

OPERATING INSTRUCTIONS

TOP CUT collect



The weed collector

Publishing information

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Table of contents

1	General.....	5
1.1	Introduction.....	5
1.2	Disclaimer.....	5
1.3	Signs and symbols in this manual.....	6
1.4	Safety alert symbols.....	7
1.5	Warnings.....	9
1.6	Application.....	9
1.6.1	Intended use.....	9
1.6.2	Reasonably foreseeable misuse.....	10
2	Safety.....	11
2.1	Danger zone.....	11
2.2	General safety instructions.....	11
2.3	Machine-related safety instructions.....	11
2.4	Residual hazards.....	12
3	Machine description.....	13
3.1	Machine components.....	13
3.2	Sensors on the machine.....	14
3.3	Terminal (model year 20/21).....	16
3.4	Hydraulic accumulator valves.....	17
3.5	Technical details.....	17
3.6	Type plate.....	18
4	Getting Started.....	19
4.1	Tractor attachment.....	19
4.1.1	Coupling height.....	19
4.2	Connecting the oil lines.....	20
4.3	Connecting the terminal.....	21
4.4	The lights.....	21
4.5	Forward speeds / rpm.....	21
4.6	Track width.....	22
4.7	The reel.....	23
5	Operating the machine.....	24
5.1	General.....	24
5.2	Unfolding the headers into transport position.....	26
5.3	Folding the headers into transport position.....	28
5.4	Emptying the hopper.....	30
6	Maintenance and repair.....	31
6.1	General.....	31
6.2	Service and maintenance.....	32
6.3	Hydraulic system.....	32
6.4	Wheels and tyres.....	33
6.5	Lubrication.....	34
6.5.1	General.....	34
6.5.2	Lubricants and oils.....	34
6.5.3	Grease points on the hopper.....	35
6.5.4	Grease points on the lifting arm.....	36

6.5.5	Grease points on the A-frame.....	37
6.5.6	Grease points on the elevator belt.....	38
6.5.7	Grease points on the header.....	39
6.5.8	Grease points on the supporting running gear.....	40
6.5.9	Grease points on the knife drive.....	41
6.6	Changing the oil in the knife drive.....	42
6.7	Elevator belt tension.....	43
6.8	Header belt tension.....	43
6.9	Tensioning the header belt drive chains.....	46
6.10	Tensioning the reel drive chains.....	47
6.11	Knife guide.....	48
7	Malfunctions.....	49
8	Storage.....	51
9	Road transport.....	52
10	Cleaning.....	54
11	EU Declaration of Conformity.....	55
12	Torques for metric bolts.....	56
13	General warranty conditions.....	57

1 General

1.1 Introduction



Read these operating instructions carefully to familiarise yourself with the machine and its correct operation as well as its service and maintenance requirements in order to avoid personal injury or damage to the machine itself. Failure to observe these instructions may result in personal injury or damage to the machine. These operating instructions and the safety decals on the machine may also be available in other languages (your dealer can order these for you).

This manual belongs with the machine and should be handed over to the new owner when reselling the machine.

All measurements quoted in these instructions are given as metric units. Use only parts and bolts of a suitable size and design. You must use different spanners for metric and inch bolts.

The designations “right” and “left” refer to the forward direction of the machine.

Enter the serial number of the machine into the table in section 3.6. Ensure that the numbers are copied correctly. This information is an essential help in the event of theft. You will also have to state the serial number when ordering parts from your dealer. We also recommend that you note down the serial number in a separate location.

Your dealer will have carried out an inspection before the machine was delivered to you. This inspection should be repeated after the machine has been operated for between 20 and 50 hours. This is to ensure that the machine continues to perform at top level.

The machine must be operated, serviced and maintained by staff who are familiar with it and aware of the safety hazards. The relevant accident prevention regulations as well as other general safety, occupational health and road traffic regulations must be observed. Any unauthorised modifications to this machine will render manufacturer liability for consequential damage null and void.

1.2 Disclaimer

We make every effort to ensure that the information contained in this instruction book is correct and up to date. In order to secure our leading position in technological development, it may be necessary to make changes to the product and the way in which it operates without prior notice. We accept no liability for malfunctions, breakdowns and any resulting damage.

Please also note any additional information supplied.

1.3 Signs and symbols in this manual

The signs and symbols in this manual are intended to help you use the manual and the machine quickly and safely.



Information on how to use the machine and this manual most effectively.

Action steps

1. By following this specific sequence of action steps, you will be able to use the machine correctly and safely.
 2.
- ▶ Action step

Result

- ✓ This describes the result of performing a specific sequence of individual steps.




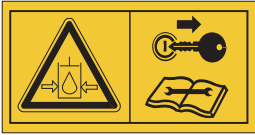




[] Position number

Position numbers in the illustrations are given in square brackets [].









1.4 Safety alert symbols

A warning symbol signifies a safety hazard.

Machine The following safety alert symbols are found on this machine:




Pictograms	Descriptions
	<p>Stop the engine</p> <p>Before you work on the machine, stop the engine and remove the ignition key. Wait until all moving parts have come to a standstill.</p>
	<p>Drawing-in hazards by moving parts</p> <p>There is risk of serious or fatal injury when working on the machine with the engine running. Before you work on the machine, shut off the engine and remove the ignition key. Wait until all moving parts have come to a standstill.</p>
	<p>Hazards from sharp parts</p> <p>There is risk of serious or fatal injury when working on the machine with the engine running. Before you work on the machine, shut off the engine and remove the ignition key. Wait until all moving parts have come to a standstill.</p>
	<p>Hazards from pressure accumulators</p> <p>The system comprises pressure accumulators. Read the operating and maintenance instructions before you start servicing the machine.</p>
	<p>Hot surface hazards</p> <p>This alert symbol indicates actions that involve hazards from hot surfaces.</p>
	<p>Tie-down points on the machine</p> <p>When transporting the machine on a low trailer, strap the machine only to the marked tied-down points.</p>
	<p>Lifting points</p> <p>Only the marked lifting points may be used to raise the machine.</p>
	<p>Keep off</p> <p>Do not climb on any part of the machine, because this could severely damage or destroy some parts.</p>

Operating instructions These operating instructions use the following safety alert symbols:

Pictogram	Description
	General warning This symbol marks actions that involve multiple risks.
	Cutting hazard This symbol marks actions that involve potentially fatal hazards arising from sharp machine parts.
	Drawing-in hazards by moving parts This symbol marks actions that involve potentially fatal hazards from moving machine parts.
	Hot surface hazards This symbol indicates actions that involve hazards arising from hot surfaces.
	Electric shock This safety alert symbol indicates actions that involve potentially fatal hazards due to electric shock.
	High-pressure oil leaks This safety alert symbol indicates actions that involve potentially fatal hazards from high-pressure systems.
	Falling object / vertical movement hazard This safety alert symbol indicates actions that involve potentially fatal hazards from falling objects.
	High-pressure parts This safety alert symbol indicates operator actions that involve hazards arising from pressurised elements and liquids.

1.5 Warnings

Hazard classification This manual uses the following levels of hazard to indicate potentially hazardous situations and important safety regulations:

Hazard level	Description
 DANGER	DANGER alert of a hazardous situation which will lead to death or serious injury and must therefore be avoided.
 WARNING	WARNING alert of a hazardous situation which may lead to death or serious injury and must therefore be avoided.
 CAUTION	CAUTION alert of a hazardous situation which may lead to minor or fairly serious injury and must therefore be avoided.
ATTENTION	Risk of material damage. The product or the surroundings may be damaged.

How we use warnings Warnings in this manual consist of the following elements:

Pictogram (Safety alert symbol)	HAZARD LEVEL
	The category and source of hazard Failure to observe warnings and instructions ► Action to prevent the hazard

1.6 Application

1.6.1 Intended use

The machine reflects state-of-the-art technology and complies with the safety regulations that were in place at the time of its market launch for a specific intended use.

In designing this product, the manufacturer was unable to exclude foreseeable misuse or residual dangers without restricting the intended functionality.

This machine is designed for typical field work or similar operations. Any other use is considered as outside the scope of purpose. The manufacturer cannot be held liable for any damage resulting from use that is outside the scope of purpose; any risk from such use is borne solely by the operator.

The machine is designed to carry out the following functions:

- Cutting, gathering, collecting and removing weed seeds (mechanical in-field weed control).

Intended use also includes compliance with the operating, maintenance and servicing conditions prescribed by the manufacturer.

1.6.2 Reasonably foreseeable misuse

In the event of reasonably foreseeable misuse of the machine, the manufacturer's warranty will be null and void.

The following uses constitute reasonably foreseeable misuse:

- Allowing passengers to ride on the machine
- Dismounting from the operator platform while the machine is running
- Starting and operating the machine from outside the operator platform
- Operating the machine remotely by installing the terminal in a location outside the machine
- The removal of guards from the machine
- Not observing the service and maintenance intervals
- Failure to replace a part at the specified interval
- Failure to service or repair the machine at the specified interval
- Services or repairs not carried out properly
- Storing items on the machine outside the compartments provided
- Transporting the machine on public roads with parts projecting beyond the statutory transport width
- Transporting the machine on public roads with the hopper filled
- Exceeding the gross weight
- Exceeding the maximum forward speed
- Moving the machine with the hopper tipped

2 Safety

2.1 Danger zone

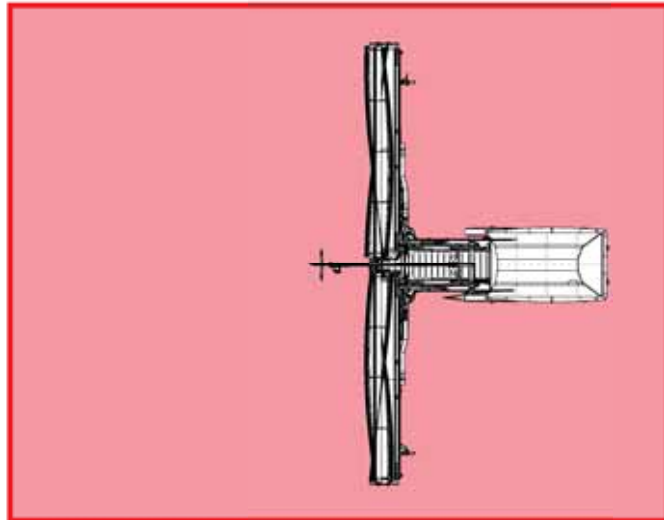


Fig. 1: Danger zone (top view)

2.2 General safety instructions

- Observe the statutory regulations on accident prevention and environmental protection.
- Observe the safety rules and regulations of the country in which the machine is to be used.
- The machine must be operated by qualified staff only.
- Only operate the machine when it is in a technically perfect condition.
- Observe all decals on the machine.
- Persons operating or servicing the machine must not be intoxicated by alcohol, drugs or medication that causes drowsiness or has sedative effects.
- To avoid health hazards caused by using unsuitable parts, fit only accessories and parts that are approved by the manufacturer.
- Observe the specifications and ambient conditions as stated in the documentation.

2.3 Machine-related safety instructions

- General**
- You must not modify or convert any part of the machine.
 - Wear protective clothing (e.g. safety shoes, gloves) when operating the machine.
 - Never walk about on top of the machine. Use a pedestal to reach areas high off the ground.
- Road transport**
- Transporting the machine on public roads is only permitted when the header is in transport position and the hopper empty.
 - The knives must be protected by a guard when the machine is not in use.

- Commissioning**
 - The commissioning process must be carried out by qualified staff.
- Operating the machine**
 - Ensure that other people stand well clear of the machine when it is in operation. Immediately shut off the Top Cut Collect when a person enters the danger zone.
 - Operators must constantly monitor the danger zone.
- Service and maintenance**
 - Inspect the machine for damage and cracks at regular intervals (50 hours). Remove any damage that is detected during the inspection and take the machine out of operation until any such damage is repaired.
 - Repairs must be carried out by trained staff.

2.4 Residual hazards

The documentation indicates all residual hazards.

The best way to avoid these residual hazards is by observing and implementing the following instructions:

- the special warning signs on the machine
- the general safety instructions in this manual
- the special warnings in these instructions

The following situations present potential life or health hazards:

- misuse
- improper handling and operation
- road transport
- removal of guards
- defective or damaged parts
- operation / use by unqualified, untrained staff

Using the machine may involve the following environmental hazards:

- improper handling and operation
- leaking liquids (lubricants etc.)

Material damage to the machine can be caused by:

- improper handling and operation
- failure to observe the service and maintenance intervals
- use of incorrect lubricants and liquids

Damage to property within the operating zone of the machine may be caused by:

- improper handling and operation

The functionalities or performance of the machine may be restricted by the following:

- improper handling and operation
- improper maintenance / repair or failure to carry out due maintenance / repair
- use of incorrect lubricants and liquids

3 Machine description

3.1 Machine components

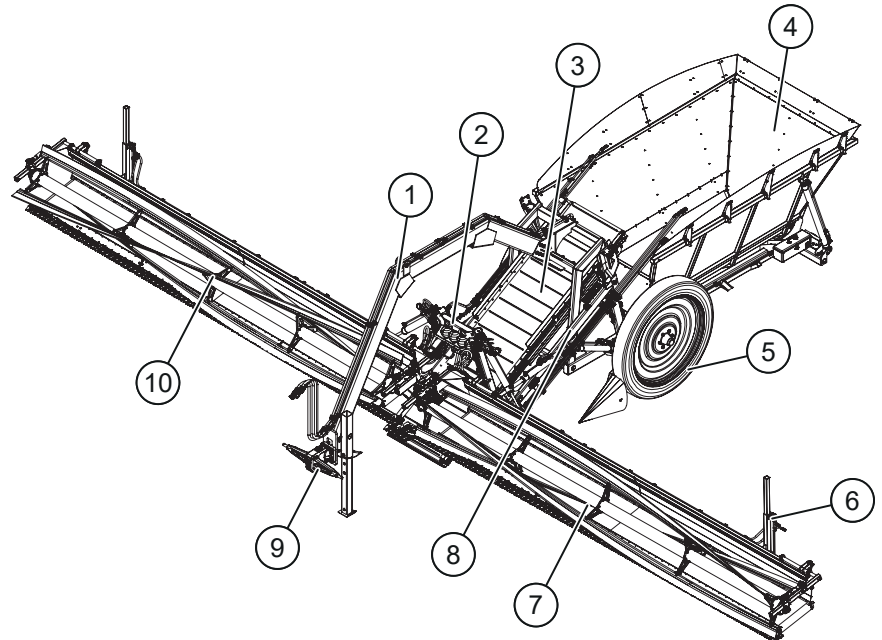


Fig. 2: Machine

- | | |
|---------------------------------|-------------------------------|
| [1] Swan neck and machine frame | [6] Supporting running gear |
| [2] A-frame | [7] Header (left-hand side) |
| [3] Elevator belt | [8] Lifting arm |
| [4] Hopper | [9] Hitch |
| [5] Wheel | [10] Header (right-hand side) |

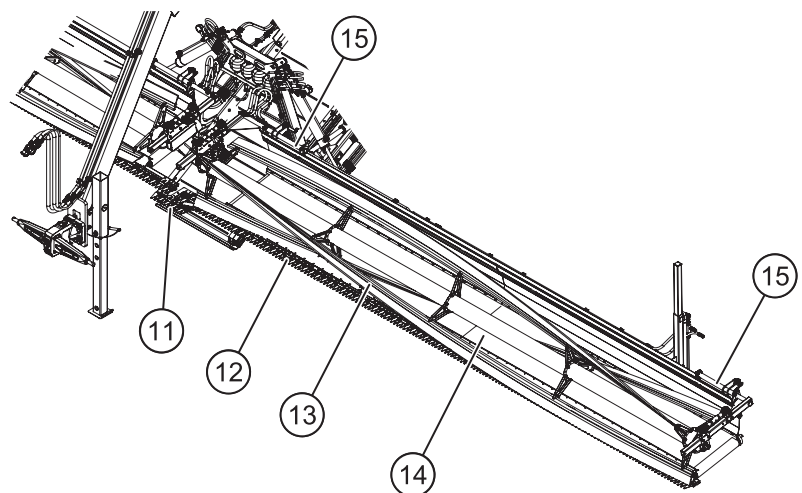


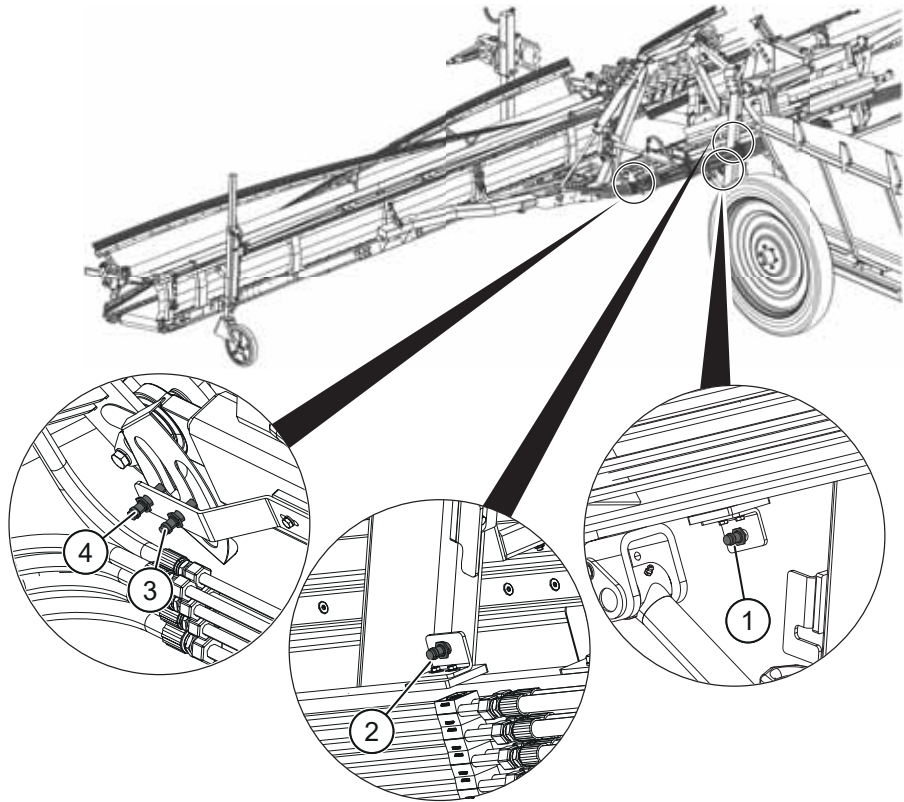
Fig. 3: Header

- | | |
|----------------------------------|------------------|
| [11] Central knife | [14] Header belt |
| [12] Double-knife cutting system | [15] Reel arms |
| [13] Reel (helical) | |

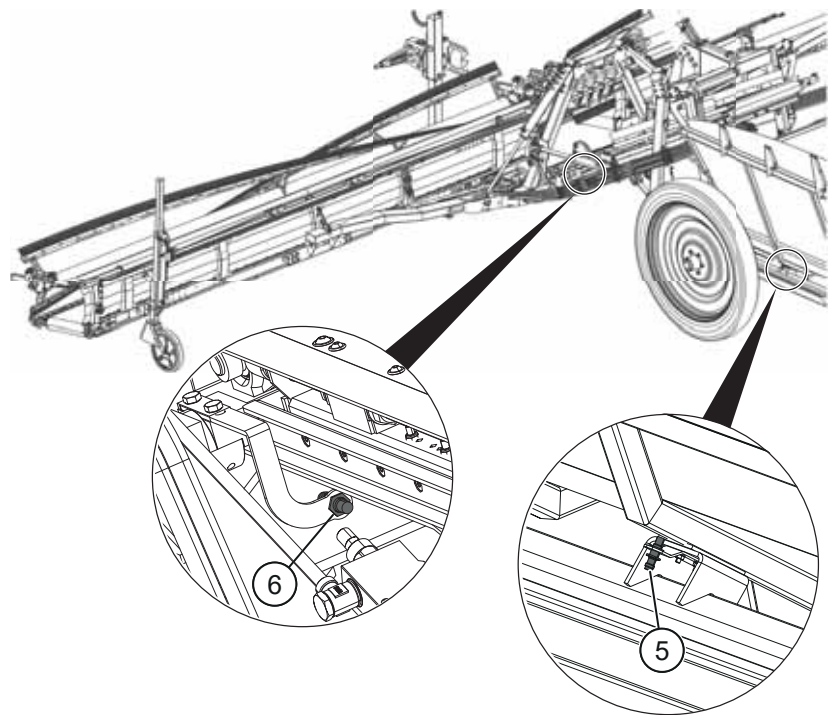
3.2 Sensors on the machine



All sensors are located on the left-hand side of the machine.



- | | | | |
|-----|---|-----|--|
| [1] | Lifting arm height, bottom-mounted
Header in work position | [3] | A-frame angle
Header in work position |
| [2] | Lifting arm height, top-mounted
Header in transport position | [4] | A-frame angle
Maximum forward tilt |



[5] End position sensor
Hopper down

[6] Elevator belt, front end

3.3 Terminal (model year 20/21)

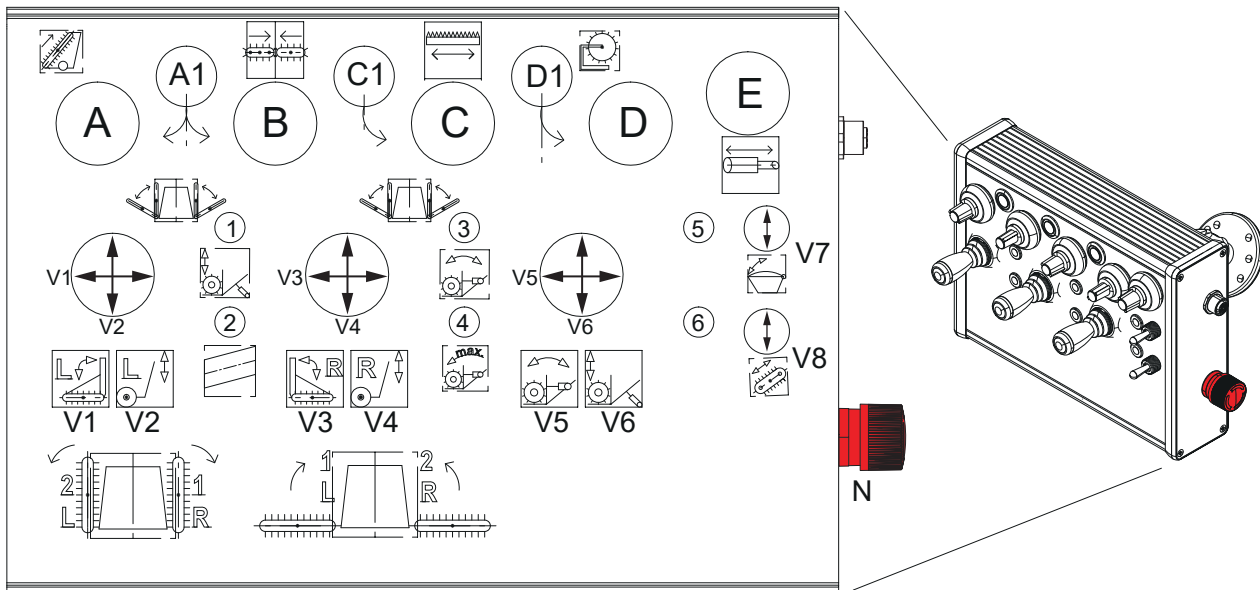


Fig. 4: The terminal

- Sensors**
- | | |
|---|--|
| 1 Lifting arm height, bottom-mounted Header in work position | 4 A-frame angle
Maximum forward tilt |
| 2 Lifting arm height, top-mounted Header in transport position | 5 End position control
Hopper down |
| 3 A-frame angle
Header in work position | 6 Elevator belt, front end |

- Forward speed / rpm control**
- | | |
|------------------------------|------------------------|
| A Elevator belt rpm | A1 Belts on/off |
| B Header belt speed | C1 Knife on/off |
| C Knife speed | D1 Knife on/off |
| D Reel speed | |
| E Hydraulic ram speed | |

- Cylinder functions**
- | | |
|--|----------------------------------|
| V1 Left header
Fold in/out | V5 A-frame fore/aft |
| V2 Left support wheel up/down | V6 Lifting arm up/down |
| V3 Right-hand header
Fold in/out | V7 Tilt hopper up/down |
| V4 Right support wheel up/down | V8 Elevator belt fore/aft |

- Safety system** **N** Emergency stop

3.4 Hydraulic accumulator valves

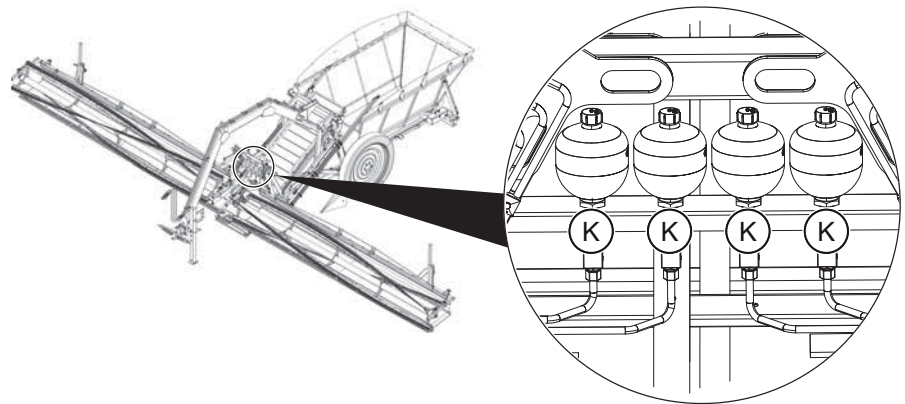


Fig. 5: Valves (K)

3.5 Technical details

Tractor requirements

Parameter	Value
Rated pressure on the couplers supplying Top Cut ^{Collect} :	180 bar
Oil flow on the couplers supplying Top Cut ^{Collect}	: ≥ 80l/min
Link arm couplers	Cat. 2

Overall dimensions

Parameter	Value
Total length	8,165 mm
Distance from the middle of the link arm pin/ball to the rear end of the machine	7,890 mm
Coupling height (trailer frame is parallel to the surface of the road)	875 mm
Maximum hopper capacity	approx. 6.5 m ³
Unloading height	approx. 1,900 mm
Tyre size	210 / 95 R44

Dimensions in work position

Parameter	Value
Working width	> 12,000 mm
Minimum cutting height	200 mm
Maximum cutting height	1,600 mm
Minimum track width	1,850 mm
Maximum track width	2,250 mm
Minimum ground clearance (under trailer or hopper)	503 mm
Swan neck ground clearance (trailer frame is parallel to the surface of the road)	725 mm

Dimensions in transport position

Parameter	Value
Total width	approx. 2,500 mm
Total height	approx. 3,620 mm
Minimum track width	1,850 mm
Maximum track width	2,250 mm
Minimum ground clearance (under trailer or hopper)	503 mm
Swan neck ground clearance (trailer frame is parallel to the surface of the road)	725 mm

Registered weights and loads

Parameter	Value
Road travel	
Registered gross weight	4,000 kg
Gross axle weight rating	3,100 kg
Registered tongue load on the coupling point of the tractor	1,000 kg
In the field	
Maximum payload	1,000 kg

Wind load It is not recommended to operate the machine in winds stronger than 5 Beaufort (Bft) (29 - 38 km/h).
 Stop operating the machine when wind velocities reach and exceed 8 Bft (62 - 74 km/h).

3.6 Type plate



The type plate is on the swan neck on the left side.
 Please enter the type code and serial number of your machine in the table below.

Type code:	
Serial number:	

This information is required when you make a warranty claim or order parts from your authorised dealer.

4 Getting Started

4.1 Tractor attachment

4.1.1 Coupling height

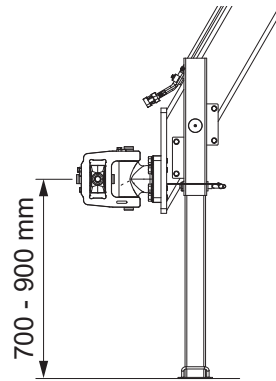


Fig. 6: Coupling height

The machine is coupled to the lower links of the tractor.

- ▶ Adjust the stabilisers or make them rigid to minimise any side movement of the link arms and ensure maximum stability.
- ▶ Ensure the coupling height is between 700 mm and 900 mm.

4.2 Connecting the oil lines



The machine requires an oil flow of 80l/min. Ensure that the tractor's hydraulic system can provide this flow rate. Otherwise the machine will not operate properly.

Depending on the individual tractor specification or hydraulic connections, the machine can be operated by a Load Sensing, Power Beyond or a constant flow system or spool.

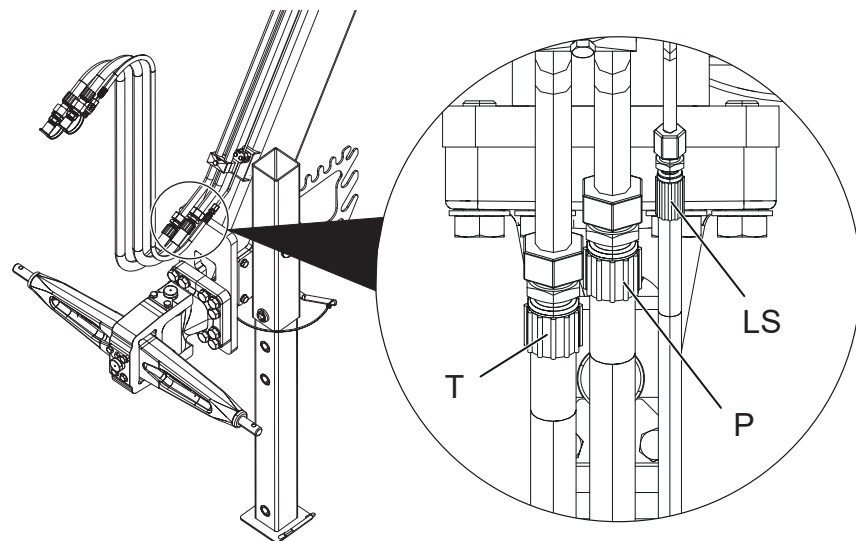


Fig. 7: Oil lines on the machine

[T] Return line to reservoir
[P] Feed line from pump

[LS] Load Sensing

Tractor attachment ► Couple all lines to the tractor (see the tractor manual).



The LS line is not coupled when the machine is operated by a constant flow system / spool.

Setting up the hydraulic system

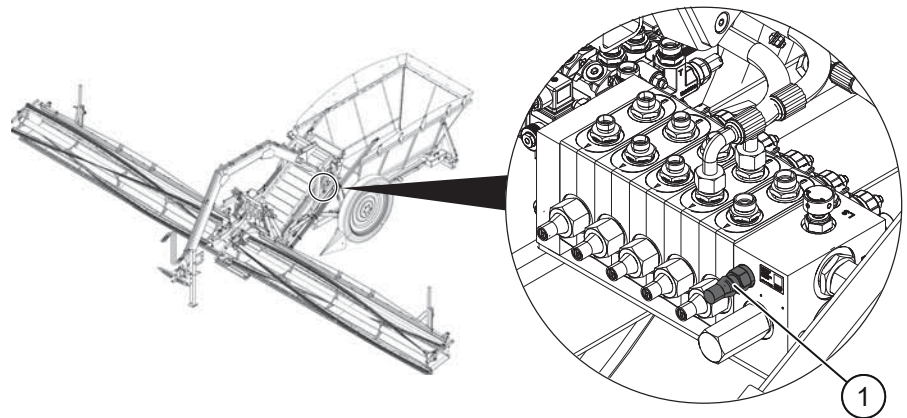


Fig. 8: Adjuster screw that selects the system

- ▶ Unscrew the adjuster (1) in order to operate the machine from the constant flow system / spool.
- ▶ Screw in the adjuster (1) in order to operate the machine with an LS / Power Beyond system.

4.3 Connecting the terminal

The three control lines to the terminals are fixed on the drawbar.

1. Route these lines from the machine to the tractor.
2. Connect them to the terminal.
3. Connect the terminal to the 12V socket in the cab.

4.4 The lights

- ▶ Connect the electric line to the tractor.

4.5 Forward speeds / rpm



Information in brackets refers to Fig. 4 on page 16.

You can set the speeds of the individual drives (A, B, C, D) individually.

- ▶ The speed is changed on the dial. After the optimum speed is set, you can turn the functions on and off switching A1, C1, D1.

You can adjust the stroke rate of the hydraulic cylinders from the dial (E).

4.6 Track width

⚠ WARNING



Crushing hazards from suddenly moving parts

When setting the track width, the machine is at risk of falling from the prop and causing serious or fatal injuries.

- ▶ Therefore, support the machine properly using adequate props.
- ▶ Only qualified and trained staff may work on the machine.
- ▶ Adjust the track width only when the machine is coupled to the tractor.
- ▶ Never remove the wheel when adjusting the track width.
- ▶ Wear your personal protective gear.

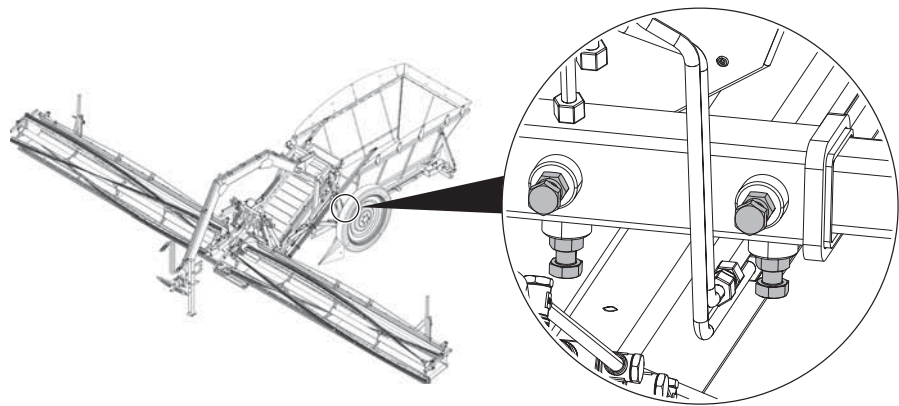


Fig. 9: The axle stubshaft is secured with 4 bolts

You can vary the track width between 1,850 mm and 2,250 mm.

1. Lift the machine until the wheels rotate freely.
Lift the machine only at the marked lifting points (see chapter 6.1 "General", page 31)!
2. Undo the four M16 bolts on each axle stubshaft.
3. Choose identical track width settings on each machine side.
4. Tighten the bolts and locking nuts to the required torque of 215 Nm.
5. Lower the machine to the ground.

4.7 The reel

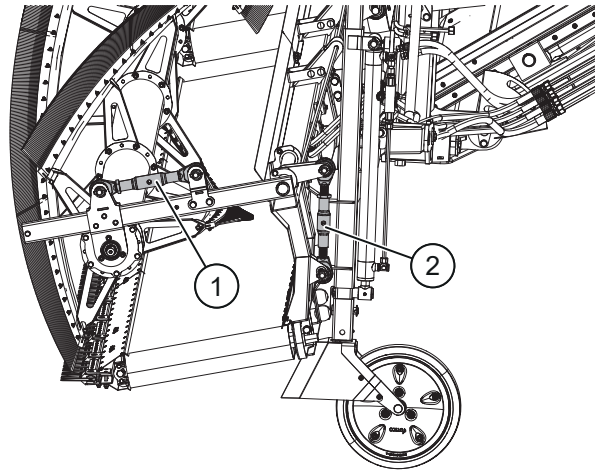


Fig. 10: Turnbuckles for setting up the reel

The reel can be adjusted fore / aft and up / down. Its optimum position is very close to the knife and right above the knife.

1. To alter the fore / aft position, adjust the turnbuckle on the reel arm [1].
2. To alter the up / down position, adjust the turnbuckle at the back plate of the header [2].
3. After setting up the reel, tighten the locking nuts on the turnbuckles.

5 Operating the machine

5.1 General

DANGER



Risk of injury from controlled movement by unguarded machine parts

Risk of collision with and injury of bystanders in the field to be weeded.

- ▶ The operator must constantly monitor the danger zone and the work zone.
- ▶ Ensure people keep clear off the machine when this is in operation.

WARNING



Risk of injury from moving / rotating parts

The machine may pick up solid objects when clearing weeds. These objects may be catapulted by the reel or header belts into random directions and cause personal injury.

- ▶ Ensure that people keep well clear of the machine when it is in operation.
- ▶ Immediately shut off the machine and stop working when a person enters the danger zone.

WARNING



Risk of injury from sudden movement of parts

Should a part of the header or the header belts become detached, they may fly off in random directions.

- ▶ Ensure that people keep well clear of the machine when it is in operation.
- ▶ Immediately shut off the machine and stop working when a person enters the danger zone.

WARNING



Cutting hazards

Operators may suffer cuts to their hands or fingers if they reach into the cutting system while it is running.

- ▶ Ensure that bystanders keep well clear of the machine when it is in operation.
- ▶ Immediately shut off the machine and stop working when a person enters the danger zone.
- ▶ Never extend your hand towards the cutting knife.

⚠ WARNING**Risk of injury from rotating parts**

The operator must avoid the risk of limbs or clothing being pulled into the header belts or the reel.

- ▶ Ensure that bystanders keep well clear of the machine when it is in operation.
- ▶ Immediately shut off the machine and stop working when a person enters the danger zone.

⚠ CAUTION**Risk of injury from vibrating parts**

There is a health risk due to prolonged exposure to vibrations. These may affect the wellbeing and performance and capability of the operator and also put his / her spine under undue strain.

- ▶ Operate the machine only on a tractor with a vibration damping cab.

⚠ CAUTION**Burn hazard**

In normal operation, the components of the hydraulic system naturally run hot.

- ▶ Only touch these parts after they have been left to cool for a considerable time.

NOTICE**Damage to property**

Negative tongue load on the coupling points.

- ▶ Drive the tractor with the hopper in tow only with the hopper in working position (headers are extended).
- ▶ Do not exceed the maximum payload of 1,000 kg.

5.2 Unfolding the headers into transport position

⚠ WARNING



Risk of injury from controlled movement by unguarded machine parts

Bystanders are exposed to personal injury while the headers are being extended.

- ▶ Ensure everybody keeps clear off the machine while the headers fold in/out.
- ▶ Ensure adequate visibility of the danger zone from the tractor.
- ▶ Immediately shut off the machine and stop working when a person enters the danger zone.



Check valves are in place to ensure that the headers are halted and remain halted in the event of a malfunction.

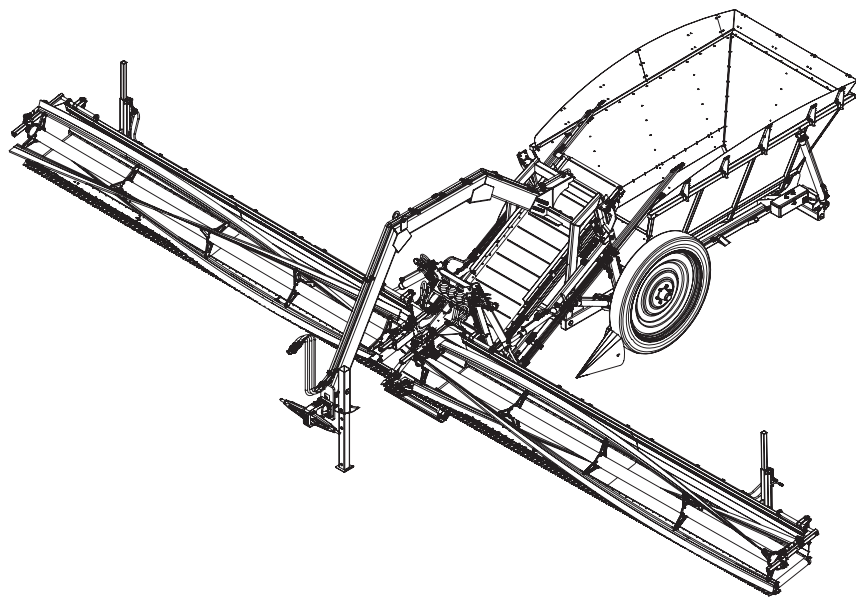


Fig. 11: The machine in working position



For explanation of the information provided in brackets, see chapter 3.3 "Terminal (model year 20/21)", page 16 and 3.4 "Hydraulic accumulator valves", page 17.

1. Tilt the A-frame (V5) forward until the LED indicating header in work position comes off (3).
2. Lower the lifting arm (V6) until the LED indicating header in work position comes on (1).
3. Fold out the right-hand header (V3).
4. Fold out the left-hand header (V1).
5. Raise the lifting arm (V6) slightly.
6. Tilt the A-frame (V5) forward until the knife and the header belts are more or less level or slightly tilted forward.
7. Operate the elevator belt (V8) forward into the correct work position.
8. Attach the support wheels to both headers.
When in delivery / transport position, the support wheels are stored in brackets on the machine. Attach the wheels to the supporting running gear and secure the bolts with split pins.

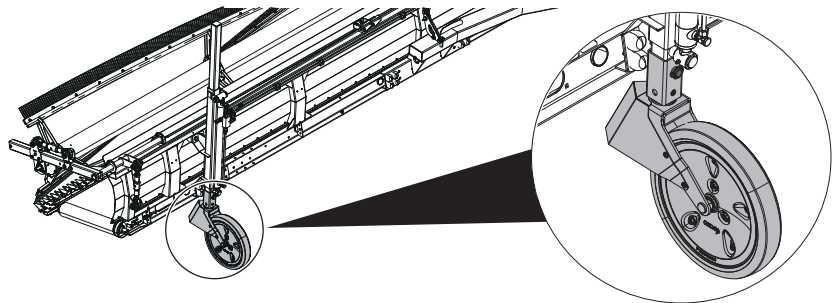


Fig. 12: The support wheel is fitted to the supporting running gear.

9. Attaching the dividers.
The delivery / transport position of the dividers is on the side of the machine. In work position, they are bolted to the inside of the wheels and secured with split pins. The height of the dividers is adjustable.

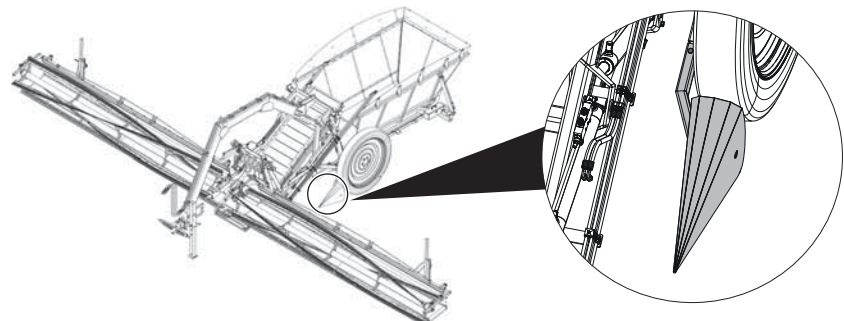


Fig. 13: The divider in mounted position

10. Open the four valves (K) on the hydraulic accumulators.
11. Fold in the headers (V1 and V3) until they are level relative to the ground. In this position, the pressure inside the oil accumulators is correct.
12. Remove the knife guard.
13. Adjust the cutting height by adjusting the lifting arm (V6) and the support wheels on the headers (V2 and V4).

5.3 Folding the headers into transport position

⚠ WARNING



Risk of injury from controlled movement by unguarded machine parts

Bystanders are exposed to personal injury while the headers are being extended.

- ▶ Ensure everybody keeps clear off the machine while the headers fold in/out.
- ▶ Ensure adequate visibility of the danger zone from the tractor.
- ▶ Immediately shut off the machine and stop working when a person enters the danger zone.

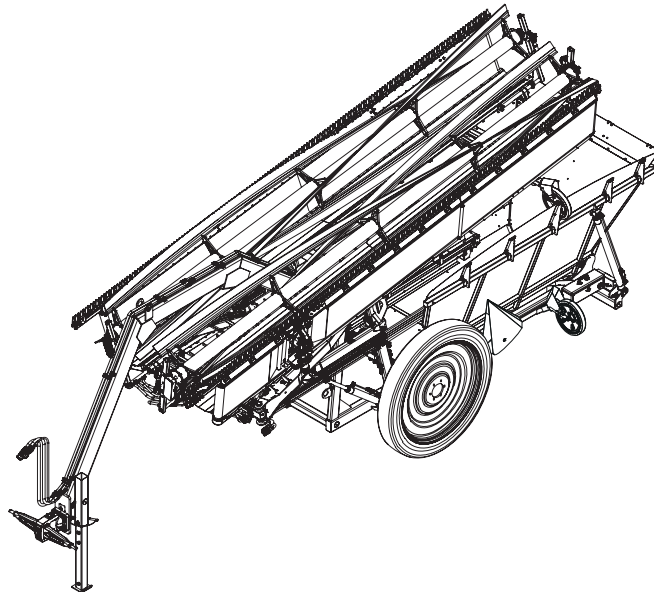


Fig. 14: The headers are in transport position



For explanation of the information in brackets, see chapter 3.3 "Terminal (model year 20/21)", page 16 and 3.4 "Hydraulic accumulator valves", page 17.

1. Retract the support wheels (V2 and V4) completely and remove them. Store the wheels in the holder on the side of the machine.
2. Remove the dividers and store them in the holder on the side of the machine.
3. Attach the knife guard.
4. Close the four valves (K) on the hydraulic accumulators.
5. Move the elevator belt (V8) to the rear and up to the stop.
6. Lower the lifting arm (V6) until the LED indicating the height of the work position comes on (1).
7. Tilt the A-frame (V5) to the rear until the LED indicating the angle in work position comes on (3).
8. Fold up the left-hand header (V1).
9. Fold up the right-hand header (V3).
10. Lower the lifting arm (V6) until the LED indicating the current transport height comes on (2).
11. Tilt the A-frame (V5) to the rear until the headers are lowered into their transport brackets.

5.4 Emptying the hopper

DANGER



Danger of fatal injury by the machine flipping over

Emptying the hopper involves the risk of the machine flipping over and causing serious injury to people.

- ▶ The machine must not be moved before emptying is completed and the hopper has been lowered onto the chassis.

WARNING



Risk of injury from controlled movement of unguarded machine parts

Emptying the hopper involves the risk of people getting injured/ crushed.

- ▶ Ensure everybody keeps clear off the machine while the headers fold in/out.
- ▶ Ensure adequate visibility from the tractor to view the danger zone.
- ▶ Immediately shut off the machine and stop working when a person enters the danger zone.

WARNING



High wind load hazard

Emptying the hopper in very windy conditions may put people in the immediate surroundings at risk and damage the machine.

- ▶ The hopper must not be emptied at wind velocities of 5 Beaufort (Bft) (29 - 38 km/h) and more.



Check valves ensure that the hopper cannot be tipped if there is a malfunction.



The hopper can only be tilted when the machine is in working position and the elevator in its forward position.



Before it is possible to move the elevator, the hopper must be lowered all the way.

1. Move the elevator belt (V8) all the way to the front end.
2. Tilt the hopper (V7).
3. After emptying the hopper (V7) lower it to its lowest position and move the elevator belt (V8) back into its work position.

6 Maintenance and repair

6.1 General

⚠ DANGER



Danger of fatal injury from the machine tipping over or from falling parts

Raising the machine using incorrect methods involves the risk of the machine tipping over or parts falling.

- ▶ Raise the machine only at the dedicated lifting points and according to instructions.
- ▶ All service and maintenance and repair work must be carried out by qualified and properly trained staff.
- ▶ Prop up any component that is being fitted to the machine.
- ▶ Wear protective clothing (safety boots and gloves).

⚠ WARNING



Risk of injury from parts with hazardous and unguarded surfaces

Any type of work on the machine involves the risk of injury caused by the cutting system and sharp edges. There is a danger of loose items being caught up in the moving header and elevator belts and the revolving reel.

- ▶ Stop the engine and secure it against accidental starting before you carry out maintenance on the machine.
- ▶ Wear protective clothing (safety boots and cut resistant gloves)

Lifting points

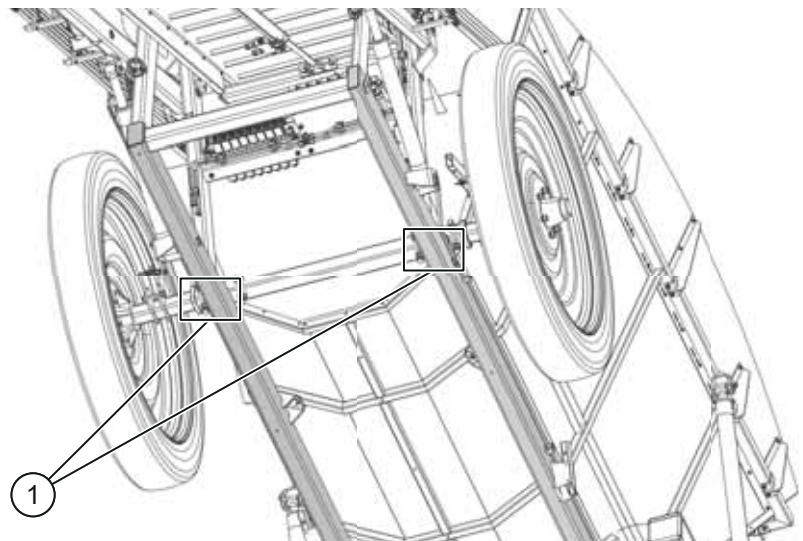


Fig. 15: Lifting points [1] (viewed from below)

Lift the machine only at the marked lifting points under the axle (grey).

6.2 Service and maintenance

Action	Time interval
Inspect the machine for damage and cracks at regular intervals	Every 50 operating hours
Visual inspection	Daily
Replace the oil hoses	After 6 years at the latest, earlier if exposed to high strain
Lubrication	See chapter 6.5 "Lubrication", page 34
Oil the chains	Every 100 operating hours or once a year
Changing the oil in the knife drive	After 50 to 60 hours after commissioning the machine; after that approx. every 400 hours
Check the tyre pressure	Daily
Check the lighting system	Before starting
Check the cutting system for damage	Before starting work
Inspect the belts and the reel for contamination and damage	Before starting work

6.3 Hydraulic system

⚠ WARNING



Risk of injury from oil under high pressure in the hydraulic system

Oil under pressure may leak and cause injury.

- ▶ Depressurise the hydraulic system before you start working on it.
- ▶ Secure the engine against being accidentally switched on again.
- ▶ Take particular care when working on and near the accumulators.
- ▶ Wear your personal protective gear (visor or goggles, gloves) when working on the hydraulic system.

⚠ WARNING



Risk of injury from sudden movement of parts

Elements in the hydraulic system may suddenly move in uncontrolled fashion due to air remaining in the system.

- ▶ After every repair, bleed the hydraulic system completely before resuming operation.
- ▶ After each repair, test the function before resuming operation.

⚠ WARNING**Burn hazard**

There is a risk of the operator coming in contact with hot hydraulic oil and being scalded.

- ▶ Wear personal protective gear (safety gloves, goggles) when working on the hydraulic system.
- ▶ Wait until the hydraulic system has cooled sufficiently before you start working on it.

6.4 Wheels and tyres

⚠ CAUTION**Safety hazard from flying objects**

When inflating tyres, the tyres may burst and cause injuries to individuals in the area.

- ▶ Ensure that bystanders keep well clear of a tyre that is being inflated.
- ▶ Never inflate a tyre to a higher pressure than specified by the manufacturer.
- ▶ Immediately replace a cracked, porous or worn tyre.
- ▶ Immediately replace damaged wheel studs and nuts.



The recommended tyre pressure is 2.4 bar.

- ▶ Check the tyre regularly for the proper pressure and potential damage.

Wheel change Wheel nuts are torqued at 310 Nm

6.5 Lubrication

6.5.1 General

⚠ CAUTION



Risk of injury from moving parts without guards

There is the risk of injury from shearing, impact or cutting when lubricating the machine.

- ▶ Only lubricate the machine when it is switched off.
- ▶ Secure the machine against being switched on accidentally.

⚠ CAUTION



Hazard of allergic skin reactions

Repeated contact with grease may cause skin irritations.

- ▶ Wear your personal protective gear (safety gloves) and use hand cream when refilling the auto lubricator.



The chapters 6.5.3 "Grease points on the hopper", page 35 to 6.5.9 "Grease points on the knife drive", page 41 show the grease points. The illustrations show the grease points only on one machine side. All grease points are duplicated on the other side and need greasing.



To access some grease points it is necessary to move the headers into transport position.

6.5.2 Lubricants and oils

Grease

NOTICE

Damaged parts

- ▶ Immediately replace missing or defective grease nipples.
- ▶ Clean the grease nipples thoroughly before lubricating them.

Use a grease of the proper NLGI grade which suits the outside temperatures that is anticipated for the time period in which the machine is operated before it is serviced the next time.

The following greases are recommended for use:

- Shell Alvania Grease RL 2
- Gadus S2 V100 2
- John Deere Grease-Gard Premium
- Petronas Grease CA 00



Other greases can also be used provided they meet the required specification.

Oil for the knife driving gearboxes

Type of oil: SAE80-W90, API GL5

For example:

- Liqui-Moly Hypoid Gear Oil SAE 80-W90 GL5
- Ravenol EPX SAE 80-W90 GL5
- Avia SYNTHOGEAR FE SAE 80-W90 GL5

Maximum quantity: 0.8 litres

Chain lubrication

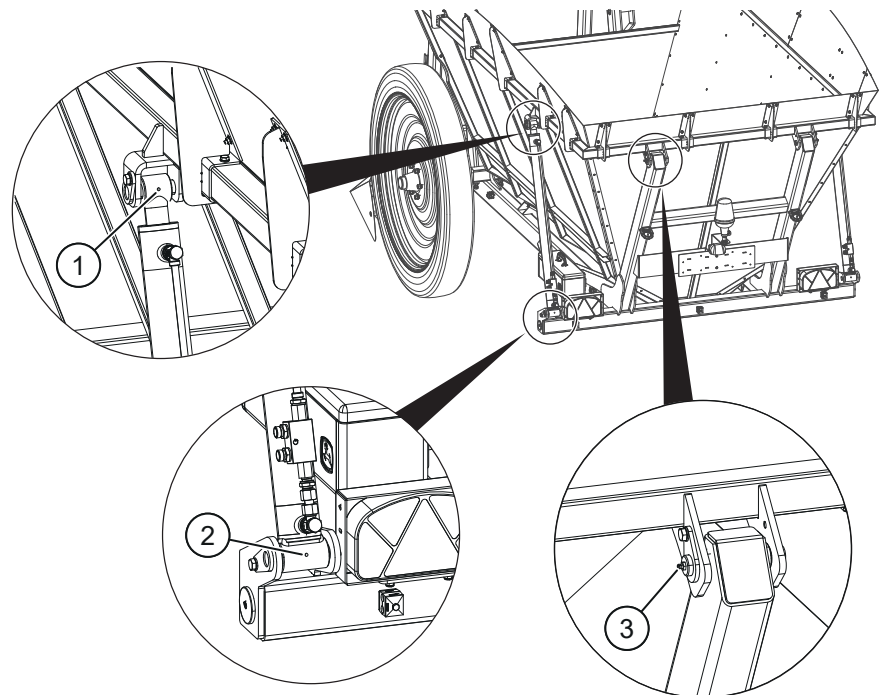
The following oils are recommended for use

- Shell Naturelle HF-E 46



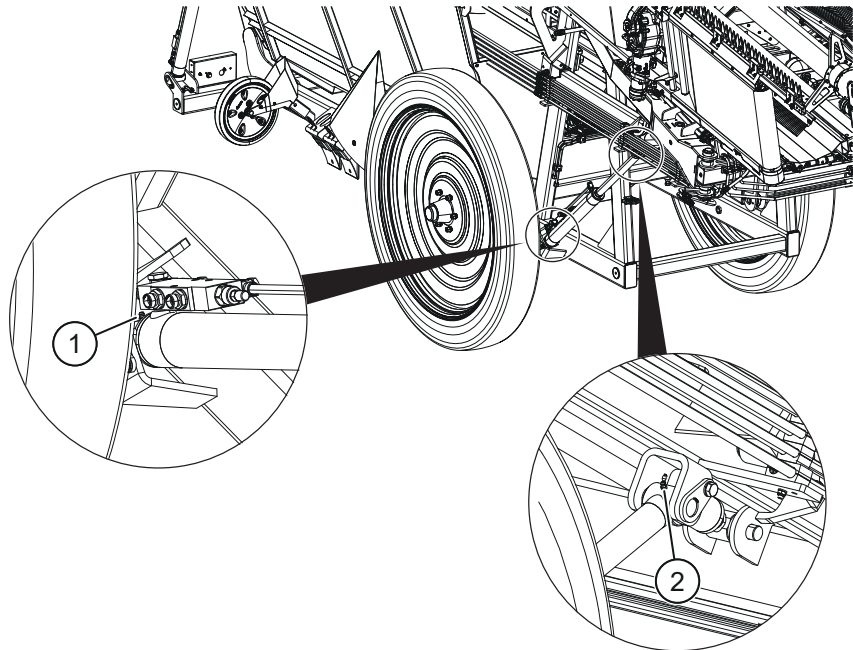
Other oils of the same viscosity class (at 40 °C) = 40-300 mm²/s can also be used.

6.5.3 Grease points on the hopper

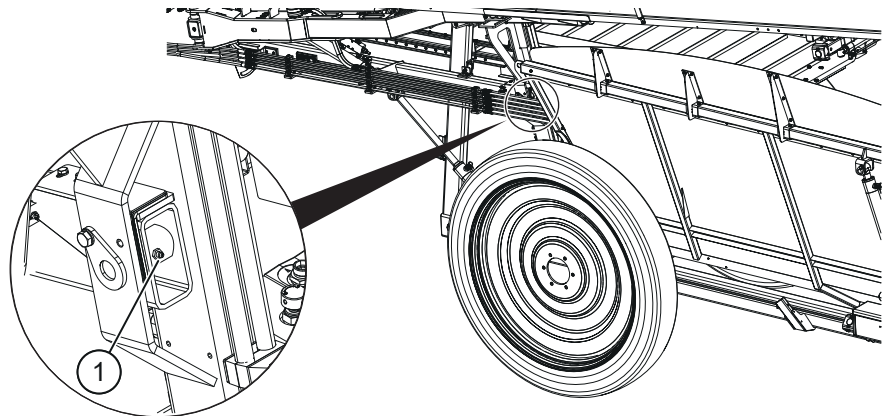


	Grease point	Service interval
[1]	Tipping ram; rod mounting eye	Daily
[2]	Tipping ram; piston mounting eye	Daily
[3]	Bearing	Daily

6.5.4 Grease points on the lifting arm

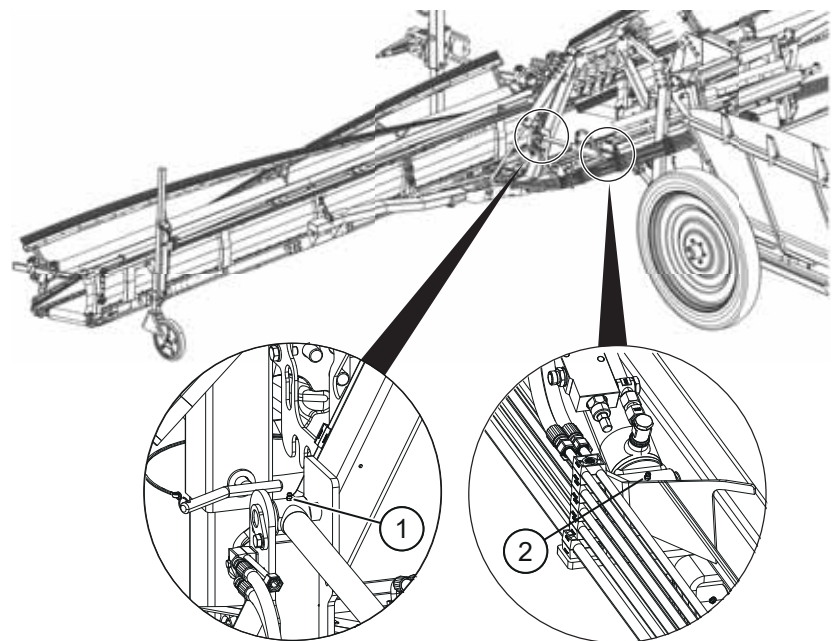


	Grease point	Service interval
[1]	Lifting arm operating ram; piston mounting eye	Daily
[2]	Lifting arm operating ram; rod mounting eye	Daily



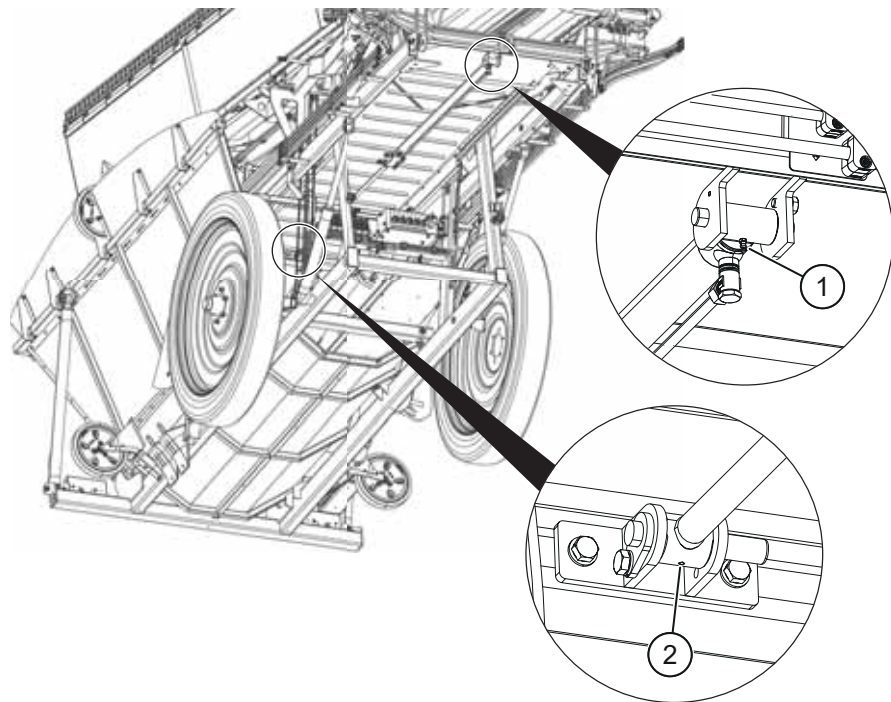
	Grease point	Service interval
[1]	Lifting arm bearing	Daily

6.5.5 Grease points on the A-frame

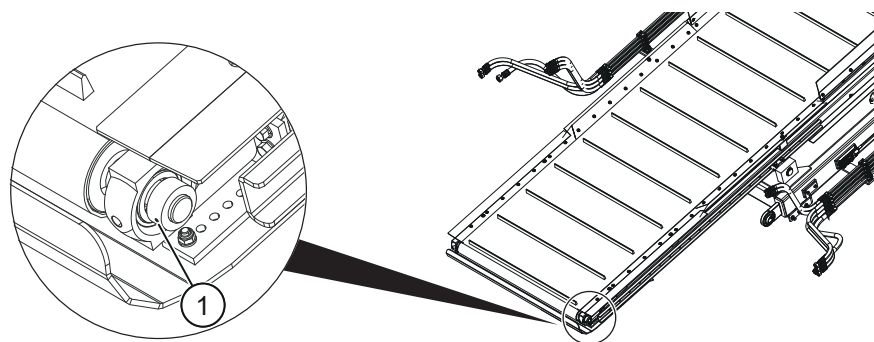


	Grease point	Service interval
[1]	Tipping ram; rod mounting eye	Daily
[2]	Tipping ram; piston mounting eye	Daily

6.5.6 Grease points on the elevator belt

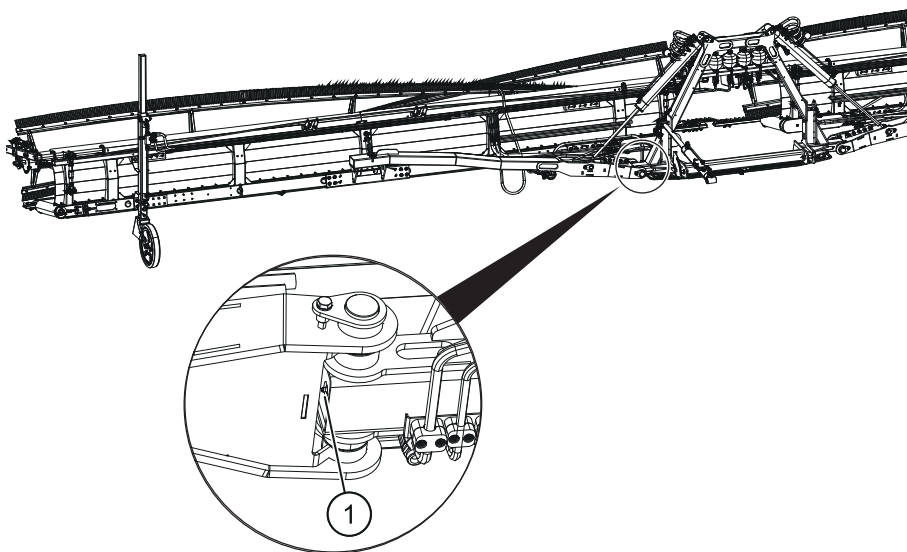


	Grease point	Service interval
[1]	Elevator belt operating ram; piston mounting eye	Daily
[2]	Elevator belt operating ram; rod mounting eye	Daily



	Grease point	Service interval
[1]	Idler pulley spherical roller bearing	Daily

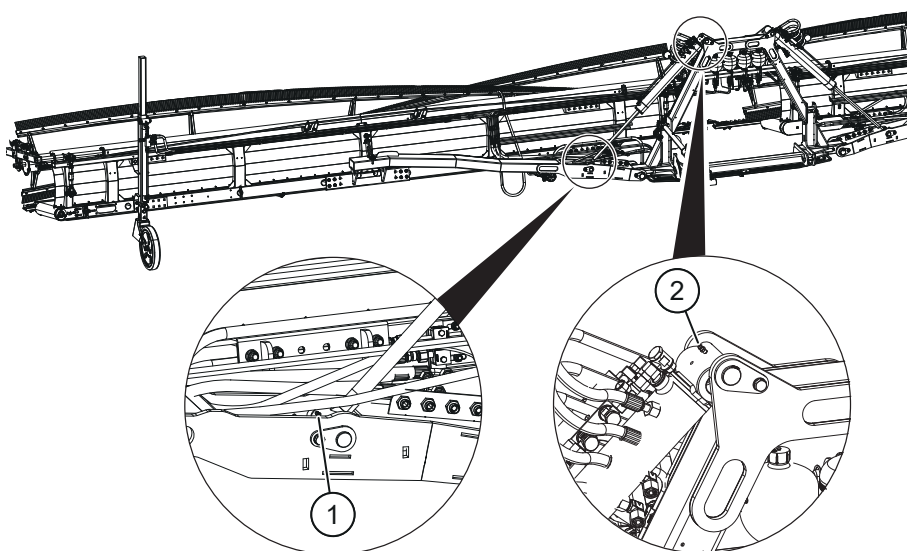
6.5.7 Grease points on the header



Grease point	Service interval
[1] Bottom mounted bearing	Daily

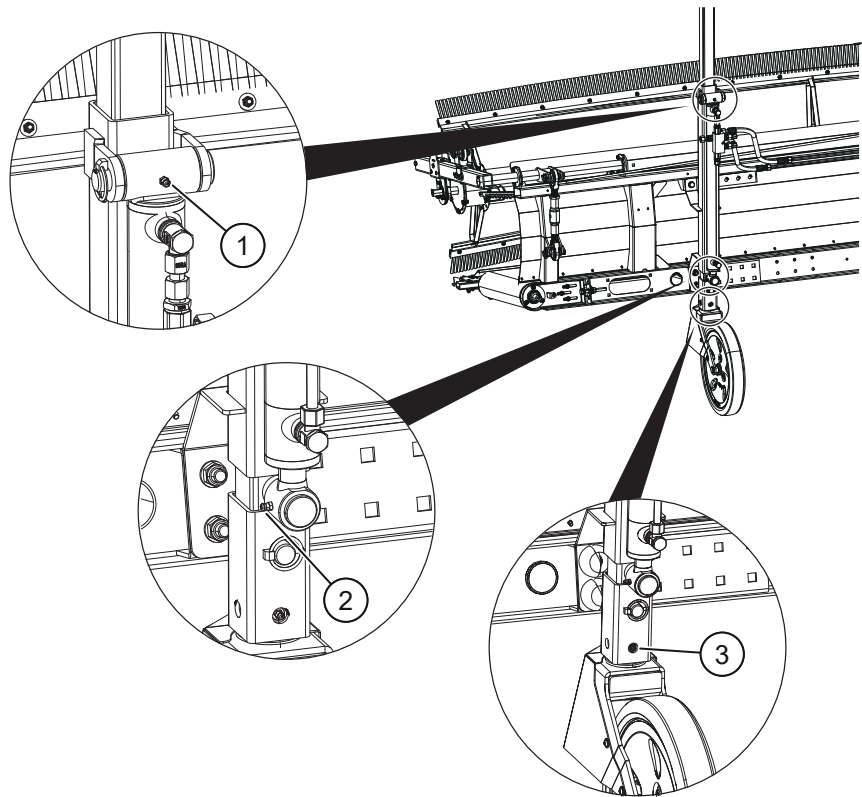


For greasing the bearing on the bottom of the header it is necessary to fold the header.



Grease point	Service interval
[1] Tipping ram mounting; piston mounting eye	Daily
[2] Tipping ram mounting; rod mounting eye	Daily

6.5.8 Grease points on the supporting running gear



	Grease point	Service interval
[1]	Cylinder on the piston end	Daily
[2]	Cylinder on the rod end	Daily
[3]	Bearing on the rotating axle	Daily

6.5.9 Grease points on the knife drive



	Grease point	Service interval
[1]	Underbelly grease point	Daily
[2]	Top and bottom knives driving head	Daily; every four hours if used intensively

6.6 Changing the oil in the knife drive

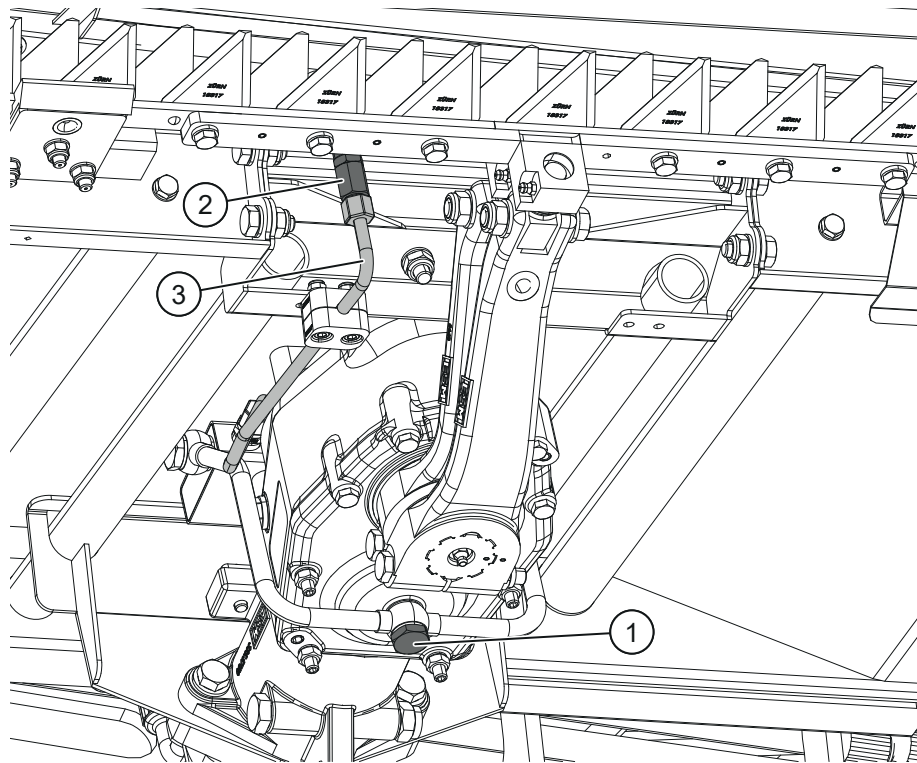


Fig. 16: Changing the oil in the knife drive

1. Undo the banjo bolt [1] and drain the gearbox completely.
2. Refit the banjo bolt and tighten it.
3. Remove the vent port [2].
4. Fill the defined oil quantity (0.8 l) into the open vent [3].

6.7 Elevator belt tension

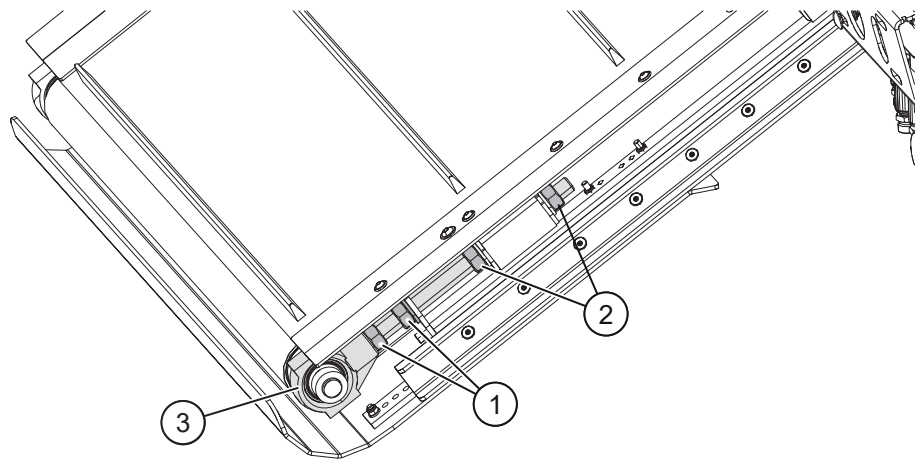


Fig. 17: Elevator belt tension

The elevator belt tension is adjusted on the deflection roller at the front end of the elevator.

1. Undo the lock nuts [1] on the threaded spindle of the spherical plain bearing head [3].
2. Turn the tensioning nuts [2] until the belt tension is correct. The belt should not sag to avoid the lugs chafing on the belt frame and wearing off.
3. Retighten the lock nuts [1].



Repeat on the other machine side.
Ensure to tighten the nuts on both sides to the same torque.

6.8 Header belt tension

NOTICE

Risk of belt damage

Incorrectly tensioned belts are at risk of damage.

- For the belts to run centrally over the drive rollers, it is necessary to adjust the belt on both ends to the same tension.



By making adjustments on both ends, you control the way the belt runs on the rollers.

You can re-tension the header belts should they become slack.
Each of the two header belts is adjusted separately on both its front and rear-facing side.

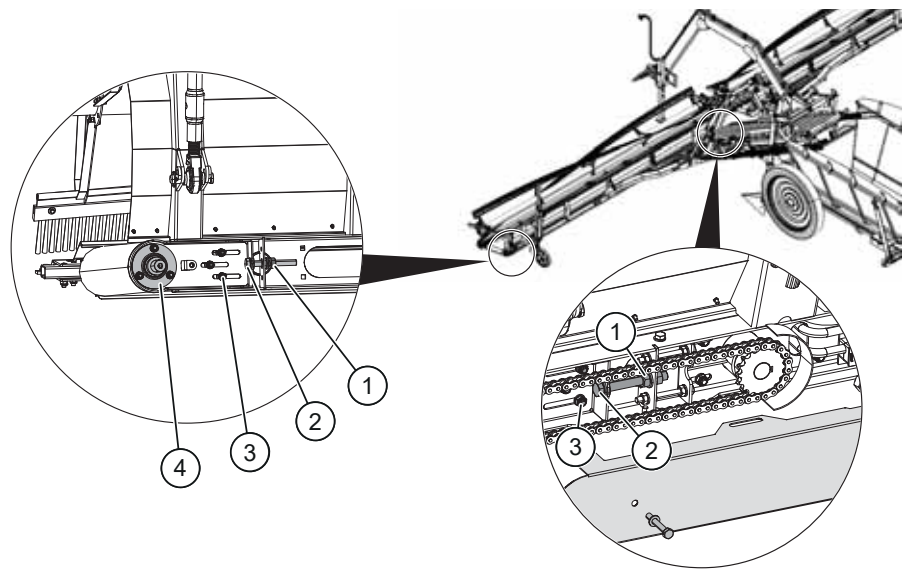
The rear-facing side

Fig. 18: Adjusting the header belt tension on the rear-facing side

1. Undo the three clamping screws [3].
2. Undo the nuts [1].
3. Turn the screw [2] right or left to adjust the position of the slider [4] and optimise the belt tension.
4. Lock the slider in its new position by tightening the three clamping screws [3].
5. Retighten the nuts [1].

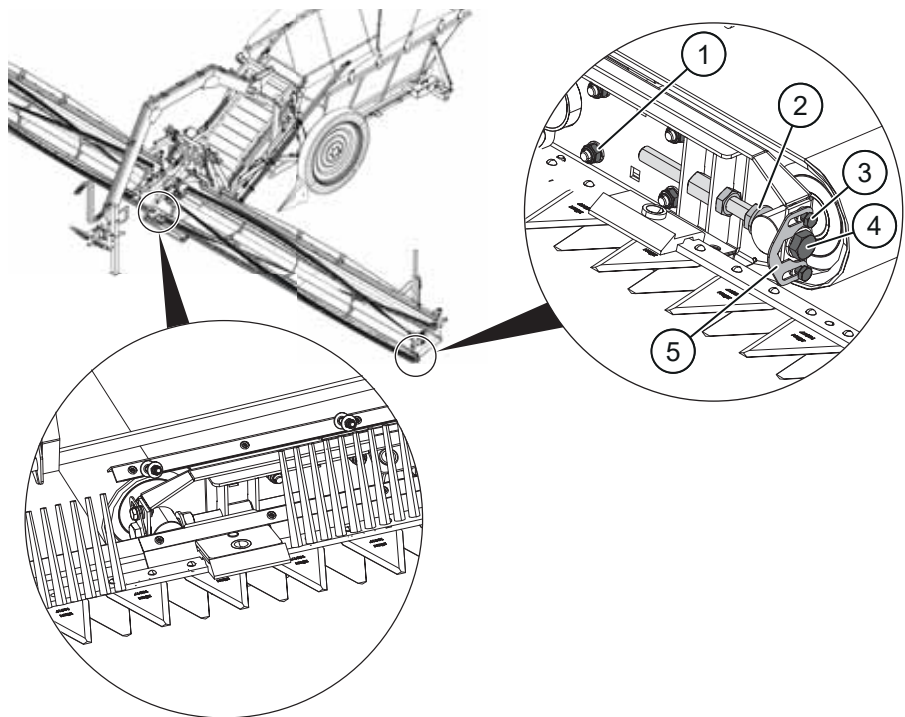
The front-facing side

Fig. 19: Adjusting the header belt tension on the front side

1. Remove the covers under and over the cutting system.
2. Undo the four clamping screws [1].
3. Release the two bolts [3] on the turning stop [5] and push the stop outwards.
4. Undo the locking nuts [2].
5. Tension the belt by turning the tensioning screw [4] right or left until the belt tension is correct.
6. Refit the turning stop [5] to the bolt head [4] and secure it by tightening the bolts [3].
7. Retighten the lock nuts [2].
8. Secure the slider by tightening the four clamping screws [1].
9. Remove the covers under and over the cutting system.

6.9 Tensioning the header belt drive chains

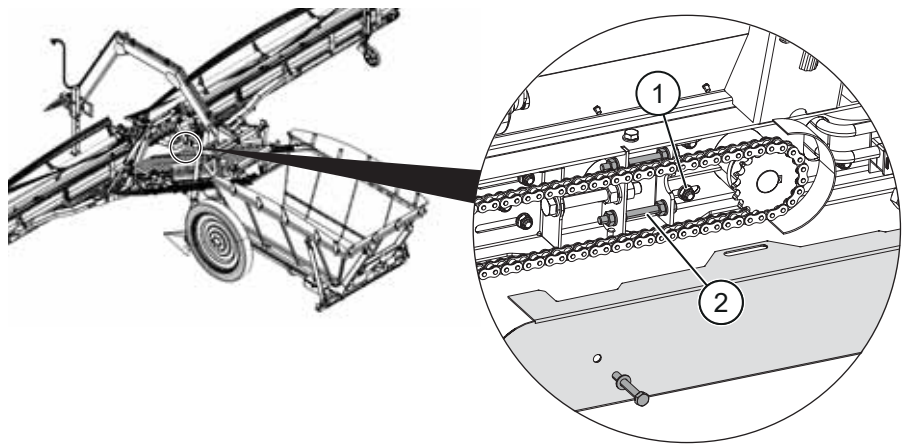


Fig. 20: Tensioning the header belt drive chains

The chains driving the header belts are tensioned by sliding the motor closer to the drive roller sprocket.

1. Remove the cover.
2. Undo the three clamping screws [1].
3. Tighten the tensioning bolts [2].
4. Retighten the three clamping screws [1].
5. Check the chain slack. 1 cm up/down movement is okay.
6. Refit the cover.

6.10 Tensioning the reel drive chains

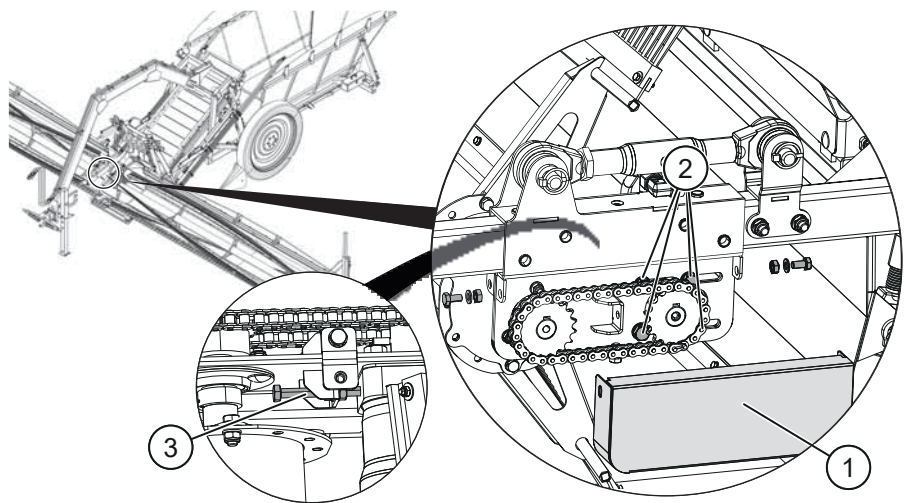


Fig. 21: Tensioning the reel drive chains

The chains driving the reel are tensioned by sliding the motor closer to the sprocket.

1. Remove the cover [1].
2. Undo the four clamping screws [2].
3. Tighten the tensioning screw [3] on the inside.
4. Retighten the clamping screws [2].
5. Check the chain slack. 1 cm up/down movement is okay.
6. Refit the cover [1].

6.11 Knife guide

⚠ WARNING



Cutting hazards

Working on the cutting system involves the risk of injury.

- ▶ Before working on the cutting system, shut off the machine and secure it against coming on accidentally.
- ▶ Wear your personal protective gear (gloves) when working on the cutting system.

NOTICE

Property damage

Should the knife guides be fixed too tightly, the power input increases and the wear of the knife guides is excessive. They can even melt in the heat that develops by friction.

- ▶ Make sure that the knife guides are set up correctly.



A clean cut requires careful adjustment of the section guides (gaps must neither be too wide nor too small).



Replace worn knife guides (item number 18343).

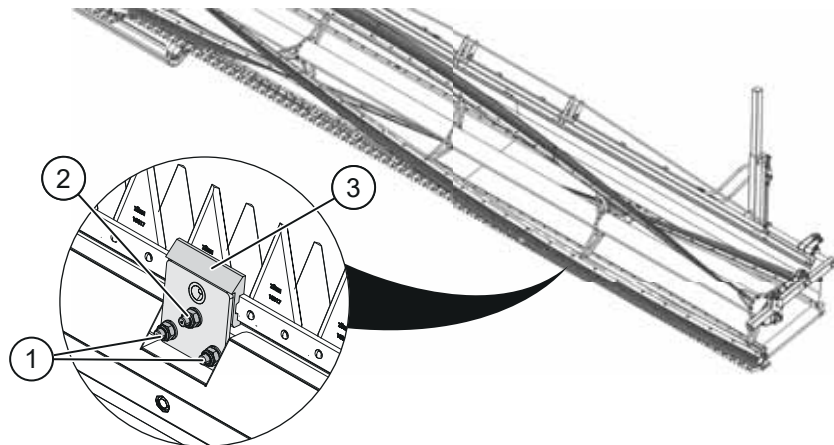


Fig. 22: Adjusting the knife guide

1. Check if the two rear screws [1] are tight. Tighten them if necessary.
 2. Adjust the knife guide [3] by adjusting the screw at the front [2]. Turn the screw slowly until the tips of the knife sections touch the guide slightly.
- ✓ The sections themselves must move freely.

7 Malfunctions

Malfunctions	Cause	Remedy
General hydraulics		
No hydraulic function	Hydraulic lines are not connected	Connect the hydraulic lines correctly
	There is no hydraulic oil supply	Establish the oil supply
	The terminal is not connected	Connect the terminal to the machine
	No power supply to the operator terminal	Establish the power supply
	The A...E dial is set to zero	Adjust the oil quantity on the dial
	Hydraulic functions (switch A1...D1) are switched off	Flick the switch to ON
	The emergency stop is engaged	Check the emergency stop switch
	The solenoid valve is defective	Verify that the solenoid valve connector LED lights up when the valve is operated
All hydraulic functions are carried out too slowly	The A...E dial is set too low	Increase the oil flow by operating the dial
	Low flow rate from the tractor	Increase the oil flow and verify that the tractor's minimum oil flow is 80 l/min.
Hydraulic cylinders		
Rams do not operate	No hydraulic function	Check the hydraulic functions
The hopper does not tilt	The elevator belt is not in its most forward position	Bring the elevator belt into its most forward position until LED 6 comes on
	Sensor 6 (elevator belt front end) is defective	Check sensor 6
The elevator belt doesn't move	The hopper is not fully lowered	Lower the hopper completely until LED 5 comes on
	The A-frame is tilted too far to the rear	Tilt the A-frame forward until LED 4 comes on
	Sensor 5 (hopper end position control) is defective	Check sensor 5
	Sensor 4 (A-frame is tilted all the way forward) is defective	Check sensor 4
Cutting system		
The knife is not operable	No hydraulic function	Check the hydraulic functions
	Defective drive lever	Check the knife drive
	The cutting system is blocked up	Check the cutting system for damage
The knife does not make clean cuts	The knife is worn	Inspect the knives, replace defective sections or a complete knife if necessary
	The knife guide is defective	The knife guide is worn or not set up correctly
	The knife speed is too low	Increase the knife speed

Malfunctions	Cause	Remedy
The reel		
The reel does not turn	No hydraulic function	Check the hydraulic functions
	The chain driving the reel is slack	Check the chain tension
The reel does not pick up all material from the knife	The gap between the knife and the reel is too small	Adjust the up/down position of the reel
	Incorrect reel speed	Reduce or increase the reel speed
	The brushes on the reel are worn	Replace the reel brushes
The header belts		
The header belts are not running	No hydraulic function	Check the hydraulic functions
	The belt system is blocked up	Inspect the belt system for blockages
	Slack header belts	Increase the belt tension
	Slack drive roller chain	Check the chain tension
Clippings accumulate on the header belts	Excessive material	Reduce the volume, such as by making higher cuts and repeating the passes
Header belts not running straight	Belt tension is not identical at both ends	Adjust the belt tension so that the belts run centrally
The hopper is not filled evenly	The elevator belt speed is not correct	Increase or reduce the speed of the elevator belt

8 Storage

⚠ CAUTION



Risk of injury from hazardous surfaces

In vertical position the cutting system presents an injury hazard on the stationary machine.

- ▶ Therefore, always fit the knife guard when parking the machine for a longer period of time.

- ▶ If possible, store the machine in a dry place.

9 Road transport

General

⚠ CAUTION



Risk of injury from hazardous surfaces

In vertical position the cutting system presents an injury hazard on the stationary machine.

- ▶ Therefore, always fit the knife guard when parking the machine for a longer period of time.

Transporting the machine on a low trailer

⚠ DANGER



Risk of serious injuries when transporting and using mobile equipment

The machine may slip or overturn.

- ▶ The machine must be transported by qualified staff only.
- ▶ Tie down the machine as required by the appropriate legislation.
- ▶ Keep clear off the danger zone.



Lifting and lashing points are marked out on the machine (see chapter 1.4 "Safety alert symbols", page 7).

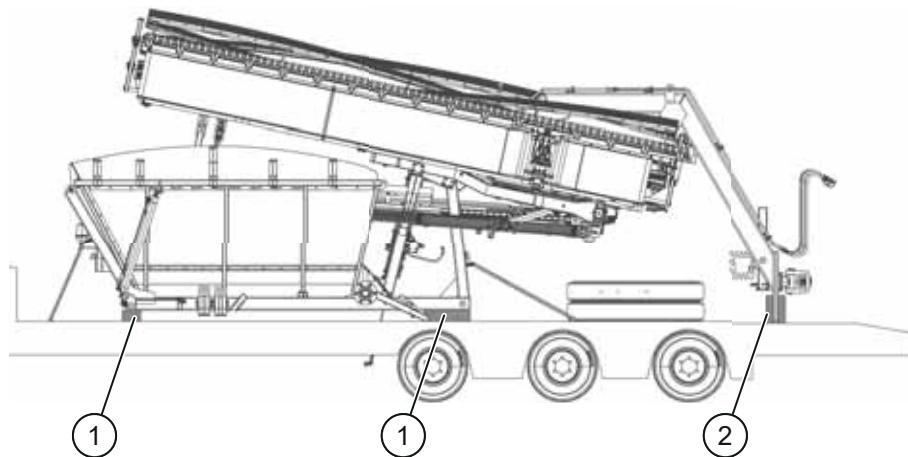


Fig. 23: Transporting the machine on a low trailer

When transporting the machine on a low loader, take the following precautions:

- ▶ Prop the machine beneath the positions marked - under the hitch frame [1] and at the front end under the swan neck [2]. Use sufficiently sturdy elements for propping (such as hardwood blocks or similar).
- ▶ It is mandatory to use anti-slip mats.
- ▶ Use straps of suitable capacity.

Road travel**⚠ DANGER****Risk of serious injuries when transporting and using mobile equipment**

Motorists or pedestrians may suffer injuries.

- ▶ The machine must be in transport position for travel on public roads.
- ▶ Secure all loose vehicle parts.
- ▶ The hopper must be empty for road transport.
- ▶ Observe the permissible total mass of the machine which is 4,000kg.

Moving the machine in the transport position for road travel: see chapter 5.3 "Folding the headers into transport position", page 28

10 Cleaning

⚠ WARNING



Electric shock hazard

Cleaning the machine with water involves the risk of electric shock to the operator.

- ▶ Disconnect the electric line from the tractor before washing the machine.

⚠ WARNING



Fire hazard

A contaminated machine catches fire during normal operation and may cause injury to the operator.

- ▶ Regularly clean the machine according to manufacturer instructions.

⚠ WARNING



Injury hazard due to controlled movement of unprotected parts

Cutting and drawing-in hazards by moving parts and sharp corners / edges.

- ▶ Ensure that the tractor drive is shut off and secured against switching on when cleaning the Top Cut Collect.
- ▶ Wear your personal protective gear (gloves) when cleaning the machine.

NOTICE

Risk of machine damage due to improper cleaning

Damage can be caused by using unauthorised liquids or cleaning agents.

- ▶ Make sure that the cleaning agent does not damage any components.

Cleaning the machine as a whole

- ▶ Remove residues and seeds from the machine using an air gun.

Cleaning the hopper

- ▶ Tilt the hopper before you start cleaning it with a pressure washer. **Never climb on the machine**

Cleaning the header belts and elevator belt

- ▶ Clean the inside of the header belts and the hopper belt with an air gun.

Cleaning the hydraulic spools

The hydraulic spools are protected from dirt by a fabric tarp cover.

- ▶ Remove the cover and blast the connectors clean with an airline.

Rotating parts

Organic material may wrap around the drive shafts and deflection rollers, but also around the support wheels and the rollers of header belts.

- ▶ Remove the material or cut it off with a suitable tool.

11 EU Declaration of Conformity

according to Machinery Directive 2006/42/EC, Annex II 1. A

The responsibility for issuing this declaration of conformity lies solely with the manufacturer

Zürn Harvesting GmbH & Co. KG

Kapellenstraße 1

DE - 74214 Schöntal-Westernhausen

The EU resident who is authorised to compile the relevant technical documentation:

Matthias Müller

Machine description and identification

Product / Produce	Harvester of weeds / crop plants
Project number	23092021
Trade name	Top Cut Collect
Function	Harvesting weeds / crop plants

It is expressly declared that the machine complies with all relevant provisions of the following EU directives and regulations:

2014/30/EU	Directive 2014/30/EU of the European Parliament and of the Council dated 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast) Published in 2014/L 96/79 dated 29 March 2014
2006/42/EC	Directive 2006/42/EC of the European Parliament and of the Council dated 17 May 2006 on machinery and on the amended Directive 95/16/EC (Recast) (1) Published in L 157/24 dated 09 June 2006

Sources of the harmonised standards applied in accordance with Article 7 (2):

EN ISO 4254-1:2015	Agricultural machinery - Safety - Part 1: General requirements (ISO 4254-1:2013)
EN ISO 12100:2010-11	Machinery safety - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
EN ISO 13850:2015	Machinery safety - Emergency stop - Principles for design (ISO 13850:2015)
EN 60204-1:2018	Machinery safety - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2016, modified)
EN 1853:2017	Agricultural machinery - Trailers - Safety
EN ISO 13849-1:2015	Machinery safety - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015)

12 Torques for metric bolts

Bolts	Grade 4.8				Grade 8.8 or 9.8				Grade 10.9				Grade 12.9			
	Oiled bolts		Dry bolts		Oiled bolts		Dry bolts		Oiled bolts		Dry bolts		Oiled bolts		Dry bolts	
Size	N-m	lb-in	N-m	lb-in	N-m	lb-in	N-m	lb-in	N-m	lb-in	N-m	lb-in	N-m	lb-in	N-m	lb-in
M6	4.7	42	6	53	8.9	79	11.3	100	13	115	16.5	146	15.5	137	19.5	172
M8	11.5	102	14.5	128	22	194	27.5	243	32	23.5	40	29.5	37	27.5	47	35
M10	23	204	29	21	43	32	55	40	63	46	80	59	75	55	95	70
M12	40	29.5	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	46	80	59	120	88	150	110	175	130	220	165	205	150	260	190
M16	100	74	125	92	190	140	240	175	275	200	350	255	320	235	400	300
M18	135	100	170	125	265	195	330	245	375	275	475	350	440	325	560	410
M20	190	140	245	180	375	275	475	350	530	390	675	500	625	460	790	580
M22	265	195	330	245	510	375	650	480	725	535	920	680	850	625	1080	800
M24	330	245	425	315	650	80	820	600	920	680	1150	850	1080	800	1350	1000
M27	490	360	625	460	950	700	1200	885	1350	1000	1700	1250	1580	1160	2000	1475
M30	660	490	850	625	1290	950	1630	1200	1850	1350	2300	1700	2140	1580	2700	2000
M33	900	665	1150	850	1750	1300	2200	1625	2500	1850	3150	2325	2900	2150	3700	2730
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2770	4750	3500

The specified torques are approximate values. These torques are not applicable, if a specific application of the machine requires a different torque or a different type of attachment. There are specific requirements for fastening nuts and bolts from stainless steel or nuts on U-bolts. Unless other instructions are given, tighten locknuts with plastic inserts or crimp steel locknuts to the torques indicated for dry bolts and nuts in the table.

Shear bolts are designed to shear off when exposed to a certain load. Replacement shear bolts must be of the same quality as the bolts to be replaced. Replacement bolts and nuts must be of the same quality as the elements to be replaced. Tighten higher grade bolts and nuts to the same torque as the original elements. Ensure that the threads are clean and inserted correctly into the hole. If possible, oil regular and galvanised bolts and nuts (except lock nuts, stud bolts or nuts) unless other instructions are given in the specific application.

“Oiled bolts” describes bolts that are covered with a lubricant such as engine oil, or phosphated, oiled or JDM F13C zinc-coated M20 bolts.

“Dry bolts” describes regular or galvanised bolts that are not oiled or JDM F13C zinc-coated M6 - M18 M20 bolts.

13 General warranty conditions

Zürn Harvesting GmbH & Co. KG, Kapellenstraße 1 D-74214 Schöntal-Westernhausen (hereinafter referred to as "Zürn Harvesting") hereby certifies to each customer who has purchased a new Zürn Harvesting machine from an authorised dealer that the quality of material and build of this machine is warranted under the conditions set out below, provided that the machine is used and maintained in accordance with the provisions as stated in the machine's operating instructions.

I. Duration of the warranty The warranty covers one year starting on the date the machine is delivered by Zürn Harvesting. Within this time period, it applies for up to 500 operating hours. The replacement or repair of individual parts does not extend the aforementioned warranty cover period.

II. Scope of the warranty The warranty service covers only the reimbursement or repair of the parts as well as reimbursement of labour costs to carry out the repair based on the repair times set out by Zürn Harvesting, providing the defect is accepted as such by our technical customer service and recognised as being caused by defective material quality or build defect for which Zürn Harvesting is responsible. Replaced parts become the property of Zürn Harvesting. Services received by the customer from the seller/dealer under the warranty must be credited to the warranty.

The warranty does not cover any further claims against Zürn Harvesting, referring in particular to the following: Travel or transport costs shall not be reimbursed. Zürn Harvesting is not liable for any consequential damage caused by the defect, such as harvest or yield losses.

III. Limitations of the warranty The warranty shall not cover any defects or faults that are attributed to one or all of the following:

- normal wear and tear,
- failure to observe the instructions on operating, storing or transporting the machine given in the manual,
- improper use, insufficient maintenance, improper operation or overloading,
- damage caused to the machine or its equipment during transport or loading. The machine and its equipment and parts are shipped at the risk of the consignee.
- Exposure of the machine to damage caused by third parties, inclement weather or other natural phenomena and
- circumstances that were already known to the buyer at the time of purchase.

This warranty is rendered null and void by any modifications made to the machine without prior written consent from Zürn Harvesting or the installation of any parts that are not original parts from Zürn Harvesting and/or repairs that were not carried out by an authorised specialist dealer. Furthermore, failure by the dealer to carry out the initial running according to Zürn Harvesting's instructions shall void this warranty.

IV. Enforcement of the warranty

To claim under warranty, dealers and customers must observe the following requirements:

- The warranty card (machine passport) must be completed in full by the dealer and the buyer and be returned to Zürn Harvesting by post or e-mail immediately after delivery of the machine to the buyer.
- Warranty claims must be made on the appropriate Zürn Harvesting form and submitted by the dealer to Zürn Harvesting within one month of the defect/malfunction being identified.
- The application must be filled out legibly and contain the following information:
 - name, address and customer number of the dealer
 - name and address of the buyer
 - the specific machine type and model name
 - the full serial number of the machine
 - date of delivery to the dealer and to the buyer
 - date on which the damage occurred
 - number of operating hours or acreage of the machine
 - precise description of the damage and indication of the suspected cause
 - quantity, item number and description of the damaged parts

The parts reported as defective must be kept for three months and, on request, sent free of charge to Zürn Harvesting for inspection with a copy of the warranty claim. The costs incurred in returning the replaced or repaired parts shall be borne by the sender.

If the warranty claim is rejected, the dealer or the customer can request the return of the damaged parts within a period of 15 days, starting from the day of receipt of Zürn Harvesting's decision. After this period, the parts will be disposed of.

V. Additional provisions

The claims arising from the warranty are not transferable to others without the prior written consent of Zürn Harvesting.

Dealers have neither the right nor the authority to make declarations or enter into obligations etc, whether expressly or tacitly, on behalf of Zürn Harvesting.

Technical assistance provided by Zürn Harvesting or its agents in carrying out the repair shall exclude any further liability on the part of Zürn Harvesting and shall not impact the present warranty conditions in any way.

Zürn Harvesting reserves the right to change the design of the machine without prior notice. Zürn Harvesting is not obliged to transfer such changes in design to any machines already sold or in use.

Furthermore, due to the rapidly developing state of the art, no warranty can be given for the machine descriptions contained in these operating instructions and in other technical literature.



Zürn Harvesting GmbH & Co. KG
Eichenstraße 27
D-74747 Ravenstein-Merchingen

Tel.: +49 6297 92885-0
Fax.: +49 6297 92885-19
E-Mail: info@zuern.de
Internet: www.zuern.de