OPERATING INSTRUCTIONS EN

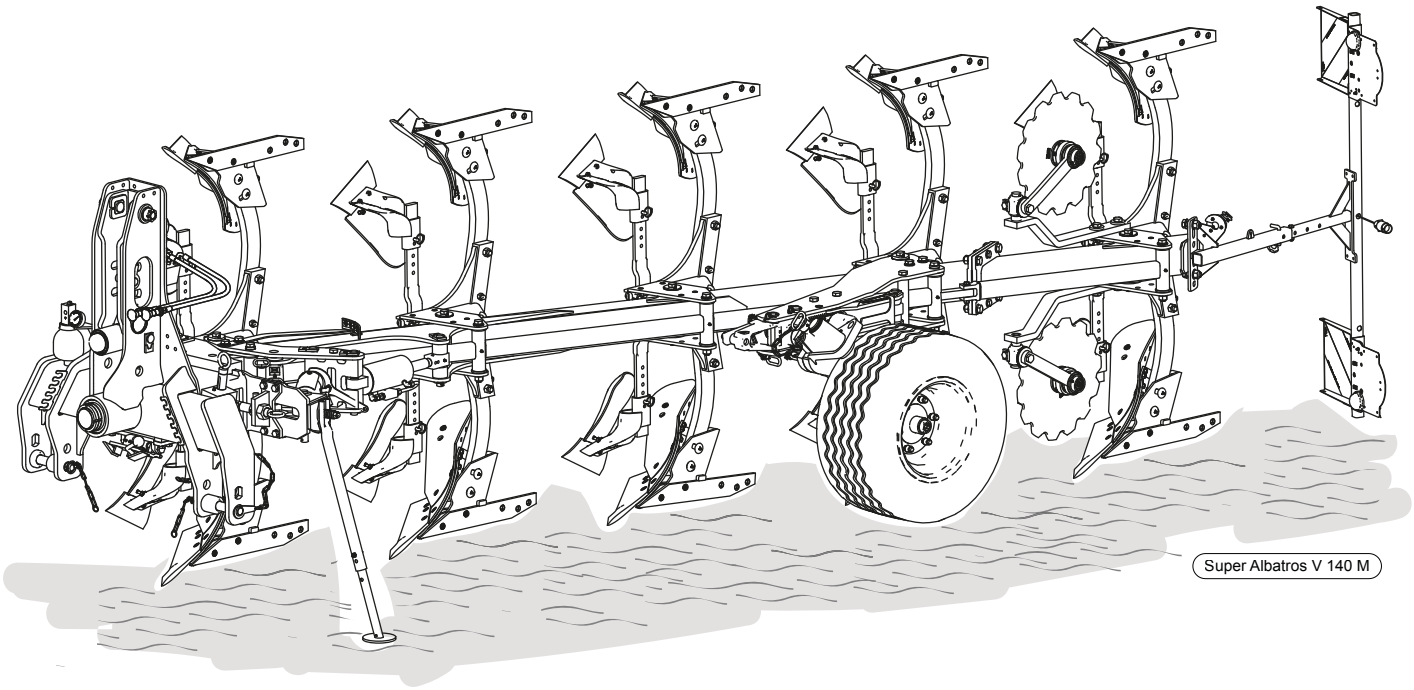
(TRANSLATION OF THE ORIGINAL)

Serial no.

Attachment-reversible plough

Albatros V, Series 1, 2 / Albatros VHA, Series 1

Super Albatros V, Series 1-3 / Super Albatros VHA, Series 2,3



Super Albatros V 140 M

RABE
A ZOOMLION COMPANY

BRIEF INSTRUCTIONS

Quick guide for experienced operators, always observe the detailed operating instructions as well.

TABLE OF CONTENTS FOR THE BRIEF INSTRUCTIONS

BRIEF INSTRUCTIONS

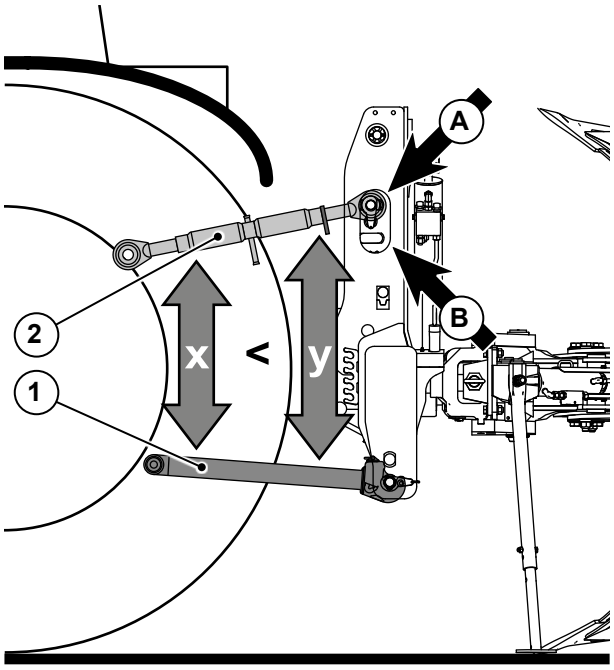
1 PREPARING THE TRACTOR

- ► Calculate required ballast for the tractor, then attach ballast.
- ► Check that the air pressure in the tractor's tyres is correct and equal.
- ► Check the output and lifting capacity of the rear power lift on the tractor in relation to the plough version.
- ► Check the permissible axle load for the tractor.
- ► Check that tractor’s and implement’s connection categories are the same.
- ► Set the bottom links to the same height.
- ► Limit the bottom links to a low lateral ...
  ... tolerance with the side locks when raised and adjust them so that they ...
  ... move freely when lowered.
- ► Set the tractor hydraulics to traction control.
- ► Check the bottom link’s lifting height.

  Minimum lifting height = 85 cm

2 COUPLING THE IMPLEMENT

Notes on coupling



- The bottom link (1) must slope downwards slightly towards the implement.
- Attach the top link (2) so that it slopes upwards towards the working implement.

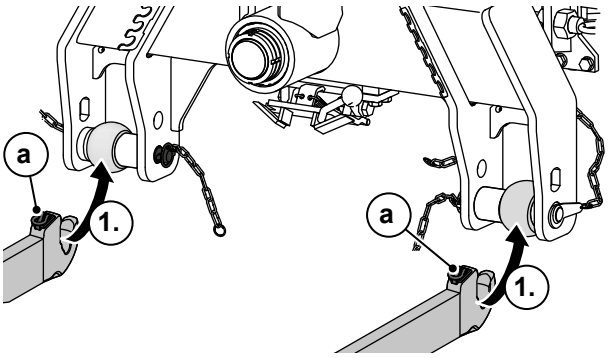
  x < Y
- The incline can be changed by inserting the top link stock in position A or B.
- Insert the top link into the elongated hole.

  Benefits:

  - Quicker soil penetration
  - Safer bottom guidance
  - Load reduction on the plough hydraulics

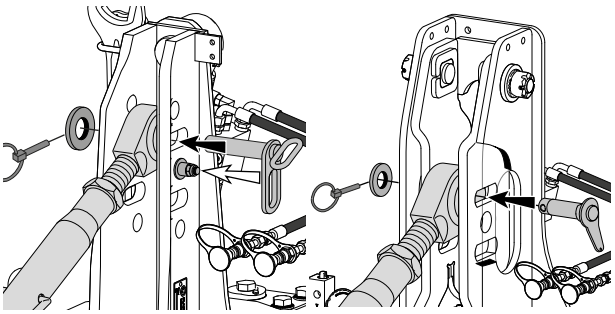
NOTE
Insert the top link into the hole if the soil is heavy.

Coupling



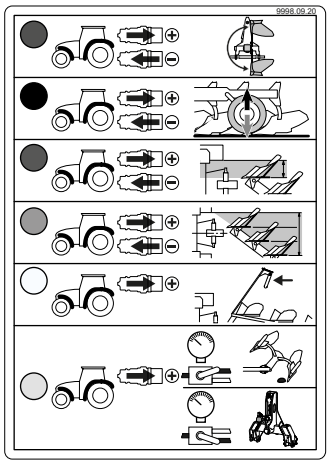
► Couple and lock the bottom link (a).

Albatros **Super Albatros**

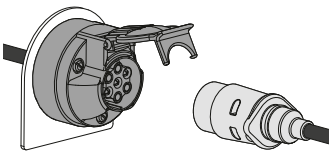


► Couple the top link.

Blue	
Black	
Red	
Green	
White	
Yellow	



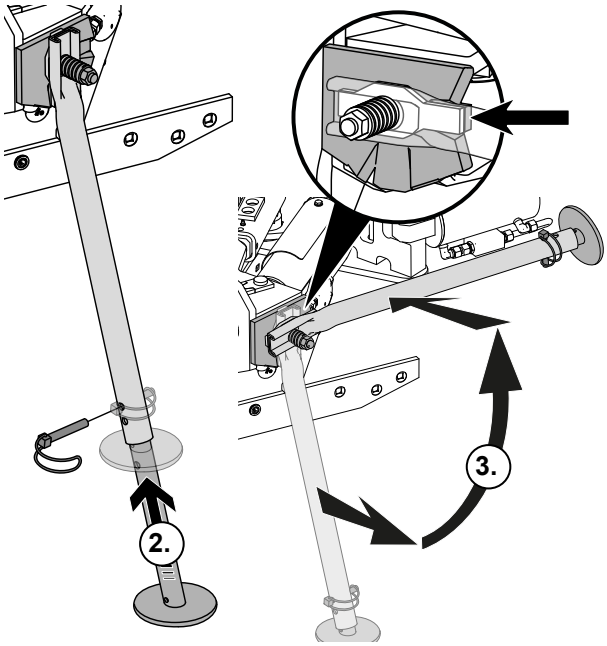
► Connect the hydraulic line.



► Connect the lighting cable.

3 FOLDING UP THE PARKING SUPPORT

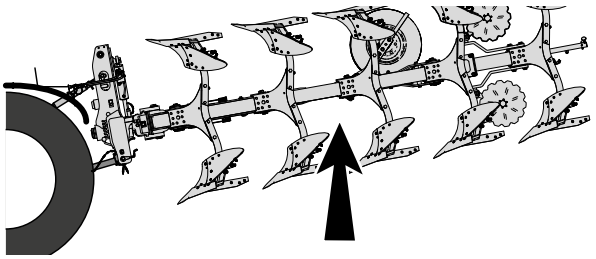
► 1.) Lift the plough using the three-point power lift until the parking support is free.

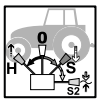


► 2.) Insert the parking support and pin it to the shortest position.

► 3.) Fold up and lock the parking support..

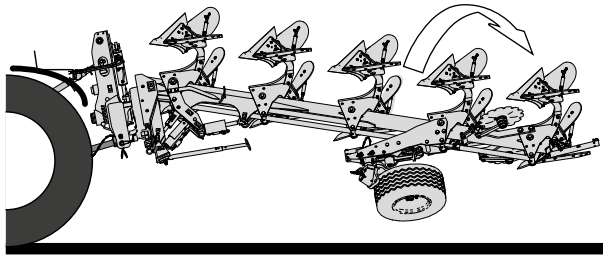
4 MOVING THE PLOUGH WITH COMBINATION WHEEL INTO THE TRANSPORT POSITION

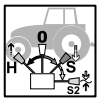


► 1.) 

Lift the plough with the three-point power lift.

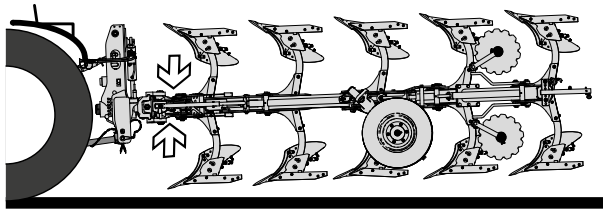
Minimum lifting height = 85 cm.

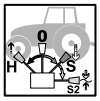


► 2.) 

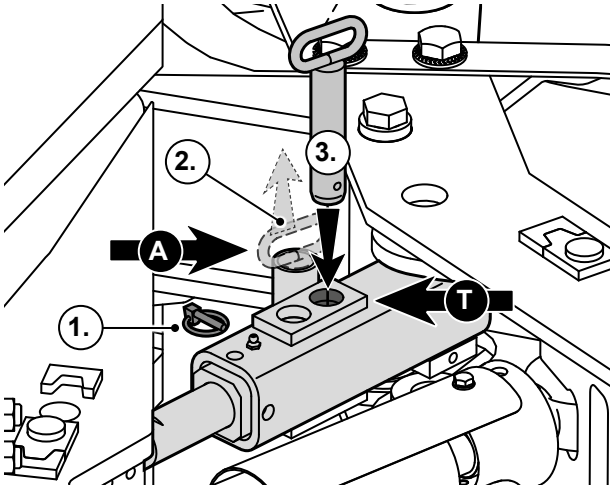
Actuate the control device until the plough has rotated onto the right-hand side completely.

For hydraulic frame slewing, actuate the control device until hydraulic frame slewing is pivoted in.



► 3.) 

Pivot hydraulic width adjustment in so that it is narrow behind the tractor.

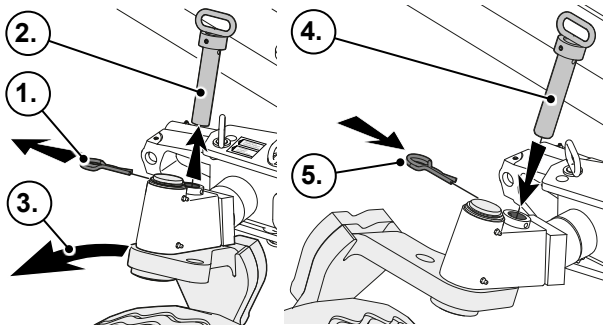


► Remove the locking pin from the working position (A) and pin it into the transport position (T).

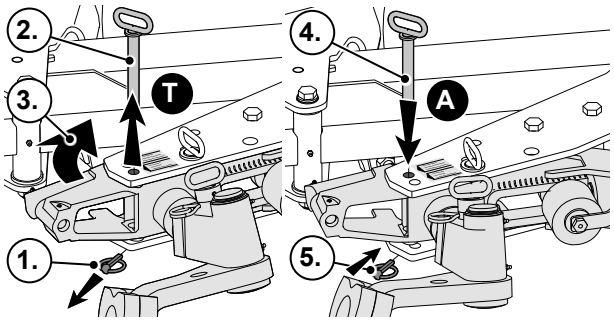
A = working position for the locking pin

T = transport position

Turning the D30 combination wheel into the transport position



► Pin the D30 combination wheel into the transport position.

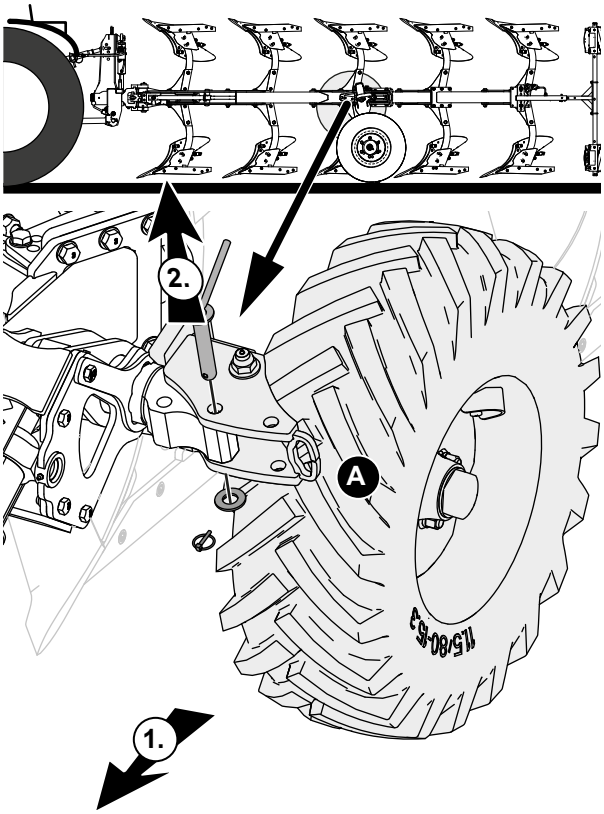


► Pin the D30 wheel console into the transport position.

A = working position for the locking pin

T = transport position

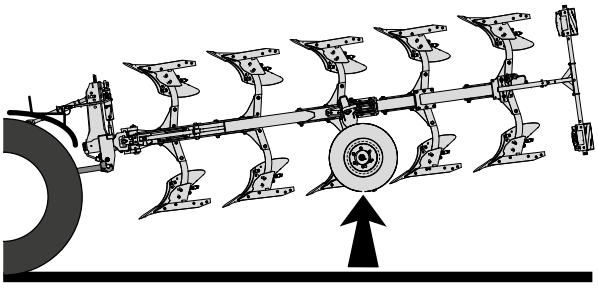
Turning the RCRH combination wheel into the transport position

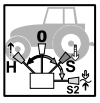


Ⓐ = Working position

► 1.) Remove the hinged pin and washer.

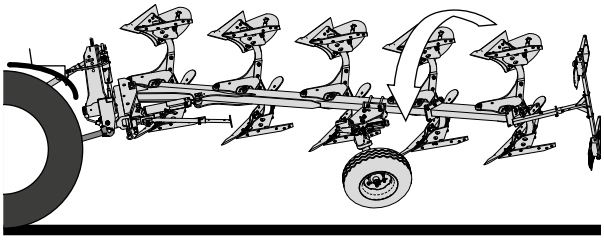
► 2.) Remove the locking pin.

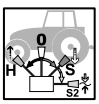


► 3.) 

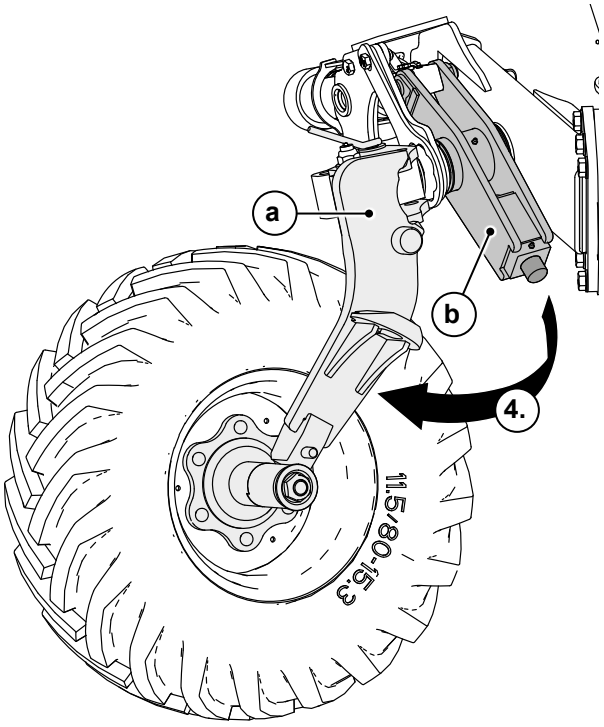
Lift the plough with the three-point power lift..

Minimum lifting height = 85 cm



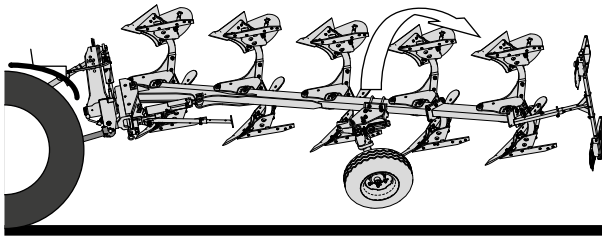
► 4.) 

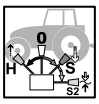
Turn the plough slowly until the RCRH combination wheel unlocked.



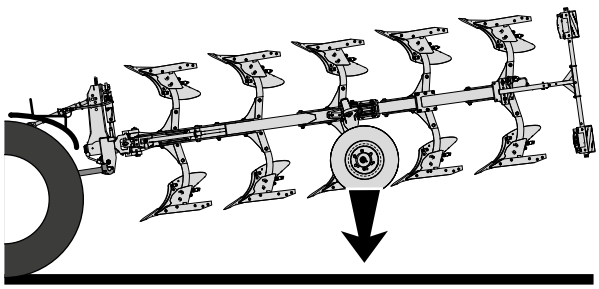
NOTE

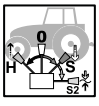
- *When turning the plough, the wheel arm (a) unlocks from the swivel arm (b).*



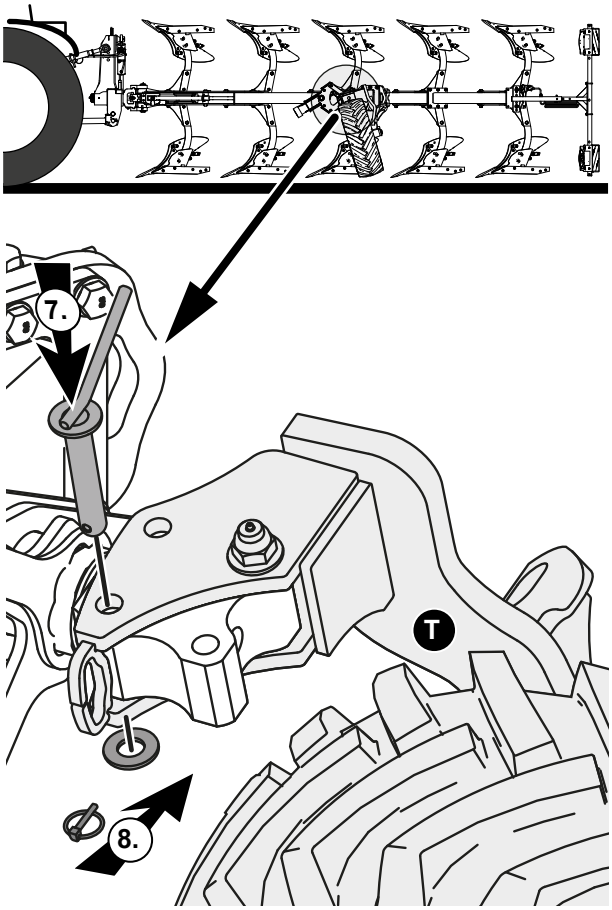
► 5.) 

Rotate the plough back to the right-hand side.



► 6.) 

Lower the plough.

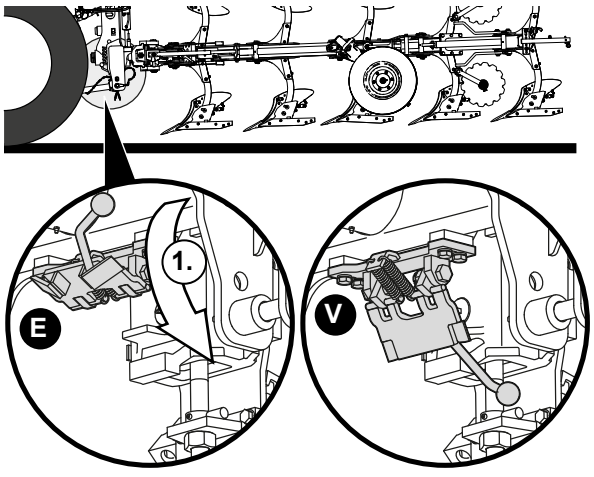


T = Transport position

► 7.) Insert the locking pin and ...

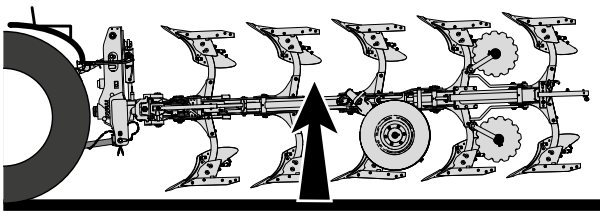
► 8.) ... secure with washer and hinged pin.

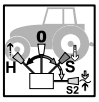
Lock the central lock.



► Lock the central lock.

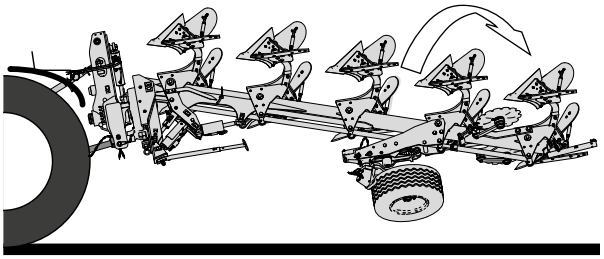
V =	Locked =	transport position, turning locked
E =	Unlocked =	working position, turning possible

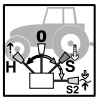


► 

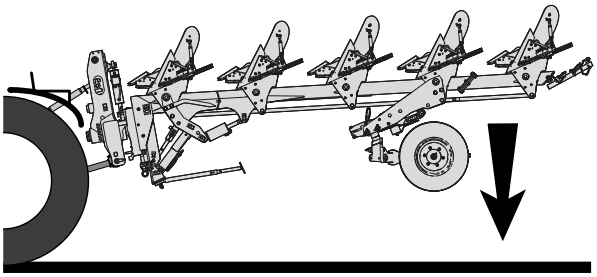
Lift the plough with the three-point power lift.

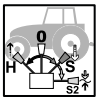
Minimum lifting height = 85 cm



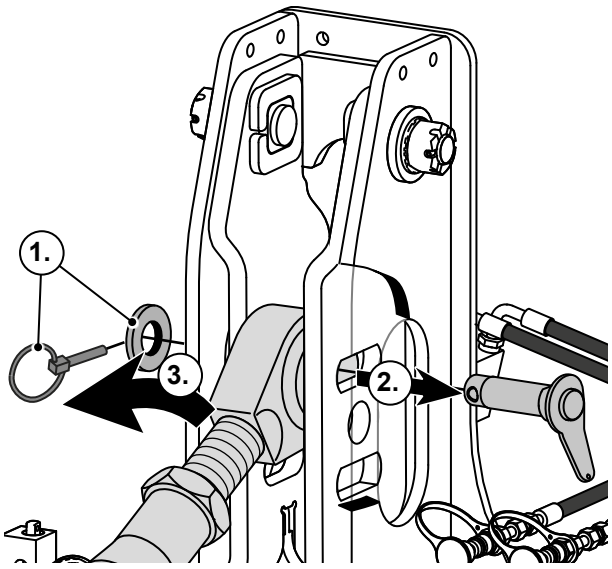
► 

Turn the plough slowly until the central lock engages.



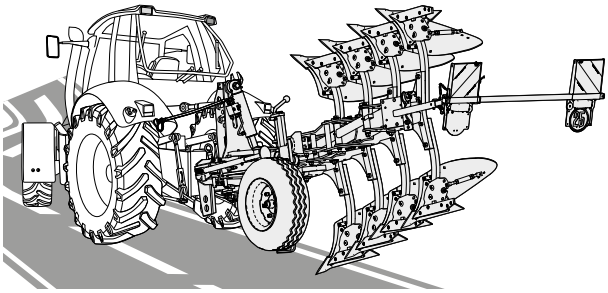
► 

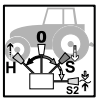
Use the three-point power lift to lower the plough until the combination wheel meets the ground.



► Uncouple the top link.

5 LIFTING THE PLOUGHS WITH DEPTH CONTROL WHEEL INTO THE TRANSPORT POSITION



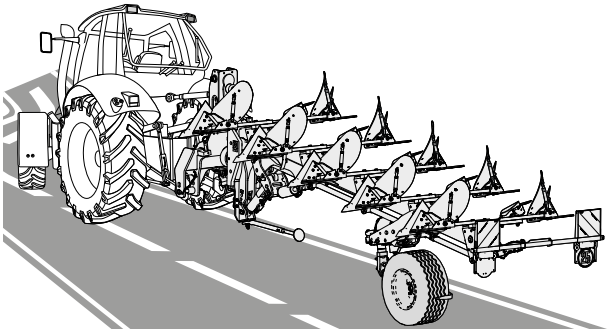
► 1.) 

Lift the plough out of the working position and into the transport position.

► 2.) Lock the lateral movement of the tractor's bottom link (tractor operating instructions).

► 3.) Lock the tractor's control devices (tractor operating instructions).

6 TRAVELLING BY ROAD



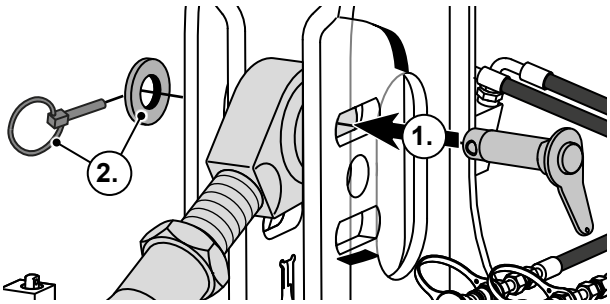
Driving instructions

- Adapt your driving speed to conditions on the road or track.
- Max. speed = 25 km/h
- Max. speed when transporting on a combination wheel = 25 km/h

Before moving off, check that

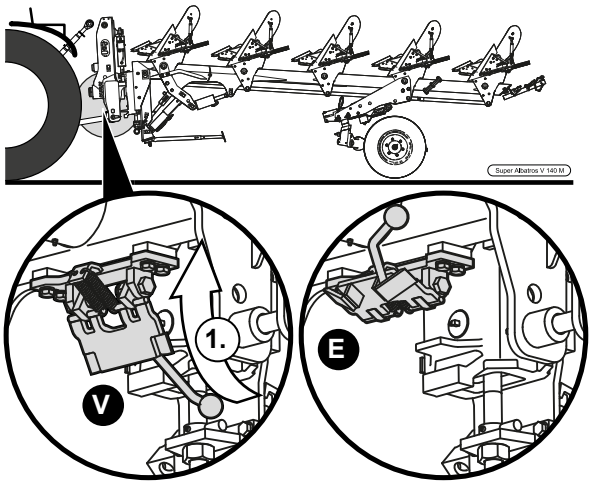
- The parking support is folded in and secured.
- All hydraulic control devices are locked (tractor operating instructions).
- The bottom link lateral lock is applied (tractor operating instructions).
- The lighting is installed.
- Indicators, tail lights and reversing lights are working.
- The pick-up arm is folded into the transport position (pick-up arm operating instructions).

7 MOVING THE PLOUGH WITH COMBINATION WHEEL INTO THE WORKING POSITION



► Couple the top link.

Unlock the central lock

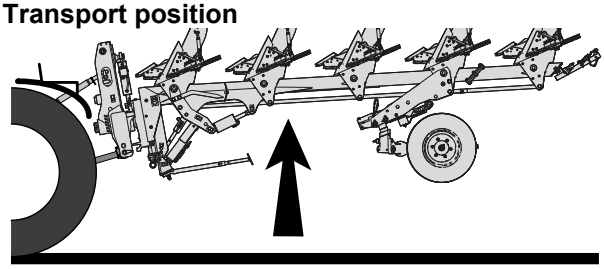


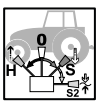
► Unlock the central lock.

V = Locked = Transport position, turning locked.

E = Unlocked = Working position, turning possible

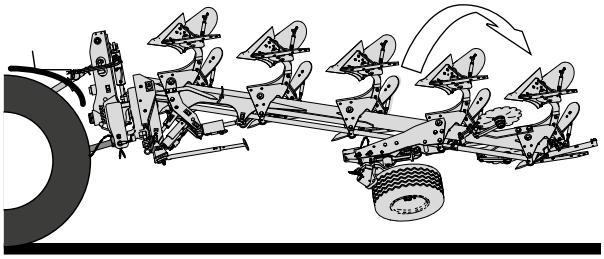
Transport position

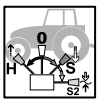


► 

Lift the plough with the three-point power lift.

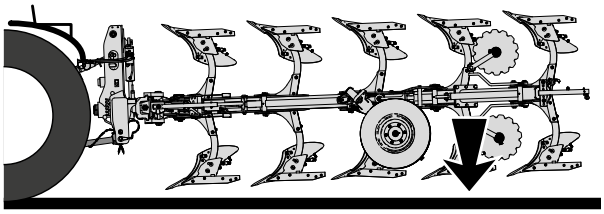
► Minimum lifting height = 85 cm

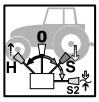


► 

Turn the plough onto the right-hand side.
Actuate the control device until the plough has turned completely.

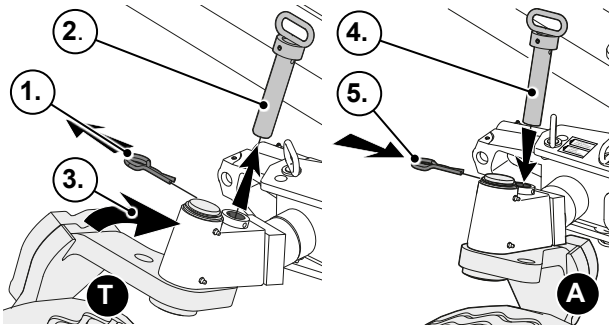
Working position



► 

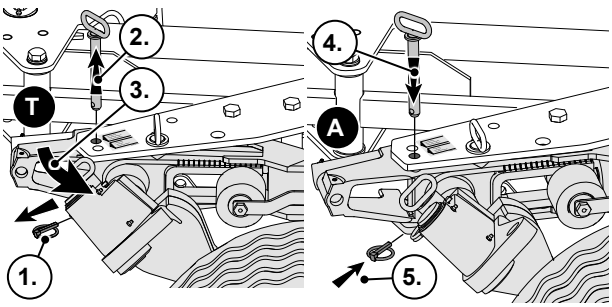
Lower the plough.

Turning the D30 combination wheel into the working position



► Turn the D30 combination wheel into the working position.

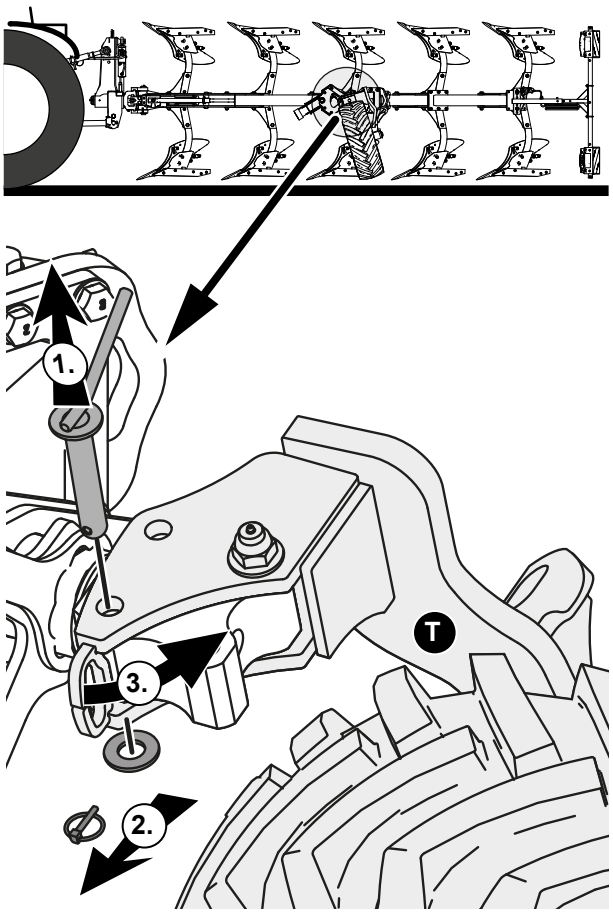
T = transport position A = working position



► Pivot the D30 wheel console into the working position.

T = transport position A = working position

Turning the RCRH combination wheel into the working position

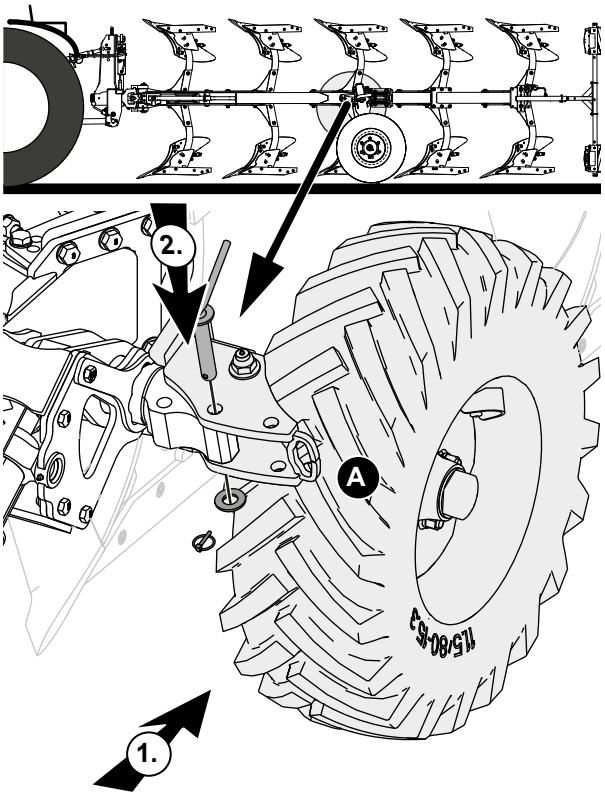


T = Transport position

► 1.) Remove the hinged pin and washer.

► 2.) Remove the locking pin.

► 3.) Turn the combination wheel into the working position.

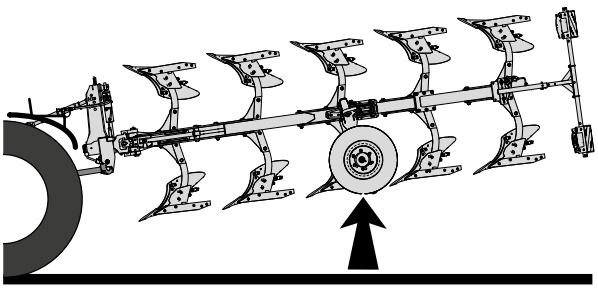


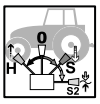
A = Working position

► 4.) Insert the locking pin and ...

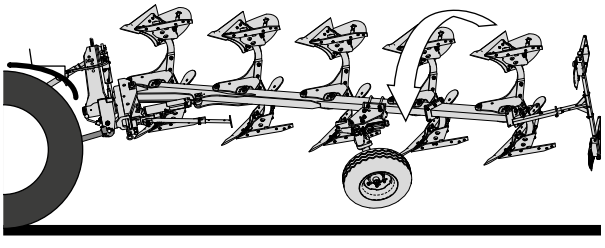
► 5.) ... secure with washer and hinged pin.

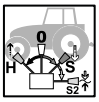
Engage the wheel arm in the working position



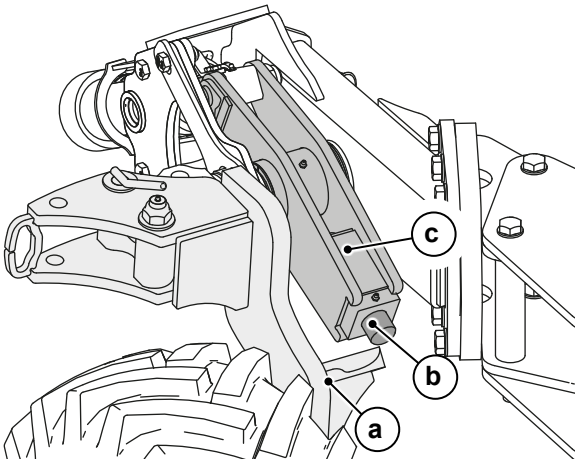
► 1.)  Lift the plough with the three-point power lift..

Minimum lifting height = 85 cm



► 2.)  Turn the plough slowly until the RCRH combination wheel engages.

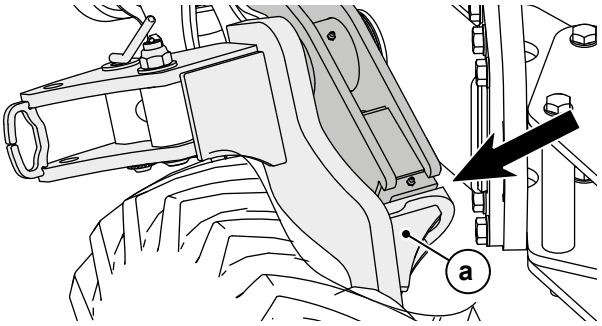
Wheel arm (a) unlocked

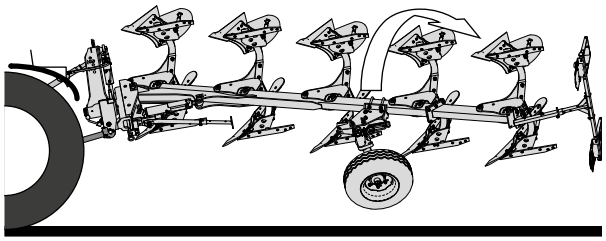


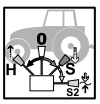
NOTE

- *When turning the plough,* the wheel arm (a) engaged at the locking pin (b) of the swivel arm (c).

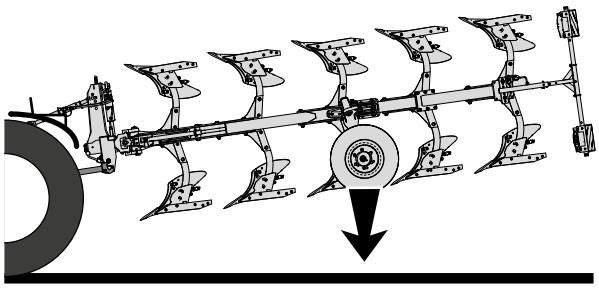
Wheel arm (a) engaged

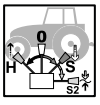




► 3.) 

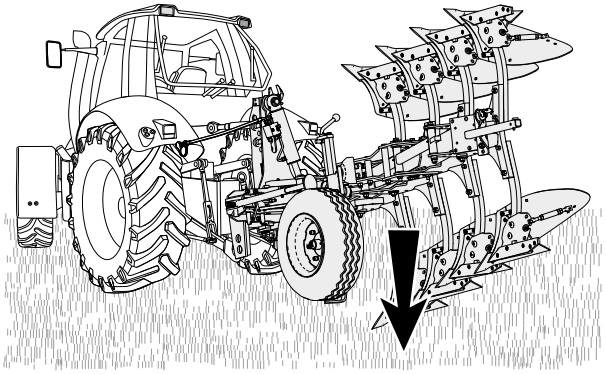
Rotate the plough back to the right-hand side.

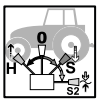


► 4.) 

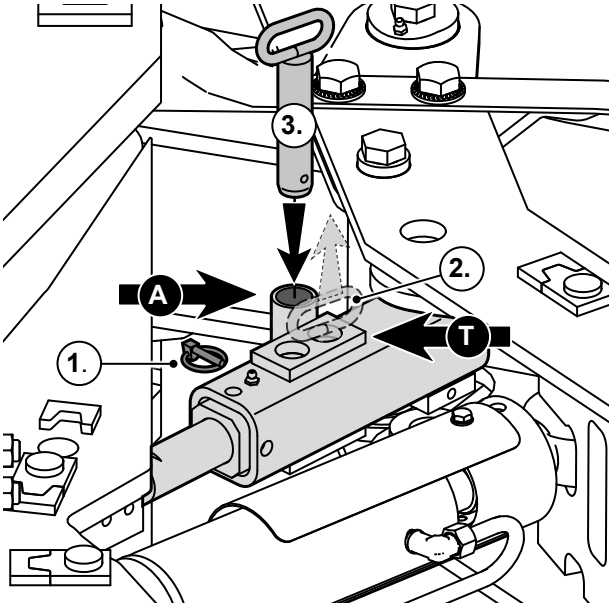
Lower the plough.

8 MOVING THE PLOUGH WITH DEPTH CONTROL WHEEL INTO THE WORKING POSITION



► 

Lower the plough from the transport position into the working position.

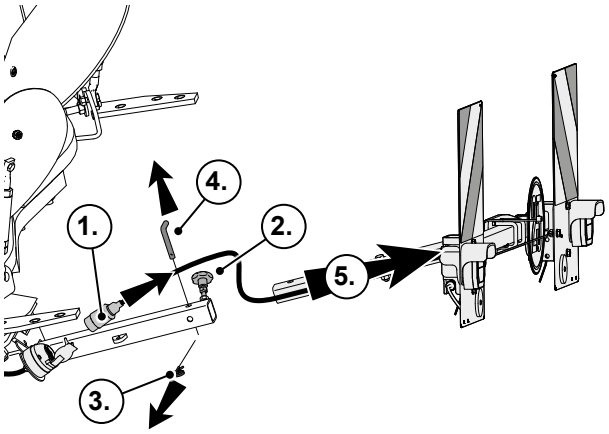


► Pin the swivelling limiter into the working position (A).
Remove the locking pin from the transport position (T) and pin it into the working position (A).

A = working position for the locking pin

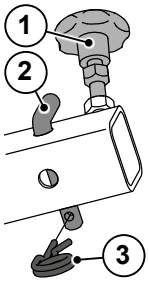
T = transport position

9 Removing the lighting



► Remove the lighting bar.

To store the locking pin:



► Screw the star grip screw (**1**) tight.
► Insert the locking pin (**2**) into the frame tube and secure with the spring cotter (**3**).

10 Working values: Working speed / working depth

Working speed

Working speed = 4 km/h - 10 km/h

The working speed depends on the following:

- The composition of the ground
- Plant cover
- The working width
- The working depth
- Wear and tear

Solid sheet body working depth

Body designation	Maximum working depth approx. cm
BP-351 O	40
BP-322 P	38
BP-320 W	30
BP-341 W	35
BP-351 W	35
BP-365 P	30

Slatted body working depth

Body designation	Maximum working depth approx. cm
BP-331 WS	30
BP-322 PS	38
BP-323 PS	38
BP-355 RS	40
BP-351 WS	35

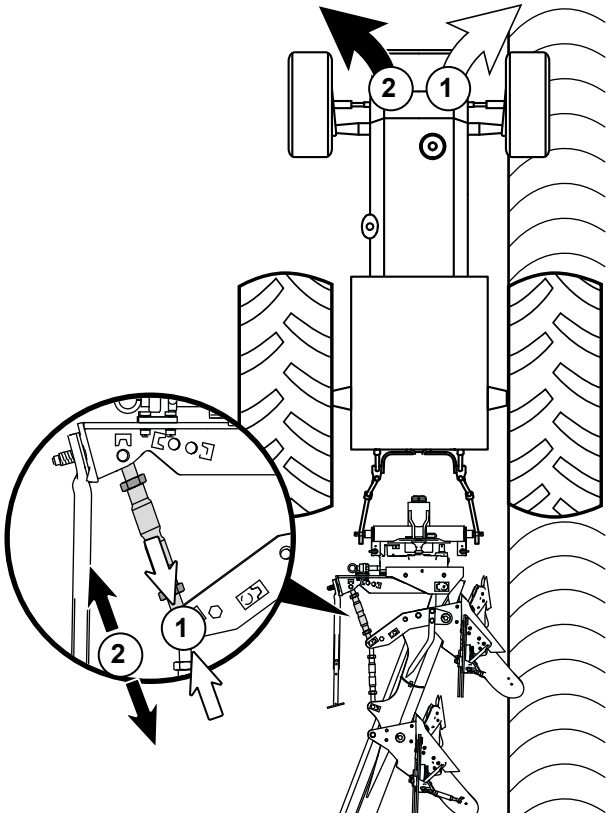
11 ADJUSTING THE TRACTION POINT

11.1 Plough with turnbuckle

Tools

Spanner with a width of 55 mm (supplied)

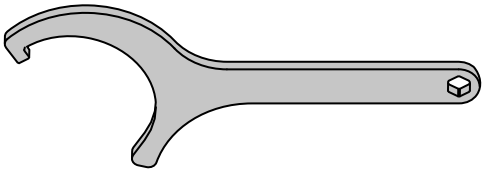
Adjustment instructions



1) Tractor moves towards ploughed soil
   = shorten the turnbuckle.
2) Tractor moves towards unploughed soil
   = extend the turnbuckle.

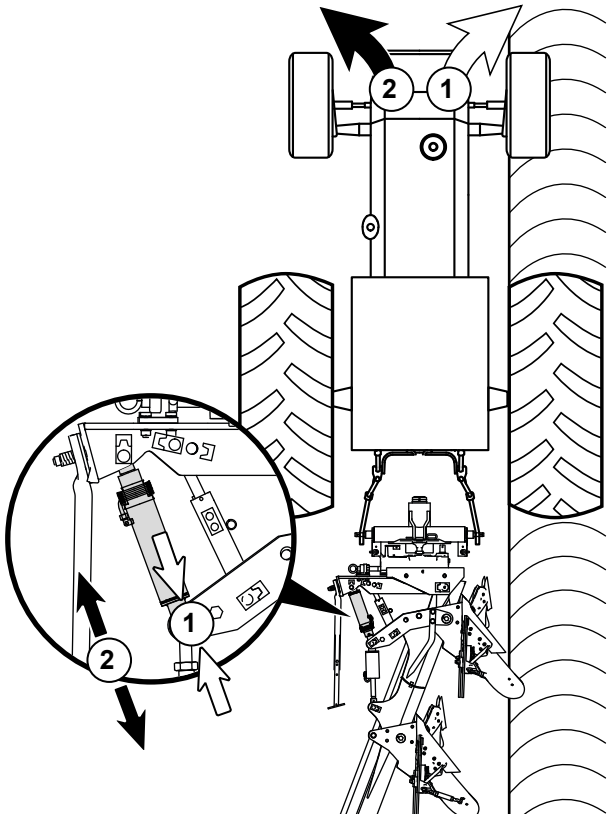
11.2 Plough with hydraulic frame slewing

Tools



- Hook spanner with hexagon for a width of 13 mm (supplied)
- Allen key with a width of 10 mm

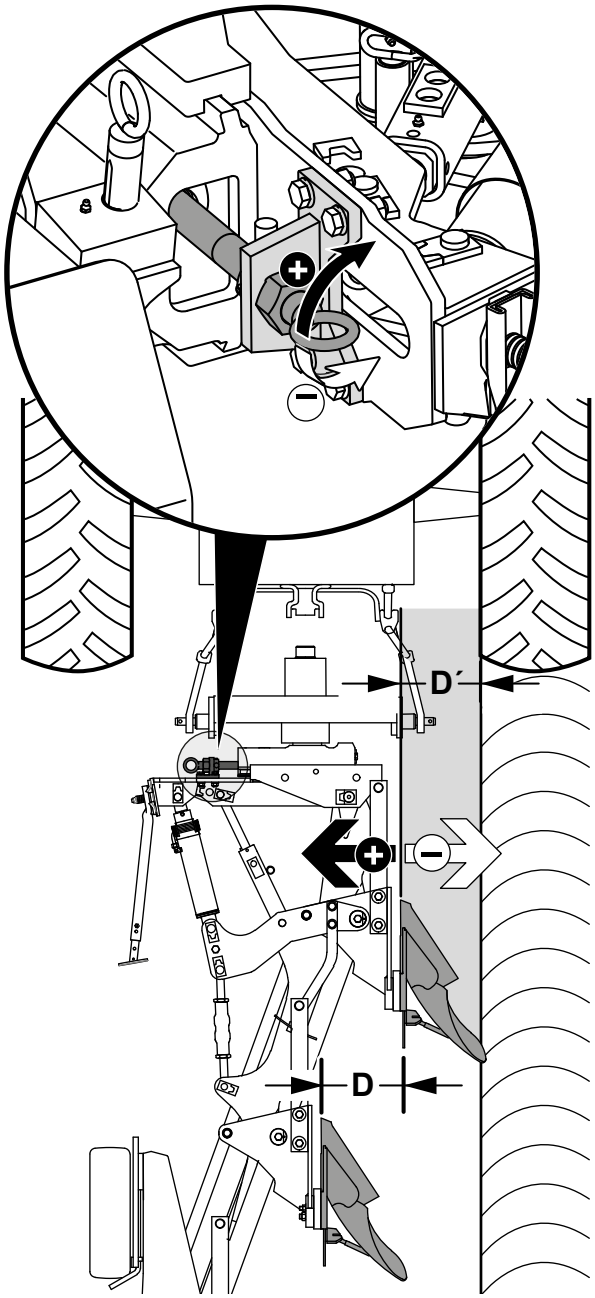
Adjustment instructions



1) Tractor moves towards ploughed soil
   = shorten the cylinder path with a stop.
2) Tractor moves towards unploughed soil
   = extend the cylinder path with a stop.

12 ADJUSTING THE FIRST-BODY WORKING WIDTH

12.1 Plough with adjusting spindle

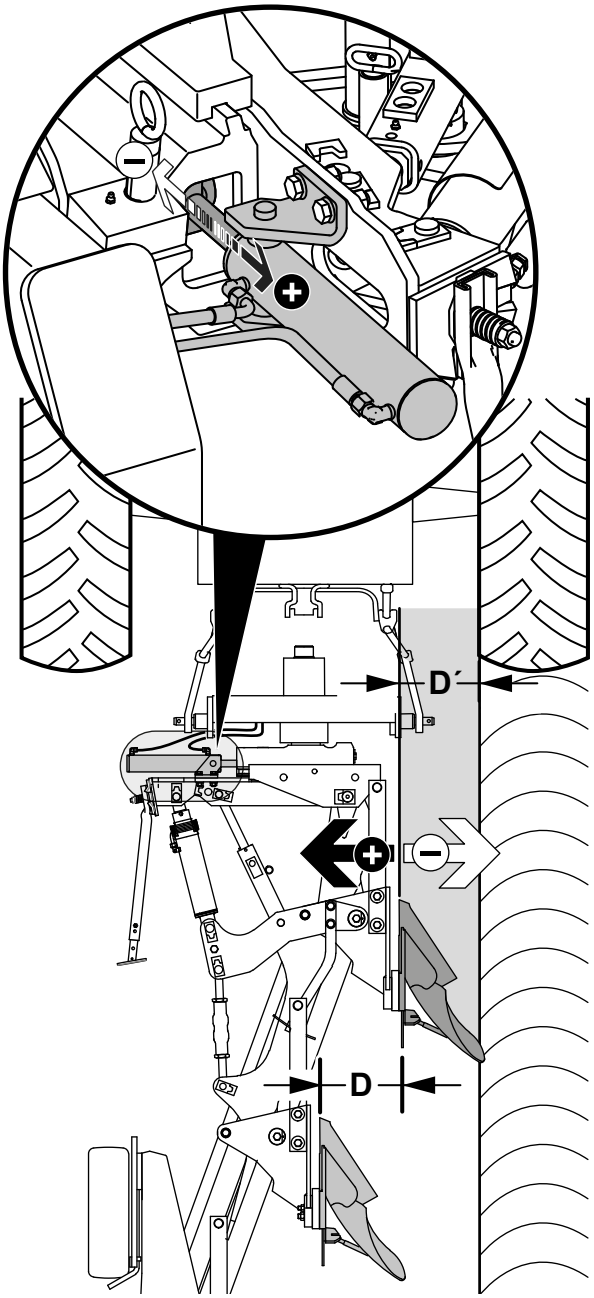


⊕ = Rotate adjusting spindle to the right
= increase first-body working width

⊖ = Rotate adjusting spindle to the left
= decrease first-body working width

12.2 Ploughs with hydraulic cylinder

NOTE
When adjusting hydraulically, only adjust the traction point when the implement is at a standstill and lowered.



⊕ = Extend adjusting spindle
= increase first-body working width.

⊖ = Retract adjusting spindle
= decrease first-body working width

13 ADJUSTING THE WORKING DEPTH

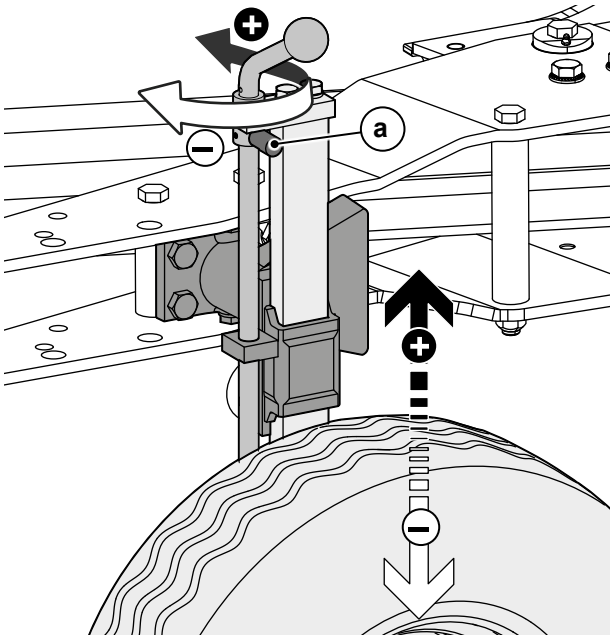
13.1 Preparation

► Plough for a few metres with the plough in the home position.

► Measure the working depth.

► Lift the plough slightly if adjustment is required.

13.2 Depth adjustment mechanically, depth control wheel PS 5

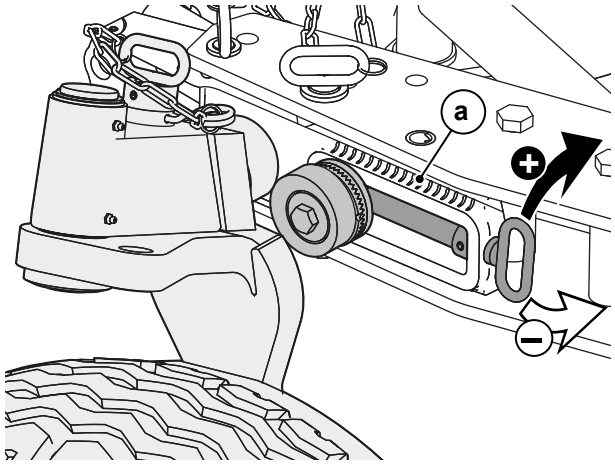


► Adjust the working depth by rotating the adjustment spindle.
The pawl (a) secures the rotating spindle to prevent it rotating while ploughing.

⊕ = Rotate adjusting spindle to the left
= Increase working depth

⊖ = Rotate adjusting spindle to the right
= Decrease working depth

13.3 Depth adjustment mechanically, depth control wheel PS30M and combination wheel D30M

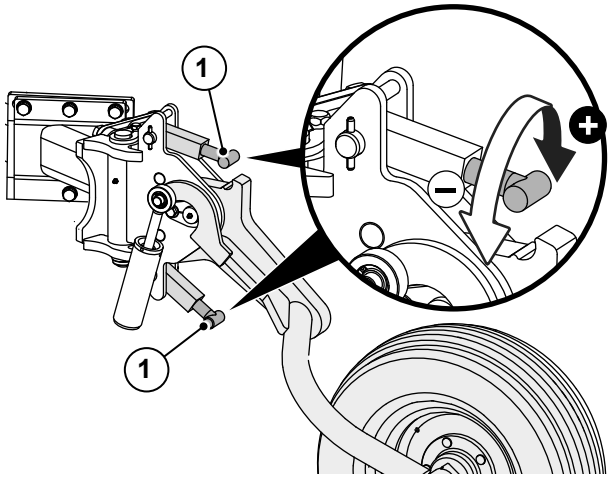


► Adjust the working depth by rotating the adjustment spindle.
The adjustment markings (a) aid adjustment.

⊕ = Rotate adjusting spindle to the right
= increase working depth

⊖ = Rotate adjusting spindle to the left
= decrease working depth

13.4 Depth adjustment mechanically, depth control wheel RJR

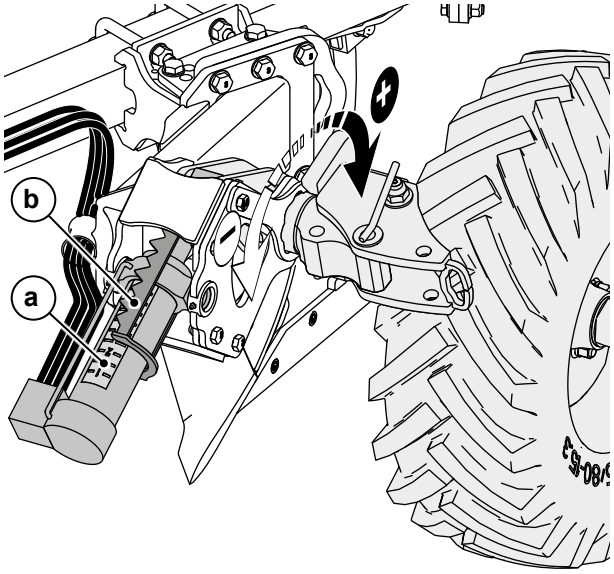


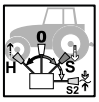
► Adjust the working depth by rotating the limit stops (1).
Adjust both limit stops evenly.

⊕ = Rotate to the right limit stop
= Increase working depth

⊖ = Rotate adjusting spindle to the left
= Decrease working depth

13.5 Depth adjustment hydraulically, depth control wheel RTRH and combination wheel RCRH



► 

Actuate the tractor hydraulics for the depth adjustment hydraulic cylinder until the required working depth has been reached.

⊕ = Extend adjustment cylinder
= increase working depth

⊖ = Retract adjustment cylinder
= reduce working depth

The adjustment scale (**a**) and setting pointer (**b**) simplify the adjustment.

14 ALIGNING THE PLOUGH PARALLEL TO THE GROUND

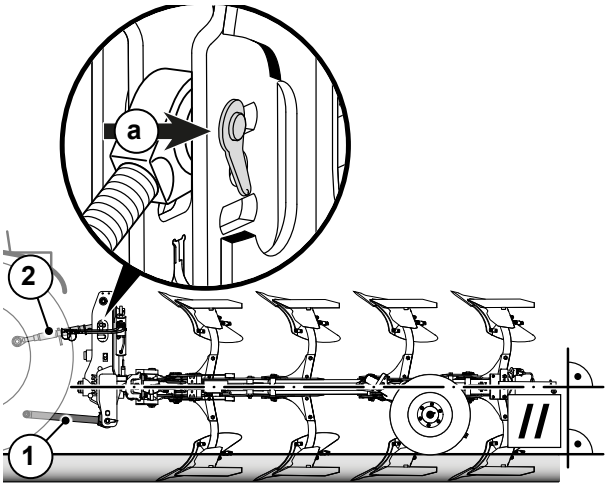
Preparation

► Lower the plough onto the contact or combination wheel.

► Plough for another metre.

► Check that the plough is parallel to the ground (visual inspection).

Adjustment



Position the plough parallel // to the ground, to do this:

► Adjust the bottom link height (1).

► Set the top link (2) shorter or longer.

The top link should:

- be slightly inclined towards the tractor.
- make contact slightly forward on level ground and when ploughing in an elongated hole (**a**).

15 ADJUSTING THE INCLINE

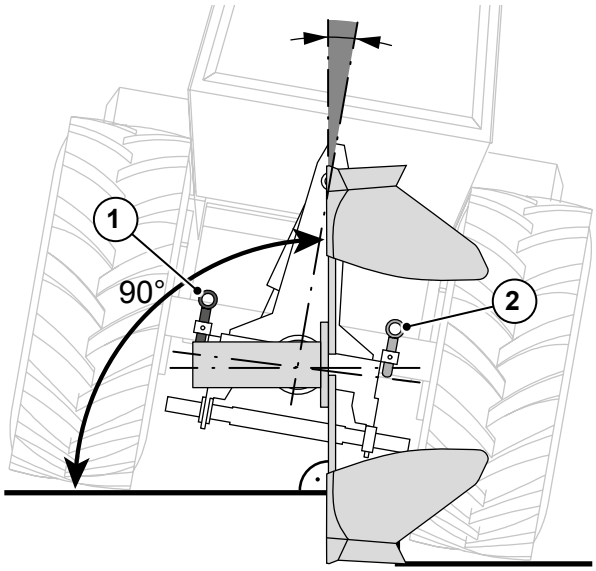
Preparation

► Plough for a few metres with the plough in the home position.

► Tractor and plough in working position, tractor wheel in furrow.

► Check the incline from the legs to the unploughed soil (visual inspection).

Adjustment



► Rotate spindles (1) or (2) until the correct incline is reached.

Spindle 1 = Incline adjustment for the right-hand bodies

Spindle 2 = Incline adjustment for the left-hand bodies

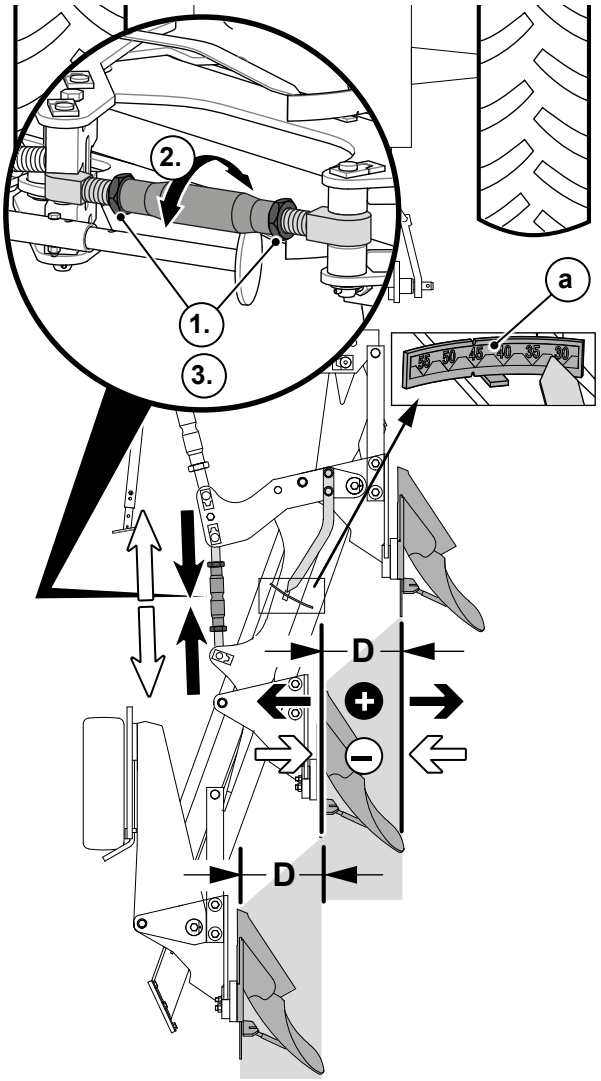
16 ADJUSTING THE WORKING WIDTH

16.1 Plough with turnbuckle

Tools

- Spanner with a width of 55 mm (supplied)

Adjusting the working width on the turnbuckl



► 2.) Turn the turnbuckle nut until the required working width is shown on the working width scale (a).

⊕ = Turnbuckle shorter
= Increase the working width (D).

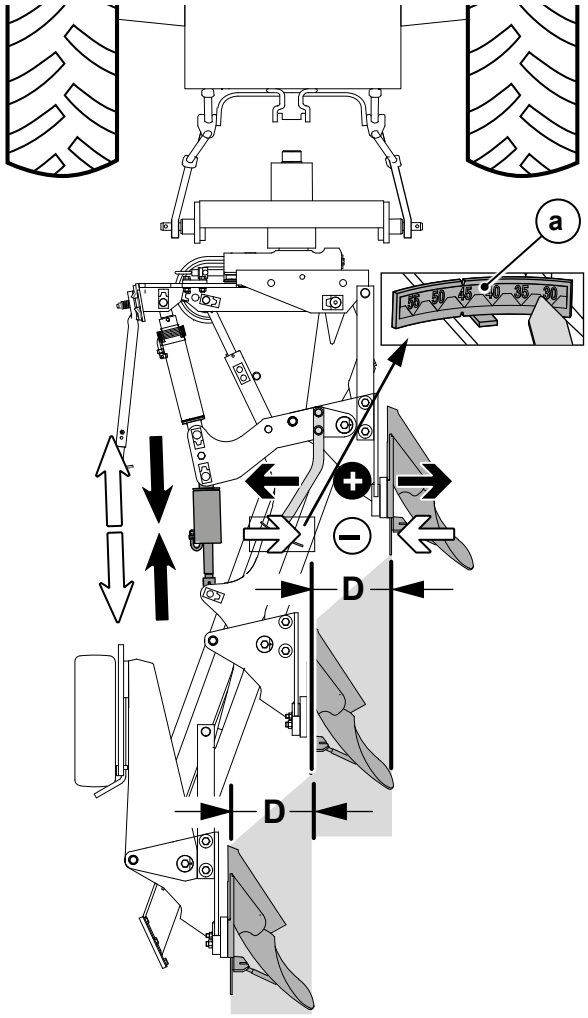
⊖ = Turnbuckle longer
= Reduce the working width (D).

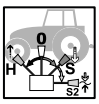
16.2 Plough with hydraulic adjustment

Adjustment instruction

Adjust the working width in small steps when ploughing.

Adjusting the working width hydraulically



► 

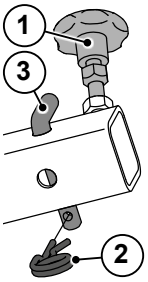
Actuate the control device on the tractor hydraulics until the required working width (D) is shown on the working width scale (a).

⊕ = Retract the cylinder
= Increase the working width.

⊖ = Extend the cylinder
= Reduce the working width.

17 INSTALLING THE LIGHTING

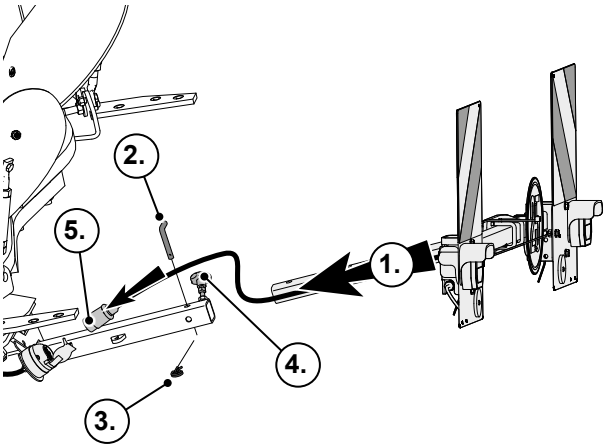
Remove the locking pin from storage:



► Unscrew the star grip screw (**1**).

► Remove the spring cotter (**2**).

► Remove the locking pin (**3**) from the frame tube.



► 1.) Insert the lighting bar.

OPERATING INSTRUCTIONS

OPERATION 52

INTRODUCTION

The design and construction of this Albatros reversible plough attachment, which you have purchased, places great value on ease of use and a long service life.
Our range of products is completed by a comprehensive range of accessories, which provides for a multitude of different uses.

The operating instructions are intended to familiarise you with the functions of the implement and provide descriptions on setup, operation, care and maintenance.

Please retain the operating instructions for subsequent use.
It is an integral part of the implement, and must always be carried on it or in the tractor's cab.

These operating instructions are intended for skilled agricultural workers and individuals, who are employed in other qualified positions in the agricultural industry.

This document was produced using the information with respect to equipment and operation, which was known at the time of printing.
Changes due to technical improvements are reserved.

NOTE
The operating instructions must be enclosed whenever you sell or pass the implement on to a third party.

If you have any questions, contact your specialist dealer or Rabe directly.

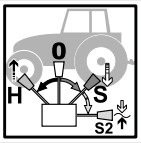
IMPORTANT
- READ BEFORE USE
- RETAIN FOR LATER REFERENCE

1 Notes on the operating instructions

The individual descriptions are complemented by diagrams of the plough. The implement illustrated in these diagrams may differ from the implement before you, due to the different equipment variants which exist.
All instructions pertaining to direction should be taken to mean in the direction of travel.

2 Symbol descriptions

The operating instructions use the following symbols to identify hazards which occur when using the implement or information on using the implement.

Symbol in the instructions	Meaning
	**Hazard warning** Hazard warnings allude to risks which occur when using the implement.
	The hazard warnings are arranged into different levels and are described with the signal words “Danger, Warning, Caution”. The signal words specify the severity of the impending hazard. **DANGER** Identifies hazards with a *high* degree of risk. Failure to observe these hazards can result in critical injuries or death. **WARNING** Identifies hazards with a *moderate* degree of risk. Failure to observe these hazards can result in serious injuries or death. **CAUTION** Identifies hazards with a *low* degree of risk. Failure to observe these hazards can result in moderate injuries.
	**NOTE** Instructions which help to simplify use of the implement and the operating instructions are indicated by this symbol. Failure to observe these instructions can result in malfunctions with the implement.
►	List of working instructions
(1) (a)	Item designations in figures
	The tractor symbol indicates: Actuate the control device on the tractor.
(N. sh)	Not shown
WAF	Width for the tool to be used

3 Target audience of these operating instructions

These operating instructions are intended for skilled agricultural workers and individuals, who are employed in other qualified positions in the agricultural industry and who have received instruction on working with this implement.

4 Intended use

The implement is intended exclusively for its normal usage in agricultural work.
Any use surpassing this is regarded as non-intended use. The manufacturer shall not be liable for any damage resulting from this. It is solely the user who bears this risk.
The intended use also involves compliance with the operating, servicing and repair instructions specified by the manufacturer.
The implement may only be used by individuals who are familiar with its features. Instructions for operation, service and the safe use of the implement, as indicated in the operating instructions in the form of warning notices and on the implement in the form of warning signs, must be observed.

The applicable accident prevention rules as well as any other generally accepted safety requirements, occupational health and traffic regulations must be observed.

Any unauthorised changes to the implement invalidate the manufacturer's liability for any damage resulting from this.

Foreseeable misuse
In order to prevent use of the implement in a manner not intended by the operating instructions, the warning notices and warning signs indicate potential incorrect use. The instructions provided must be observed at all times.

5 For your safety

5.1 General safety information

Take note of the safety instructions
- In the interests of your own safety
- in the interests of the safety of your colleagues
- in order to guarantee the safety of the implement.

A number of hazards may occur as the result of incorrect operation of agricultural implements. You should therefore work with particular care and never in a hurry.

► Familiarise yourself with the contents of these operating instructions prior to start-up or assembly of this implement.

► Make sure that the operating instructions have been read and understood by all persons working with the implement or charged with care or maintenance tasks.

► Make sure that all persons working with the implement or charged with care-related tasks have access to the operating instructions at all times.

► Regularly inform those working with the implement about the safety instructions and statutory regulations.

► Conduct training on a regular basis for all persons who work with the implement; at least once a year.
Untrained or unauthorised personnel may not use the implement.

5.2 Who may operate the implement?

Qualified persons only.

The implement may only be operated by a qualified person or a specialist who has been briefed on how to do so, and on the hazards which exist when handling the implement. In general, these persons have received agricultural education or are comparably trained.
Maintenance and repair may only be carried out by a specialist, or in a service centre.

5.2.1 Definition of personnel qualifications

Qualified person
Person who has been trained in the task assigned to them, who has been briefed on the potential dangers of improper conduct and who has been instructed with regards to the necessary protective equipment and measures.

Specialist
Person with specialist technical training. Due to their qualifications and knowledge of the applicable regulations they are able to evaluate the work assigned to them and identify potential hazards.

Service centre
A service centre has the knowledge and resources (hoists, lifting gear and support equipment) required to assure a professional and safe execution of the tasks involved in maintaining and repairing the implement.

5.3 Workplace

The workplace of the operator is in the driver's seat inside the tractor.
Apart from when carrying out adjustment tasks, the implement may only be operated from the driver’s seat inside the tractor.

5.4 Safety instructions - general usage

DANGER
Risk of accident due to riding on the implement
- *Riding on the implement and standing within hazard zones are prohibited.*

WARNING
Risk of accident and injury due to missing or incorrect operator safety equipment.
- *Always wear the prescribed work clothing, e.g. closely-fitting clothing, safety shoes and protective gloves when carrying out all work on or with the implement.*

DANGER

Risk of accident due to operating errors.

- *Prior to starting work or starting up the implement, familiarise yourself with all equipment and operating controls and their functions.*

WARNING

Risk of accident due to operational and road safety problems.

- *Consider the maximum permitted dimensions and axle loads for the tractor/implement combination.*
- *Follow the general safety and accident prevention regulations.*
- *Check the tractor and implement for operational and road safety prior to every start-up*
- *All safety devices must be fully installed and secured.*
- *Prescribed setup, maintenance and inspection work must be carried out within the required timeframe.*

WARNING

Risk of accident due to uncontrolled movements of the tractor/implement combination.

- *The operator must not leave the operator's platform while the vehicle is in motion.*
- *Before leaving the tractor, always:*
  - *Wait until the implement has come to a complete standstill.*
  - *Lower the implement fully.*
  - *Apply the tractor's parking brake.*
  - *Switch off the tractor's engine.*
  - *Remove the ignition key.*

Risk of accident when folding and unfolding implement parts.

- *When folding and unfolding implement parts, make sure that no persons are standing in the danger area.*
- *When folding and unfolding implement parts, make sure that there is adequate clearance around the implement.*

Danger of tipping when folding and unfolding implement parts.

- *Only fold and unfold implement parts on level ground.*

Accident and injury hazard due to damaged parts.

- *Only use the implement when it is in a technically flawless condition.*
- *Take damaged implements out of service immediately and secure them to prevent re-use.*

Risk of injury due to heavy components.

- *When handling heavy components, use suitable lifting devices or seek the assistance of a second person.*

WARNING

Risk of accident when lifting implements or implement combinations with the tractor's three-point linkage.

- *When lifting implements, make sure that they do not collide with components on the tractor, e.g. the rear window.*
- *When lifting implements, make sure that no persons are standing in the danger area.*
- *When lifting implements, make sure that there is adequate clearance around the implement.*

DANGER

Electric shock due to overhead power lines.

- *When lifting implements and folding/ unfolding implement parts, ensure that sufficient clearance is left for power lines.*

5.5 Safety instructions - loading

DANGER

Risk of accident due to suspended loads.

- *Do to walk under suspended loads.*
- *Do not stand under or in the vicinity of the implement while it is lifted.*
- *When lifting the implement, proceed with care and pay attention to balance.*

5.6 Ballast calculation

WARNING
Danger of accidents due to incorrectly configured ballast offset.
Incorrectly configured or missing ballast offset may negatively affect the steering, braking and stability of the tractor.

- *The tractor/implement combination must never be used without the calculated front or rear ballasting. See the appendix for the calculation formulae.*
- *Never use the tractor/implement combination if the weight or axle load exceeds the permitted values for the tractor or tyres.*

5.7 Safety instructions - coupling/ uncoupling

WARNING
Risk of accident while coupling the implement to and uncoupling it from the tractor.

- *During coupling and uncoupling, no person may stand between the tractor and the implement.*
- *Do not step between the tractor and the implement while operating the external hydraulics control.*
- *Take note of all crushing and shearing points on all of the implement's moving parts.*
- *Before coupling and uncoupling the hydraulic plug couplings, depressurise the hydraulic system. Follow the tractor's operating instructions and safety instructions.*
- *Prior to uncoupling*
  - *Wait until the implement has come to a complete standstill.*
  - *Lower the implement fully.*
  - *Use the implement's supporting elements.*
  - *Apply the tractor's parking brake.*
  - *Switch off the engine.*
  - *Remove the ignition key.*
- *Secure the implement to prevent it rolling away (brake, wheel chocks).*

5.8 Hydraulic safety instructions

WARNING
Risk of accident due to hydraulic fluid escaping at high pressure.
The hydraulic system is under high pressure; hydraulic fluid may escape when connecting or disconnecting hydraulic lines.

- *When connecting or disconnecting, make sure that the hydraulic systems on the tractor and on the implement have been depressurised!*

Risk of accident due to operating errors caused by improperly connected hydraulic lines.
Incorrectly connected hydraulic lines may result in malfunctions and serious injury or death.

- *Connect the hydraulic lines to the prescribed connections.*

Risk of injury and infection due to hydraulic fluid penetrating the skin.
Fluids (hydraulic oil) escaping under high pressure may penetrate the skin and cause severe injury!

- *Consult a doctor immediately in case of injury.*
- *Check hydraulic lines regularly and replace if damaged or showing signs of ageing. Only use original spare parts.*
- *Use suitable tools when looking for leaks.*
- *Park the implement, depressurise the system, switch off the engine and remove the ignition key before commencing work on the hydraulic system.*

5.9 Safety instructions - Pressure tanks

DANGER
Danger of explosion when carrying out welding or soldering work on the pressure tank.

- *Welding or soldering on the pressure tank is not permitted.*

DANGER

Danger of rupturing from mechanical processing or deformation.

- *No drilling or other mechanical processing on the pressure tank is permitted.*
- *Take implements with damaged pressure tanks out of service immediately and secure them to prevent re-use.*
- *Immediate replace damaged pressure tanks.*

WARNING

Risk of burning due to hot components. The pressure tank can become very hot during operation.

- *Do not touch the pressure tank immediately after use.*

5.10 Safety instructions - oils and greases

WARNING

Oils and greases are harmful to health.

- *Observe the safety datasheet (from the oil supplier) for the oil and grease used.*

Health hazard due to continuous skin contact.

Frequent or extended contact with hydraulic oil or clothes soaked in oil can cause skin conditions.

- *Change clothes soaked in oil.*
- *Do not put cloths that are soaked in oil into pockets on the work clothing.*
- *After working with hydraulic oil, wash your hands and use hand cream.*

5.11 Safety instructions - Travelling by road / transport

WARNING

Risk of accident while transporting the implement by road.

- *Pay attention to national laws and regulations on the use of public roads.*
- *Ensure that the lights on your implement are in an excellent condition.*
- *Lock the hydraulic control devices to prevent accidental operation before each journey by road.*
- *Before moving off, check the immediate vicinity. No item or person may be in the immediate vicinity.*
- *The operator must not leave the operator's platform while the vehicle is in motion.*

Risk of accident due to unsecured attachments.

- *Secure all attachments to prevent uncontrolled movements using the retaining system provided (transport lock) or other suitable measures.*
- *Always use the covers supplied (e.g. tine protection equipment).*

Risk of accident due to wide working radius of the implement.

During cornering, the wide working radius of the implement can cause accidents.

- *When cornering and making turns, pay attention to obstacles and the traffic situation.*

Risk of tipping due to the large centrifugal mass of the implement.

When cornering, the large centrifugal mass can cause the implement to tip over.

- *Drive slowing when cornering and making turns.*

5.12 Safety instructions - field use

WARNING

Risk of accident while using the implement in the field.

- *Prior to starting work, familiarise yourself with all equipment and operating controls, and their functions.*
- *Only perform adjustment work with the implement lowered.*

Risk of tipping due to the large centrifugal mass of the implement.

When working on a slope, the large centrifugal mass can cause the implement to tip over.

- *Pay attention to the position of the centre of gravity when lifting and turning.*

WARNING

Risk of accident due to objects being ejected.

- *Before start-up, check the immediate vicinity. No item or person may be in the immediate vicinity.*

5.13 Safety instructions - care, maintenance and repair

WARNING

Risk of accident when performing maintenance work.

- *You should always work with particular care and never in a hurry.*
- *When working on the implement that is coupled to the tractor:*
  - *Wait until the implement has come to a complete standstill.*
  - *Lower the implement fully.*
  - *Switch off the tractor's engine.*
  - *Remove the ignition key.*
- *Before performing work on the hydraulic system, lower the implement and depressurise the system.*
- *When performing care and maintenance tasks, wear work gloves and the prescribed work clothing.*
- *All tasks must be performed using suitable tools.*
- *Always disconnect the power before starting any work on the electrical system (e.g. lighting).*
- *Disconnect the implement from the tractor before welding work.*
- *Secure the implement to prevent unauthorised start-up while such work is in progress.*

WARNING

Risk of accident due to pinching or crushing while performing adjustment, care, maintenance and repair work.

- *Turn off the tractor's engine and remove the key from the ignition.*
- *Only perform work on the raised implement when it is in a safe condition and has been secured to prevent it lowering and rolling away.*
  Use all provided supports.
- *During all work, wear work gloves, the prescribed work clothing and protective equipment.*
- *If the implement is folded, use additional means to secure it to prevent it unfolding unintentionally.*
  - *Close the provided shut-off valves, engage the mechanical locks.*

Risk of accident due to failure to perform maintenance tasks or not doing so properly.

- *Replace self-locking nuts with new ones during reassembly.*
- *Do not replace self-locking nuts with normal nuts.*
- *Inspect the spring washers during reassembly, and replace with new ones if necessary.*
- *Never replace shear bolts with standard bolts.*
- *Only replace nuts and bolts with those of the same strength class, e.g. 8.8.*
- *Observe the tightening torques.*
- *Check the tyre pressure regularly.*
- *Perform a regular visual inspection of the brake systems for damage and leaks.*
- *Only use original spare parts.*

Risk of injury due to heavy components.

- *When handling heavy components, use suitable lifting devices or seek the assistance of a second person.*

Risk of accident due to defective brake systems (depending on the equipment).

Improper repairs to the brake systems cause the brakes to fail and result in serious accidents.

- *Adjustment and repair work on brake systems may only be performed by individuals with the proper technical training or by service centres.*

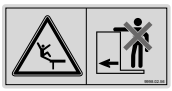
Risk of accident due to improperly carried out work on tyres and wheels.

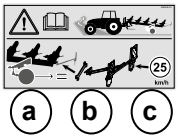
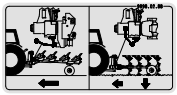
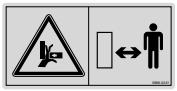
Removing and installing wheels requires thorough expertise and approved mounting tools.

- *Repairs to tyres and wheels may only be carried out by service centres.*

5.14 Meanings of the safety symbols

The following labels are affixed to the implement, for your safety.
These labels must not be removed.
Damaged or illegible labels must be replaced.
The position of safety symbols is detailed in the diagrams in the appendix.

Order no.	Warning signs	Meaning
9998.02.59		**Read the operating instructions before start-up.** Observe the safety instructions. Observe the transport and assembly instructions.
9998.02.73		**Re-tighten all bolts after first use** Continue to check that all bolts are tight on a regular basis. For specific tightening torques, see the operating instructions or the spare parts list. Use a torque wrench.
9998.06.17		**Read the operating instructions prior to adjusting, maintaining and repairing the system.** Observe the safety instructions. Observe the setup and installation instructions.
9998.02.56		**Riding on the implement while it is operational or being transported is not permitted.** Only step on the loading ramp or platform while the implement is at a standstill, fully mounted and securely supported.
9998.02.81		**Crushing hazard when staying between tractor and the implement.** When coupling the implement combination to the tractor, ensure that nobody is standing between the tractor and the implement! Do not step between the tractor and the implement when activating the external control for the three-point power lift.

Order no.	Warning signs	Meaning
9998.06.26		**Operating pressure** The operating pressure of the hydraulic system must not exceed 200 bar.
9998.00.29		**Fold-out side parts.** Maintain sufficient distance from high voltage lines.
9998.06.34		a) Transporting by road is only permitted on the combination wheel and with lighting. b) The lighting must be installed. c) The lighting must have a 25 km/h sign.
9998.02.88		**Transport lock** Transport lock for transporting by road on the combination wheel. Unlock the transport lock for field work.
9998.02.52		**The plough turns and pivots.** Keep your distance. Do not stand in the slewing range.
9998.06.85		**The pressure tank is pressurised.** Disassembly and repair must be done according to the technical manual.
9998.02.61		**Risk of crushing.** Keep your distance.

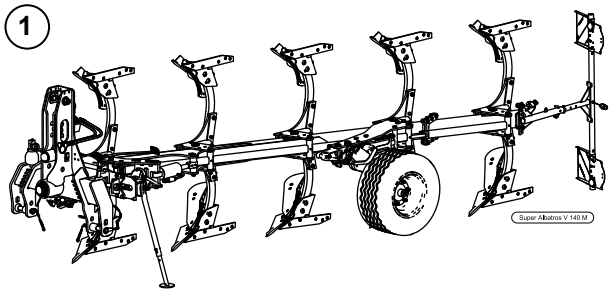
DESCRIPTION

6 SCOPE OF DELIVERY

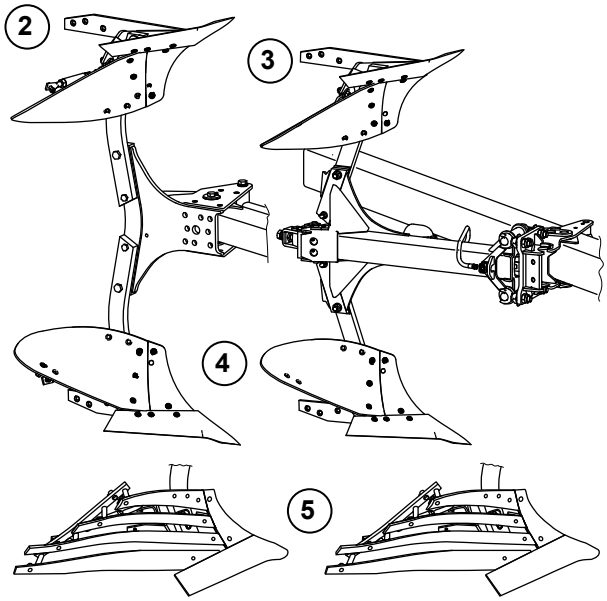
Before commissioning, check the delivery for completeness.
Inform your dealer, importer or manufacturer immediately in writing of any missing parts or parts damaged during transport.

6.1 Basic equipment

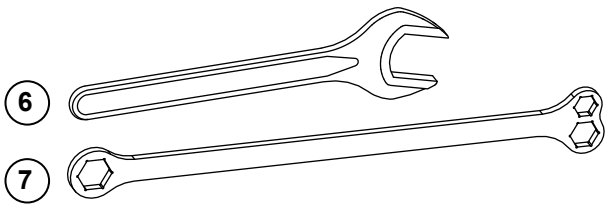
The following items are supplied with the implement:



1) Plough in accordance with the order, equipped with:

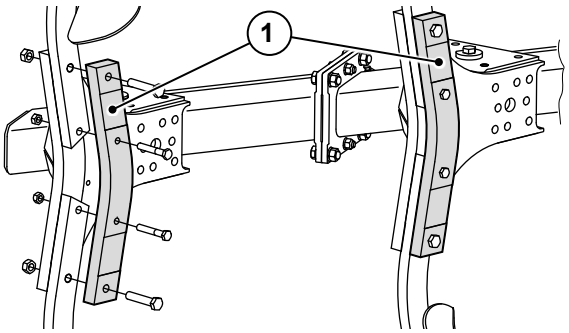


2) Plough body with mechanical stone protection system shear bolts
3) Plough body with Hydro Avant hydraulic stone protection system
4) Solid sheet body
5) Slatted body

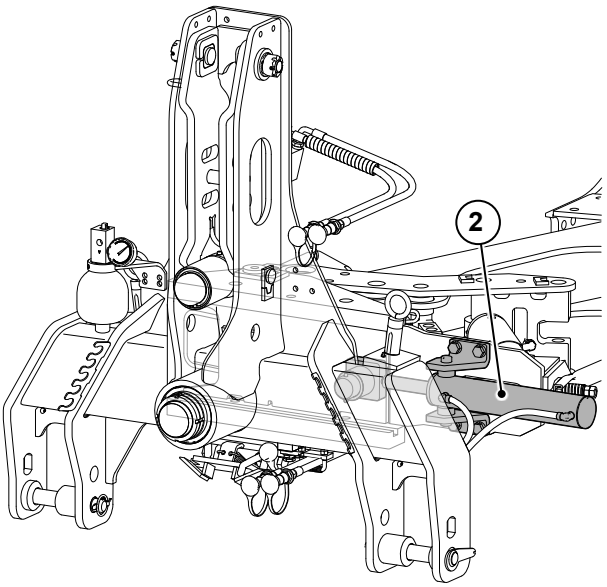


6) AF 55 spanner
7) AF 24, 30, 36 ring spanner
8) Operating instructions (not shown)

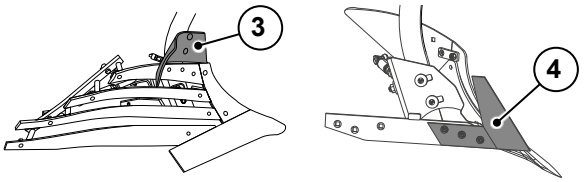
6.2 Additional equipment



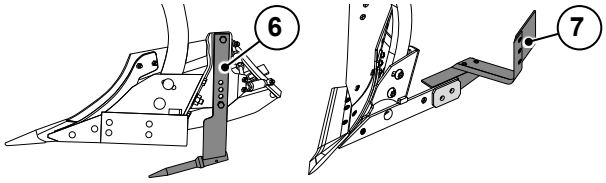
1) Leg reinforcements



2) Hydraulic first body - working width adjustment



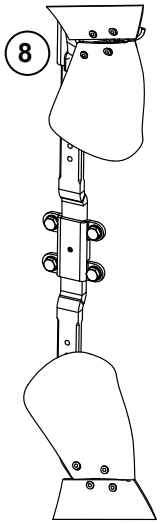
3) Trash board
4) Add-on coulter
5) Clod breaker (not shown)



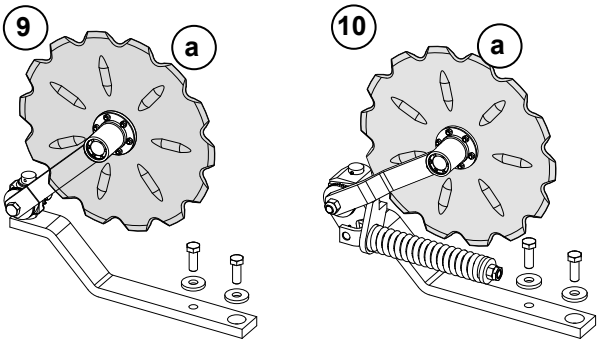
6) Subsoiler1)

7) Wide furrow knife1)

1) not in conjunction with hydraulic stone protection system (HA = Hydro Avant)

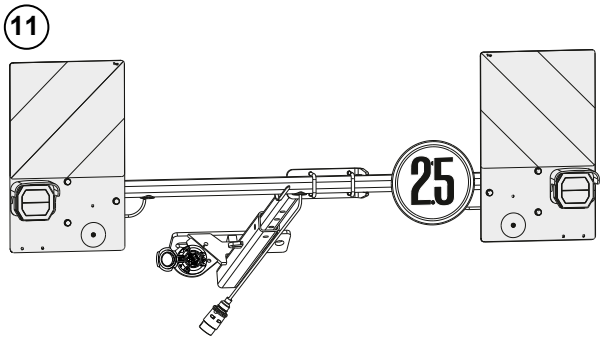


8) Vari-Fix skimmer



9) Disc coulter
   a) serrated disc coulter

10) Disc coulter, spring-mounted
   a) serrated disc coulter



11) Lighting

7 Description of the implement

This section contains general information relating to your implement, as well as information regarding:

- Characteristics of the implement
- Description of the assemblies
- Technical data

7.1 Functional description

The Albatros V is a hydraulically-controlled reversible plough attachment that is mounted to the three-point power lift.

The following controls can be operated using the tractors hydraulics from the driver's seat depending on the selected equipment:

- First-body working width
- Working width
- Working depth - only with combination wheel

The Albatros V is designed for ploughing in the furrow.

The base frames are square, with an edge length of 120 mm, 140 mm or 160 mm. The turning axle has a diameter of 100 mm or 120 mm.

The Albatros V can be for 4 or 5 furrows.
Depending on the equipment selected, the Super Albatros V can be designed for 4 to 6 furrows.

Working speeds between 4 and 8 km/h ensure a consistent, precise ploughed surface.
The working width per plough body can be continuously adjusted using the hydraulic system. It can be adjusted between 33 cm and 53 cm depending on the interbody distance.

When changing the working width, the positions of the contact or combination wheel, the front tools and the disc coulter are adjusted automatically.

The basic versions of the plough bodies can be equipped with mouldboards or designed as slatted bodies.

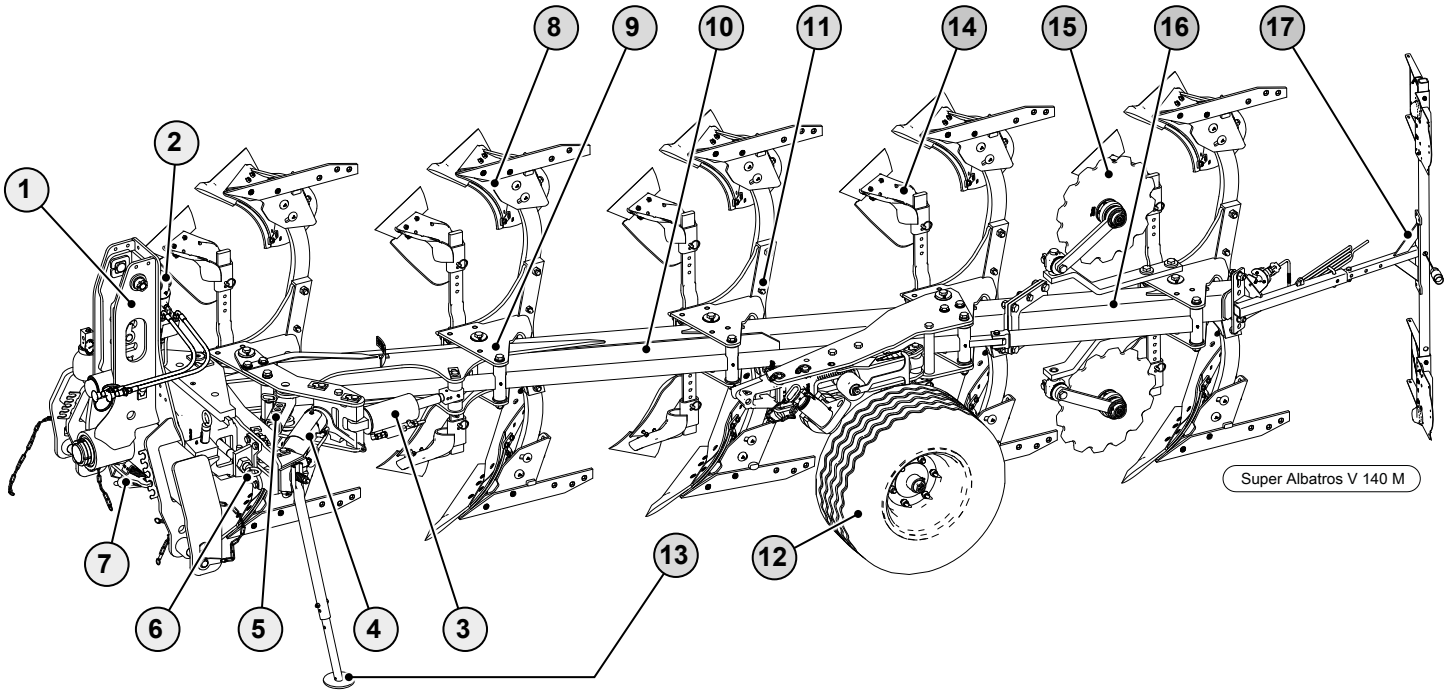
The legs and plough bodies are protected against damage by the stone protection system. The stone protection system can be designed as a mechanical or hydraulic stone protection system.

In the mechanical stone protection system, shear bolts with a break groove ensure safe shearing.
In the "Hydro Avant" (HA) hydraulic stone protection system, an intermediate leg with a hydraulically supported lifting device is inserted. The lifting devices enable the plough bodies to avoid stones safely. These legs are also equipped with shear bolts.

The legs are designed as rod or bend legs with a square cross section.
Bend legs are used for plough bodies with mechanical stone protection.
Rod legs are used on plough bodies with the "Hydro Avant" hydraulic stone protection system.

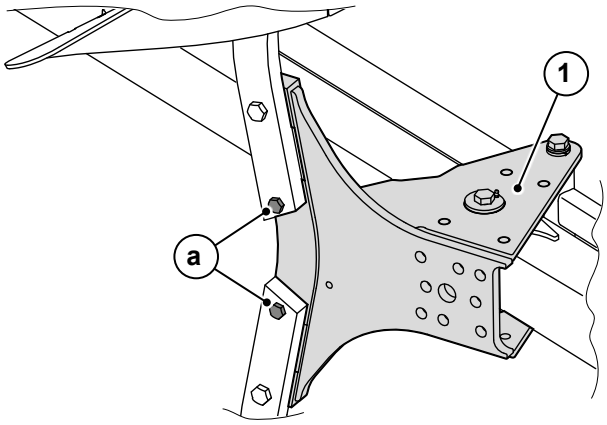
The consoles can be equipped with additional equipment such as skimmers and disc coulters.

7.2 Description of the components

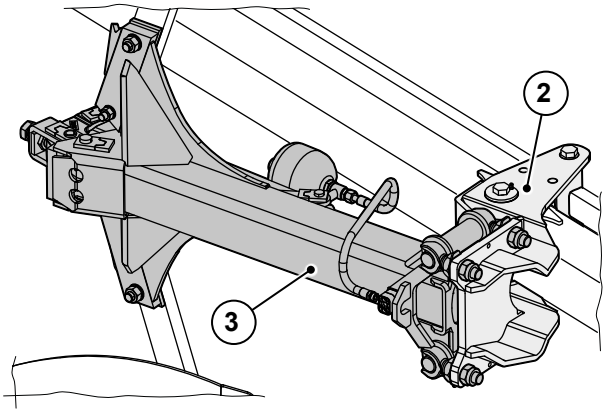


1) Tower
2) Rotation cylinder
3) Working width adjustment (V = variant), cylinder or turnbuckle
4) Hydraulic slewing / traction point adjustment, cylinder or turnbuckle
5) Swivelling limiter
6) First body working width adjustment
7) Central lock
8) Plough body
9) Console
10) Plough frame
11) Stone protection system
12) Swinging supporting wheel / combination wheel
13) Parking support
14) Skimmer
15) Disc coulter
16) Frame set
17) Lighting

7.3 Description of the components on the plough body with hydraulic working width adjustment

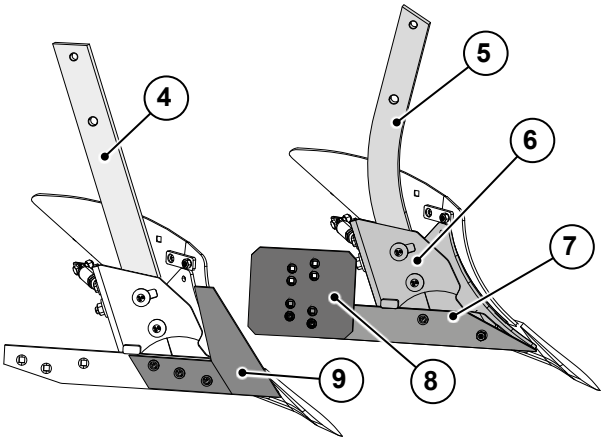


12) Leg console
with shear bolt (a) for the mechanical stone protection system.



13) Link console

14) Intermediate leg for the hydraulic stone protection system (Hydro Avant)



15) Rod leg

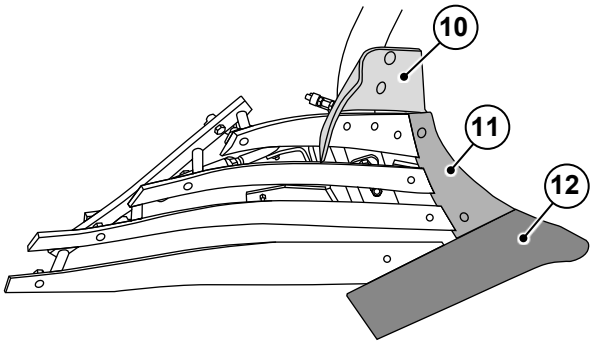
16) Bend leg

17) Frog

18) Attachment

19) Add-on heel

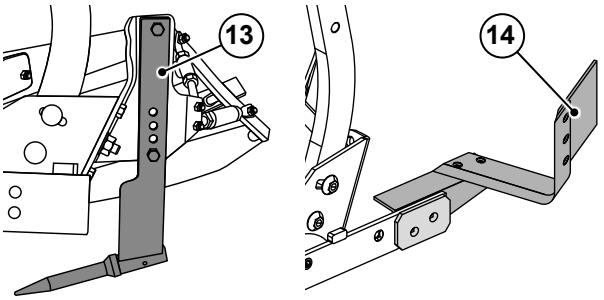
20) Add-on coulter



21) Trash board

22) Front mouldboard

23) Tines



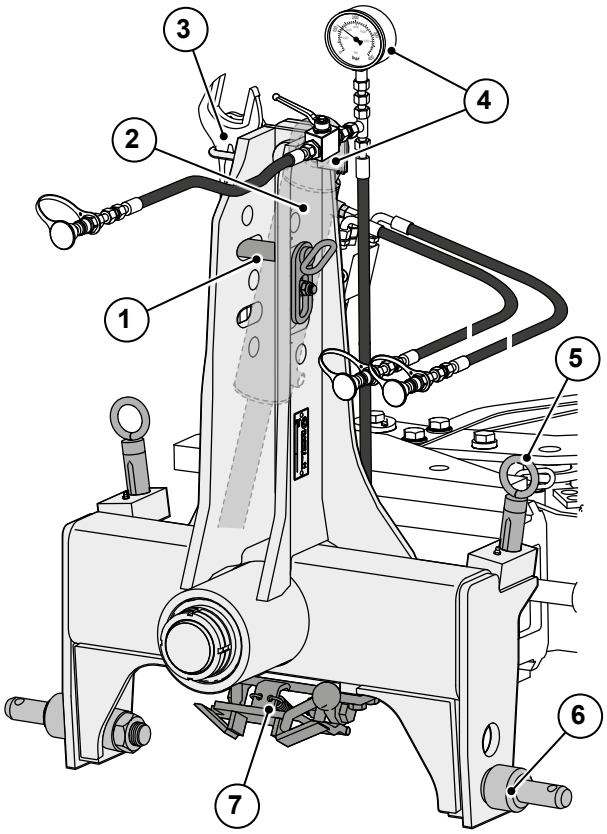
24) Subsoiler1)

25) Wide furrow knife1)

1) not in conjunction with the “Hydro Avant” hydraulic stone protection system

8 Description of the components

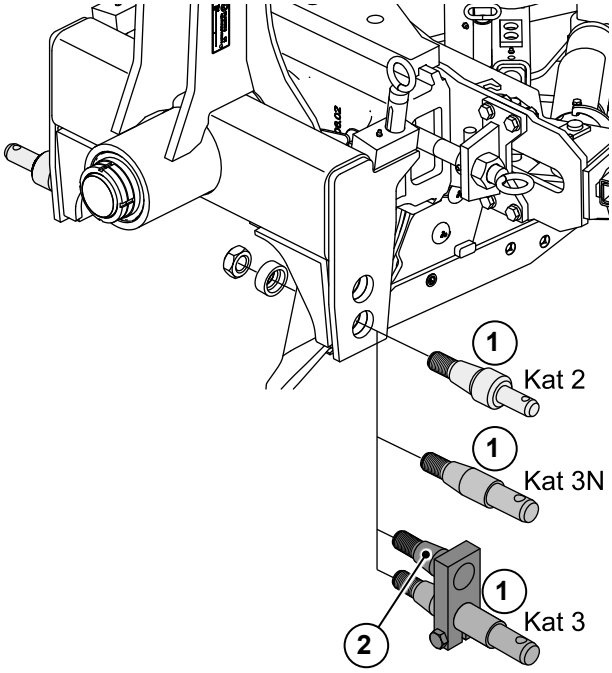
8.1 Tower for Albatros



The tower consists of:

1) The top coupling point for coupling the top link.
2) The rotation cylinder.
3) The tools to adjust the plough and repair the shear bolts.
4) The pressure gauge and the shut-off valve for the hydraulic stone protection system.
5) The spindles for adjusting the incline.
6) The axle head bolts for the bottom coupling points for coupling the tractor's bottom link.
7) The central lock to lock the turning gear.

Bottom link connection



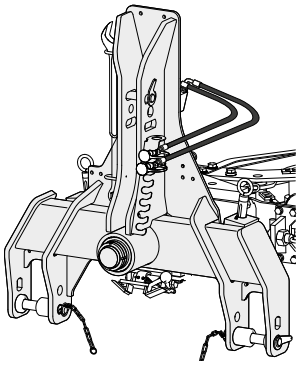
Depending on the design of the axle head bolts (**1**), the bottom link connection is designed for category 2, 3 or 3N (short).

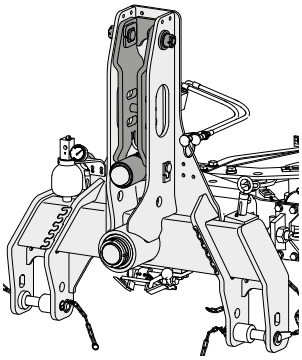
The axle head bolts in category 3 are provided with a support pin (**2**) to increase stability.

8.2 Tower for Super Albatros

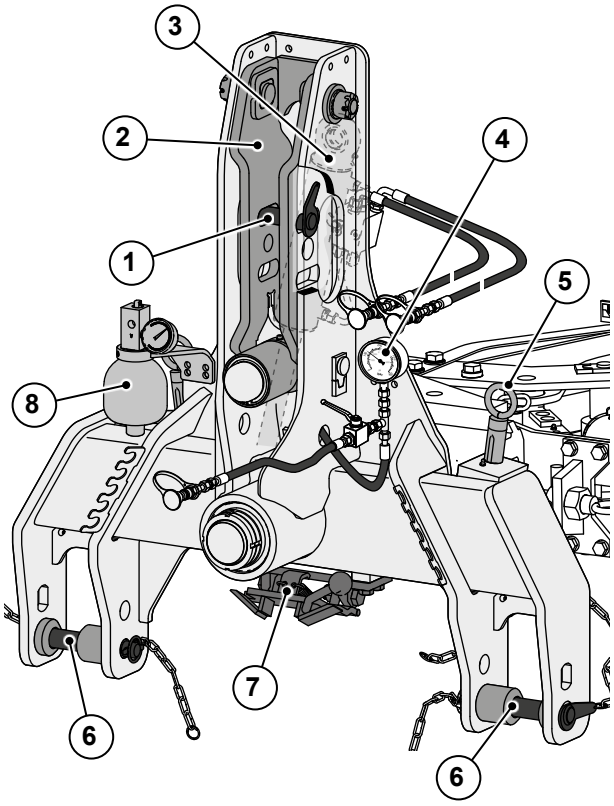
Tower with or without hydraulic suspension.

Without suspension **With suspension**





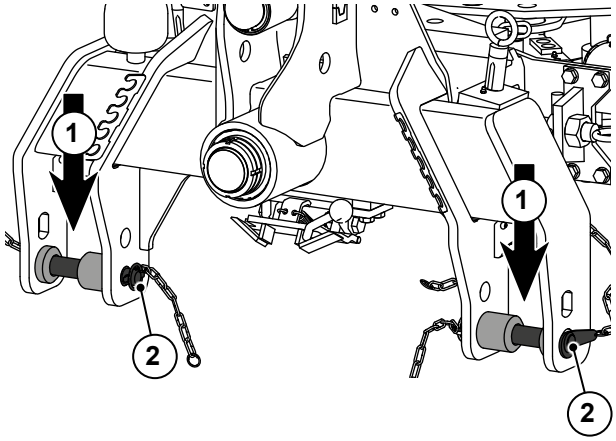
The tower consists of:



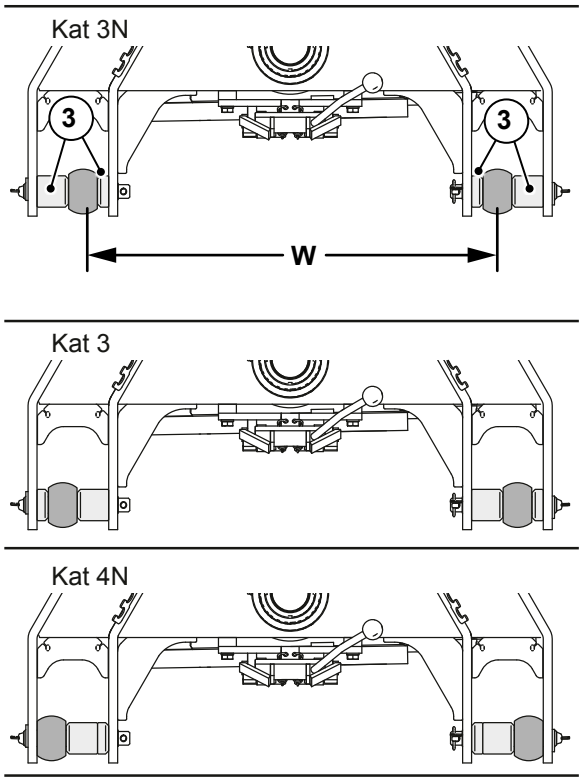
1) The top coupling point for coupling the top link.
2) The yoke.
3) The rotation cylinder.
4) The pressure gauge and the shut-off valve for the hydraulic stone protection system (only Hydro Avant version).
5) The spindles for adjusting the incline.
6) The bottom coupling points for coupling the tractor's bottom links.
7) The central lock to lock the turning gear.
8) The pressure tank for the hydraulic tower suspension with pressure gauge to indicate the pressure (for hydraulic suspension).

The hydraulic suspension on the top link connection damps blows that occur when turning on headlands and on uneven ground.
The suspension effect can be adjusted using the pressure tank (**8**).

Bottom link connection

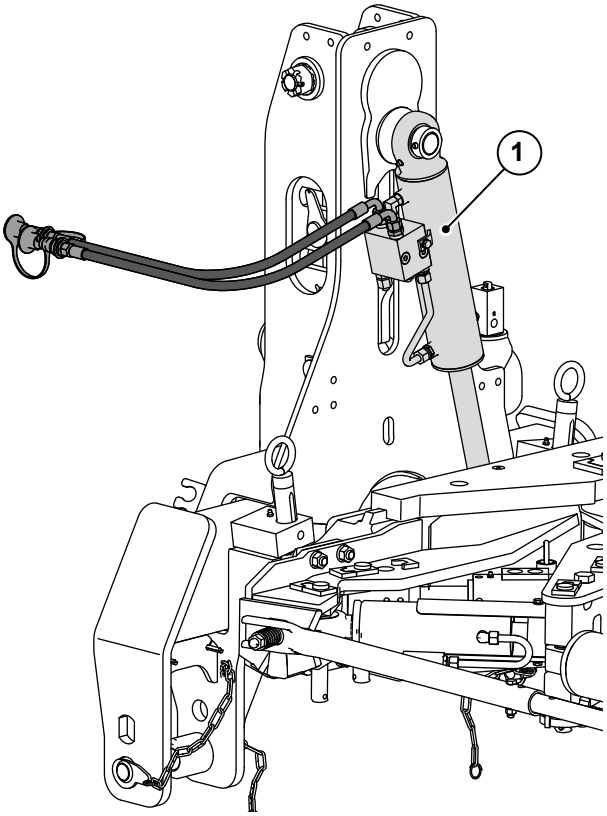


The bottom link connection (**1**) is designed for categories 3, 3N (short) or 4N.
The coupling bolts (**2**) can be offset to adjust the lifting height.



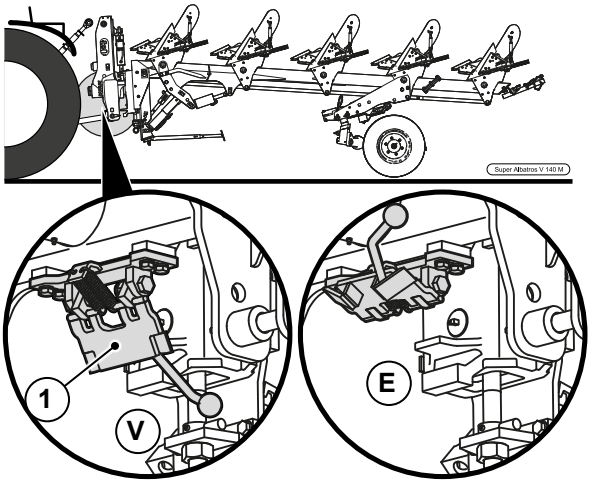
The category / hinge width (**W**) is adjusted by offsetting the spacer sleeves (**3**).

8.3 Rotation cylinder



The rotation cylinder (**1**) rotates the plough on the headlands into the various working positions and into the transport or storage position when work is complete.

8.4 Central lock



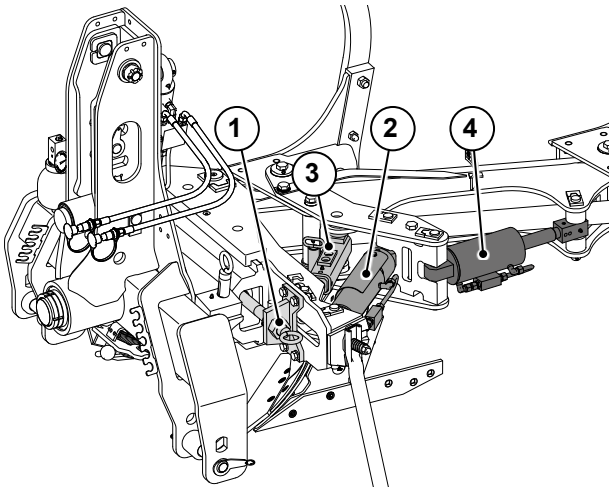
If ploughs have a combination wheel, the central lock (**1**) secures the ploughs that are in the transport position to prevent them rotating unintentionally.

V = locked = turning locked

E = unlocked = turning possible

The central lock can be engaged in the transport position before turning the plough. When the plough is rotated into the transport position, the central lock engages automatically.

8.5 Adjustment centre

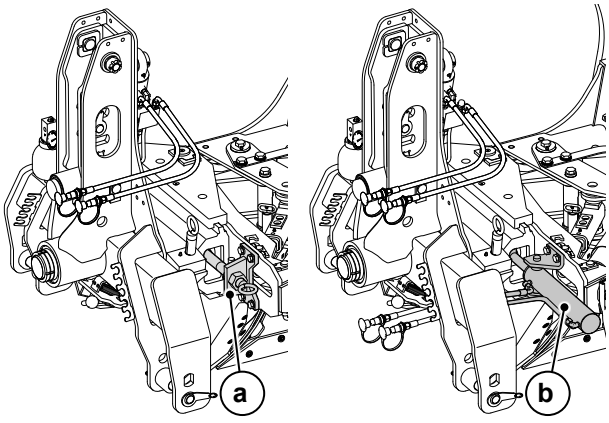


All adjustment devices are arranged centrally in the adjustment centre.

The adjustment devices can be designed as mechanical or hydraulic adjustment devices.

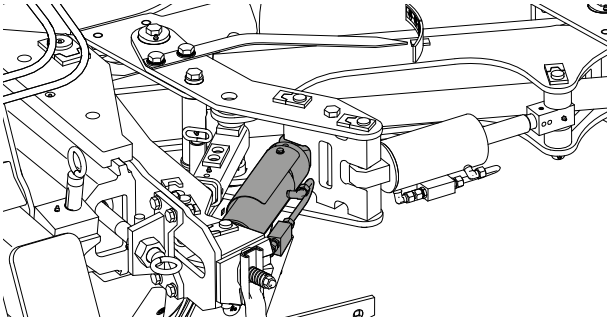
1) First-body working width adjustment
2) Frame swivel cylinder / traction point adjustment
3) Swivelling limiter
4) Working width adjustment

8.5.1 First-body working width adjustment



Continuous adjustment of the first-body working width by a spindle adjuster (**a**) or hydraulic cylinders (**b**). By sliding the entire plough frame in parallel, the traction point setting is not affected.

8.5.2 Frame swivel cylinder



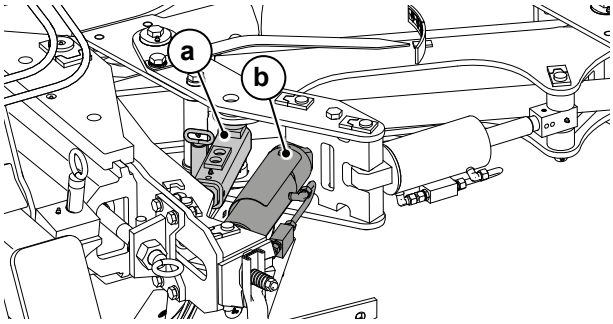
The frame swivel cylinder swivels the plough frame ...

... in when turning, so that the plough frame and the contact or combination wheel has enough space to rotate.

... in when transporting, so that the plough's transport height or transport width is low.

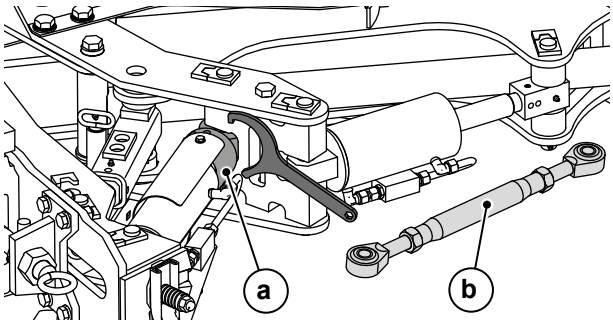
The frame swivel device is separated from the working width adjuster hydraulically.
The working width is not adjusted when swivelling the plough.

8.5.3 Swivelling limiter



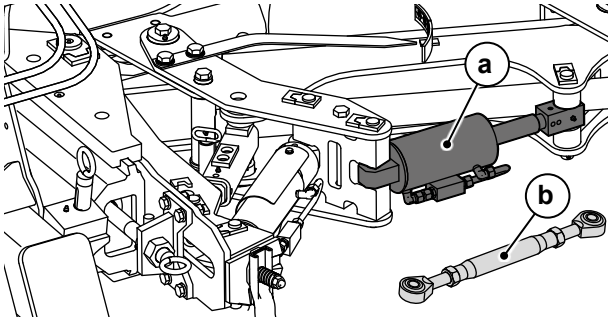
The swivelling limiter (**a**) is only installed in conjunction with the frame swivel cylinder (**b**).
It blocks the frame swivel cylinder when transporting.

8.5.4 Traction point adjustment



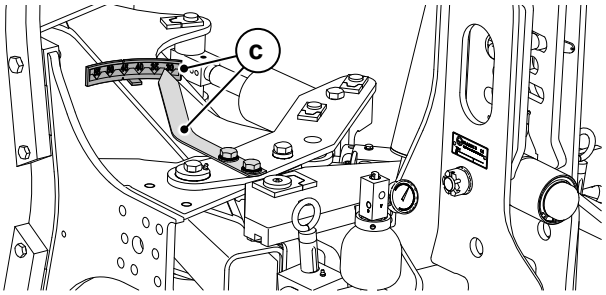
The traction point is adjusted using the fixed stop (**a**) on the frame swivel cylinder and by a spindle adjuster (**b**) when ploughing without a swivel device.

8.5.5 Working width cylinder



Continuous adjustment of the working width using hydraulic cylinders (**a**) or spindle adjustment (**b**).

The working width cylinder is used to adjust the working width of all plough bodies centrally from the driver's seat.
It can be adjusted continuously between 33 cm and 53 cm depending on the interbody distance.
The traction point is adjusted automatically when the working width is adjusted.



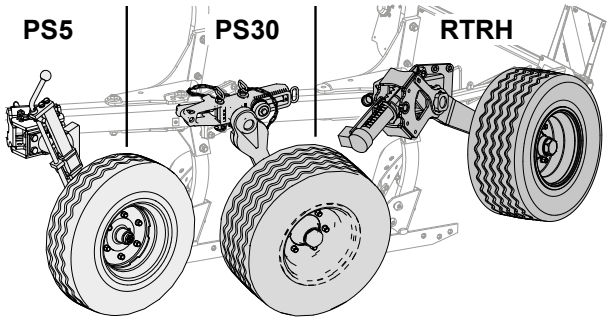
The working width that is set can be read on the width indicator (**c**) on the plough frame.

8.6 Depth control with depth control wheel or combination wheel

PS5, PS30 and RJR depth control wheel

The depth wheels are designed solely to control the implement's depth.

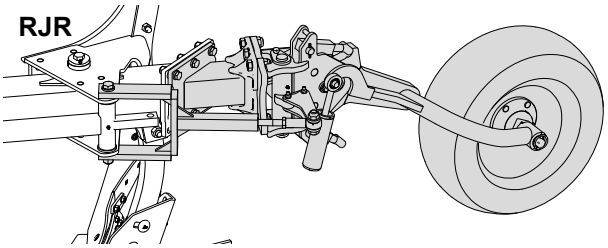
As they are purely depth control wheels, you are not permitted to use them as transport wheels.



PS 5 = with mechanical depth adjustment

PS30 = with mechanical depth adjustment

RTRH = with hydraulic depth adjustment

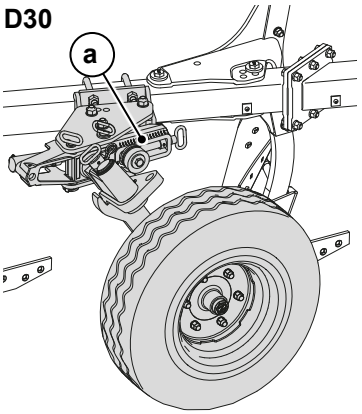


RJR = with mechanical depth adjustment

NOTE

When using an RJR depth control wheel, no lighting can be installed. For this reason, a plough with an RJR supporting wheel is not permitted to be driven on roads in Germany.

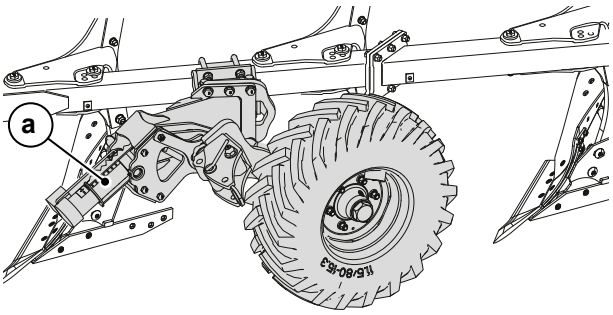
D30 combination wheel



The combination wheel is designed for depth adjustment and transport.

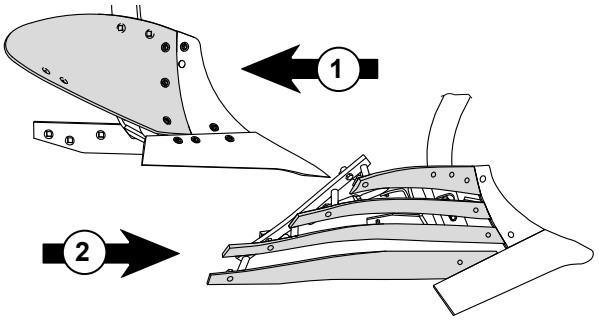
D30M = a) with mechanical depth adjustment

RCRH combination wheel



RCRH = a) with hydraulic depth adjustment

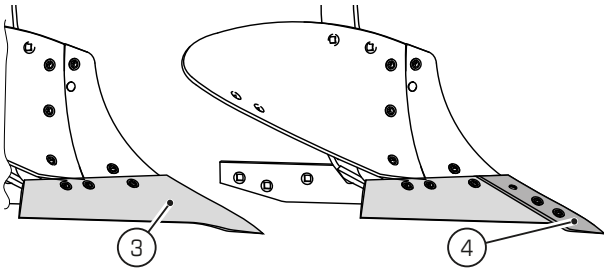
8.7 Bodies



The plough bodies come in solid sheet (**1**) or slatted designs (**2**).

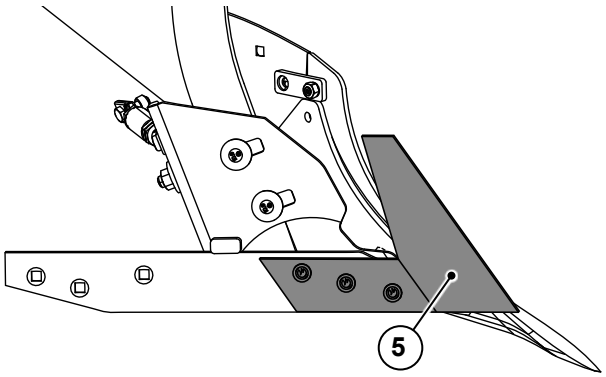
Slatted bodies are preferred on sticky soils.

8.8 Tines



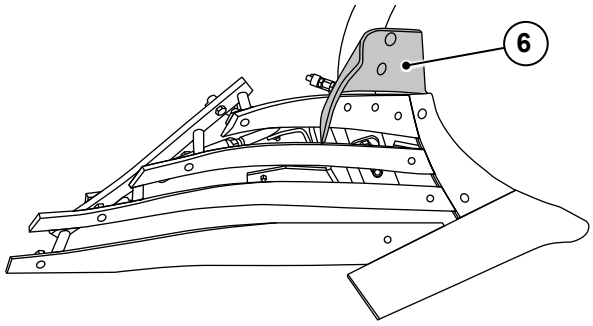
The tines can be designed as beak-shaped tines (**3**) or tines with reversible points (**4**).

8.9 Add-on coulter



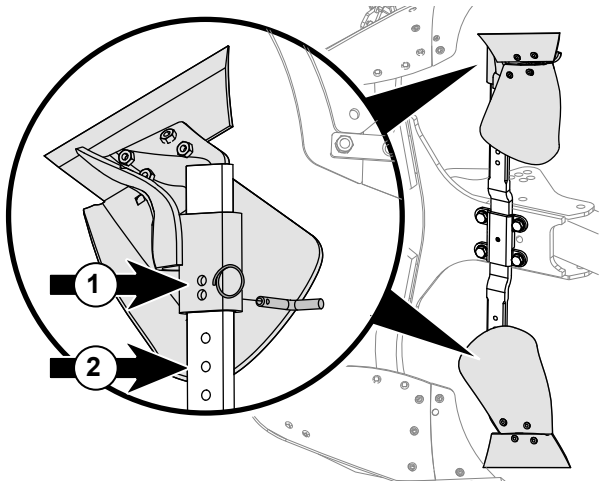
The add-on coulter (**5**) ensures that the wall of the furrow is cut cleanly and protects the front mouldboard edge on the plough body.

8.10 Trash board



The trash board (**6**) improves soil turning.
For heavy, cohesive, non-crumbling soil, use skimmers instead of trash boards.

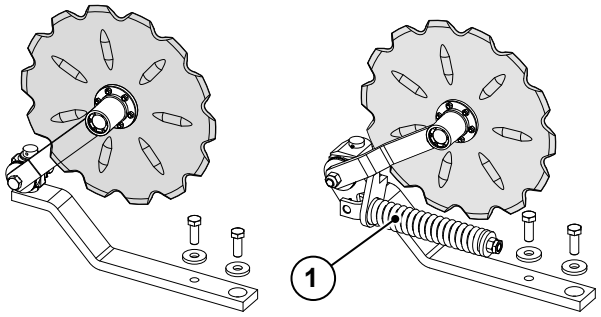
8.11 Vari Fix skimmer



The Vari Fix skimmer can be used to adjust the working depth quickly and without tools.
The working depth is adjusted using holes in the holder (**1**) and the rod (**2**).

The lateral overlap and the throwing angle are fixed for the Vari Fix skimmer.

8.12 Disc coulter

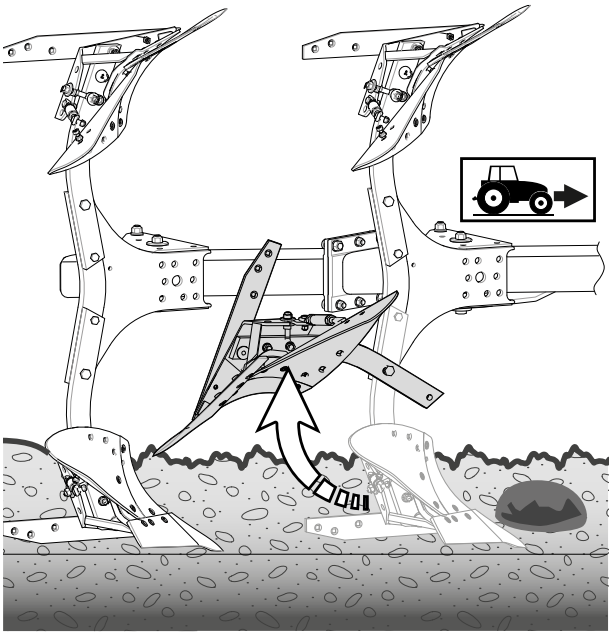


The disc coulter ensures that the furrow edge is cut cleanly.
In the sprung version (**1**), the disc can compensate for hindrances and is therefore protected against damage.

8.13 Plough body stone protection system

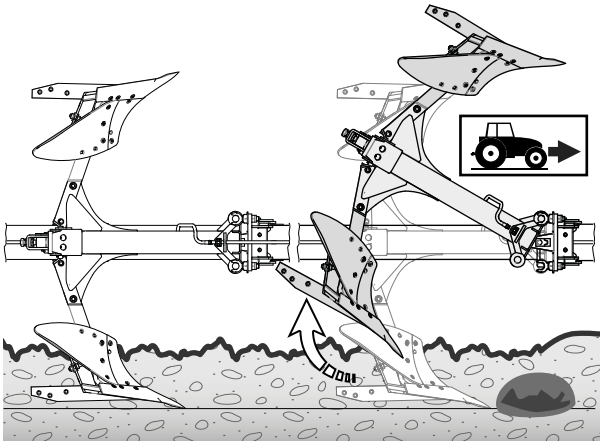
The stone protection system protects the leg and the plough body against damage due to overloading.
It is designed as a mechanical or hydraulic stone protection system.

8.13.1 Mechanical stone protection system



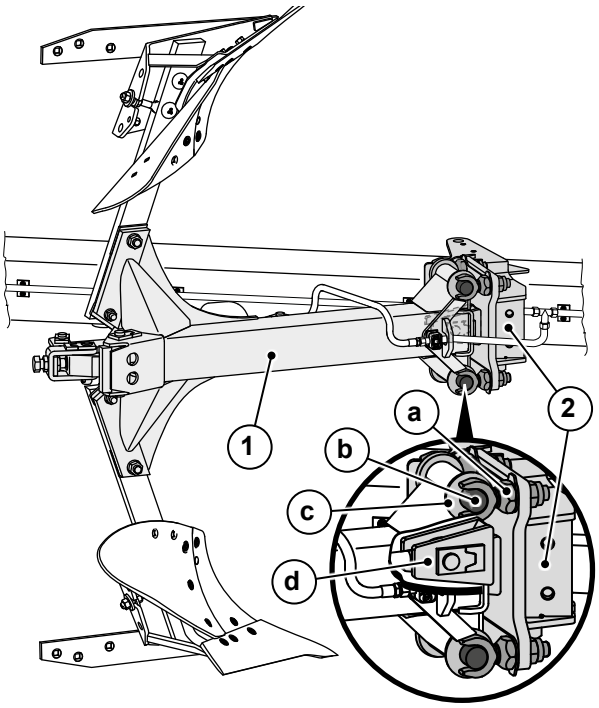
Each leg on the plough bodies is equipped with a shear bolt.
If a plough body becomes blocked, the mechanical stone protection system is triggered by shearing the shear bolt.
The plough body folds in.

8.13.2 "Hydro Avant" hydraulic stone protection system



The hydraulic lifting device protects the leg and the plough body against damage due to blocked plough bodies.
If there is an overload, the plough body avoids the hindrance upwards and sideways.

The legs on the plough bodies are also equipped with shear bolts. If the lifted plough body remains blocked, e.g. due to tree roots, the shear bolt shears off and protects the plough body against damage.



In the hydraulic stone protection system, an intermediate leg (**1**) with a hydraulic spring-mounted restoring device is inserted.

a) Bearing screws,

b) bearing bolts,

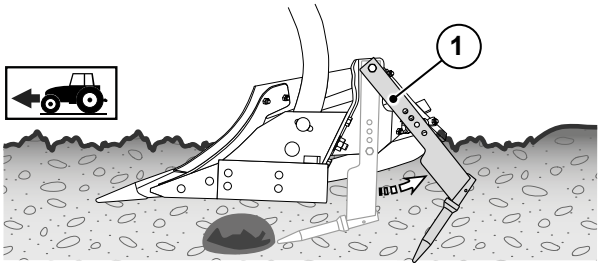
c) guide washers and the

d) cone on the link console (2) guarantee that the plough body always pivots back into the working position safely without twisting.

The force as of which the plough body avoids objects (triggering force) can be adjusted. It can be adjusted to different soil conditions. This guarantees that the plough body is stable on the ground.

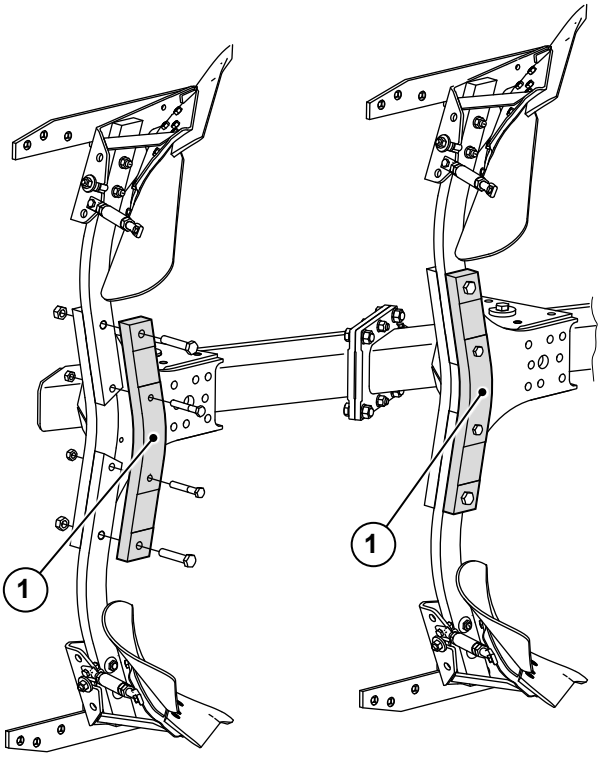
The legs on the hydraulic stone protection systems are also equipped with shear bolts.

8.14 Subsoiler stone protection system



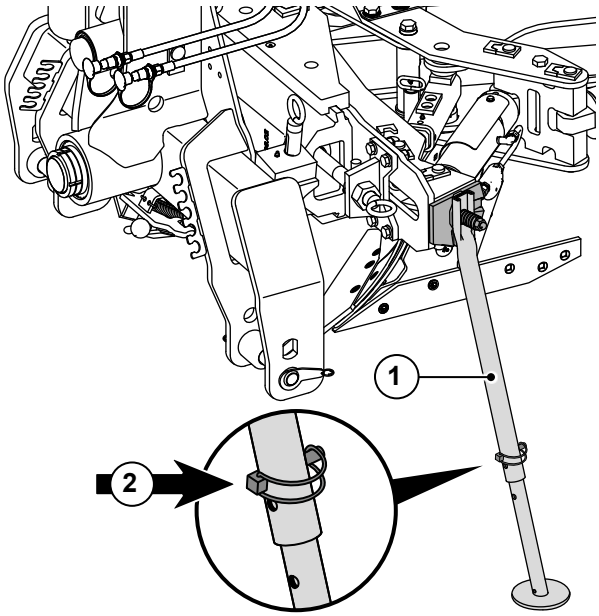
Each subsoiler (**1**) is equipped with a shear bolt.
If the subsoiler becomes blocked, the mechanical stone protection system is triggered by shearing the shear bolt.
The subsoiler folds in.

8.15 Leg reinforcements



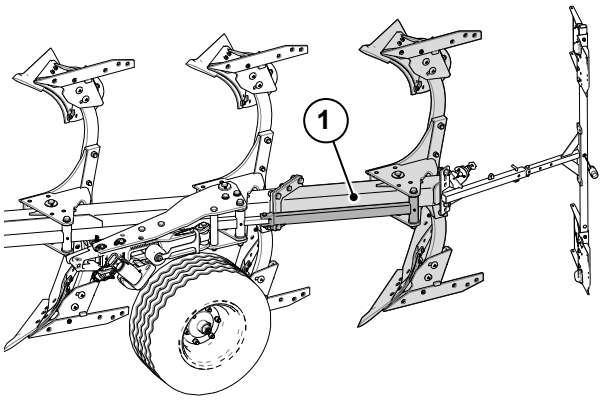
If there are high lateral forces, the leg reinforcements provide the consoles and the legs with additional support.
The leg reinforcement is recommended for demanding operating conditions and dry, hard soils without a great deal of stones and deep ploughing.

8.16 Parking support



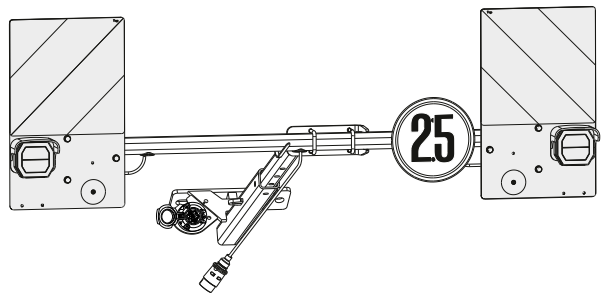
The parking support (**1**) ensures that the parked plough is stable. It can be adjusted to the ground conditions using the height adjuster (**2**).
The parking support may only be used on a solid surface.

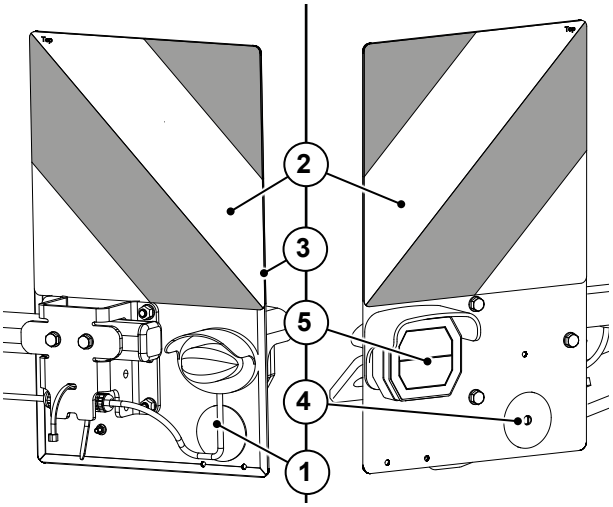
8.17 Frame set



The frame set (**1**) enables an additional body to the added to a 3, 4 or 5 furrow plough.

8.18 Lighting unit





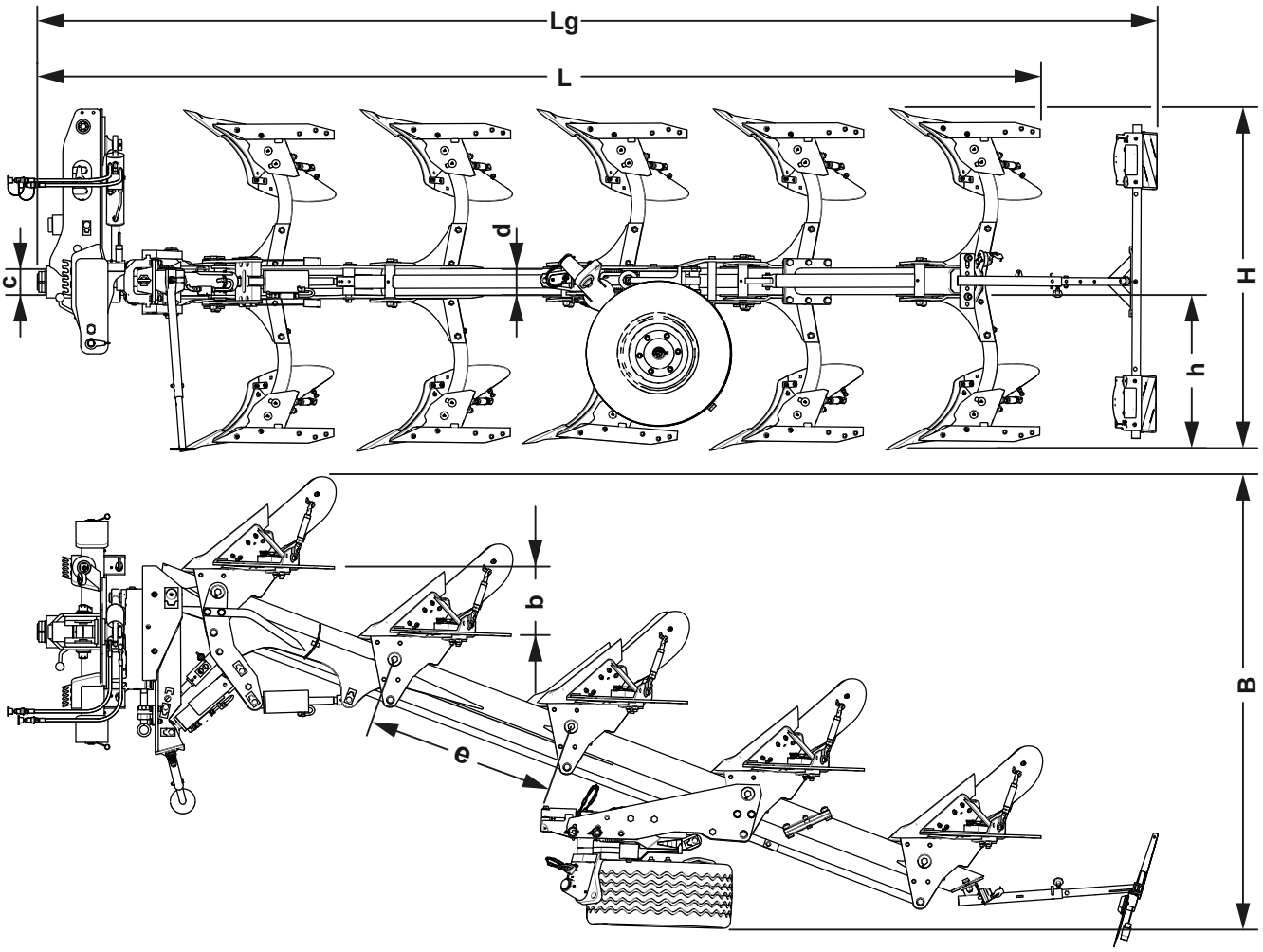
The lighting unit comprises:

1) Running light
2) Warning panel
3) Side spotlight
4) Rear spotlight
5) Rear light

NOTE
The design of the lighting unit delivered may differ from one country to another.

9 Technical data

9.1 Technical data for Albatros V / Super Albatros V



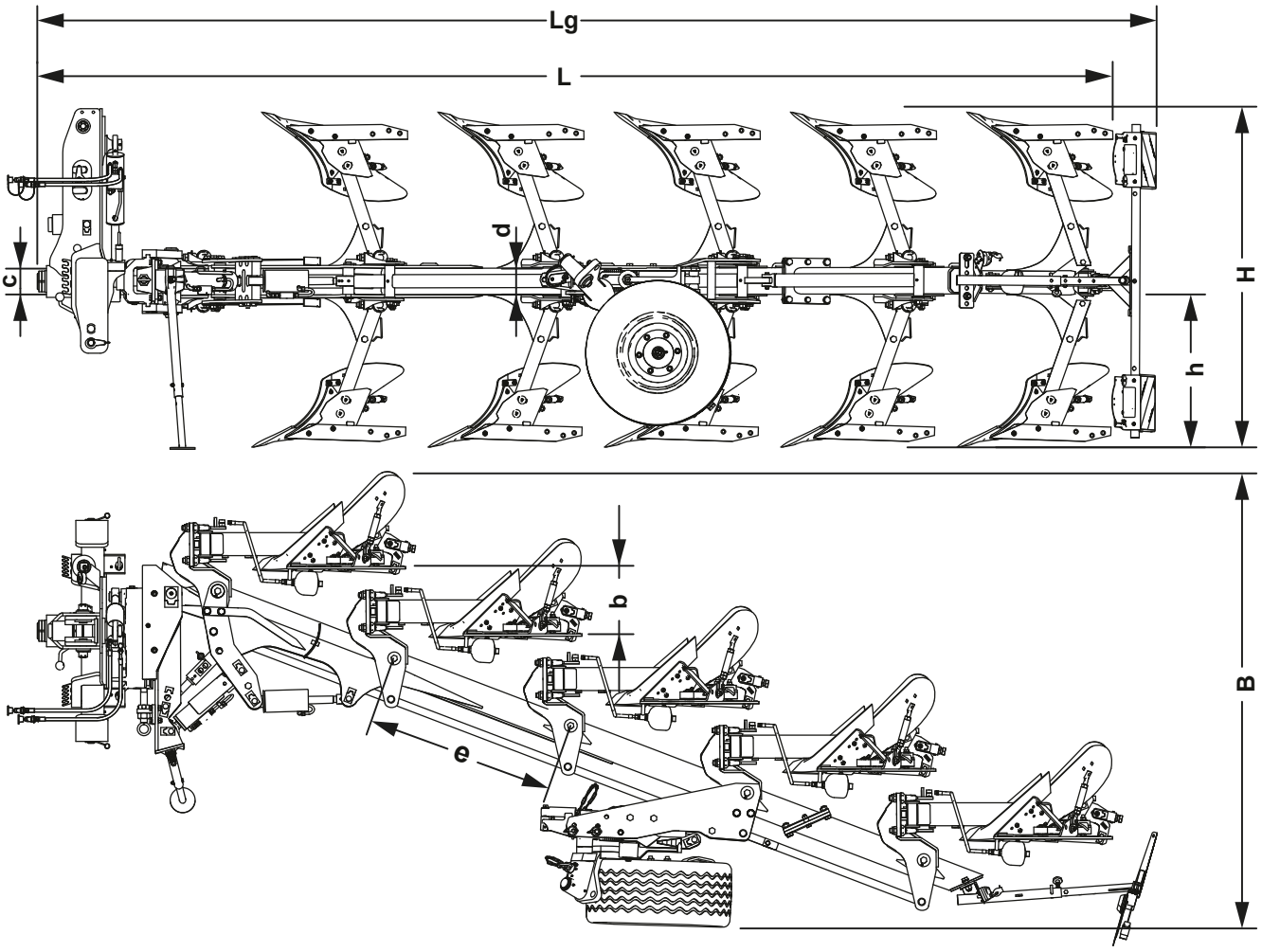
Type		Albatros V 120 S			Albatros V 120 MS			Super Albatros V 140 M			Super Albatros V 160 M		
Number of furrows		3	3 + 1 4	4 + 1 5	3	3 + 1 4	4 + 1 5	4	4 + 1 5	5 + 1 6	4	4 + 1 5	5 + 1 6
Approx. weight in kg*		990	1209	1453	990	1209	1453	1473	1707	1948	1532	1788	2048
Approx. dimensions in mm	b (continuous)	S 330 - 520			MS 340 - 530			340 - 530			340 - 530		
	B*	1915-2485	2245 - 3005	2575 - 3525	1915-2485	2245 - 3005	2575 - 3525	2285 - 3045	2625 - 3575	2965 - 4105	2285 - 3045	2625 - 3575	2965 - 4105
	c	ø100			ø100			ø120			ø120		
	d	120 x 120 x 10			120 x 120 x 10			140 x 140 x 10			160 x 160 x 10		
	e	S 900			MS 970			1000			1000		
	f	70 x 30			70 x 30			70 x 35			80 x 35		
	h	800			800			800			800		
	H	1700			1700			1720			1720		
	L**	3379	4279	5179	4489	5459	6429	4579	5579	6579	4579	5579	6579
	Lg**	3991	4891	5791	5191	6191	7191	5191	6191	7191	5191	6191	7191

Type	Albatros V 120 S			Albatros V 120 MS			Super Albatros V 140 M			Super Albatros V 160 M		
Number of furrows	3	3 + 1 4	4 + 1 5	3	3 + 1 4	4 + 1 5	4	4 + 1 5	5 + 1 6	4	4 + 1 5	5 + 1 6
Tractor power	75 - 150 kW 100 - 200 HP			75 - 150 kW 100 - 200 HP			119 - 201 kW 160 - 270 HP			119 - 201 kW 160 - 270 HP		
Three-point linkage	Cat 2 Cat 3 Cat 3N		Cat 3 Cat 3N	Cat 2 Cat 3 Cat 3N		Cat 3 Cat 3N	Cat 3 Cat 3N Cat 4N			Cat 3 Cat 3N Cat 4N		
Swinging supporting wheel – Model; Tyres	PS5-13 EB; 10.0 / 75-15 RJR; 200/60 x 14.5 or 10.0 / 75-15 or 320/60-12 PS30M; 10.0 / 75-15 or 13.0 / 55-16 RTRH; 11.5/80 x 15 AS oder 13.0/55-16			PS5-13 EB; 10.0 / 75-15 RJR; 200/60 x 14.5 or 10.0 / 75-15 or 320/60-12 PS30M; 10.0 / 75-15 or 13.0 / 55-16 RTRH; 11.5/80 x 15 AS oder 13.0/55-16			RJR; 200/60 x 14.5 or 10.0 / 75-15 or 320/60-12 PS30; 10.0 / 75-15 PS30M; 13.0 / 55-16 RTRH; 11.5/80 x 15 AS oder 13.0/55-16			PS30; 10.0 / 75-15 PS30M; 13.0 / 55-16 RTRH; 11.5/80 x 15 AS oder 13.0/55-16		
Swinging supporting wheel – Air pressure	2.5 bar / 250 kPa / 36 PSI											
Combination wheel – Tyres	D30 M; 10.0 / 75-15 or 13.0 / 55-16 RCRH: 11.5 / 80-15.3 oder 13.0 / 55-16											
Combination wheel – Air pressure	3.75 bar / 375 kPa / 54 PSI											
Max. Hydraulic pressure	210 bar / 21 MPa / 3.05 KSI											
Hydraulic pressure stone protection	Minimum pressure: 120 bar / 12 MPa / 1740 PSI (factory setting) Maximum pressure: 170 bar / 17 MPa / 2665 PSI											
Hydraulic oil for implement	HLP-68											
Working speed	4 - 8 km/h											
Transport speed	25 km/h											
Sound pressure level	< 70 dB(A)											

* Approximate values, as they depend on the set working width, tine and wheel design.

** Maximum length at narrowest working width.

9.2 Technical data for Albatros VHA / Super Albatros VHA



Type		Albatros VHA 120 S		Albatros VHA 120 MS		Super Albatros VHA 140		Super Albatros VHA 140 M	
Number of furrows		4	4 + 1 5	4	4 + 1 5	5	5+1	4	4 + 1 5
Approx. weight in kg*		1469	1618	1469	1618	2032	2331	1733	2032
Approx. dimensions in mm	b (continuous)	S 330 - 520		MS 340 - 530		330 - 520		M 340 - 530	
	B*	2140 - 2900	2470 - 3420	2140 - 2900	2470 - 3420	1650 - 2600	1980 - 3120	2180 - 2940	2520 - 3470
	c	ø100		ø100		ø120		ø120	
	d	120 x 120 x 10		120 x 120 x 10		140 x 140 x 10		140 x 140 x 10	
	e	900		970		930		1000	
	f	70 x 30		70 x 30		70 x 35		70 x 35	
	h	800		800		800		800	
	H	1700		1700		1720		1720	
	L**	4579	5479	4789	5759	5599	6529	4879	5879
	Lg**	4891	5791	5101	6071	5911	6841	5191	6191

Type		Albatros VHA 120 S		Albatros VHA 120 MS		Super Albatros VHA 140		Super Albatros VHA 140 M	
Number of furrows		4	4 + 1 5	4	4 + 1 5	5	5+1	4	4 + 1 5
Tractor power		75 - 149 kW 100 - 200 HP		75 - 149 kW 100 - 200 HP		119 - 201 kW 160 - 270 HP		119 - 201 kW 160 - 270 HP	
Three-point linkage		Cat 2 Cat 3 Cat 3N	Cat 3 Cat 3N	Cat 2 Cat 3 Cat 3N	Cat 3 Cat 3N	Cat 3 / Cat 3N Cat 4N		Cat 3 / Cat 3N Cat 4N	
Swinging supporting wheel	Model; Tyres	PS5-13 EB; 10.0 / 75-15 RJR; 200/60 x 14.5 or 10.0 / 75-15 or 320/60-12 PS30 M; 10.0 / 75-15 or 13.0 / 55-16 RTRH; 11.5/80 x 15 AS oder 13.0/55-16		PS5-13 EB; 10.0 / 75-15 RJR; 200/60 x 14.5 or 10.0 / 75-15 or 320/60-12 PS30 M; 10.0 / 75-15 or 13.0 / 55-16 RTRH; 11.5/80 x 15 AS oder 13.0/55-16		RJR; 200/60 x 14.5 or 10.0 / 75-15 or 320/60-12 PS30; 10.0 / 75-15 PS30 M; 13.0 / 55-16 RTRH; 11.5/80 x 15 AS oder 13.0/55-16		RJR; 200/60 x 14.5 or 10.0 / 75-15 or 320/60-12 PS30; 10.0 / 75-15 PS30 M; 13.0 / 55-16 RTRH; 11.5/80 x 15 AS oder 13.0/55-16	
	Air pressure	2.5 bar / 250 kPa / 36 PSI							
Combination wheel	Tyres	D30 M; 10.0 / 75-15 or 13.0 / 55-16 RCRH: 11.5 / 80-15.3 oder 13.0 / 55-16							
	Air pressure	3.75 bar / 375 kPa / 54 PSI							
Max. Hydraulic pressure		210 bar / 21 MPa / 3.05 KSI							
Hydraulic pressure stone protection		Minimum pressure: 120 bar / 12 MPa / 1740 PSI (factory setting) Maximum pressure: 170 bar / 17 MPa / 2665 PSI							
Hydraulic oil for implement		HLP-68							
Working speed		4 - 8 km/h							
Transport speed		25 km/h							
Sound pressure level		< 70 dB(A)							

* Approximate values, as they depend on the set working width, tine and wheel design.

** Maximum length at narrowest working width.

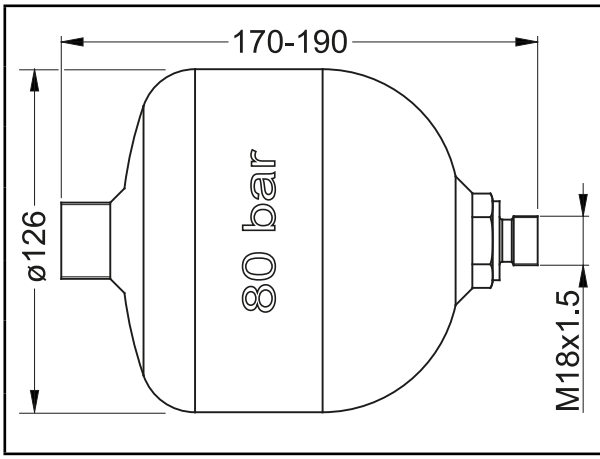
9.3 Technical data for solid sheet body

Body designation	Maximum working depth approx. cm	Working width up to approx. cm	Weight kg	Description
BP-351 O	40	50	56	Single-part tine with reversible points, Plasmabid hard coating or uncoated.
BP-322 P	38	50	56	Single-part tine with reversible points or Plasmabid hard coating.
BP-320 W	30	50	56	Single-part tine with reversible points or Plasmabid hard coating.
BP-341 W	35	50	56.5	Single-part tine with reversible points or Plasmabid hard coating.
BP-351 W	35	50	55	Single-part tine with reversible points, Plasmabid hard coating or uncoated.
BP-365 P	30	50	56	Split tine with hardened points.

9.4 Technical data for slatted body

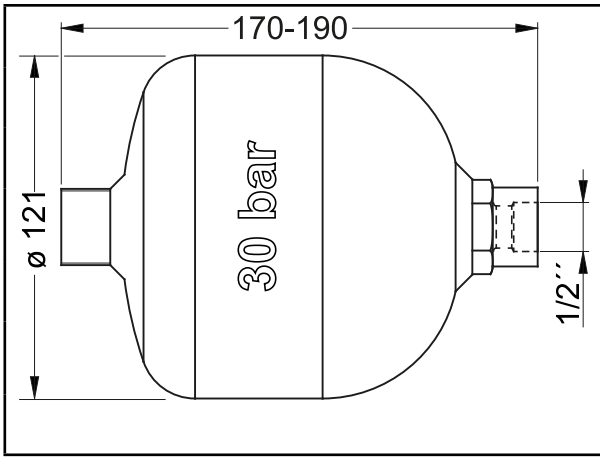
Body designation	Maximum working depth approx. cm	Working width up to approx. cm	Weight kg	Description
BP-331 WS	30	45	35	Single-part tine with Plasmabid hard coating, no reversible points.
BP-322 PS	38	50	60	Single-part tine with Plasmabid hard coating or reversible points.
BP-323 PS	38	50	61	Single-part tine with Plasmabid hard coating or reversible points, wide lower stripes.
BP-355 RS	40	50	61	Single-part tine with Plasmabid hard coating or reversible points.
BP-351 WS	35	50	58	Single-part tine with Plasmabid hard coating, no reversible points.

9.5 Technical data for pressure tank for stone protection



Model	E1, refillable
Nominal volume	0.75 litres
Filling gas	Nitrogen
Gas preload provided by the factory (filling pressure)	80 bar
Operating fluid	Hydraulic oil
Maximum permissible operating pressure	250 bar
Permissible operating temperature	-10°C to +80°C

9.6 Technical data for pressure tank for tower suspension



Model	E1, refillable
Nominal volume	0.75 litres
Filling gas	Nitrogen
Gas preload provided by the factory (filling pressure)	30 bar
Operating fluid	Hydraulic oil
Maximum permissible operating pressure	200 bar
Permissible operating temperature	-10°C to +80°C

9.7 Individual weights of the additional equipment

Accessories	Approx. weight (kg)
Skimmer	26 - 33
Disc coulter, ø 500 mm	44
Disc coulter, ø 500 mm, spring loaded	51
Subsoiler	26
Wide furrow knife	18
Trash board	14

Accessories	Approx. weight (kg)
Sword coulter	6
Swinging supporting wheel	86
Combination wheel	136 / 146*
Combination wheel with hydraulic depth adjustment	171 / 181*

* depending on the tyre size

9.8 Required hydraulic connection

NOTE
Do not mix hydraulic mineral oil and bio-oil.

- Before connecting, check that the plough and tractor hydraulic systems are filled with the same type of hydraulic oil.

Function	Hydraulic connection		Colour of protecting cap
	Single-acting	Double-acting	
Rotation	-	1 x	Red
Frame swivelling device	with coupled turning function (sequence control)		
Working depth adjustment	-	1 x	Black
First-body working width	-	1 x	Blue
Working width	-	1 x	Green
“HydroAvant” hydraulic stone protection system adjustment	1 x	-	White
Hydraulic tower suspension / Super Albatros adjustment	1 x	-	White

9.9 Required power connection

Consumers	Poles	Voltage	Power connection
Lighting system	7-pole	12 VDC	Acc. to DIN-ISO 1724

9.10 Maximum permissible dimensions and weights for transport by road

Maximum length of the combination (tractor + implement)	12 m	
Maximum width	3 m (DE*)	3.5 m (FR**)
Maximum height	4 m	

*Germany / ** France

9.11 Explanation of the type designation

Example: Super Albatros V 140 HA MS IV/80

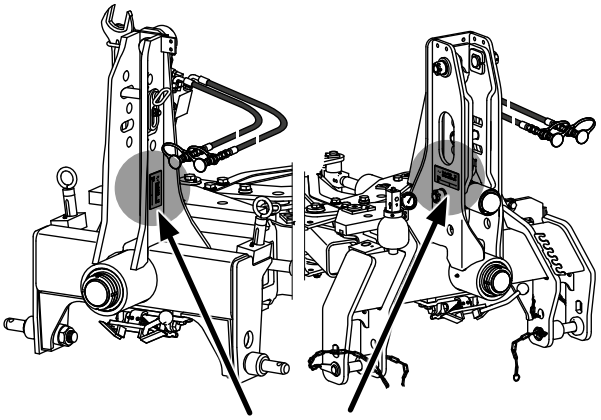
Albatros	=	ø rotating axle 100 mm
Super Albatros	=	ø rotating axle 120 mm
V	=	Variant, continuous hydraulic working width adjustment
140	=	Beam dimensions in mm
HA:	=	HydroAvant, Hydraulic stone protection system
M	=	Greater interbody distance
S	=	strong, for the reinforced version
IV	=	Number of bodies
80	=	Frame height in cm

10 Loading

9.12 Type plate, CE mark

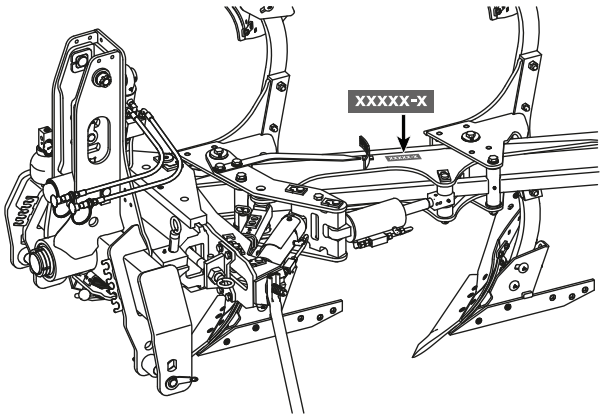
The type plate is attached to the tower and displays the following:

Tower for Albatros **Tower for Super Albatros**



Model number	
Serial number	Year of construction

The CE mark indicates that the plough is in compliance with the provisions of the Machinery Directive and other relevant EU Directives.
The EU Declaration of Conformity attests to the fact that implement being placed on the market is manufactured in accordance with the relevant standards.

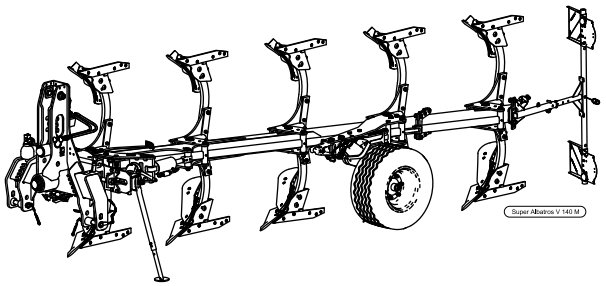


The serial number is also stamped on the plough frame.

DANGER
Risk of accident due to suspended loads.
- *Do to walk under suspended loads.*
- *Do not stand under or in the vicinity of the implement while it is lifted.*

Risk of tipping when lifting the implement.
- *When lifting the implement, proceed with care and pay attention to balance.*

Prior to loading



► Move the plough into the storage position - see chapter 25 "Parking the implement" - page 92.

Ensure the following when loading (cranes)

- Only suitable lifting aids are used.
- Only lifting aids permitted for the weight of the implement (technical data) are used.
- The safety guidelines of the lifting aids and the crane are taken into account.

OPERATION

11 Preparing the tractor

11.1 Checking requirements for the tractor

NOTE

- Operate large ploughs with large tractors. This makes calibration between the plough and the tractor easier.
- Large track widths improve stability.

► Check the output and lifting capacity of the rear power lift on the tractor in relation to the plough version.

- Tractor data: see the tractor operating instructions
- Machine data: see „Technical data“ - page 44

► Check the permissible axle load for the tractor - See the tractor operating instructions

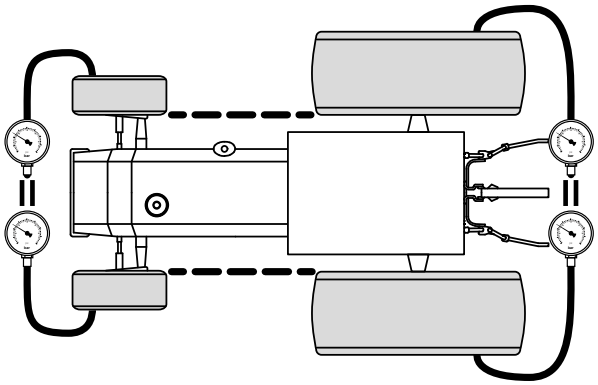
► Calculation the required ballasting for the tractor - see „Ballast weight“ - page 52 and „Ballastberechnung“ - page 123.

► Attach the ballast weight - see the tractor operating instructions.

► Check that tractor’s and implement’s connection categories are the same.

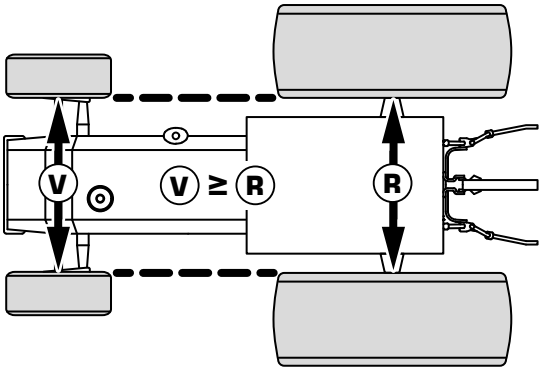
- Tractor: see tractor operating instructions
- Implement: depending on the design, see „Technical data“ - page 44

11.2 Checking the tractor’s air pressure



► Check tractor tyres for correct and even air pressure - see the tractor operating instructions.

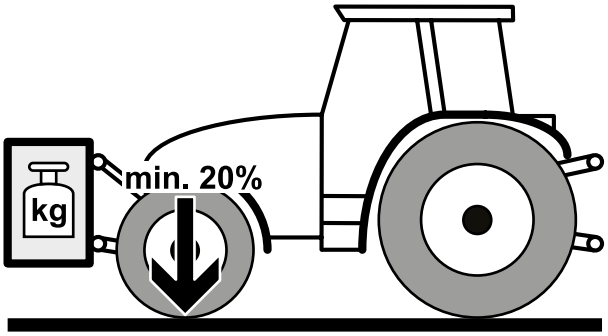
11.3 Checking the track width



► Check the track width for the axles.

The front track width (**V**) must be equal to (**=**) or a maximum of 10 cm larger (**>**) than the rear track width (**R**).

11.4 Ballast weight



The tractor should be equipped with sufficient ballast weight at the front to guarantee the steering and braking capabilities.
For more information on calculation, see chapter „Ballastberechnung“ - page 123.

WARNING
At least 20% of the vehicle's empty weight must be on the front axle.

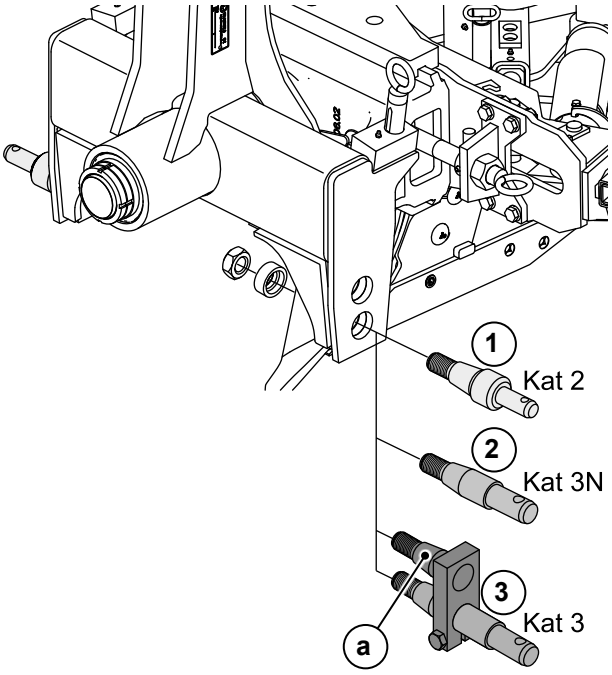
12 COUPLING THE IMPLEMENT

WARNING
Risk of accident while coupling the implement to the tractor.

- *During coupling, no person may stand between the tractor and the implement; also do not step between the tractor and the implement while operating the external hydraulics control.*
- *Take note of all crushing and shearing points on all of the implement's moving parts.*
- *Before coupling and uncoupling the hydraulic plug couplings, depressurise the hydraulic system.*
  Follow the tractor's operating instructions and safety instructions.
- *Secure the implement to prevent it rolling away.*

12.1 Bottom link connection for Albatros tower

12.1.1 Connection categories



1) Cat2 axle head bolts
2) Cat3N axle head bolts
3) Cat3 axle head bolts with support pin (**a**)

For more notes, see "Dimensions of connection categories of the rear three-point linkage" - page 129

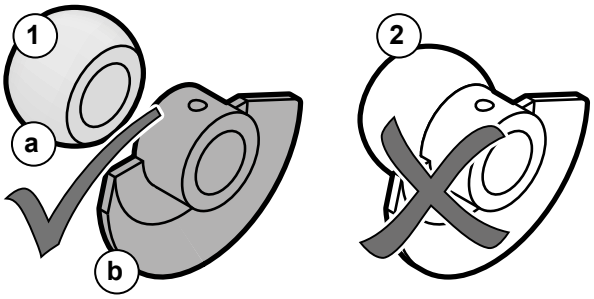
12.1.2 Ball bush and guide cone for axle head bolt

DANGER
Risk of axle head bolts breaking due to fixed ball bushes.

- *The ball bushes must be able to rotate on the greased pins on the axle head bolts.*

The axle head bolts must be equipped with a ball bush (**1**) and a guide cone (**2**).

Do not use a single-part guide cone.



1) multi-part ball bush - ✓ use
2) single-part ball bush - ✗ do not use

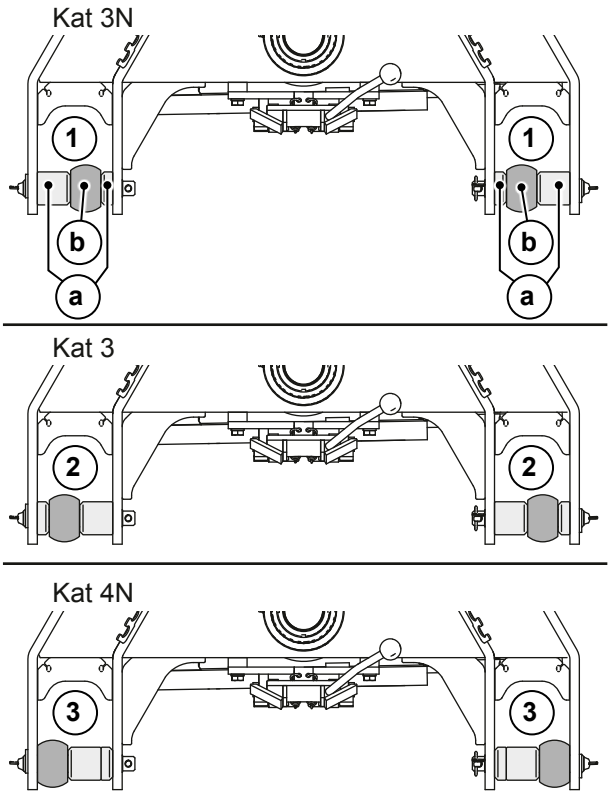
Ensure that the connection category for the ball bush is correct.

NOTE

- The ball bush and guide cone are not supplied as standard.
- Installation instructions are provided in „Installing the ball bush and guide cone on axle head bolts“ - page 121.

12.2 Bottom link connection for Super Albatros tower

12.2.1 Connection categories



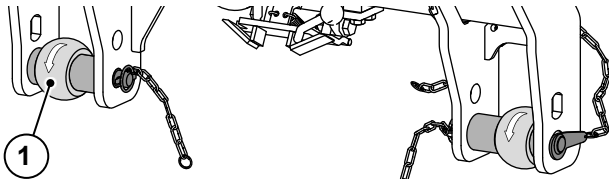
a = compensation bush

b = ball bush

1) Position of Cat 3N compensation and ball bush
2) Position of Cat 3 compensation and ball bush
3) Position of Cat 4N compensation and ball bush 4/3 reduction ball required for Cat 4N.

For more notes, see "Dimensions of connection categories of the rear three-point linkage" - page 129

12.2.2 Ball bush and guide cone for bottom link bolt



The bottom link bolts for bottom links with quick coupler heads must be equipped with ball bushes (**1**).
Use 4/3 reduction bushes for Cat 4 bottom links with ball eyes.

NOTE

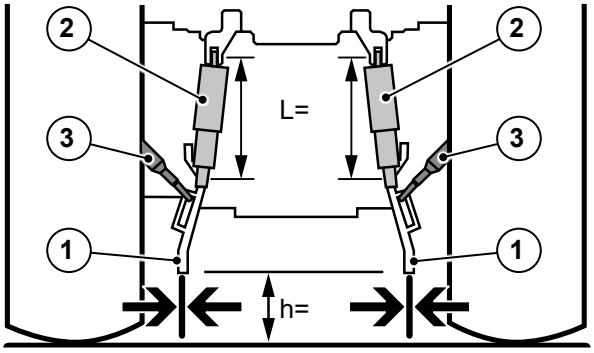
- The ball bush is not supplied as standard.
- Installation instructions are provided in „Installing the ball bush on bottom link bolts“ - page 122.

12.3 Couple the bottom links

12.3.1 Preparation

NOTE

- Always additionally consult the operating instructions of the tractor manufacturer when coupling.
- Check that the connection categories for the tractor and implement are the same.



► Set the bottom links (1) to the same height (h). To do so, adjust both lifting rods (2) to the same length (L).

► Limit the bottom links to a low lateral ...
... tolerance with the side locks (3) when raised and adjust them so that they ...
...move freely when lowered.

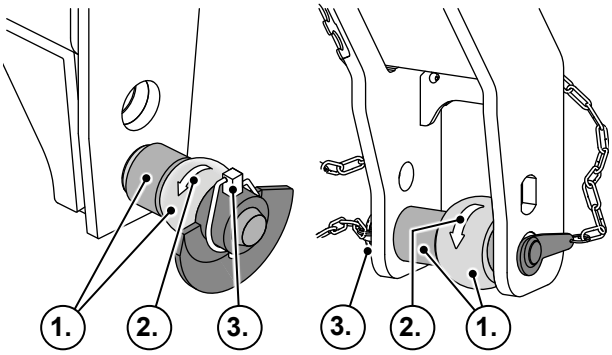
► Set the tractor hydraulics to traction control.

► Check the bottom link’s lifting height.

Minimum lifting height = 85 cm

12.3.2 Coupling the bottom links

Checking the bottom link connection

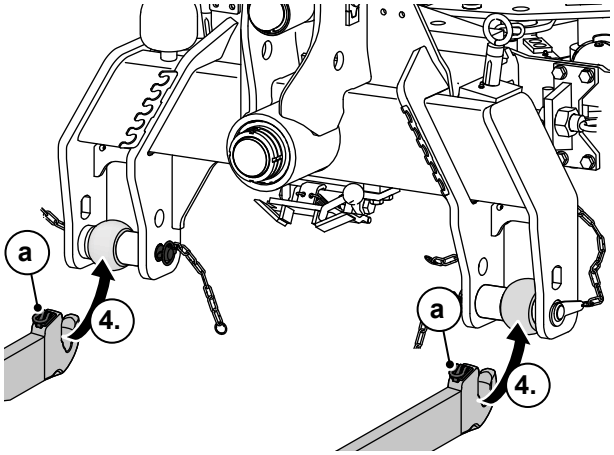


► 1.) Check the axle head bolts / bottom link bolts and the ball bush for wear and damage.
Replace damaged parts immediately.

► 2.) Check that the ball bushes can move freely.

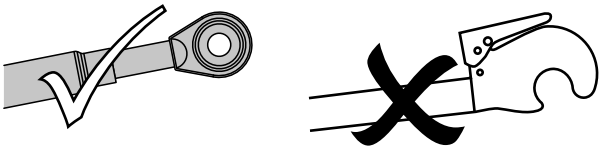
► 3.) Ensure that the ball bush and the guide cone are secured correctly.

Coupling the bottom links

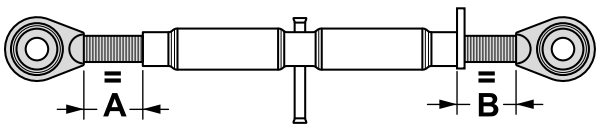


► 4.) Couple the bottom links to the plough and lock them.
When coupling, ensure that the locks (a) engage securely.

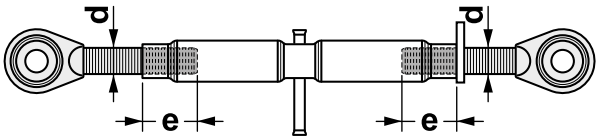
12.4 Couple the top link



DANGER
Risk of accident due to damaged catching hook locking mechanism or a crack in the catching ball.
The dimensions of different catching hooks may vary substantially, which could result in damage to the coupling components or the catching hook locking mechanism.
- *Only use top links with enclosed ball eyes. Top links with catching hooks may not be used - Risk of accident.*

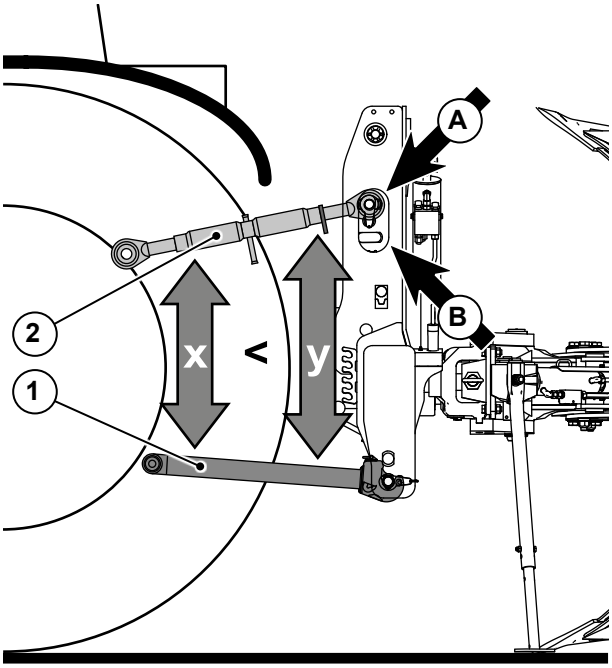


NOTE
Before attaching the implement, check that the two threaded spindles are of equal length (A = B).



DANGER
Risk of accident due to stripping on the spindle thread.
- *When the top link is adjusted, the minimum thread engagement (emin) of the threaded spindles must be 1.5 times the thread diameter (d).*
  emin = 1.5 x d.
- *Observe the maximum working length according to the manufacturer's specifications.*

12.4.1 Installation instructions

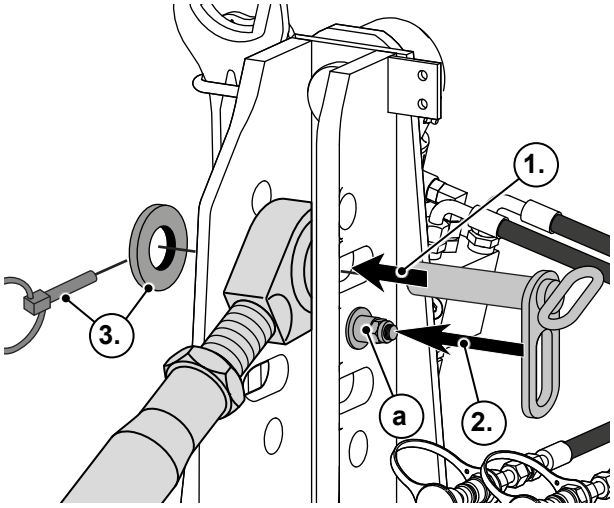


- The bottom link (1) must slope downwards slightly towards the implement.
- Attach the top link (2) so that it slopes upwards towards the working implement.
  x < Y
- The incline can be changed by inserting the top link stock in position A or B.
- Insert the top link into the elongated hole.
  Benefits:
  - Quicker soil penetration
  - Safer bottom guidance
  - Load reduction on the plough hydraulics

NOTE
Insert the top link into the hole if the soil is heavy.

12.4.2 Coupling the top link

Tower for Albatros

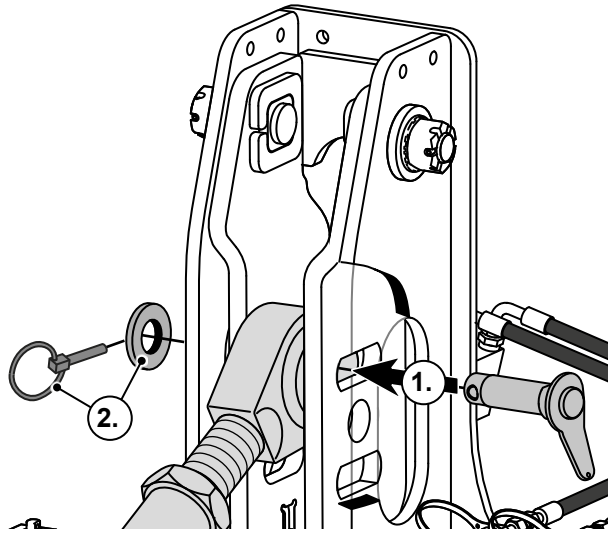


► 1.) Secure the top link with the top link stock in the selected hole, when doing so ...

► 2.) ... guide the anti-twist device for the top link stock over the locking bolts (a).

► 3.) provide the top link stock with a washer and secure with a hinged pin.

Tower for Super Albatros



► 1.) Secure the top link with the top link stock in the selected hole, when doing so ...

► 2.) provide the top link stock with a washer and secure with a hinged pin.

12.5 Connect the hydraulic lines

DANGER

Risk of accident due to hydraulic fluid escaping at high pressure.

- *When connecting, make sure that the hydraulic systems on the tractor (floating position) and on the implement have been depressurised.*

Risk of accident due to incorrectly connected pressure lines.

- *When connecting, ensure that the hydraulic lines are connected to the prescribed connections.*
  Incorrect connection may result in incorrect operation and serious injury or death.

Risk of accident and crushing due to the implement tipping over.

- *During connection work, secure the tractor to prevent it rolling unintentionally.*

DANGER

Risk of infection due to fluids escaping under high pressure.

Fluids (hydraulic oil) escaping under high pressure may penetrate the skin and cause severe injury.

- *Park the implements, depressurise the system, switch off the engine and remove the ignition key before commencing work on the hydraulic system!*
- *Use suitable tools when looking for leaks!*
- *Consult a doctor immediately in case of injury!*

WARNING

Hydraulic oil is harmful to health.

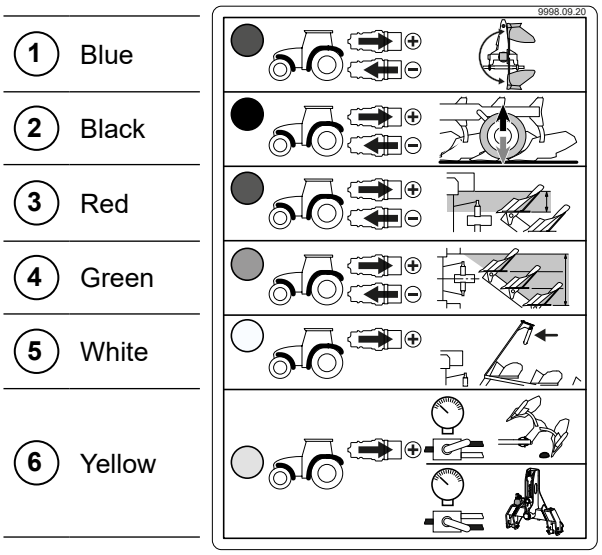
- *Observe the safety datasheet (from the oil supplier) for the hydraulic oil used.*

NOTE

- Maximum operating pressure 200 bar
  - *The operating pressure of the hydraulic system must not exceed 200 bar.*
    Adjust the pressure from the tractor accordingly if required.
- Do not mix hydraulic mineral oil and bio-oil.
  - *Before connecting, check that the implement and tractor hydraulic oils are permitted to be mixed.*

- When connecting the hydraulic system, make sure that the connectors and couplings are clean.
- Route all connecting cables carefully and make allowances for the movements of the attached implement.
- Dispose of oil and oily cloths in accordance with regional disposal and environmental regulations.

12.5.1 Required hydraulic connections



Function	Hydraulic connection	
	Single-acting	Double-acting
1 Rotation	-	1 x
Frame swivelling device	with coupled turning function	
2 Working depth	-	1 x
3 First-body working width	-	1 x
4 Working width	-	1 x
5 Packer arm	1 x	-
6 Hydraulic stone protection system Tower suspension	1 x	-

12.5.2 Connect the hydraulic lines

► Check the operating pressure of the hydraulic system on the tractor.
Maximum operating pressure = 200 bar.

► Turn off the tractor's hydraulic system or switch to the floating position (depressurise).

► Clean the hydraulic plug and the couplings.

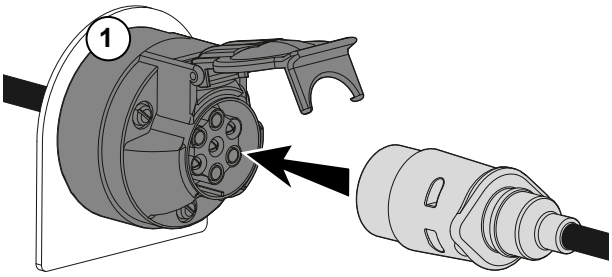
► Connect the hydraulic hoses in accordance with the table in chapter 12.5.1.
When connecting, ensure that the lock on the hydraulic connection clearly engages.

► Open the hydraulic system on the tractor.

12.6 Connecting the lighting cable

NOTE

- Route all connecting cables carefully and make allowances for the movements of the attached implement.
- Do not route connecting cables in the vicinity of slewing or rotating components.



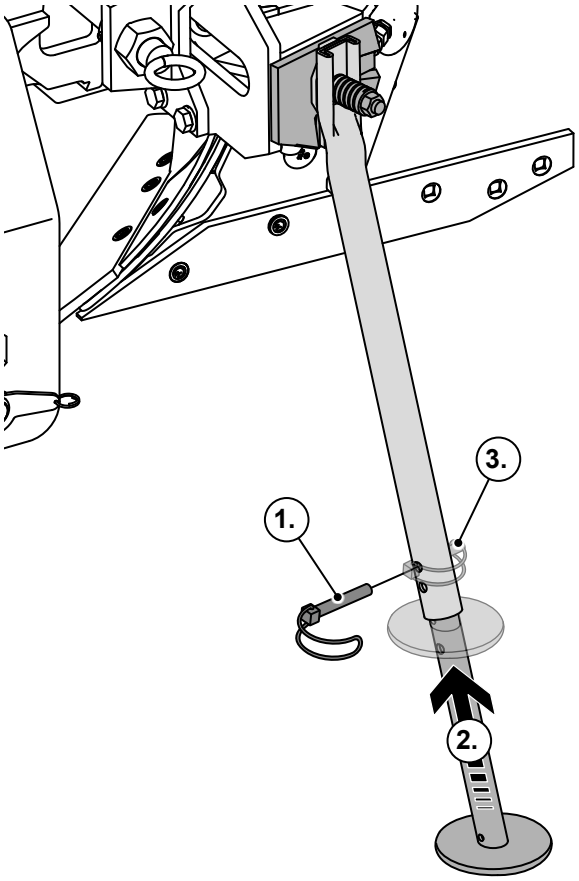
► Connect the connection cable for the lighting to the lighting socket (1) on the tractor.

13 Sliding in and folding up the parking support

Preparation

► Lift the plough using the three-point power lift until the parking support is free.

Sliding in

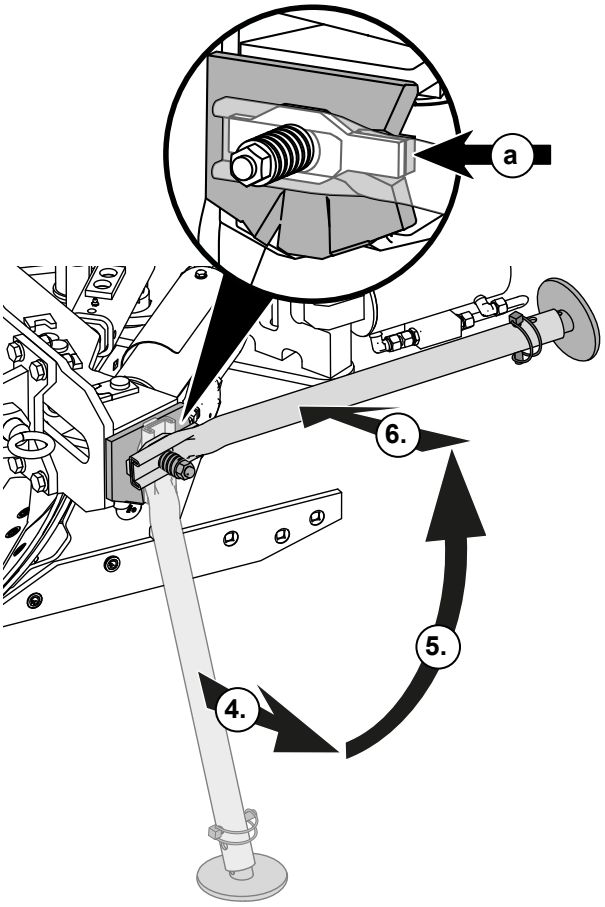


► 1.) Remove the hinged pin.

► 2.) Insert the inner pipe and pin it to the shortest position in the adjustment hole.

► 3.) Secure the hinged pin by throwing the safety catch.

Folding in



► 4.) Pull the parking support against the spring pressure.

► 5.) Fold up the parking support and...

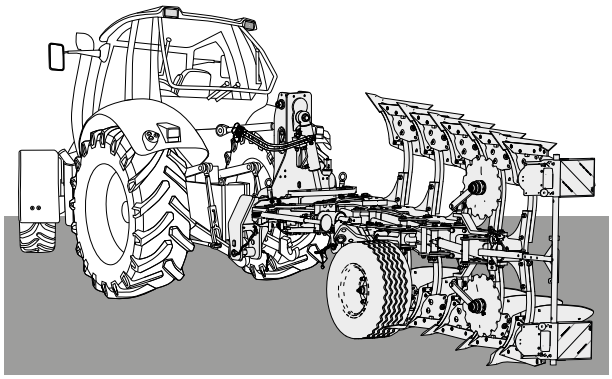
► 6.) ... lock it into the locking device (a).

14 Carrying out the turning test

DANGER
Risk of accident when turning the plough.
- *Before turning, ensure that there is nobody within the turning range.*

CAUTION
Risk of accident due to collision with the raised or turning plough.
- *Make sure that the implement does not collide with anything in its raised state, even when turning.*
- *Close the rear window on the tractor before carrying out the turning test.*

Information on the model



The following description assumes that the plough is on the right-hand side in the storage or working position.

Checks before the turning test

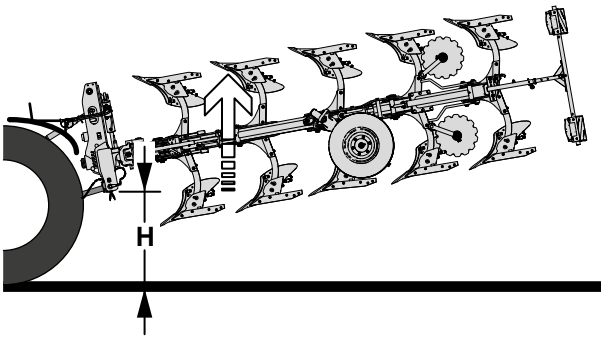
✓ The support (**a**) is folded up and secured - see chapter "Sliding in and folding up the parking support" - page [58].

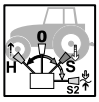
✓ The central lock is released - see chapter [18.2.2] - page [73]

When ploughing with hydraulic frame slewing

✓ The swivelling limiter is pinned in the working position - see chapter [18.2.2] - page [73].

Carrying out the turning test

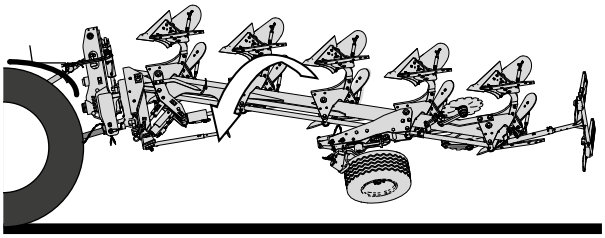


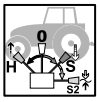
► 

Use the three-point power lift to lift the plough up completely.

H = Minimum lifting height for the bottom link

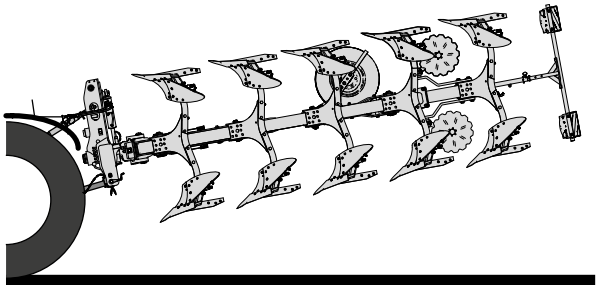
H = 85 cm



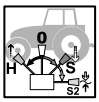
► 

Actuate the control device until the plough has turned.

For hydraulic frame slewing, actuate the control device until hydraulic frame slewing is pivoted out completely again.



Once the plough is in the end position

► 

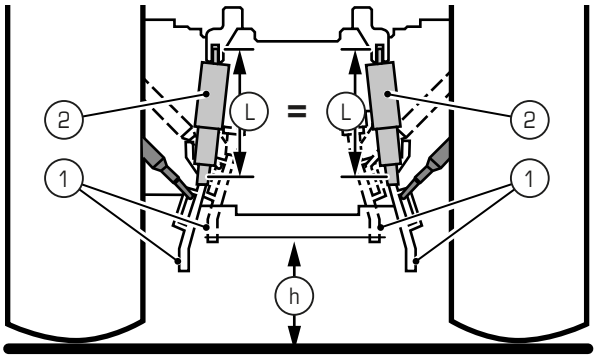
Release the control device.

After approximately 8 seconds, a new turn can be initiated.

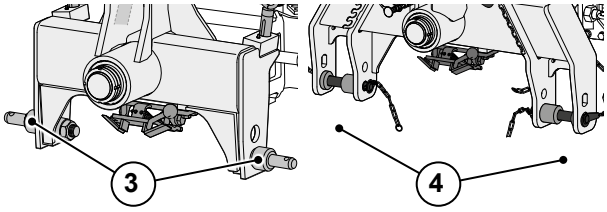
15 Preparing the machine, pre-adjustments

Rectifying turning faults

If it appears that the plough is not lifted high enough when turning:



► Shorten the lifting rods (2) to adjust the bottom link (1) higher.



► Offset the axle head bolts (3)/ bottom link bolts (4) downwards.

For instructions on offsetting the axle head bolts, see:
chapter 43 - page 118
chapter 44 - page 119

For instructions on offsetting the axle head bolts, see:
chapter 47 - page 122

► Attach the top link higher up on the tower.

► Turn the top link less.

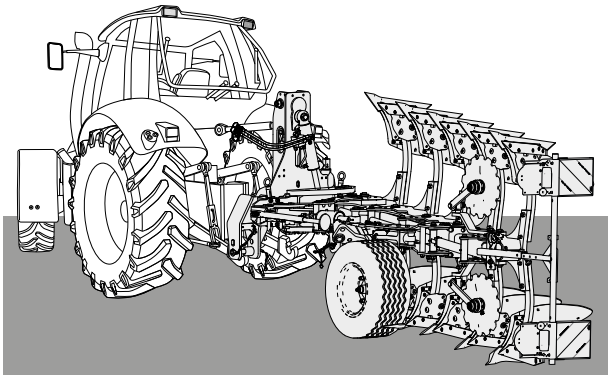
DANGER
General risk of accident while working with the implement.
- *Observe the safety instructions in the chapter „For your safety“ - page 25 in all cases.*

Risk of accident due to crushing between the tractor and the implement.
- *Turn off the tractor’s engine and remove the key from the ignition.*
- *When coupling the implement, do not stand between the tractor and the implement.*

WARNING
Risk of accident due to crushing during setup and adjustment work.
- *Care must be taken during all work to ensure that the implement is stable and has been secured to prevent it rolling away.*
- *Support the raised implement to prevent lowering.*

The following adjustments are described in the following chapters:
- Pre-adjusting the traction point
- Adjusting the first-body working width
- Adjusting the incline

15.1 Information on the model



The following description assumes that the plough is on the right-hand side in the storage or working position.

15.2 Required preparations

- ► "Coupling the implement" - page 53
- ► "Connect the hydraulic lines" - page 56
- ► "Sliding in and folding up the parking support" - page 58
- ► Set the plough down.
- ► Secure the tractor / implement to prevent it rolling away.
- ► Switch off the tractor engine.
- ► Secure the tractor to prevent it being started up without authorisation - remove the ignition key.

15.3 General adjustment instructions

Carry out the pre-adjustments on level, solid ground.

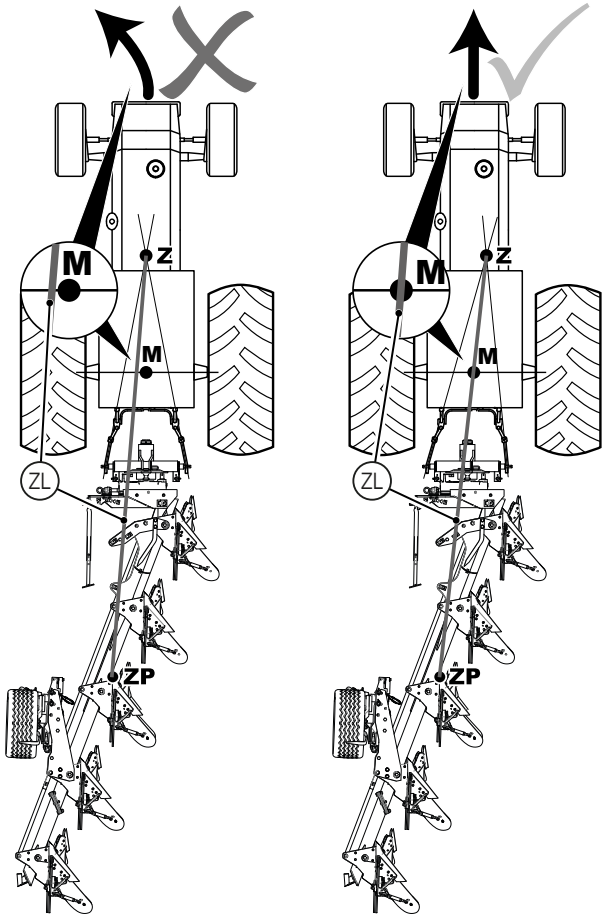
The traction point and the first-body working width can be adjusted before use on the tractor. Fine adjustment is then performed when ploughing.

If the traction point and first-body working width are to be adjusted,

- first adjust the traction point
- and then the first-body working width.

15.4 Pre-adjusting the traction point

15.4.1 Adjustment instructions



Z = intersection of the bottom link lines

M = middle of the rear tractor axle

ZP = plough traction point

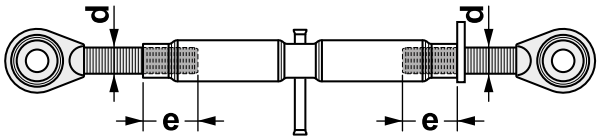
ZL = plough pull line

A correctly set traction point ensures that the tractor runs in the furrow without side pull.
The traction point is adjusted perfectly when the pull line ZL runs through the middle point of the tractor axle M.

The traction point and the first body working width can be pre-adjusted roughly in advance.
Fine adjustments are performed during use.

15.4.2 Ploughs with turnbuckle

Adjustment instruction



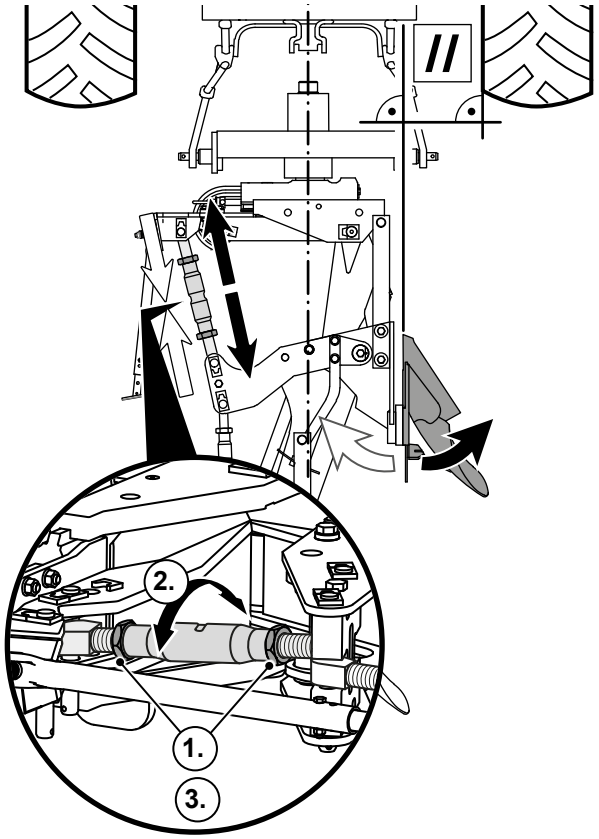
DANGER
Risk of accident due to stripping on the spindle thread.

- *When adjusting the turnbuckles, the minimum thread engagement, emin, of the threaded spindles must be at least 1.5 times the thread diameter (d). emin = 1.5 x d.*

Required tools

Spanner with a width of 55 mm (supplied)

Adjusting the traction point - plough with turnbuckle



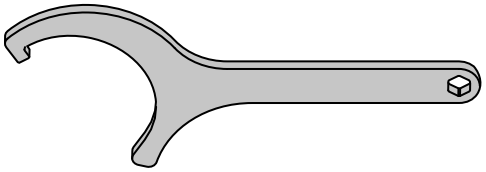
► 1.) Undo the AF 55 counter nuts.

► 2.) Turn the turnbuckle nut until the body sward coulters are parallel // to the tractor tyres.

► 3.) Secure the turnbuckle nut by tightening the locking nuts.

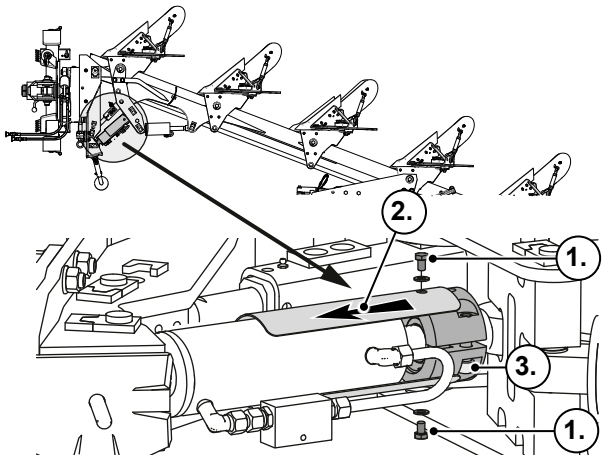
15.4.3 Ploughs with hydraulic frame slewing

Required tools



- Hook spanner with hexagon for a width of 13 mm (supplied)
- Allen key with a width of 10 mm

Adjusting the traction point - plough with hydraulic frame slewing



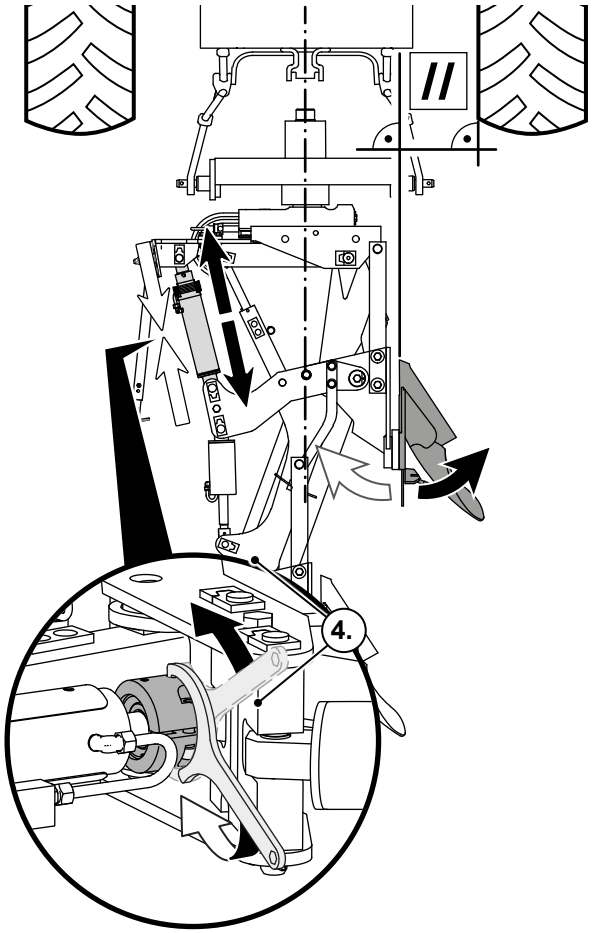
► 1.) Remove the hexagonal bolts (AF 13 mm) with washers.

► 2.) Slide the protection plate in.

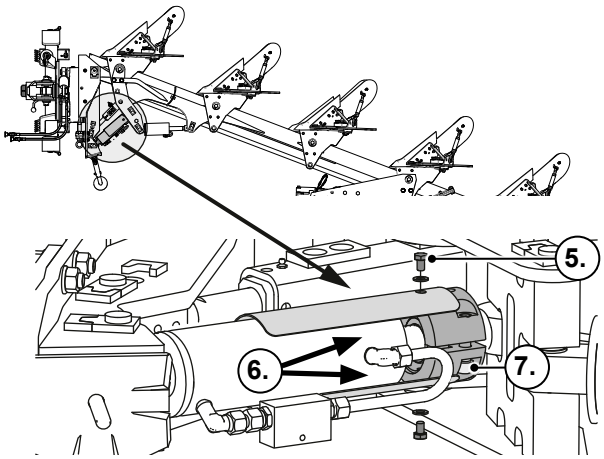
► 3.) Undo the clamping bolt (AF 10 mm).

15.5 Adjusting the first-body working width

15.5.1 Adjusting the ploughs with adjusting spindle



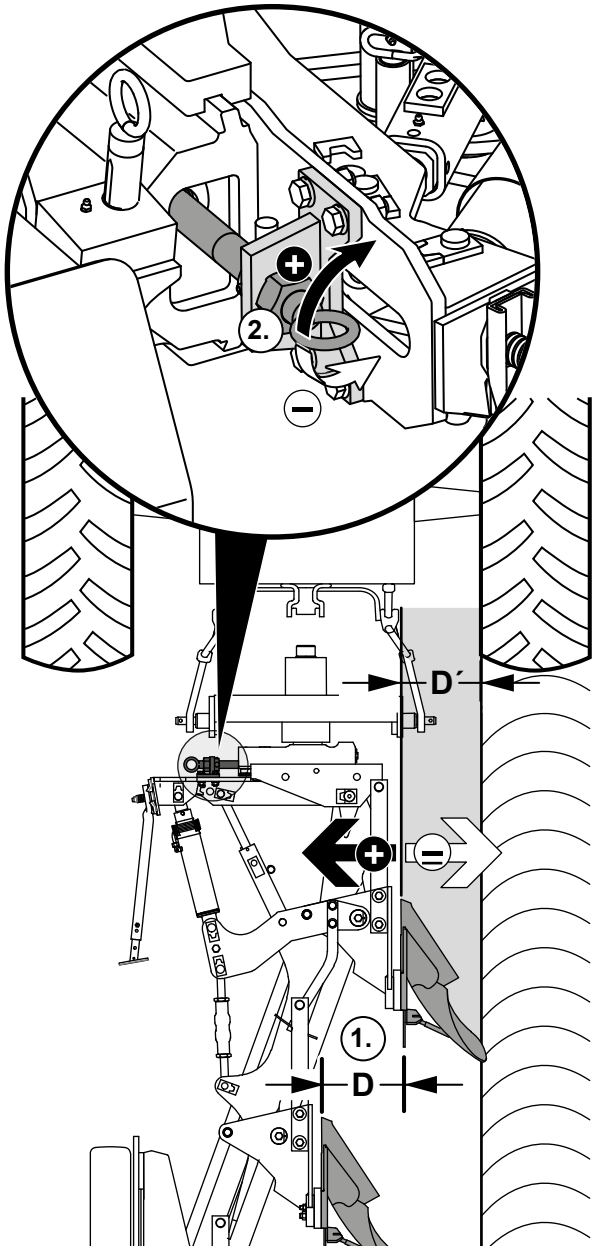
► 4.) Turn the cylinder stop until the body sward coulters are parallel // to the tractor tyres.



► 5.) Screw the protection plate tight.

► 6.) Leave a gap between the protection plate and the hydraulic hose. Align the protection plate by rotating the cylinder stop if necessary.

► 7.) Tighten the clamping bolt.



► 1.) Measure the interbody distance (D).

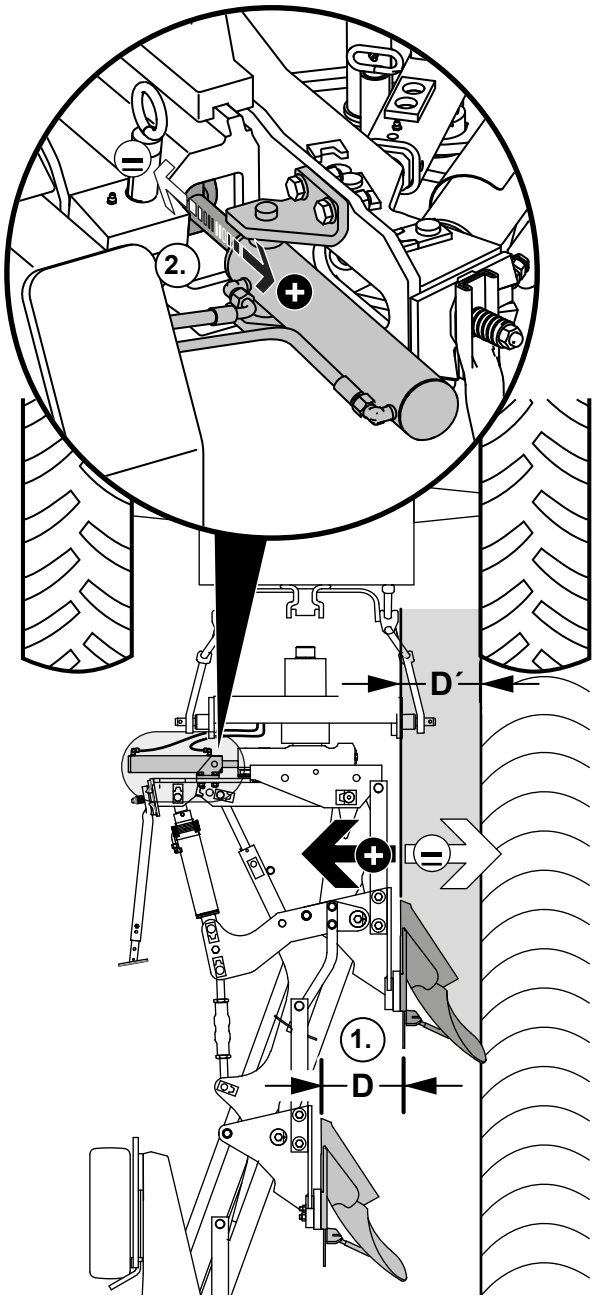
► 2.) Rotate the adjustment spindle and adjust the determined gap on the first body (D´). A ratchet secures the rotating spindle to prevent it rotating of its own accord.

⊕ =Rotate adjusting spindle to the right = increase first-body working width

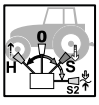
⊖ =Rotate adjusting spindle to the left = decrease first-body working width

15.5.2 Adjusting the ploughs with hydraulic cylinders

NOTE
When adjusting hydraulically, only adjust the traction point when the implement is at a standstill and lowered.



► 1.) Measure the interbody distance (D).

► 2.)  Actuate the control device for the tractor hydraulics until the determined gap on the first body (D´) is adjusted.

⊕ = Retract adjusting spindle
= increase first-body working width

⊖ = Extend adjusting spindle
= decrease first-body working width

16 MOVING THE PLOUGH INTO THE TRANSPORT POSITION

DANGER
General risk of accident while working with the implement.
- *Observe chapter 5.4 "Safety instructions - general usage" - page 25 under all circumstances.*

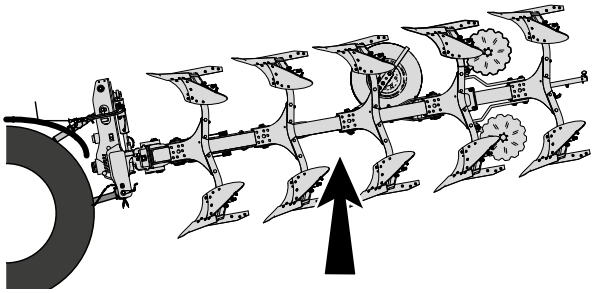
Danger of tipping when folding and unfolding implement parts.
- *Only fold and unfold implement parts on level ground.*

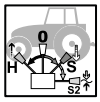
DANGER
Electric shock due to overhead power lines.
- *When lifting implements and folding/ unfolding implement parts, ensure that sufficient clearance is left for power lines.*

Required work

- Turn the plough onto the right-hand side.
- Lock the swivelling limiter.
- Lift the ploughs with depth control wheel into the transport position.
- Ploughs with combination wheel:
  - rotate into transport position.
  - lower onto the combination wheel.
  - uncouple the top link.
- Install the lighting.

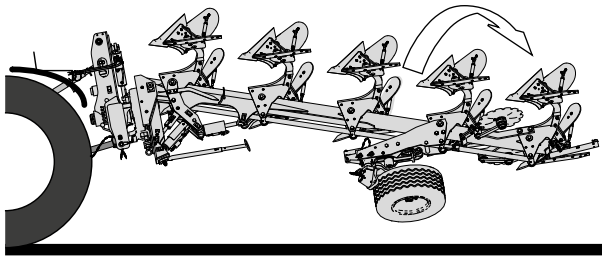
16.1 Turning the plough onto the right-hand side

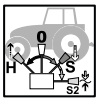


► 1.) 

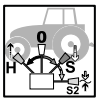
Lift the plough with the three-point power lift.

Minimum lifting height = 85 cm

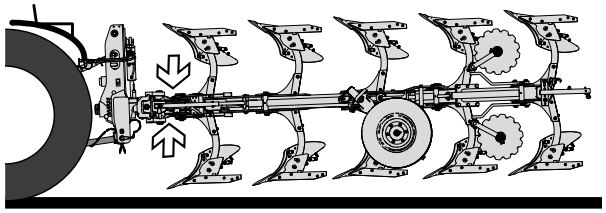


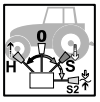
► 2.) 

Actuate the control device until the plough has rotated onto the right-hand side completely.

► 3.) 

For hydraulic frame slewing, actuate the control device until hydraulic frame slewing is pivoted in.

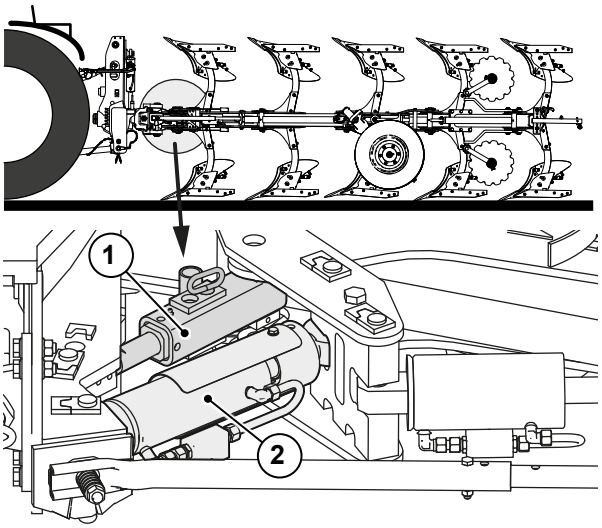


► 4.) 

Pivot hydraulic width adjustment in so that it is narrow behind the tractor.

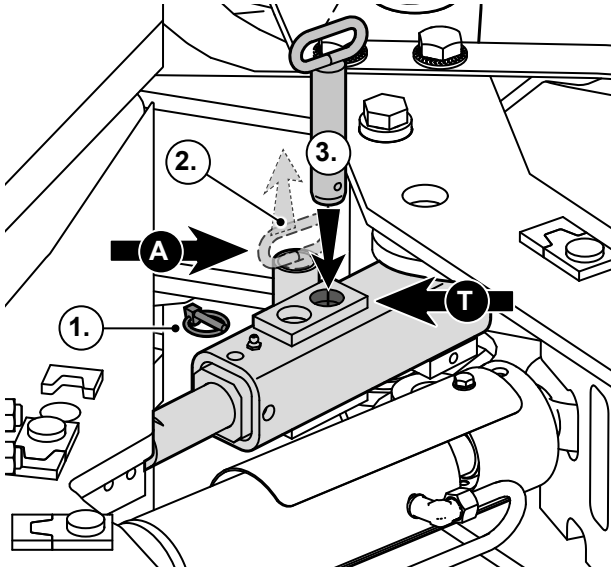
16.2 Pinning the swivelling limiter in the transport position

Note



- The swivelling limiter (1) is only installed in conjunction with hydraulic frame slewing (2).
- The plough must be pivoted in to the narrowest point.„Turning the plough onto the right-hand side“ - page 65

Pinning the swivelling limiter in the transport position



A = working position for the locking pin

T = transport position

► 4.) Remove the hinged pin.

► 5.) Remove the locking pin from the working position (A), ...

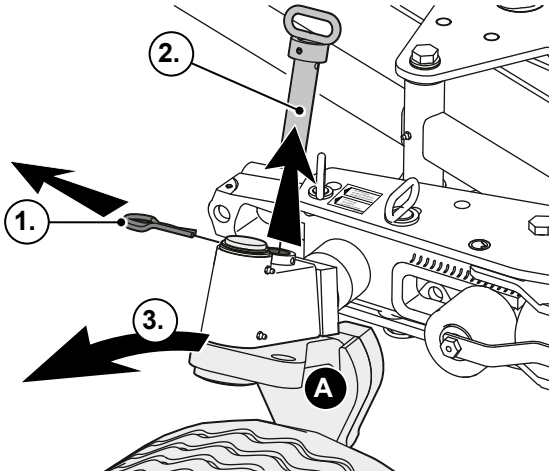
► 6.) .. pin it into the transport position (T) and secure with the hinged pin.

16.3 Turn the ploughs with combination wheel into the transport position

DANGER
Risk of accident when turning due to the combination wheel turning and the high weight of the wheel.
- *When turning the combination wheel, proceed with great care and if possible seek the assistance of a second person.*

16.3.1 Turn the D30 combination wheel into the transport position

Pinning the D30 combination wheel into the transport position

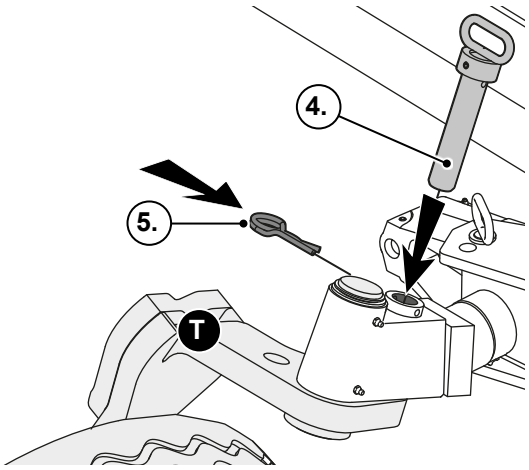


A = Working position

► 1.) Remove the spring cotter.

► 2.) Remove the locking pin.

► 3.) Turn the combination wheel into the transport position.

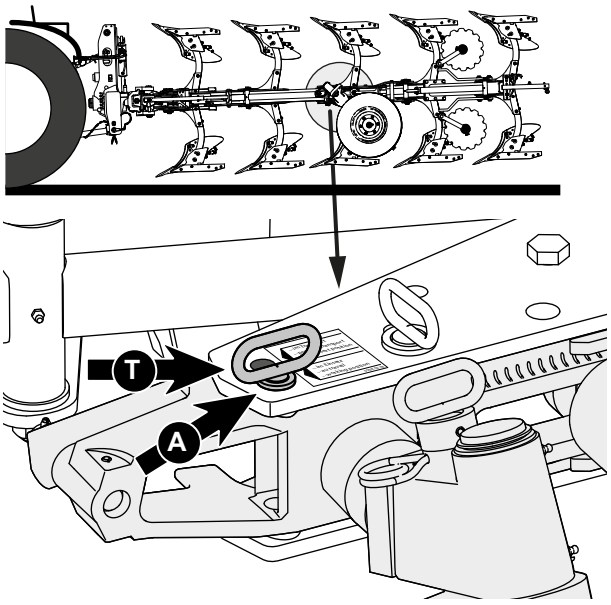


T = transport position

► 4.) Insert the locking pin and ...

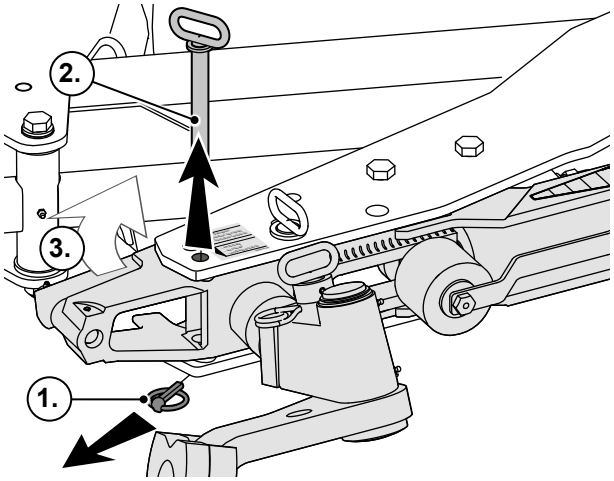
► 5.) ... secure with a spring cotter.

Pinning the D30 wheel console into the transport position



T = transport position

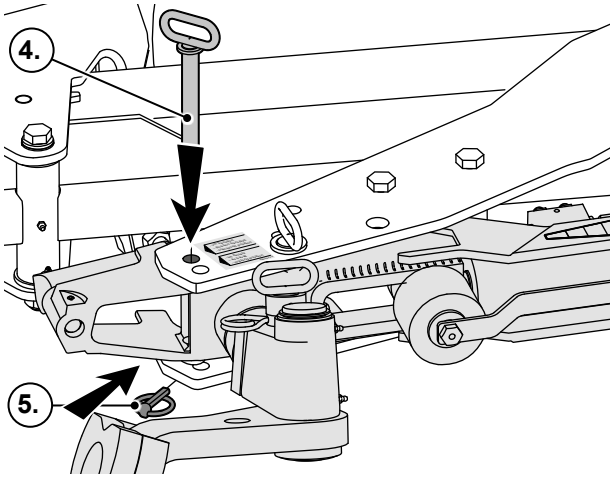
A = working position for the locking pin



► 1.) Remove the hinged pin.

► 2.) Remove the locking pin.

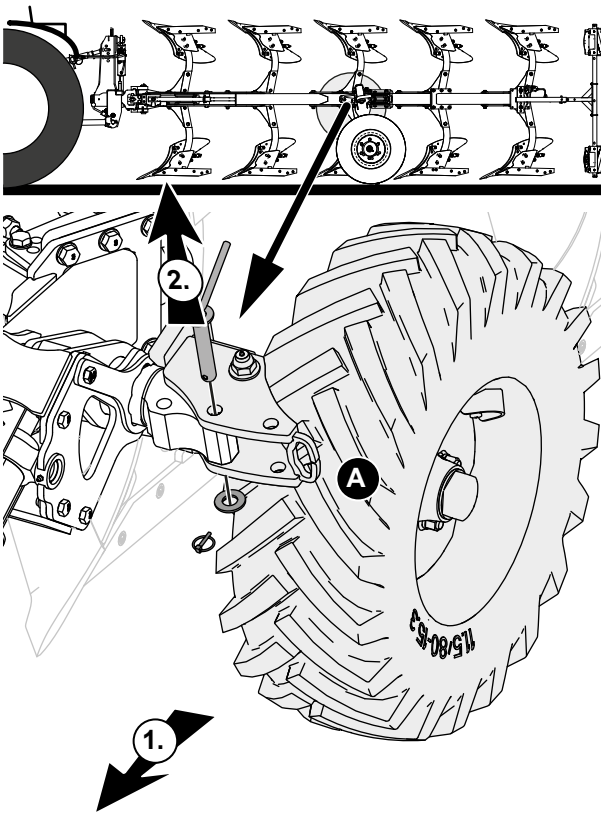
► 3.) Turn the wheel console into the working position.



► 4.) Insert the locking pin and ...

► 5.) ... secure with the hinged pin.

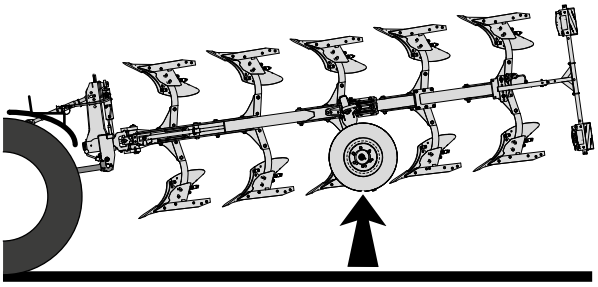
16.3.2 Turning the RCRH combination wheel into the transport position

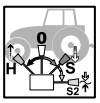


Ⓐ = Working position

► 1.) Remove the hinged pin and washer.

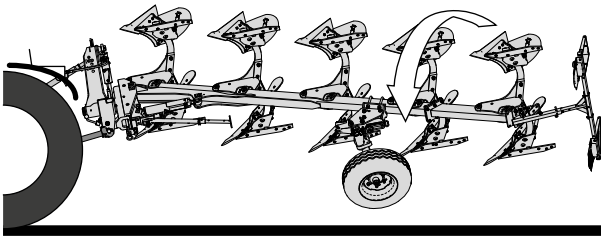
► 2.) Remove the locking pin.

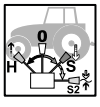


► 3.) 

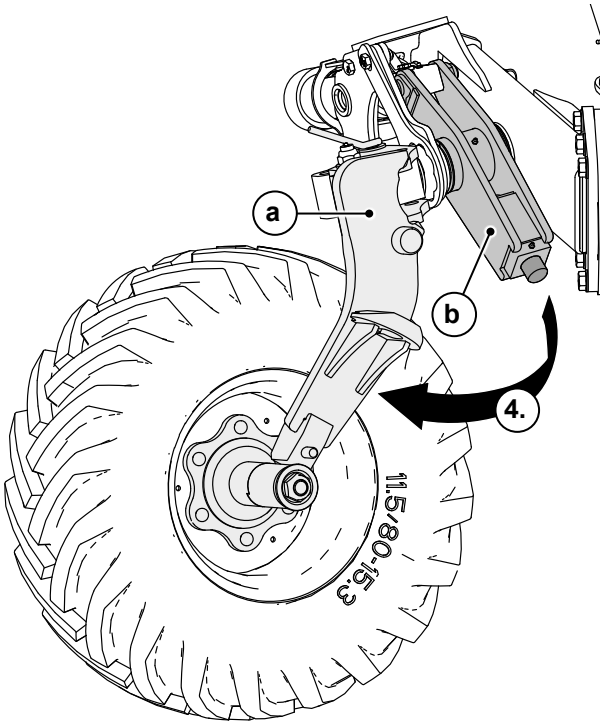
Lift the plough with the three-point power lift..

Minimum lifting height = 85 cm



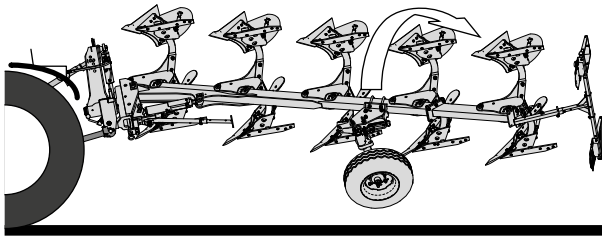
► 4.) 

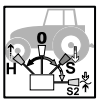
Turn the plough slowly until the RCRH combination wheel unlocked.



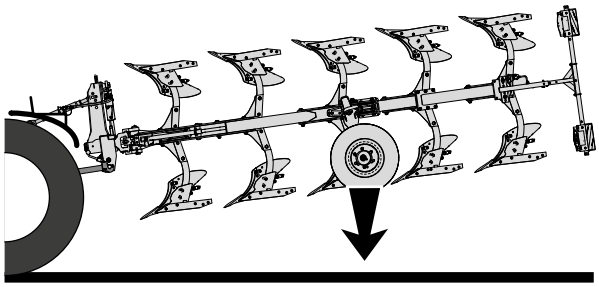
NOTE

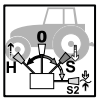
- *When turning the plough, the wheel arm (a) unlocks from the swivel arm (b).*



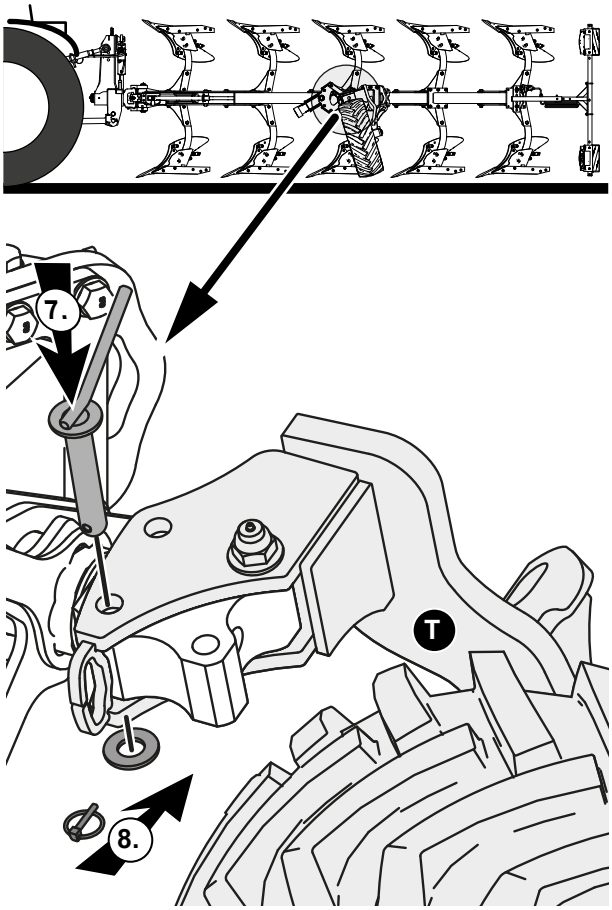
► 5.) 

Rotate the plough back to the right-hand side.



► 6.) 

Lower the plough.



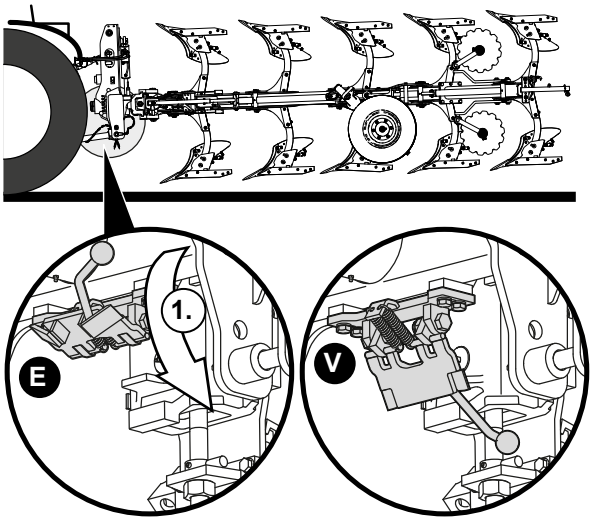
T = Transport position

► 7.) Insert the locking pin and ...

► 8.) ... secure with washer and hinged pin.

►

16.3.3 Locking the central lock



► 1.) Lock the central lock.

V = locked = transport position, turning locked

E = unlocked = working position, turning possible

16.3.4 Turning the plough into the transport position

DANGER

Risk of accident when turning the plough.

Before turning, ensure that there is nobody within the turning range.

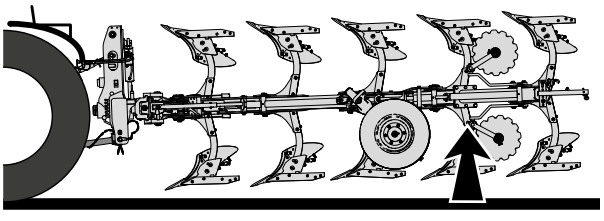
CAUTION

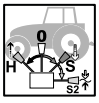
Risk of accident due to collision with the raised or turning plough.

Make sure that the implement does not collide with anything in its raised state, even when turning.

- *Close the rear window on the tractor.*

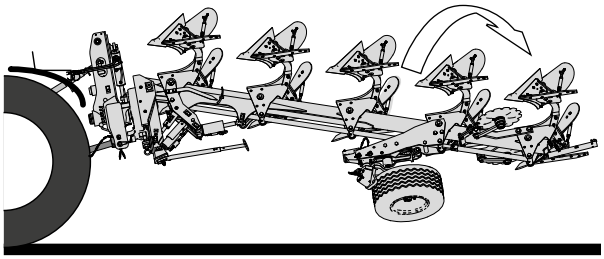
Working position

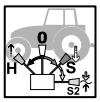


► 1.) 

Lift the plough with the three-point power lift.

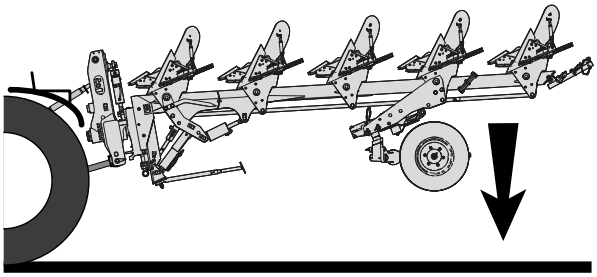
Minimum lifting height = 85 cm

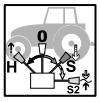


► 2.) 

Turn the plough slowly until the central lock engages.

Transport position



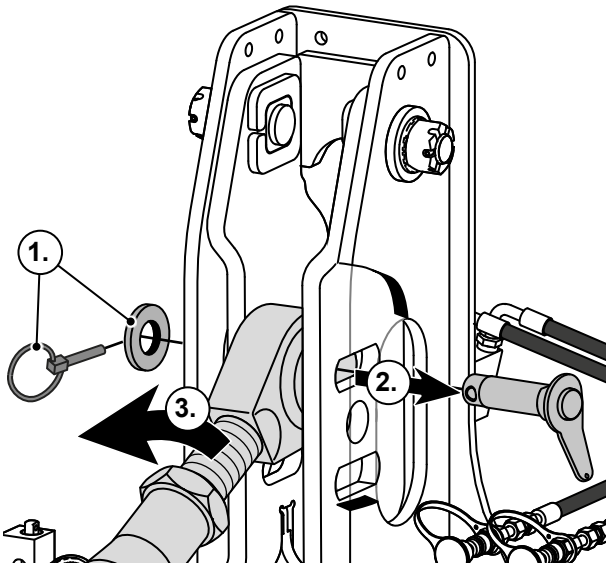
► 3.) 

Use the three-point power lift to lower the plough until the combination wheel meets the ground.

16.3.5 Uncoupling the top link

NOTE

- Always also consult the operating instructions of the tractor manufacturer when uncoupling.
- Before coupling ensure that the top link is relieved of load.

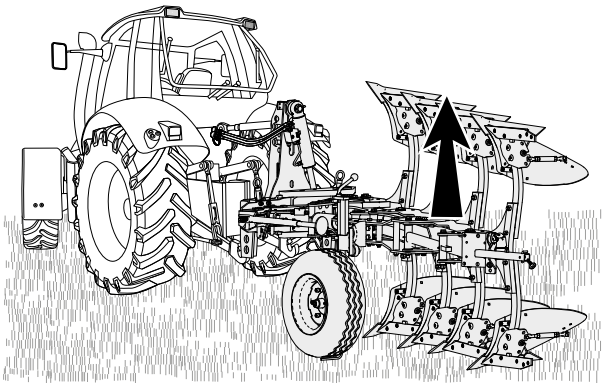


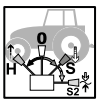
► Uncouple the top link.

For a description, see chapter "Uncoupling the top link" - page 96.

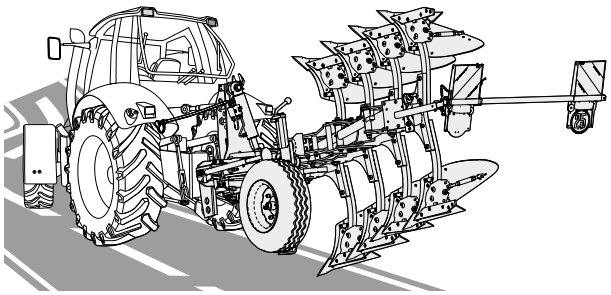
17 Travelling by road

16.4 Lifting the ploughs with depth control wheel into the transport position



► 1.) 

Lift the plough out of the working position and into the transport position.



► 2.) Lock the lateral movement of the tractor's bottom link (tractor operating instructions).

► 3.) Lock the tractor's control devices (tractor operating instructions).

DANGER
General risk of accident while working with the implement.

- *Observe the safety instructions in chapter „Safety instructions - general usage“ - page 25 in all cases, in particular in chapter „Safety instructions - Travelling by road / transport“ - page 28.*

Risk of accident due to riding on the implement

- *Riding on the implement and standing within hazard zones are prohibited.*

Risk of accident due to unsecured attachments.

- *Secure all attachments to prevent uncontrolled movements using the retaining system provided (transport lock) or other suitable measures.*
- *Always use the covers supplied.*

Risk of tipping due to the large centrifugal mass of the implement.
When cornering, the large centrifugal mass can cause the implement to tip over.

- *Drive slowing when cornering and making turns.*

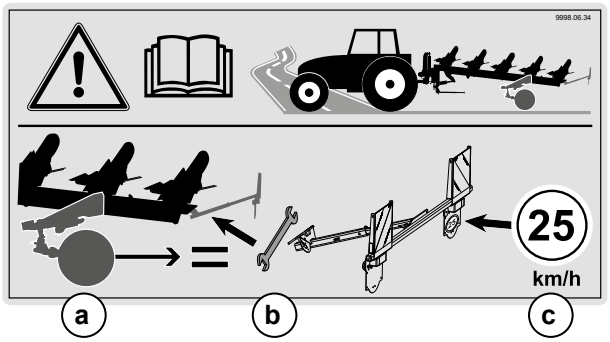
Observe chapter „Notes on transport and lighting“ - page 127.

17.1 Preparations for travelling by road

To travel by road, move the implement from the storage or working position to the transport position.
More information on this can be found in chapter 16 "Moving the plough into the transport position" - page 64.

17.2 Driving instructions

- Adapt your driving speed to conditions on the road or track.
- Max. speed = 25 km/h
- Max. speed when transporting on a combination wheel = 25 km/h



- Observe the information signs on the implement. The signs are only attached in conjunction with the combination wheel.

Meaning:

a) Transporting by road is only permitted on the combination wheel and with lighting.

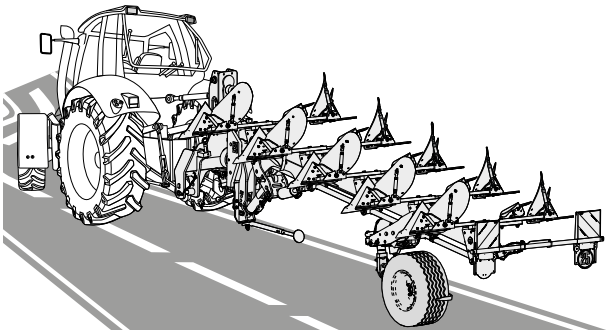
b) The lighting must be installed.

c) The lighting must have a 25 km/h sign.

NOTE - RJR DEPTH CONTROL WHEEL

When using an RJR depth control wheel, no lighting can be installed.
A plough with an RJR supporting wheel is not permitted to be driven on roads.

17.3 Before moving off, check that



- The parking support is folded in and secured - see chapter "Sliding in and folding up the parking support" - page 58.
- All hydraulic control devices are locked (tractor operating instructions).
- The bottom link lateral lock is applied (tractor operating instructions).
- The lighting is installed.
- Indicators, tail lights and reversing lights are working.
- The pick-up arm is folded into the transport position (pick-up arm operating instructions).

18 Moving the plough from the transport position to the working position

DANGER
General risk of accident while working with the implement.

- *Observe chapter chapter 5.4 "Safety instructions - general usage" - page 25 under all circumstances.*

Danger of tipping when folding and unfolding implement parts.

- *Only fold and unfold implement parts on level ground.*

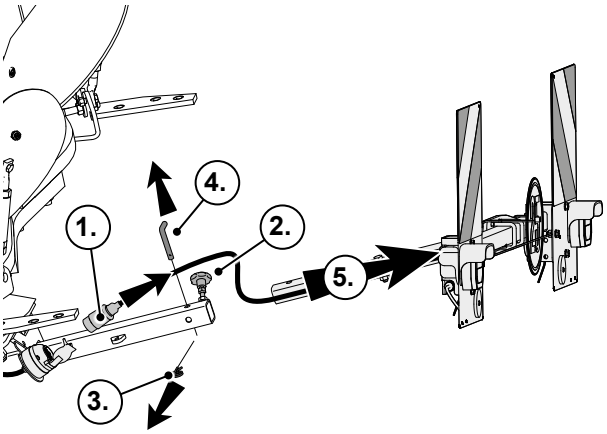
DANGER
Electric shock due to overhead power lines.

- *When lifting implements and folding/ unfolding implement parts, ensure that sufficient clearance is left for power lines.*

Required work

- Remove the lighting.
- Turn the ploughs with combination wheel into the working position.
- Lower the ploughs with depth control wheel into the working position.
- Release the swivelling limiter.
- Move the subsoiler into the working position.

18.1 Removing the lighting



► 1.) Pull out the lighting cable plug.

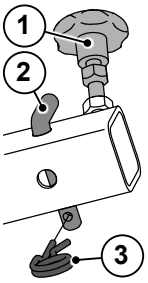
► 2.) Remove the spring cotter.

► 3.) Pull the locking pins out.

► 4.) Undo the star grip screw and...

► 5.) ... Remove the lighting bar.

To store the locking pin:

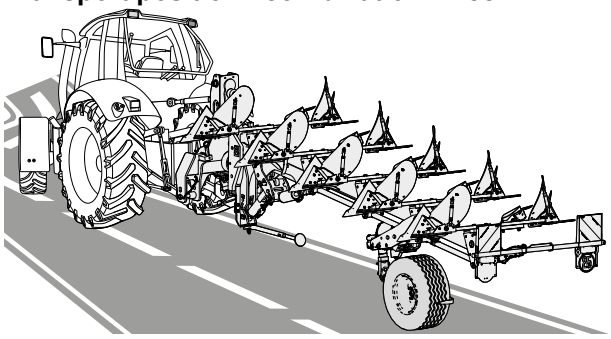


► Screw the star grip screw (**1**) tight.
► Insert the locking pin (**2**) into the frame tube and secure with the spring cotter (**3**).

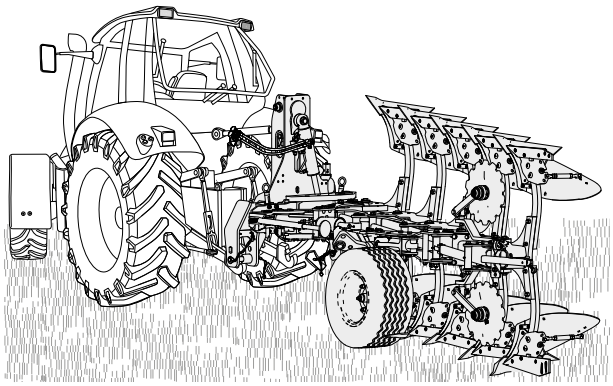
18.2 Turn the plough with combination wheel into the working position

Prior to working on the field, the plough must be turned from the transport position onto the right-hand side.

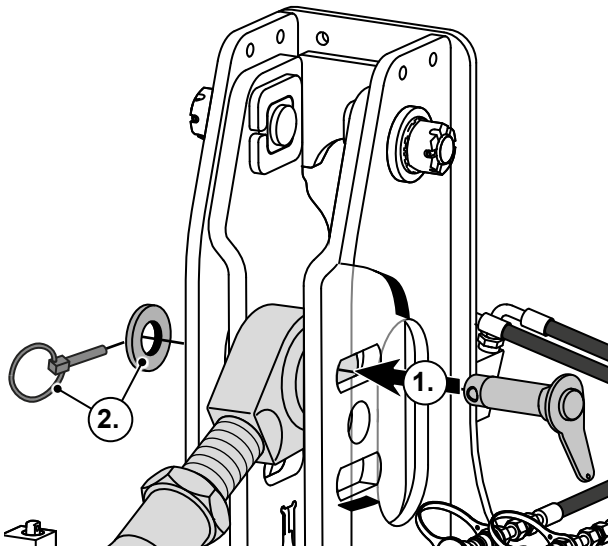
Transport position - combination wheel



Working position - combination wheel



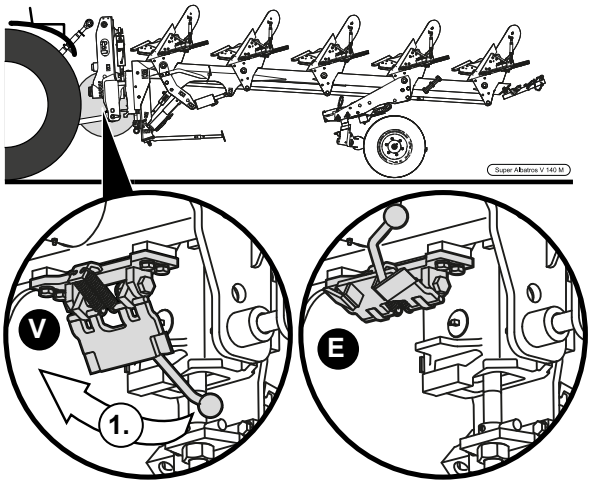
18.2.1 Coupling the top link



► Couple the top link.

For the description, see chapter 12.4 "Couple the top link" - page 55

18.2.2 Unlocking the central lock



► 1.) Unlock the central lock.

V =	locked =	Transport position Rotation locked.
E =	unlocked =	Working position Rotation possible

18.2.3 Turning the plough onto the right-hand side

DANGER

Risk of accident when turning the plough.

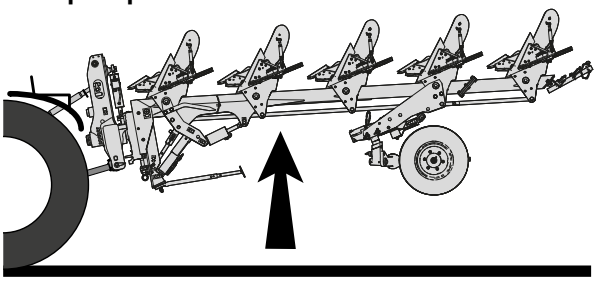
- *Before turning, ensure that there is nobody within the turning range.*

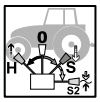
CAUTION

Risk of accident due to collision with the raised or turning plough.

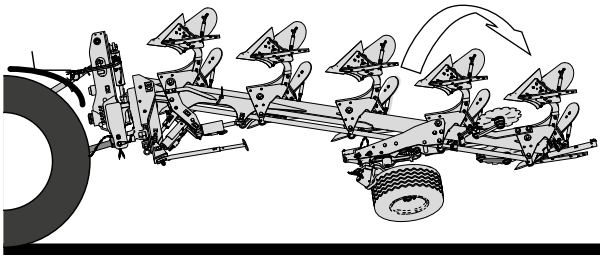
- *Make sure that the implement does not collide with anything in its raised state, even when turning.*
- *Close the rear window on the tractor.*

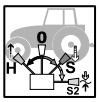
Transport position



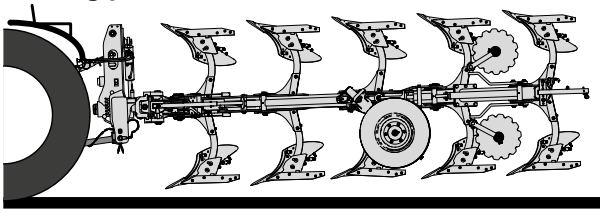
► 1.)  Lift the plough with the three-point power lift.

Minimum lifting height = 85 cm

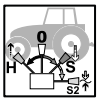


► 2.)  Actuate the control device until the plough has rotated onto the right-hand side completely.

Working position



Once the plough is in the end position.

► 3.)  Release the control device.

► 4.) Lower the plough with the three-point power lift.

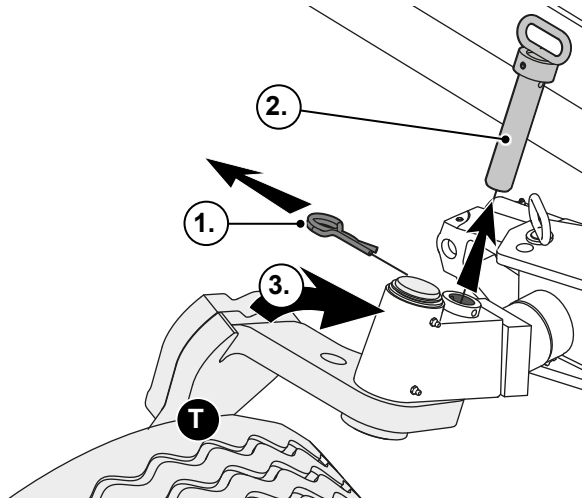
18.2.4 Turning the D30 combination wheel into the working position

DANGER

Risk of accident when turning due to the combination wheel turning and the high weight of the wheel.

- *When turning the combination wheel, proceed with great care and if possible seek the assistance of a second person.*

Turning the D30 wheel into the working position

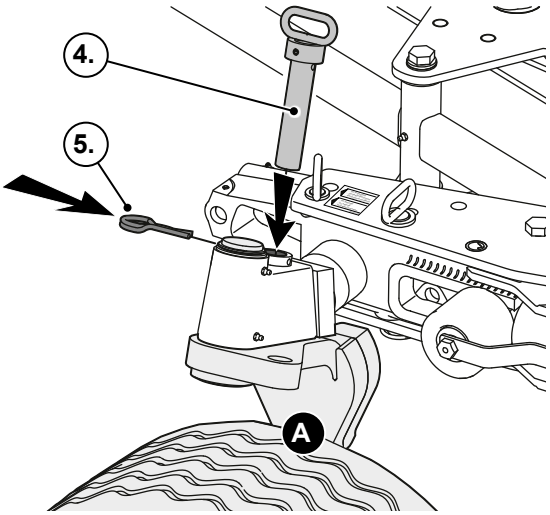


T = transport position

► 1.) Remove the spring cotter.

► 2.) Remove the locking pin.

► 3.) Turn the combination wheel into the working position.

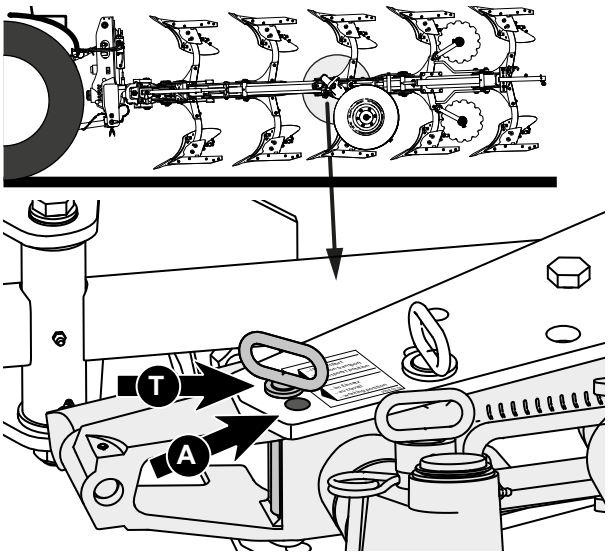


A = Working position

► 4.) Insert the locking pin and ...

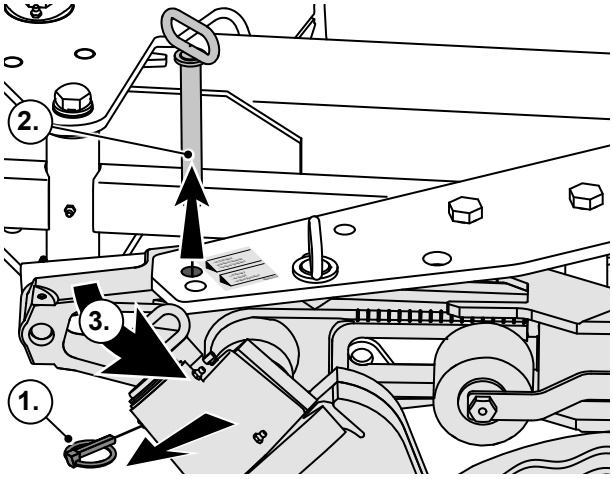
► 5.) ... secure with a spring cotter.

Turning the D30 wheel console into the working position



T = Locking pin in transport position

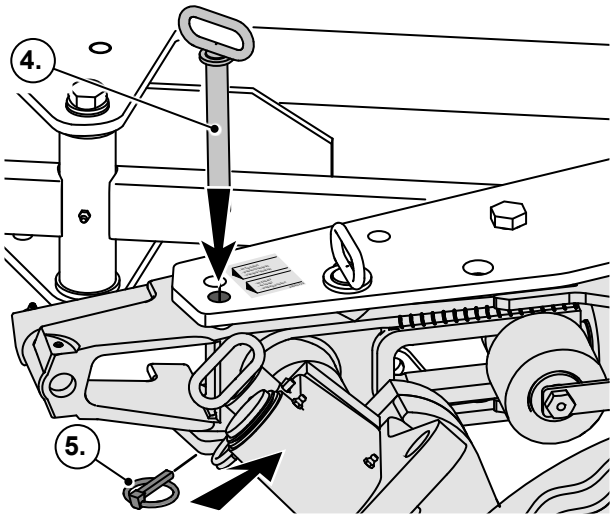
A = Working position



► 1.) Remove the hinged pin.

► 2.) Remove the locking pin.

► 3.) Turn the wheel console into the working position.



► 4.) Insert the locking pin and ...

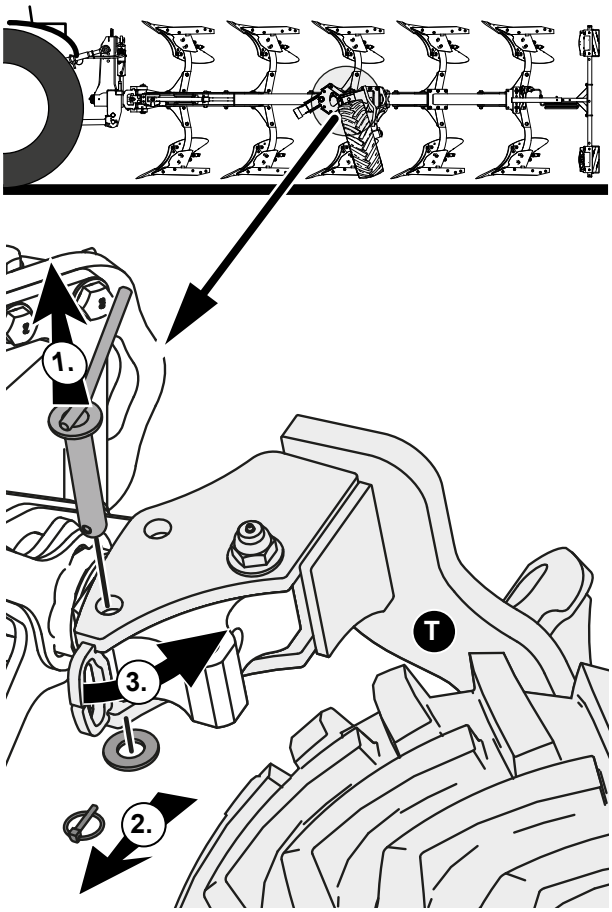
► 5.) ... secure with the hinged pin.

18.2.5 Turning the RCRH combination wheel into the working position

DANGER

Risk of accident when turning due to the combination wheel turning and the high weight of the wheel.

- *When turning the combination wheel, proceed with great care and if possible seek the assistance of a second person.*

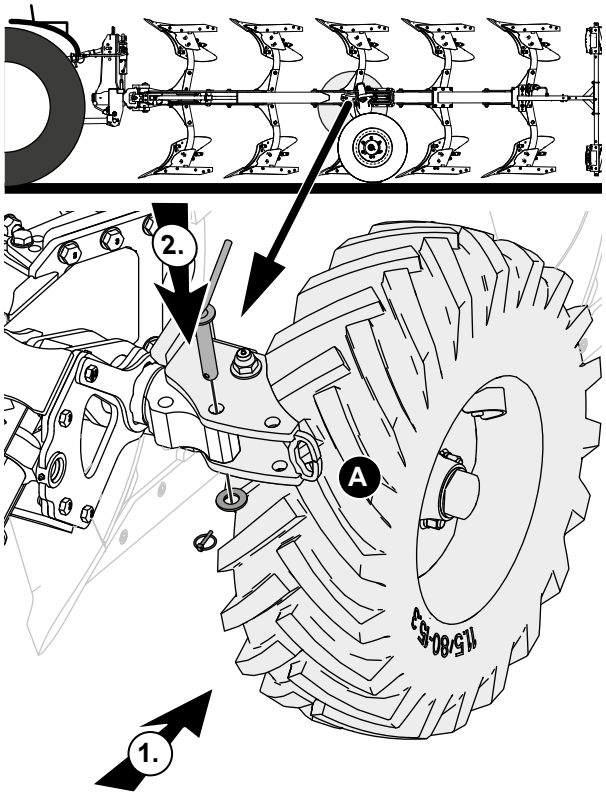


Ⓣ = Transport position

► 1.) Remove the hinged pin and washer.

► 2.) Remove the locking pin.

► 3.) Turn the combination wheel into the working position.

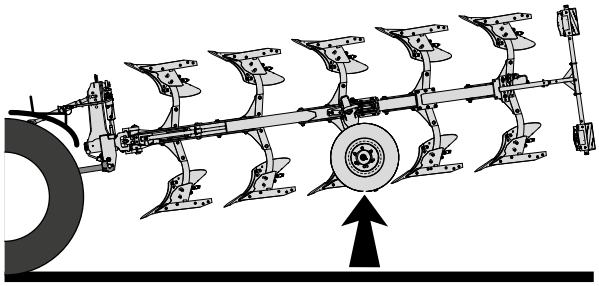


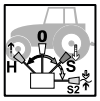
A = Working position

► 4.) Insert the locking pin and ...

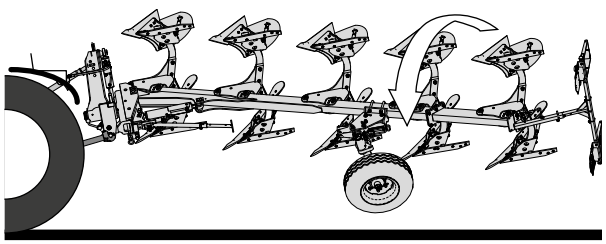
► 5.) ... secure with washer and hinged pin.

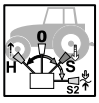
18.2.6 Engage the wheel arm in the working position



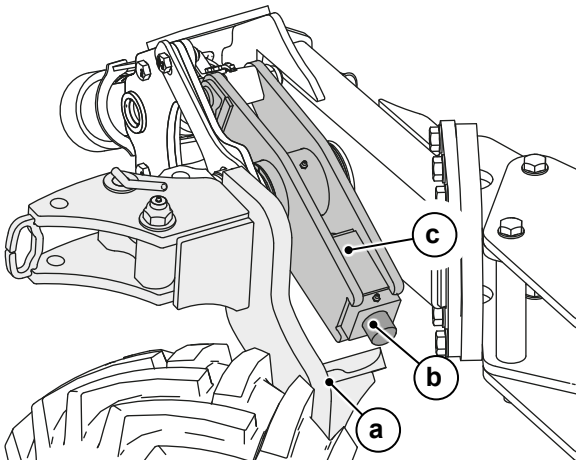
► 1.)  Lift the plough with the three-point power lift..

Minimum lifting height = 85 cm



► 2.)  Turn the plough slowly until the RCRH combination wheel engages.

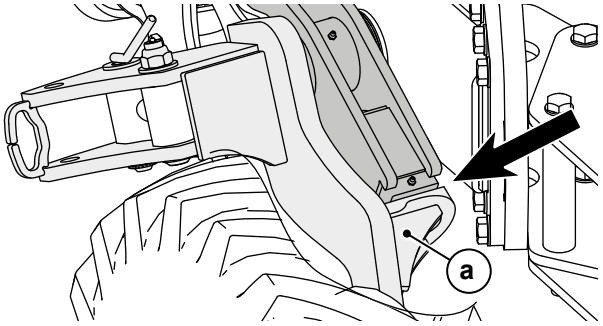
Wheel arm (a) unlocked

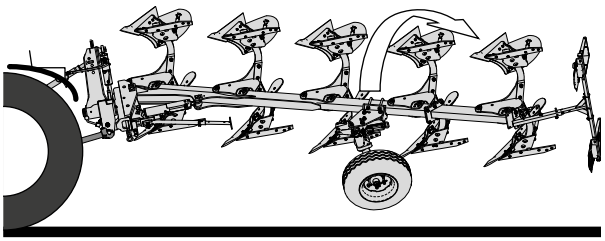


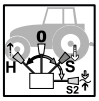
NOTE

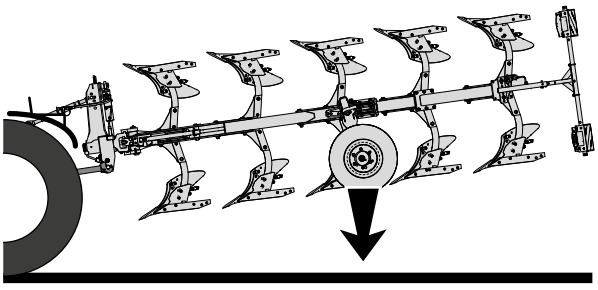
- *When turning the plough,* the wheel arm (a) engaged at the locking pin (b) of the swivel arm (c).

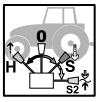
Wheel arm (a) engaged





► 3.)  Rotate the plough back to the right-hand side.

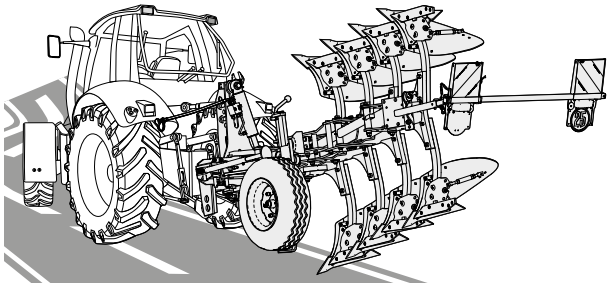


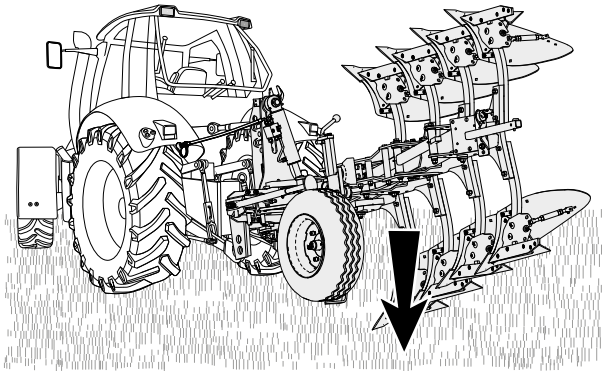
► 4.)  Lower the plough.

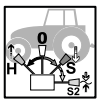
►

18.3 Lowering the plough with depth control wheel into the working position

Transport position - depth control wheel



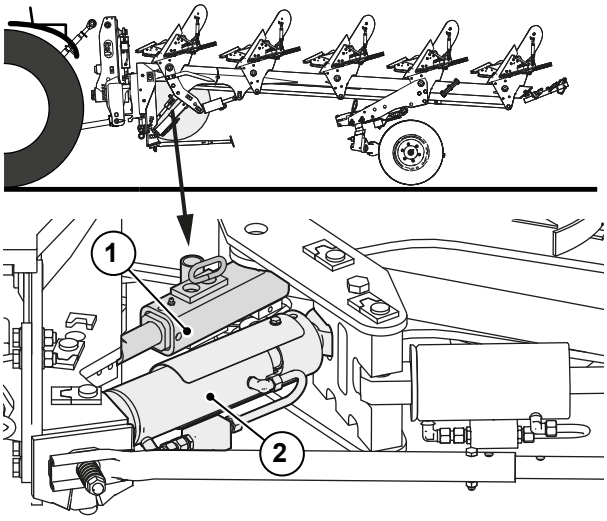


► 

Lower the plough from the transport position into the working position.

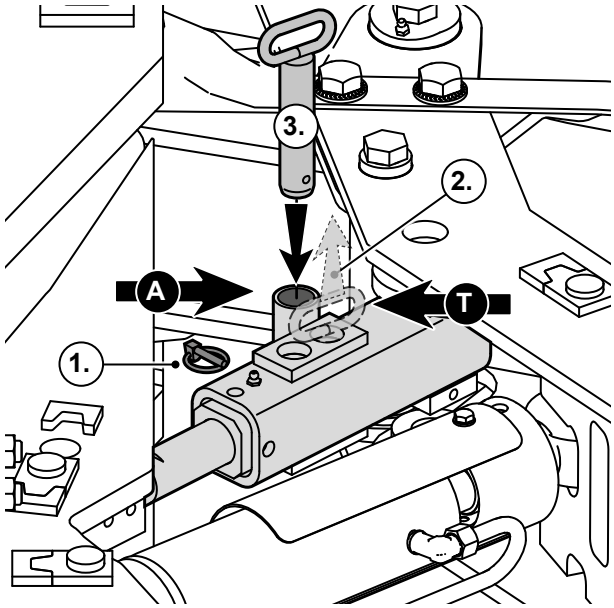
18.4 Pinning the swivelling limiter in the working position

Note



The swivelling limiter (**1**) is only installed in conjunction with hydraulic frame slewing (**2**).

Pinning the swivelling limiter in the working position



T = Locking pin in transport position

A = Working position

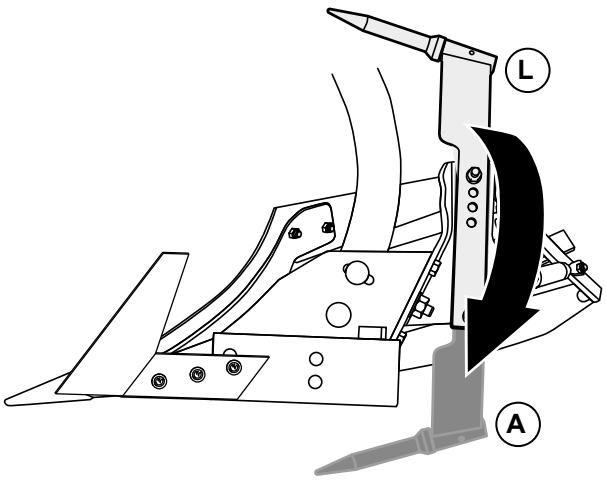
► 1.) Remove the hinged pin.

► 2.) Remove the locking pin from the transport position (T), ...

► 3.) .. pin it into the working position (A) and secure with the hinged pin.

18.5 Moving the subsoiler into the working position

Adjustment instructions



Before starting work, the subsoiler on the ground side must be moved from the storage position (**L**) to the working position (**A**).

Required tools

- 2 ring spanners with a 24 mm width
- Torque spanner

19 WORKING INFORMATION

19.1 Safety during operation

DANGER
Risk of accident due to riding on the implement
- *Riding on the implement and standing within hazard zones are prohibited.*

DANGER
General risk of accident while working with the implement.
- *Always observe the safety instructions in chapter 1.0 - page 9.*

WARNING
Risk of accident while using the implement in the field.
- *Prior to starting work, familiarise yourself with all equipment and operating controls, and their functions.*

Warning
Risk of tipping due to the large centrifugal mass of the implement.
When working on a slope, the large centrifugal mass can cause the implement to tip over.
- *Pay attention to the position of the centre of gravity when lifting and turning.*

Risk of accident due to crushing during setup and adjustment work.
- *Care must be taken during all work to ensure that the implement is stable and has been secured to prevent it rolling away.*

19.2 Working values: Working speed / working depth

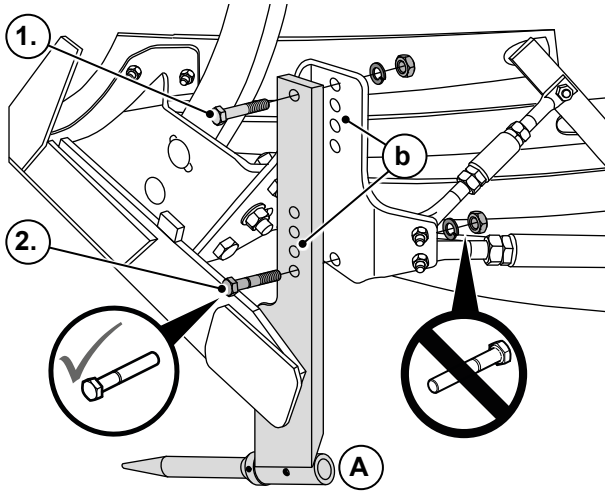
Working speed

Working speed = 4 km/h - 10 km/h

The working speed depends on the following:
- The composition of the ground
- Plant cover
- The working width
- The working depth
- Wear and tear

Moving the subsoilers

NOTE
When assembling, observe the position and alignment of the shear bolt (2).



► 1.) Remove the pivot bolt.

► 2.) Remove the shear bolt.

► 3.) Turn the subsoiler into the working position (A) and install.

► 4.) Adjust the working depth by offsetting the subsoiler in the connection points.

For information on adjusting the depth, see chapter "Adjusting the subsoiler" - page 87.

► 5.) Insert the shear bolt (2) and the pivot bolt (1) from the subsoiler.

► 6.) Tighten the threaded connection to the correct torque.

Torque - shear bolt

Size	Quality grade 4.6		Width across flats
	Nm	lb-ft	
M 16	71	53	24

Torque - pivot bolt

Size	Quality grade 8.8		Width across flats
	Nm	lb-ft	
M 16	230	170	24

Solid sheet body working depth

Body designation	Maximum working depth approx. cm
BP-351 O	40
BP-322 P	38
BP-320 W	30
BP-341 W	35
BP-351 W	35
BP-365 P	30

Slatted body working depth

Body designation	Maximum working depth approx. cm
BP-331 WS	30
BP-322 PS	38
BP-323 PS	38
BP-355 RS	40
BP-351 WS	35

19.3 Working information

- Release the lateral lock for the bottom links (tractor operating instructions).
- Set the tractor hydraulics to traction control (observe the tractor operating instructions).
- The top link must be positioned at the front of the elongated hole when ploughing.
  Also see „Couple the top link“ - page 55.
- Adhere to the working speed.
  Too high a speed increases wear.
- Do not drive round tight corners when in use.
- Lift the plough before turning or reversing.
- When working on a hillside, adhere to the maximum gradient of 20 ° in order to maintain operational safety on the implement.
- Only turn the plough when the tractor is stopped or driving forwards.
  Also see chapter "Operational safety on a hillside" - page 79.
- When ploughing across the gradient:

  If the ground is ploughed slope downwards, the first plough body ploughs wider.

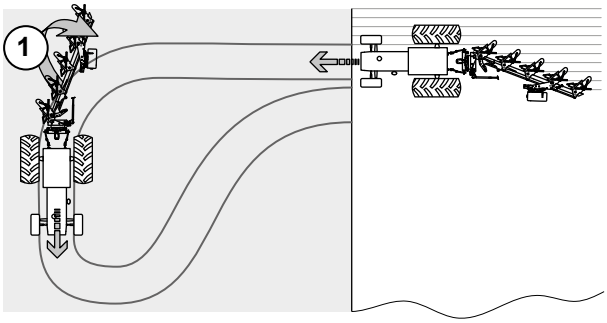
  If the ground is ploughed slope upwards, the first plough body ploughs narrower.

19.4 Driving instructions - turning on headlands

Two turning options are available depending on the width of the headland.

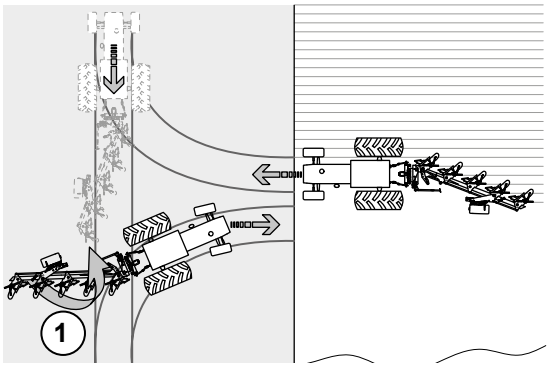
Turning 1 - driving the unit in a semicircle

For wide headlands.



Turning 2 - driving the unit backwards

For narrow headlands.



NOTE

- (1) Only turn the plough when the tractor is stopped or driving forwards.
- Turning 1 should always be preferred if possible.

19.5 Operational safety on a hillside

Operational safety of the implement is guaranteed when working perpendicularly across the slope, from left to right and vice-versa, as well as up and down the hillside up to a maximum gradient of 20°.

NOTE

This statement on operational safety on hills only relates to the functions of the implement and NOT to the stability of the tractor/implement unit.
This is determined by the equipment on the tractor. In any case, it is the responsibility of the tractor driver to ensure stability.

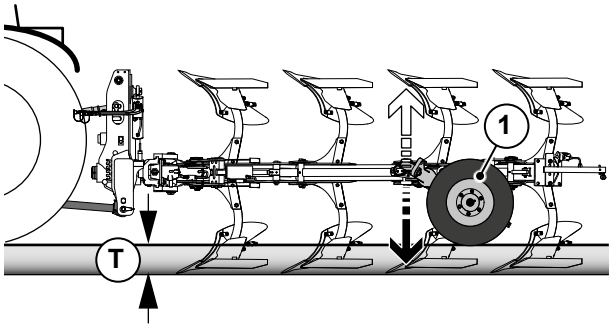
20 Adjustments after ploughing

The following adjustments are described in the following chapters:

- Adjusting the working depth
- Aligning the plough parallel to the ground78
- Adjusting the incline79

20.1 Adjusting the working depth

20.1.1 Adjustment instructions



T = Working depth

The working depth is adjusted using the swinging supporting or combination wheel (**1**), or using the RJR wheel.

After checking the working depth, check that the plough is parallel to the ground.

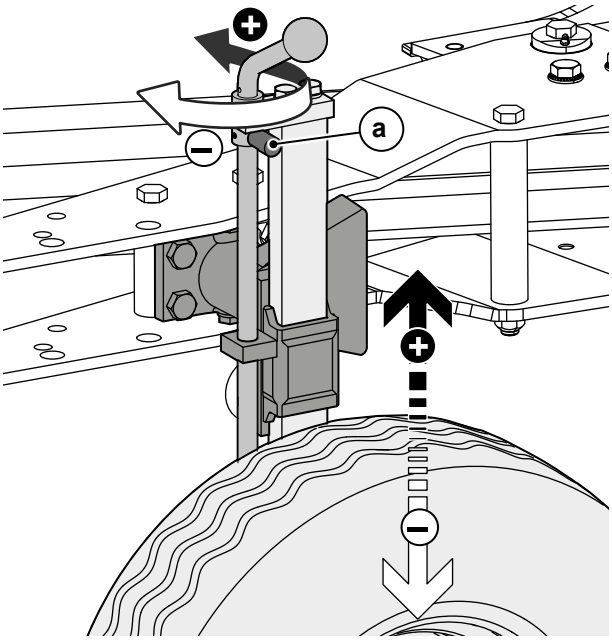
20.1.2 Preparation

► Plough for a few metres with the plough in the home position.

► Measure the working depth.

► Lift the plough slightly if adjustment is required.

20.1.3 Depth adjustment, PS5 depth control wheel

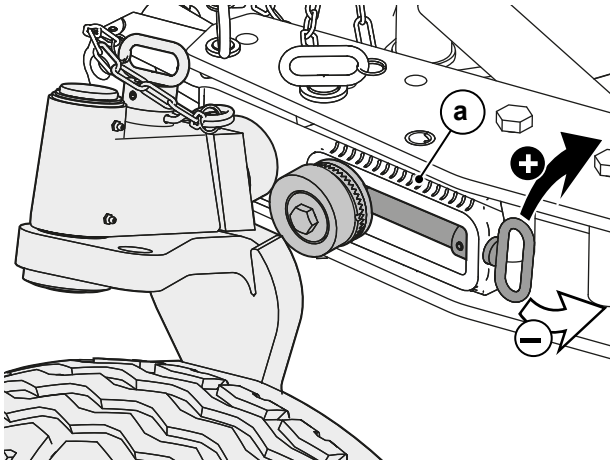


► Adjust the working depth by rotating the adjustment spindle.
The pawl (a) secures the rotating spindle to prevent it rotating while ploughing.

⊕ = Rotate adjusting spindle to the left
= increase working depth

⊖ = Rotate adjusting spindle to the right
= decrease working depth

20.1.4 Depth adjustment mechanically, depth control wheel PS30M and combination wheel D30M

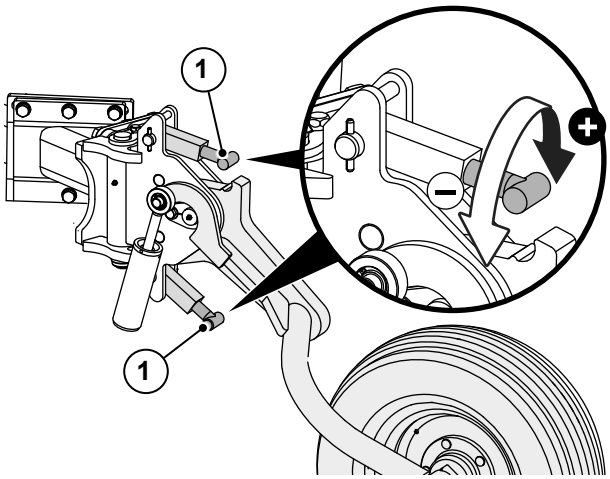


► Adjust the working depth by rotating the adjustment spindle.
The adjustment markings (a) aid adjustment.

⊕ = Rotate adjusting spindle to the right
= increase working depth

⊖ = Rotate adjusting spindle to the left
= decrease working depth

20.1.5 Depth adjustment mechanically, depth control wheel RJR

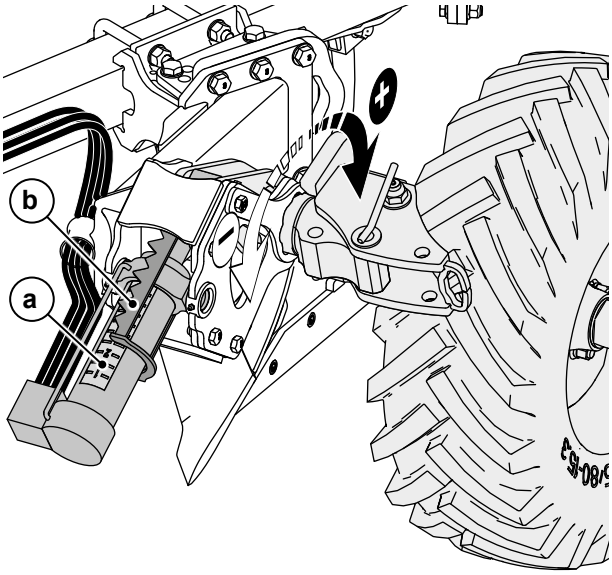


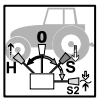
► Adjust the working depth by rotating the limit stops (1).
Adjust both limit stops evenly.

⊕ = Rotate to the right limit stop
= Increase working depth

⊖ = Rotate adjusting spindle to the left
= Decrease working depth

20.1.6 Depth adjustment hydraulically, depth control wheel RTRH and combination wheel RCRH



► 

Actuate the tractor hydraulics for the depth adjustment hydraulic cylinder until the required working depth has been reached.

⊕ = Extend adjustment cylinder
= increase working depth

⊖ = Retract adjustment cylinder
= reduce working depth

The adjustment scale (**a**) and setting pointer (**b**) simplify the adjustment.

20.2 Aligning the plough parallel to the ground

Adjustment instructions

After checking that the plough is parallel to the ground, check it's incline to the ground.

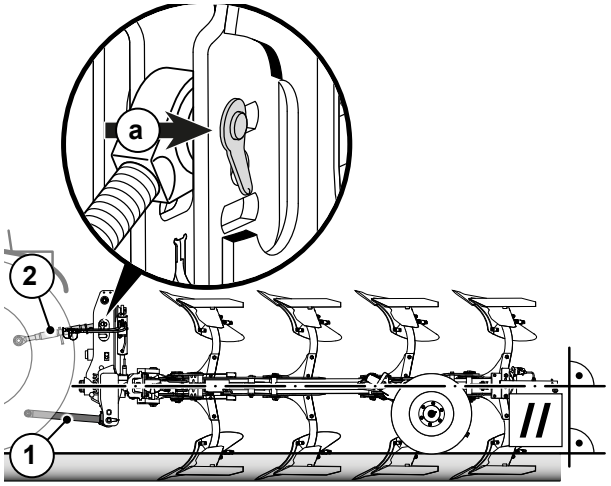
Preparation

► Lower the plough onto the contact or combination wheel.

► Plough for another metre.

► Check that the plough is parallel to the ground (visual inspection)

Adjustment



Position the plough parallel // to the ground, to do this:

► Adjust the bottom link height (1).

The bottom link must slope downwards slightly towards the implement.

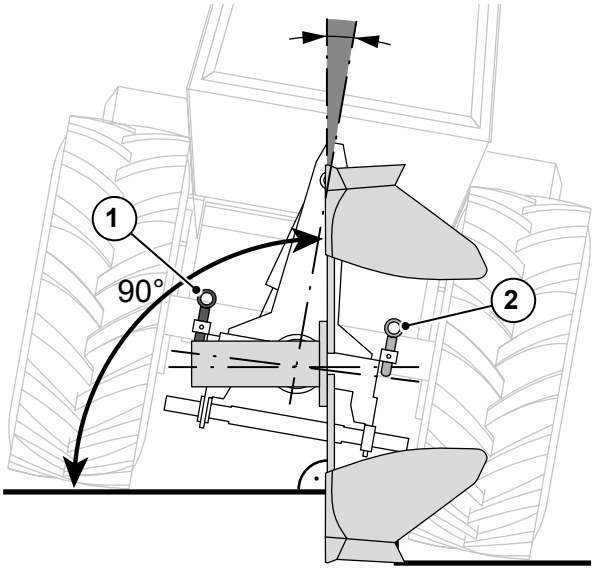
► Set the top link (2) shorter or longer.

The top link should:

- slope upwards slightly towards the implement.
- make contact slightly forward on level ground and when ploughing in an elongated hole (**a**).

20.3 Adjusting the incline

Adjustment instructions



- The surface of the ground and the legs should be at a 90° angle to each other.
- Use the two adjustment spindles on the tower to adjust the plough's incline.

  Spindle 1 = Incline adjustment for the right-hand bodies

  Spindle 2 = Incline adjustment for the left-hand bodies
- Adjust both adjustment spindles.

Preparation

► Plough for a few metres with the plough in the home position.

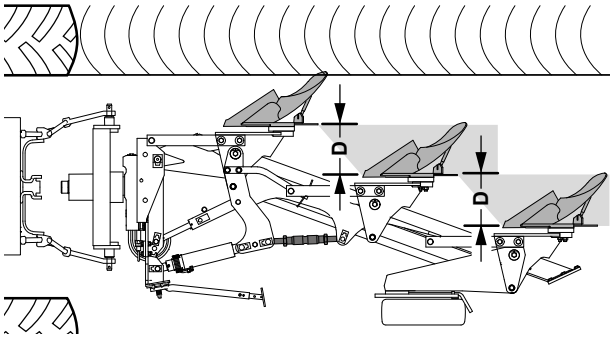
► Tractor and plough in working position, tractor wheel in furrow.

► Check the incline from the legs to the unploughed soil (visual inspection).

Adjustment

► Rotate spindles (1) or (2) until the correct incline is reached.

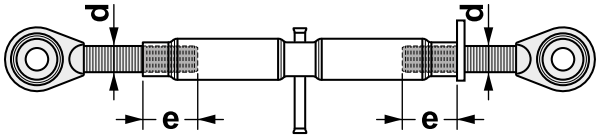
21 ADJUSTING THE WORKING WIDTH



D = Working width of the bodies

21.1 Adjusting the working width - plough with turnbuckle

Adjustment instruction



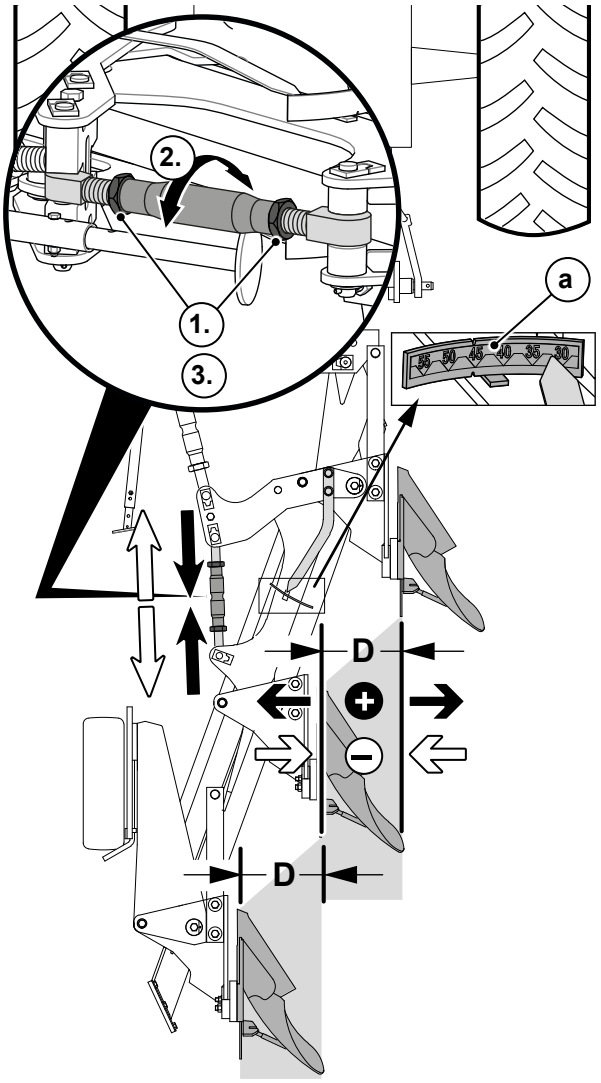
DANGER
Risk of accident due to stripping on the spindle thread.

- *When adjusting the turnbuckles, the minimum thread engagement, emin, of the threaded spindles must be at least 1.5 times the thread diameter (d). emin = 1.5 x d.*

Tools

- Spanner with a width of 55 mm (supplied)

Adjusting the working width on the turnbuckle



► 1.) Undo the AF 55 counter nuts.

► 2.) Turn the turnbuckle nut until the required working width is shown on the working width scale (a).

⊕ = Turnbuckle shorter
= Increase the working width (D).

⊖ = Turnbuckle longer
= Reduce the working width (D).

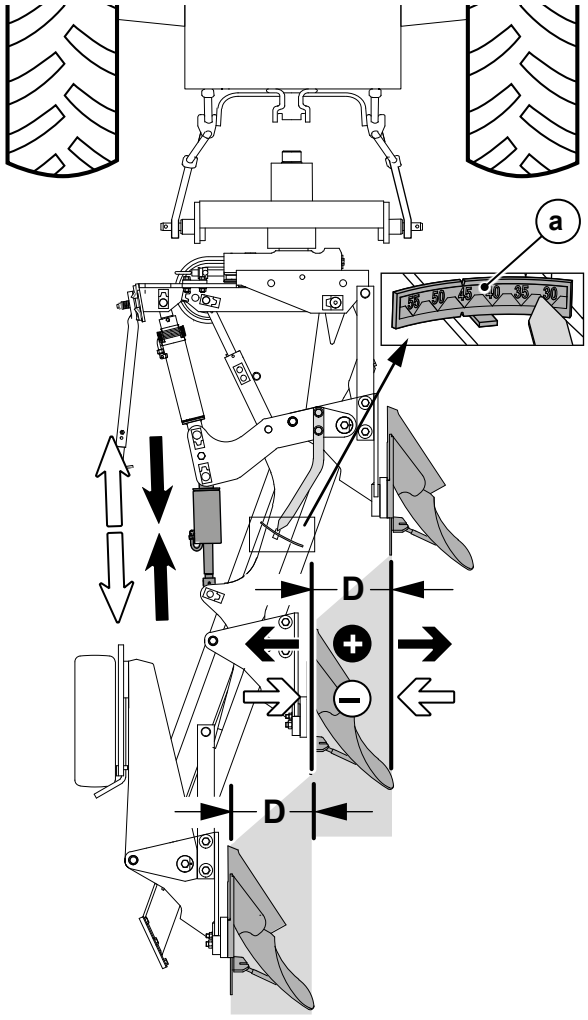
► 3.) Secure the turnbuckle nut by tightening the locking nuts.

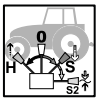
21.2 Adjusting the working width - plough with hydraulic adjustment

Adjustment instruction

Adjust the working width in small steps when ploughing.

Adjusting the working width hydraulically



► 

Actuate the control device on the tractor hydraulics until the required working width (D) is shown on the working width scale (a).

⊕ = Retract the cylinder
= Increase the working width (D).

⊖ = Extend the cylinder
= Reduce the working width (D).

22 ADJUSTMENTS DURING OPERATION

- Traction point; chapter 22.1 - page 84
- First-body working width, chapter 22.2 - page 86
- Adjusting the restoring force of the hydraulic stone protection system, chapter - page 121
- Adjusting the spring force of the spring-mounted tower, chapter 34 - page 105

22.1 Re-adjusting the traction point

22.1.1 Adjustment instructions

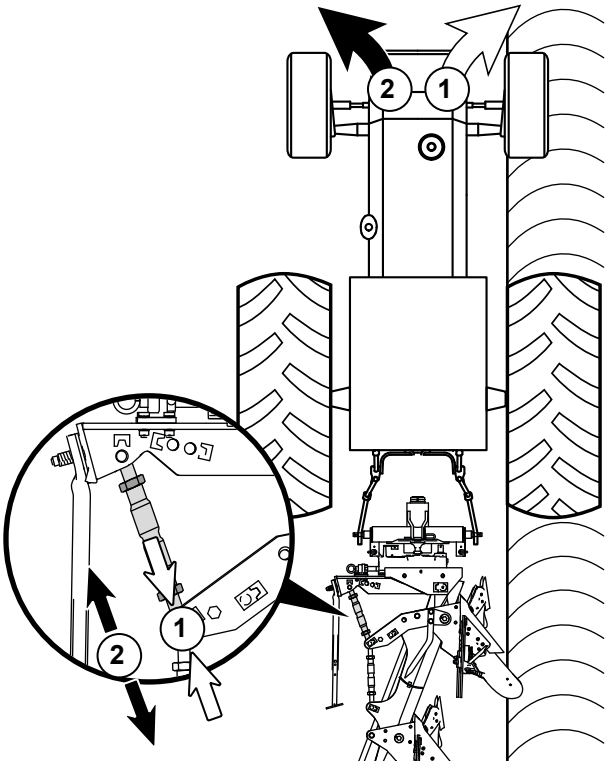
For information on the traction point, see chapter "Pre-adjusting the traction point" - page 61

22.1.2 Re-adjusting the traction point - Plough with turnbuckle

Tools

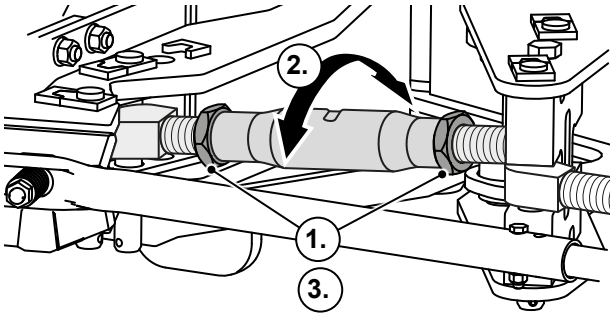
Spanner with a width of 55 mm
(supplied)

Adjustment instructions



1) Tractor moves towards ploughed soil
= shorten the turnbuckle.
2) Tractor moves towards unploughed soil
= extend the turnbuckle.

Adjusting the traction point - plough with turnbuckle



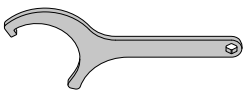
► 1.) Undo the AF 55 counter nuts.

► 2.) Adjust the traction point by turning the turnbuckle.

► 3.) Secure the turnbuckle nut by tightening the locking nuts.

22.1.3 Re-adjusting the traction point - Plough with hydraulic frame slewing

Tools

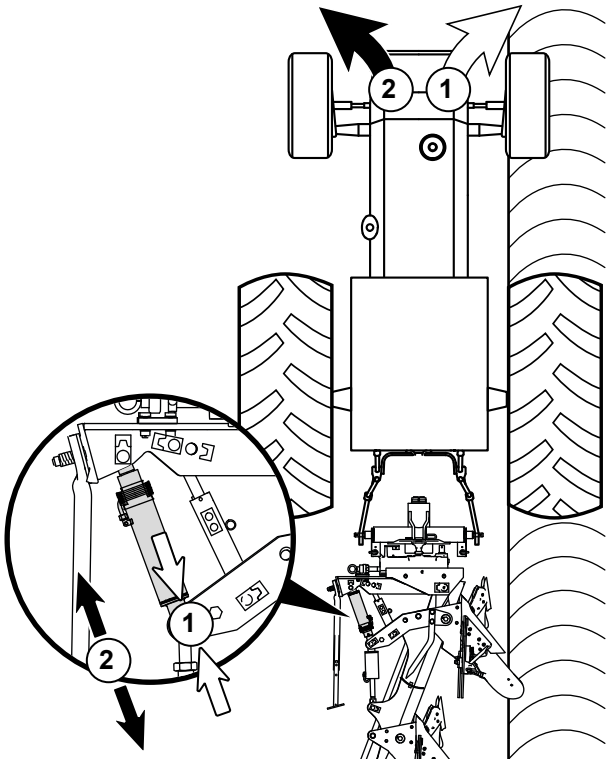


Hook spanner with hexagon for a width of 13 mm (supplied)

- Allen key

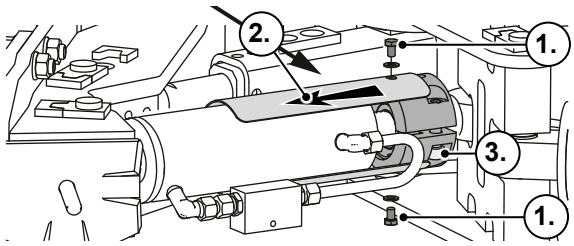
with a width of 10 mm

Adjustment instructions



1) Tractor moves towards ploughed soil
= shorten the cylinder path with a stop.
2) Tractor moves towards unploughed soil
= extend the cylinder path with a stop.

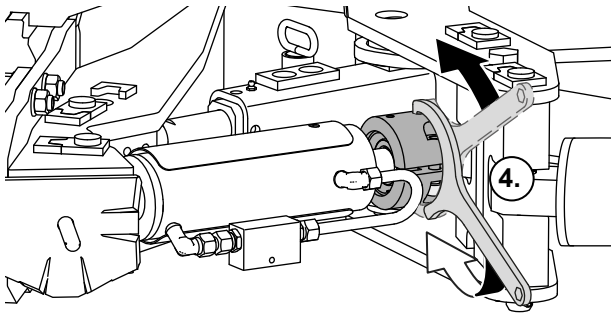
Adjusting the traction point - plough with hydraulic frame slewing



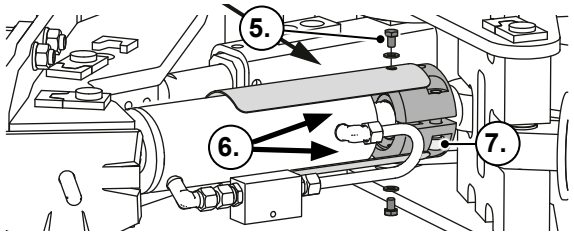
► 1.) Remove the hexagonal bolts (AF 13 mm) with washers.

► 2.) Slide the protection plate in.

► 3.) Undo the clamping bolt (AF 10 mm).



► 4.) Adjust the traction point by turning the cylinder stop.



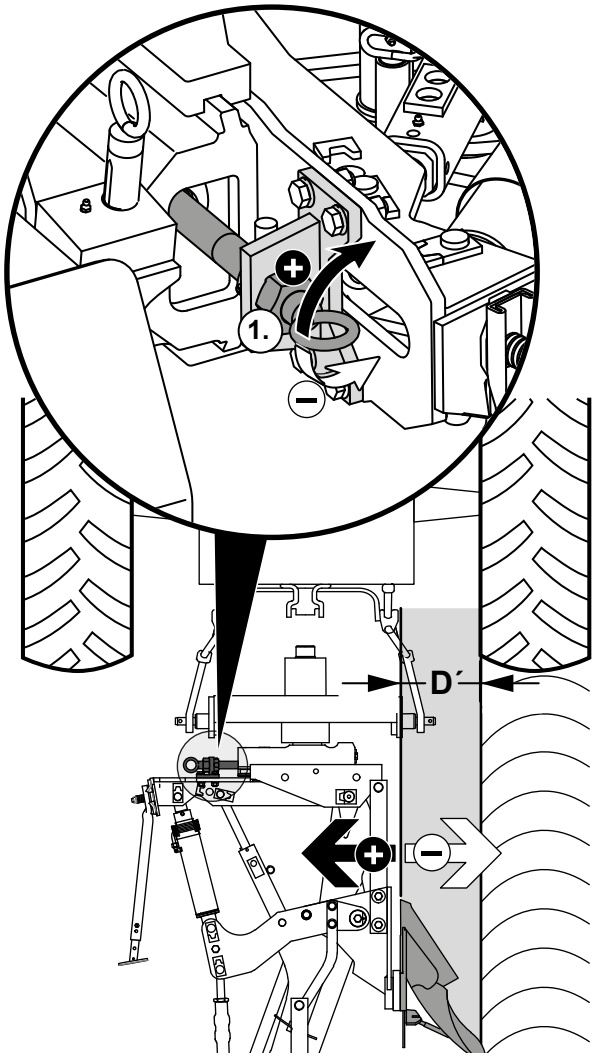
► 5.) Screw the protection plate tight.

► 6.) Leave a gap between the protection plate and the hydraulic hose. Align the protection plate by rotating the cylinder stop if necessary.

► 7.) Tighten the clamping bolt. Adjust the first-body working width.

22.2 Re-adjusting the first-body working width

22.2.1 Adjusting the ploughs with adjusting spindle



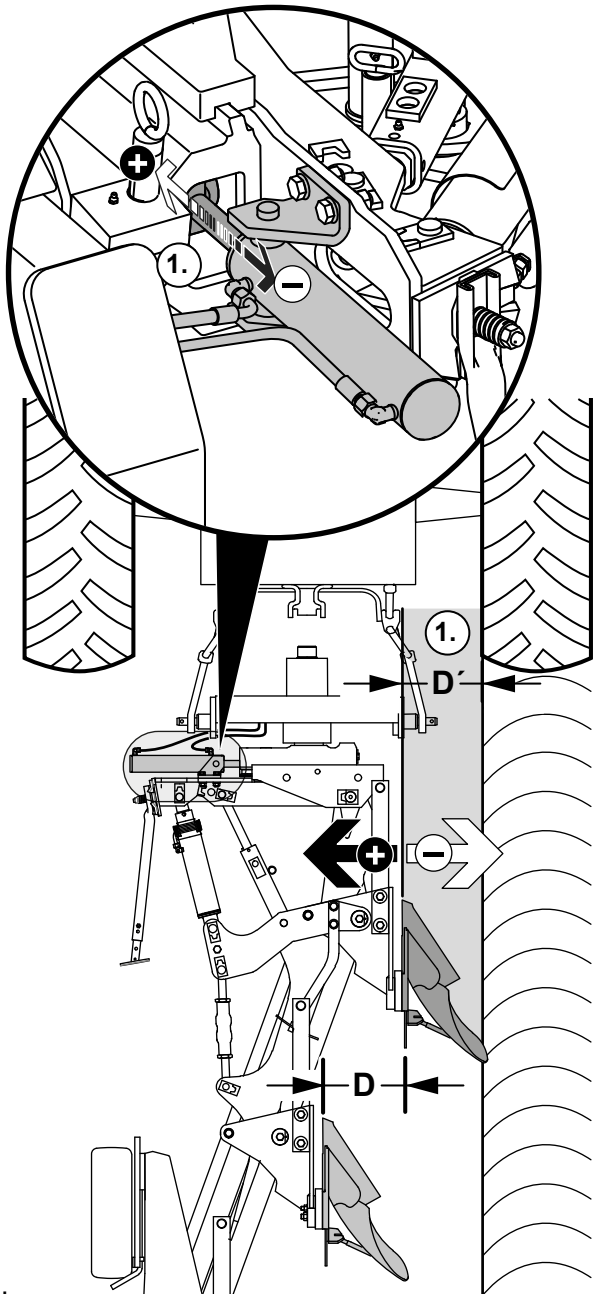
► 1.) Rotate the adjustment spindle and re-adjust the determined gap on the first body (D´).

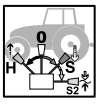
⊕ = Rotate adjusting spindle to the right
= increase first-body working width (D´)

⊖ = Rotate adjusting spindle to the left
= decrease first-body working width (D´)

22.2.2 Adjusting the ploughs with hydraulic cylinders

NOTE
When adjusting hydraulically, only adjust the traction point when the implement is at a standstill and lowered.



► 1.)  Actuate the control device for the tractor hydraulics until the determined gap (D) on the first body (D´) is adjusted.

⊕ = Retract the adjusting spindle
= increase first-body working width (D´)

⊖ = Extend the adjusting spindle
= decrease first-body working width (D´)

23 ADJUSTING THE EQUIPMENT

23.1 Adjusting the trash boards

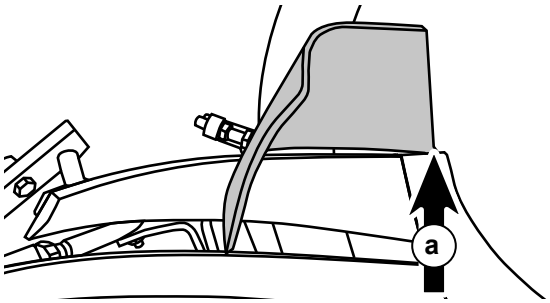
Tools

2 x spanner with a width of 19 mm

Torque spanner

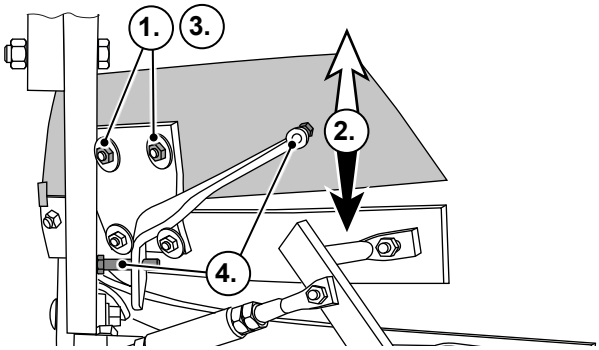
Adjustment instructions

- Do not adjust trash boards too deep to avoid slowing down the soil flow too much.
- If the soil is crumbling, the trash boards are only needed to scrape off the upper furrow crown. Adjust the working depth and the plough speed.



- The “trash board” should be resting against the mouldboard on the front (a).

Adjustment



► 1.) Undo the locking nuts.

► 2.) Adjust the height of the trash boards in the holder's elongated holes.

► 3.) Tighten the locking nuts to the correct torque.

► 4.) Adjust the support bolts to contact.

Torque

Size	Quality grade 10.9		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M12	137	101	19 (18*)

23.2 Adjusting the subsoiler

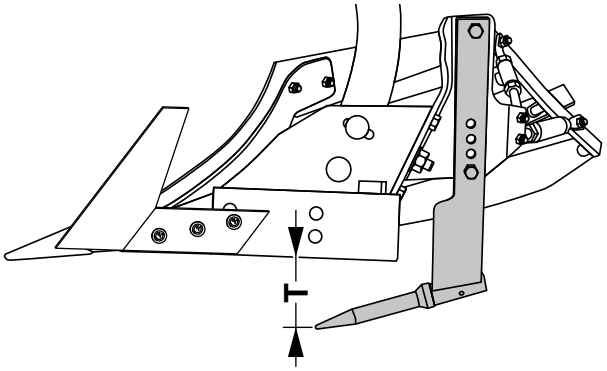
Tools

2 x ring spanners with a 24 mm width

Torque spanner

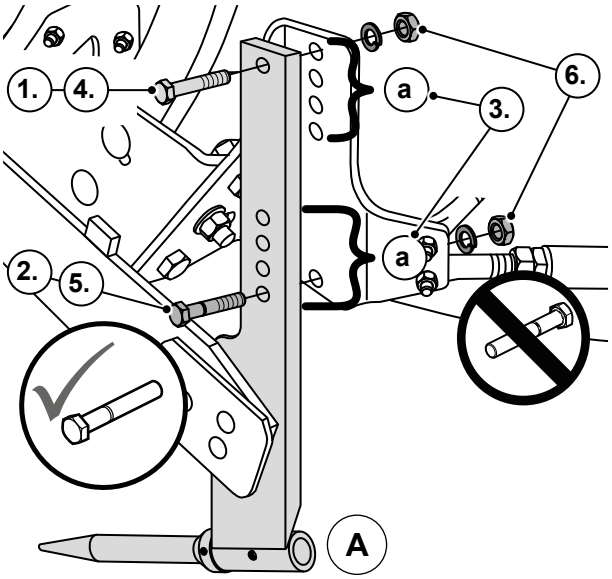
NOTE
Take note of the shear bolt's position and screw-in direction.

Adjustment instructions



Adjustable working depth
T = approx. 13.5 cm to approx. 21.5 cm in 3 cm steps

Adjustment



► 1.) Remove the pivot bolt.

► 2.) Remove the shear bolt.

► 3.) Adjust the subsoiler's height by setting offsets in the connection points (a).

► 4.) Insert the pivot bolt from the subsoiler.

► 5.) Insert the shear bolt from the subsoiler.

► 6.) Tighten the threaded connection to the correct torque.

Torque

Shear bolt

Size	Quality grade 4.6		Width across flats
	Nm	lb-ft	
M 16	71	53	24

Pivot bolt

Size	Quality grade 8.8		Width across flats
	Nm	lb-ft	
M 16	230	170	24

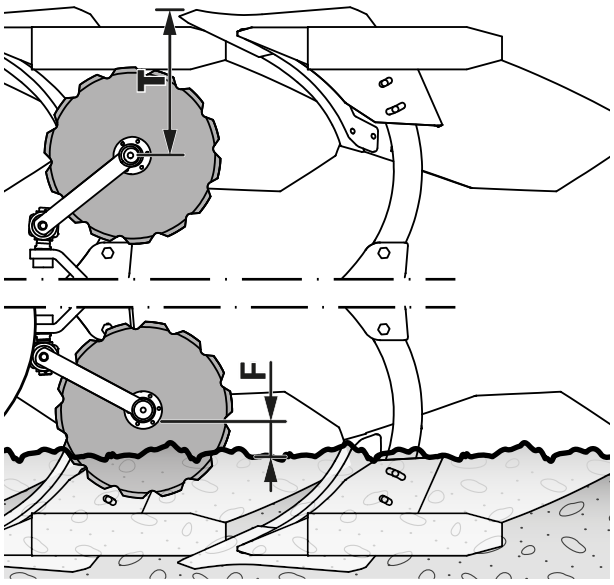
23.3 Adjusting the disc coulter

Tools

Ring spanner with a 24 mm width
Ring spanner with a 30 mm width
Torque spanner

23.3.1 Adjusting the disc coulter's working depth

Adjustment instructions

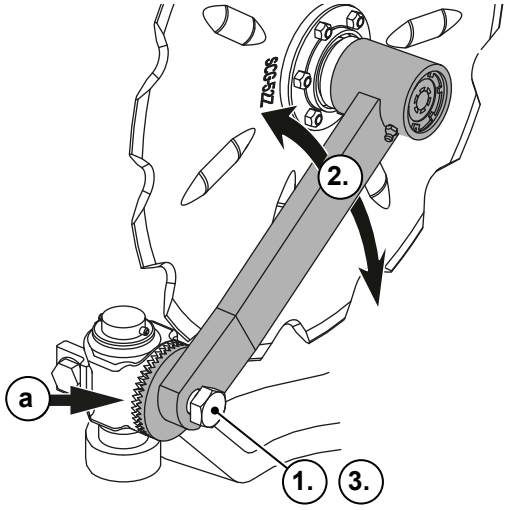


T = factory setting: 35 cm
Tmin = 35 cm

F = gap between the disc bearing housing and the ground.
Fmin = approx. 5 cm

Limit the depth so that there is at least a gap of approximately 5 cm between the disc bearing housing and the ground.

Adjustment



► 1.) Undo the fastening screw.

► 2.) Use the tooth system (a) to adjust the working depth.

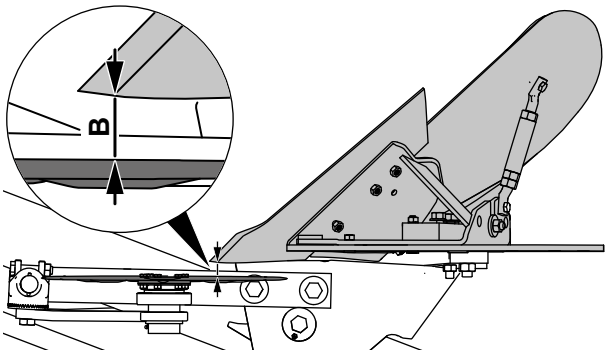
► 3.) Tighten the fastening screw to the correct torque.

Torque

Size	Quality grade 8.8		Width across flats
	Nm	lb-ft	
M20	464	342	30

23.3.2 Adjusting the disc coulter side overlap

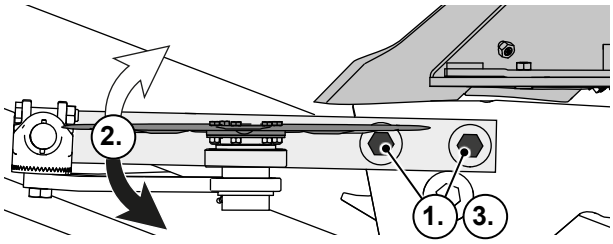
Adjustment instructions



B = overlap, factory setting: approx. 5 - 6 cm.

- After adjusting the overlap, check that the disc coulter is able to turn to the direction of travel, see chapter 23.3.3 - page 89.

Adjustment - disc coulter with flat rod



► 1.) Undo the fastening screws.

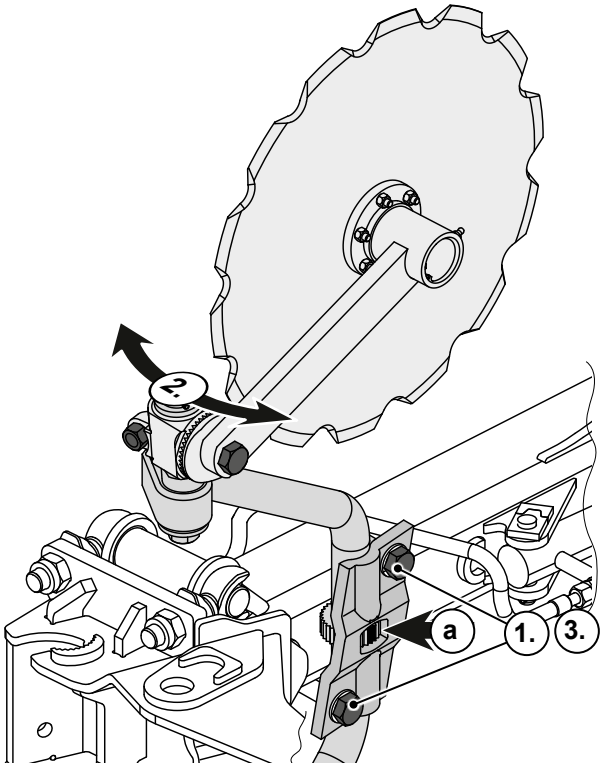
► 2.) Adjust the disc coulter's overlap.

► 3.) Tighten the fastening screws to the correct torque.

Torque

Size	Quality grade 10.9		Width across flats
	Nm	lb-ft	
M20	661	488	30

Adjustment - disc coulter with round rod



► 1.) Undo the fastening screws.

► 2.) Adjust the disc coulter's overlap by rotating the round rod.

► 3.) Tighten the fastening screws to the correct torque.

NOTE
The factory default setting is indicated by the red mark (a).

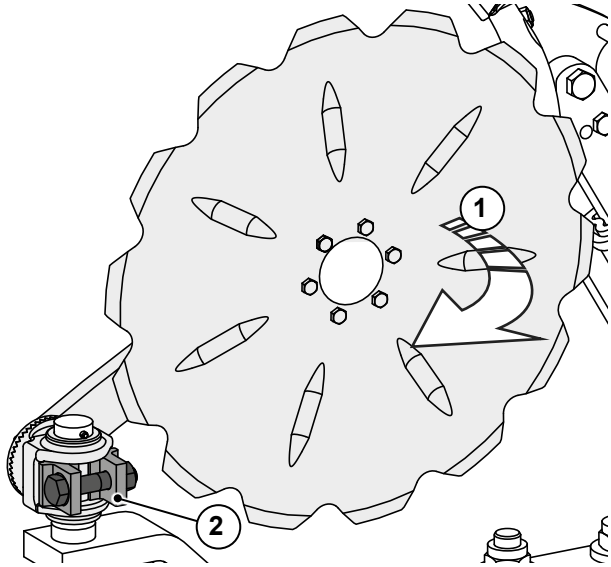
Torques (observe the quality grade)

Size	Quality grade 8.8		Width across flats
	Nm	lb-ft	
M16	230	170	24

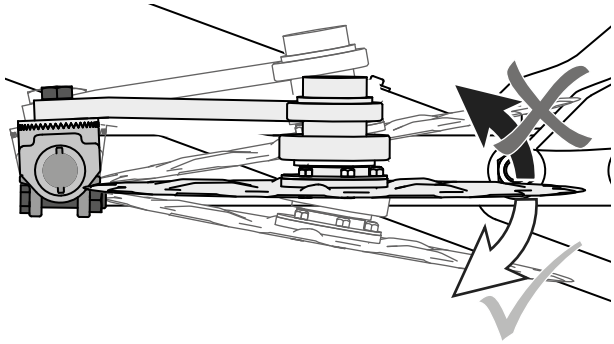
Size	Quality grade 10.9		Width across flats
	Nm	lb-ft	
M16	338	250	24
M20	661	488	30

23.3.3 Adjusting the stop of the swing arm on the disc coulter

Adjustment instructions



- The side swing of the disc coulter (1) is limited by the adjusting ring (2).

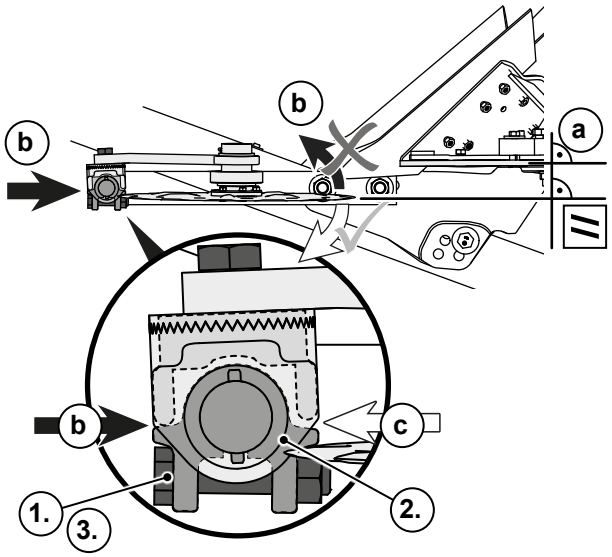


- Adjust the stop so that the swing arm can only pivot outwards.

23.4 Adjusting the Vari-Fix skimmer

23.4.1 Adjusting the Vari-Fix skimmer's working depth

Adjustment



► 1.) Undo the clamping bolt on the adjusting ring.

► 2.) Rotate the adjusting ring so that the disc coulter:

- (a) can pivot in parallel to the tines.
- (b) has its pivoting path to the tines blocked by the adjusting ring stop.

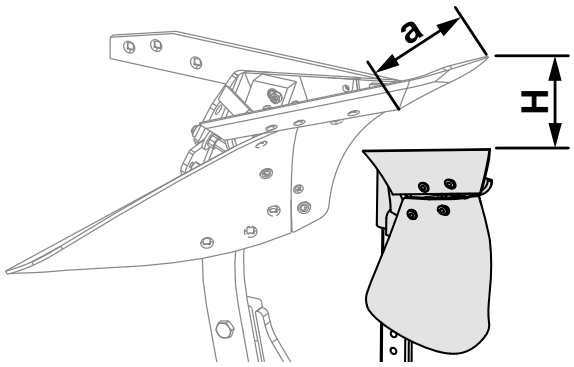
c = Pivoting play

► 3.) Tighten the clamping bolt to the correct torque.

Torque

Size	Quality grade 8.8		Width across flats
	Nm	lb-ft	
M16	230	170	24

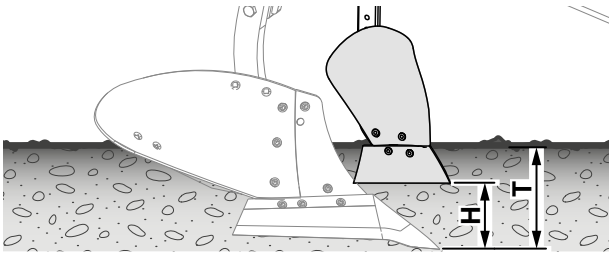
Adjustment instructions

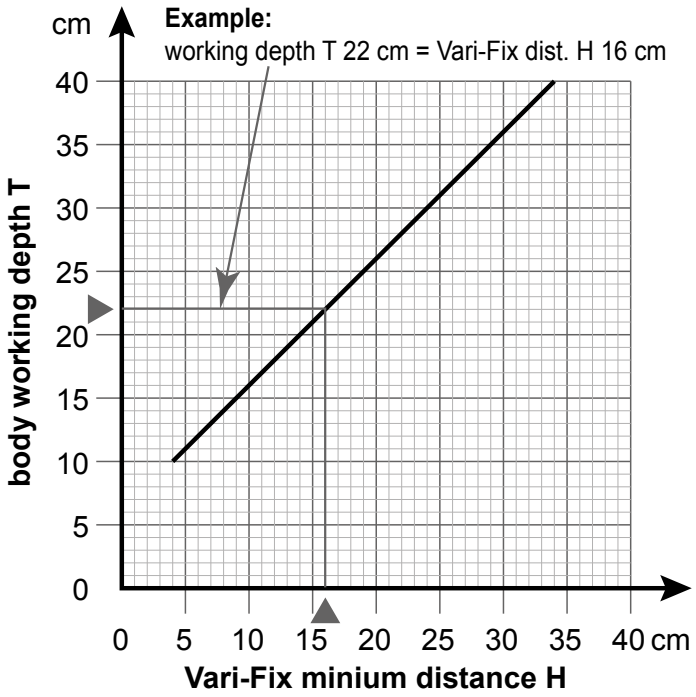


H = factory setting: approx. 18 cm

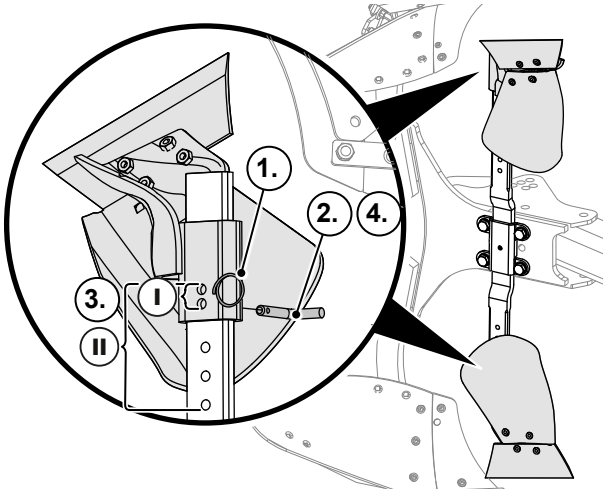
- The Vari-Fix working depth is calculated from the gap to the blade tip (H)
- Adjust H so that the cutting edge (a) works in the soil across the entirety of its width.
- Ensure that all skimmers are adjusted evenly.

Vari-Fix adjustment





► Use the diagram to determine gap H.



► 1.) Remove the retaining ring.

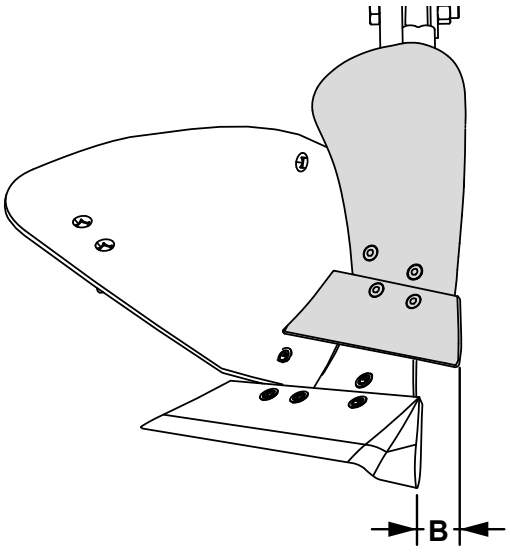
► 2.) Remove the locking pin and ...

► 3.) ... adjust the working depth by aligning the hole in the rod (I) with the hole in the bracket (II).

► 4.) Insert the locking pin in the corresponding hole and secure with the retaining ring.

► Adjust all skimmers to the same working depth.

23.4.2 Vari-Fix skimmer - side overlap



The lateral overlap (**B**) for Vari-Fix is preset to between 2 and 3 cm at the factory.

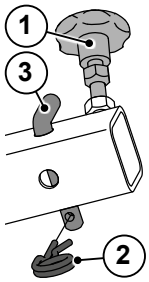
24 After the work

24.1 Required work

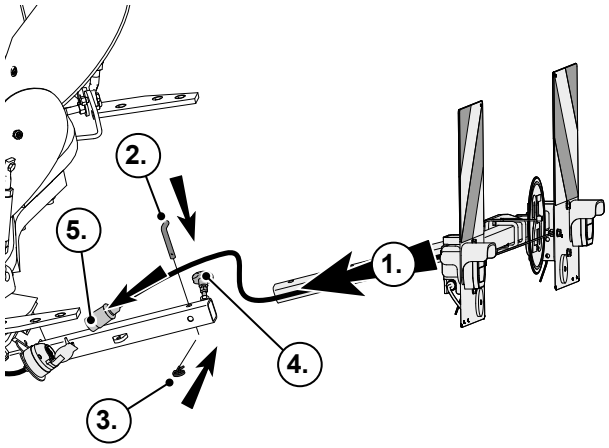
- Move the plough into the transport position; for instructions, see chapter 16 - page 64
- Install the lighting.

24.2 Install the lighting

Remove the locking pin from storage:



► Unscrew the star grip screw (**1**).
► Remove the spring cotter (**2**).
► Remove the locking pin (**3**) from the frame tube.



► 1.) Insert the lighting bar ...

► 2.) ... secure with locking pins.

► 3.) Insert the spring cotter.

► 4.) Screw the star grip screw tight.

► 5.) Insert the lighting cable plug.

25 PARKING THE IMPLEMENT

WARNING
Risk of accident when parking the implement.
- *Take note of all crushing and shearing points on the implement.*
- *Secure the parked implement to prevent it rolling away and tipping.*

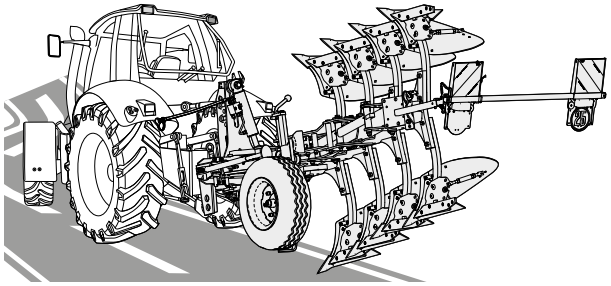
Required work

- Fold the parking support out and adjust the length
- Move the subsoiler into the storage position
- Turn the combination wheel into the storage position.

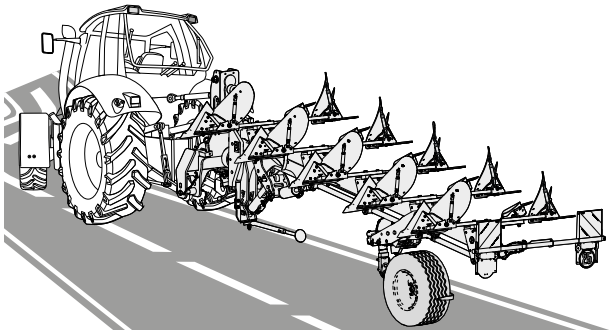
25.1 Prerequisite

The following description requires the plough to be in the transport position.

Transport position - plough with depth control wheel



Transport position - plough with combination wheel



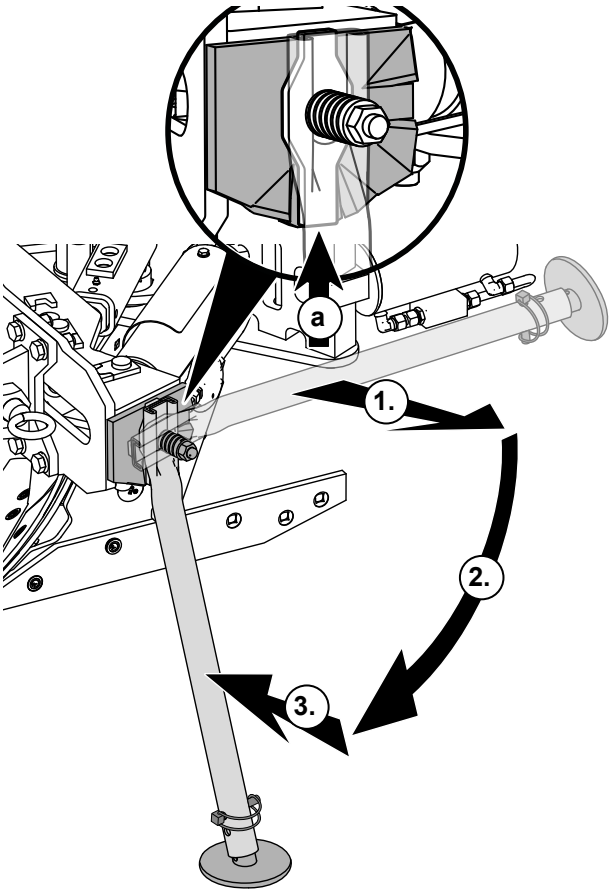
25.2 Note the following when parking

- The hydraulic width adjusted must be pivoted in to the narrow point.
- Set the implement on the right-handed bodies.
- Turn the ploughs with combination wheel from the transport position to the working position.
- If subsoilers are installed, pivot the subsoilers on the ground side in; see chapter
- Only set the implement down on solid ground.
- Ensure that the implement is stable.
- Use the supports provided (parking supports).

25.3 Fold the parking support out and adjust the length

NOTE
On ploughs with a combination wheel, do not fold the parking support out until the plough has been turned to the storage position.
Observe the description in chapter 25.5 "Parking the ploughs with combination wheel" - page 94.

Fold out



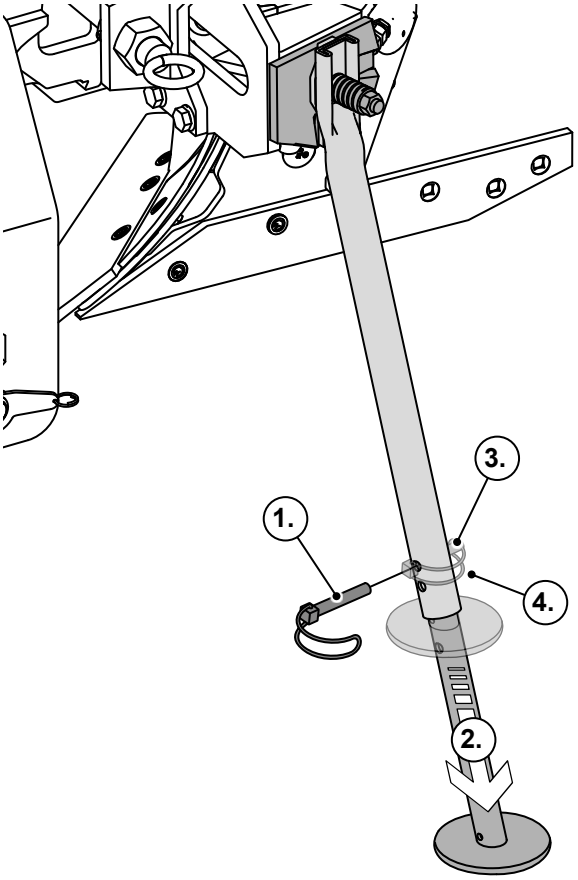
► 1.) Pull the parking support against the spring pressure.

► 2.) Fold the parking support down and...

► 3.) ... lock it into the locking device (a).

25.4 Move the subsoiler into the storage position

Adjusting the length



► 1.) Remove the hinged pin.

► 2.) Adjust the length so that the plough and the parking support are stable on the ground.

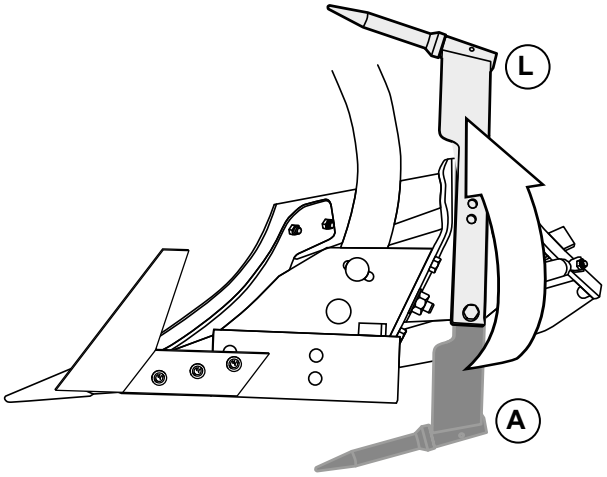
► 3.) Secure the parking support by inserting the hinged pin into the adjustment holes.

► 4.) Secure the hinged pin by throwing the safety catch.

Tools

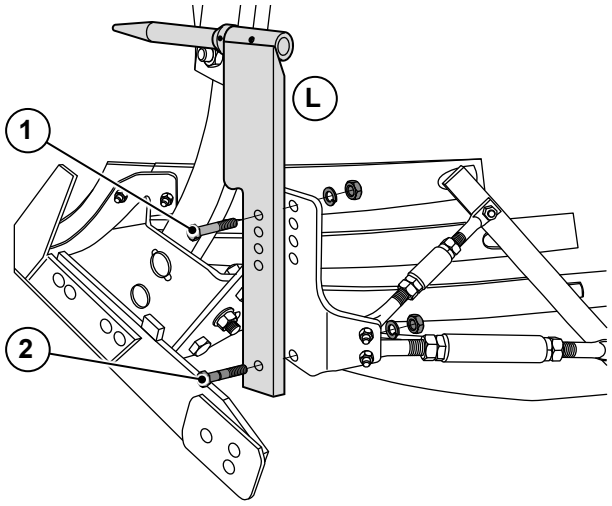
- 2 ring spanners with a 24 mm width

Adjustment instruction



Before shutting down, the subsoiler on the ground side must be moved from the working position (**A**) to the storage position (**L**).

Moving the subsoilers



► 1.) Remove the shear bolt (1) and the pivot bolt (2).

► 2.) Install the subsoiler in the storage position (L).

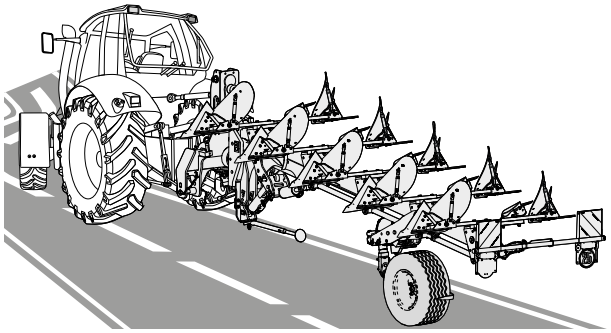
► 3.) Insert the shear bolt (1) and the pivot bolt (2) from the subsoiler side.

► 4.) Tighten the threaded connection.

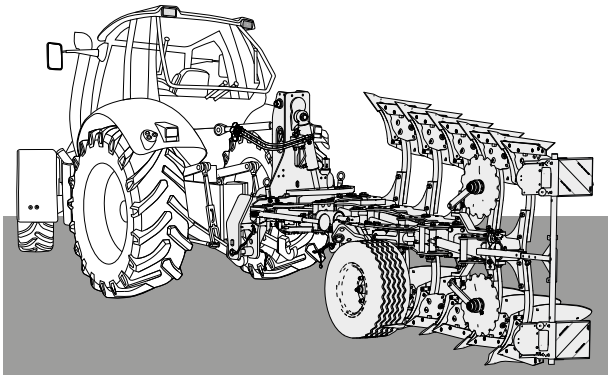
25.5 Parking the ploughs with combination wheel

Prior to parking, the implement must be turned from the transport position onto the right-hand side.

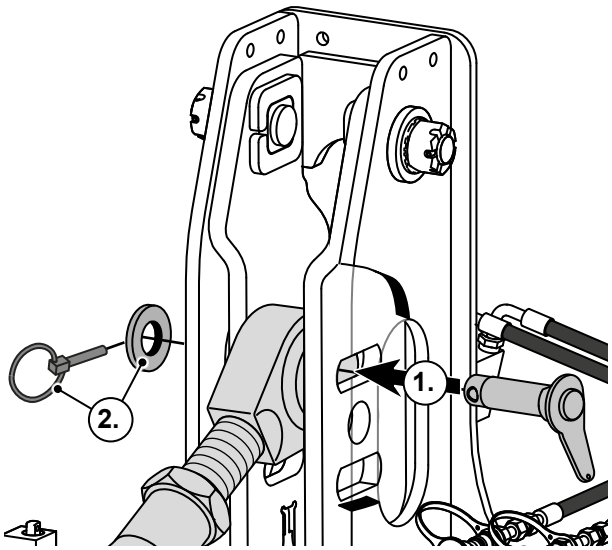
Transport position - combination wheel



Storage position - combination wheel

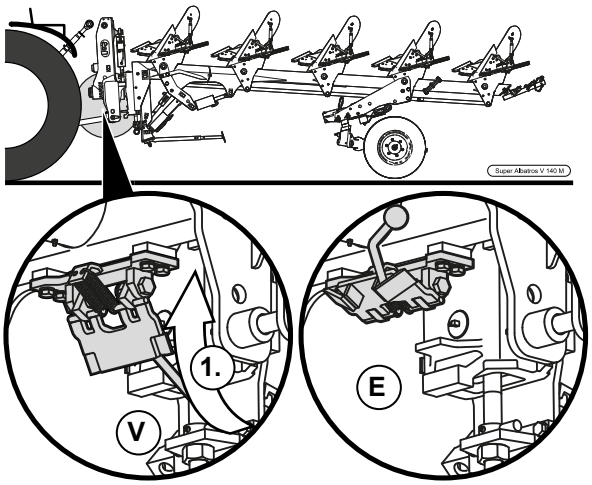


25.5.1 Coupling the top link



► Couple the top link.
For a description, see chapter 12.4 - page 55

25.5.2 Unlocking the central lock



► 1.) Unlock the central lock.

V = locked
= transport position, turning locked

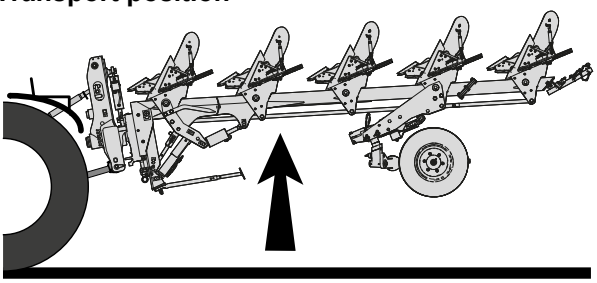
E = unlocked
= working position, turning possible

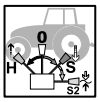
25.5.3 Turning the plough onto the right-hand side

DANGER
Risk of accident when turning the plough.
- *Before turning, ensure that there is nobody within the turning range.*

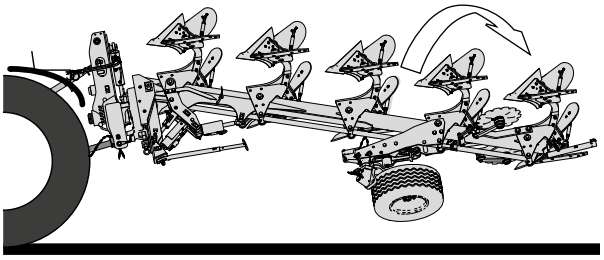
CAUTION
Risk of accident due to collision with the raised or turning plough.
- *Make sure that the implement does not collide with anything in its raised state, even when turning.*
- *Close the rear window on the tractor.*

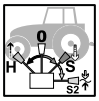
Transport position



► 1.)  Lift the plough with the three-point power lift..

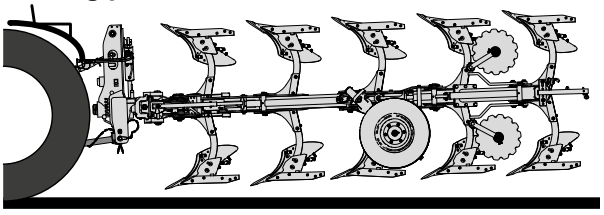
Minimum lifting height = 85 cm



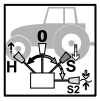
► 2.)  Actuate the control device until the plough has rotated onto the right-hand side completely.

For hydraulic frame slewing, actuate the control device until hydraulic frame slewing is pivoted out completely again.

Working position



Once the plough is in the end position.

►  Release the control device.

► Lower the implement with the three-point power lift.

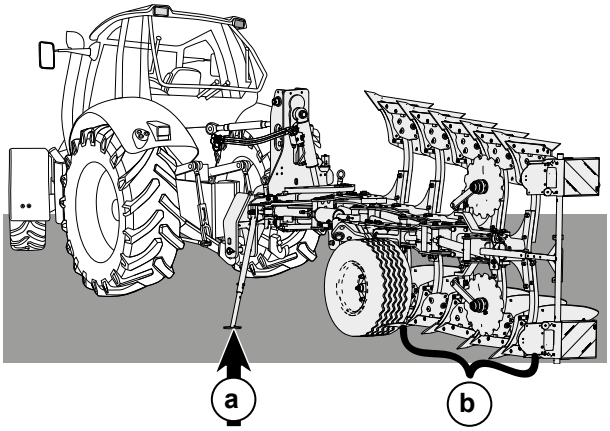
25.5.4 Turning the combination wheel into the storage position

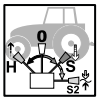
The combination wheel can be left in the transport position for storage.

25.5.5 Parking the plough

► "Fold the parking support out and adjust the length" - page 92.

Storage position

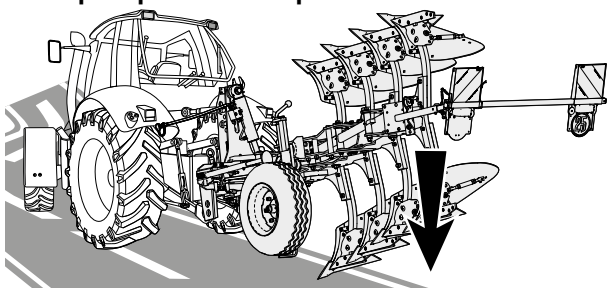


►  Use the three-point power lift to lower the plough until the parking support (a) and the plough tines (b) are on the ground.

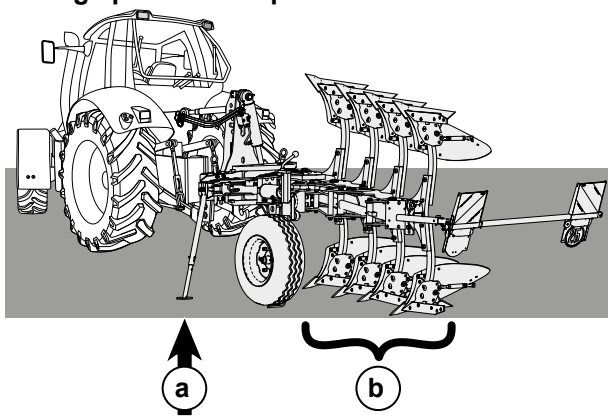
25.6 Parking the ploughs with depth control wheel

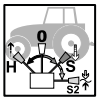
► "Fold the parking support out and adjust the length" - page 92.

Transport position - depth control wheel



Storage position - depth control wheel



►  Use the three-point power lift to lower the plough until the parking support (a) and the plough tines (b) are on the ground.

26 Uncoupling the implement

WARNING
Risk of accident while parking and uncoupling the implement.

- *When uncoupling, nobody may stand between the tractor and the implement; also do not step between the tractor and the implement while operating the external hydraulics control.*
- *Take note of all crushing and shearing points on the implement.*
- *Secure the parked implement to prevent it rolling away.*

DANGER
Risk of accident due to hydraulic fluid escaping at high pressure.

- *When disconnecting the hydraulic connections, make sure that the hydraulic system on the tractor (floating position) and on the implement have been depressurised.*
- *Follow the tractor's operating instructions and safety instructions.*

DANGER
Risk of infection due to fluids escaping under high pressure.
Fluids (hydraulic oil) escaping under high pressure may penetrate the skin and cause severe injury.

- *Park the implement, depressurise the system, switch off the engine and remove the ignition key before commencing work on the hydraulic system!*
- *Consult a doctor immediately in case of injury!*

26.1 Disconnecting hydraulic connections

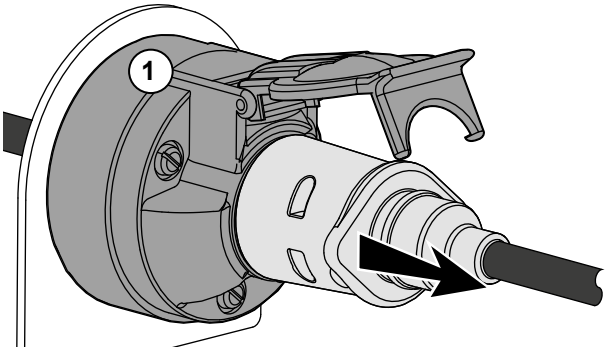
NOTE
Always also consult the operating instructions of the tractor manufacturer when disconnecting.

► Turn off the tractor's hydraulic system or switch to the floating position (depressurise).

► Disconnect the hydraulic hose connections.

► Protect the hydraulic plug against contamination.

26.2 Disconnect lighting

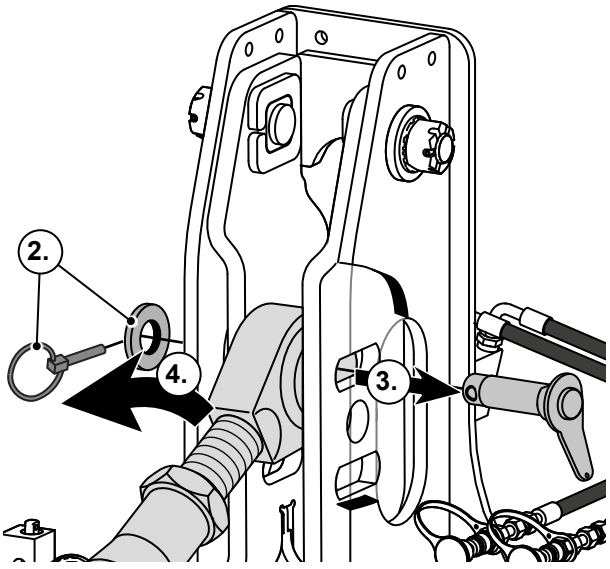


► Pull the connection cable for the lighting out of the lighting socket (1) on the tractor.

26.3 Uncoupling the top link

NOTE

- Always also consult the operating instructions of the tractor manufacturer when uncoupling.
- Before coupling ensure that the top link is relieved of load.



► 1.) Relieve the top link.

► 2.) Remove the hinged pin and the washer.

► 3.) Pull the top link stock out and ...

► 4.) ... Remove the top link.

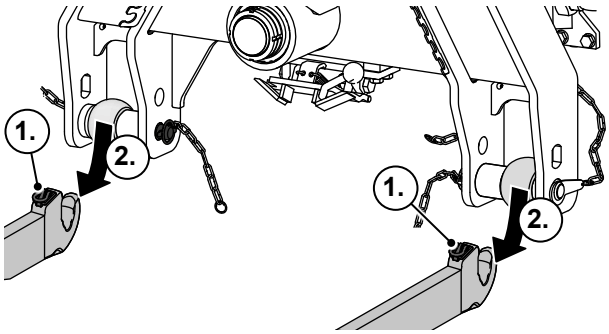
For storage:

► Insert the top link stock back into the hole on the tower and secure with a washer and the hinged pin.

26.4 Uncoupling the bottom link

NOTE

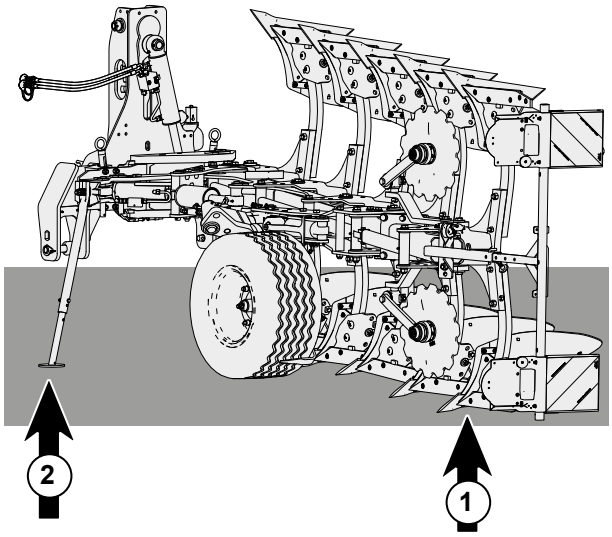
- Always also consult the operating instructions of the tractor manufacturer when uncoupling.
- Before uncoupling, ensure that the bottom links are relieved.



► 1.) Open the lock on the bottom links and ...

► 2.) ... uncouple the bottom links from the bottom link pins.

27 Storage information



- Always park the plough on the right-hand bodies (1).
- Use the parking support (2).
- Ensure that the implement is stable. Before placing into storage, clean the implement thoroughly.
- Protect hydraulic plug from dirt.
- Protect lighting plug from dirt.
- Park the implement in a location which is protected from the elements, and cover.
- Protect uncoated metal parts of the implement from rust.

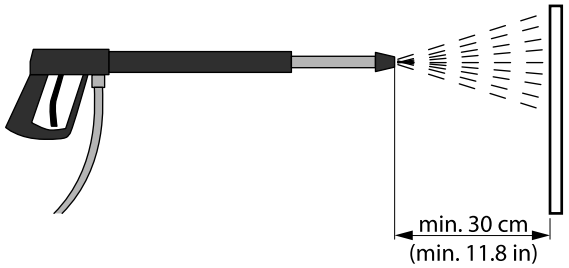
28 Cleaning

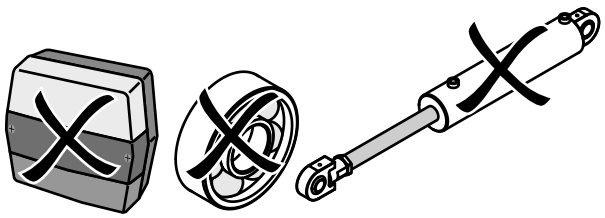
28.1 Safety instructions

WARNING
Risk of accident due to pinching or crushing while performing cleaning work.

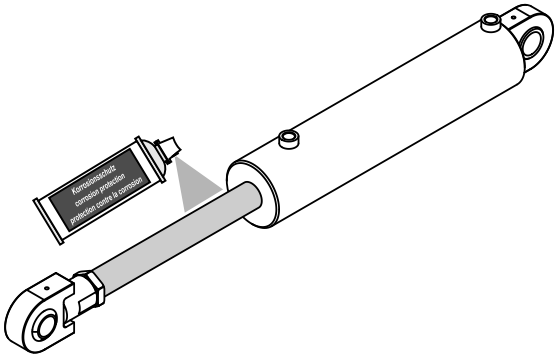
- *Turn off the tractor's engine and remove the key from the ignition.*
- *Only perform work when the implement is in a safe condition and has been secured to prevent it dropping and rolling away. Use all provided supports.*
- *During all work, wear work gloves, the prescribed working clothing and protective equipment.*
- *Secure the implement to prevent unauthorised start-up while such work is in progress.*

28.2 Cleaning information





- Do not use a pressure washer to clean hydraulic components.
- Do not direct jets of water onto electrical components or bearing points.
- Using too high a pressure for cleaning can cause damage to paintwork.
  Maintain a minimum distance between the cleaning nozzle and the implement of approx. 30 cm.
- After cleaning, lubricate the implement as per the lubrication schedule.



- Take precautions to prevent rust forming.
  Treat uncoated metal parts on the implement and piston rods with an environmentally-friendly corrosion protection agent.
- Repair damage to the paintwork.

NOTE
Plough bodies are easier to keep clean if they are cleaned after every use and protected against corrosion.

RECTIFY FAULTS

29 Troubleshooting

Fault	Rectification	Note in chapter
Plough bodies		
↳ Stone protection system triggered	Replace the shear bolt	chapter 30 - page 100
Subsoiler		
↳ Stone protection system triggered	Replace the shear bolt	chapter 31 - page 102
Hydraulic stone protection system		
↳ Plough bodies take evasive action too soon.	Adjust the restoring force of the hydraulic stone protection system	chapter 32 - page 103
↳ Console bearings have too much / too little play	Adjust the angle lever stop on the hydraulic stone protection system	chapter 33 - page 104
↳ Stone protection system blocked	Adjust the angle lever stop on the hydraulic stone protection system	chapter 33 - page 104
Spring-mounted tower		
↳ no spring effect	Adjust the spring force	chapter 34 - page 105
Uneven ploughed surface		
↳ Incline (camber) too great or too small	Adjust the incline	20.3 - page 82
↳ horizontal alignment unsuitable	Set the plough to horizontal	20.2 - page 82
Plough moves badly in the soil		
↳ Tines worn	Replace the tines	42.3 - page 115
↳ Incline moved	Check and adjust the incline	20.3 - page 82
↳ Undercut too shallow	Adjust undercut	35 - page 106
Plough pulls to the side		
↳ First-body working width moved	Check and adjust the first-body working width	22.2 - page 86
↳ Incline (camber) too great or too small	Adjust the incline	20.3 - page 82
↳ horizontal alignment unsuitable	Set the plough to horizontal	20.2 - page 82
Tractor pulls to the side		
↳ Traction point moved	Adjust the traction point	15.4 - page 61 and 22.1 - page 84
Plough ploughs at uneven depths		
↳ Incline (camber) too great or too small	Adjust the incline	20.3 - page 82
↳ horizontal alignment unsuitable	Set the plough to horizontal	20.2 - page 82
Earth is turned poorly		
↳ Incline (camber) too small	Increase the incline	20.3 - page 82
↳ Skimmer too deep	Adjust the skimmer so that it is flatter	23.4 - page 90
↳ Working speed too slow	Increase the working speed.	19.2 - page 78

30 Replacing the shear bolt on plough bodies

DANGER
Risk of injury due to heavy and sharp-edged components.
- *Gloves must always be worn.*

Risk of accident when rectifying the fault.
- *If the implement is raised, do not work underneath it whilst unsecured.*
- *Secure the implement to prevent it lowering.*

If the mechanical stone protection system triggers:

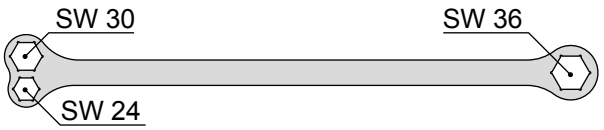
► Stop immediately.

► Lift the plough out of the furrow and park on level ground.

► Switch off the tractor and secure it to prevent it rolling away.

► Secure tractor against being started up (remove ignition key).

Tools



WAF = Width Across Flats

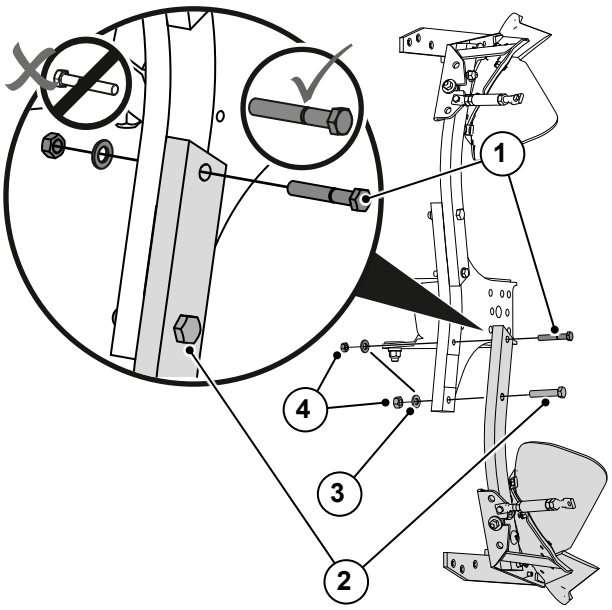
- Rabe special ring spanners supplied.
- 19 mm ring spanner

Repair instructions

- Always use original shear bolts.
- Never replace shear bolts with standard bolts.
- Replace damaged bolts with bolts of the same strength category.
- The sheered plough body must point downwards.
- Only approach the sheered plough body from the rear.

30.1 Replace the shear bolt

Fastening



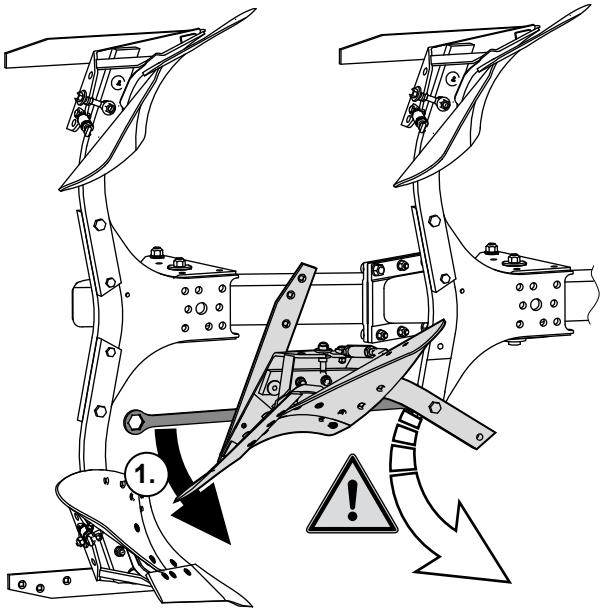
1) Shear bolt1)
2) Pivot bolt1)
3) Washers2)
4) Nuts

1) The bolt sizes are listed in the torque tables on page 100

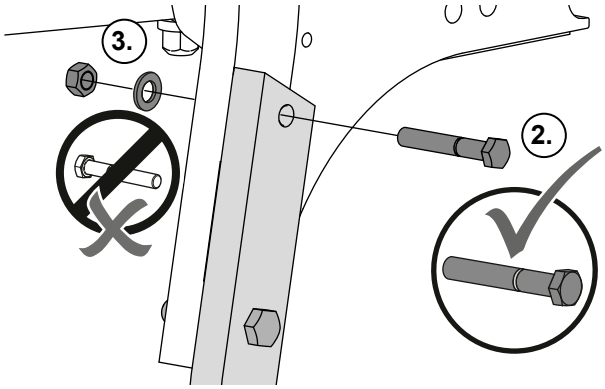
2) The number of washers may vary. Observe the installation situation on-site.

Repair

DANGER
Risk of accident when undoing the pivot bolt.
There is an increased risk of accident when the plough body swivels back.
- *The sheered plough body must point downwards.*
- *Only approach the plough body from the rear.*
- *Use RABE special ring spanners.*



► 1.) Undo the nuts on the pivot bolt.



► 2.) Insert the new shear bolt from the leg side.

► 3.) Put the washer on and tighten the fastening nut.

► 4.) Tighten the shear bolt and the pivot bolt to the correct torque.

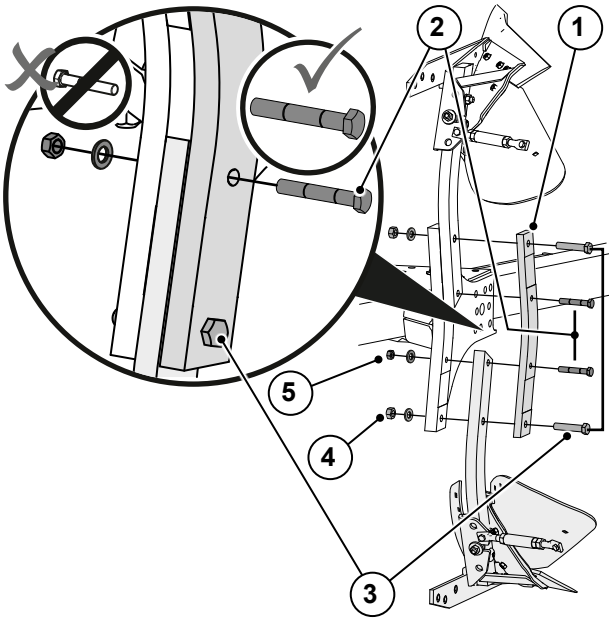
Torques for the shear and pivot bolts

Shear bolt				
Size	Quality grade	Torque		Width across flats
		Nm	lb-ft	
M16 x 1,5	8.8	190	140	24
M16 x 1,5	10.9	225	166	
M16 x 1,5	12.9	315	232	
M20 x 1,5	8.8	385	284	30

Pivot bolt				
Size	Quality grade	Torque		Width across flats
		Nm	lb-ft	
M16 x 1,5	12.9	190	232	24
M20 x 1,5	10.9	460	339	30
M20 x 1,5	12.9	640	472	
M24 x 1,5	10.9	780	575	36

30.2 Replacing the shear bolt - reinforced, double shear shaft

Fastening



1) Reinforcement
2) double shear bolt; M12 / 12.9 / WF 19 mm
3) Joint bolt; M20 / 10.9 / WF 30 mm
4) Washer / nut; M12
5) Washer* / nut; M20

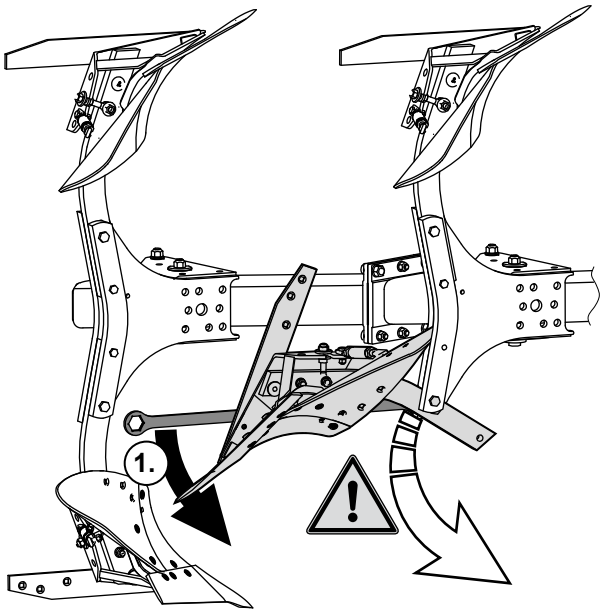
*) The number of washers may vary. Observe the installation situation on-site.

Repair

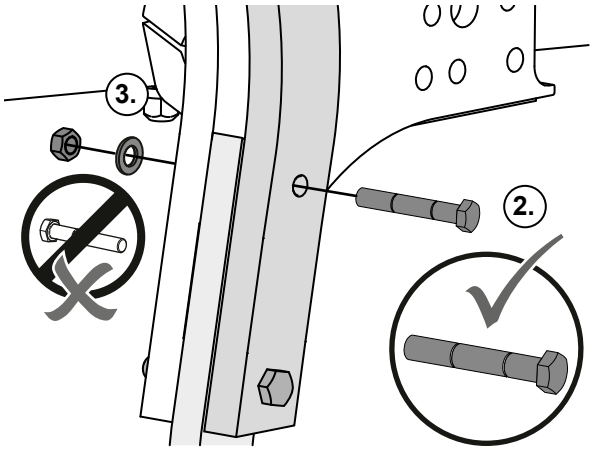
WARNING
Risk of accident when undoing the pivot bolt.
There is an increased risk of accident when the plough body swivels back.

- *The sheered plough body must point downwards.*
- *Only approach the plough body from the rear.*
- *Use RABE special ring spanners.*

31 REPLACING THE SHEAR BOLT ON THE SUBSOILER



► 1.) Undo the nuts on the pivot bolt.



► 2.) Insert the new shear bolt from the leg side.

► 3.) Put the washer on and tighten the fastening nut.

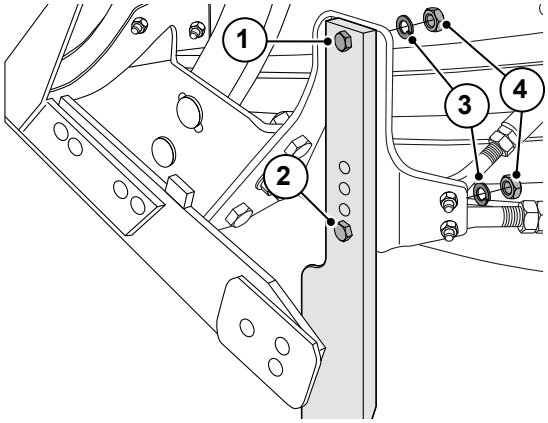
► 4.) Tighten the shear bolt and the pivot bolt to the correct torque.

Torques for the shear and pivot bolts

Shear bolt			
Size	Quality grade	Torque	
		Nm	lb-ft
M12 x 110	12.9	160	118

Pivot bolt			
Size	Quality grade	Torque	
		Nm	lb-ft
M20 x 1,5 x 110	10.9	661	488

Fastening

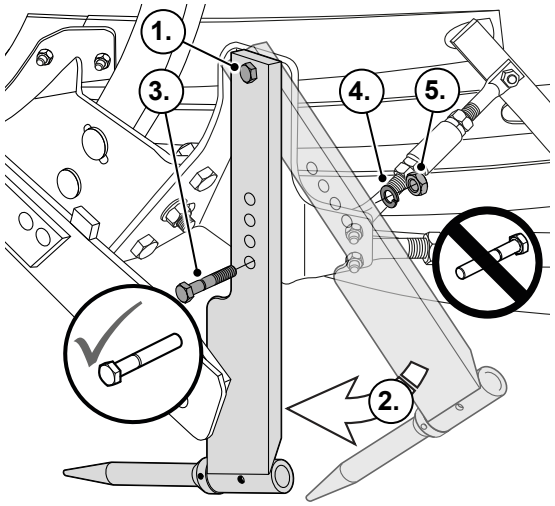


1) M16 pivot bolts
2) M16 shear bolt
3) Spring
4) M16 nut

Repair instructions

- Always use original shear bolts.
- Never replace shear bolts with standard bolts.
- Replace damaged bolts with bolts of the same strength category.

Repair



► 1.) Undo the pivot bolt.

► 2.) Pivot the subsoiler in.

► 3.) Insert the new shear bolt from the subsoiler side.

► 4.) Put the washer on and tighten the fastening nut.

► 5.) Tighten the shear bolt and the pivot bolt to the correct torque.

Torque - shear bolt

Size	Quality grade 4.6		Width across flats
	Nm	lb-ft	
M 16	71	53	24

Torque - pivot bolt

Size	Quality grade 8.8		Width across flats
	Nm	lb-ft	
M 16	230	170	24

32 ADJUST THE RESTORING FORCE OF THE HYDRAULIC STONE PROTECTION SYSTEM

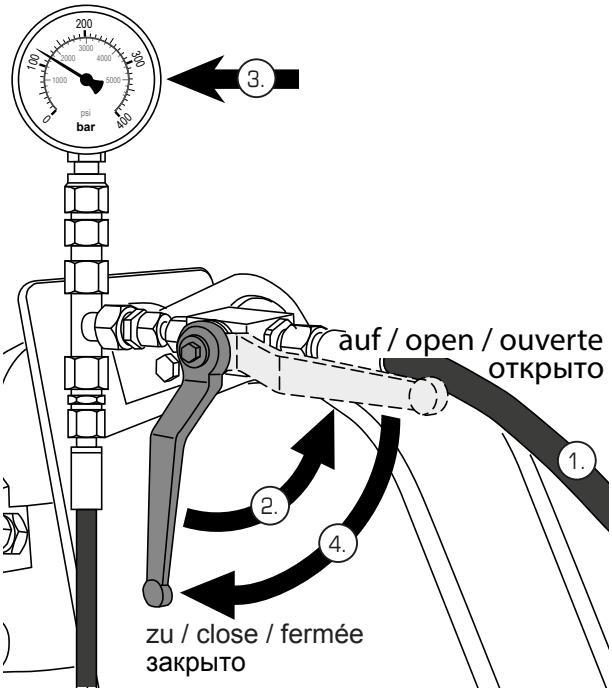
Adjustment instructions

Minimum pressure: 120 bar / 1740 PSI (factory setting)

Maximum pressure: 170 bar / 2665 PSI

- Set the restoring force so that the plough bodies sit firmly in the ground but can deflect upwards slightly over stones.
- If the deflection of the plough bodies is insufficient, increase pressure gradually.

Adjustment



► 1.) Connect the hydraulic hose (white marking) for the automatic stone protection system to a single-acting control device on the tractor. „Connect the hydraulic lines“ - page 56 must be observed.

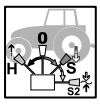
NOTE

On the Albatros HA, the adjustment line for the hydraulic stone protection system is connected to the line for the tower suspension.

► 2.) Open the shut-off valve.

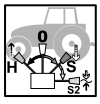
► 3.) Adjust the hydraulic pressure on the pressure gauge.

Raising the pressure:

► 

Actuate the control lever for the tractor hydraulics in the “Raise” direction until the desired hydraulic pressure is set on the pressure gauge.

Lowering the pressure:

► 

Actuate the control lever for the tractor hydraulics in the “Lower” direction until the desired hydraulic pressure is set on the pressure gauge.

► 4.) Once the pressure has been reached, close the shut-off valve.

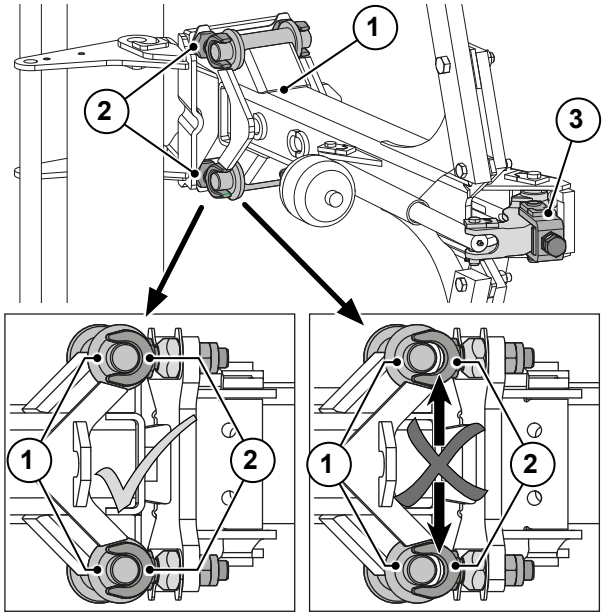
33 Adjust the angle lever stop on the hydraulic stone protection system

Tools

1 x spanner with a width of 36 mm

1 x ring spanner with a 36 mm width

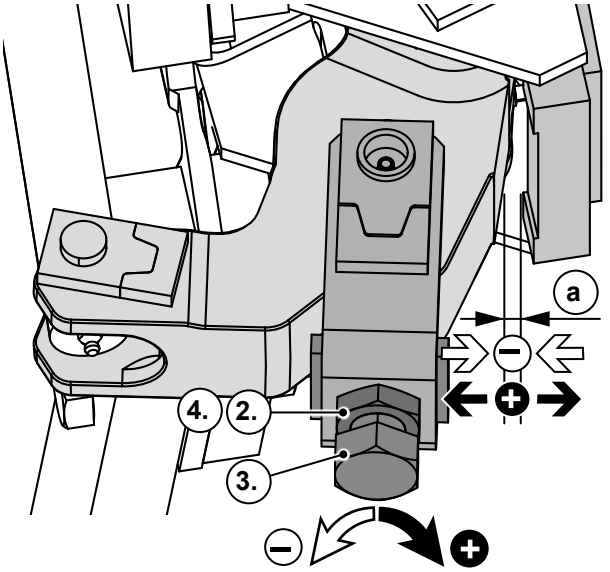
Adjustment instructions



If the intermediate leg (**1**) has play in the console bearings (**2**), the gap for the angle lever (**3**) must be adjusted.

The specified adjustment values refer to a reference pressure of 120 bar (1740 PSI).

Adjustment



► 1.) Adjust the hydraulic pressure for the stone protection system to the reference pressure of 120 bar, see chapter 32 - page 103.

► 2.) Undo the counter nut (36 mm).

► 3.) Adjust the gap (a) between the angle lever and the stop by turning the adjustment screw (36 mm).

a= required gap = approx. 3 cm

⊕ Screwing in the screw = increase the gap

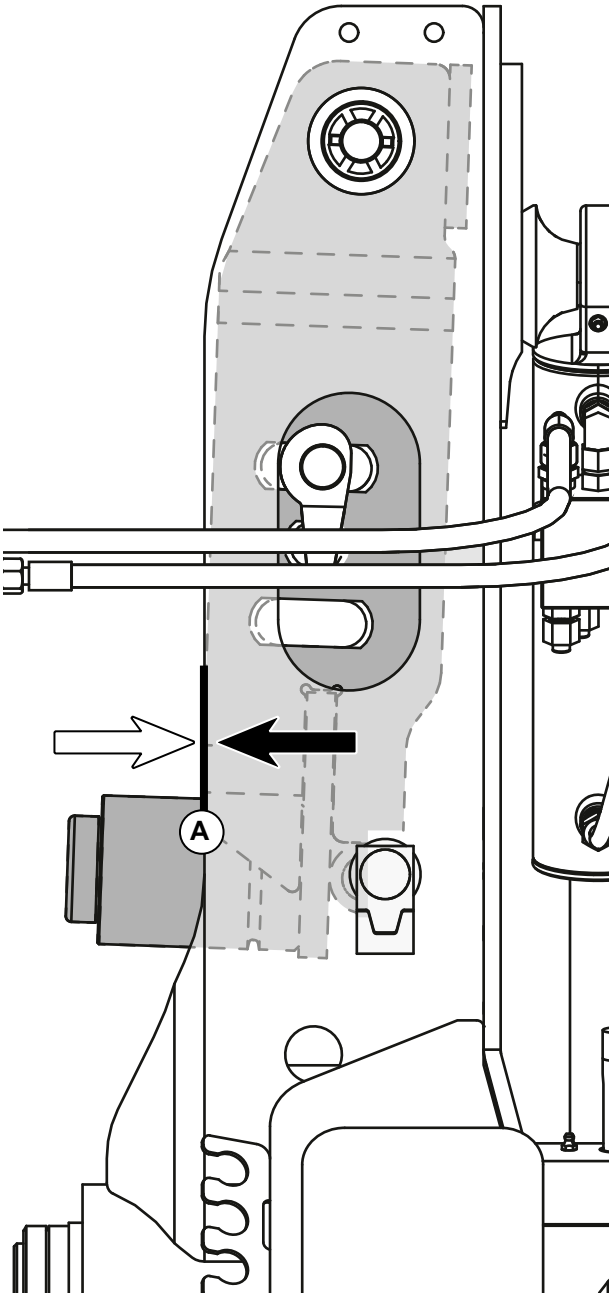
⊖ Unscrewing the screw = decrease the gap

► 4.) Tighten the counter nut.

34 Adjusting the spring force of the tower suspension

Adjustment instructions

- Perform the adjustment when the implement is raised.

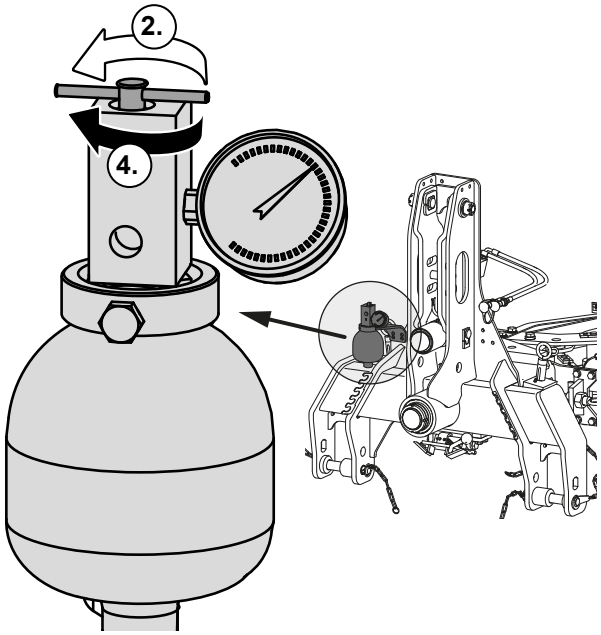


- The link must be above the damping cylinder (A) and be flush with the tower frame.
- Link too far inside: increase the hydraulic pressure on the pressure tank.
- Link too far forwards: decrease the hydraulic pressure on the pressure tank.

Adjustment

► 1.) Connect the hydraulic hose (marked in white) for the spring force adjuster to a single-acting control device on the tractor. „Connect the hydraulic lines“ - page 56 must be observed.

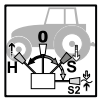
NOTE
On the Albatros HA, the adjustment line for the tower suspension is connected to the line for the hydraulic stone protection system.



► 2.) Open the shut-off valve on the pressure tank.

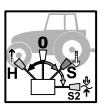
► 3.) Adjust the hydraulic pressure on the pressure tank.

Raising the link:

► 

Actuate the control lever for the tractor hydraulics in the “Raise” direction until the link is flush with the tower frame.

Lowering the link:

► 

Actuate the control lever for the tractor hydraulics in the “Lower” direction until the link is flush with the tower frame.

► 4.) After adjusting: close the shut-off valve.

► 5.) Grasp the plough by the rear end and spring downwards.

► 6.) Check the link’s position and repeat the adjustment if necessary.

35 ADJUST UNDERCUT

Safety information

WARNING
Risk of accident from crushing during set-up and adjustment work.

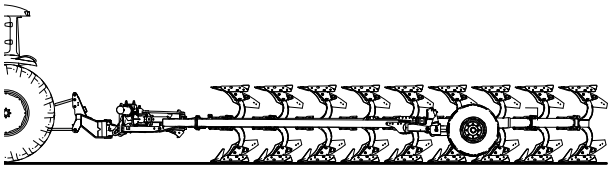
- *Care must be taken during all work to ensure that the implement is stable and has been secured to prevent it rolling away.*
- *Protect raised machines from lowering.*

Tool required

- 2 x ring / open-ended spanner, 24 mm
- 1 x ring / open-ended spanner, 19 mm
- Alignment rails
- Torque wrench

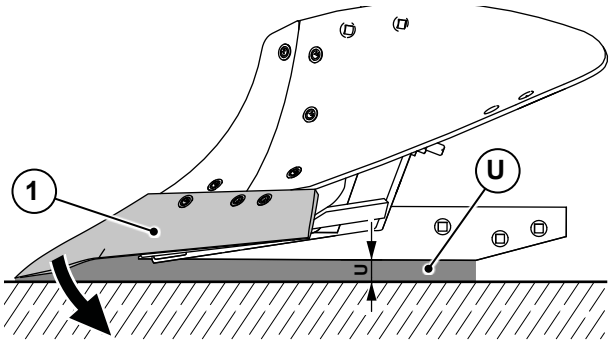
Preparation

Working position

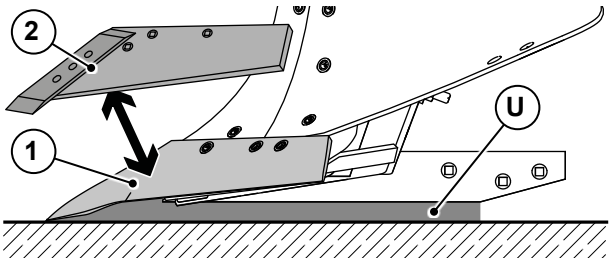


► Turn plough in working position.
► Place plough on flat, solid ground.
► Switch off tractor, secure against rolling away and unauthorised use.

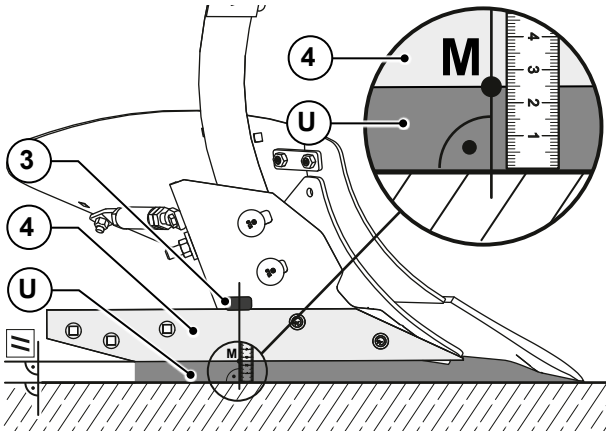
Set-up information



If plough cannot easily pull into the ground make the undercut (**U**) larger = (**1**) lower coulter tip slightly.

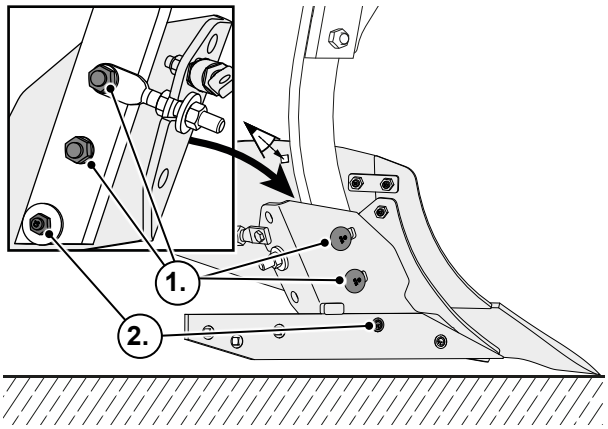


Changing the coulter
Nose coulter (**1**) ◄► Coulter with replaceable tip (**2**) Check undercut (**U**) as in chapter "Undercut - Check / adjust factory setting" - page 107.

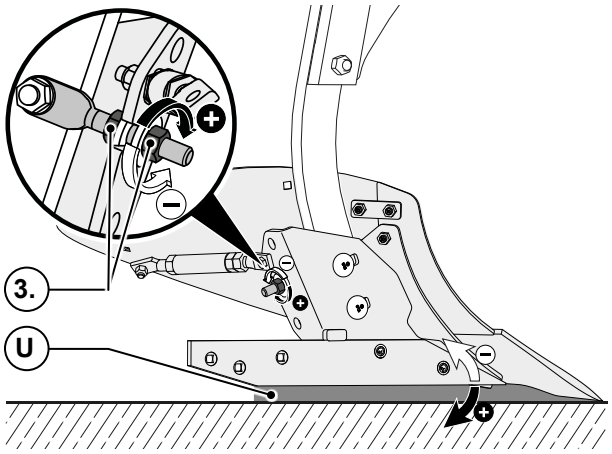


The undercut (**U**) is measured vertically below the limit stop (**3**) between the system plate (**4**) and attachment.

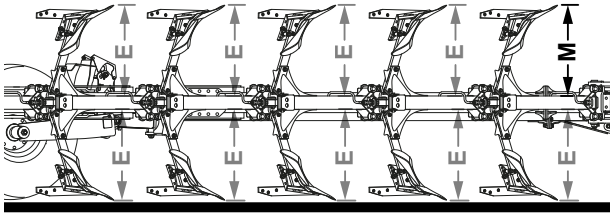
Set-up - Expanding the undercut



► **1.**) Loosen beam screw (2**4**).
► **2.**) Loosen system screw (1**9**).



► **3.**) Adjust the undercut (**U**) by turning the nuts (2**4**) on the eyebolts and by tightening the counternuts.

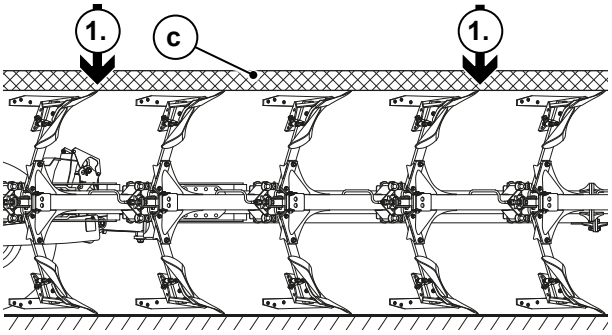


► **4.**) Measure the distance (**M**) between the coulter tip of the head and plough frame or intermediate beam.

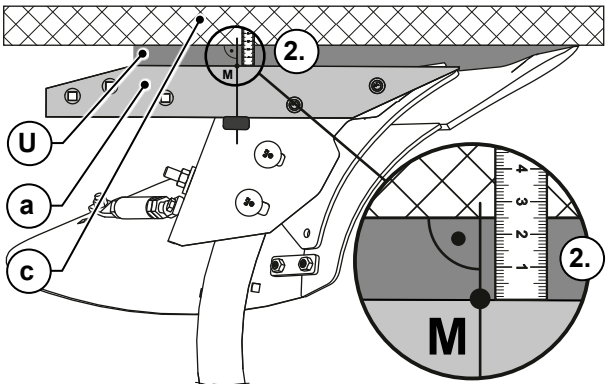
► **5.**) Adjust the measured distance for all plough bodies (**E**).

► **6.**) Tighten the beam and system screws to the tightening torque.

Undercut - Check / adjust factory setting

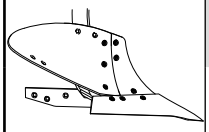


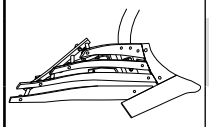
► **1.**) Position alignment rails (**c**) above coulter tips.



► **2.**) Undercut (**U**) = Measure distance between system plate (**a**) and alignment rails (**c**) and compare with factory setting.

Factory settings

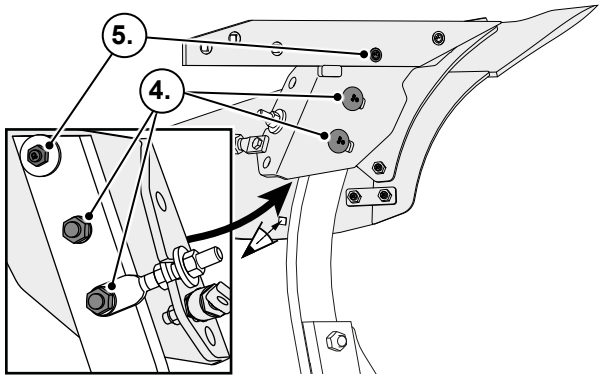
Mouldboard		Undercut
	BP-351O	WS= 38mm S = 24mm
	BP-322P	WS = 38mm S = 24mm
	BP-320 W	WS = 30mm S = 24mm
	BP-341W	WS = 35mm S = 24mm
	BP-351W	WS = 30mm S = 24mm
	BP- 365P	WS ≈ 25mm S ≈ 25mm

Slatted mouldboard		Undercut
	BP-331WS	WS = 30mm S = 24mm
	BP-322 PS	WS = 30mm S = 24mm
	BP-323 PS	WS = 38mm S = 24mm
	BP-355RS	WS = 38mm S = 28mm
	BP-351WS	WS = 30mm S = 24mm

S = Nose coulter

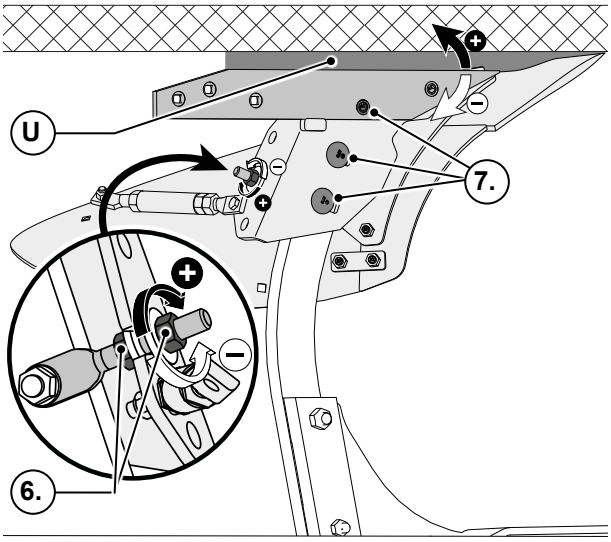
WS = Coulter with replaceable tip

► **3.**) If value deviates from factory setting, adjust distance to alignment rail.
Set all plough bodies uniformly.



► **4.**) Loosen beam screw (2**4**).

► **5.**) Loosen system screw (1**9**).



► **6.**) Adjust the undercut (**U**) by turning the nuts (2**4**) on the eyebolts.

► **7.**) Tighten the beam and system screws to the tightening torque.

Tightening torques

Size	Quality grade 10.9		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M12	137	101	19 (18*)
M16	338	250	24

36 Safety instructions - Maintenance and repair

DANGER
General risk of accident while working with the implement.

- *Observe the safety instructions in the chapter „For your safety“ - page 25 in all cases.*
- *Secure implements that are coupled to the tractor, in order to prevent unauthorised start-up while this work is in progress.*
- *When performing care and maintenance tasks, wear work gloves and the prescribed working clothing.*
- *Always disconnect the power before starting any work on the electrical system.*
- *Before performing welding work, disconnect all power connections to the tractor.*

DANGER
Risk of injury due to pinching or crushing while performing maintenance work.

- *Only perform work when the implement is in a safe condition and has been secured to prevent it rolling away.*
- *Only perform work on the raised implement when it is in a safe condition and has been secured to prevent it lowering and rolling away.*
- *Wear protective gloves and safety footwear.*

WARNING
Risk of injury due to heavy components.

- *When handling heavy components, use suitable lifting devices or seek the assistance of a second person.*

WARNING
Risk of accident due to failure to perform maintenance tasks or not doing so properly.
- *Never replace shear bolts with standard bolts.*
- *Only replace nuts and bolts with those of the same strength class, e.g. 8.8.*
- *Always replace self-locking nuts during reassembly.*
- *Do not replace self-locking nuts with normal nuts.*
- *For threaded connections with spring washers, inspect the spring washers prior to reassembly and replace with new ones if necessary.*
- *Only use suitable tools.*
- *Observe the tightening torques.*
- *Only use original spare parts.*

36.1 Safety instructions - oils and greases

WARNING
Oils and greases are harmful to health.
- *Observe the safety datasheet (from the oil supplier) for the oil and grease used.*

NOTE
- Oils, greases, oily cloths and greasy cloths must be disposed of in accordance with regional disposal and environmental regulations.
- Dispose of synthetic oil as special waste, and separate from mineral oil.

36.2 Who may carry out maintenance?

Qualified persons

Persons, who are trained in the tasks assigned to them, who have been made aware of the potential hazards of improper use and who have been briefed about the necessary safety devices and protective measures.

Specialists

Persons with specialist technical training. They are able to assess the work assigned to them and recognise the potential dangers due to their specialist training and knowledge of the relevant regulations.

Service centre

A service centre has the knowledge and resources (hoists, lifting gear and support equipment) required to assure a professional and safe execution of the tasks involved in maintaining and repairing the implement.

Qualified persons for pressure tanks and pipelines

Work on the pressure tank and its connections may only be carried out by “Qualified persons for pressure tanks and pipelines” (in accordance with TRBS 120**3**).
Observe the test regulations for pressure tanks in accordance with the regional regulations.

37 TEST RUNS DURING OR AFTER MAINTENANCE

DANGER
General risk of accident while working with the implement.
- *Always observe the safety instructions in chapter 1.0, page 9 of the operating instructions.*

DANGER
Risk of accident during implement test run.
- *Before start-up, check the immediate vicinity. No item or person may be in the immediate vicinity.*

For information on the test run (turning test), see chapter „Carrying out the turning test“ - page 59.

38 MAINTENANCE SCHEDULE

NOTE
As proof that the maintenance tasks have been performed, particularly those on the hydraulic system, they should be logged.

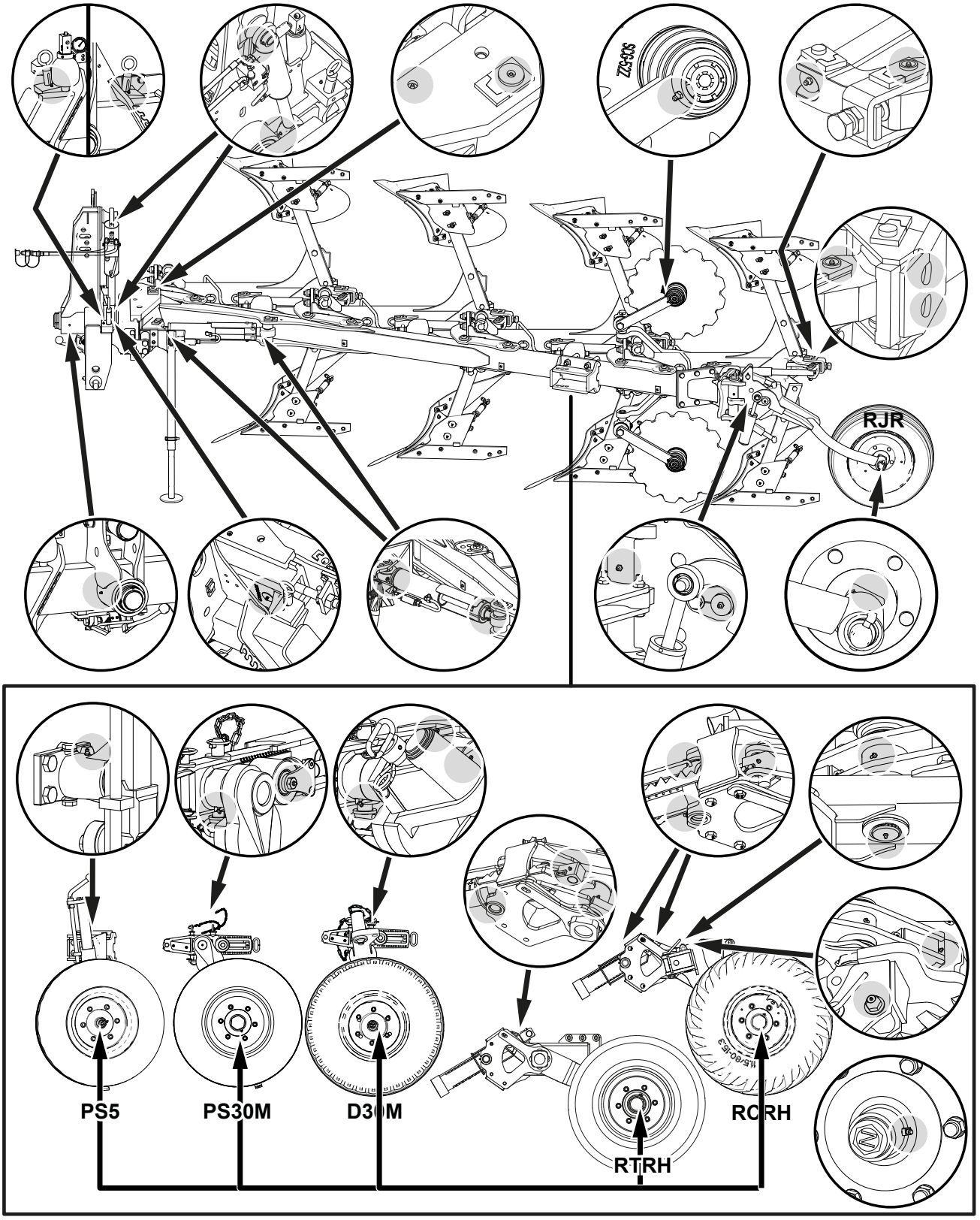
Tasks		Information on page	By			When				
			Qualified person	Service centre / Specialist	Qualified persons for pressure tanks and pipelines	After first use	Every 50 operating hours	After cleaning	Every 6 months	Every 12 months
Check the top link, bottom link and axle head bolts for wear							+			
Lubricate all lubricating points		111				+		+	+	
Keep the adjusting spindle serviceable		112						+		
Grease the adjusting spindles		112						+		
Check all piston rods for wear or damage								+		
Check the wheel bearings on the depth control wheel or the combination wheel for wheel bearing play							+			
Check tightness of all screws.		112				+	+			
Hydraulic hose	Check for tightness						+			
	Check for leaks	113					+			
Pressure tank	Check for tightness						+			
	Check for damage (Visual inspection)						+			
	Check the gas filling pressure of the nitrogen filling system									+
	General maintenance					Maintenance in accordance with the operating and maintenance instructions from the pressure tank manufacturer.				
Wear parts	Check the plough bodies						+			
	Check the trash boards						+			
	Check the subsoiler						+			
	Check the skimmer						+			
	Check the disc coulter						+			
Safety symbols		108						+		
Repair damage to the paintwork		- - -						+		

39 LUBRICATING POINTS

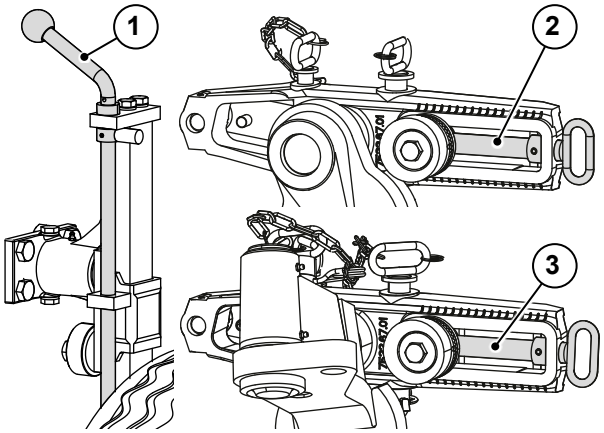
- ► Clean the lubricating nipple before lubrication.
- ► Replace blocked or missing lubricating nipples.
- ► Remove excess grease that has escaped from the bearings.
- ► Dispose of greasy cleaning cloths in an environmentally friendly manner.

Lubrication intervalls: all 150 operating hours / after cleaning

Lubricant: standard lubricating grease



39.1 Lubricating adjusting spindles



1) Adjust the depth the PS5 depth control wheel.
2) Adjust the depth the PS30 M depth control wheel
3) Adjust the depth the D30 M combination wheel

► Keep the adjusting spindles serviceable by rotating regularly.

► Grease the adjusting spindles with standard lubricating grease after cleaning.

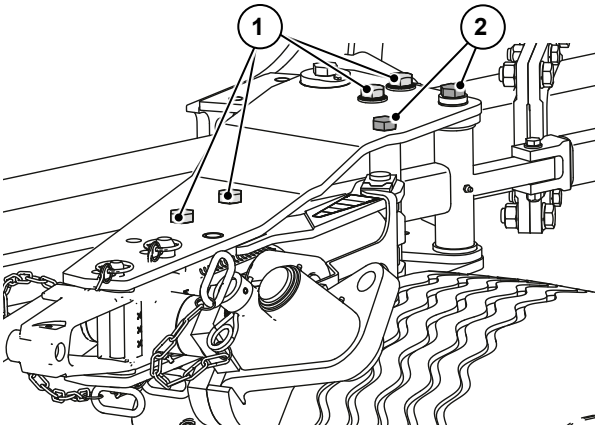
40 RETIGHTEN ALL BOLTS

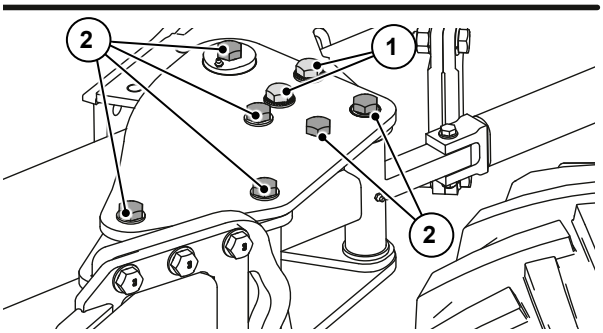
► Check that all fastening bolts are tight after first use and as specified in the maintenance schedule.
„Maintenance schedule“ - page 110.

► Observe the tightening torques. "Tightening torques for metric bolts" - page 126.

40.1 Key threaded connections

Wheel retainer for supporting and combination wheel

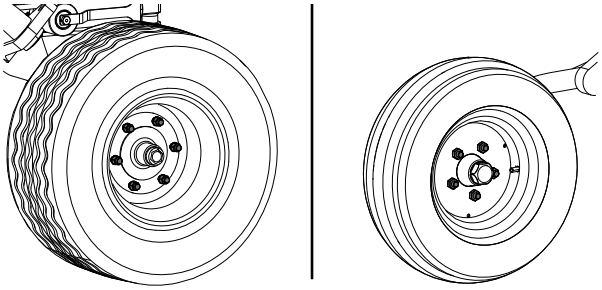




Item	Model	Torque Nm (lb/ft)
1	M20 / 8.8	464 (342)
2	M20 / 10.9	661 (488)

Wheel nuts

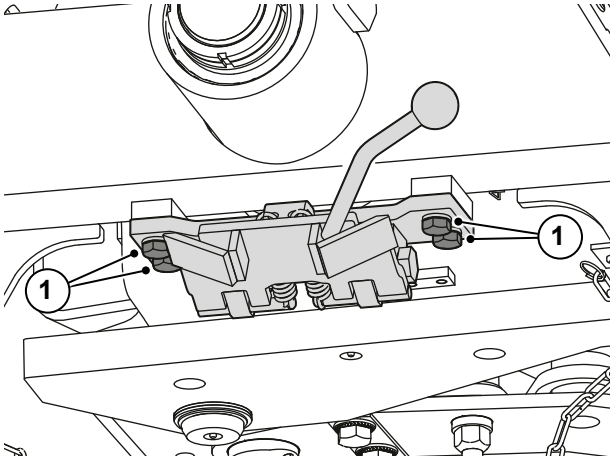
Swinging supporting wheel, combination wheel | **RJR**



► Tighten the wheel nuts to the specified torque. Observe the bolt diameter.

Size	Torque		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M12 x 1,5	97	72	19 (18*)
M14 x 1,5	159	117	22 (21*)
M16 x 1,5	244	180	24
M18 x 1,5	368	271	27

Central lock



Item	Model	Torque Nm (lb/ft)
1	M16 / 8.8	230 (170)

41 INSPECTING THE HYDRAULICS

41.1 Identification on a hydraulic hose

1) Identification: C2HF 10 11

C2HF	=	Manufacturer's identification
10	=	Year of manufacture = 2010
11	=	Month of manufacture = November

or

1) Identification: C2HF 3T 11

3T	=	3. Quarter
11	=	Year of manufacture = 2011

2) HD 208 EN 853 2SN 08 WP 350 BAR

HD	=	High pressure
208	=	Nominal width 8 mm
EN 853	=	Standard for the hydraulic hose
2 SN:	=	Type of hydraulic hose
08	=	Nominal diameter = 8 mm
WP 350 BAR	=	Maximum permitted operating pressure = 350 bar

41.2 Check the hydraulic system

DANGER
Risk of injury and infection from hydraulic fluid.
Fluids (hydraulic oil) escaping under high pressure may penetrate the skin and cause severe injury!

- *Use suitable tools when looking for leaks!*
- *Park the implements, depressurise the system, switch off the engine and remove the ignition key before commencing work on the hydraulic system!*
- *Consult a doctor immediately in case of injury!*

Before each start-up

► Check the hydraulic hoses for wear and damage.

Hydraulic hoses are subject to natural ageing.
The period of usage for hydraulic hoses should not exceed 5-6 years.

► Check the date of manufacture.

After the first 10 operating hours and every 50 operating hours thereafter

► Check the hydraulic system, lines and hoses for leak-tightness and if necessary re-tighten the threaded connections.

NOTE
The hydraulic hoses used must comply with the technical specifications of the implement manufacturer.
Only use original spare parts.

41.3 Pressure tank - checking and adjusting the gas filling pressure

DANGER
Risk of accident due to maintenance carried out improperly on pressure tanks.

- *Work on the pressure tank and its connections may only be carried out by "Qualified persons for pressure tanks and pipelines" (in accordance with TRBS 1203).*

DANGER
Risk of explosion due to incorrect filling gases.

- *Only use nitrogen for filling.*

Filling gas: Nitrogen

(Observe the operating and maintenance instructions from the pressure tank manufacturer)

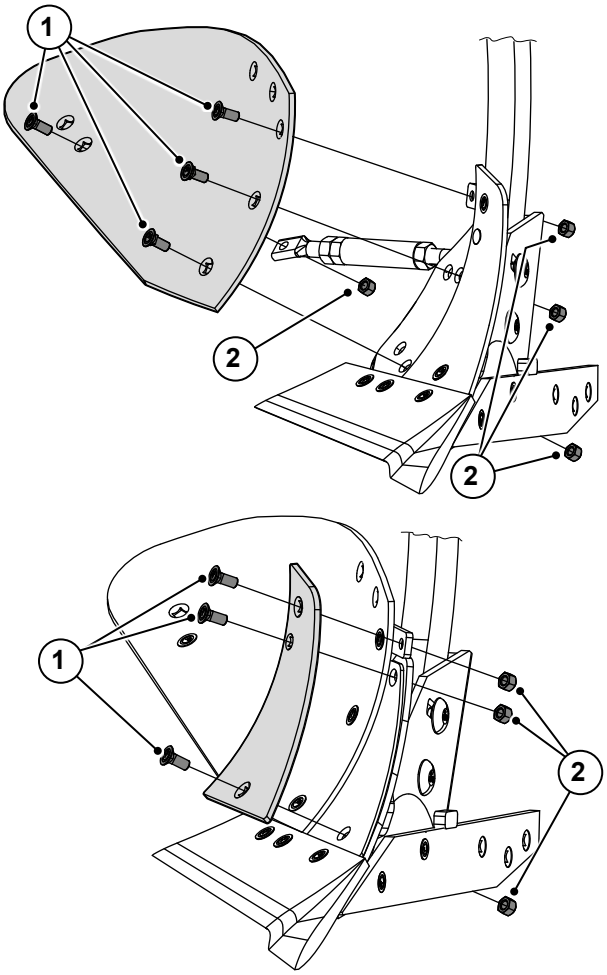
Check procedure

Checks in accordance with the operating and maintenance instructions from the pressure tank manufacturer.

42 REPLACING WEAR PARTS

42.1 Replacing mouldboards

Fastening



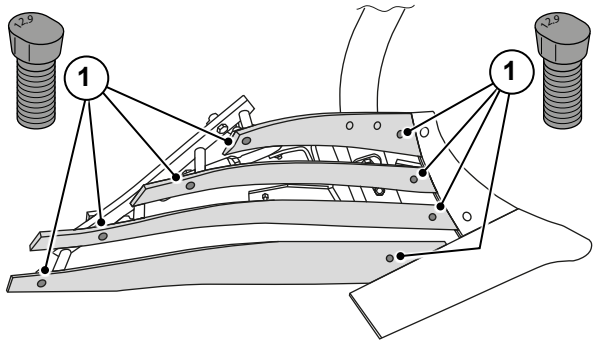
1) Countersunk screws with square shaft; M12 x 30, 10.9
2) M12 mm hexagon nut

Torque

Size	Quality grade 10.9		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M 12	137	101	19 (18*)

42.2 Replace the stripes

Fastening



1) 1 x tapered screw, M12; 12.9

NOTE
Do not tighten the tapered screw to the standard tightening torque.
Excess torque causes damage to the components.

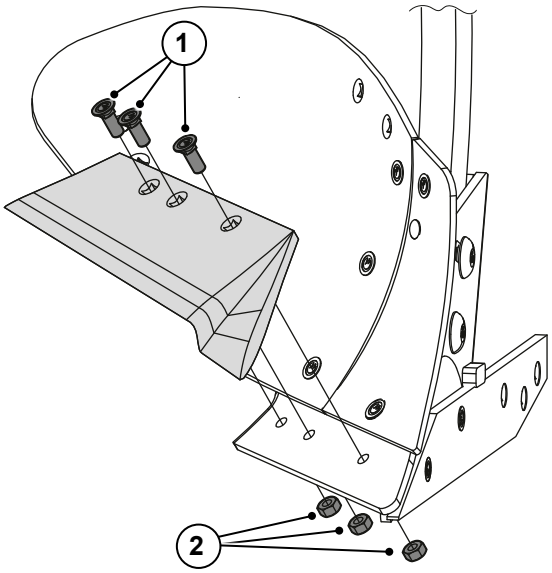
Torque

In contrast to the torques for the standard threads, the tapered screws may only be tightened to 80 Nm.

Size	Quality grade 12.9		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M 12	80	66.5	19 (18*)

42.3 Replace the tine

Fastening



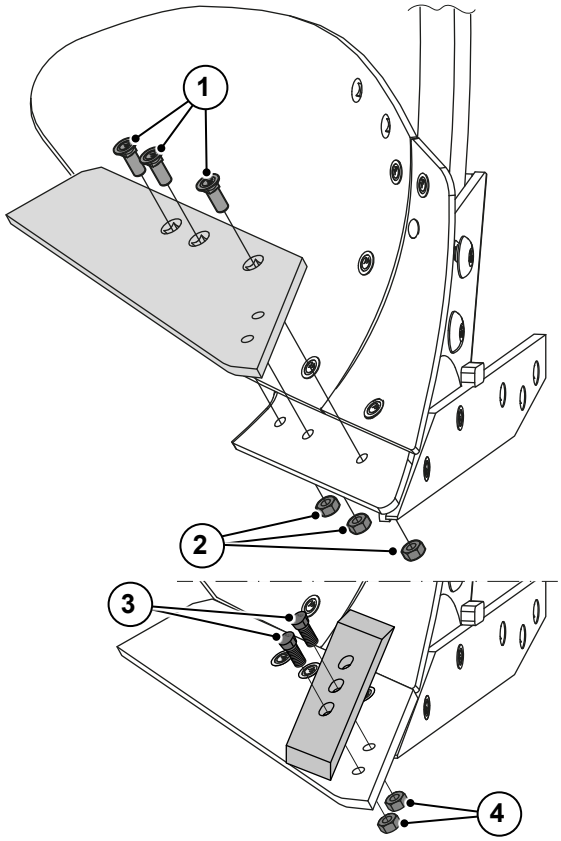
1) Countersunk screws with square shaft; M12 x 30, 10.9
2) M12 mm hexagon nut

Torque

Size	Quality grade 10.9		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M 12	137	101	19 (18*)

42.4 Replace the tines with reversible points

Fastening



1) Countersunk screws with square shaft; M12 x 35, 10.9
2) Hexagon nut; M12 mm
3) Tapered screw; M12; 12.9
4) Hexagon nut; M12 mm

Torque - tine screws (1)

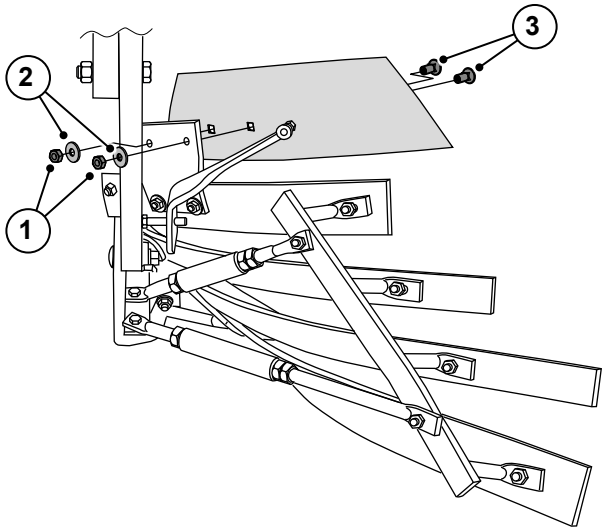
Size	Quality grade 10.9		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M 12	137	101	19 (18*)

Torque - reversible point screws (3)

Size	Quality grade 12.9		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M 12	80	66.5	19 (18*)

42.5 Replace the trash board

Fastening



1) Countersunk screws with square shaft; M12 x 30, 10.9
2) Washer
3) M12 mm hexagon nut

Adjustment

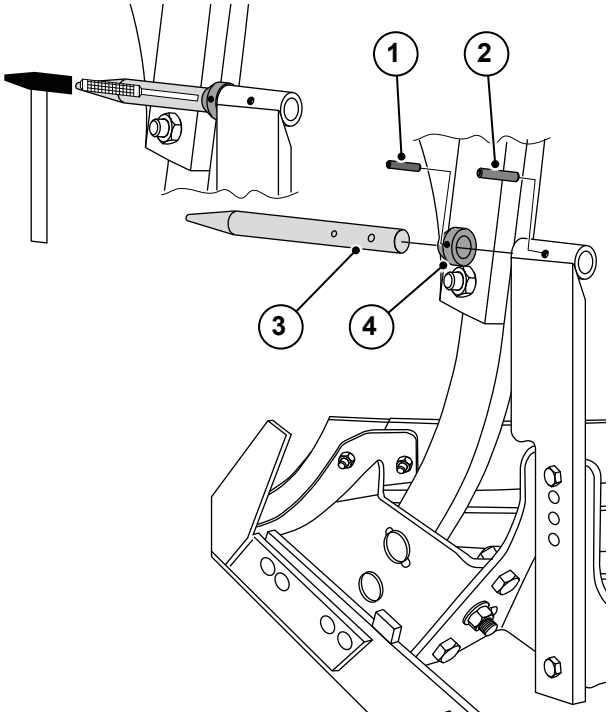
For information on adjusting, see chapter "Adjusting the trash boards" - page 87.

Torque

Size	Quality grade 10.9		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M 12	137	101	19 (18*)

42.6 Replace the subsoiler

Fastening



1) Dowel pin; ø8 X 16 mm long
2) Dowel pin; ø10 X 45 mm long
3.) Tines
4.) Sliding ring

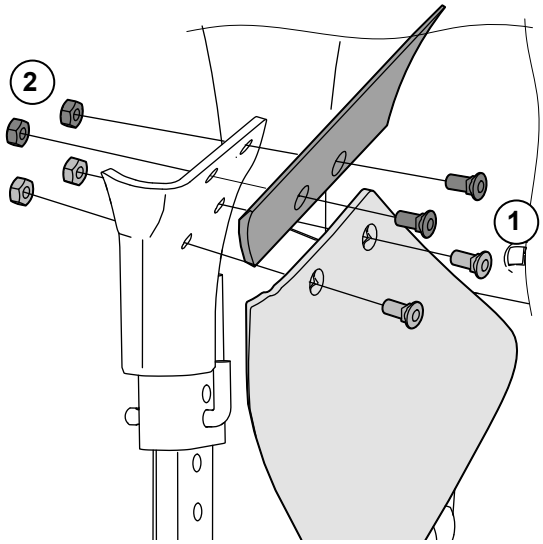
Adjustment

For information on adjusting, see chapter „Adjusting the subsoiler“ - page 87.

42.7 Replace the skimmer tines and mouldboard

Fastening

Vari Fix



1) Countersunk screws with square shaft; M10 x 25, 8.8
2) M10 hexagon nut;

Adjustment

For information on adjusting, see chapter

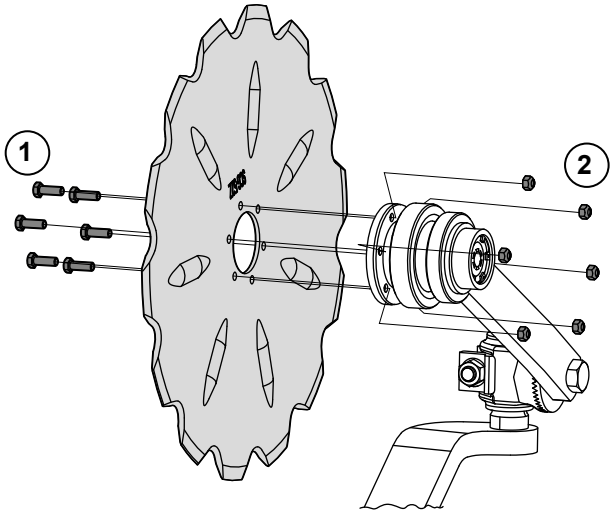
„Adjusting the Vari-Fix skimmer“ - page 90

Torque

Size	Quality grade 8.8		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M 10	54	40	16 (17*)

42.8 Replace the disc coulter

Fastening



1) Hexagon bolts, M8 x 25, 10.9
2) M8 hexagon nut;

Adjustment

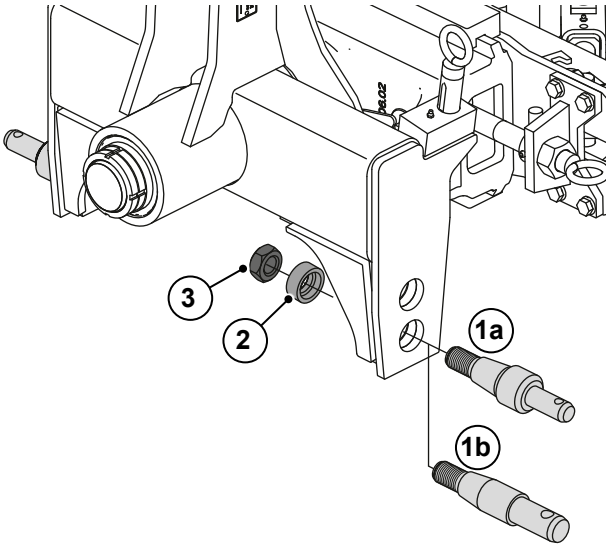
For information on adjusting, see chapter „Adjusting the disc coulter“ - page 88.

Torque

Size	Quality grade 8.8		Width across flats (*DIN ISO 272)
	Nm	lb-ft	
M 10	54	40	16 (17*)

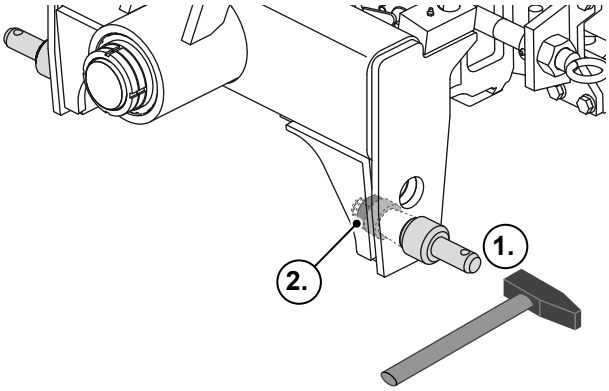
43 REPLACE THE AXLE HEAD BOLT

Fastening



1a) Axle head bolt Cat II
or
1b) Axle head bolt Cat III N
2) Bush
3) M30 x 1.5 nut

Installation



► 1.) After inserting, give the axle head bolt a seating blow.

► 2.) Tighten the axle head bolt’s nut to the required torque.

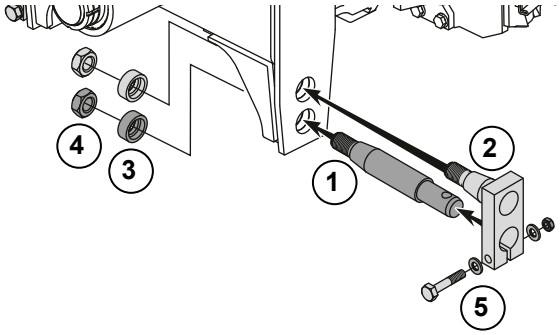
Torque

Size	Quality grade 8.8		Width across flats
	Nm	lb-ft	
M30 x 1,5*	1756	1295	46

*Fine thread

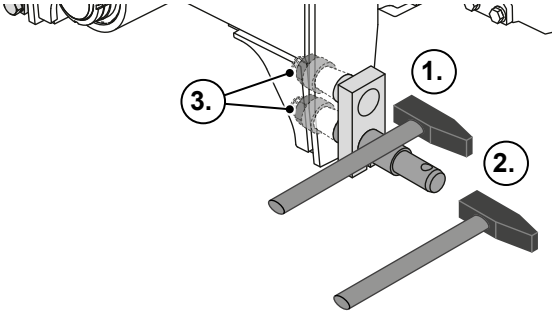
44 Replace the axle head bolt with support pin

Fastening



1) Axle head bolt Cat III
2) Support pin
3) Bushes
4) M30 x 1.5 nuts
5) M14 x 100 clamping bolt with washers and nut

Installation

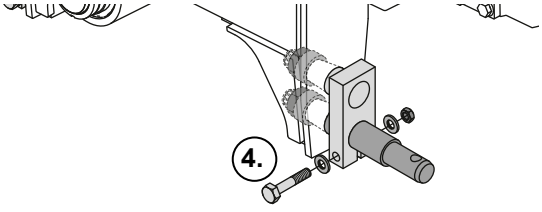


► After inserting, give a seating blow to the ...

► 1.) Support pin and ...

► 2.) ... Axle head bolt.

► 3.) Tighten the nuts for the support pin and the axle head bolt to the required torque.



► 4.) Insert the clamping bolt and screw tight.

Torque

Size	Quality grade 8.8		Width across flats
	Nm	lb-ft	
M30 x 1,5*	1756	1295	46

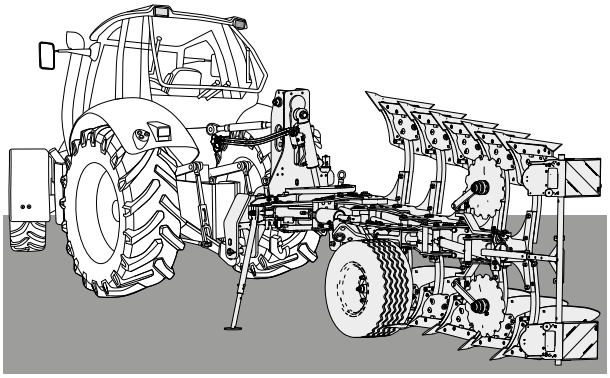
*Fine thread

45 Replace the supporting wheel / combination wheel

Required tools

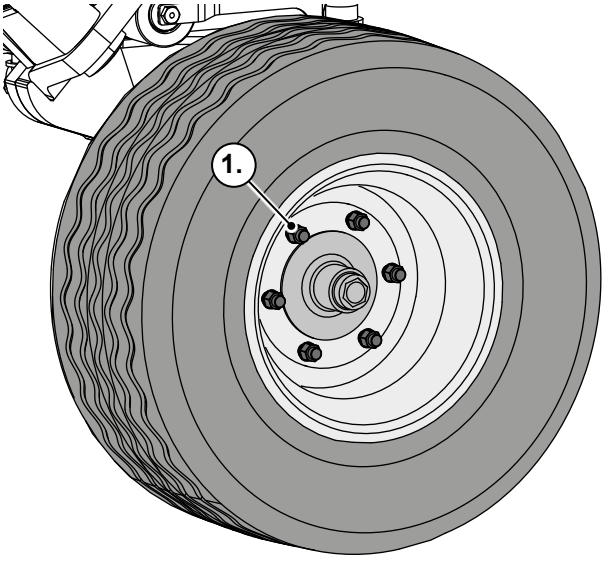
Wheel nut spanner with a 24 mm width

Preparation

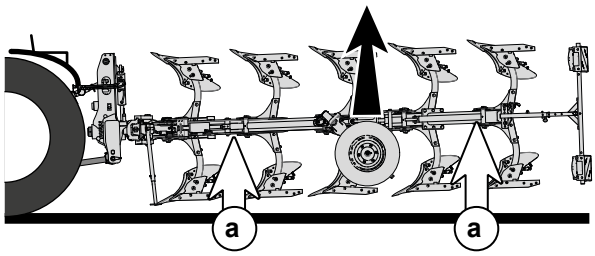


- The implement is in the storage position - chapter 25 "Parking the implement" - page 92
- Secure the implement to prevent it rolling away.
- The tractor engine is switched off.
- The tractor is secured to prevent it being started up without authorisation - remove the ignition key.

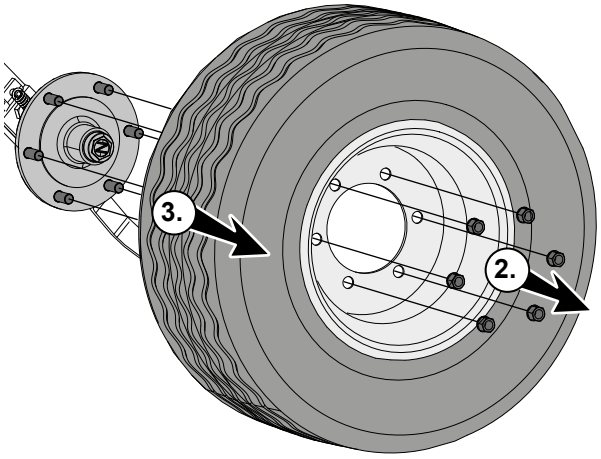
Repair



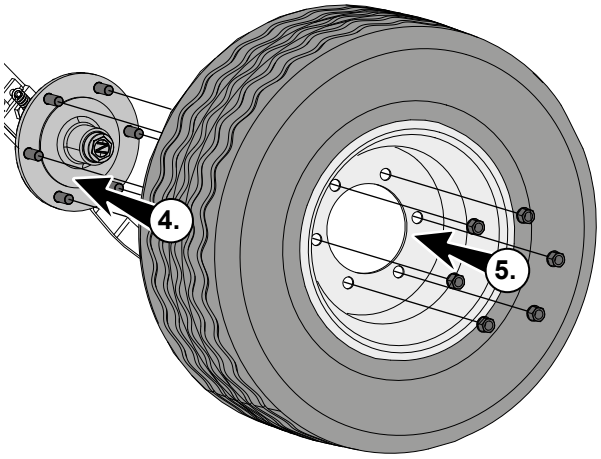
► 1.) Undo all wheel nuts.



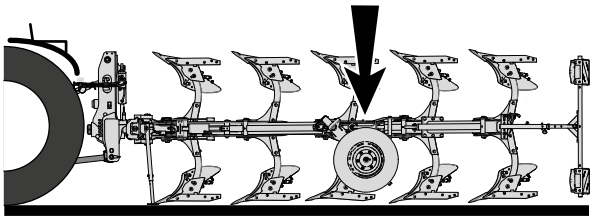
- ► Use the tractor to lift the implement until the wheel turns freely.
- ► Secure the raised device at the suitable points (a) to prevent lowering.
  Select supports that are appropriate for the plough weight.
- ► Switch off the tractor engine.
- ► Secure the tractor to prevent it being started up without authorisation - remove the ignition key.



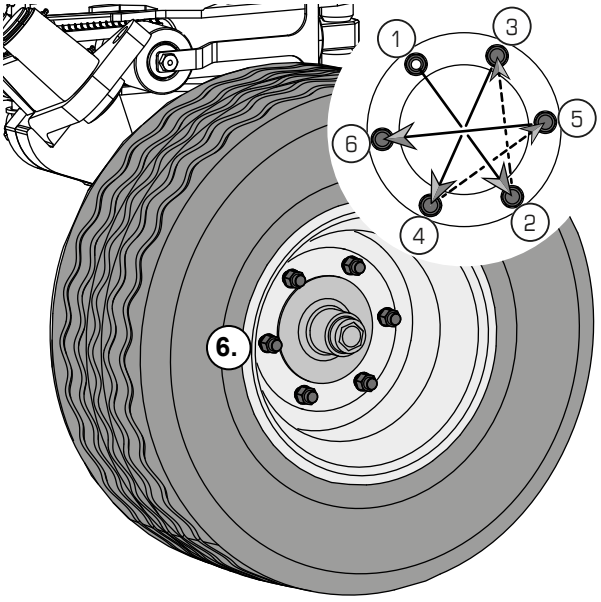
- ► 2.) Remove the wheel nuts.
- ► 3.) Take the wheel off



- ► 4.) Put the wheel on.
- ► 5.) Screw the wheel nuts on and tighten.



- ► Use the tractor to lower the implement until the wheel is on the ground.
- ► Switch off the tractor engine.
- ► Secure the tractor to prevent it being started up without authorisation - remove the ignition key.



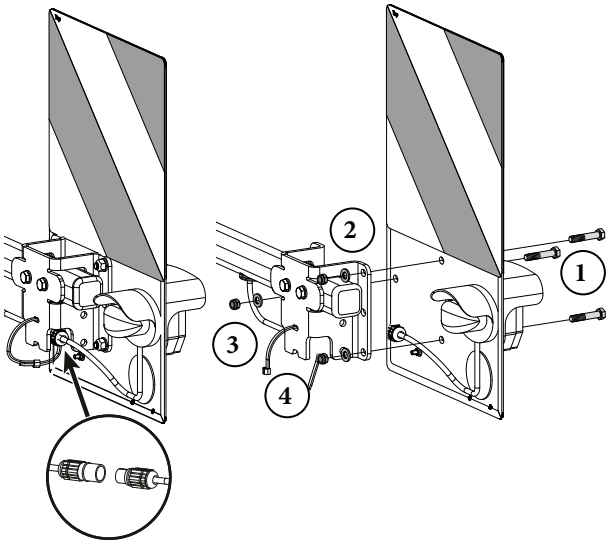
- ► 6.) Tighten all wheel nuts “crosswise” (see sketch) to the required torque.

Torque

Size	Quality grade 8.8		Width across flats
	Nm	lb-ft	
M12 x 1,5	97	72 1	9 (18*)
M14 x 1,5	159	117	22 (21*)
M16 x 1,5	244	180	24
M18 x 1,5	368	271	27

48 REPLACE THE LIGHTING

Fastening



1) Hexagon bolts, M8 x 60, 8.8
2) Washer
3) M8 self-locking hexagon nut
4) renew

Torque

Size	Quality grade 8.8		Width across flats
	Nm	lb-ft	
M8	27	20	13

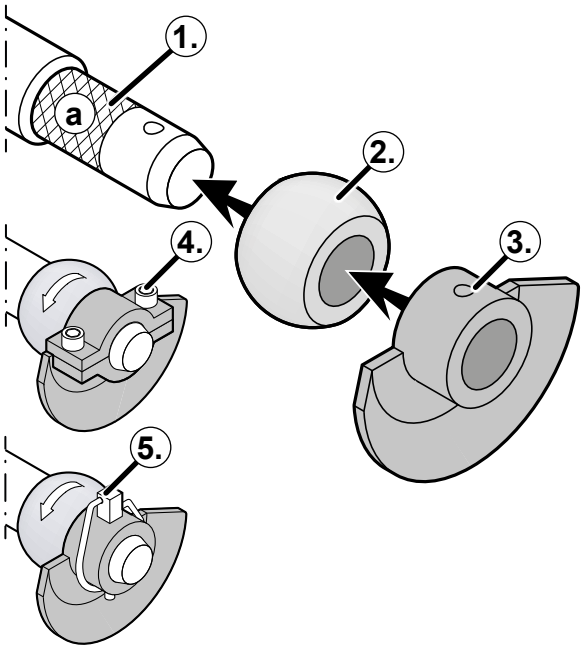
INSTALLATION

46 INSTALLING THE BALL BUSH AND GUIDE CONE ON AXLE HEAD BOLTS

Installation instructions

- The ball bush must rotate on the greased pin of the bolt.
- Do not use a single-part guide cone.

Installation



► 1.) Grease the pin on the three-point axis in the area of the ball bush (a).

► 2.) Put on the ball bush.

► 3.) Slide the clamp-type guide cone on and, depending on the design ...

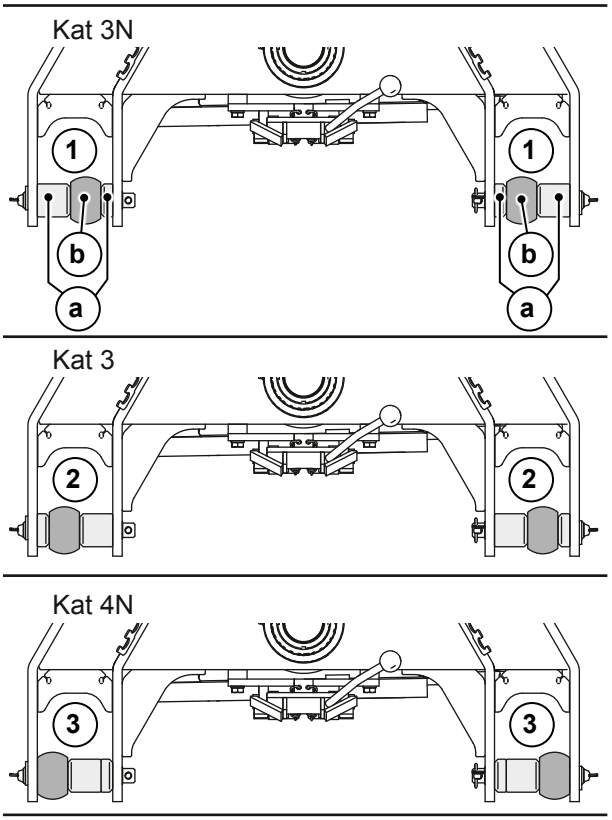
► 4.) ... clamp or ...

► 5.) ... secure with a spring cotter.

47 INSTALLING THE BALL BUSH ON BOTTOM LINK BOLTS

Installation instructions

Place the ball and compensation bushes according to the connection category.

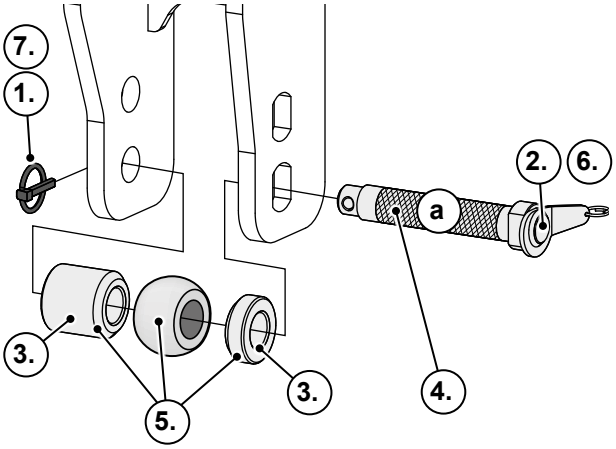


a = compensation bush

b = ball bush

1) Position of Cat 3N compensation and ball bush
2) Position of Cat 3 compensation and ball bush
3) Position of Cat 4N compensation and ball bush

Installation



► 1.) Remove the hinged pin.

► 2.) Pull the bottom link bolts out and ...

► 3.) ... Remove the compensation bushes.

► 4.) Grease the bottom link bolts in the area of the bushes (a).

► 5.) Arrange the ball and compensation bushes according to the connection category and ...

► 6.) Slide the bottom link bolts in.

► 7.) Secure the hinged pin for the bottom link bolts.

APPENDIX

49 EU Declaration of Conformity

CE

The manufacturer hereby declares that the implement meets all essential provisions of the Machinery Directive (2006/42/EC) including the changes applicable at the time this declaration was prepared.

It also meets the provisions of the following EC directives, with the changes applicable at the time this declaration was prepared:

EN ISO 4254-1:2009
Agricultural machinery - Safety - Part 1: general requirements

EN ISO 12100:2010
Safety of machinery - Basic concepts, general design principles.

A complete Declaration of Conformity is provided in the implement documentation supplied.

50 Ballast calculation - combination of the tractor and implement

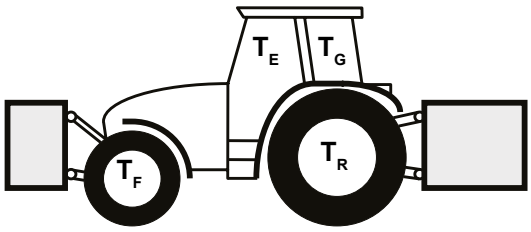
Coupling implements to the front and rear three point linkage must not result in the total permitted weight, axle load or tyre capacity of the tractor being exceeded.
The front axle load of the tractor must be at least 20% of the empty weight of the tractor at all times.
You should ensure that these requirements have been fulfilled before coupling the implement by carrying out the following calculations.

For the calculation, data is required:

- from the operating instructions for the tractor
- from the implement's operating instructions
- from weighing and measuring

NOTE
Enter the values that you have obtained into the table.

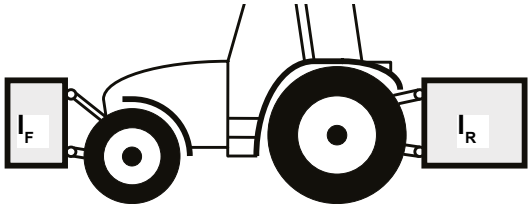
Obtain from the tractor operating instructions or by weighing



Data	Description
T_E	Empty weight of tractor
T_F	Front axle load of the empty tractor
T_R	Rear axle load of the empty tractor
T_G	Total permitted weight of the tractor

► Enter data into „Table of data obtained“ - page 124<ÜS> in kg

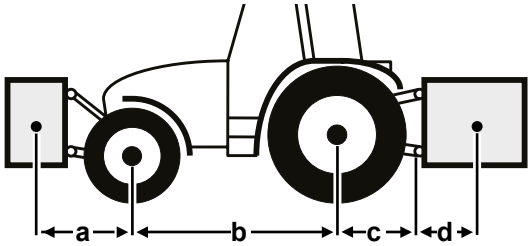
Obtain the following from the implement's operating instructions



Data	Description
I_F	Total weight of front attachment/ front ballast
I_R	Total weight of rear attachment/ rear ballast

► Enter data into „Table of data obtained“ - page 124<ÜS> in kg

Obtain/measure gaps



Data	Description
a	Distance between front attachment/ballast centre of gravity and centre of front axle
b	Wheelbase of the tractor
c	Distance between centre of rear axle and centre of bottom link ball
d	Gap between the centre of the bottom link ball and the rear attachment/ballast centre of gravity

► Enter the information into „Table of data obtained“ - page 124<ÜS>

Table of data obtained

Value		Value		Value	
T_E =	kg	I_R =	kg	a =	mm
T_F =	kg	I_F =	kg	b =	mm
T_R =	kg			c =	mm
T_G =	kg			d =	mm

Calculations

Minimum front ballasting = IF min
(for rear implement)

$$I_{F\,min} = \frac{I_R \times (c + d) - T_F \times b + 0.2 \times T_E \times b}{a + b}$$

Minimum rear ballasting = IR min
(for front implement)

$$I_{R\,min} = \frac{I_F \times a - T_R \times b + 0.45 \times T_E \times b}{b + c + d}$$

Actual front axle load = TF act

$$T_{F\,act} = \frac{I_F \times (a + b) + T_F \times b - I_R \times (c + d)}{b}$$

Actual total weight = TG act

$$T_{G\,act} = I_F + T_E + I_R$$

Actual rear axle load = TR act

$$T_{R\,act} = T_{G\,act} - T_{F\,act}$$

Evaluating the data

► Enter the following data into the table.

- Calculations.
  Enter the results of the calculations.
- Permissible values according to the operating instructions.
  Enter the permissible values for the tractor into the table - data from the tractor operating instructions.
- Tyre capacity.
  Enter the tyre capacity of two tyres into the table - data from the tyre manufacturer.

	Value according to Calculation		Perm. Value according to Operating instructions		2 x permissible Tyre capacity (2 tyres)
Minimum ballast $I_{F\,min}$ / $I_{R\,min}$	/ kg		# # #		# # #
Total weight T_G	kg	≤	kg		# # #
Front axle load T_F	kg	≤	kg	≤	kg
Rear axle load T_R	kg	≤	kg	≤	kg

► Evaluate the table.

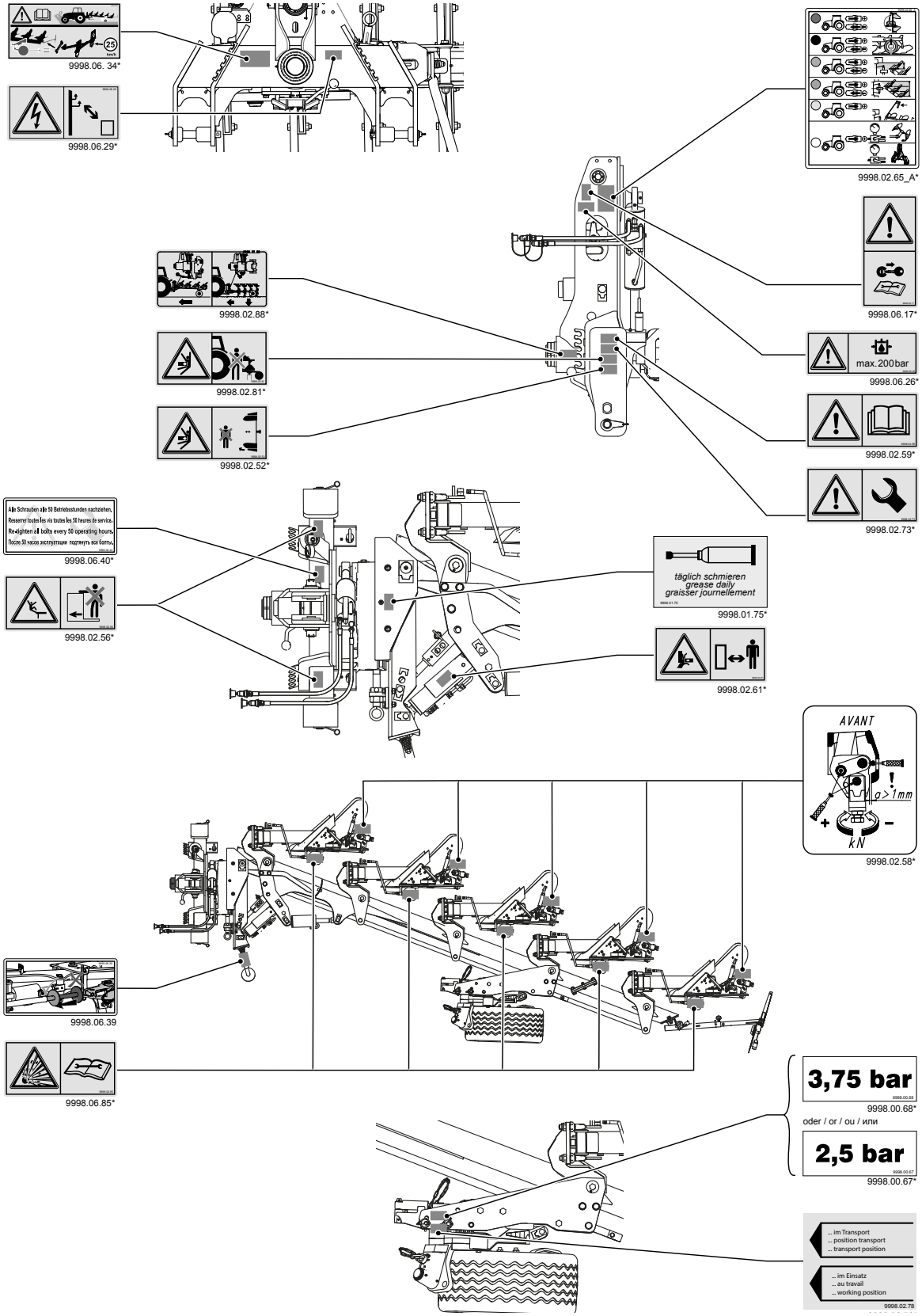
The weights and loads calculated must be less than (**<**) or equal to (**=**) the permissible values.

51 Position of the safety symbols and notice labels

Labels are affixed to the implement for your safety.
For information on their meanings, see chapter „Meanings of the safety symbols“ - page 3027.

- Do not remove the labels.
- Replace damaged or illegible labels.

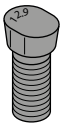
Position of the safety symbols



* Bestellnummer / Order No. / Numéro de commande

52 Tightening torques for metric bolts

Since tightening torques are dependent upon the condition of the surfaces (friction coefficient) and on lubrication, the information in the tables is only intended as a guide.
Assumed friction coefficient class B with the average friction coefficient μ = 0.14.



NOTE
Tightening torque for tapered screws for the tine and stripe screwed connections on the plough bodies.
In contrast to the torques for the standard threads, the tapered screws may only be tightened to 80 Nm. 80 Nm / 59 lb-ft.

52.1 Torques for metric bolts - standard threads

Size	Strength class						Width across flats (DIN ISO 272)
	8.8 or 9.8		10.9		12.9		
	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft	
M10	54	40	79	58	93	69	16 (17*)
M12	93	69	137	101	160	118	19 (18*)
M14	148	109	218	161	255	188	22 (21*)
M16	230	170	338	250	395	292	24
M18	329	243	469	346	549	405	27
M20	464	342	661	488	773	570	30
M22	634	468	904	667	1057	780	32 (34*)
M24	798	589	1136	838	1329	980	36
M27	1176	867	1674	1235	1959	1445	41
M30	1597	1178	2274	1677	2662	1964	46
M33	2161	1594	3078	2270	3601	2 656	50
M36	2778	2049	3957	2919	4631	3416	55
M42	3991	2944	5609	4137	6727	4962	65

52.2 Torques for metric bolts - fine thread

Size	Strength class						Width across flats (DIN ISO 272)
	8.8 or 9.8		10.9		12.9		
	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft	
M10 x 1	60	44	88	65	103	76	16 (17*)
M10 x 1,25	57	42	83	61	98	72	16 (17*)
M12 x 1,25	101	74	149	110	174	128	19 (18*)
M12 x 1,5	97	72	143	105	167	123	19 (18*)
M14 x 1,5	159	117	234	173	274	202	22 (21*)
M16 x 1,5	244	180	359	265	420	310	24
M18 x 1,5	368	271	523	386	613	452	27
M20 x 1,5	511	377	728	537	852	628	30
M22 x 1,5	692	510	985	726	1153	850	32 (34*)
M24 x 1,5	899	663	1280	944	1498	1105	36
M27 x 1,5	1304	962	1858	1370	2174	1603	41
M30 x 2	1756	1295	2502	1845	2927	2159	46

53 Notes on transport and lighting

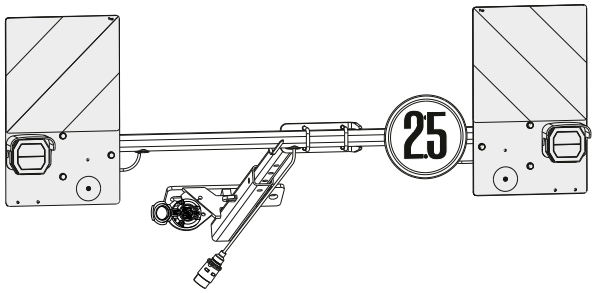
NOTE
The following descriptions are based on regulations in Germany.
The provisions of the latest road traffic regulations for the country in question must be observed.

53.1 Notes on transport

- When driving on public streets and roads the tractor and the implement must comply with the national road traffic regulations and the accident prevention regulations.
- The vehicle owner or the vehicle driver is responsible for complying with all legal requirements.
- Follow the safety instructions in the operating instructions.
- Adapt transport speed to the street and way conditions.
- Take care when navigating turns: Attachments swing out.
- Observe the provisions of the relevant national road traffic regulations.
- Working machinery must not interfere with driving the tractor combination safely.
  The mounted implement must not exceed the permissible tractor axle loads, the permissible total weight and the load bearing capacity of the tyres.
- The front axle load must be at least 20% of the empty vehicle weight to ensure steering safety (observe ballast calculation in the annex).
- Observe the maximum permissible dimensions.
  Transport width 3 m, height 4 m and the overall length 12 m.

53.2 Implement identification / lighting

No parts may protrude from the outline of the implement in such a way that they endanger traffic to a greater extent than is unavoidable (section 32 of the German Road Traffic Licensing Regulations).



If protruding parts cannot be avoided they must be covered and marked with a red/white striped warning sign 423 x 423 mm (DIN 11030; stripes each 100 mm wide, at an angle of 45° running outwards/downwards) and illuminated.
Warning signs and lighting devices are required under the following conditions for marking the extremities of the implement.

Marking to the rear:

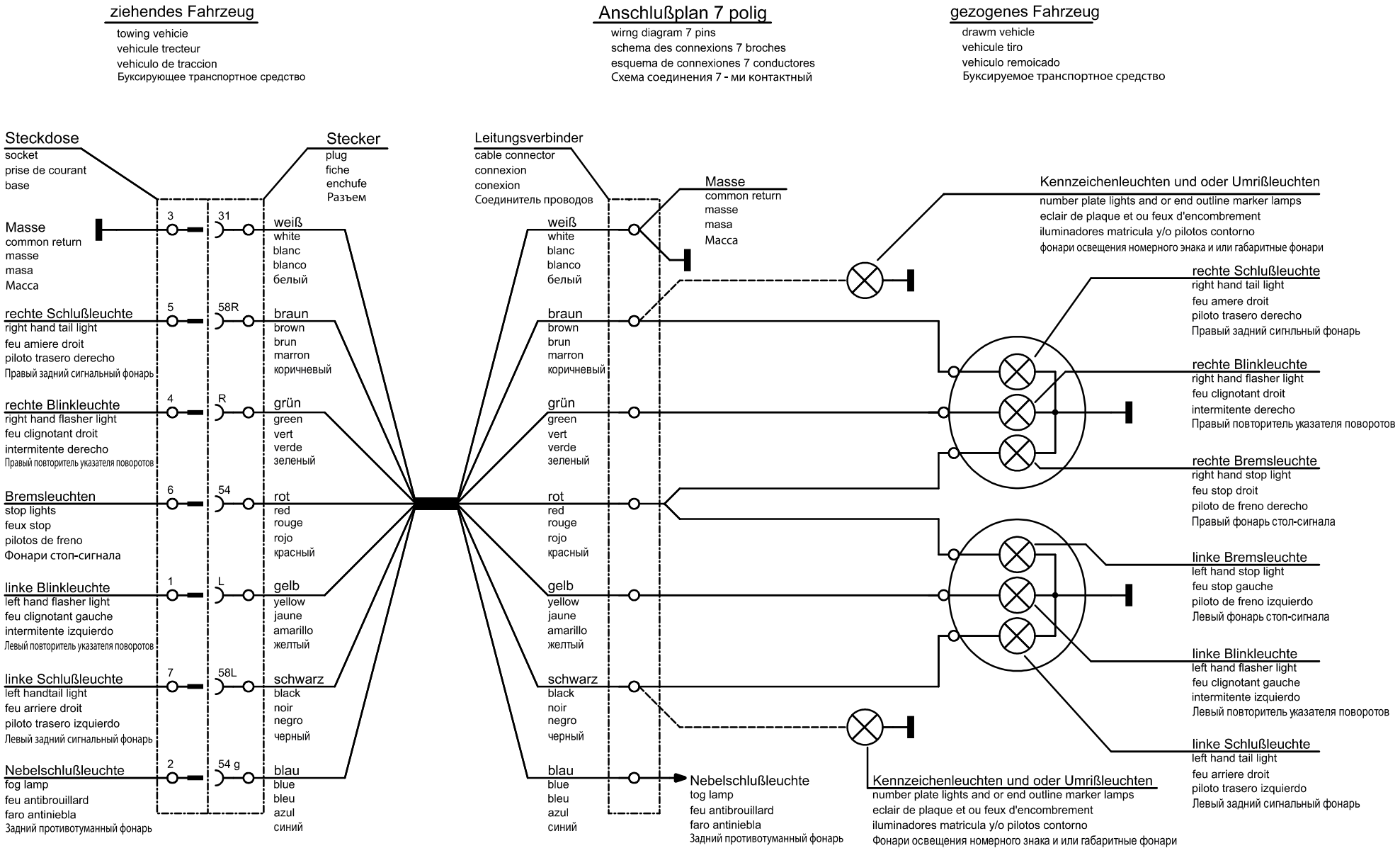
- If there is more than 1 m distance from the tractor's tail lights to the end of the implement.
- If attachments cover the tractor's tail lights.

Marking to the front and rear:

- If the implement protrudes at the side more than 40 cm over the sidelights or tail lights of the tractor.

The lighting must comprise of white lights to the front and red lights to the rear.
If the tractor license plate is covered by the implement when lifted then the license plate of one of the in-house tractors must be replicated on the implement.

54 ELECTRICAL CIRCUIT DIAGRAM - LIGHTING



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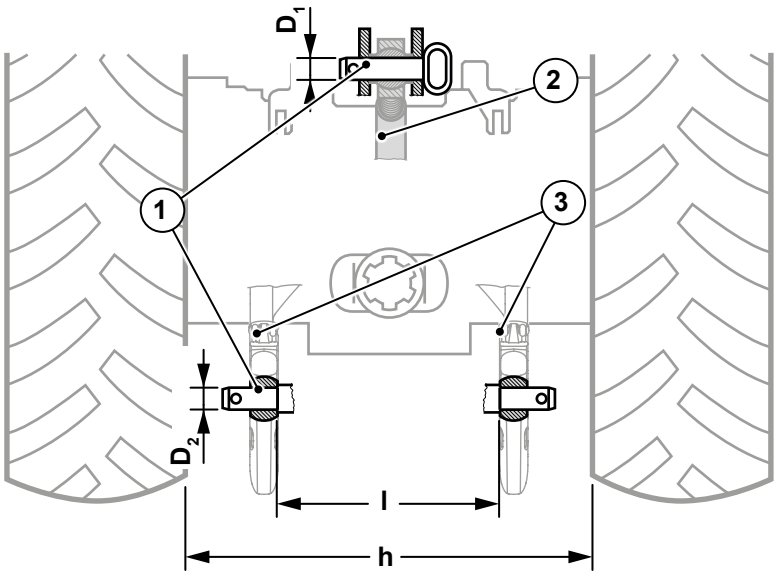
55 Dimensions of connection categories of the rear three-point linkage

As per ISO/DIS 730.2 (Draft 2007)



1) Coupling points of the implement
2) Upper handlebar
3) Lower handlebar

Implement values				Tractor values	
Category	Diameter (mm)		Collar dimension (mm)	Tyre interior dimension	Tractor power
	ø D_1	ø D_2	l	h	kW (HP)
2	25,5	28	825	1150 - 1350	35 - 100 (47 - 135)
3N	31,75	36,6	825	1150 - 1350	starting at 95 (starting at 128)
3	31,75	36,6	965	1250 - 1450	starting at 95 (starting at 128)
4N	45	50,8	952	-	starting at 110 (starting at 148)
4	45	50,8	1166,5	-	starting at 110 (starting at 148)

56 Disposing of the implement

The implement must be disposed of properly and in compliance with the current relevant waste disposal guidelines.
Deliver metal parts to a licensed waste management company.
Remove greases and oils from the implement and dispose of separately, taking account of applicable disposal regulations.

Plastic, rubber and electronic components should be disassembled and handed in for recycling.

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