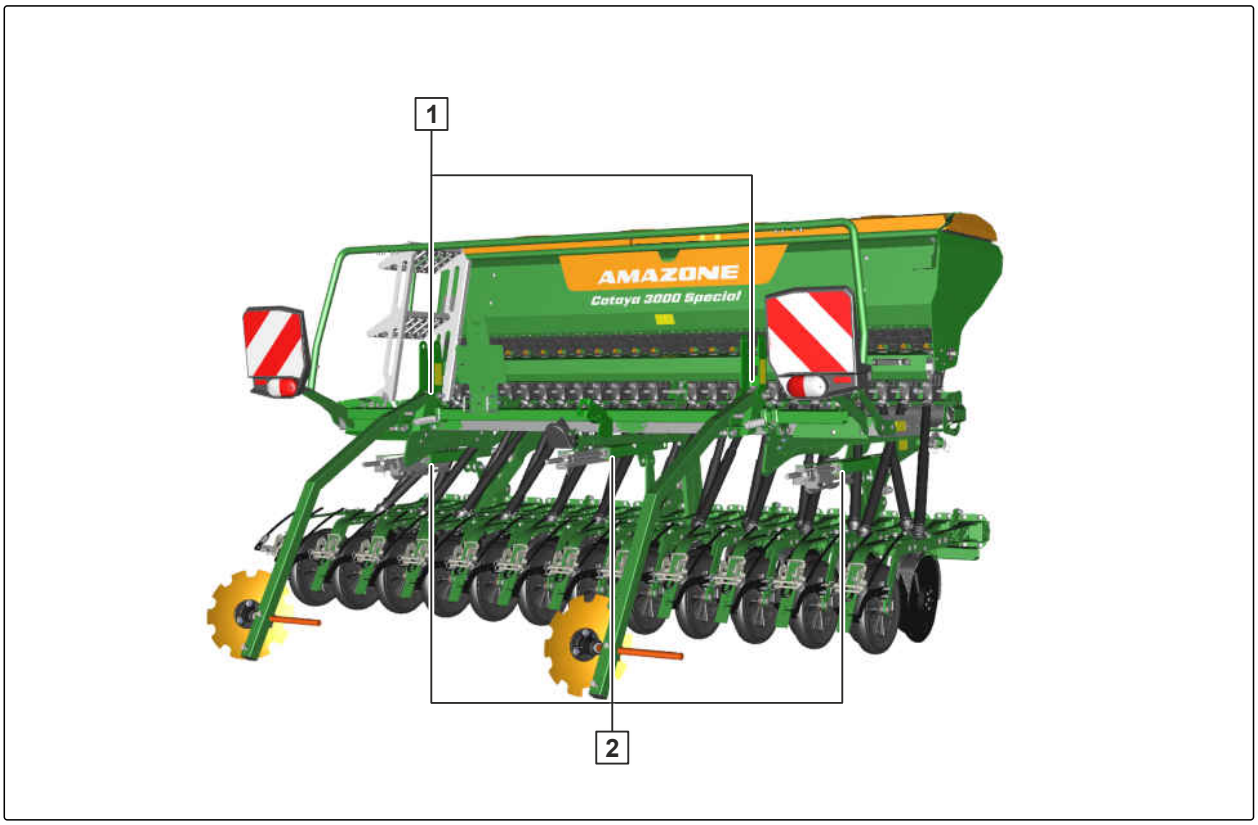
Every 100 operating hours



CMS-I-00006237

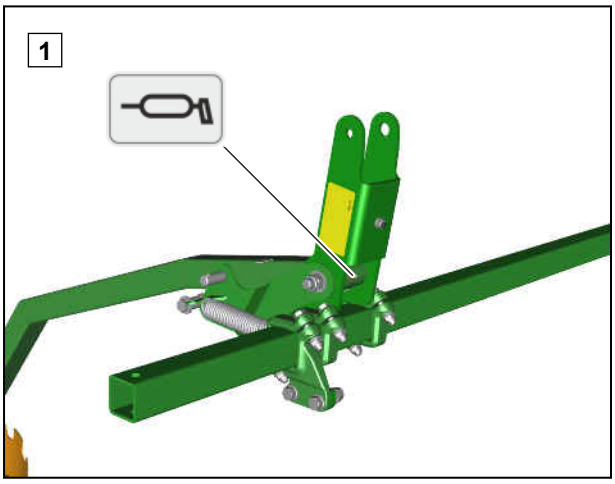
10.4.2 Overview of lubrication points 2

CMS-T-00009083-A.1

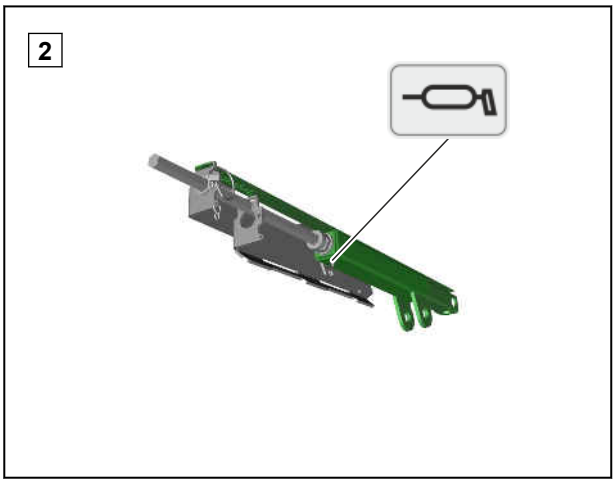


CMS-I-00006235

Every 100 operating hours



CMS-I-00006238



CMS-I-00006239

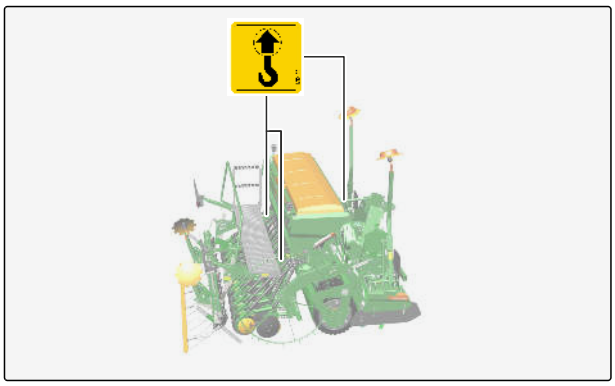
Loading the implement 11

CMS-T-00008974-B.1

11.1 Loading the implement with a crane

CMS-T-00008975-B.1

The implement has 3 lashing points for slings for lifting.



CMS-I-00006216

WARNING

Risk of accidents due to improperly attached slings for lifting

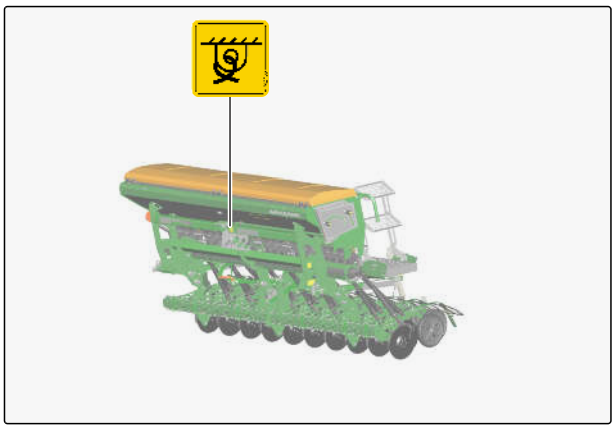
If the slings are not attached at the marked lashing points, the implement can be damaged during lifting and endanger safety.

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

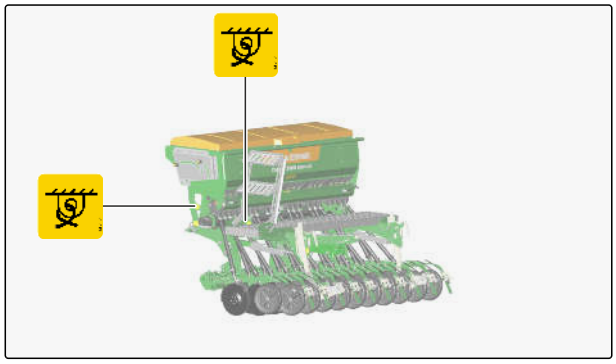
1. Attach the slings for lifting on the intended lashing points.
2. Slowly lift the implement.

11.2 Lashing the implement

CMS-T-00008978-B.1

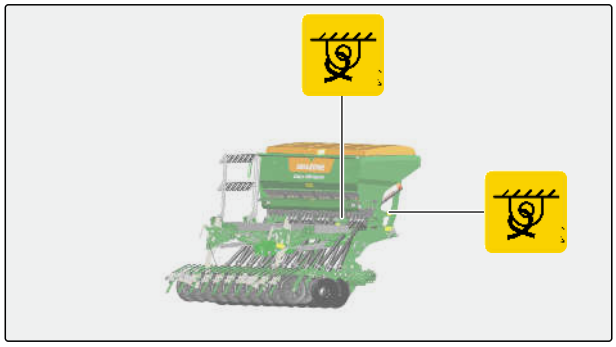


CMS-I-00009086



CMS-I-00007488

The implement has 5 lashing points for lashing straps.



CMS-I-00007489

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 12

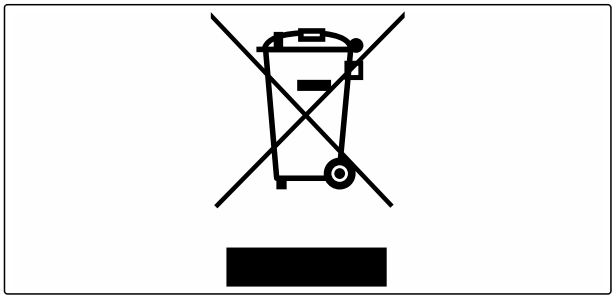
CMS-T-00010906-B.1

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

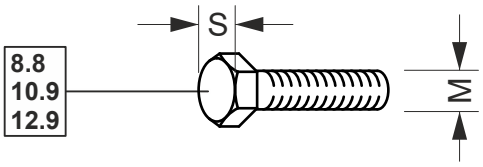
5. Dispose of the coolant.

Appendix 13

CMS-T-00008982-B.1

13.1 Bolt tightening torques

CMS-T-00008983-B.1



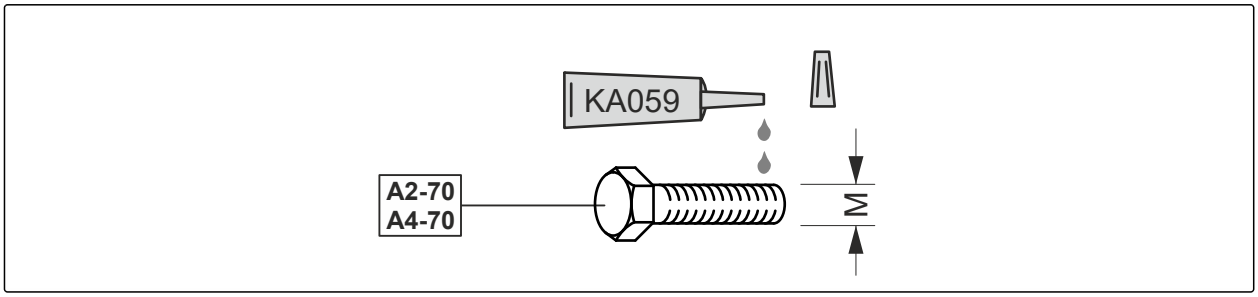
CMS-I-000260

NOTE

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

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

M	S	Nm		
		8.8	10.9	12.9
M22	32	550	780	930
M22x1.5		610	860	1050
M24	36	710	1000	1200
M24x2		780	1100	1300
M27	41	1050	1500	1800
M27x2		1150	1600	1950
M30	46	1450	2000	2400
M30x2		1600	2250	2700



CMS-I-00000065

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

13.2 Other applicable documents

CMS-T-00008984-A.1

- Tractor operating manual
- Soil tillage implement operating manual
- ISOBUS software operating manual
- AmaLog software operating manual
- Control terminal operating manual

Directories

14

14.1 Glossary

CMS-T-00000513-B.1

M

Machine

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

O

Operating materials

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

T

Tractor

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

14.2 Index

T

U

V

W

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