

CLAAS



CROP TIGER 30

Operator's Manual

SERVICE & PARTS

Please read and follow the safety instructions!

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1 Introduction

1.1 General Information

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1.1.1 How to use this manual

This operator's manual is primarily intended for the machine operator and provides information on the use, adjustment and operation of the machine.

Provided all instructions regarding proper maintenance and operation of your machine are followed, you can count on many years of reliable service.

Please have your authorised CLAAS dealer carry out regular inspections. Failure to perform maintenance or incorrect operation lead to a reduction in performance and a loss of time.

If you use the latest expertise and experience that went into this machine, it will render you consistently excellent service.

There is a separate operator's manual for front attachments and hitched devices.

Texts and figures

Pictures and graphics are neutral. Differences are pointed out by notes beneath the figure.

Texts are short and not machine-specific as far as possible. Differences are pointed out by intermediate headings.

Different types of texts can easily be distinguished from one another by their formats. The following formats are distinguished:

Text type	Description
Description	Further information on the subject.
– Instructions	Operations which must be carried out one after the other.
<i>Result</i>	Consequence of operations carried out.

Document structure based on subassemblies

As far as the contents permit, the chapters of this manual are structured according to subassemblies. The structure of these subassemblies is the same in all chapters.

Different product groups have different document structures based on subassemblies. CLAAS always takes care to keep these document structures based on subassemblies identical in any documents.

Search and find

The wanted subject can easily be found with the recurring subassembly structure, using the table of contents or the header line of this manual.

In addition, the index of this manual is a useful tool for locating a specific subject. The index can be found on the last pages of this manual.

Directions

Text elements such as front, rear, right and left always apply to the direction of travel. In figures, the direction of travel may be indicated by a direction arrow.

Your CLAAS Service Department

1.1.2 Validity of instructions

The present Operator's Manual applies to the following machine / front attachment:

Designation	Type	Machine number	
		from	to
CROP TIGER 30	035	03500001	—

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1.1.3 Specifications

Technical data, dimensions and weights are given as an indication only. CLAAS reserves the right to make changes subsequently as technical developments continue. Responsibility for errors or omissions not accepted.

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1.1.4 Road traffic regulations

The details of the road vehicle regulations in different countries may differ. In the event of discrepancies between the instructions provided by the manufacturer and the traffic regulations of the relevant countries, the traffic regulations of the countries concerned apply.

The following information applies to the Federal Republic of Germany.

As a rule, a self-propelled machine must have an operating licence and a certificate of exemption for driving on public streets.

When driving on public streets and roads with a self-propelled machine, all of the requirements relating to an operating licence and a certificate of exemption must be observed.

Documents to carry with you

Along with a driving licence, the machine operator must always carry the originals of his operating licence and his certificates of exemption.

Objects to carry with you

An advance warning triangle is to be carried with you in all machines.

An advance warning triangle, a warning light and a first-aid kit are to be carried with you in all commercially used machines.

Modifications to the machine

If parts of the machine, whose properties are specified, are modified or fitted retroactively, and the operation of them can cause a danger to other road users, then the operating licence (individual operating licence) and the certificate of exemption expire.

In order to obtain a renewed individual operating licence, the machine must be shown to the technical inspection authority (TÜV, DEKRA) who then issue an individual approval in accordance with § 19 StVZO (German Road Traffic Licensing Regulations).

If you are in doubt as to whether such a case exists, please contact CLAAS as the manufacturer.

Warning beacons

When driving on public streets and roads, the yellow, flashing warning lights (warning beacons) may only be operated if this is explicitly specified in the individual operating licence or in the certificate of exemption (for example with a wide load).

Work lights

The work lights must be switched off when driving on public streets and roads.

1.1.5 Road traffic regulations

When driving the machine on public roads, all conditions of the operating permit and of the special approval must be observed.

Road traffic regulations may vary between countries. In case of discrepancies between the instructions provided by the manufacturer and the traffic regulations of the relevant countries, the traffic regulations of the countries concerned apply.

Documents to be carried on the machine

In addition to his driving licence, the operator must always carry the original of the operating permit and of the special approval.

Objects to carry with you

An advance warning triangle is to be carried with you in all self-propelled work machines.

An advance warning triangle, a warning light and a first-aid kit are to be carried with you in all commercially used machines.

In addition, at least one wheel chock is to be carried with you in vehicles with a permitted total weight in excess of 4 t.

As a rule, CLAAS self-propelled work machines are equipped with 1 rigid or 2 folding wheel chocks. These must only be used on the front wheels.

Machine with a wide load

In self-propelled work machines with a wide load (width more than 3 m beyond the width of the tyres), you must carry with you an individual operating licence based on an individual approval, a certificate of exemption in accordance with § 70, para.1 StVZO (German Road Traffic Licensing Regulations) and an exception permit in accordance with § 29 StVZO.

All of the requirements and obligations listed in these documents are to be observed. In particular, the instructions for indicating road vehicles with a wide load are to be observed. (Two red and white striped warning plates each in the front and at the rear, two yellow, flashing warning lights).

Certificates of exception and exception permits are issued in each state of Germany according to different regulations. In general, information regarding this is provided by your nearest road traffic licensing department.

Additional weights

When driving on public streets, rear steering self-propelled work machines fitted with front attachments that have received CLAAS approval must be equipped with additional weights that act on the steering axle.

This is required in order to maintain steering of the machine and to prevent it from lifting off at the rear when braking and on slopes.

The required additional weights can be made up of implements, rear axle weights and liquid filling in the rear axle wheels.

The rear of self-propelled work machines is to be ballasted in accordance with the type of front attachment and the equipment on the machine.

Detailed information on this matter can be obtained from CLAAS.

Changes on the machine

If any parts of the machine are subsequently modified whose condition is prescribed or the operation of which (after being modified) could represent a hazard to other road users, then the vehicle type approval registration shall no longer be valid and application must be made for a new vehicle type approval registration. In this case the machine must be presented to the motor vehicle safety inspection authority responsible (TÜV) in order to obtain an expert opinion certificate (§ 19 section 2 StVZO).

If you are in any doubt as to whether this situation applies in your case, please contact us as manufacturers.

Towing a trailer

A trailer for front attachments may be towed in accordance with the permissible trailed load.

If a trailer is towed behind the machine, then the cable for the entire lighting system must be connected and the good condition of the lighting system assured.

In addition, particular care should be taken to properly latch the trailer hitch.

The towing of other trailers in the trailer hitch is **not** permitted in self-propelled combine harvesters when driving on public streets.

Identification requirements

All CLAAS self-propelled work machines are to be labelled, in accordance with § 58 StVZO (German Road Traffic Licensing Regulations), with 3 speed signs on the sides and on the back.

As a self-propelled work machine with a permitted **maximum speed of up to 20 km/h**, the machine is only subject to operating licence requirements. A registration plate number is not required.

According to § 4 of the FZV (German Motor Vehicle Registration Regulation), the machine must be permanently and clearly labelled on the left-hand side with the owner's first and last name as well as the town of origin (company and registered office).

As a self-propelled work machine with a permitted **maximum speed of over 20 km/h**, the machine is subject to operating licence and registration plate requirements.

As a part of registration plate requirements, regular recurrent vehicle inspections are to be carried out by a technical inspection authority (TÜV, DEKRA).

Warning beacons

When driving on public roads and lanes it is not permitted to have warning beacons installed unless the machine is of excess width.

Work lights

The work lights must be switched off during road travel!

Folding front attachments

The retrofitting of folding front attachments will cause the individual operating licence of the machine and the certificate of exemption to expire.

In order to obtain a renewed individual operating licence, the machine must be shown to the technical inspection authority (TÜV, DEKRA) who then issues individual approval in accordance with § 19 StVZO (German Road Traffic Licensing Regulations).

A renewed individual operating licence is to be applied for at the appropriate administrative agency (vehicle registration office) and requires new individual approval and a certificate of exemption to be submitted.

To facilitate the issuance of individual approval for the technical inspection authority, CLAAS can issue a sample certificate on request if provided with the machine type, the machine number and the year of manufacture.

In particular, the required weight increase on the steering axle is to be observed, in order to maintain steering and to prevent the machine from lifting off when braking.

In the event that the required additional weights are missing, the technical inspection authority will generally not issue an individual approval.

If it is a new CLAAS self-propelled work machine with fitted folding front attachment and the certification was carried out at the factory by the technical inspection authority, then the points mentioned above do not apply.

1.2 Identification plates and identification numbers

1.2.1 Spare parts and technical questions

Please specify the respective identification nos. when ordering spare parts and making technical inquiries:

- Machine
- Front attachment
- Engine
- Subassembly
- and/or
- Software version / versions

This is necessary as otherwise, incorrect spare part deliveries may result.

The identification no. can be found on the respective type plate.

The identification no. / nos. of the software can be found in the respective menu.

1.2.2 Machine identification plate

The identification plate is affixed to the right-hand side of the machine on the operator's platform.



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	Designation
1	Type
2	Identification no. (machine number)
3	Type of diesel engine
4	Year of manufacture

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In addition, the identification number of the machine is stamped into the frame underneath the flap (1).



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1.2.3 Engine identification plate

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The identification plate of the diesel engine is affixed above the engine.



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2 Safety Rules

2.1 General Information

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2.1.1 General information

The CE mark and the enclosed declaration of conformity document that the self-propelled machine fulfils the safety regulations of the EC Machinery Directive.

Before putting the machine into operation, read and follow the Operator's manual and the safety instructions!

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2.1.2 Important information

The instructions in this operator's manual must be read and observed, in order to prevent danger to all persons, who operate, maintain, repair and inspect this CLAAS product.

Please read, in particular, the sections "Safety rules", "Before commissioning" and "Before putting the machine into operation" in the machine operator's manual.

The use of spare parts, accessories and ancillary equipment that are not original CLAAS parts and not tested and approved by CLAAS, can have a negative impact on design specifications of the CLAAS machine and its operational reliability and thereby impair active and/or passive driving safety, as well as occupational safety (accident prevention).

Insofar as damages are caused through the use of non-CLAAS parts, accessories and ancillary equipment, any liability will be rejected by CLAAS.

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2.1.3 Intended use

Both the front attachment and the machine are designed solely for use in customary agricultural operations (intended use).

Use in any other way is considered as contrary to the intended use. The manufacturer accepts no liability for any damage or injury resulting from this misuse and these risks must be born solely by the user.

Compliance and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use.

This front attachment and the machine may be operated, serviced and repaired only by persons familiar with all its particular characteristics and acquainted with the relevant safety rules.

The accident prevention regulations, all other generally recognised regulations on safety and occupational medicine and the road traffic regulations must be observed at all times.

Any arbitrary modifications carried out on the front attachment and on the machine will relieve the manufacturer of all liability for any resulting damage or injury.

2.1.4 Safety and accident prevention regulations

- In addition to the information in this operator's manual, please refer to the general safety and accident prevention regulations.
- Before putting the machine into operation, check it for road and operational safety.
- Observe the respective regulations when using public traffic routes.
- Before work commences, you must familiarise yourself with all of the control mechanisms and their function. Once you are driving it is too late.
- Before starting the diesel engine, you must ensure that all safety devices are attached and in their protective positions.
- Only start the diesel engine from the driver's seat. The diesel engine must not be started by short-circuiting the electrical connections on the starter, because the machine may immediately start to move.
- Before starting the diesel engine and before switching on the machine:
 - Ensure that there are no persons, children or objects in the hazardous area.
 - Look out for children.
 - Signal by sounding the horn.
- Before pulling away in the machine:
 - Ensure that there are no persons, children or objects in the danger area.
 - Ensure adequate visibility.
 - Check the immediate vicinity for people and children.
 - Look out for children.
 - Signal by sounding the horn.
- Do not let diesel engine run in enclosed spaces.
- The driver should not wear loose clothing. Avoid loose-fitting clothing.
- Caution is urged when handling fuel. – Increased fire hazard. Never pour fuel in close proximity to open flames or sparks that may cause ignition. Do not smoke while filling the fuel tank.
- Before filling the fuel tank, always switch off the diesel engine and remove the ignition key. Do not fill the fuel tank in an enclosed space. Wipe up spilled fuel immediately.

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- To prevent a risk of fire, keep the machine clean.
- Caution is urged when handling brake fluid and battery acids.
Toxic and corrosive.
- Ensure there is sufficient safety clearance in areas with low-hanging power lines. You may need to look out for radio antenna.
- The warning and information labels affixed to the machine provide important information regarding safe operation.
Compliance is for your own safety.
Replace damaged and illegible warning signs / safety instruction stickers immediately.
If parts with warning signs / safety instruction stickers are being replaced, ensure that the appropriate warning signs / safety instruction stickers are affixed to the new parts.
- Do not stay in the engine compartment while the diesel engine is running.
- Ensure that the access ladder, the platform and other access areas of the machine are always free from oil and grease.

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2.1.5 General safety and accident prevention regulations for combine harvesters

- Never stand inside the range of rotation of the unloading auger tube while the engine is running.
Do not allow any other persons to stand there as well!

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2.1.6 Prior to operation, general

- Observe the maximum permissible axle loads and total weights.
- Before starting to drive and operate the forage harvester, adjust the mirrors to give full vision of the road and of the operating area behind.
- Before driving the forage harvester always check brakes for correct function and regularly check the level of the brake fluid. Only use the specified type of brake fluid and change the brake fluid at the recommended intervals.
Take care when handling brake fluid.
Toxic and corrosive!
 - Dispose of used brake fluid in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.
- The left and right brake pedals must be locked together for transport and road travel so that both front wheel brakes will be applied simultaneously.
- Projecting parts must be removed or adjusted to within the normal width of the machine before driving on public roads and lanes.
- Before driving off, always check the front and rear wheels for the correct tyre pressures!

2.1.7 Transporting passengers

- Only such persons may be transported on the instructor's seat who provide instructions regarding the machine.
- The carrying of passengers is otherwise not permitted.

2417

2.1.8 General driving operations

- When driving on the road with a raised front attachment, the safety switch must be switched off.
- Never leave the operator's platform while driving.
- The machine is only permitted to drive on public streets and roads with an empty grain tank / loading hopper.
- On public streets and roads, front attachments with finger bars, crop lifters or crop divider points must be covered.
- Be particularly careful at railway crossings. If a railway crossing cannot be crossed quickly because of traffic or an obstruction and without stopping, then you must stop in front of the St. Andrew's cross. Otherwise, a railway crossing is to be crossed without stopping.
- The driving behaviour of the machine is affected, for example, by the road and by implements. Therefore, adapt your driving style to the actual terrain and ground conditions. Special care must be taken when working and turning on a slope or with a full grain tank / loading hopper. – Never shift gears on a slope.
- When the diesel engine has stopped or when the hydraulic steering fails, significantly more force is required to steer.
- Immediately stop the machine if there is with any kind of steering or brake problem. Have malfunctions corrected immediately.

62317

2.1.9 Automotive operation of combine harvester

- When travelling on public roads swing in the grain tank unloading tube all the way.
- Existing traffic regulations must be observed.

3715

2.1.10 Driving operations on slopes

- On surfaces with an incline of over 7 %, you must shift down the gears (diesel engine braking effect).

62324

2.1.11 Leaving the machine

- Prevent the machine from rolling when you leave (parking brake, wheel chocks). Turn the engine off, remove the ignition key and lock the cab, if necessary.

29484

- Never leave the machine unattended when the engine is still running.
- Before leaving the machine, lower the front attachment completely.

62327

2.1.12 Front attachment

- Only carry out work under raised front attachments if they are supported safely.
- Front attachments and feeder units, such as conveyors, rollers, chains, augers, reels and similar cannot be fully secured using integral design features due to their function. Therefore, during operation, keep a sufficient safety distance from the moving parts. The sense of these instructions applies to all other ancillary attachments.

36728

2.1.13 Grain delivery

- The augers located inside the grain tank cannot be shielded completely against accidental contact due to their function.
- Before mounting or entering the grain tank, make sure that no other person can restart the engine.
- Enter the grain tank only through the opening provided for this purpose.

62347

2.1.14 Adjustment and maintenance work

The drives on the machine will not be automatically secured from moving after the engine has been switched off.

Moreover, when it comes to adjustments, it may be necessary to turn the drives.

For these reasons the following precautions should be observed:

- Before adjustment, cleaning and maintenance operations and before correcting malfunctions:
 - Switch off the threshing mechanism.
 - Disengage the front attachment.
 - Switch off the grain tank unloading mechanism.
 - Stop the engine.
- Before adjustment, cleaning and maintenance operations and before correcting malfunctions at the hydraulic system, lower the front attachment and/or feeder unit all the way.
- As a rule, always disconnect the cable from the battery when working on the electrical system.
- Once the threshing unit has been switched off, the drives will continue turning for a short period of time. You must wait until all the drives have stopped before carrying out any work.
- Please ensure that it is not possible for anyone to accidentally start the machine or turn any of the drives whilst work is being carried out.

29484

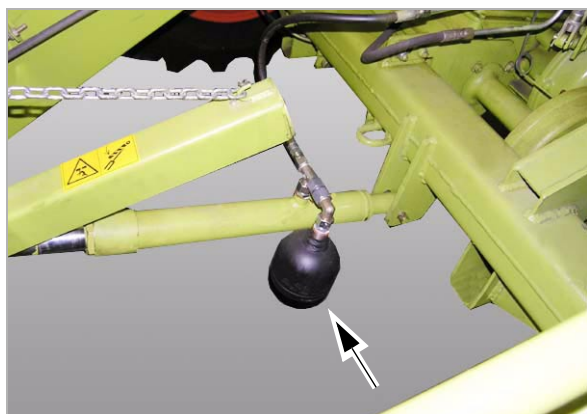
- Escaping fluid (fuel or hydraulic oil) under high pressure can penetrate the skin and cause serious injury. If any fluid is injected into the skin, consult a doctor immediately as otherwise serious infections may result.
- Repair work on the hydraulic system may only be carried out by specialist workshops.
- Be careful when opening the radiator cap. The radiator is under pressure when the engine is hot.
- Do not attempt to mount a tyre unless you have the proper equipment and experience to perform the job safely.
- Dispose of oil, fuel and filters in a way that is harmless to the environment and in accordance with existing anti-pollution regulations!
- Retighten the wheel nuts and wheel bolts regularly!

62824

2.1.15 Accumulators

Be especially careful when working on hydraulic systems equipped with accumulators. Hydraulic systems with accumulators are under high pressure!

Only have qualified workshops carry out repair work on the hydraulic system.



21510

1

2425

2.1.16 Antifreeze

Antifreeze is easily inflammable!

Keep antifreeze away from children!

Vapours may cause sleepiness and a dazed feeling.

Repeated contact may cause chapped or rough skin.

The following problems may arise:

- Irritation of the eyes
- Irritation of the respiratory tract
- Headache
- Giddiness

Effects on the central nervous system in case of high doses:

- Difficulty in breathing
- Unconsciousness

Swallowing:

- Sickness
- Vomiting

- Liver damage

Antifreeze must not come in contact with the environment.

- Collect antifreeze in a suitable container!
- Dispose of antifreeze in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.

2427

2.1.17 First aid measures

Inhaling:

- Make the person inhale fresh air and consult a doctor, depending on the symptoms.
- Remove the person from the hazard area.

Eye contact:

- Thoroughly flush with water for several minutes. If necessary, consult a doctor.

Skin contact:

- Thoroughly clean with plenty of water and soap and remove polluted and soaked clothing immediately, consult a doctor if skin is irritated (redness etc.).

Swallowing:

- Do not cause vomiting, consult a doctor immediately.

62390

2.1.18 Applying the feeder housing safety lock

The engaged safety lock prevents an uncontrolled drop of the feed rake conveyor and the mounted front attachment.

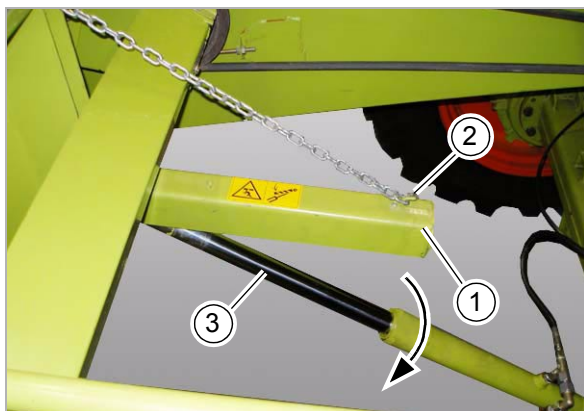


Danger!

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.



21367

2



Danger!

The front attachment and / or the feeder unit may drop in an uncontrolled way.

Death or serious injury.

- Keep a safe distance from the hazard area.

- Fully lower the reel.
- Raise the feeder unit all the way.
- Detach the safety lock (1) from the chain at (2) and fold down onto the piston (3) of the hydraulic cylinder.
- Lower the feeder unit onto the secured safety lock (1).

62397

2.1.19 Disengaging feed rake conveyor safety lock



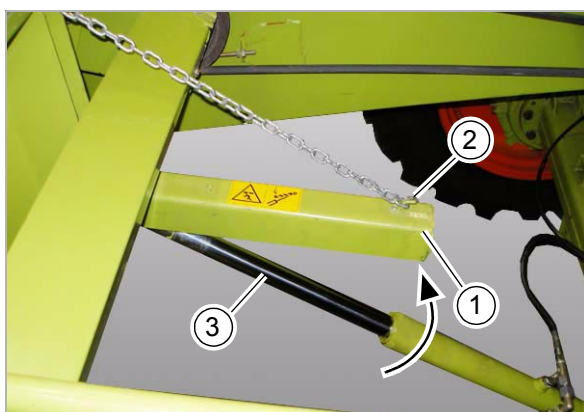
Danger!

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.

- Fully lower the reel.
- Raise the feeder unit all the way.
- Lift the safety lock (1) and hang into the chain at (2).



21367

3



Danger!

The front attachment and / or the feeder unit may drop in an uncontrolled way.

Death or serious injury.

- Support front attachment and / or feeder unit.
- Keep a safe distance from the hazard area.



21394

4

2.1.20 Wheel chocks

The wheel chocks are not included in the scope of delivery of the machine.

- Place the wheel chock (1) on both sides of the machine tightly in front of or behind the drive wheel, depending on the slope.

The machine has been secured against rolling.



21428

5

2.1.21 Disconnecting the battery

In order to interrupt the power supply to the machine, loosen and remove the cable clamps (1) from the battery.

**WARNING:**

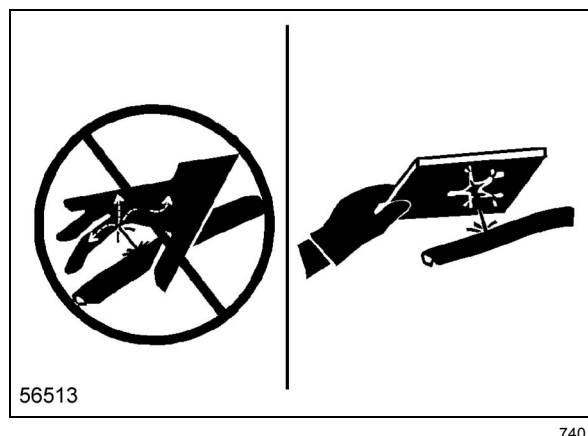
Work on the electrical system.

Machine damage.

- Before starting work, disconnect the cable from the negative terminal first and then from the positive terminal of the battery.
- When work is complete, first connect the positive terminal and then the negative terminal to the battery.
- Always disconnect the cables from the alternator and battery before performing electrical welding work on the machine and the front attachment.

Disconnect the battery daily after using the machine and in case of an emergency.

Do not disconnect the battery when the diesel engine is running.



6

2.1.22 Danger of injury due to escaping hydraulic liquid



Danger!

Liquids under high pressure.

Liquids penetrate the skin and cause serious injury.

- Only have authorised and qualified work-shops carry out work on the hydraulic system.
- Check hose lines at regular intervals. Search for leaks using a piece of wood or cardboard. Ensure that the oil jet will not be directed towards your body.
- Replace any damaged hose lines.
- Replace hose lines 6 years after the date of manufacture at the latest.



Danger!

Dealing incorrectly with injuries due to hydraulic fluids.

Death or serious injury.

Even a pinhole can result in severe injuries.

- If hydraulic fluid gets in the skin or eyes, have the injury treated by a medical specialist immediately.

63221

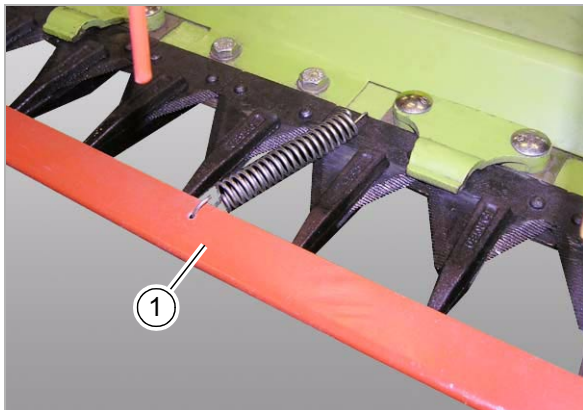
2.1.23 Attaching finger bar safety bar

For transporting the front attachment, the safety bar must be placed on the finger bar.

In addition, the safety bar must be fitted during all maintenance and repair work near the knives or the feed mechanism.

On front attachments without a crop lifter fitted, the safety bar must be attached directly on the knives.

- Raise the front attachment until the finger bar is in a well-accessible working height.
- Raise the reel completely.
- Putting the machine out of operation.



21635

7

**Danger!**

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.

**Danger!**

Front attachment, reel and feeder unit may drop in an uncontrolled way.

Death or serious injury.

- Fit the safety locks.
- Keep a safe distance from the hazard area.

**Warning!**

Sharp edges and sharp-edged machine parts

Slight injuries.

- Wear safety gloves.
 - Wear a safety hat.
- Use the tension springs to secure safety bar (1) to the finger bar.

2.2 Safety rules

Before putting the machine into operation, read and follow the Operator's manual and the safety instructions!

76

2.2.1 Identification of warning and danger signs

All parts of this operator's manual having to do with your safety or the safe operation of the front attachment or the machine are marked with the following signs. Please pass on all safety precautions to any other users of the machine as well.



Danger!

Nature and source of danger

Consequences: death or serious injury

– Countermeasures



Warning!

Nature and source of danger

Consequences: injuries

– Countermeasures



Caution!

Nature and source of danger

Consequences: material damage

– Countermeasures



Note!

Nature and source of information

Consequences: enhanced machine economy or easy assembly

– Measures



Environment!

Nature and source of danger

Consequences: damage to the environment

– Countermeasures

2.3 Safety decals

859

2.3.1 General instructions for warning signs

The danger zones on the machine or on the front attachment which cannot be eliminated by design or protective measures, are identified by safety decals. These safety decals help to alert persons to hazards which can cause personal injury.

The safety decals consist of two components:

- Part 1 shows the risk of injury in a warning triangle.
- Part 2 shows how injury and accidents can be prevented by appropriate actions.

The pictures on the safety decals consist of generally understandable pictograms. As far as possible, the safety decals must be located in close proximity to the hazardous area.

The original CLAAS safety decals are equipped with the CLAAS part number and the date of manufacture.

The positioning and meanings of the safety decals are explained below:

- When ordering, please use the 10-digit CLAAS part number given ahead of every safety decal,
- the safety decal number given in () shows the correct position of the safety decals in the associated picture,
- followed by an explanation of the safety decal graphics in text form.



Danger!

Hazard points on the machine.

Death or serious injury!

- Hazard warning signs / safety decals that are damaged or unrecognisable must be replaced immediately by new ones.
- When parts that have hazard warning signs / safety decals are replaced, always make sure to attach the relevant new hazard warning signs / safety decals to each new part.

2.3.2 Front attachment

000 516 028 0 (11)



21505

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21506

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21505

11



516 028.0

10

Do not open or remove safety shields while engine is running.

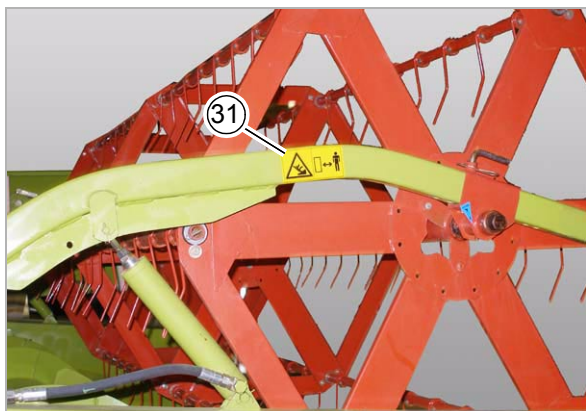
000 516 040 0 (31)



516 040.0

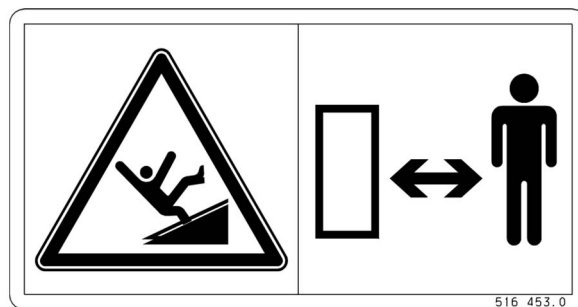
12

Stay clear of front attachment. Disengage front attachment drive, shut off engine, and remove key before servicing or unclogging front attachment.



21463

000 516 453 0 (31)



516 453.0

13

Stay clear of front attachment. Disengage front attachment drive, shut off engine, and remove key before servicing or unclogging front attachment.

62434

2.3.3 Engine

000 516 034 0 (17)



21431

15



516 034.0

16

Do not open or remove safety shields while engine is running.

2.3.4 Chassis

000 516 047 0 (40)



17

21430



18

21432



19

Use wheel chock before machine is uncoupled or parked.

2.3.5 Drives**000 516 039 0 (22)**

21339

20

21508

21

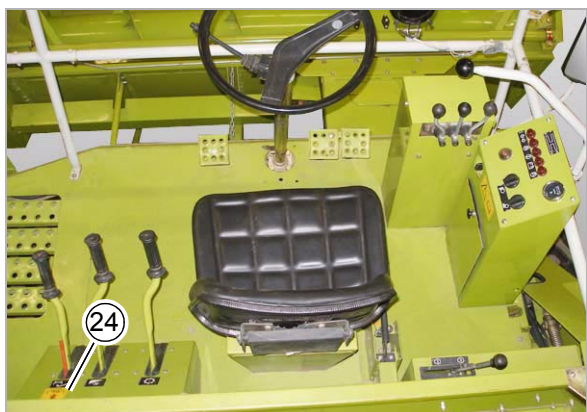
21509

22**23**

Do not open or remove safety shields while engine is running.

2.3.6 Cab / Operator's platform

000 516 041 0 (24)



24

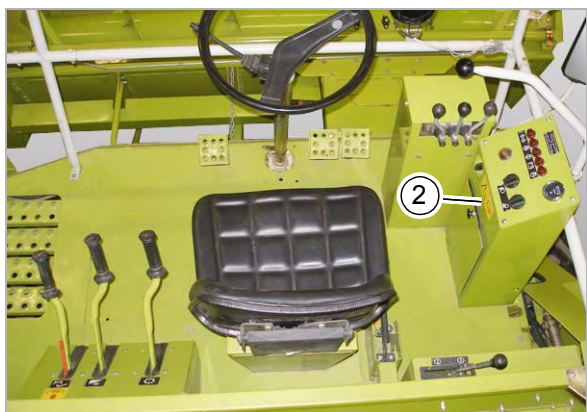
21435



25

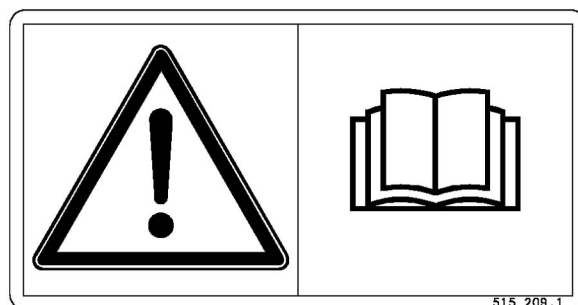
Never reach or climb into grain tank while engine is running.

000 515 209 1 (2)



26

21435



27

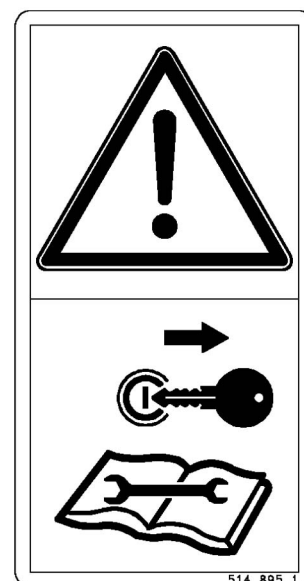
Carefully read operator's manual before handling the machine. Observe instructions and safety rules when operating.



28

21430

000 514 895 1 (33)



29

Shut off engine and remove key before performing maintenance or repair work.

000 516 044 0 (34)



30

21430



31

Do not ride on platform or ladder.

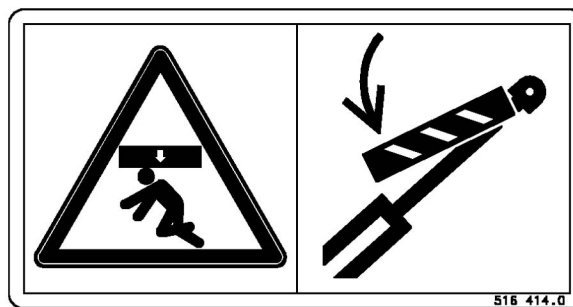


21367

32

2.3.7 Feeder unit

000 516 414 0 (13)



33

Secure lifting cylinder with locking device before getting in hazardous area.

000 514 901 1 (15)



21448

34



35

Do not open or remove safety shields while engine is running.

62530

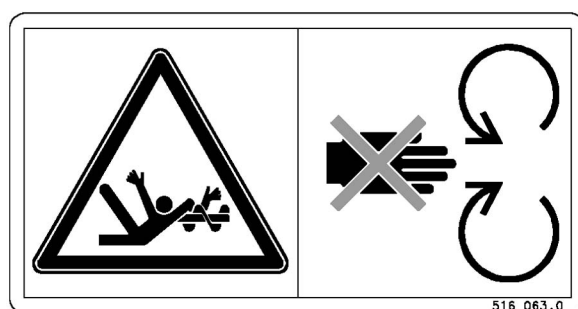
2.3.8 Threshing mechanism

000 516 063 0 (16)



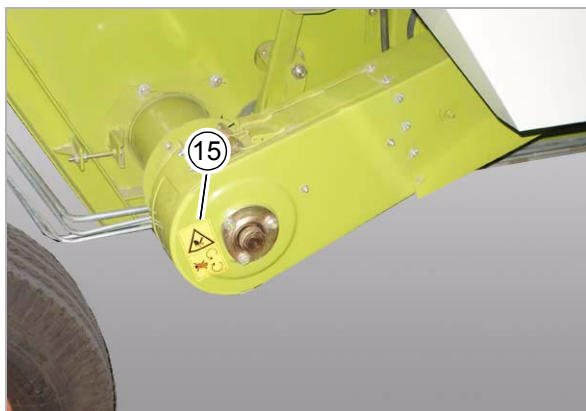
21448

36



37

Never reach into rotating auger.



21474

38



21502

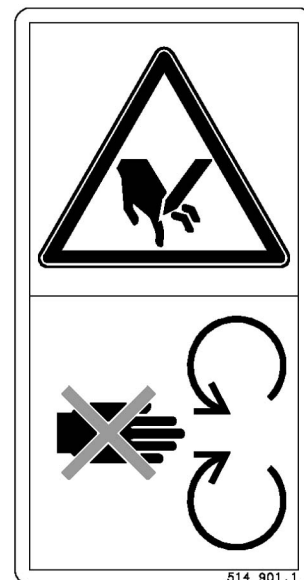
39



21352

41

000 514 901 1 (15)



514 901.1

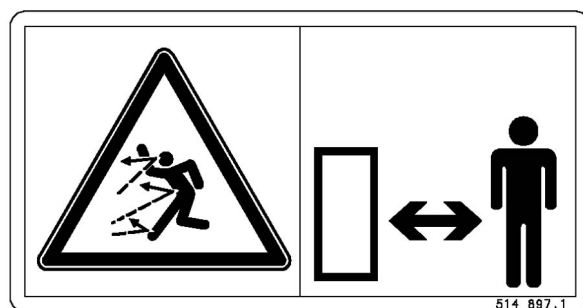
40

Do not open or remove safety shields while engine is running.

2.3.9 Crop receptacle / straw receptacle

62819

000 514 897 1 (32)



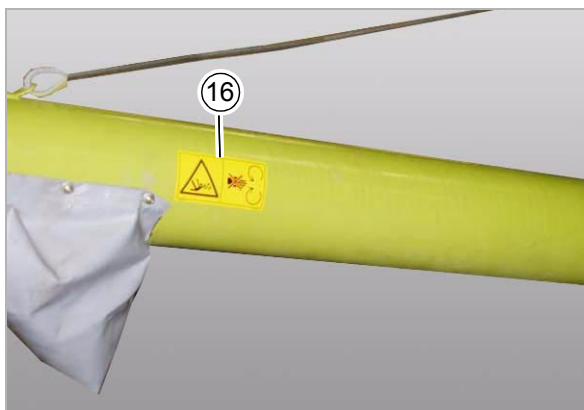
514 897.1

42

Danger - flying objects; keep safe distance from the machine as long as the engine is running.

2.3.10 Grain delivery

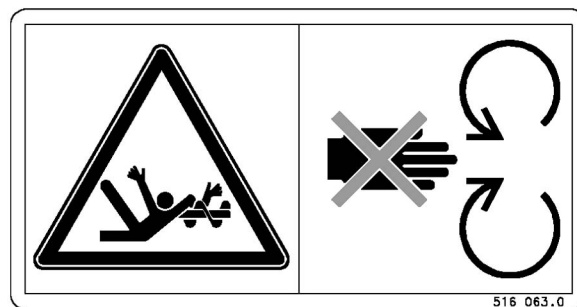
000 516 063 0 (16)



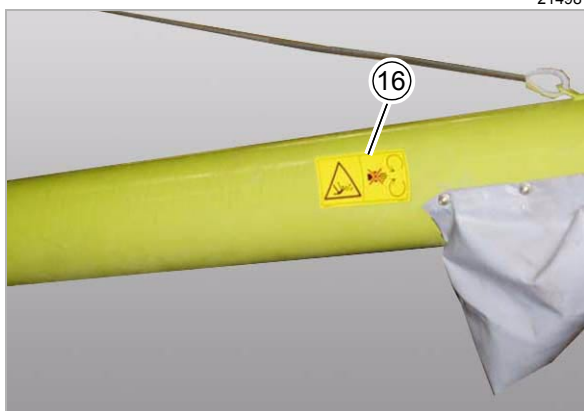
21498

43

Never reach into rotating auger.



45



21499

44

000 516 033 0 (16)



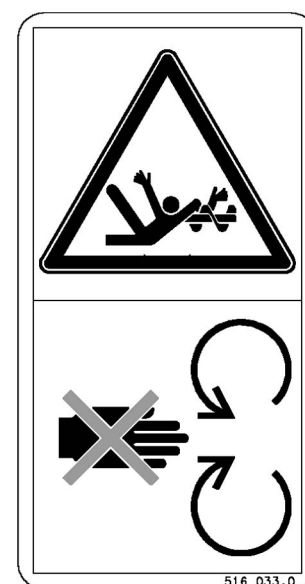
21501

46



21502

47



48

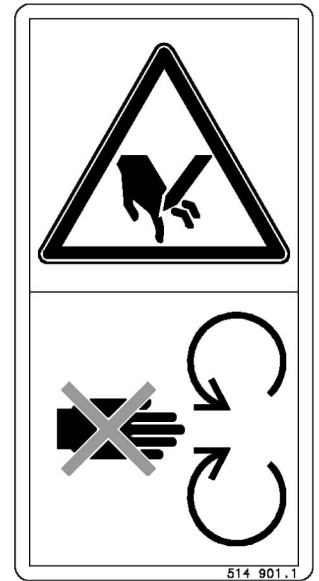
Never reach into rotating auger.



21507

000 514 901 1 (15)

49



514 901.1

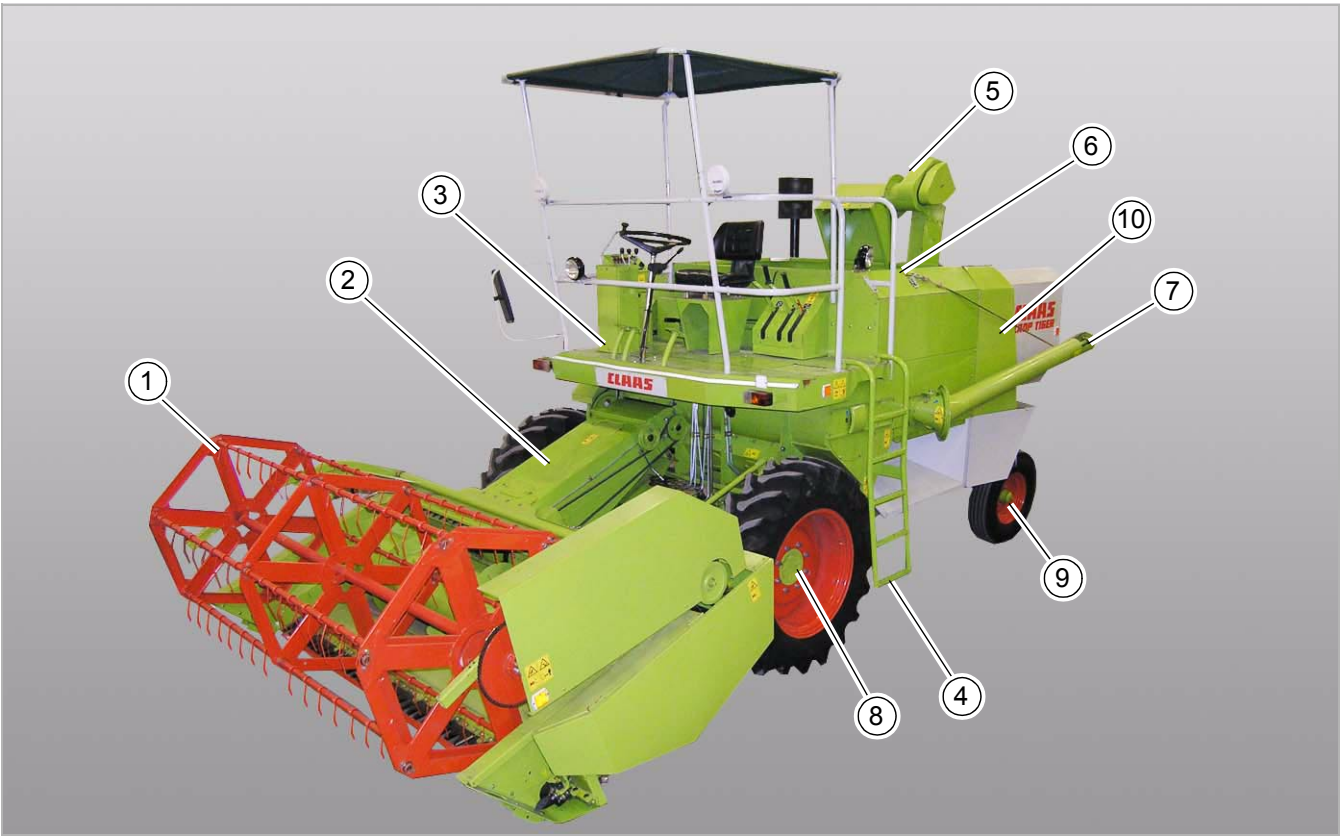
50

Do not open or remove safety shields while engine is running.

3 Sectional view of machine

3.1 CROP TIGER 30

3.1.1 Overview of machine front and left side



21578

1

	Designation
1	Front attachment
2	Feeder unit
3	Operator's platform
4	Ladder to the operator's platform
5	Grain tank loader
6	Grain tank
7	Grain tank unloading tube
8	Drive axle
9	Rear axle
10	Side flap of main drive / fuel filler neck

3.1.2 Overview of machine rear and right side

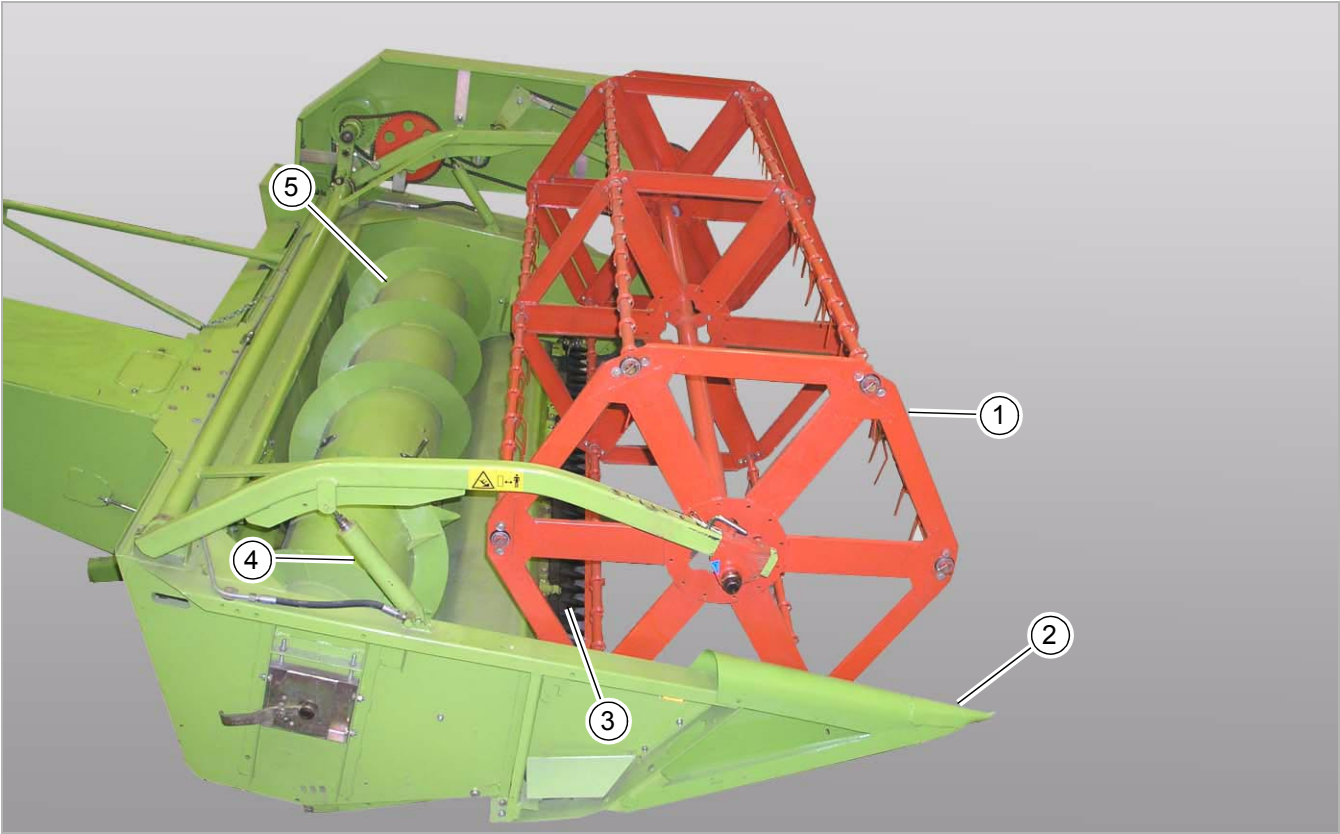


21585

2

	Designation
1	Diesel engine
2	Rotary chaff screen
3	Tailgate
4	Drives side flaps
5	Rear hood

3.1.3 Overview of front attachment



22428 3

	Designation
1	Reel
2	Crop divider
3	Finger bar
4	Reel cylinder (raise/lower)
5	Intake auger

4 Technical specifications

4.1 CROP TIGER 30 - TYPE 35

63224

4.1.1 General information

The machine used for determining the technical specifications was equipped with tyres 13.6-28 and 7.5-16, 4-cylinder diesel engine, a full fuel tank and a roof.

65984

4.1.2 Front attachment

Designation	
Cutting width	2.7 m
Intake auger, rice	Coated auger spirals
Reel drive	Mechanical V-belt variable speed drive
Reel speed	12 - 49 rpm
Reel height adjustment	hydraulic
Hydraulic fore and aft reel adjustment	mechanical

63157

4.1.3 Engine

Designation	
Engine manufacturer	Perkins
Engine type	1104A-44
Cubic capacity	4.4 litres
Maximum no-load speed	2310 ^{+20/-30} rpm
Rated speed	2200 rpm
Minimum no-load speed	1000 ^{+20/-30} rpm
Engine power at rated speed	2200 ± 10 rpm
Output (ISO TR 14396)	57 (77), kW (hp)
Coolant	approx. 18.0 litres
Alternator	65 A / 12 V
Fuel tank capacity	100 litres

4.1.4 Chassis

Designation	
Ground drive	mechanical, hydraulically adjustable variable speed drive
Manual gearbox	3 forward gears and 1 reverse gear
Forward ground speed	1st gear from 1.3 to 3.4 km/h 2nd gear from 2.5 to 6.8 km/h 3rd gear from 6.6 to 18.2 km/h
Reverse ground speed	R gear from 2.7 to 7.4 km/h
Front wheel drive	Final drives running in oil

69162

4.1.5 Chassis track width

A	Width between the tyres			
B	Track width			
C	Width over tyres			
Axle	Tyres	A	B	C
		mm	mm	mm
Drive axle	13.6-28 AS	1822	2182	2542
Rear axle	7.50-16 Truck	1140	1354	1700

69269

4.1.6 Brake

Designation	
Brake	Fluid pressure brakes, designed with an independent brake system
Parking brake	mechanical, independent

68787

4.1.7 Tyre pressures

Designation	bar / psi
Front tyres 13.6-28	1.9 / 28
Rear tyres 7.50-16	2.8 / 40

69270

4.1.8 Steering

Designation	
Steering, type	hydrostatic

4.1.9 Drives

Designation	
Front attachment: intermediate drive shaft speed	1140± 10 rpm

69164

4.1.10 Electric system / Electronics

Designation	
Battery	12 volts, 80 Ah

69170

4.1.11 Feeder unit

Designation	
Feed rake conveyor	Feeder chain
Cutting height	From -28 mm to maximum +690 mm
Clearance height (up to bottom edge of cutterbar skids)	710 mm
Cutterbar clutch	V-belt clutch

67617

4.1.12 Threshing mechanism

Designation	
Stone trap	As standard
Axial and tangential separating system	Lateral mounted rotor, one-piece threshing concave, cylindrical separating cage
Threshing concaves:	1 section, width 575 mm, Adjustable on the right-hand side of the rotor housing
– Grain	N10 (10 x 34)
– Soya / maize	N18 (18 x 34)
– Rice	Spike tooth concave
Disawning bars	2 disawning bars
Separating cage	Cylinder-shaped, lower half with perforations 20 x 40
Threshing drum clutch	V-belt clutch

4.1.13 Separation

Designation	
Rotor	Threshing and separating drum: Diameter 450 mm Width of the threshing area 575 mm Width of the separating area 1225 mm
– Grain equipment	8 rasp bars, 4 saw-tooth separating bars
– Rice equipment	8 threshing tooth bars, 4 saw tooth separating bars
Speed adjustment	5 speeds by changing V-belt pulleys: 500, 630, 803, 1013, 1282 rpm

21325

4.1.14 Cleaning unit

Designation	
Forced air cleaning	Paddle-type cleaning fan
Wind quantity	2 speeds by changing the V-belt pulleys: 1343 and 1505 rpm
Sieve pan	one-piece
Upper sieve	Long-lipped frogmouth sieve
Lower sieve	Short-lipped frogmouth sieve
Total sieve area	1.56 m ²

21269

4.1.15 Crop receptacle / straw receptacle

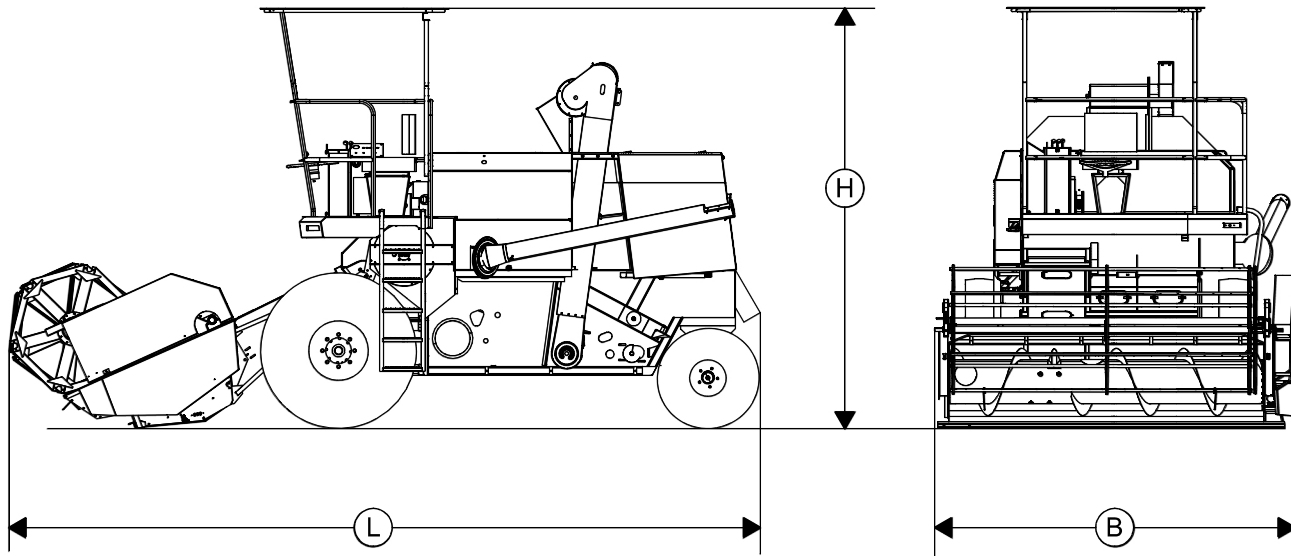
Designation	
Straw receptacle	on the left next to the machine

21273

4.1.16 Grain delivery

Designation	
Returns	Return flow to the back collecting auger
Grain tank capacity basis for calculation in t = litre weight of 780 g/l	1500 litres (approx. 1.1 t wheat)
Unloading tube	mechanically swivelling

4.1.17 Attachment parts / machine body dimensions



		Transport position	Working position
B	Width of right side of front attachment to the unloading tube rotating gear	3100 mm	* 3100 mm
	* When crop dividers are installed, the displayed measurement for the outer deflector must be added.		
H1	Height of bottom edge of the grain tank unloading tube	–	approx. 2100 mm
H2	Height of top edge of grain tank	2250 mm	2250 mm
H3	Height of top edge of grain elevator	2980 mm	2980 mm
H4	Height of top edge of roof	3550 mm	3350 mm
L1	Length of basic machine without front attachment	3720 mm	–
L2	Length of basic machine with front attachment without crop divider	5750 mm	–
L3	Length of basic machine with front attachment with crop dividers	6850 mm	6810 mm

4.1.18 Attachment parts / machine body weights

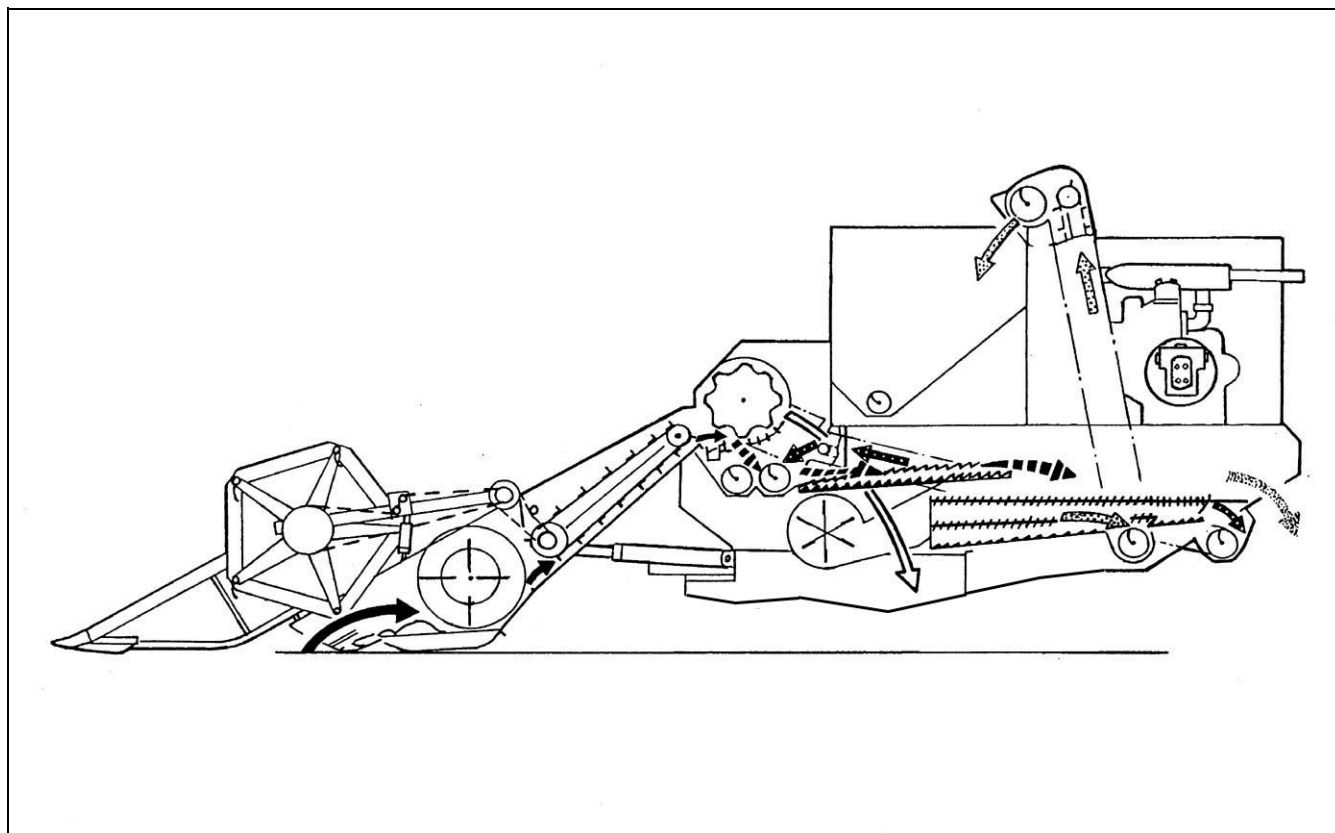
Designation	
Empty weight *	4485 kg
Front attachment	850 kg
2 short crop dividers	+37 kg
2 rice crop dividers	+10 kg
Rear straw receptacle (lateral straw conveyor belt)	+70 kg
Straw chopper	+80 kg
* Unladen weight with a full fuel tank and no front attachment.	

5 Structure and function

5.1 CROP TIGER 30

63136

5.1.1 Structure of the machine



21608

1

Arrow	Designation
	Harvested crop
	Grain, chaff and broken straw
	Grain
	Returns
	Straw
	Chaff

63134

5.1.2 Working mode of the machine

Front attachment

Crop dividers separate the crop to be left standing from the crop to be cut.

Crop lifters ensure zero-loss of down grain pick-up and cut losses due to hanging crop are prevented.

The reel guides the harvested crop into the intake auger. The harvested crop, which is conveyed through the intake auger spirals to the centre of the cutterbar, is guided via the conveyor chains of the feeder unit to the threshing mechanisms. Foreign objects are caught by the stone trap. Damage to the threshing mechanisms are largely avoided by this.

Threshing and separating mechanism

The threshing and separating rotor and the threshing and separating cage are used for threshing and separation. The right-hand section of the cage (approx. 1/3) is the threshing area, consisting of an adjustable open threshing concave in which the main threshing process takes place. Rasp bars on the threshing section, tined reaping bars on the separating section of the rotor and twisted bars on the inside of the separating cage move the material in a spiral shape around the rotor to the left. The crop swirls around several times through the cage, in order to achieve a gentle and thorough threshing and separation.

The earth on the grain along with the chaff and broken straw is separated in the threshing concave and falls into the trough of the front and rear collecting auger under the separating cage.

The separating section of the rotor separates out the grain which is still in the straw. The grain separated here is also fed into the trough of the front and rear collecting auger. The straw is laid out on the field either through the straw discharge opening on the left of the machine or through a lateral straw conveyor belt behind the machine.

Cleaning unit

The grain chaff broken straw mixture, which is conveyed from the auger spirals of the front and back collecting auger to the middle, is thrown by the conveyor paddles of the front and back collecting auger onto the preparation floor.

Through the swinging movement the grain chaff broken straw mixture is broken up on the preparation floor and supplied to the sieves simultaneously.

The air blast produced by the cleaning fan carries all of the light parts (chaff) out the rear of the machine. The grain fall through the upper and lower sieve into the trough of the grain auger and are conveyed by the grain elevator into the grain tank.

All parts that are heavier than the grain and larger than the chaff are fed via the upper and lower sieve into the trough of the returns auger. Here they are fed via the returns elevator back to the collecting auger for renewed cleaning.

After swinging out the grain tank unloading tube, the grain tank can be quickly emptied directly into a waiting trailer or one that is being towed alongside.

6 Prior to each operation

6.1 General Information

37391

6.1.1 General warnings

In the following sections of this chapter, the general warnings below are referred to by means of instructions.

**Danger!**

Carry out repair, maintenance and cleaning work and remove malfunctions only with the machine shut down.

Death or serious injury.

- Diesel engine OFF.
- Engage the parking brake.
- Remove the ignition key.
- Remove the key of the battery isolating switch.
- Secure machine by means of wheel chocks.
- Ensure that the machine cannot be put into operation by third-party persons.

63142

6.1.2 Check list for daily operation

The following must be carried out every time before putting the machine into operation.

- Complete all necessary steps according to the maintenance schedule.

Chassis

- Check the air pressure of the tyres.

7 Prior to initial operation

7.1 General Information

63349

7.1.1 General warnings

In the following sections of this chapter, the general warnings below are referred to by means of instructions.



Danger!

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.



Danger!

Front attachment, reel and feeder unit may drop in an uncontrolled way.

Death or serious injury.

- Fit the safety locks.
- Keep a safe distance from the hazard area.

7.1.2 Initial operation check list

The following must be done before putting the machine into operation.

- Complete all necessary items on the checklist for daily putting the machine into operation.
- Observe instructions for loading and tying down the machine.
- Clean the machine to protect it against salt damage after sea travel or road travel involving wintry road conditions.

Front attachment

- Align the front attachment.

Engine

- Check the air filter for correct seating.
- Check the engine oil level.
- Check the cooling water level.

Chassis

- Check the tyre pressure and correct if necessary.
- Check condition and permissibility of tyres.
- If necessary convert the rear axles / rear wheel drive axles from transport position to working position.
- If necessary adjust the wheel track for the given tyres.
- Check tightening values of wheel fixing elements and correct if necessary.
- Check oil level in all gearboxes and refill if necessary.

Brake

- Check the brake fluid level and refill if necessary.

Drives

- Check all belt tensions and adjust if necessary.
- Check safety devices and put in their protective position if necessary.
- Check the oil level in all gearboxes and refill if necessary.

Hydraulic system

- Check hydraulic oil level and tightness of hydraulic system.

Electrical / electronic equipment

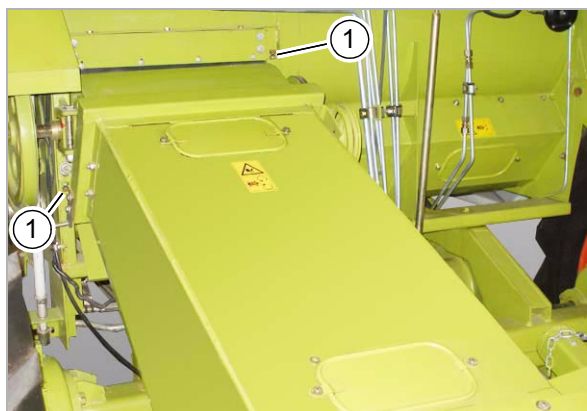
- Top up and charge the battery if necessary.

7.2 Front attachment

63407

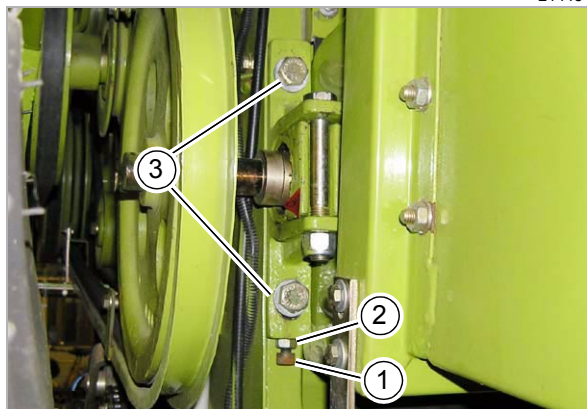
7.2.1 Aligning the front attachment

- Note the general warnings at the beginning of the chapter "Prior to initial operation".
- Making sure that the air pressure of all tyres corresponds to the details in the section Technical specifications.
- Drive the machine on level ground.
- Lower the front attachment until a skid touches the ground.
- Check whether the front attachment is aligned parallel to the ground.
- If necessary, align the front attachment.
 - Loosen the nut (2) on each side of the feeder unit.
 - Loosen the bolts (3) on both sides of the feeder unit.
 - Align the front attachment on both sides of the feeder unit using the bolt (1).
 - Tighten the bolts (3) and the nuts (2) on both sides of the feeder unit.



1

21448



2

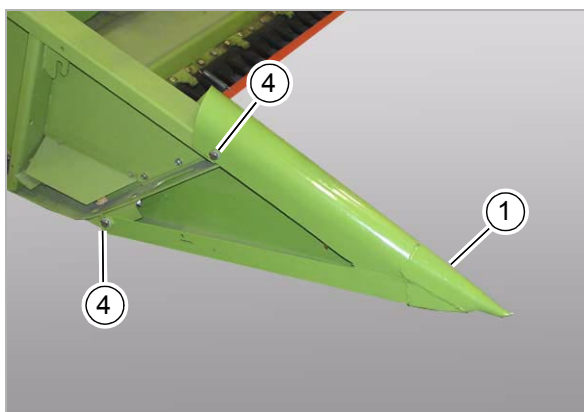
21693

7.2.2 Fitting the crop dividers

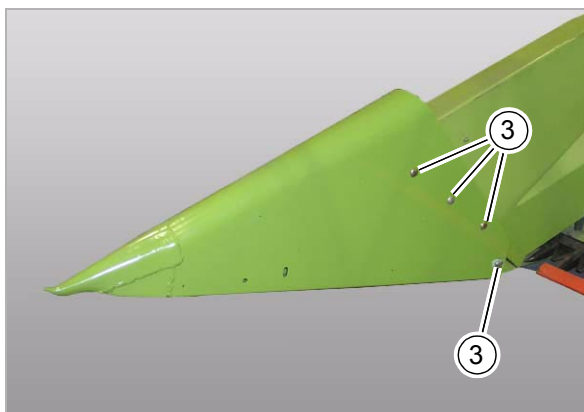
- Note the general warnings at the beginning of the chapter "Prior to initial operation".

	Designation	Number
1	Right crop divider	1
2	Left crop divider	1
3	Flat-headed screw M8 x 16	6
	Hex. nut M8	6
	Contact washer A8	6
4	Hexagon head bolt M12 x 25	6
	Hex. nut M12	6
	Contact washer A 12	6

- Bolt the crop divider (1) onto the right-hand side of the front attachment.



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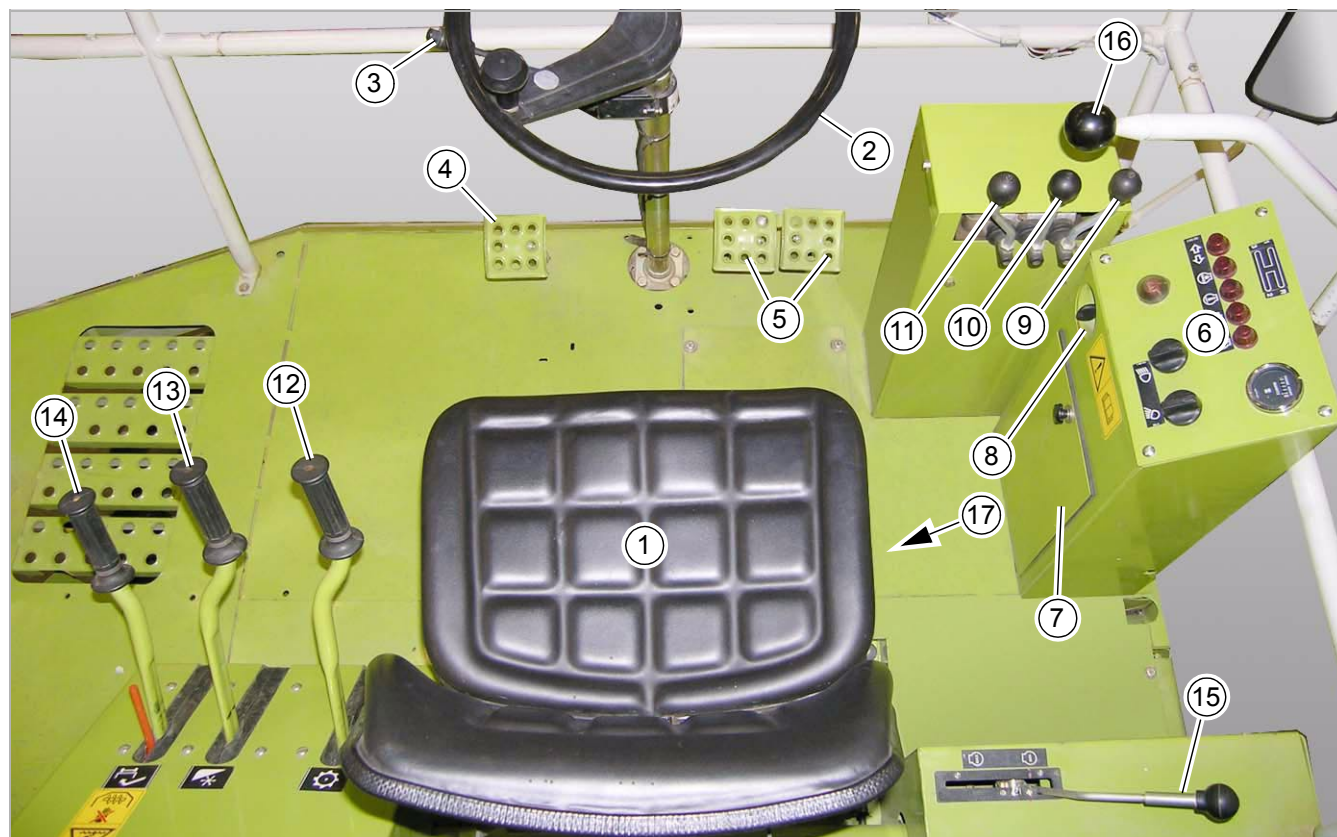
- Bolt the crop divider (2) onto the left-hand side of the front attachment.

8 Overview of controls

8.1 Cab / Operator's platform

63177

8.1.1 Operator's platform overview



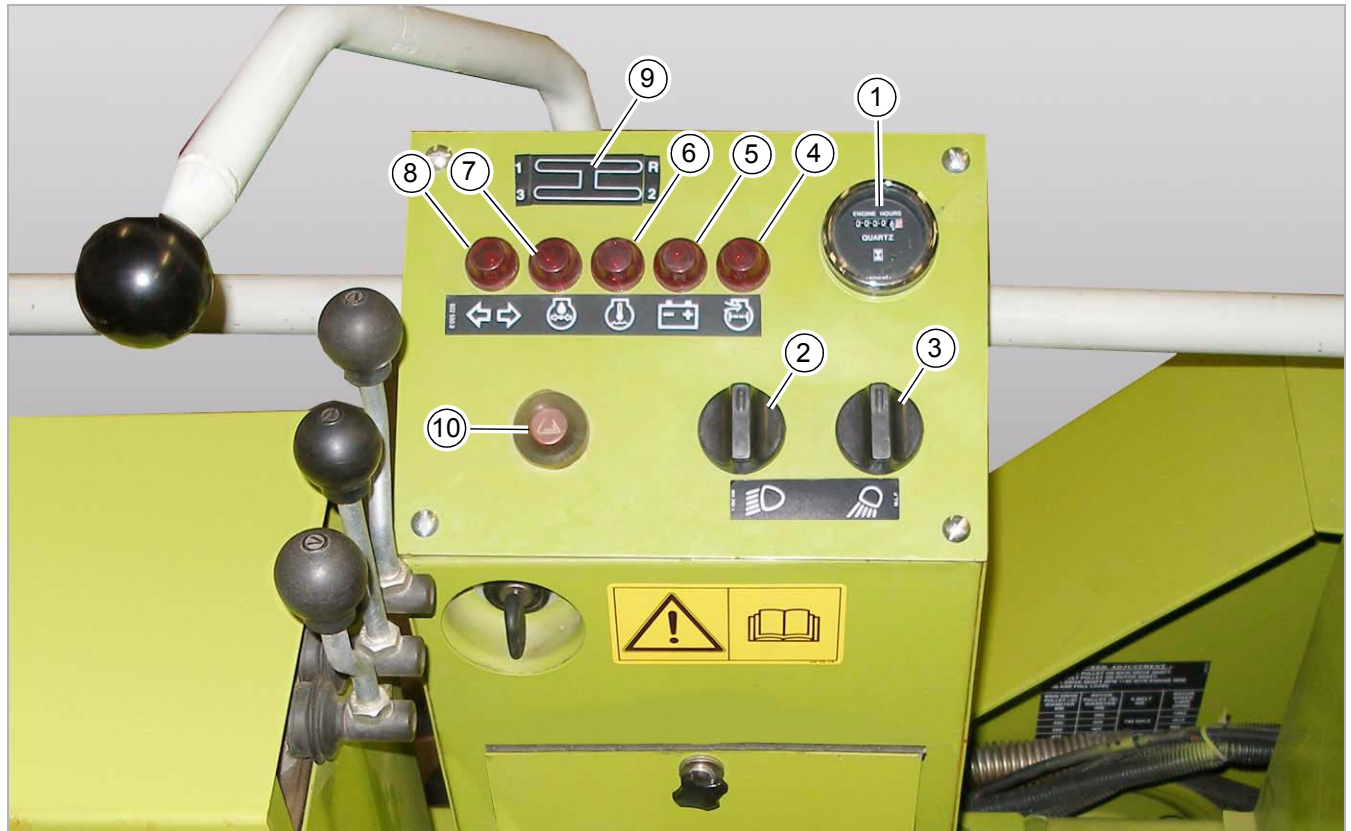
21618

1

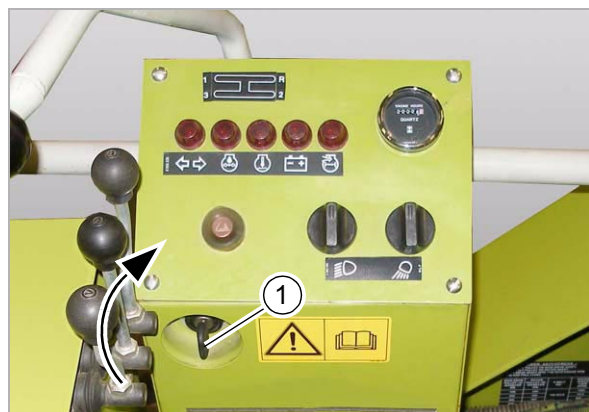
	Designation
1	Operator's seat
2	Steering wheel
3	Lever for the indicator / horn
4	Clutch pedal
5	Brake pedal
6	Control panel
7	Central electrics
8	Ignition switch
9	Lever to raise/lower the reel
10	Lever for the ground speed
11	Lever to raise/lower the front attachment
12	Lever to switch the threshing mechanism ON/OFF
13	Lever to switch the front attachment ON/OFF
14	Lever to switch grain tank unloading ON/OFF

	Designation
15	Lever for the diesel engine speed
16	Lever for the gear shift mechanism
17	Lever for the parking brake/container for brake fluid

8.1.2 Switch console



	Designation
1	Hour meter for the diesel engine
2	Rotary switch for the driving lights
3	Rotary switch for the work lights
4	Indicator for air filter control
5	Indicator for the battery
6	Indicator for the cooling water temperature of the diesel engine
7	Indicator for oil pressure in the diesel engine
8	Indicator for the indicator lights
9	Information label for the gear shift mechanism
10	Hazard warning flasher switch



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8.1.3 Ignition switch



Caution

When operating or starting up the machine when there is a problem with the diesel engine.

Damage to the diesel engine.

- If a problem occurs with the diesel engine, switch it off immediately or do not switch it on.
- Correct the problem immediately or notify an authorised specialist workshop.

Posi- tion	Function
0	Ignition OFF
1	Ignition ON
2	Pre-heat diesel engine
3	Start diesel engine

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8.1.4 Foot brake

The foot brake can be used both as a conventional brake and as an independent brake.



Danger!

When using the independent brake on public streets and roads.

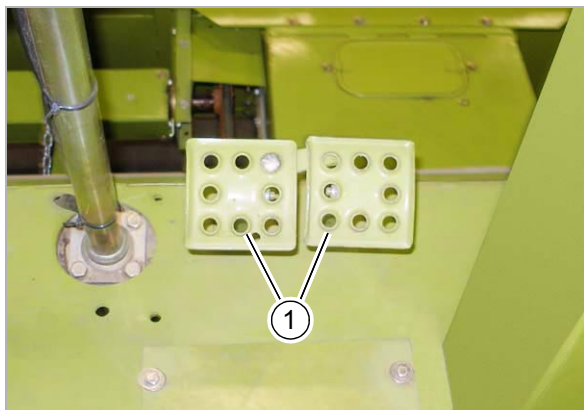
Death or serious injuries!

- Before driving on public streets and roads, couple the pedals of the foot brake together.
- Only use the independent brake in the field.

The independent brake serves for handling tight bends or as a steering aid on muddy ground.

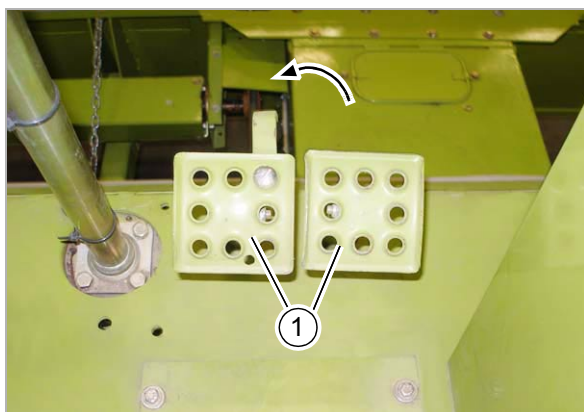
The brake settings are as follows:

- Conventional brake with coupled brake pedal (1).



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- Independent brake with uncoupled brake pedal (1).



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8.1.5 Access ladder

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The operator's platform can be reached via the ladder on the left machine side.



Danger!

Unexpected machine movements.

Death or serious injury.

- Only enter the ladder and the machine while it is standing still.

9 Driving and transportation

9.1 General Information

65684

9.1.1 General warnings

In the following sections of this chapter, the general warnings below are referred to by means of instructions.



Danger!

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.

63227

9.1.2 Preparing road travel



Danger!

Insufficient knowledge about machine functions.

Death or serious injury.

- Before putting the machine into operation, make yourself familiar with the controls.



Danger!

People are still in the driving range of the machine.

Death or serious injuries!

- Before and while driving the machine, make sure that no persons or objects are in the driving area.
- Do not carry any persons outside of the cab.



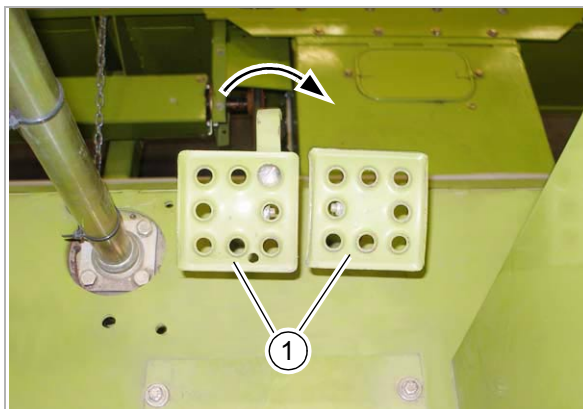
Danger!

Machine starts to move unexpectedly.

Death or serious injury.

- Never shift gears while driving!
- Never shift gears while driving on slopes.
- Do not let the machine roll.

- Remove heavy soiling from the machine.
- Attach the safety bar on the finger bar.
- Sit in the seat.
- Adjust the driver's seat.
- Sound the horn.
- Start the diesel engine.



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- Couple the foot brake pedals.

- Couple the foot brake pedals (1).



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- Release the parking brake.

**Danger!**

Unexpected machine movements.

Death or serious injuries!

- Do not drive in 3rd gear on gradients of more than 7%.

**Danger!**

Unexpected machine movements.

Death or serious injuries!

Machine damage.

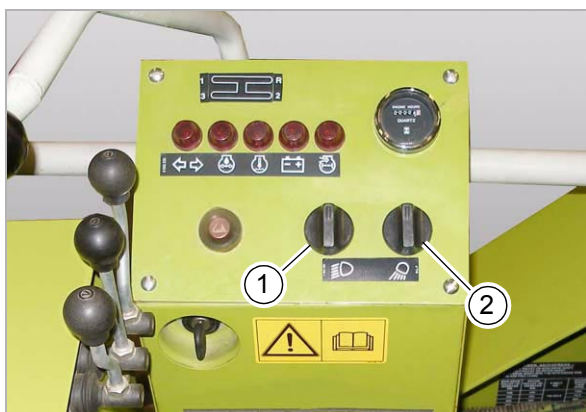
- Adapt the ground speed to the field conditions in areas with a slope.
- Never exceed the permitted ground speed of 20 (25) km/h on surfaces with a slope.

- Shift machine to desired gear.
- Swing in unloading auger tube.
- Move the front attachment to transport position and prepare it for road travel.



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- Adjust the diesel engine speed using the lever (1).

- If necessary, switch on the headlights rotary control switch (1).
- Switch off the work lights rotary control switch (2).

9.1.3 Preparing fieldwork

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Danger!

Insufficient knowledge about machine functions.

Death or serious injury.

- Before putting the machine into operation, make yourself familiar with the controls.

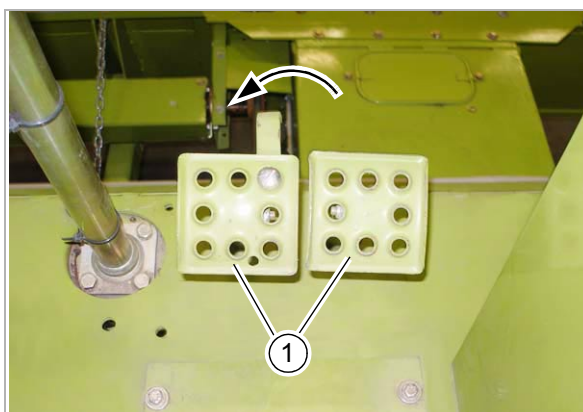


Danger!

Persons are present in the drive range of the machine.

Death or serious injury.

- Before starting the machine and while driving, ensure that there are no persons or objects in the drive range.
- Do not carry any passengers outside of the cab.



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**Danger!**

Machine starts to move unexpectedly.

Death or serious injury.

- Never shift gears while driving!
- Never shift gears while driving on slopes.
- Do not let the machine roll.

- Remove the safety bar on the finger bar.
- Sit in the seat.
- Adjust the driver's seat.
- Sound the horn.
- Start the diesel engine.

**Danger!**

Use of independent brake on public roads and lanes.

Death or serious injury.

- Couple the foot brake pedals.

- If necessary, uncouple the foot brake pedals (1).

- Release the parking brake.
- Shift machine to desired gear.

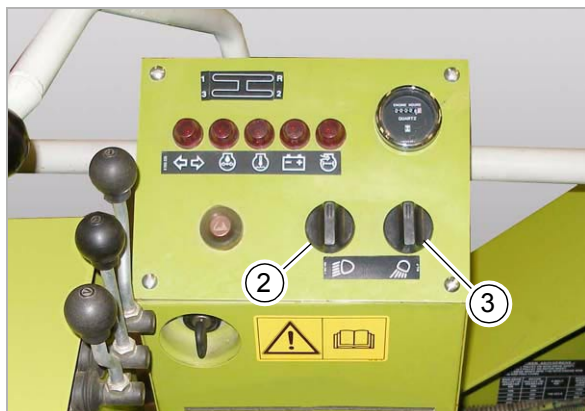
**Danger!**

Unexpected machine movements.

Death or serious injuries!

- Do not drive in 3rd gear on gradients of more than 7%.

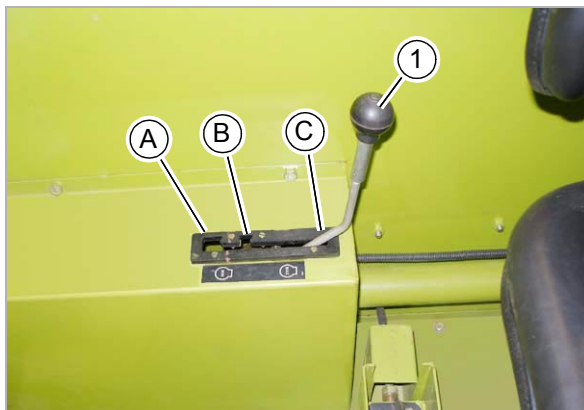
- Adjust the diesel engine speed using the lever (1).



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- If necessary, switch on the drive lights rotary control switch (2).
- If necessary, switch on the work lights rotary control switch (3).



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9.2 Engine

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9.2.1 Adjusting the diesel engine speed

The speed of the diesel engine is set using the lever (1).

The different speeds are needed for the different kinds of work the machine handles.

(A) MIN = slow idling speed:

- Starting the diesel engine
- Manoeuvring

(B) = middle idle speed:

- Grain tank discharge process
- Manoeuvring

(C) MAX = maximum no load speed:

- Road travel
- Fieldwork

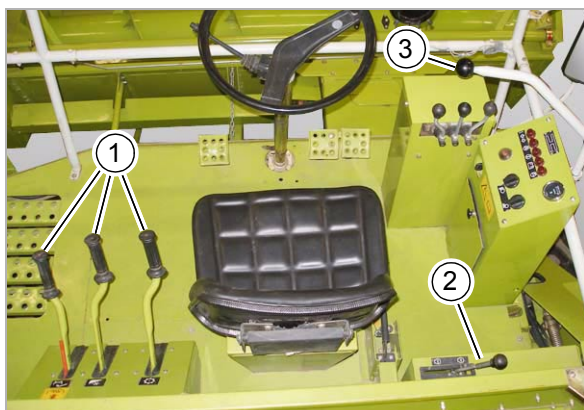
63259

9.2.2 Start diesel engine

- Sit in the seat.
- Adjust the driver's seat.
- Move the lever (1) into the upper position.

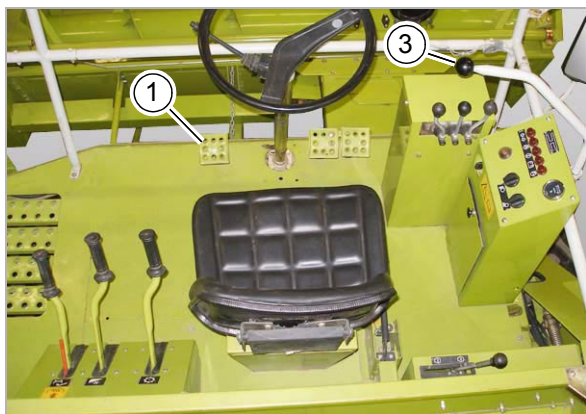
The functions for the discharge process, reel and threshing mechanism are switched off.

- Adjust the diesel engine speed at (2) to the slow idling speed.



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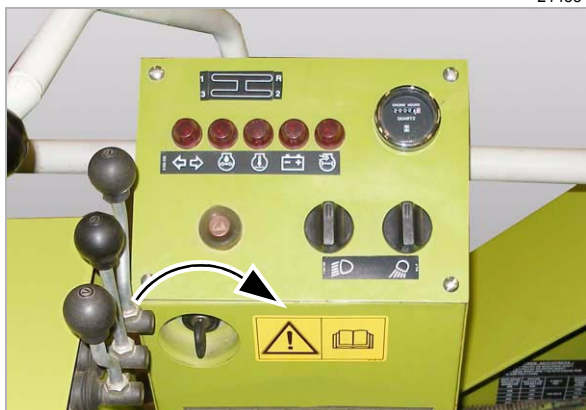


Danger!

When starting the machine, persons are on the machine or in its hazard area.

Death or serious injury.

- Before starting the machine ensure that there are no persons or objects in the hazardous area.



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Warning!

Operation or putting into operation of machine with a diesel engine fault.

Damage to diesel engine.

- In case of faults on the diesel engine, do not start the diesel engine or stop it immediately.
- Remove the fault without delay or inform an authorised specialist workshop.

- Put the gear shift mechanism into neutral position using the lever (3).
- Press and hold the clutch pedal (1) up to the stop.
- Sound the horn.
- Turn the ignition key to position 1.
- Turn the ignition key to the limit stop until the diesel engine starts.

Do not hold the ignition key at the limit stop for more than 10 seconds!

- Release the ignition key.

The ignition key engages and the diesel engine is started.

At low outside temperatures, let diesel engine run at min. no-load speed for some minutes after starting.

- Release the clutch pedal (1).

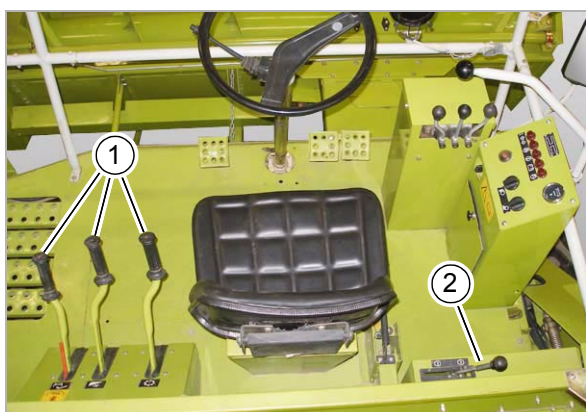
63269

9.2.3 Stopping the diesel engine

- Move the lever (1) into the upper position.

The functions for the discharge process, reel and threshing mechanism are switched off.

- Adjust the diesel engine speed at (2) to the slow idling speed.



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- Turn the ignition key to position 0.

The diesel engine stops.

9.2.4 Filling up the machine

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Fill the fuel tank of the machine immediately after finishing work in order to avoid the condensation of water in the tank.

- Observe the general warning signs at the beginning of the section Driving and transport.



Warning!

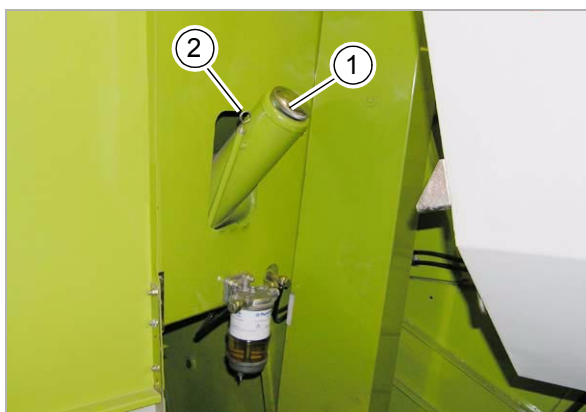
Swallowing of fuels.

Poisoning hazard.

- When swallowing fuel, consult a doctor immediately.
- Keep fuels outside of the reach of children.

- Stop the diesel engine.
- Unscrew cover (1).
- Clean screen in filler neck.

Replace damaged sieves!



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Caution

Prohibited or contaminated fuels.

Damage to the diesel engine.

- Only fill with fuels which have been authorised by the engine manufacturer. Refer to the operator's manual from the engine manufacturer
- Do not fill with contaminated fuel.



Environment!

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.

- Fill fuel into the filler neck at (1).
- Pull out dipstick (2).

If the fuel level is at the topmost marking of the dipstick (2), then sufficient fuel has been added.

- Insert the dipstick (2).
- Bolt on the cover (1).

9.3 Chassis

63302

9.3.1 Adjusting the ground speed

The lever (1) is used to change the ground speed of the selected gear of the machine.

The ground speed can be set both for forward motion and for reversing.

Reducing the ground speed

The farther the lever (1) is pressed in direction (A), the slower the ground speed.

The machine cannot be braked to a standstill.

Increasing the ground speed

16 The farther the lever (1) is pressed in direction (B), the greater the ground speed.

The machine can be accelerated up to the maximum ground speed.

63307

9.3.2 Shifting gears



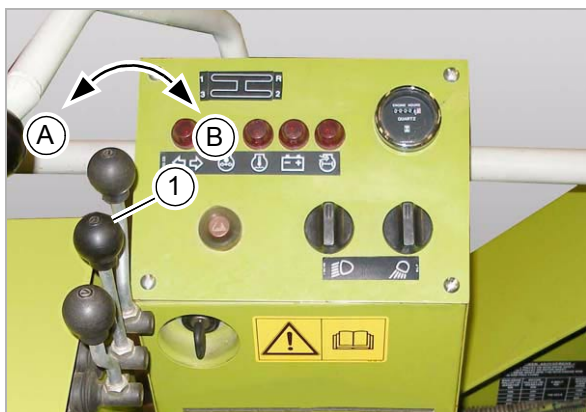
Danger!

Machine starts to move unexpectedly.

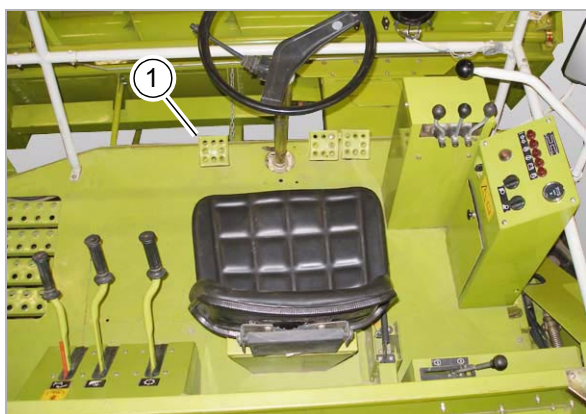
Death or serious injury.

- Never shift gears while driving!
- Never shift gears while driving on slopes.
- Do not let the machine roll.

- Stop the machine.
- Press and hold the clutch pedal (1) up to the stop.

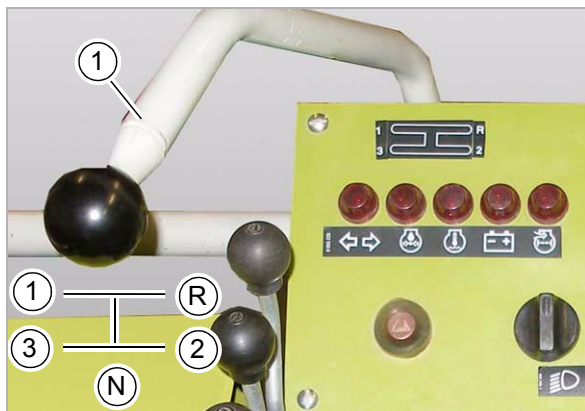


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- Set the machine to the desired shifting position using the shift lever (1).

	Gear	Designation
N		Neutral
1	1st gear	Fieldwork gear
2	2nd gear	Fieldwork gear / road gear
3	3rd gear	Road gear
R	Reverse gear	Fieldwork gear / road gear



Note!

Shift lever becomes stuck during shifting.
Gear is difficult to engage.

- Set shift lever in neutral.
- Briefly release the clutch pedal and then press down again.
- Set shift lever to desired shift position.

9.3.3 Driving behaviour



Danger!

Unexpected machine movements.
Death or serious injury.

- Adapt your driving style to the local terrain and ground conditions.
- Adapt your driving style to the load carried.
- Be especially careful when working on slopes!

9.3.4 Towing the machine



Danger!

Towing the machine.
Death or serious injury.
Serious machine damage.

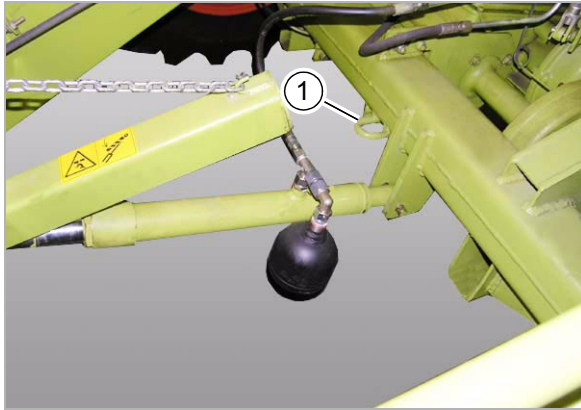
- Tow machine only when absolutely necessary.
- Do not tow machine over an extended distance.
- Consider that steering is heavier when the engine is shut down.
- Use suitable towing tools.
- Tow machine only with **no** gear engaged.

**Caution**

Towing backwards.

Machine damage.

- Do not tow machine backwards.
- Do not attach any tow rope / tow chain to the drawbar hitch / axle body.



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A tow rope or chain can be attached to the traction eye (1) of the drive axle for towing the combine forward.

The machine should be towed only if this is absolutely necessary.

9.4 Brake

9.4.1 Applying the parking brake

The parking brake works independently of the footbrake.



WARNING:

Applied brakes become hot during driving.

Machine damage

- Always release the parking brake all the way before driving.

- Pull the lever (1) upward as far as possible.
- Make sure that the parking brake is firmly applied.

The parking brake is applied.



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9.4.2 Releasing the parking brake



WARNING:

Applied brakes become hot during driving.

Machine damage

- Always release the parking brake all the way before driving.

- Lower the lever (1) all the way down with button (2) depressed.

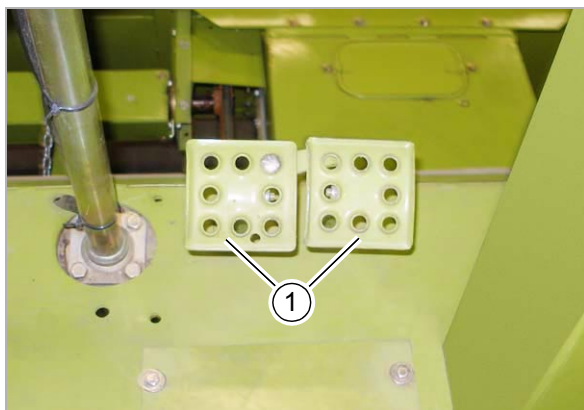
The parking brake is switched off.



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9.4.3 Braking the machine using the foot brake



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**Danger!**

Use of independent brake on public roads and lanes.

Death or serious injury.

- Couple the foot brake pedals.

- Make sure that the pedals (1) are coupled to each other.

The independent brake is not working.

- Stop the machine with the help of the pedals (1).

After releasing the pedals (1) the machine accelerates back up to the original ground speed.

63342

9.4.4 Parking the machine

- Drive the machine on solid ground.
- Switch on the parking brake using the lever (1).
- Stop the diesel engine.
- Remove the ignition key.
- Apply the wheel chocks when parking on a slope.



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9.5 Steering

9.5.1 Steering

The hydrostatic steering enables easy steering of the machine with the rear wheels.



Danger!

The machine swings out at the rear.

Death or serious injury.

- Be careful when driving on public roads.
- Be careful when taking tight bends.

The steering continues to function even with the engine stopped. But a much greater steering effort is required.

9.6 Cab / Operator's platform

9.6.1 Adjusting the driver's seat

**Danger!**

Unexpected machine movements.

Death or serious injury.

- Never adjust the driver's seat while driving!

**Warning!**

Driver's seat misadjusted.

Health damage.

- Before putting the machine into operation, adapt the driver's seat ergonomically and individually to the driver.

**Danger!**

Operating error.

Death or serious injury.

- Strictly comply with instructions and results.

- Move the driver's seat forwards or backwards.
 - Pull up the lever (1).
 - Slide the driver's seat forwards or backwards.
 - Release the lever (1).

An audible signal will sound and the lever (1) will engage.

The driver's seat can no longer be moved.



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- Adjusting the backrest height.
 - Loosen the bolts (1) on both sides of the seat.
 - Adjust the backrest as desired.
 - Tighten the bolts (1) on both sides of the seat.

The backrest can no longer be adjusted.

10 Fieldwork settings

10.1 General Information

63349

10.1.1 General warnings

In the following sections of this chapter, the general warnings below are referred to by means of instructions.



Danger!

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.



Danger!

Front attachment, reel and feeder unit may drop in an uncontrolled way.

Death or serious injury.

- Fit the safety locks.
- Keep a safe distance from the hazard area.

69204

10.1.2 Adjust the machine to the crop

The machine needs to be adjusted to the crop to be harvested. The adjustment values are summarised in the threshing chart.

The adjustment values are averaged information from our global harvesting experience. It cannot not be ruled out that a particular crop grown in another region, would require a different machine setting.

The necessary adjustment work is outlined in the section "Settings for field work" or "Field work".

10.2 Front attachment

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10.2.1 Installing the crop lifters (optional equipment)

Crop lifters may be installed for harvesting down grain.

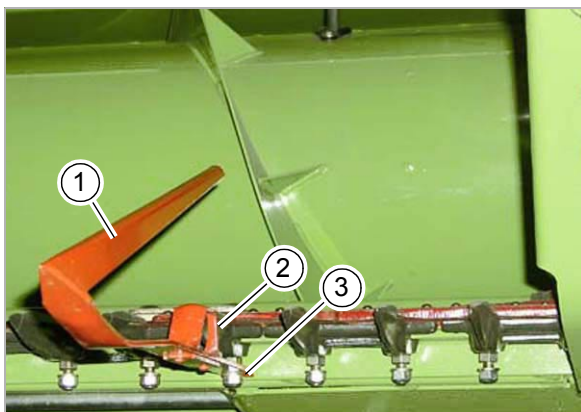
- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.

**Note!**

Incorrect number of crop lifters.

Uneconomic use.

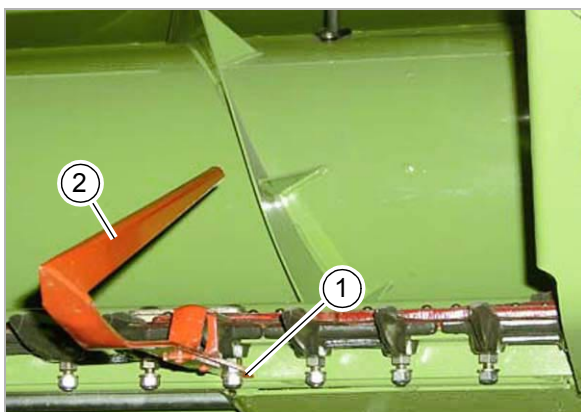
- Increase number of crop lifters if required.
Down grain and green plants between crops:
Bolt crop lifters down to every forth to sixth double finger.
Short, standing grain and ears hanging down:
Install crop lifters with a smaller spacing.



11929

1

- Slacken off nut (3).
- Install crop lifter (1) on every forth double finger with opening (2) and (3).
Start installing on the right and left side of the finger bar as shown in the figure.
- Bolt down crop lifter (1) with nut at (3).



11929

2

10.2.2 Removing the crop lifters (optional equipment)

64086

Crop lifters may be installed for harvesting down grain.

- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.

- Slacken off nut (1).

Slacken off nut (1) only until the crop lifter can just be pulled out.

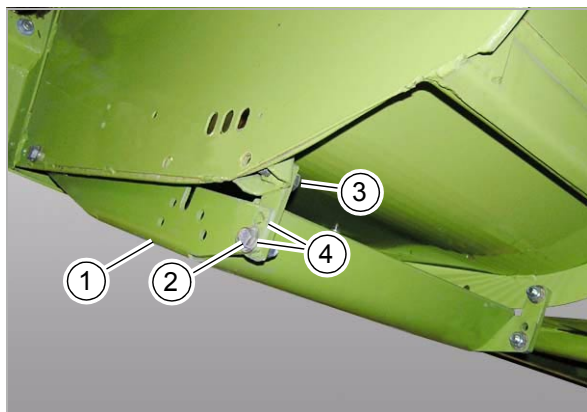
- Pull off crop lifter (2).
- Tighten nut (1).

10.2.3 Adjusting the skids

The skids (1) are height-adjustable.

Proper positioning of skids depends on the size of the tyres.

- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.



21685

3



Note!

Uneconomic use of machine and front attachment.

High fuel consumption.

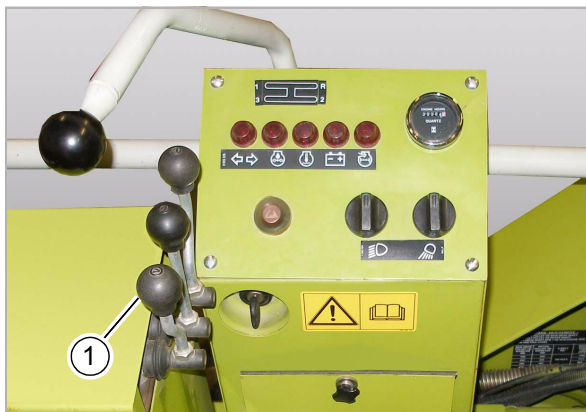
High wear of front attachment.

- Ensure that the skid does not come into contact with the ground even with low cutting heights.
If necessary, adjust the cutting height setting.
- Unscrew the bolts (2) on both sides of the skid.
- Loosen the bolts (3) on both sides of the skid.
- Raise the skid (1) to the desired position.
- Bolt on the skid (1) in the desired hole (4) using the bolts (2).
- Tighten bolts (3).
- Repeat this process on the other side of the front attachment.

10.2.4 Dismounting the front attachment

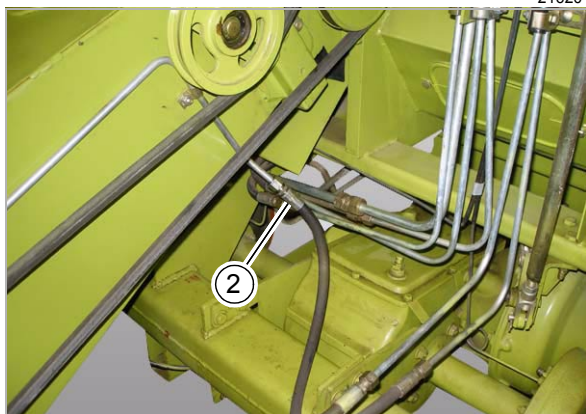
To convert the threshing concave the front attachment must be removed and reattached.

- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.
- Lower the front attachment down to the ground. Hold the lever (1) several seconds longer in the lowered position, so that the residual pressure in the hydraulic lines can be released.



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23499

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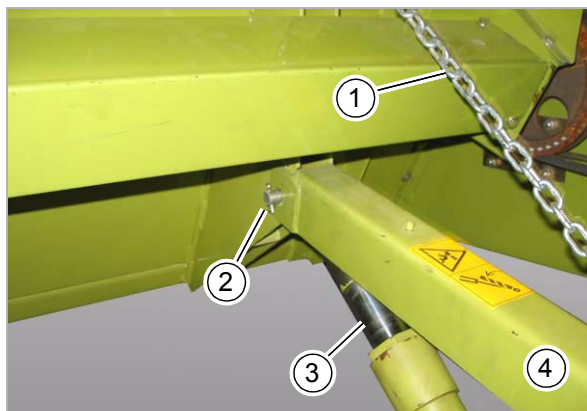


Environment!

Lubricants and fuels end up in the environment.

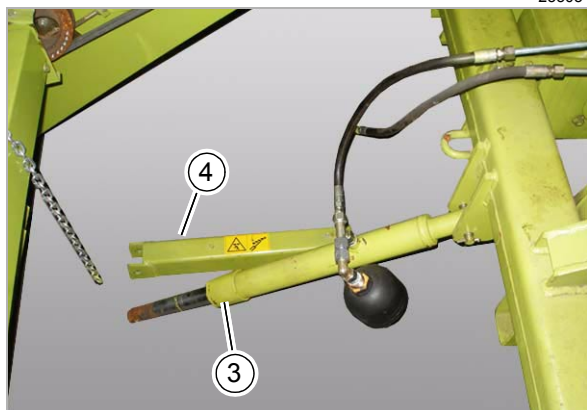
Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.
- Unscrew the hydraulic line (2).



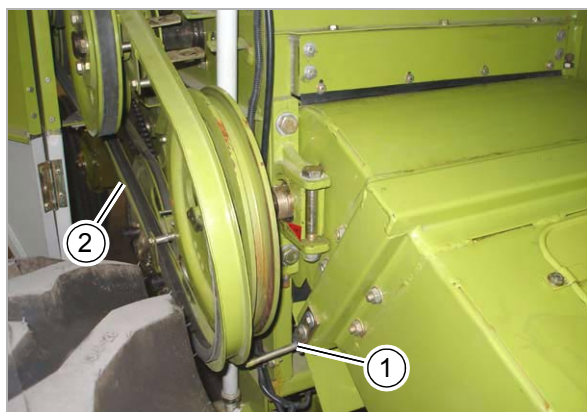
23505

6



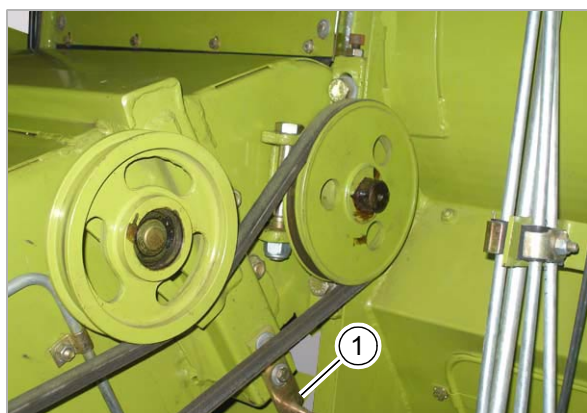
23506

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- Disconnect the chain (1).
- Remove the locking pins (2), cylinder (3) and safety lock (4).

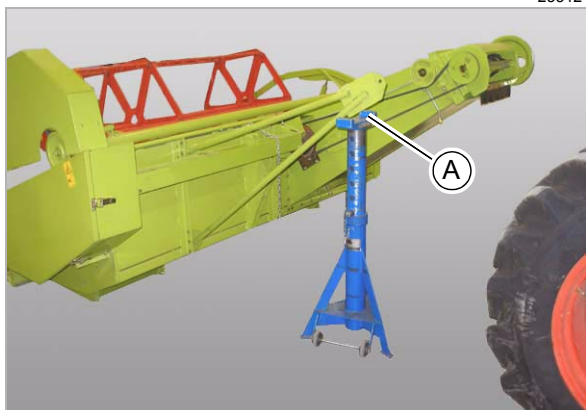
- Unscrew the bracket (1).
- Remove the front attachment drive (2).

- Unscrew the bracket (1).



23512

10



23513

11

**Danger!****Jacking up the machine.****Death or serious injury.**

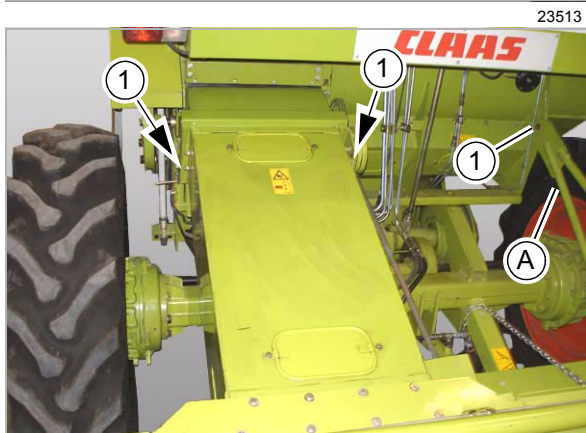
- Use jack / jack stand with sufficient capacity.
 - Use reliable jack / jack stand.
 - Use jack / jack stand on solid and level ground.
 - Apply the jack / jack stand at the position of the machine intended for this purpose.
-
- Securely support the front attachment in position (A).
 - Unscrew and remove the bolts (1).
- Drive the machine slowly in reverse.

10.2.5 Mounting the front attachment

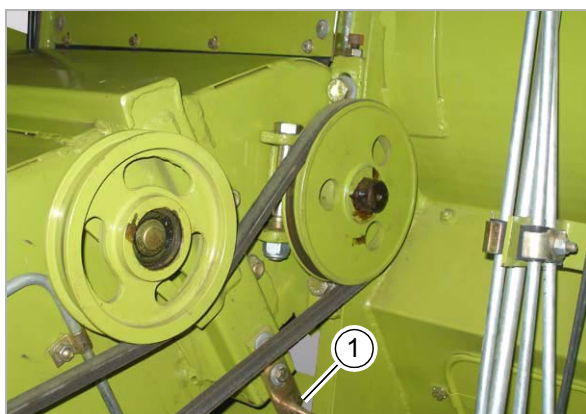
- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.
- Drive the machine slowly up to the front attachment. Bolt on the front attachment using the bolts (1).



12

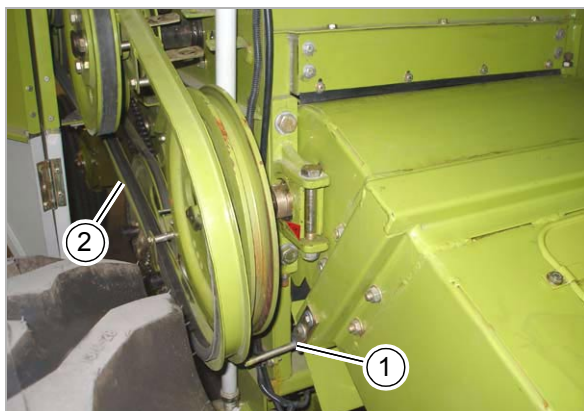


13



14

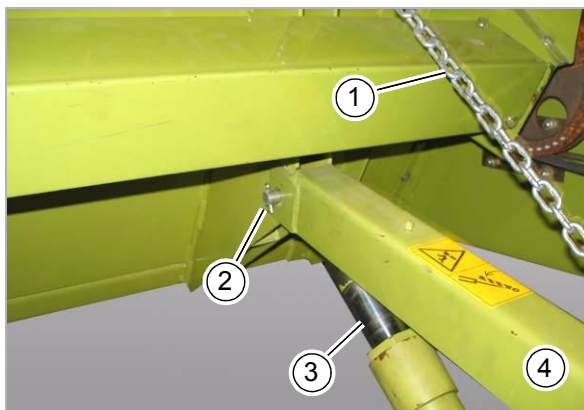
- Lift the stone trap or stone trap feed plate and bolt on the bracket (1).



23510

15

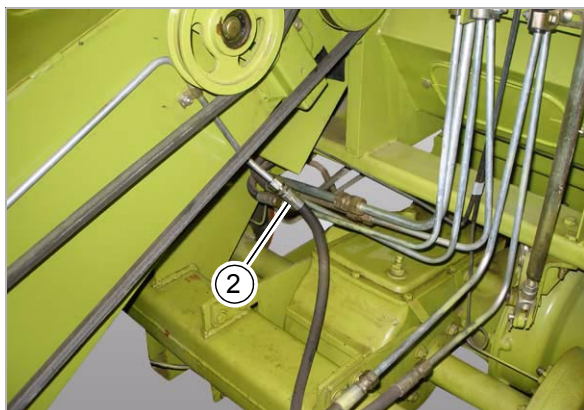
- Lift the stone trap or stone trap feed plate and bolt on the bracket (1).
- Fit and adjust the front attachment drive (2).



23505

16

- Raise the cylinder (3) and safety lock (4) and fit the locking pin (2).
- Attach the chain (1).



23499

17

- Screw on the hydraulic line (2).

**Environment!**

Lubricants and fuels end up in the environment.

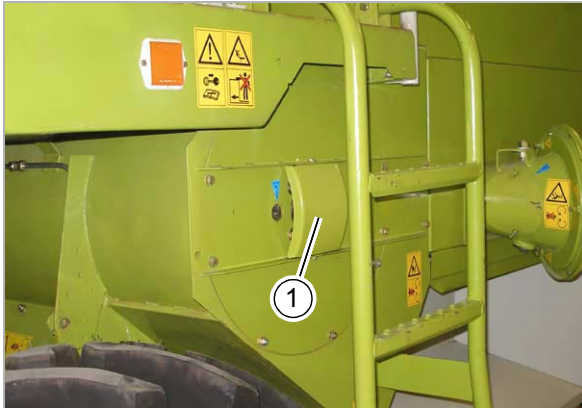
Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.

10.3 Threshing mechanism

10.3.1 Removing the threshing drum

- The threshing drum must be converted for grain or rice depending on the crop. Refer to Threshing chart.
- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.
- Remove the front attachment. (when converting the threshing concave)
- Unscrew the cover (1).



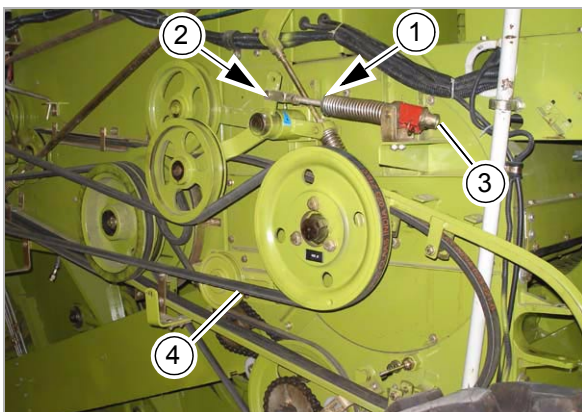
18

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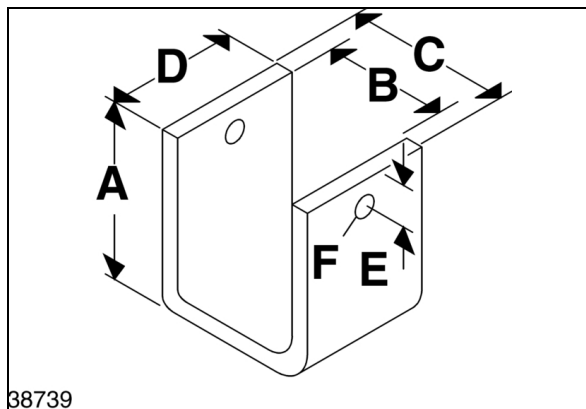
Warning!

Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Loosen the nut (1).
- Insert the U-piece (U, CLAAS-produced) and secure with a spring clip.
- Screw in the cylinder barrel (3) until the belt (4) is sufficiently loosened.
- Unlock and remove the pin (2).
- Remove the belt (4).



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U-piece, CLAAS-produced:

A = 46 mm

B = 30 mm

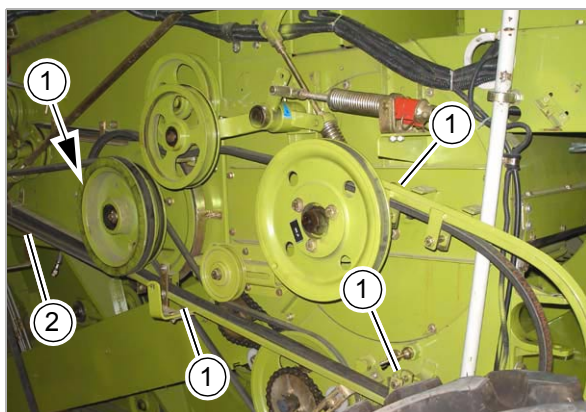
C = 38 mm

D = 35 mm

E = 7 mm

F = Ø 4 mm

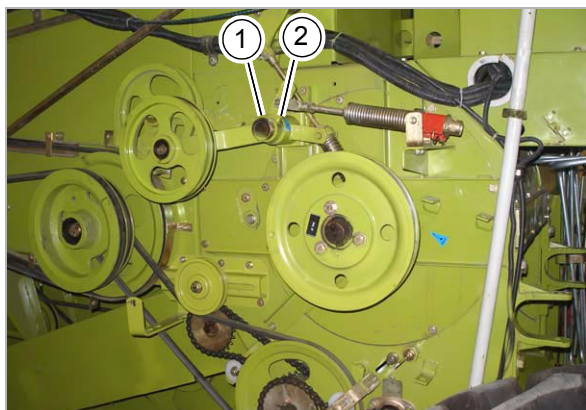
21



22659

22

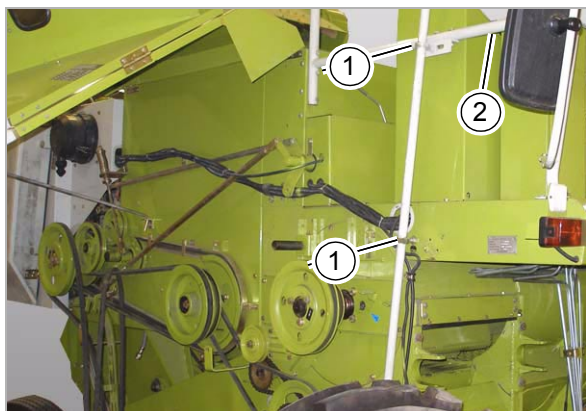
- Unscrew the belt guide at position (1). Pull the belt guide and belt back and let it hang on the belt (2).



22661

23

- Unscrew the brackets (1) and (2) of the jockey pulley completely.



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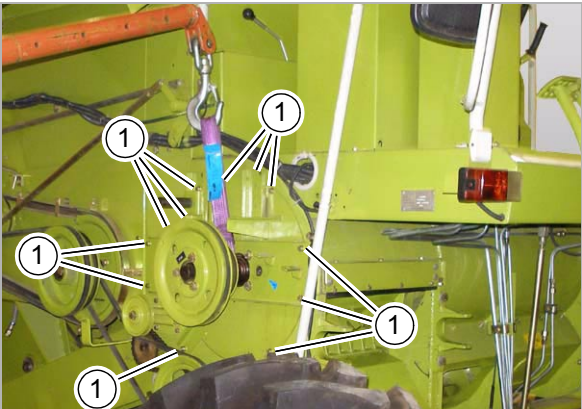
24

- Unscrew the bracket (1) of the shifter rod and angle the shifter rod forwards. Tie the shifter rod to the rail (2).



25

22704



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- Slide a wooden block (100 mm x 100 mm x 250 mm) underneath the threshing drum from the left.



Danger!

Suspended loads may fall.

Death or serious injuries!

- Use suitable lifting equipment.
- Observe the lifting capacity.
- Never stand underneath a suspended load.

Threshing drum version	Weight
Threshing drum, grain	approx. 130 kg
Threshing drum, rice	approx. 110 kg

- Attach the threshing drum to suitable lifting equipment.
- Unscrew and remove the side wall at position (1).
- Pull the threshing drum approx. 700 mm out of the machine.

- Suspend the threshing drum and lift it completely out of the machine.



Grain

22863

27



Rice

22859

28



23712

29

- The threshing concave (1) can now be removed and installed again.

10.3.2 Installing the threshing drum

- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.
- Install the threshing concave, stone trap or stone trap feed plate, depending on the crop. Refer to the Threshing chart.
- Fasten a wooden block (100 mm x 100 mm x 250 mm) onto a rope (1.5 m) and place it in the separation outer cover.

The wooden block can subsequently be pulled out on the left-hand side of the machine by the end of the rope.



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31

Grain

22863



32

Rice

22859



Danger!

Suspended loads may fall.

Death or serious injuries!

- Use suitable lifting equipment.
- Observe the lifting capacity.
- Never stand underneath a suspended load.

Threshing drum version	Weight
Threshing drum, grain	approx. 130 kg
Threshing drum, rice	approx. 110 kg

- Attach the threshing drum to suitable lifting equipment and lift it into the machine. Rest the threshing drum on the wooden block.

**33**

22867

- Suspend the threshing drum and lift it all the way into the machine.

Note: the wooden block must move to the left when the threshing drum is pushed in.

**34**

22704

- Lift the threshing drum and insert the bearing (3) into the side wall.

**35**

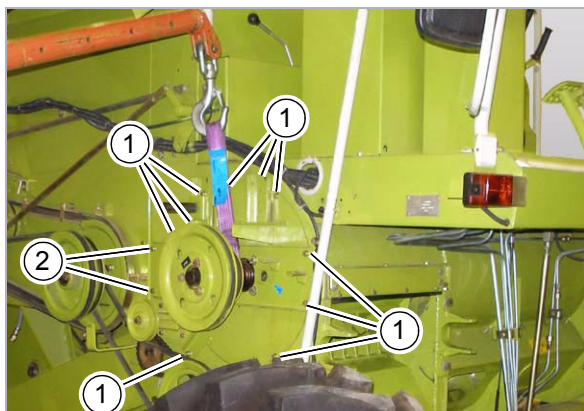
22652

- Bolt down the bearing (3).
- Remove the wooden block from the machine.

**36**

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- Bolt on the cover (1).

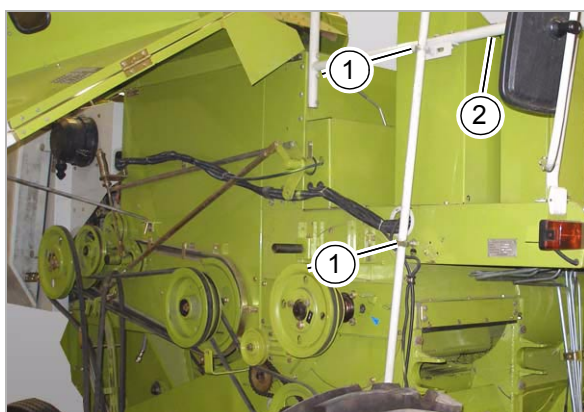


22867

37

- Bolt the side wall on.

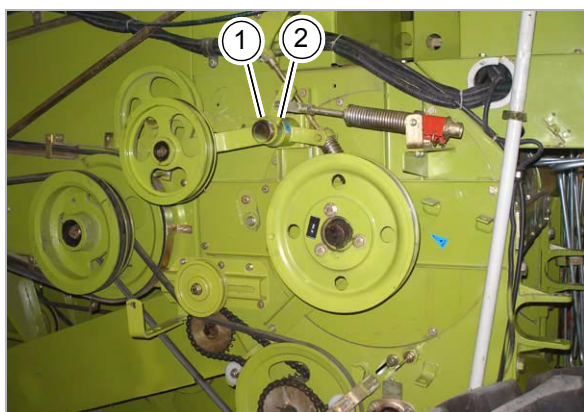
No.	Designation
1	Hexagon head bolt M 8 x 20
2	Hexagon head bolt M 8 x 16
3	Hex. nut M 8



23711

38

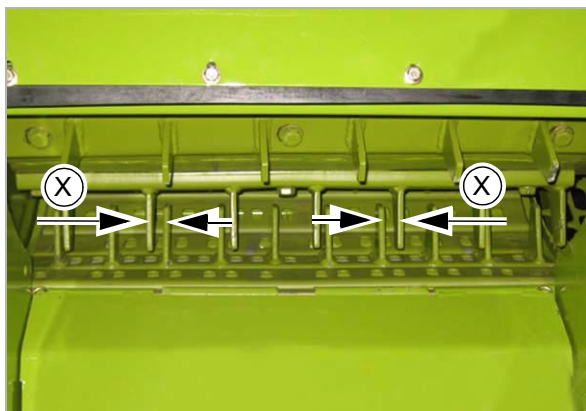
- Bolt on the bracket (1) of the shifter rod.



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- Fully bolt on brackets (1) and (2) of the jockey pulley.



23459

40

Align the threshing drum.

The grain threshing drum should be aligned in the centre of the drum housing.

The rice threshing drum must be aligned with the rice spike tooth concave.

- Determine and check the dimension (X). Check all of the bars on the threshing drum.

$X = 8 \pm 0.5 \text{ mm}$.

- If necessary, adjust the dimension (X).

Option 1:

Adjust the spike tooth bars of the threshing drum and the threshing concave to one another.

Option 2:

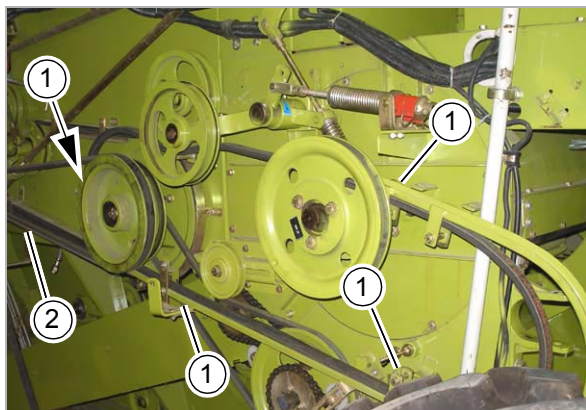
Unscrew the cover plate (2) on the left threshing drum bearing (1) and set to the dimension (X) with the discs.

- If the threshing drum is aligned using option 2, the belt alignment must be checked and the belt pulleys must be aligned if necessary.



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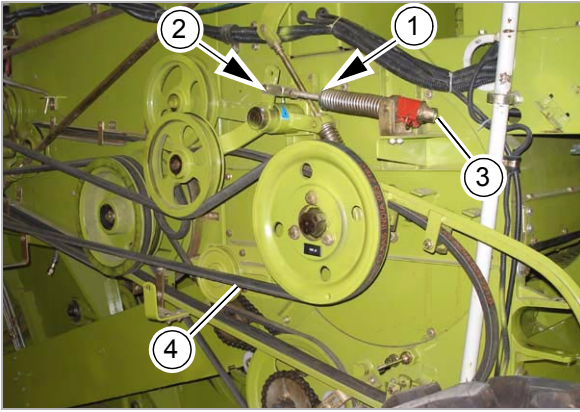
41



22659

42

- Screw on the belt guide in position (1).



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- Fit the threshing drum drive belt (4).
- Insert and secure pin (2).



Danger!

Pre-tensioned springs are under high pressure.

Severe injuries are caused by completely removing the cylinder barrel.

- Never remove the entire cylinder barrel.

- Unscrew the cylinder barrel (3) a little and retighten the spring using the nut (1) at the same time. Refer to Adjusting the threshing drum drive (4).

Remove the U-piece.

- Attach the front attachment (when converting the threshing concave).

67268

10.3.3 Converting the threshing drum to rice harvesting

- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.
- Remove the threshing drum.



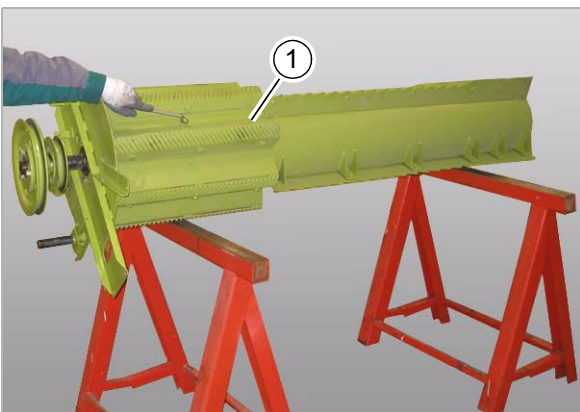
Caution

Unbalanced threshing drum.

Damage to the threshing drum bearing.

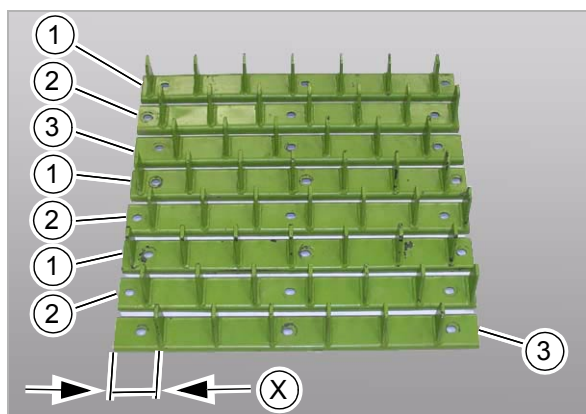
- Mark the used drum plates with rasp bars before removing.
- Only used drum plates with rasp bars in sets and if the installation position has been marked before removal.
- Install drum plates with rasp bars opposite to each other.
- Replace the new drum plates with rasp bars as a complete set.
- Attach the left-ribbed and right-ribbed rasp bars alternately.

- Mark and remove the existing drum plates with rasp bars (1) from the threshing drum.



23011

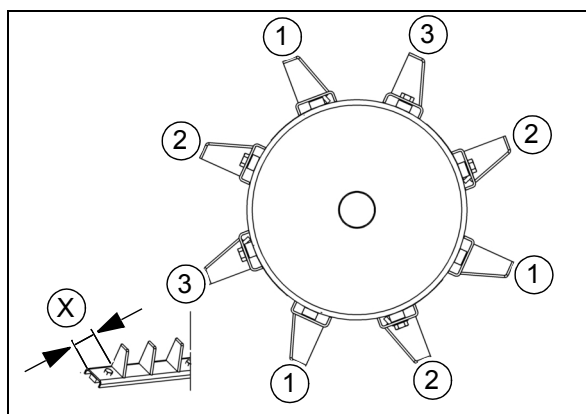
44



45

- Arrange the spike tooth bars in the sequence shown.

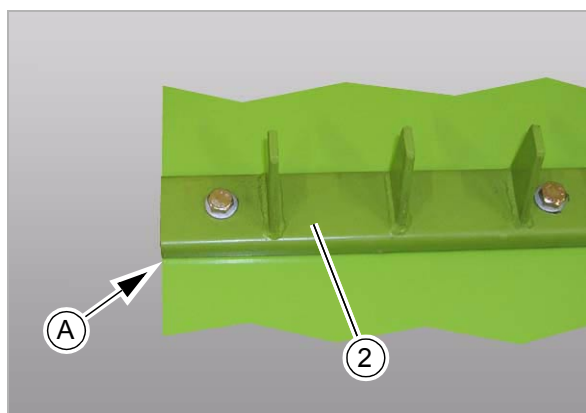
Installation position for the spike tooth bar	Dimension (X)
1	15 mm
2	43 mm
3	71 mm



46

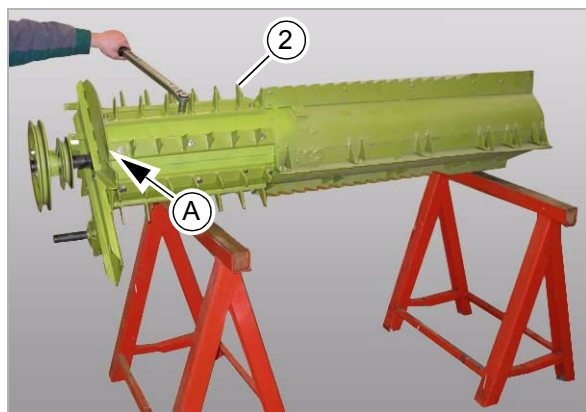
- Attach the spike tooth bars onto the threshing drum in the sequence shown.

Installation position for the spike tooth bar	Dimension (X)
1	15 mm
2	43 mm
3	71 mm



47

- Observe the installation position of the spike tooth bars on the threshing drum.
- Pre-assemble the spike tooth bars (2) flush with the outer edges (A) of the threshing drum.



48

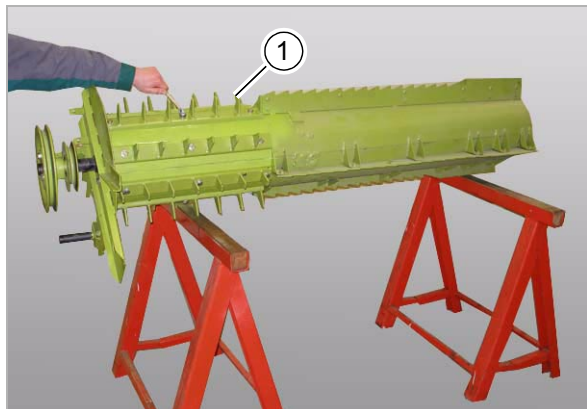
- Bolt the spike tooth bars (2) onto the threshing drum.

Tightening torque = 48.5 Nm

- Install the threshing drum.

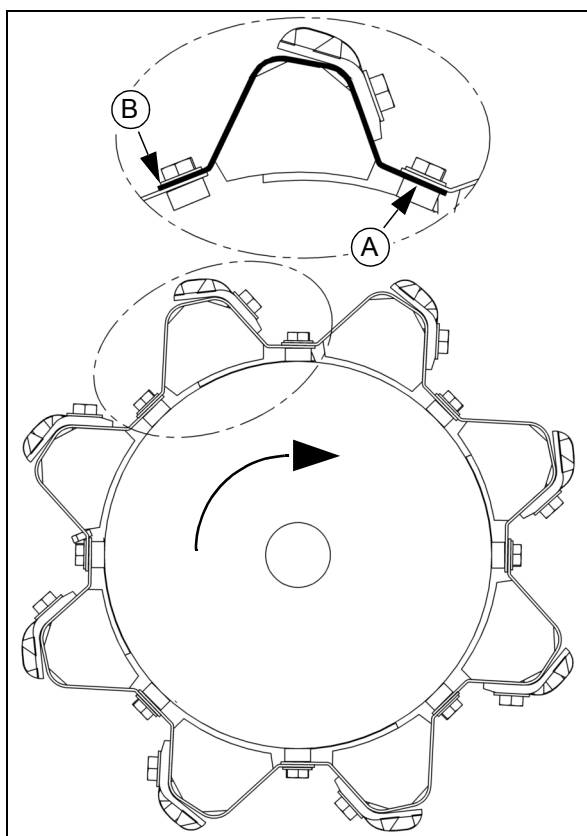
10.3.4 Converting the threshing drum to grain harvesting

- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.
- Remove the threshing drum.
- Remove the existing spike tooth bars (1).



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23301



Caution

Unbalanced threshing drum.

Damage to the threshing drum bearing.

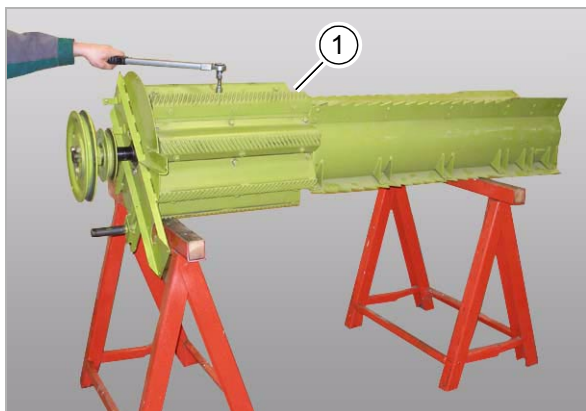
- Mark the used drum plates with rasp bars before removing.
- Only used drum plates with rasp bars in sets and if the installation position has been marked before removal.
- Install drum plates with rasp bars opposite to each other.
- Replace the new drum plates with rasp bars as a complete set.
- Attach the left-ribbed and right-ribbed rasp bars alternately.

- Attach the drum plates with rasp bars (1) to the threshing drum.

Note the direction of rotation.

Attach the drum plate at position (A) under the existing drum plate.

Install the drum plate at position (B) above the following drum plate.



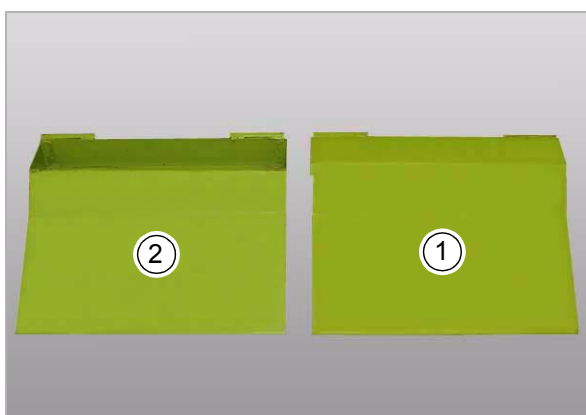
23014

51

- Tighten the drum plates with rasp bars (1) onto the threshing drum.

Tightening torque = 48.5 Nm

- Install the threshing drum.



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10.3.5 Installing / removing the stone trap and stone trap feed plate

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The stone trap feed plate (1) must be installed when used, for example in maize and therefore covers the stone trap. (Install only if crop is picked up without stones and other foreign objects). This provides an ideal crop flow for maize.

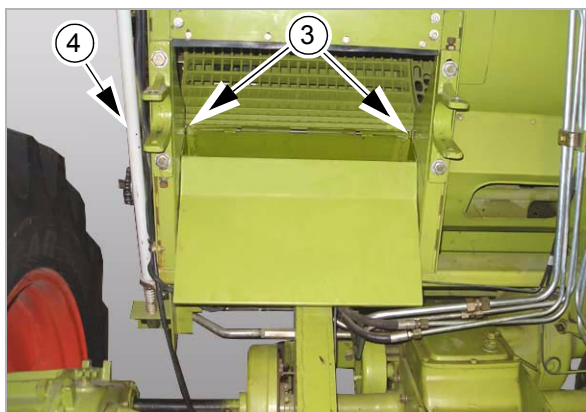
With the stone trap feed plate removed, the stone trap (2) catches stones and other foreign objects up to a particular size, this protecting the threshing mechanisms against damage.

The stone trap / stone trap feed plate may need to be installed, depending on the crop. Refer to the Threshing chart.

- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.

Assembly with the threshing drum removed:

- Remove the threshing drum.
- Set the threshing concave downwards.
- Remove the split pin (3) from the rod.
- Unscrew bolt (4).



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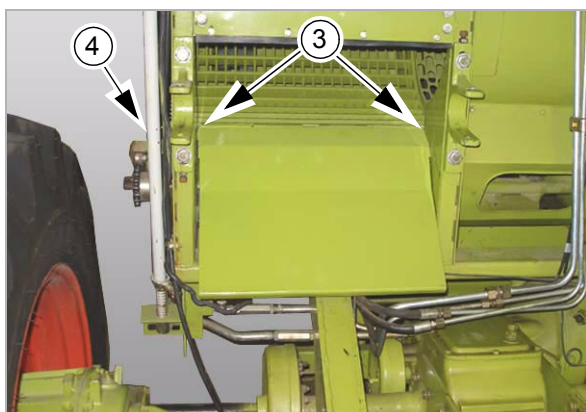
53



54

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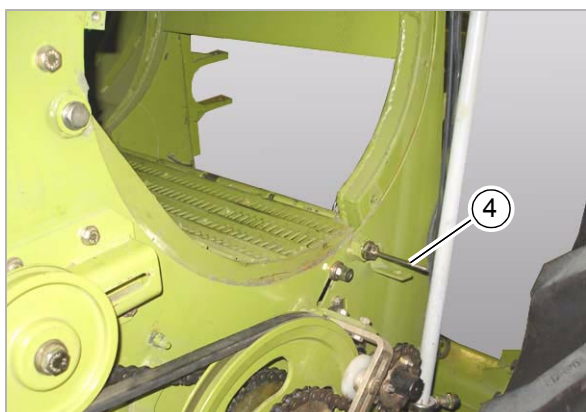
- Pull out the rod using the bolt (4) and remove the stone trap feed plate or stone trap.



55

23714

- Install the stone trap feed plate or stone trap and insert the rod. Secure the rod with the split pin (3).



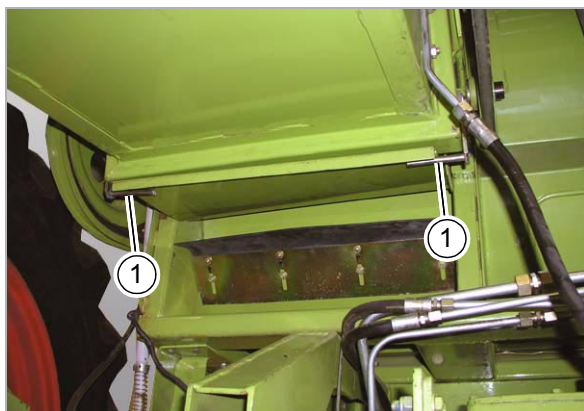
56

22787

- Tighten the bolt (4).

Assembly with the threshing drum installed and the front attachment mounted:

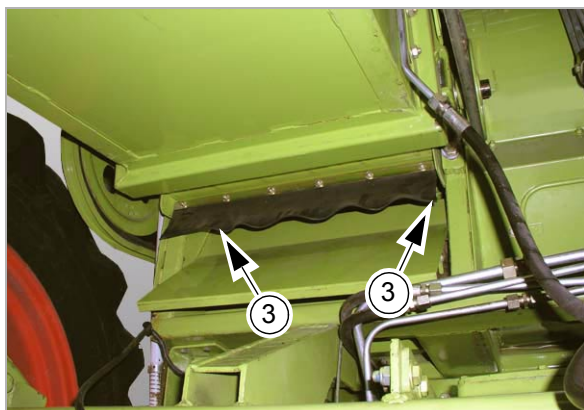
- Raise the front attachment and engage the safety lock of the feed rake conveyor.
- Set the threshing concave downwards.



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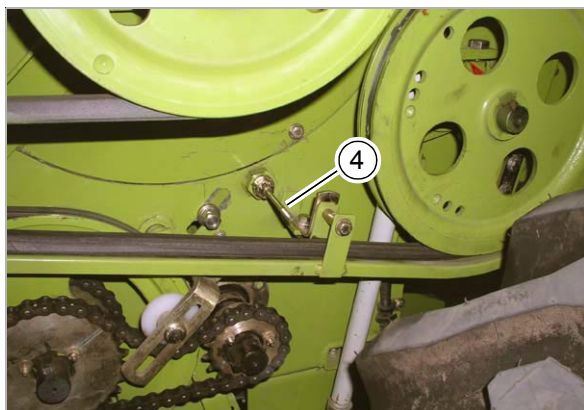
- Unscrew the bracket (1) and fold the stone trap feed plate or stone trap downwards.



58

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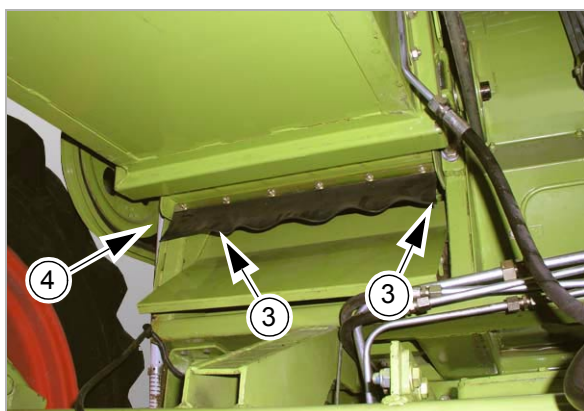
- Remove the split pin (3) from the rod.



59

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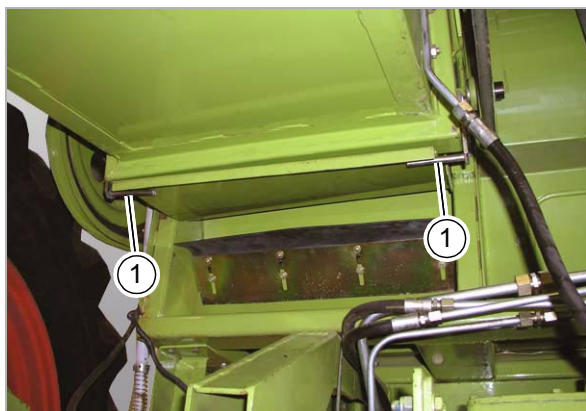
- Unscrew bolt (4).
- Pull out the rod using the bolt (4) and remove the stone trap feed plate or stone trap.



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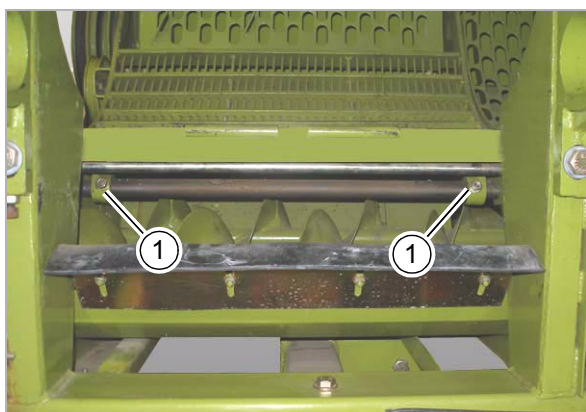
- Install the stone trap feed plate or stone trap and insert the rod. Secure the rod with the split pin (3).
- Tighten the bolt (4).



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61

- Lift the stone trap or stone trap feed plate and bolt the bracket (1) in place.



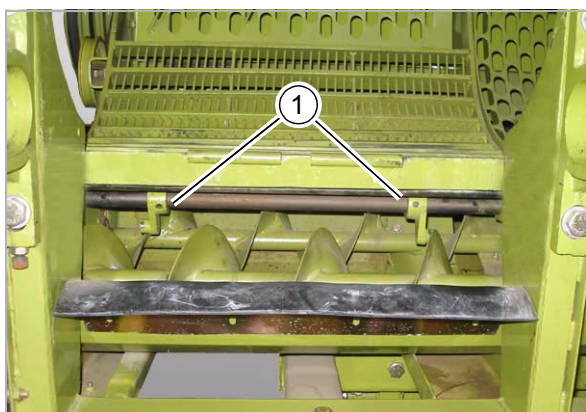
22821

62

10.3.6 Removing the threshing concave

66807

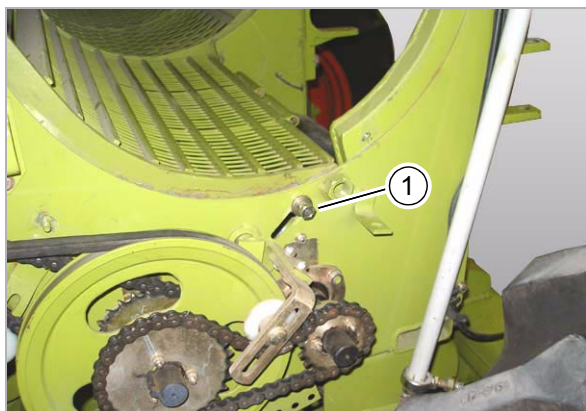
- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.
- Remove the threshing drum.
- Remove the stone trap / stone trap feed plate.
- Unscrew bolts (1).



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63

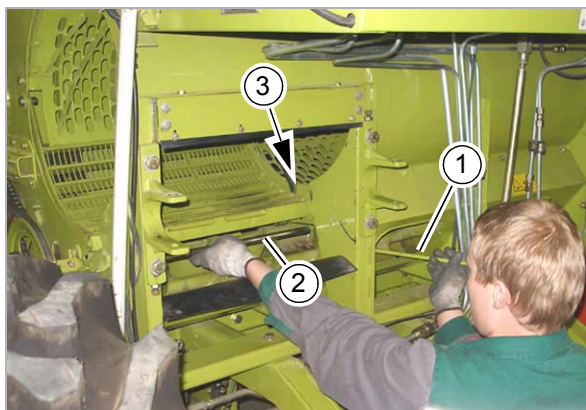
- Move the lever (1) downwards and slide to the middle.



64

22849

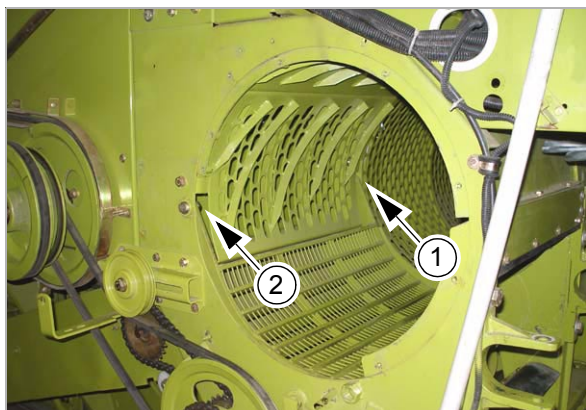
- Loosen the lock nut and remove the bolt (1) on the inside.



65

22848

- Remove the bolt (1) through the installation flap. Remove the spacer tube (2) to the front. Remove the washer (3) from between the concave and the side panel.



66

22853

- Turn out screw (1).
- Unscrew the bolt (2) and remove the threshing concave.



67

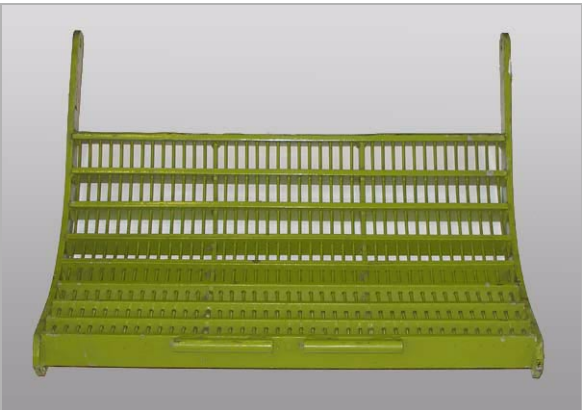
22858

- Remove the threshing concave.

10.3.7 Threshing concave variants

The threshing concave variant must be selected depending on the crop. Refer to the Threshing chart.

Wire concave N10 (10 x 34)



23715

68

Wire concave N18 (18 x 34)



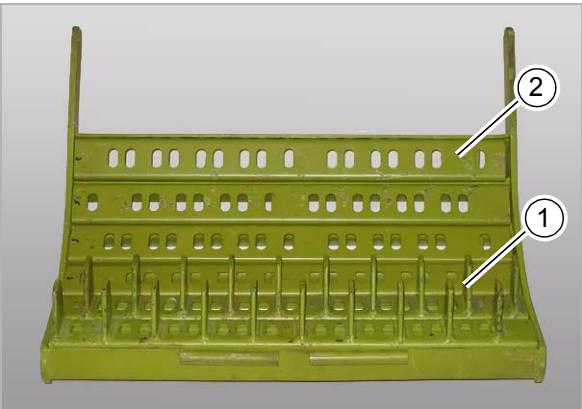
23716

69

Spike tooth concave

The spike tooth concave can be fitted with a varied number spike tooth bars (1) and threshing bars (2).

- Align spike tooth bars to the right and bolt onto the concave.



23717

70

Number of spike tooth bars (1)	Number of threshing bars (2)	Harvesting conditions
1	5	Default For easily threshed rice, higher degree of ripeness.
2	4	For difficult to thresh rice.

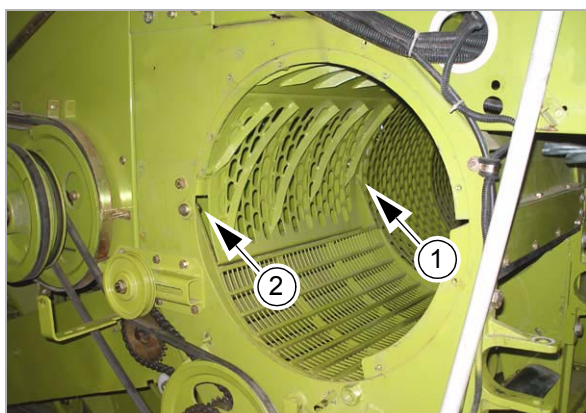
10.3.8 Installing the threshing concave

- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.
- Insert the threshing concave into the drum housing.



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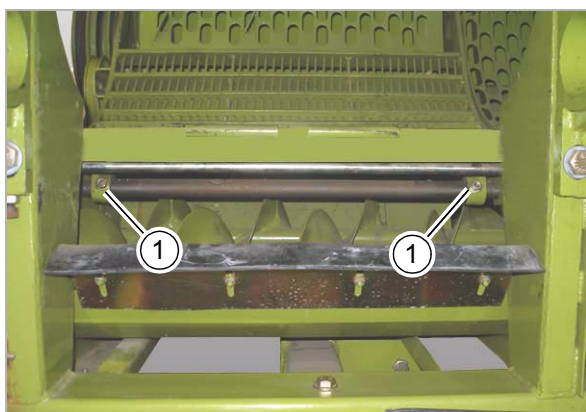
71



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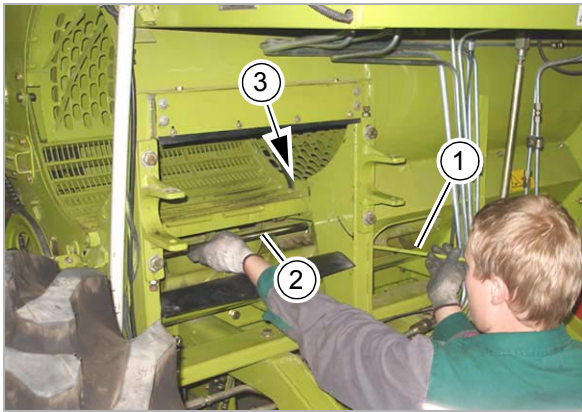
- Bolt the threshing concave in place using the bolts (2) and (1).



22821

73

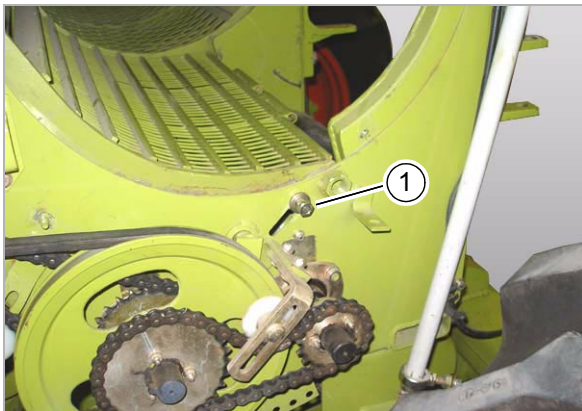
- Attach on the lever (1) using the bolts (1).



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22848

- Insert the washer (3) between the concave and the side panel.
- Insert the spacer tube (2).
- Insert the bolt (1) through the installation flap.



75

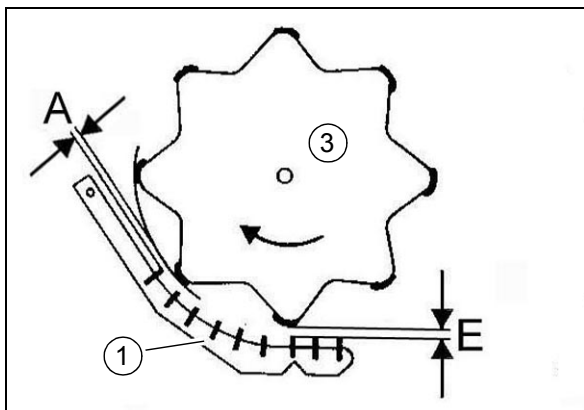
22849

- Screw the lock nut with washer onto the bolt (1).

- Install the stone trap / stone trap feed plate.
- Install the threshing drum.

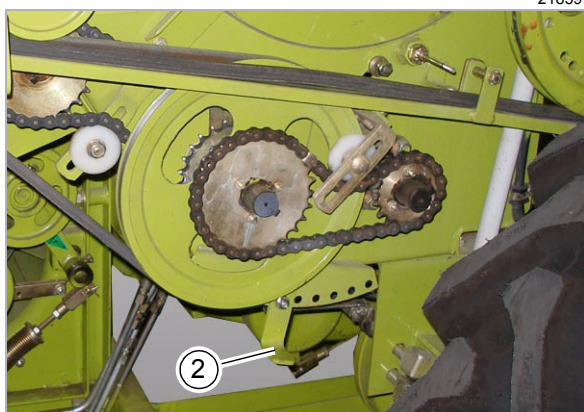
10.3.9 Adjusting the distance of the threshing concave

The threshing concave (1) can be set to the crop using the lever (2). By moving the lever (2), the dimensions (A) and (E), between the threshing concave (1) and threshing drum (3), can be adjusted.



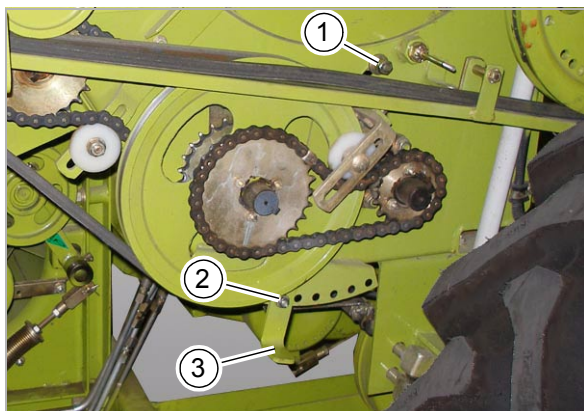
76

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21853



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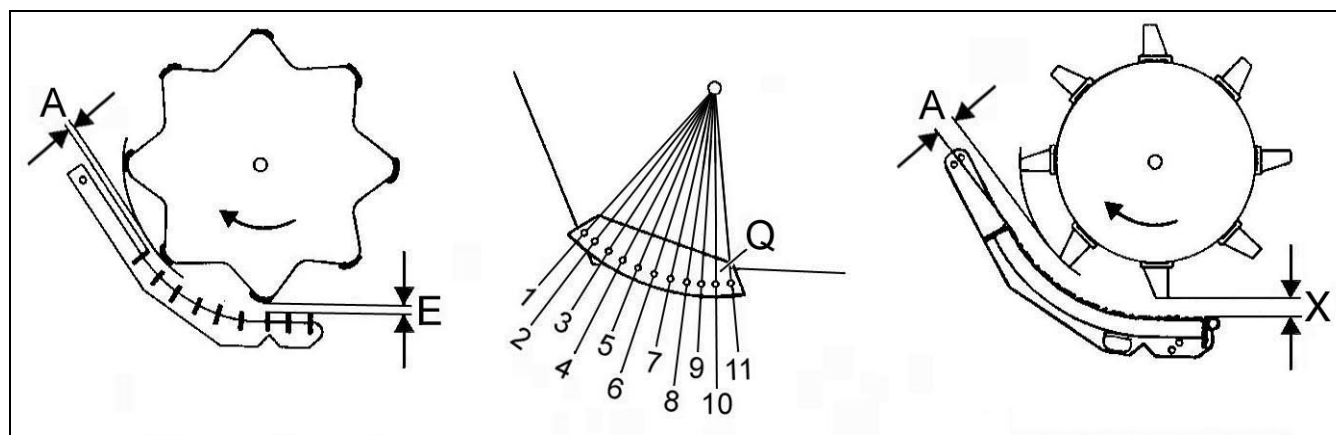
- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.

**Danger!**

Machine components may run on although the drive has been shut down.

Death or serious injury.

- Never touch any machine parts that are running on.
- Wait until all machine parts have stopped moving.
- Loosen nuts (1).
- Unscrew bolt (2).
- Set the threshing concave according to the table below using the lever (3).
- Attach the lever (3) in the appropriate hole using the bolt (2).
- Tighten and lock the nuts (1).



21836

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Hole (Q)	Dimension (A) mm	Grain concave Dimension (E) mm	Rice / soya concave Dimension (X)
1	4.0	9.0	11.0
2	4.5	9.5	11.5
3	5.0	10.0	12.0
4	5.5	11.5	12.5
5	6.0	13.0	13.0
6	7.0	15.0	16.0
7	8.0	18.0	20.0
8	10.0	22.0	25.0
9	12.0	25.0	30.0
10	14.0	28.0	33.0
11	16.0	31.0	38.0



Note!

Dimensions (E) and (X) are not being reached at the respective setting.

Uneconomic use of machine.

Crop loss and inadequate crop quality.

- Check the threshing concave and threshing drum for wear, have it replaced by a specialist workshop if necessary.

11 Fieldwork

11.1 General warnings

63794

11.1.1 General warnings

In the following sections of this chapter, the general warnings below are referred to by means of instructions.

**Danger!**

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.

**Danger!**

Front attachment, reel and feeder unit may drop in an uncontrolled way.

Death or serious injury.

- Fit the safety locks.
- Keep a safe distance from the hazard area.

69204

11.1.2 Adjust the machine to the crop

The machine needs to be adjusted to the crop to be harvested. The adjustment values are summarised in the threshing chart.

The adjustment values are averaged information from our global harvesting experience. It cannot not be ruled out that a particular crop grown in another region, would require a different machine setting.

The necessary adjustment work is outlined in the section "Settings for field work" or "Field work".

11.2 General operation of front attachment

11.2.1 Before working in the field



Note!

Foreign objects or obstacles may get caught in the front attachment.

Reduced service life of front attachment.

- Check standing crop for major foreign objects where possible.
- Obtain information about any possible obstacles in the standing crop before starting the harvest.



Note!

Incorrectly adjusted front attachment.

Poor crop pick-up and uneconomical use of the front attachment.

- Before putting into operation, check the crop-dependent settings on the front attachment.
- Before field work, check if the crop is picked up properly.

11.2.2 Checking the crop intake

- Drive the machine with front attachment into the crop.
- Check if the crop is picked up properly and, if necessary:
 - Adjust the reel tines.
 - Adjust the intake auger position.
 - Adjust the intake auger finger.
 - Adjust the peripheral speed of the reel.
 - Adjust reel height.
 - Make the horizontal reel adjustment.

11.3 Front attachment

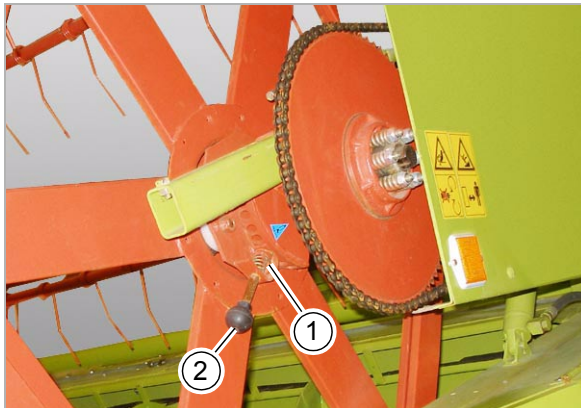
11.3.1 Adjusting the reel tines

In normal harvesting conditions, set the reel tines either to a vertical position or slightly to the front.

In case of heavy down crops or short standing crop, set the reel tines to grip.

Excessive grip settings of reel tines may cause wrapping on the reel.

- Observe the general warnings at the beginning of the "Fieldwork" chapter.



21753

1

Danger!

Sharp edges or sharp-edged machine parts.
Death or serious injury.

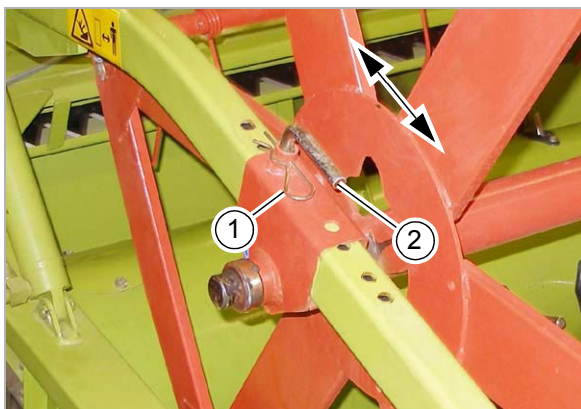
- Attach the protective guard to avoid danger.

- Pull out locking pin (1).
- Adjust the reel tines with lever (2) until the locking pin (1) engages again.

11.3.2 Making the horizontal reel adjustment

With difficult down crops or short crops, move the reel further forwards.

- Observe the general warnings at the beginning of the "Fieldwork" chapter.
- Raise or lower the reel until supporting arm is in a horizontal position.



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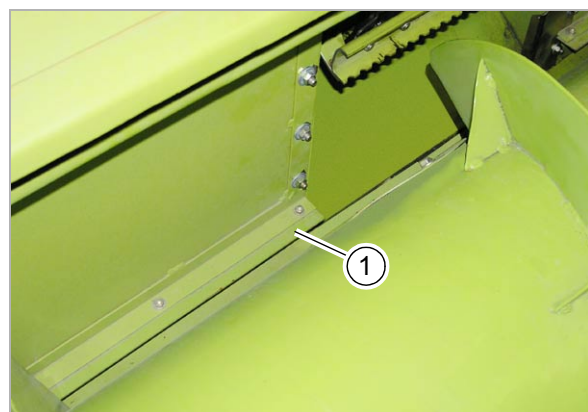
2

Danger!

Sharp edges or sharp-edged machine parts.
Death or serious injury.

- Attach the protective guard to avoid danger.

- Remove spring clip (1).
- Pull out the locking pin (2).
- Repeat this process on the other side of the front attachment.
- Gradually move the reel in the desired direction on both sides.
- Secure the position of the respective hole in the supporting arm on both sides of the front attachment using the locking pin (2).
- Insert the spring clips (1) on both sides of the front attachment.



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3

11.3.3 Adjusting the stripper profile of the intake auger

The stripper profiles (1) are located behind the intake auger.

The stripper profiles (1) should be set as close as possible to the intake auger.



Caution!

Incorrectly adjusted stripper profiles.

Damage to intake auger.

- The stripper profiles must not touch the flighting or fingers of the intake auger.
- Make this adjustment any time you change the position of the intake auger.

- Lift the feeder unit.
- Lift the reel.
- Stop the diesel engine.
- Engage the safety lock of the feed rake conveyor.
- Observe the general warnings at the beginning of the "Fieldwork" chapter.



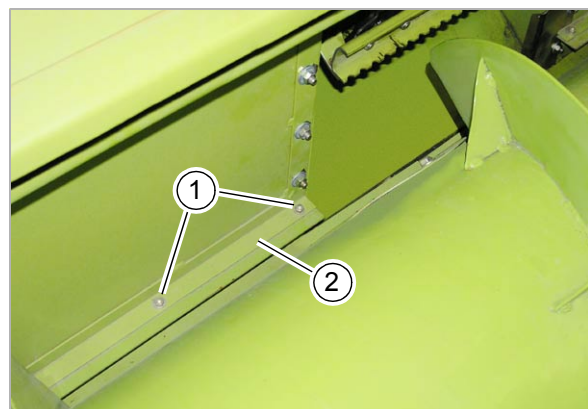
Danger!

Sharp edges or sharp-edged machine parts.

Death or serious injury.

- Attach the protective guard to avoid danger.

- Loosen the bolts (1) along the entire length of the front attachment.
- Slide the scraper profile (2) forwards or backwards.
- Move the intake auger by hand in order to ensure that the scraper profiles do not touch the intake augers.
If necessary, correct the setting.
- Tighten all the bolts (1).



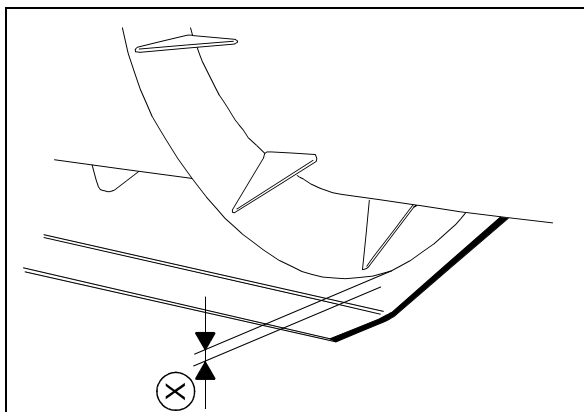
21770

4

11.3.4 Adjusting the position of the intake auger

Clearance (X) should be about 15 mm for the entire length of the intake auger.

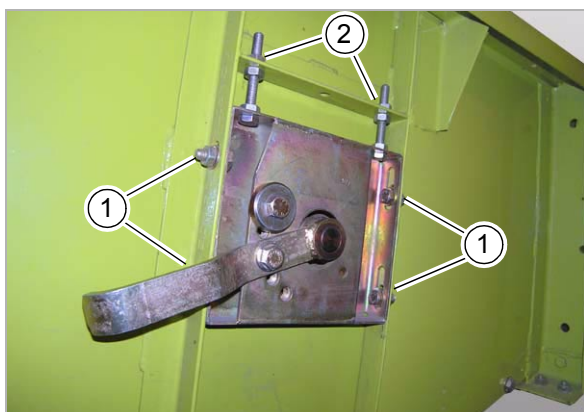
When dense windrows are taken up, and for bulky and brittle threshing material, set the intake auger higher.



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- Raise the feed rake conveyor.
- Raise the reel.
- Stop the diesel engine.
- Observe the general warnings at the beginning of the "Fieldwork" chapter.



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6

Danger!

Sharp edges or sharp-edged machine parts.
Death or serious injury.

- Attach the protective guard to avoid danger.

- Slacken off bolts (1).
- Adjust intake auger by means of bolt (2).
Make the same adjustments on both sides of the machine.
- Screw down bolts (1).

Caution!

Incorrectly adjusted stripper profiles.
Damage to intake auger.

- The stripper profiles must not touch the fluting or fingers of the intake auger.
- Make this adjustment any time you change the position of the intake auger.
- Adjust the intake auger fingers.
- Adjust the stripper profiles.

11.3.5 Adjusting the intake auger fingers

The auger fingers (5) pull the threshed material that has been moved to the middle by the auger flighting under the auger and into the feeder housing.



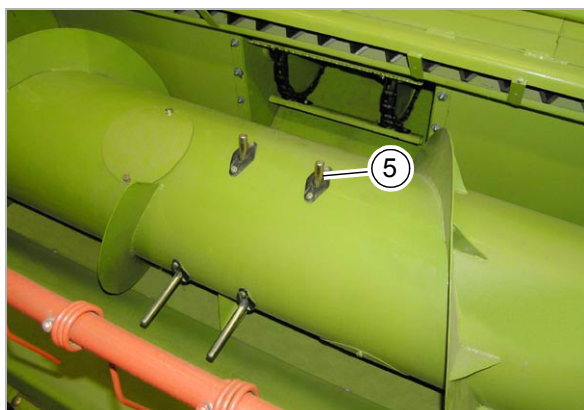
Caution!

Putting into operation with damaged intake auger fingers.

Damage to intake auger.

- Replace damaged intake auger fingers immediately.

7



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- Observe the general warnings at the beginning of the "Fieldwork" chapter.
- Stop the diesel engine.



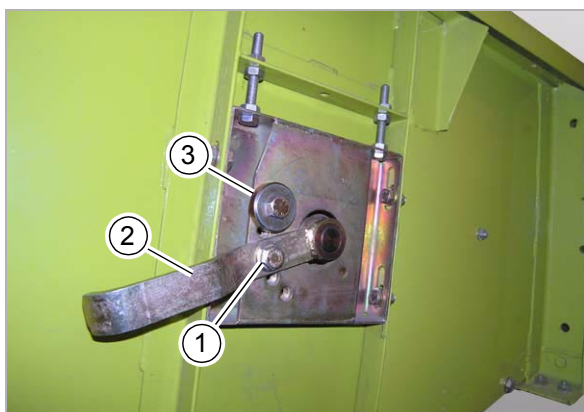
Caution

If there is no securing bolt and washer, fingers may come into contact with the cutterbar trough.

Machine damage.

- Make sure that the safety bolt and washer are always fitted in the topmost hole of the section.

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21771

- Make sure that the safety bolt (3) and washer is always fitted in the topmost hole of the section.
- Remove screw (1).
- Set the fingers using the lever (2).
Tall crop = bottom hole
Short crop = 3rd hole from the bottom
Basic setting = 3rd hole from the bottom
- Bolt down bolt (1) in the selected bore.

11.3.6 Adjusting the reel peripheral speed

**Note!**

The peripheral speed of the reel is incorrect.

Grain will be lost.

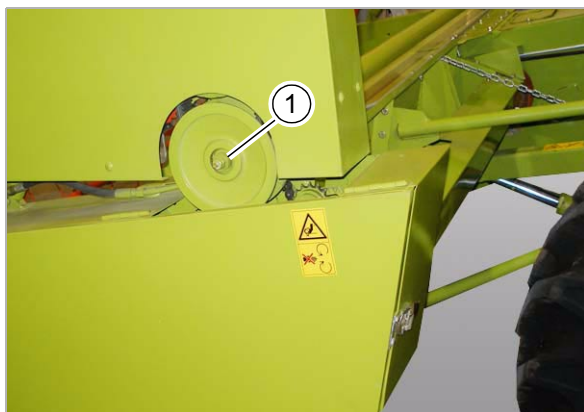
Finger bar jams.

- Adapt the peripheral speed of the reel to the harvesting conditions.

The peripheral speed of the reel can be adjusted to the ground speed by using the bolt (1).

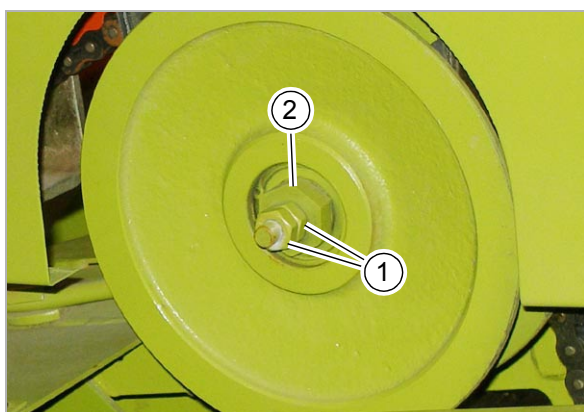
For optimum pick-up of the crop, the peripheral speed should be somewhat faster than the ground speed.

If the peripheral speed is too fast, this will lead to the loss of sensitive crops, if the speed is too slow the finger bar will become jammed.



21506

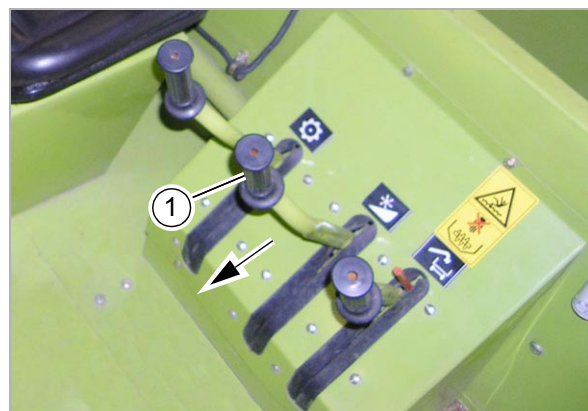
9



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- Loosen nuts (1).
- Adjust the nut (2) to the desired setting.
 - Clockwise rotation =
Increases the reel peripheral speed
 - Anti-clockwise rotation =
Reduces the reel peripheral speed
- Tighten nuts (1).



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11.3.7 Switching on the front attachment

- Prepare the fieldwork.
- Set diesel engine speed to slow idling speed.
- Engage the threshing mechanism.



Danger!

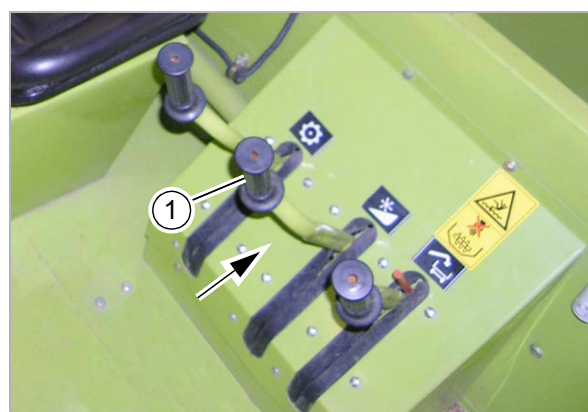
Sudden starting up of machine parts.

Death or serious injuries!

- Before switching on the front attachment, switch on the threshing mechanism first. This is an indication of imminent field work.
- Before starting ensure that there are no persons in the danger area of the front attachment.

- Switch on the front attachment.
 - Push the lever (1) all the way downwards.

The lever engages in to the lower position. The reel, the intake auger and the finger bar of the front attachment are switched on.



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11.3.8 Switching off the front attachment

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- Set diesel engine speed to slow idling speed.
- Switch off the front attachment.
 - Pull the lever (1) all the way upwards.

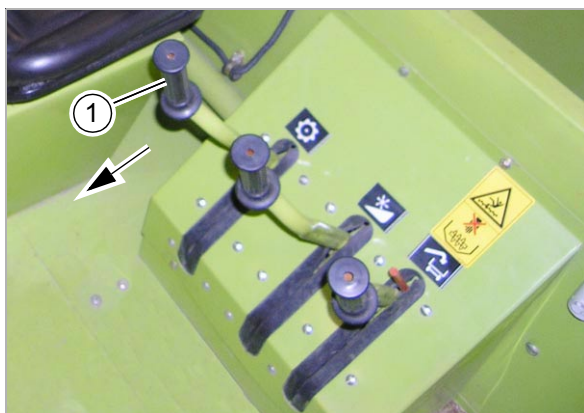
The reel, the intake auger and the finger bar of the front attachment are switched off.

11.4 Threshing mechanism

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11.4.1 Engaging the threshing mechanism

- Prepare the fieldwork.
- Set diesel engine speed to slow idling speed.



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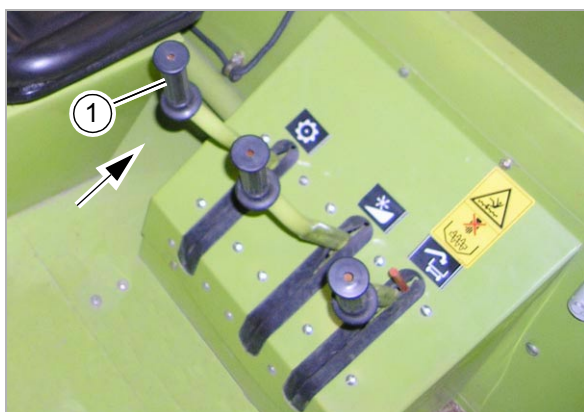
13

The lever engages in to the lower position. The threshing mechanism, the separation process and the cleaning system are switched on.

11.4.2 Switching off the threshing mechanism

63965

- Prepare the fieldwork.
- Set diesel engine speed to slow idling speed.



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The threshing mechanism, the separation process and the cleaning system are switched off.

**Warning:**

High wear.

Machine damage.

- Engage and disengage threshing mechanism at slow idling speed of the diesel engine.

- Engage the threshing mechanism.
 - Push the lever (1) all the way downwards.

**Warning:**

High wear.

Machine damage.

- Engage and disengage threshing mechanism at slow idling speed of the diesel engine.

- Switch off the threshing mechanism.
 - Pull the lever (1) all the way upwards.

11.4.3 Installing the disawning bars (additional equipment)

With certain crops that are difficult to disawn, thresh, and husk, you can achieve better threshing results by installing disawning bars.

- Observe the general warnings at the beginning of the "Fieldwork" chapter.

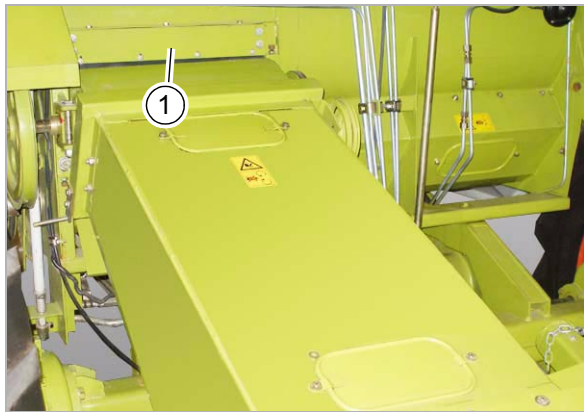


Danger!

Machine components may run on although the drive has been shut down.

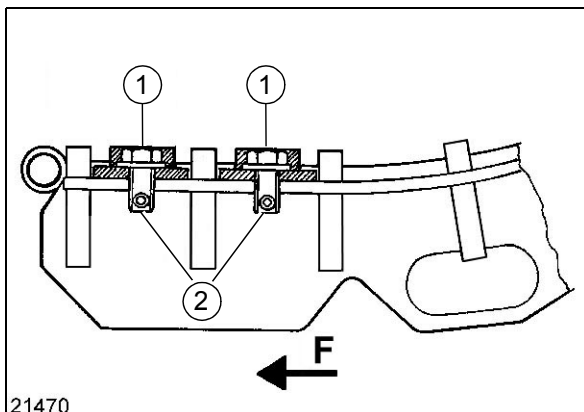
Death or serious injury.

- Never touch any machine parts that are running on.
- Wait until all machine parts have stopped moving.



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The concave filler bars can be installed if a feed rake conveyor is attached.

- Remove guard (1).

The threshing concave is accessible.

- Clean the threshing concave.

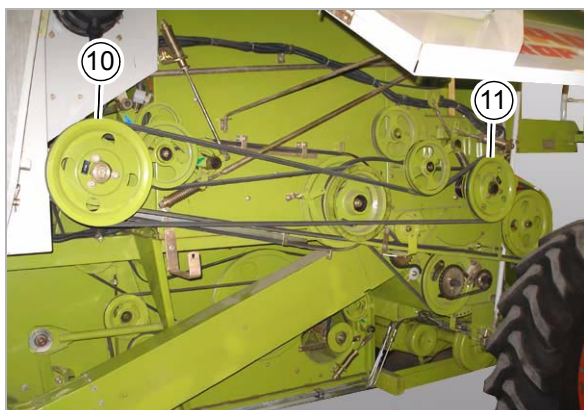
- Insert the bars (1) into the first two sections.
The bars (1) can optionally be inserted into the first section only.
- Ensure that the bars (1) lie flush with the concave wire along its entire length.
- Turn the bolts (2) along the entire length of the bars (1) by 90°.
- Ensure that the bars (1) are fixed securely to the threshing concave.

- Fit safety device.

11.4.4 Adjusting the threshing drum speed

The threshing drum speed can be changed by replacing the V-belt pulleys on the main shaft (A) and the threshing drum shaft (B). This, together with the instant adjustment of the threshing concave, makes it possible to quickly adapt to the varied properties of the different crops to be threshed. Long, moist straw and crops that are difficult to thresh and disawn require higher threshing drum speeds than dry and easily broken crops.

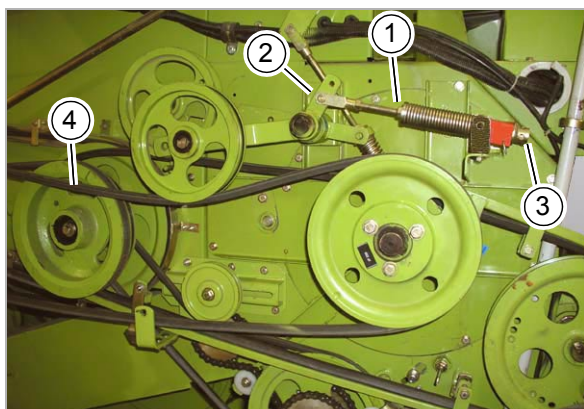
The speed must be set crop-dependently. Refer to the Threshing chart.



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- Observe the general warnings at the beginning of the "Fieldwork" chapter.



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**Warning!**

Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Loosen the nut (1).
- Insert the U-piece (U, CLAAS-produced) and secure with a spring clip.
- Screw in the cylinder barrel (3) until the belt (4) is sufficiently loosened.
- Unlock and remove the pin (2).
- Remove the belt (4).

U-piece, CLAAS produced:

A = 46 mm

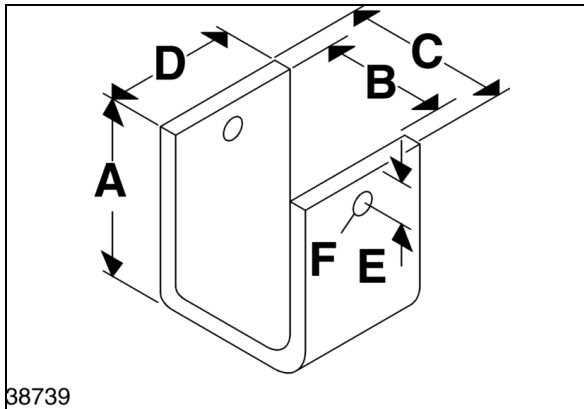
B = 30 mm

C = 38 mm

D = 35 mm

E = 7 mm

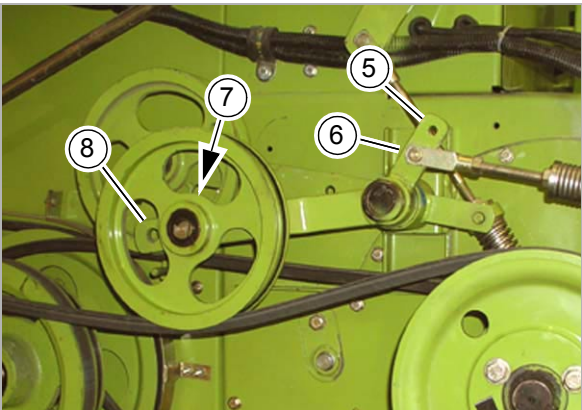
F = Ø 4 mm



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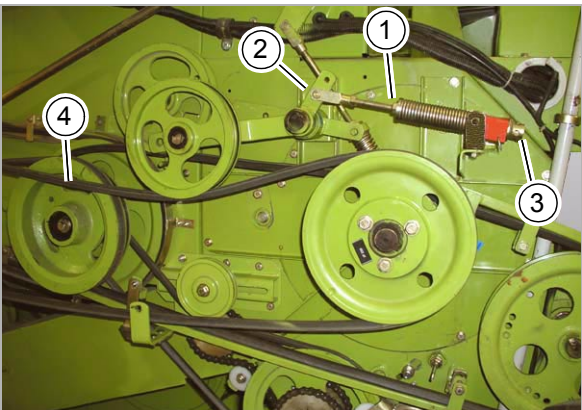
19



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V-belt pulley (A) main shaft Ø	V-belt pulley of threshing drum shaft Ø	V-belt Part no.	Threshing drum speed rpm
326 mm	290 mm	742 024 0	1282
290 mm	326 mm		1013
260 mm	365 mm		803
326 mm	584 mm	661 128 0	630
260 mm	584 mm	061 701 1	500



21

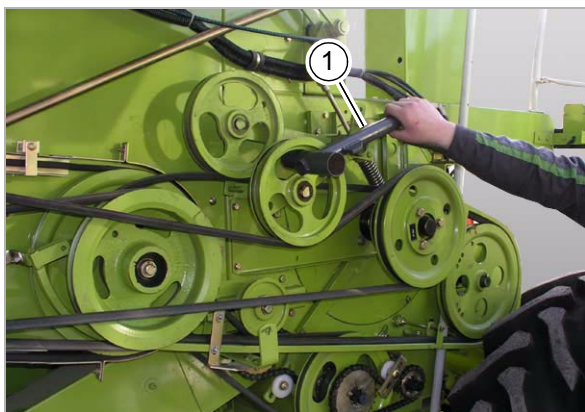
23549

- Install the V-belt pulley (A) and (B) and V-belt according to the desired speed.
- For the rotor speeds **1282, 1013,803 rpm** hitch the spring-loaded cylinder in the bottom hole (6) of the lever and install the jockey pulley in the hole (7) on the inside of the jockey pulley arms.
- For the rotor speeds **630 and 500 rpm** hitch the spring-loaded cylinder in the top hole (5) of the lever and install the jockey pulley in the hole (8) on the outside of the jockey pulley arms.

- Fit the threshing drum drive belt (4).
- Insert and secure pin (2).

Danger! Pre-tensioned springs are under high pressure. Severe injuries are caused by completely removing the cylinder barrel. – Never remove the entire cylinder barrel.

- Unscrew the cylinder barrel (3) a little and retighten the spring using the nut (1) at the same time. Refer to Adjusting the threshing drum drive (4). Remove the U-piece.



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11.4.5 Removing the wrap around from the threshing drum

- Observe the general warnings at the beginning of the "Fieldwork" chapter.
- Move the threshing concave downwards.
- Turn the threshing drum against the direction of travel when the threshing concave is fully open by using the lever (1) above the jockey pulley.

**Danger!**

Moving machine parts and / or unexpected motion of the machine.

Death or serious injuries!

- Make sure that the machine drives do not inadvertently continue turning when removing the straw plug.
-
- Remove the straw plug through the open drum inspection cover.
 - Close the drum inspection cover.
 - Engage the threshing mechanism.
 - Move concave segment to the desired position.

11.5 Cleaning unit

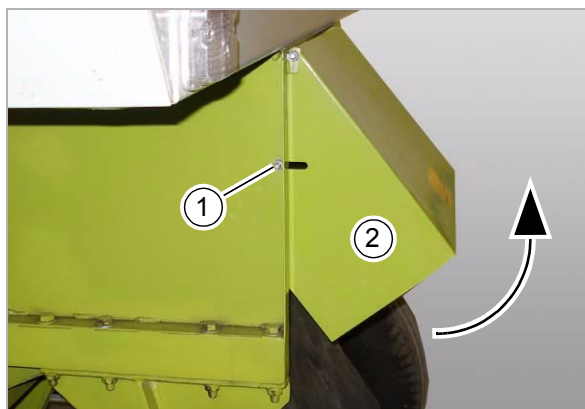
64211

11.5.1 Adjusting the sieve

The sieves can be adjusted to better suit the crop with the help of levers.

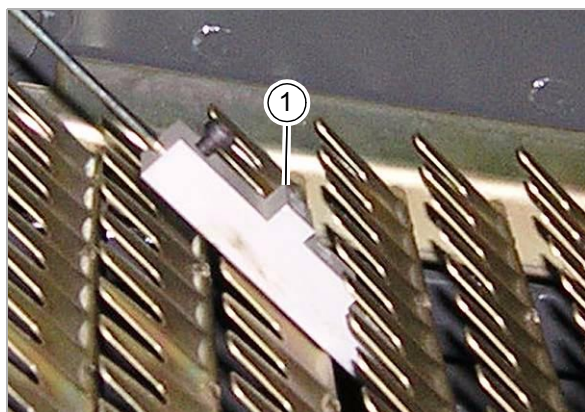
- Observe the general warnings at the beginning of the "Fieldwork" chapter.
- Loosen the bolt (1) on both sides of the machine.
- Swing the flap (2) upwards and secure in the top-most position with the bolts (1).

This makes the sieves more easily accessible.



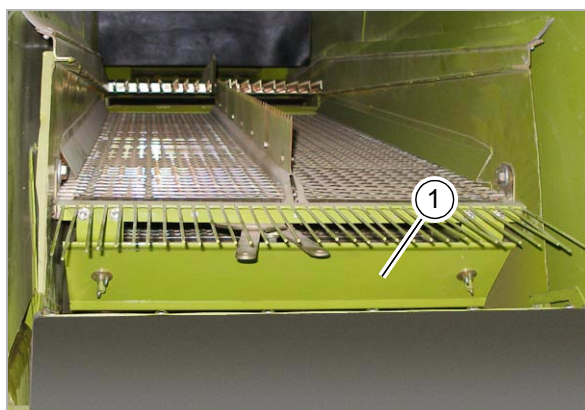
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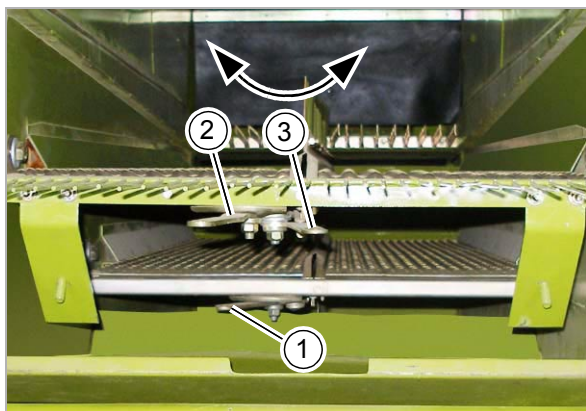


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- Check the sieve openings using the gauge (1).
CLAAS special tool Part no. 000 181 625 0.
- Adjust the sieve opening according to the Threshing chart if necessary.

- Remove the plate (1).



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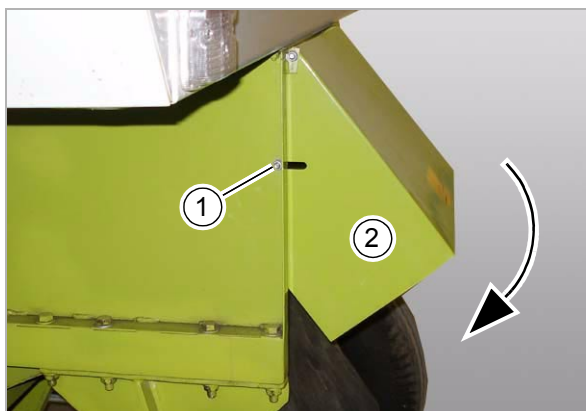
26

- Open the upper sieve all the way
- Adjust the lower sieve using the lever (1).
- Adjust the upper sieve using levers (2) and (3).
Lever (2) = entire upper sieve
Lever (3) = only the rear area of the upper sieve

The upper sieve is set correctly, if the crop has been fully sieved using three quarters of the sieve area.

The sieve openings in the back area of the upper sieve can be adjusted separately.

These openings should be adjusted further than the rest of the sieve, so that unthreshed crop is fed into the returns.



21944

27

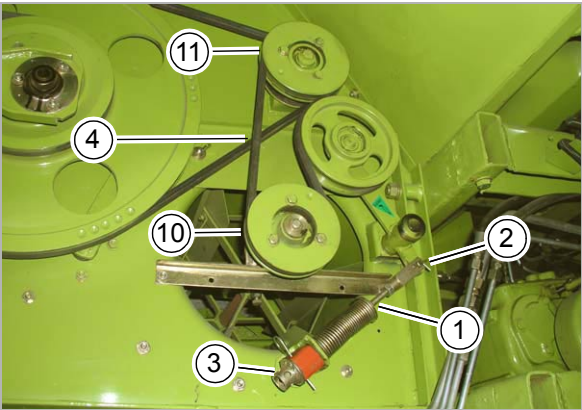
- Bolt the plate back in place.
- Loosen the bolt (1) on both sides of the machine.
- Swing the flap (2) downwards and secure in the desired position with the bolts (1).

11.5.2 Adjusting the fan speed

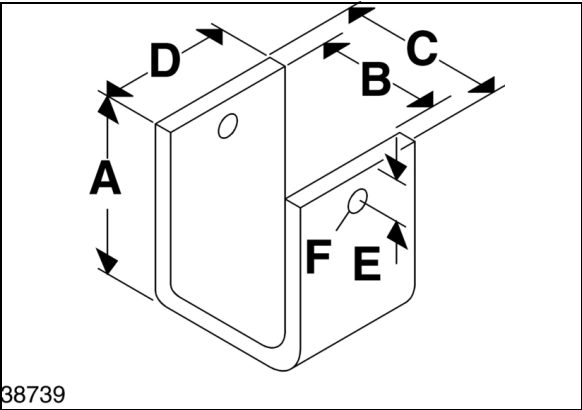
When threshing particularly light crops, the speed in a two-speed drive can be set to two different speed ranges.

The speed must be set crop-dependently. Refer to the Threshing chart.

V-belt pulley		V-belt pulley		Fan speed
No.	Ø	No.	Ø	rpm
10	125 mm	11	140 mm	1343
11	140 mm	10	125 mm	1505



28



29

- Observe the general warnings at the beginning of the "Fieldwork" chapter.



Warning!

Pinch points during assembly work.

Bruises of limbs.

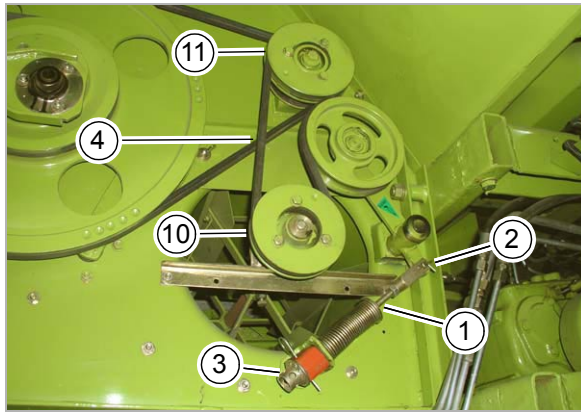
- Keep limbs out of the hazard area.
- Use suitable tools.

- Loosen the nut (1).
- Insert the U-piece (U, CLAAS-produced) and secure with a spring clip.
- Screw in the cylinder barrel (3) until the belt (4) is sufficiently loosened.
- Unlock and remove the pin (2).
- Remove the belt (4).

U-piece, CLAAS produced:

- A = 46 mm
- B = 30 mm
- C = 38 mm
- D = 35 mm
- E = 7 mm
- F = Ø 4 mm

- Unscrew the belt pulley (10) and (11), switch the position of the discs and bolt on.



Fan speed 1505 rpm

23327

30

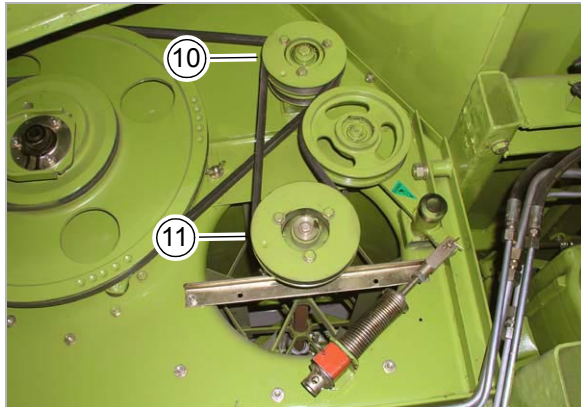
- Fit the belt (4).
- Insert and secure pin (2).

**Danger!**

Pre-tensioned springs are under high pressure.

Severe injuries are caused by completely removing the cylinder barrel.

- Never remove the entire cylinder barrel.

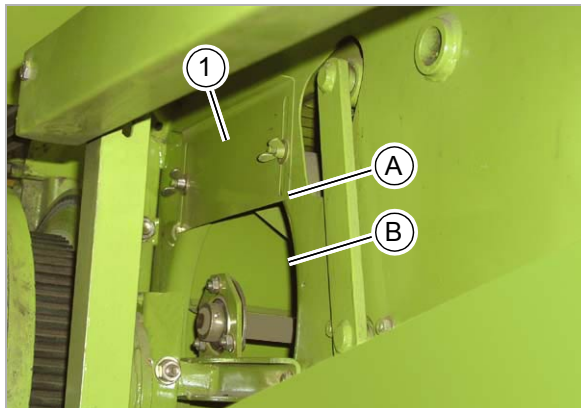


Fan speed 1343 rpm

23333

31

- Unscrew the cylinder barrel (3) a little and retighten the spring using the nut (1) at the same time. Refer to Adjusting the fan drive. Remove the U-piece.



left machine side

23833

32

11.5.3 Adjusting the fan blast reduction

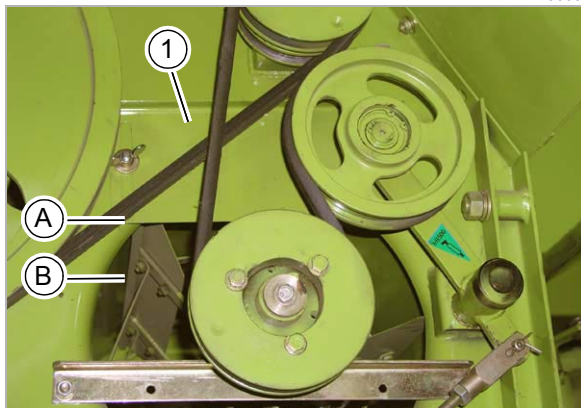
69835

If, even at the lowest fan speed the air blast is too strong with extremely light seeds, then the wind strength can be further reduced by infinitely adjusting the aperture of the fan intake opening using the shutters (1).

- Observe the general warnings at the beginning of the "Fieldwork" chapter.

Shutter position	State	Wind strength
A	Open	More
B	Closed	Less

- Loosen the nuts, slide the shutters (1) into the desired position and tighten the nuts.



right machine side

23834

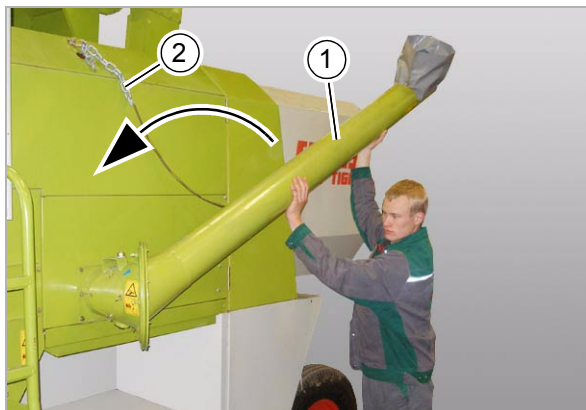
33

11.6 Grain delivery

11.6.1 Emptying the grain tank

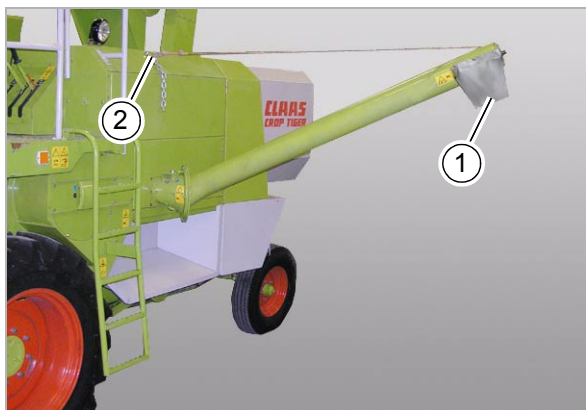
- Stop the machine.
- Apply parking brake.
- Set the diesel engine speed to medium idling speed.
- Swing out the grain tank unloading tube (1)
- Swing the grain tank unloading tube (1) to the front by pushing with your hand at the end of the tube.

The grain tank unloading tube is secured with a chain (2) and remains in the end position.



21809

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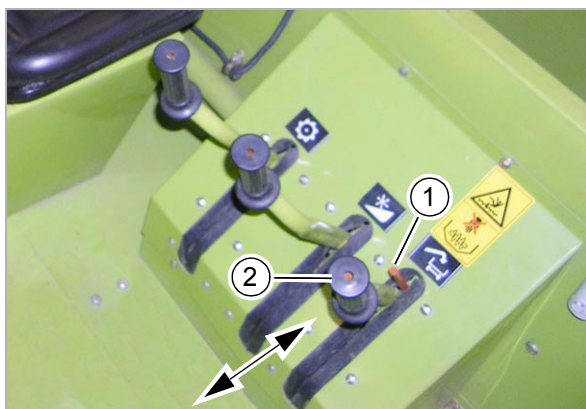


21812

35

- Drive the trailer under the middle of the sleeve (1) of the grain tank unloading tube.

The height of the discharge process can be changed by hitching the chain (2) to be shorter or longer.



21805

36



Danger!

Empty the grain tank with the grain tank unloading tube folded in.

The grain tank unloading tube may swing out suddenly.

Death or serious injuries!

- Never start grain tank unloading with the grain tank unloading tube folded in.

- Switching on grain tank unloading.
 - Move the lever (1) up against the lever (2).
 - Press the lever (2) all the way down.

The lever engages in to the lower position. The grain tank is emptied.

- Wait until the grain tank has finished emptying.
- Pull the lever (2) upwards.
- Pull the lever (1) upwards a bit more.

Grain tank unloading has finished and is protected against being unintentionally switched on.

- Ensure that the auger of the grain tank unloading tube has stopped moving.
- Fold in the grain tank unloading tube by hand.

11.7 Sieve charts / threshing charts

11.7.1 Threshing chart

Type 035	Clearance Feed roller - cutterbar trough	Position of intake finger	stone trap	Feed plate Stone trap	Main concave	Threshing drum	Disawning bars
Crop	mm	Hole from the bottom	0 = removed 1 = installed	0 = removed 1 = installed	0 = grain 1 = soya / maize 2 = rice	0 = grain 1 = rice	0 = removed 1 = installed
Wheat	12 - 15	3rd	1	0	0	0	1
Winter barley	12 - 15	3rd	1	0	0	0	1
Spring barley	12 - 15	3rd	1	0	0	0	0
Rice	12 - 15	3rd	0	1	2	1	0
Peas	12 - 15	3rd	1	0	1	0	0
Soya beans	12 - 15	3rd	1	0	1	0	0
Sunflowers	12 - 15	3rd	0	1	1	0	0
Grain maize	12 - 15	3rd	0	1	0	0	0
Rape / bird rape	12 - 15	3rd	1	0	0	0	0
Millet	12 - 15	3rd	1	0	0	0	1
Durra / sorghum	12 - 15	3rd	1	0	0	0	0
Grass seed	12 - 15	3rd	1	0	0	0	0
Flax	12 - 15	3rd	1	0	0	0	0
Mustard	12 - 15	3rd	1	0	0	0	0
Lentils	12 - 15	3rd	1	0	0	0	0
Buckwheat	12 - 15	3rd	1	0	0	0	0

- = use not possible

These details are guide values only and can deviate with different harvest conditions.

Type 035	Threshing drum speed	Threshing concave distance Position of lever	Fan blast reduction kit	Fan speed Standard frogmouth sieves	Upper sieve opening Standard frogmouth sieves	Upper sieve opening Returns screening Standard frogmouth sieves	Lower sieve opening Standard frogmouth sieves
Crop	rpm		0 = open 1 = closed	rpm	mm	mm	mm
Wheat	1013/1282	5	0	1505	13	13	6
Winter barley	1282/1013	5	0	1505	13	13	6
Spring barley	1282/1013	5	0	1505	13	13	6
Rice	803/1013	10	0	1505	13	13	8
Peas	500	9	0	1505	15	15	10
Soya beans	500/630	6	0	1505	15	15	8
Sunflowers	500/630	9	0	1505	15	15	8
Grain maize	630/500	8	0	1505	18	18	12
Rape / Bird rape	803/1013	5	0	1343	10	10	4
Millet	803	5	0	1505	10	10	5
Durra / sorghum	803	5	0	1505	10	10	5
Grass seed	803/1013	5	1	1343	14	14	8
Flax	500/630	5	1	1343	8	8	4
Mustard	803/1013	5	1	1343	10	10	4
Lentils	630/803	11	0	1505	13	13	6
Buckwheat	630	6	0	1505	13	13	6

- = usage not possible

These details are guide values only and can deviate with different harvest conditions.

12 Faults and remedies

12.1 General Information

63349

12.1.1 General warnings

In the following sections of this chapter, the general warnings below are referred to by means of instructions.



Danger!

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.



Danger!

Front attachment, reel and feeder unit may drop in an uncontrolled way.

Death or serious injury.

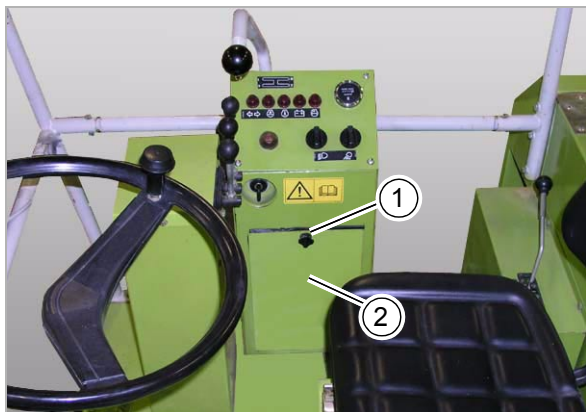
- Fit the safety locks.
- Keep a safe distance from the hazard area.

12.2 Cab / Operator's platform

66182

12.2.1 Opening the central terminal compartment / Base

- Note the general warnings at the beginning of the chapter "Problems and remedies".
- Unscrew the bolt (1) and fold the flap (2) downward.



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1

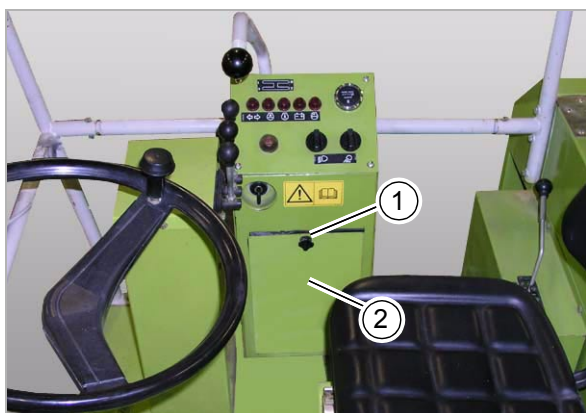


22476

2

The fuses are located behind the covers (3).

- Pull off the cover (3).



22475

3

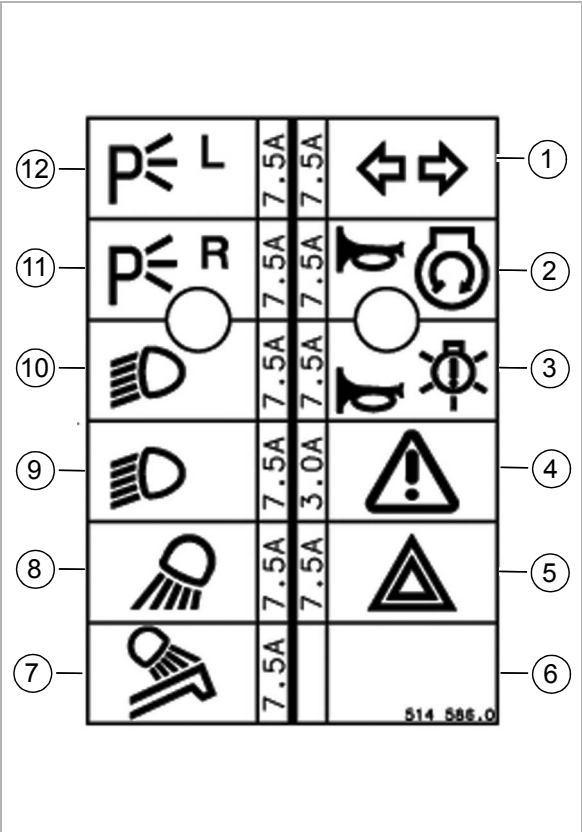
12.2.2 Closing the central terminal compartment / Base

66193

- Note the general warnings at the beginning of the chapter "Problems and remedies".
- Put the cover on the fuses.
- Fold the flap (2) upwards and screw on the bolt (1).

12.2.3 Basic central electrics fuses

Basic central electrics fuses 000 514 586 0		
	Designation	Value
1	Warning flasher / ignition / +30	7.5A
2	Brake light / horn	7.5A
3	Reversing horn	7.5A
4	Warning horn / warning lights	3.0 A
5	Warning flasher / ignition / +30	7.5A
6	not used	
7	Work lights, grain tank	7.5A
8	Work lights, front	7.5A
9	Headlight, right	7.5A
10	Headlight, left	7.5A
11	Position light, right	7.5A
12	Position light, left	7.5A



4

12.3 Front attachment**12.3.1 Front attachment**

- Observe the general warnings at the beginning of the section "Front attachment".

Problem	Possible Cause / remedy
Front attachment	
Poor cutting quality.	Knives are worn / damaged. – Replace the knives. Foreign material collects on the finger bar. – Clean the finger bar. Finger bar is picking up earth. – Raise the front attachment higher. Wear on the finger bar. – Adjust the knife thumb.
Knives have stopped.	Foreign material collects on the finger bar. – Remove foreign material from the finger bar. Finger bar drive belt is loose. – Tighten the finger bar drive belt. Drive belt has broken. – Replace the drive belt. Knife fingers are damaged. – Replace the knife fingers.
Crop is picked up poorly.	Crop has been pressed down in one direction. – Pick up the crop from the other direction of travel. Reel is set incorrectly. – Tilt the reel a little more to the front and downwards. Reel fingers are aligned to the front. – Put the reel tines into more of a grasping position. Knives are cutting too high. – Lower the front attachment further down. – Move in the cutterbar skid if necessary. Crop lifters have the incorrect clearance. – Select the correct clearance for the crop lifters.

Problem	Possible Cause / remedy
Crop intake is too low or wrapped up.	Scraper profiles on the intake augers are improperly adjusted. – Set the scraper profile closer to the intake auger. Intake fingers of the intake auger are set incorrectly. – Adjust the intake fingers of the intake auger. Intake fingers of the intake auger are faulty. – Replace faulty intake fingers. Reel is set incorrectly. – Set the reel closer to the intake auger. Intake auger is set incorrectly. – Adjust the intake auger.
Too many stones are picked up with the crop.	Crop lifters have the incorrect clearance. – Attach less crop lifters. – Do not cut so low (with down grain the crop lifters should lift the grain).
Blockages at the crop divider points.	Incorrect crop dividers. – Use special crop dividers.
Front attachment cannot be raised.	Hydraulics problem. – Check the hydraulics for leaks. – Have the hydraulic oil pressure checked.
Uneven flow of material.	Intake fingers of the intake auger are set incorrectly. – Adjust the intake fingers of the intake auger. Intake fingers of the intake auger are faulty. – Replace faulty intake fingers. Reel position is not correct. – Tilt the reel to the front or to the rear. Intake auger height is not correct. – Adjust the intake auger according to the crop. Reel fingers are aligned to the front. – Put the reel tines into more of a grasping position. Reel speed is unsuitable. – Correct the reel speed.

Problem	Possible Cause / remedy
Intake auger is blocked	Foreign objects are blocking the intake auger. – Turn the intake auger in the other direction and remove foreign material. Clearance between the intake auger and the bottom plate is too small. – Adjust the intake auger position, and increase the distance to the bottom plate. Slip clutch is set incorrectly. – Have the slip clutch set to the specified torque.
Material is being wrapped up around the reel	Reel is set too low. – Adjust the reel higher. Reel fingers are aligned to the rear. – Move the reel fingers to the front. Reel speed is too high. – Adapt the reel speed to the ground speed.
Reel fingers are touching the finger bar	Reel basic setting is not set correctly. – Adjust the reel basic setting.
Reel hangs lopsided when raised	There is air in the reel cylinders. – Bleed the reel cylinders. Reel lifting cylinders are leaking. – Replace the seals or lifting cylinders. Eye bolts of the lifting cylinders are not set correctly. – Adjust the eye bolts of the lifting cylinders. Reel basic setting is not set correctly. – Adjust the reel basic setting.
Cutterbar is not parallel with the ground	Tyre pressure is too low on one side. – Bring the tyre pressure to the recommended level.
Reel has stopped	Drive chain has broken. – Tension the drive chain or replace it.

12.4 Feeder unit

12.4.1 Feeder unit problem and remedy

- Note the general warnings at the beginning of the chapter "Problems and remedies".

Problem	Cause, remedy
Intake	
Feeder unit cannot be raised	Hydraulic problems. – Check the hydraulics for leakage. – Have the hydraulic oil pressure checked.
Feeder chains stop moving too easily	Slip clutch is set incorrectly. – Have the slip clutch on the feeder chains adjusted. Front attachment drive belt is set incorrectly. – Adjust the front attachment drive belt.
Uneven flow of material.	Feeder chains are set incorrectly – Tension the feeder chains correctly.

12.5 Threshing mechanism**12.5.1 Threshing mechanism problem and remedy**

- Note the general warnings at the beginning of the chapter "Problems and remedies".

Problem	Cause, remedy
Threshing mechanisms	Dirty threshing mechanisms cause unbalance and grain will be lost, worn threshing mechanisms cause reduced threshing performance and threshing losses.
Drum wrap around	Uneven flow of material in the cutterbar / feeder unit – Refer to Problems with cutterbar / feeder unit. Uneven flow of material in the threshing mechanism. – Set the threshing concave narrower. – If the crop is moist, increase the threshing drum speed. – If the moisture level increases, drive slower. – Correct the basic setting for the threshing concave. – Check the smooth running of the tensioning cylinder with the jockey pulley for the threshing mechanism drive.
Speed of the machine fluctuates greatly.	Engine problem. – Check engine (refer to Engine problems).
Stones and other foreign objects are damaging the threshing mechanisms.	Stone trap is full. – Clear the stone trap regularly. Front attachment is cutting too low. – Do not cut so low (with down grain the crop lifters should lift the grain).
High V-belt wear	Belt tension is set incorrectly. – Adjust the V-belt-tensioning device correctly. Contact faces of the V-belt pulleys are dirty. – Remove rust and clean the contact faces of the V-belt pulleys. Belts are oily. – Clean the oily belts with lye.

Problem	Cause, remedy
Inadequate threshing	Threshing concave clearance is too large. – Adjust the threshing concave closer. Threshing drum speed is too low. – Increase the threshing drum speed. Rasp performance is too low. – Install disawning bars. Wear or incorrectly set threshing concave. – Correct the basic setting of threshing concave. Wear on the threshing concave / the drum bars. – Have worn or damaged threshing mechanisms repaired (threshing concave, drum bars). Special threshing equipment has not been installed. – Use special threshing equipment if necessary.
Inadequate disawning	Threshing concave clearance is too large. – Set the threshing concave closer. Threshing drum speed is too low. – Increase the threshing drum speed. Rasp performance is too low. – Install disawning bars. Ripeness has not been reached yet. – Wait for the late ripeness period. Wear or incorrectly set threshing concave. – Correct the basic setting of threshing concave. Wear or damage to the threshing concave / the drum bars. – Check the threshing concave and drum bars for wear or damage.
Cracked grain	Threshing drum speed is too high. – Decrease the threshing drum speed. Threshing concave clearance is too narrow. – Set the threshing concave further away. Rasp performance is too high. – Remove the disawning bars. Elevator chain tension is set incorrectly. – Tension the elevator chains correctly. Crop is threshed again unnecessarily. – Reduce the grain percentage in the returns. Adjust the sieve.

Problem	Cause, remedy
Unbalanced machine	Threshing drum bars are dirty. – Clean the dirty threshing drum. V-belt pulleys and jockey pulleys are dirty. – Remove dust accumulation in V-belt pulleys and jockey pulleys. Threshing drum bars are bent. – Have the damaged threshing drum repaired.
Slippage messages from different units	Speed signal is faulty. – Check the cam wheels for proper seating and correct position, if necessary.
Returns	
Too much chaff and broken straw in the returns	Fan speed too low. – Adjust to a stronger air blast. Sieve opening is too large. – Set the frogmouth sieve a little closer. Threshing drum speed is too high. – Decrease the threshing drum speed.
Too much grain in the returns	Uneven flow of material in the cutterbar / feeder unit – Refer to Problems with the cutterbar / feeder unit. Setting for the threshing mechanisms are not ideal. – Check the settings for the threshing mechanisms. Sieve opening is too small. – Open the frogmouth sieve wider. Fan speed too high. – Reduce air blast. Wind boards are not in the best position. – Adjust the wind boards correctly.
Elevator blocked.	Check the machine settings. – Open the elevator boot and auger trough, remove the blockage, allow the combine harvester to idle, close the flaps again tightly. Belt tension is set incorrectly. – Re-tension the V-belt on the elevator drive. Chain tension is set incorrectly. – Tension the elevator chain correctly. Elevator housings and augers are dirty. – Clean dirty elevator housings and augers.

Problem	Cause, remedy
Slippage messages from different units.	Speed signal is faulty. – Check the cam wheels for proper seating and correct position, if necessary.

12.5.2 Threshing drum

- Note the general warnings at the beginning of the chapter "Problems and remedies".

The threshing drum can only work efficiently when the rasp bars are straight and not too worn. The threshing drum was balanced at the factory.

- When replacing the rasp bars, always fit bars of the same weight and replace them only in pairs.
- After this, rebalance the threshing drum.
The rasp bars must fit tightly into the drum plates.
- Threshing drum repairs should only be carried out by trained expert personnel.

12.6 Separation

12.6.1 Separation problem and remedy

- Note the general warnings at the beginning of the chapter "Problems and remedies".

Problem	Cause, remedy
Straw walker	
Slippage messages from different units	Speed signal is faulty. – Check the cam wheels for proper seating and correct position, if necessary.

12.7 Cleaning unit

12.7.1 Cleaning problem and remedy

- Note the general warnings at the beginning of the chapter "Problems and remedies".

Problem	Cause, remedy
Cleaning unit	
Uneven feeding of the sieve	Uneven flow of material in the cutterbar / feeder unit – Refer to Problem with cutterbar / feeder unit.
Matted formation on the frogmouth sieves.	Sieve opening is too small. – Open the frogmouth sieve wider. Fan speed too low. – Adjust to a stronger air blast. Threshing drum speed is too high (broken straw). – Decrease the threshing drum speed.
Grain is not clean.	Fan speed too low. – Adjust the air blast higher. Sieve opening is too large. – Set the frogmouth sieve a little narrower.
Slippage message from different units	Speed signal is faulty. – Check the cam wheels for proper form seating and correct position, if necessary.

13 Maintenance

13.1 General Information

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13.1.1 General warnings

In the following sections of this chapter, the general warnings below are referred to by means of instructions.

**Danger!**

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.

**Danger!**

Front attachment, reel and feeder unit may drop in an uncontrolled way.

Death or serious injury.

- Fit the safety locks.
- Keep a safe distance from the hazard area.

13.2 General Information

13.2.1 Front attachment



Danger!

Front attachment, reel and feeder unit may drop in an uncontrolled way.

Death or serious injury.

- Fit the safety locks.
- Keep a safe distance from the hazard area.

13.2.2 Cleaning the engine compartment and hazard areas

- Thoroughly clean the engine area and the exhaust system in particular as well as the surrounding areas including the brakes, gearbox and similar components, in order to prevent a fire hazard.
- When the crop is very dry and there is a lot of dust, frequently check these mentioned areas for accumulated dirt and clean when necessary.

13.2.3 Belts

- All belts must always be kept well tensioned.
- Belts smeared in oil can be cleaned using washing lye. Do not use petrol or similar products.
- When new belts are fitted, check the tension after the first 2 to 3 operating hours adjust the tension if necessary.

13.2.4 Variable-speed drives

- Whenever the variable-speed pulleys have been greased, operate the pulleys a few times to ensure even spreading of grease on sliding parts.
- Remove any accumulations of dust from between the variable speed pulley halves to make sure the pulleys can be run through their full speed range.

13.2.5 Bolts

- Check all bolts for firm seating and tighten if necessary (particularly the nuts on the chassis and on the steering).

13.2.6 Lubrication

- Observe the specified oil change intervals and oil types in the hydraulic system and in the gearboxes.
- Only use quality brand name lubricants on the machine, for example, Shell Retinax A EP 2 all-purpose lubricant.
- Before lubricating, remove dirt from the grease nipples.
- Lubricate regularly according to the lubrication chart.



Environment!

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.



Warning!

Contact with hot liquids or machine parts.

Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.

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13.2.7 Cleanliness of lubricants



Warning!

Machine operation with non-permitted or polluted lubricants.

Machine damage.

- Ensure a clean environment.
- Use suitable and clean tools.
- Use approved lubricants.
- Lubricants must be free of pollutants.



Warning!

Operation of the machine with contaminated lubricants.

Machine damage.

- Make sure surroundings are clean.

13.2.8 Brakes



Danger!

Insufficient brake system maintenance.

Death or serious injury.

- Check the brake system thoroughly at regular intervals.
- Adjustment, repairs and service work on the brake system may be performed only by authorised specialist workshops.
- Check the level of the brake fluid at regular intervals.

Only use the specified type of brake fluid and change the brake fluid at the recommended intervals.



Warning!

Contact with hot liquids or machine parts.

Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.



Warning!

Incorrect handling of brake liquid.

Medium-grade injuries.

- Observe the instructions on handling of brake fluid on the container.
- Wear safety gloves.
- Collect brake fluid in a suitable container.
- Dispose of used brake fluid in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.

13.2.9 Wheels / tyres

**Warning!**

If tyre pressures exceed the specified values the tyres may explode.

Beware of personal injury

- Never stand in the vicinity of the tyre while it is being inflated. Always stand clear!
 - Regularly check the air pressure of the tyres.
 - The tyres must be kept at the specified pressures.
-
- When a wheel has been fitted, the wheel bolts and nuts must be retightened after the first 10 operating hours and then checked for firm seating every 50 operating hours.
 - The track adjustment elements are to be retightened as specified by the manufacturer.
 - Observe the required tyre pressure when ballasting.
 - Keep oil and grease away from the tyres.
 - Check the tyres regularly for damage even on the inside.
 - Do not clean tyres directly with steam-jet cleaners.

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13.2.10 Hydraulic system

**Danger!**

Work on the hydraulic system.

Death or serious injury

- Relieve the hydraulic pressure before working on the system.

**Danger!**

Dealing incorrectly with injuries due to hydraulic fluids.

Death or serious injury.

Even a pinhole can result in severe injuries.

- If hydraulic fluid gets in the skin or eyes, have the injury treated by a medical specialist immediately.



Danger!

Pre-loaded energy accumulators (spring, accumulator, hydraulic cylinder).

Death or serious injury.

- Only have authorised and qualified workshops carry out work on energy accumulators.



Danger!

Liquids under high pressure.

Liquids penetrate the skin and cause serious injury.

- Only have authorised and qualified workshops carry out work on the hydraulic system.
- Check hose lines at regular intervals.
Search for leaks using a piece of wood or cardboard.
Ensure that the oil jet will not be directed towards your body.
- Replace any damaged hose lines.
- Replace hose lines 6 years after the date of manufacture at the latest.

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13.2.11 Electrical system



WARNING:

Work on the electrical system.

Machine damage.

- Before starting work, disconnect the cable from the negative terminal first and then from the positive terminal of the battery.
- When wrk is complete, first connect the positive terminal and then the negative terminal to the battery.
- Always disconnect the cables from the alternator and battery before performing electrical welding work on the machine and the front attachment.

**Danger!**

Incorrect handling of batteries.

Death or serious injury.

- Be careful with battery gases, they are highly explosive.
- Avoid sparks and naked flames in the vicinity of a battery!
- Remove the covers (vent caps) when recharging the battery to prevent the accumulation of highly explosive gases.
- Be careful when handling battery acids, they are caustic.

**WARNING:**

Use of fuses that are too strong.

Damage to the electric system.

- Only use original fuses.

**Environment!**

Handling of used batteries.

Environmental pollution.

- Dispose of old batteries in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.

**Caution**

Incorrect handling of three-phase alternator.

Damage to three-phase alternator.

- Do not loosen and remove the cable clamps from the battery while the diesel engine is running.
- Do not loosen and remove the cable from the three-phase alternator while the diesel engine is running.
- Do not carry out a voltage test on a cable using a metal object on the earth.
- Immediately replace faulty battery indicator lamps.

13.2.12 Protective guards



Danger!

Missing or damaged safety devices.

Death or serious injury.

- Fit safety devices before putting the machine into operation.
- Check function of safety devices at regular intervals.
- Replace worn or damaged safety devices by new ones.

11209

13.2.13 Spare parts



Danger!

Use of unauthorised spare parts.

Death or serious injury.

- Spare parts must at least comply with the technical standards required by the manufacturer of the implement!
- We recommend using genuine CLAAS spare parts.

11212

13.2.14 Unbalance



Caution!

Uneven running of machine parts.

Machine damage and excessive wear.

- Remove dirt accumulations in rotating machine parts regularly and thoroughly.

62416

13.2.15 Jack up the machine

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Danger!

Jacking up the machine.

Death or serious injuries!

- Use a jack / support frame with sufficient load bearing capacity.
- Use a jack / support frame that is functioning correctly.
- Use the jack / support frame on solid and flat ground.
- Position the jack / support frame in a suitable position on the machine.

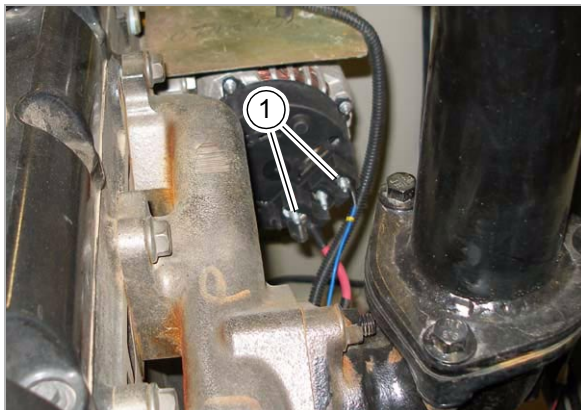
13.2.16 Welding work on combine harvester

**WARNING:**

Overvoltage may occur during all electric welding work on the machine.

Electronic unit damage.

- Carry out all work steps below.
 - Connect the earth clamp of the welder in the near vicinity of the area where the welding is being carried out.
-
- Observe the general warnings at the beginning of the "Maintenance" chapter.
 - Disconnect all cable connections (1) from the alternator.



21806

1

13.2.17 Winter storage instructions for combines

38041

Proper storage of the machine after the harvest is essential in order to obtain the optimum return on the investment capital in this machine. By following the simple points below, money and time will be saved by the fact that components will have an increased life expectancy.

**Caution!**

Cleaning the front attachment / machine with water.

Material damage due to corrosion.

- Avoid cleaning with water.
 - After cleaning with water, grease all grease points.
After that, let the front attachment/ machine run for a few minutes.
 - Do not clean hollow spaces and cable glands with water.
-
- Clean the machine thoroughly inside, particularly the threshing drum, concave, the space behind the drum, the preparation floor, return floors, straw walkers and above the cleaning fan.

- Open the elevator covers and auger troughs.
- Remove grease and dirt from the outside of all the bearing assemblies.
- After the harvest, preserve the machine including the lubrication points requiring annual maintenance by pressing in brand-name grease.

To allow the grease to spread evenly, let the machine run for a short period until a small grease ring has formed on the outside of the bearings.

When cleaning the machine with a high-pressure cleaner, the bearings must be greased before and after cleaning!

- With the combine still running, operate the variable-speed drives to distribute the grease evenly between the sliding parts.

Coat the inner flanks of the variable speed pulleys with corrosion inhibitor as far as possible.

Remove preservation before putting the machine into operation the next time!

- Seal off peripheries of slip clutches with paint to keep moisture out and to keep friction faces from rusting.
- Grease all polished parts such as finger bars and crop lifters.
- Carry out all maintenance work according to the specified intervals.
- Check machine prior to cleaning.
Have repairs carried out if necessary.
- Store the machine in a dry, weatherproof shed where no fertilisers are stored!
- Lower the front attachment to the ground or remove it in order to relieve the hydraulic system.
- Jack up the machine so that the full weight is not resting on the wheels.
- Check the coolant antifreeze content.
- Charge the battery and recharge every six weeks or leave it with a battery service point to take care of.

12884

13.2.18 Coolant

The engine cooling system has been filled with a mixture of corrosion / frost protection and water at the factory.

The coolant consists of 50% corrosion / frost protection and 50% water.

This ensures frost protection down to approx. -37 °C. Also refer to the specifications of the engine manufacturer.

13.3 Maintenance schedule**13.3.1 Service intervals**

Maintenance Operations		Service intervals in working hours										
		Before the harvest	After the first		Every day	Every			Once a year or every 500	Every 2 years	As required	After the harvest
			10	100		50	100	250				
General maintenance												
Complete all steps according to the lubrication intervals.	grease											
Front attachment												
Knife drive chain	check/adjust	•		•				•			•	
Intake auger drive chain	check/adjust			•				•			•	
Reel drive chain	check/adjust			•				•			•	
Reel slip torque	check/adjust	•									•	
Damage to knives and double fingers	check/adjust	•									•	
Knife thumb play	check/adjust										•	•
Engine												
Diesel engine surroundings	clean				•						•	
Fuel tank fuel	drain										•	
Fuel tank	fill				•						•	
Fuel tank screen in the filler neck	clean										•	
Fuel system	bleed										•	
Condensate on water separator	drain								•		•	•
Fuel filter	change								•		•	•
Diesel engine power take-off	clean				•						•	
Diesel engine oil level	check				•						•	
Diesel engine oil / oil filter	change								•			
Diesel engine valves	adjust				(Refer to operator's manual from the engine manufacturer)							
Radiator coolant level	check				•						•	
Coolant mixing ratio	check								•			•
Radiator coolant	change				Every 5 years							
Cleaning the rotary chaff screen	clean				•						•	
Cooling units	clean				•						•	
Coolant hoses	change									•		
Diesel engine air cleaner	clean				•						•	
Diesel engine air cleaner	change								•		•	
Safety air-cleaner cartridge from the diesel engine (or the main cartridge after servicing 5 times)	change										•	

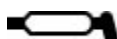
Maintenance Operations		Service intervals in working hours											
		Before the harvest	After the first		Every day	Every			Once a year or every 500	Every 2 years	As required	After the harvest	
			10	100		50	100	250					
Air cleaner intake screen, diesel engine	clean				•							•	
Air intake pipes	change									•			
Clamps on the air intake pipes	retighten		•									•	
Chassis													
Wheel nut tightening torque	check		•	•									
Gearbox drive axle surroundings	clean				•							•	
Final drive oil level	check	•										•	
Final drives Oil	change			•					•				
Drive axle gearbox Oil level	check	•										•	
Drive axle gearbox Oil	change			•					•				
Brakes													
Brake fluid	check	•				•						•	
Brake fluid	change				(only through authorised workshop)					•			
Parking brake	adjust				(only through authorised workshop)							•	
Drives													
Belts (all)	adjust			•					•			•	
Chains (all)	adjust			•					•			•	
Hydraulic system													
Hydraulic system Oil level	check	•				•						•	
Hydraulic system Oil/oil filter	change			•					•				
Electrical / electronic equipment													
Battery acid level	check	•										•	
Intake													
Feeder chains	adjust					•						•	
Threshing mechanism													
Threshing concave distance	adjust								•				
Stone trap	clean				•							•	
Separation													
Auger troughs	clean											•	
Deflector curtain	check											•	
Cleaning unit													
Space above fan	clean											•	
Preparation floor	clean											•	

Maintenance Operations		Service intervals in working hours										
		Before the harvest	After the first		Every day	Every			Once a year or every 500	Every 2 years	As required	After the harvest
			10	100		50	100	250				
Sieves	clean										•	
Grain delivery												
Returns elevator drive chain	adjust							•			•	
Returns elevator chain	adjust					•					•	
Grain elevator drive chain	adjust							•			•	
Grain elevator chain	adjust					•					•	
Grain tank	clean										•	

13.4 Lubricants chart

13.4.1 Lubricants

Component	Capacity	Type of lubricant / Specification	Viscosity class / SAE class	Remark
Diesel engine				
Perkins 1104A-44	approx. 6.9 litres	CLAAS Agri Universal 400 API CG4	10W40	Check oil level with the dipstick
Cooling system**	approx. 18 litres	CLAAS AGRI-COOL antifreeze coolant See also the Operator's Manual from the diesel engine manufacturer Perkins		Check for suffi- cient antifreeze protection before winter storage
** The coolants on MB sheet 325.0 and MB sheet 325.2 may be mixed. ** The coolants on MB sheet 325.3 and CAT EC-1 may be mixed. ** The coolants on MB sheet 325.0, MB sheet 325.2 must not be mixed the coolants MB sheet 325.3 and CAT EC-1. ** Mixing with commercially available coolant is not allowed. ** Use only specified coolant for refilling.				
Chassis				
Manual gearbox 000 694 169 0	approx. 3.0 litres	CLAAS AGRISHIFT MT 80W-90 (total driveline) API GL5 MIL: 2105 B	80W-90	Check oil level on oil level check plug
Final drives 000 602 235 1	approx. 2.5 litres each	CLAAS AGRISHIFT MT 80W-90 (total driveline) API GL5 MIL: 2105 B	85W-90	Check oil level on oil level check plug
Brake				
Foot brake	Reservoir must always be full	ATE brake fluid	DOT 4	

Component	Capacity	Type of lubricant / Specification	Viscosity class / SAE class	Remark
Hydraulic system				
Hydraulic system	approx. 6.5 litres	CLAAS AGRIHYD HVLDP 46 (detergent multigrade) **	HVLP Part 3 ISO-VG 46	Check oil level in sight glass
** When selecting the hydraulic oil, the following conditions need to be met: Pourpoint < -25 °C (DIN ISO 3016) Viscosity 0 °C < 600 cSt. (DIN 51 562) Viscosity 40 °C 50.6 cSt. max. (DIN 51 562) Viscosity index > 170 (DIN ISO 2909) The oil must have detergent properties!				
Lubrication points				
Grease nipples 	Refer to Lubrica- tion chart	CLAAS AGRIGREASE EP 2	EP 2 Grease DIN 51502	400 g cartridge Part no.: 000 147 437 0
Lubrication points 	Refer to Lubrica- tion chart	CLAAS special chain oil		Spray can 500 ml Part no.: 000 177 353 3

13.5 Front attachment

13.5.1 Adjusting knife clips

- Observe the general warnings at the beginning of the "Maintenance" chapter.

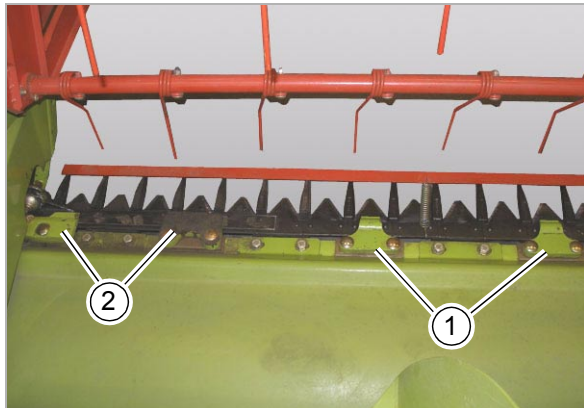


Warning!

Sharp edges and pointed machine parts.

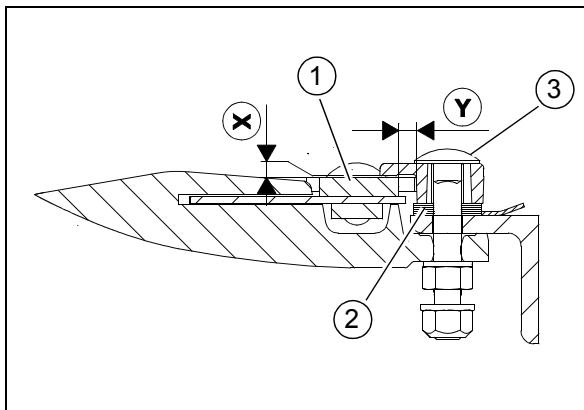
Slight injuries.

- Wear safety gloves.



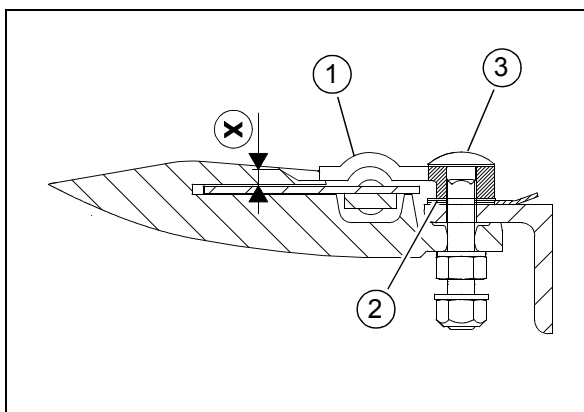
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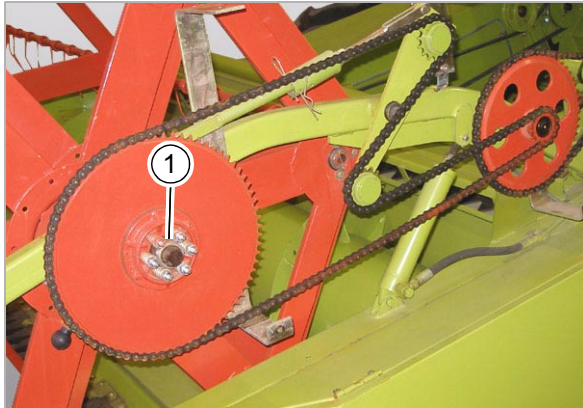
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A **high** knife clip (1) is located at the left end of the finger bar.

A **low** knife clip (2) is located on every other double finger.

- Adjust the **high** knife thumb (1).
 - Move the finger bars up until the smallest dimension (Y) has been reached.
 - Check that clearance (X) = approx. 1.5 mm.
 - Check that clearance (Y) = approx. 1.5 mm.
 - If necessary, loosen or remove the bolt (3).
 - Adjust the clearance (X) by inserting or removing the shims (2).
 - Adjust the clearance (Y) by pushing the knife thumb (1) forwards or backwards.
 - Check the clearance (X) and (Y) again, and correct if necessary.
 - Tighten the screw (3).
- Aligning a **low** knife thumb (1):
 - Check the clearance (X) = approx. 1.5 mm.
 - If necessary tighten the screw (3).
 - Adjust the clearance (X) by inserting or removing the shims (2).
 - Check the clearance (X) again, and correct if necessary.
 - Tighten the screw (3).



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13.5.2 Setting the reel slip torque

- Observe the general warnings at the beginning of the "Maintenance" chapter.

The reel is protected by a slip clutch (1) against overloading.

- To avoid damage to the feeder unit, have slip torque of clutch (1) checked by a specialist workshop according to the maintenance interval.



Caution!

Improperly performed work on the machine or the front attachment can lead to malfunctioning.

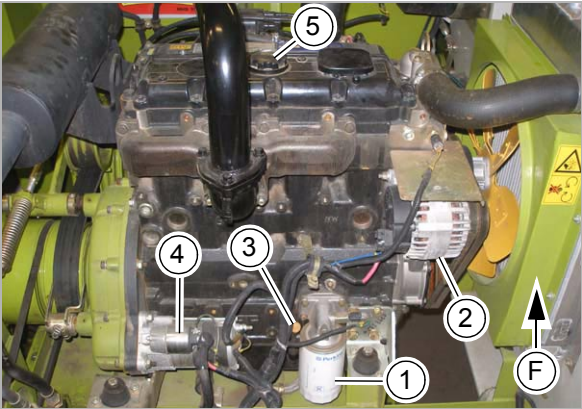
Risk of machine damage

- Have adjustment and repairs performed only by an authorised specialist workshop.
- Never tighten the bolts to such an extent that the slip clutch becomes locked and thereby fails to function as a safety device.
- Adjust the slip torque when the slip clutch is cold.

Slip torque = **430 Nm ± 40 Nm**

13.6 Engine

13.6.1 Engine overview Perkins 1104A-44



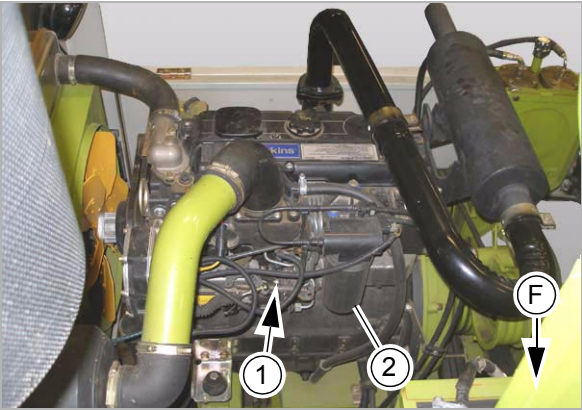
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Refer also to the operator's manual of the engine manufacturer!

	Designation
1	Engine serial number
2	Fuel filter
F	Direction of travel

Refer also to the operator's manual of the engine manufacturer!



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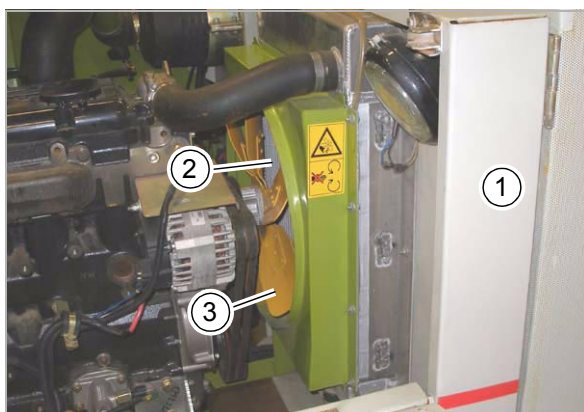
13.6.2 Overview of cooling units

**Danger!**

Insufficient specialist knowledge for repair and maintenance work.

Death or serious injury.

- Only have authorised and qualified work-shops carry out work on this component.



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13.6.3 Cleaning the diesel engine surroundings

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- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Clean the surroundings of the diesel engine, the exhaust system and the engine output on the machine.



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13.6.4 Draining fuel from the fuel tank

In case of severe and frequent fouling of the fuel prefilter, the accumulated condensate and dirt in the tank can be drained off.

- Reduce the fuel tank capacity to a minimum.
- Park the machine on level ground.
- Observe the general warnings at the beginning of the "Maintenance" chapter.



Warning!

Swallowing of fuels.

Poisoning hazard.

- When swallowing fuel, consult a doctor immediately.
- Keep fuels outside of the reach of children.



Environment!

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.



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- Remove screw (1).
- Collect the fuel in a suitable container.
- Turn in screw (1).



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13.6.5 Filling the fuel tank

- Observe the general warnings at the beginning of the "Maintenance" chapter.

**Danger!**

Fire hazard / explosion hazard when handling fuel.

Death or serious injuries!

- Avoid fire, naked flames, smoke and spark formation.
- Wipe up all fuel that has been dropped or splashed.
- Never mix diesel fuel with petrol.

**Warning!**

Swallowing of fuels.

Poisoning hazard.

- When swallowing fuel, consult a doctor immediately.
- Keep fuels outside of the reach of children.

**WARNING:**

Unallowed or polluted fuels.

Diesel engine damage.

- Use fuels approved by the engine manufacturer.
- Do not use any polluted fuels.

**Caution**

Formation of condensate in the fuel tank

Damage to the diesel engine.

- Always fill up the tank of the vehicle directly after it has been used for work.

**Environment!**

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.



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- Unscrew cover (1).
- Only tank with clean fuel.
Observe the capacity of the fuel tank.
- If necessary clean the fuel tank screen.
- Screw on the cap (1) and check that it is tight.



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13.6.6 Cleaning the fuel tank sieve

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The fuel tank has a sieve in the filler neck.

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Unscrew cover (1).
- Remove the sieve and clean.
Replace damaged sieve!
Install sieve.
- Bolt on cover (1).

13.6.7 Bleed fuel system

- Observe the general warnings at the beginning of the "Maintenance" chapter.

**Caution**

Excessive operation of the starter.

Damage to the fuel injection pump, the battery and to the starter.

- Do not try to start the diesel engine for longer than 30 seconds.
- Let the starter cool for two minutes before trying to start the diesel engine again.

Try the procedure with two people.

**Danger!**

Rotating and moving machine parts.

Death or serious injuries!

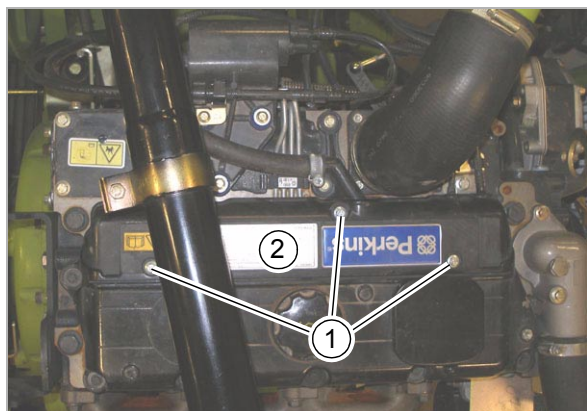
- Keep a safe distance from all rotating and moving machine parts.

**Danger!**

Fluids under high pressure.

Fluids penetrate the skin and cause serious injuries.

- Never use your hands to check if a pressurised medium is leaking.
Search for leakage points with a piece of wood or cardboard.
Take care not to redirect the jet towards the body.



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- Unscrew bolts (1).
- Remove the safety device (2).
- Loosen the nuts (3) a little.
- Watch the connections on the nuts (3) carefully.
- Try to start the diesel engine for a maximum of 30 seconds.

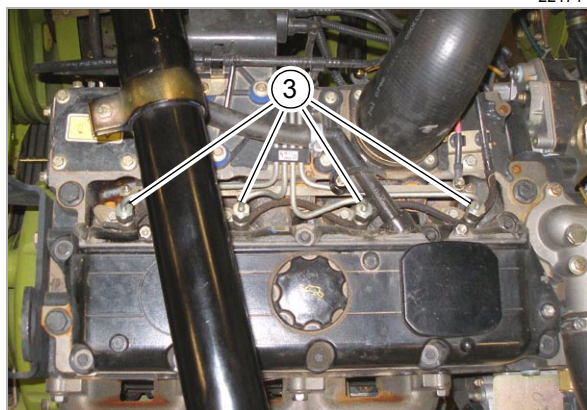
Have a break from the start procedure for two minutes.

- Repeat this process until the diesel engine starts running and the escaping fuel no longer contains bubbles.

- While the diesel engine is running, tighten the nuts (3).

Tightening torque = 30 Nm

- Allow the diesel engine to idle for five minutes.
- Inspect the diesel engine for leaks.
- Screw on the safety device (2).



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13.6.8 Draining the condensate from the water separator

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The water separator is accessible after the left side flap is opened.

Any water contained in the fuel is collected in the sight glass.

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Environment!

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.

- Fill fuel tank.



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- Hold a suitable container for the collected water in the sight glass (1) under the water separator.
- Loosen bolt (2).
Collect escaping liquid in a suitable container.

The collected water flows out of the sight glass.

- Tighten bolt (2).
- Bleed fuel system.

13.6.9 Replacing the fuel filter

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The fuel filter removes even the smallest particles of dirt from the fuel.

Refer to operator's manual from the engine manufacturer.

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Danger!

Fire hazard / explosion hazard from splashing of fuel on hot surfaces or parts of the electrical system.

Death or serious injuries!

- Avoid fire, naked flames, smoke and spark formation.
- Wipe up all fuel that has been dropped or splashed.



Warning!

Use of unauthorised spare parts.

Machine damage.

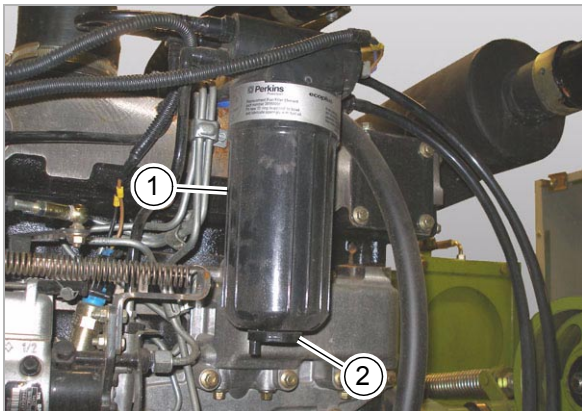
- Spare parts must at least comply with the technical standards required by the manufacturer of the implement!
- We recommend using genuine CLAAS spare parts.



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- Before unscrewing the fuel filter (1) clean the surroundings and the fuel filter (1).
- Place a suitable cover over all of the parts removed from the fuel system.
- Place a suitable container under the fuel filter (1).



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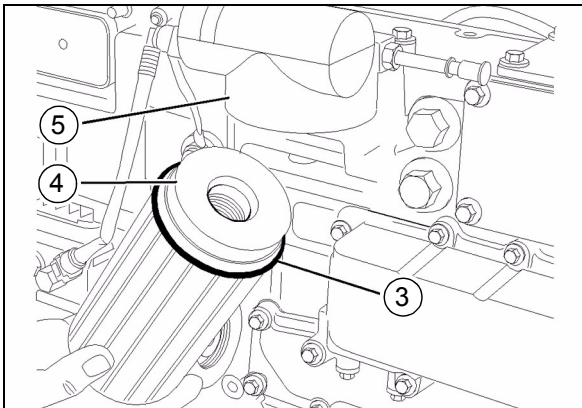
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- Open the valve (2) and wait until the fuel has run off.
- Remove the filter carrier (1) from the filter head (5).
- Press the filter element (4) and turn it in an anti-clockwise direction to detach it from the filter carrier (1).
- Dispose of the filter element (4).
- Remove the O-ring (3) from the filter carrier (1).
- Clean the filter carrier (1).
- Fit new O-ring (3) onto the filter carrier (1).
- Insert the new filter element (4) in the filter carrier (1).

Press the filter element (4) and turn in a clockwise direction to lock it in the filter carrier (1).

- Install the filter carrier (1) in the filter head (5). Tighten the filter head (1) by hand until it touches the filter head (5).

Then tighten the filter carrier (1) a further 1/4 turn by hand. Do not use a tool for this.



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Caution

Soiling of fuel system.

Machine damage.

- Make sure surroundings are clean.
- Use an appropriate and clean tool.
- Ensure that no dirt can enter the fuel system.

- Bleed fuel system.
- Start the diesel engine.
Let diesel engine run at min. no-load speed for about 10 seconds.
- Check tightness of fuel filter.

13.6.10 Checking the diesel engine oil level

Refer also to the operator's manual of the engine manufacturer!

- Park the machine on level ground.
- Observe the general warnings at the beginning of the "Maintenance" chapter.



Warning!

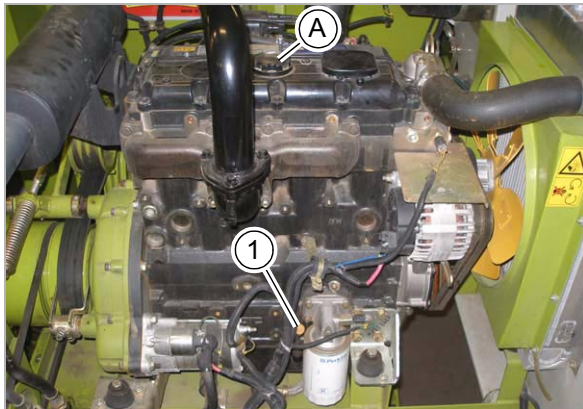
Machine operation with non-permitted or polluted lubricants.

Machine damage.

- Ensure a clean environment.
 - Use suitable and clean tools.
 - Use approved lubricants.
 - Lubricants must be free of pollutants.
-
- Stop the diesel engine.
 - Wait for about 5 minutes.
 - Read the oil level on the gauge rod (1).

The oil must not be higher than the FULL mark (maximum) and must not drop below the SAFE mark (minimum) on the oil dipstick.

- If necessary, refill with oil at (A).



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13.6.11 Changing the diesel engine oil / oil filter

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Refer also to the operator's manual of the engine manufacturer!



Warning!

Contact with hot liquids or machine parts.

Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.



Environment!

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.

Drain the engine oil immediately after switching off the engine with the engine still at operating temperature in order to flush dirt particles in the sump out with the draining oil.



Warning!

Use of unauthorised spare parts.

Machine damage.

- Spare parts must at least comply with the technical standards required by the manufacturer of the implement!
- We recommend using genuine CLAAS spare parts.

- Observe the general warnings at the beginning of the "Maintenance" chapter.



WARNING:

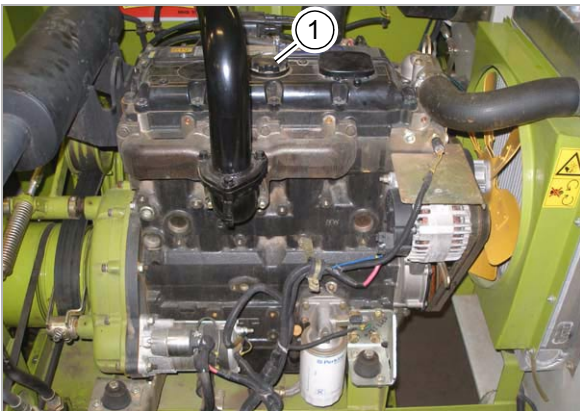
Operation of the machine with contaminated lubricants.

Machine damage.

- Make sure surroundings are clean.
- Make sure that no foreign matter enters the filter housing.
- Never wipe out the filter housing.

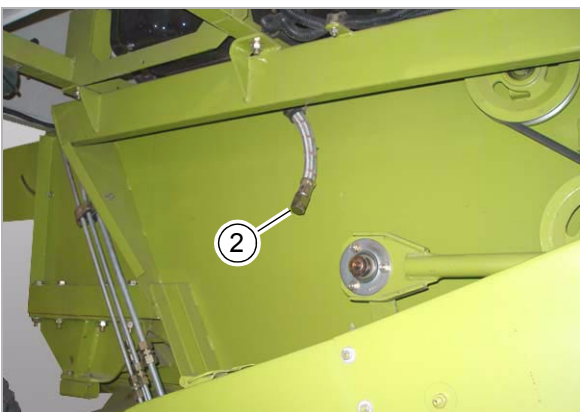
- Unscrew covers (1).

- Unscrew the screw plug (2).
- Collect the used oil in a sufficiently large container.



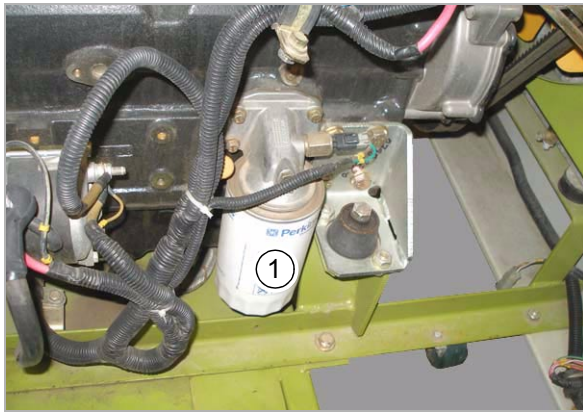
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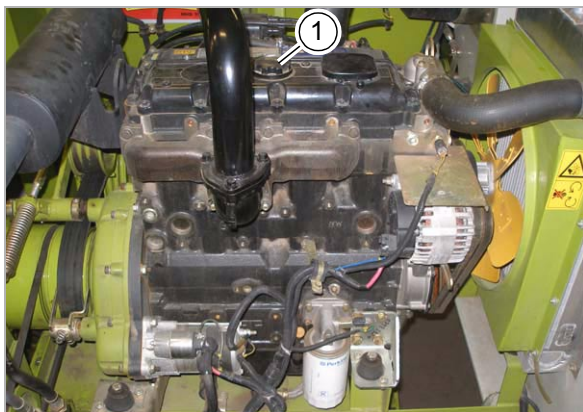
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- Detach the oil filter (1) with a strap wrench or a similar tool.
- Clean the inside of the filter head.
- Use a new oil filter (1).
- When screwing it back on, be careful that the seal is seated properly.
- Lubricate the seal on top of the new oil filter using clean engine oil.
- Fill the new oil filter (1) with new engine oil.
- Screw the oil filter (1) on by hand until it touches the filter head.

Then tighten the oil filter (1) a further $\frac{3}{4}$ turn by hand. Do not use a tool

- Top up oil at (1).
 - Check the oil level.
- Top up oil if required.



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**Warning!**

Machine operation with non-permitted or polluted lubricants.

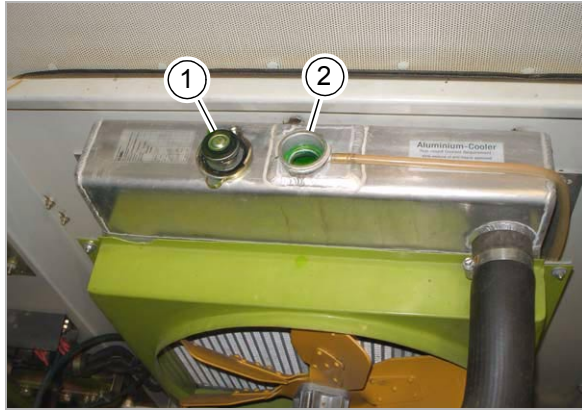
Machine damage.

- Ensure a clean environment.
- Use suitable and clean tools.
- Use approved lubricants.
- Lubricants must be free of pollutants.

- Bolt on cover (1).
 - Start the diesel engine.
- Let diesel engine run at min. no-load speed for about 10 seconds.
- Check the oil level.
- Top up oil if required.

13.6.12 Adjusting the diesel engine valves

Refer to engine manufacturer's operator's manual!



22015

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13.6.13 Checking the radiator coolant level

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Let diesel engine cool down.
- Ensure that the cooling system drain tap is closed.



Warning!

Contact with hot liquids or machine parts.

Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.

- Unscrew cover (1).



Caution!

Temperature difference between coolant and diesel engine.

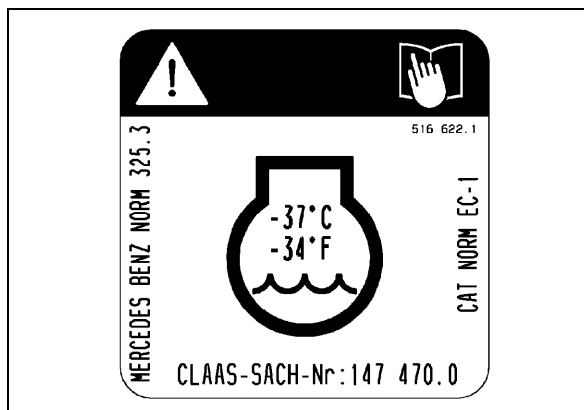
Machine damage

- Let diesel engine cool down.
- Do not fill cold coolant into the engine when at operating temperature.

- Check the level of the coolant in the connecting piece (2).

The container is filled sufficiently when the cooling fins are covered with coolant.

- Bolt on cover (1).
- Start the diesel engine and let it run at slow idle speed.
- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Stop the diesel engine.
- Let diesel engine cool down.
- Check the coolant level again top up if necessary.



4033

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13.6.14 Checking the coolant mixing ratio



Warning!

Soiling of liquids / lubricants.

Machine damage

- Use clean, low-lime and low-chlorine water.
- Use clean containers.

The cooling system of the machine is filled with a corrosion protection/anti-freeze agent and water, in order to prevent damage due to corrosion or frost.

The coolant consists of 50 % corrosion protection/anti-freeze agent and 50 % water.

The anti-freeze protection is guaranteed to approx. - 37 °C.

Use without corrosion protection/anti-freeze agent is not permitted.

62703

13.6.15 Changing the radiator coolant

- Drain the radiator coolant.
- Pouring in the radiator coolant

64503

13.6.16 Draining coolant from the water radiator

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Warning!

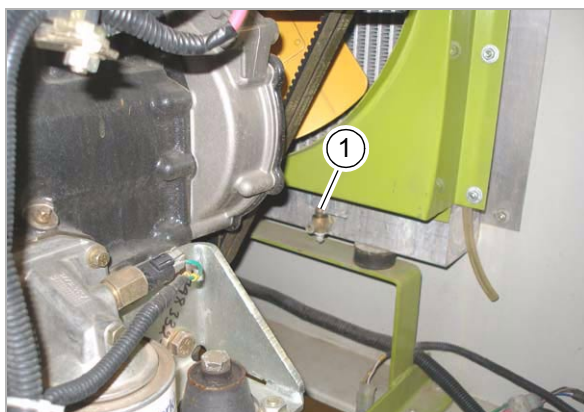
Contact with hot liquids or machine parts.

Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.

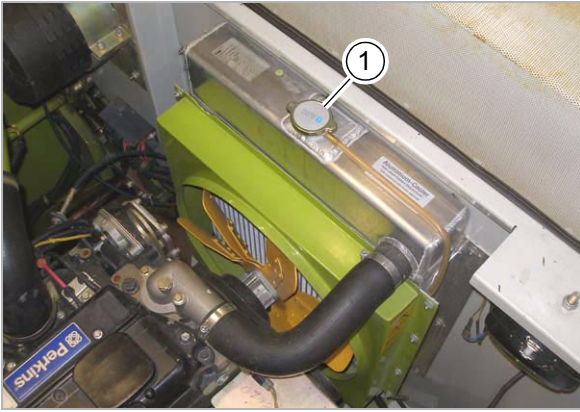
- Let diesel engine cool down.
- Put a suitable hose onto the drain cock (1). Place the end of the hose into a container.
- Open the drain cock (1) carefully.

The pressure in the system is discharged and the coolant runs out.



22022

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- Slacken off cover (1) to the stop and relieve the excess pressure.
- Unscrew cover (1).

Any possible vacuum in the system is relieved, the remaining coolant flows out of the drain tap.

- Bolt on cover (1).
- Close drain tap.

13.6.17 Topping up coolant

64504

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Caution

Mixing coolants changes their properties.
The coolant can flocculate. Engine overheating.

- Only fill with coolant according to the lubricants chart.

- Let diesel engine cool down.
- Ensure that the cooling system drain tap is closed.
- Adhere to the coolant mixing ratio.



Warning!

Contact with hot liquids or machine parts.
Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.

- Unscrew cover (1).



Caution!

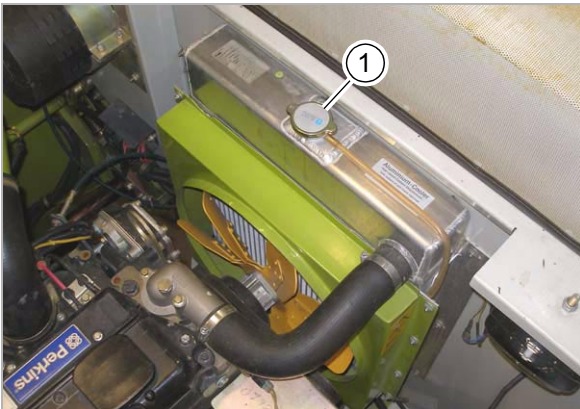
Temperature difference between coolant and diesel engine.

Machine damage

- Let diesel engine cool down.
- Do not fill cold coolant into the engine when at operating temperature.

- Fill in coolant at nozzle at (1).

The container is filled sufficiently when the cooling fins are covered with coolant.



22023

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- Bolt on cover (1).
- Start the diesel engine and let it run at slow idle speed.
- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Stop the diesel engine.
- Let diesel engine cool down.
- Check coolant level one more time and top up if necessary.

13.6.18 Cleaning the rotary chaff screen

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- In case of severe dust, regularly check the rotary chaff screen and clean only when the diesel engine is stopped.



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22473

13.6.19 Cleaning the cooling unit

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Let diesel engine cool down.

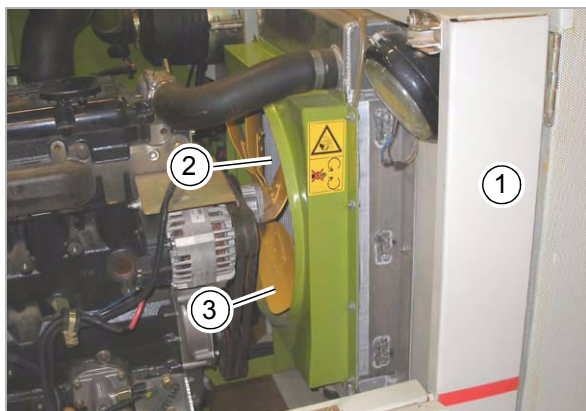


Warning!

Contact with hot liquids or machine parts.

Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.



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22474



33

22473

- Fold open the rotary chaff screen (1).
- Clean the radiator (2) with compressed air.
Do not damage the fins on the cooling unit.
- Check the rotor (3) for smooth running, and replace bearings if necessary.
- Snap shut the rotary chaff screen (1).
- Secure the rotary chaff screen (1) using the latch.

13.6.20 Changing the coolant hoses

38808

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Warning!

Contact with hot liquids or machine parts.

Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.



Caution!

Improperly performed work on the machine or the front attachment can lead to malfunctioning.

Risk of machine damage

- Have adjustment and repairs performed only by an authorised specialist workshop.

- Drain coolant.
- Remove all coolant hoses and install new coolant hoses.
- Top up with coolant.

13.6.21 Cleaning/changing the air filter in the diesel engine

**WARNING:**

Machine operation with soiled or damaged air filter.

Engine damage.

- Replace air filter immediately when a corresponding warning appears in the display of the onboard information system.
- Replace damaged air filters immediately.

**Note!**

Uneconomic use of machine.

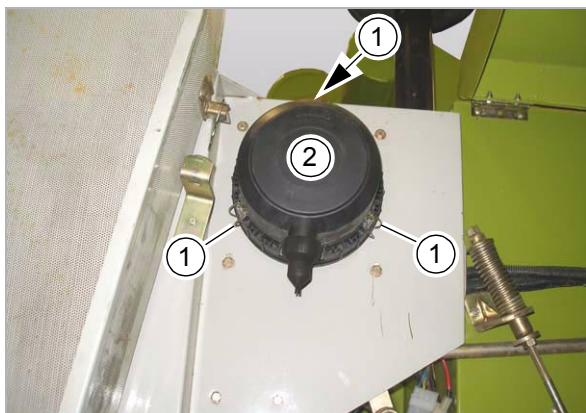
Increased fuel consumption.

- Replace air filter immediately when a corresponding warning appears in the display of the onboard information system.

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Unlock and fold open the side flap (1) at the lock (2).



22047

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22048

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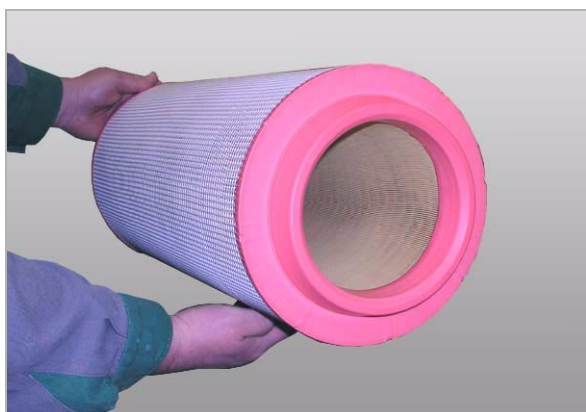
- Loosen the clips (1).
- Remove cover (2).



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- Carefully pull out cartridge (1) using slight rotating movements.
- Clean the filter housing thoroughly.



13825

37

- Clean component with compressed air of 5 bar max. from inside to outside.

During fieldwork, the cartridge can also be cleaned by gently tapping it on the palm of your hand, even provisionally for the time being.

Never tap hard against or compress the main cartridge as this will result in deformation and consequently leaks at the filter seat!



22049

38



Warning!

Use of unauthorised spare parts.

Machine damage.

- Spare parts must at least comply with the technical standards required by the manufacturer of the implement!
- We recommend using genuine CLAAS spare parts.

- Check cartridge (1) for external and internal damage and replace if necessary.
- Insert cartridge (1) in the housing.
- Refit the cover and close it tightly.

Ensure a tight and firm seating!

13.6.22 Replacing the diesel engine air filter safety filter cartridge

**WARNING:**

Machine operation with soiled or damaged air filter.

Engine damage.

- Replace air filter immediately when a corresponding warning appears in the display of the onboard information system.
- Replace damaged air filters immediately.

**Note!**

Uneconomic use of machine.

Increased fuel consumption.

- Replace air filter immediately when a corresponding warning appears in the display of the onboard information system.

Safety cartridges must not be cleaned and reused!

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Clean/change the air filter in the diesel engine.
- Carefully pull out cartridge (1) using slight rotating movements.

**39**

22050

**Warning!**

Use of unauthorised spare parts.

Machine damage.

- Spare parts must at least comply with the technical standards required by the manufacturer of the implement!
- We recommend using genuine CLAAS spare parts.
- Fit **new** cartridge.
- Reinstall air cleaner.

13.6.23 Cleaning the air filter intake screen of the diesel engine

When the engine is running, air is suctioned through the sieve. Coarse dust and dirt particles remain outside at the sieve.



WARNING:

Machine operation with soiled or damaged air filter.

Engine damage.

- Replace air filter immediately when a corresponding warning appears in the display of the onboard information system.
- Replace damaged air filters immediately.

- Observe the general warnings at the beginning of the "Maintenance" chapter.



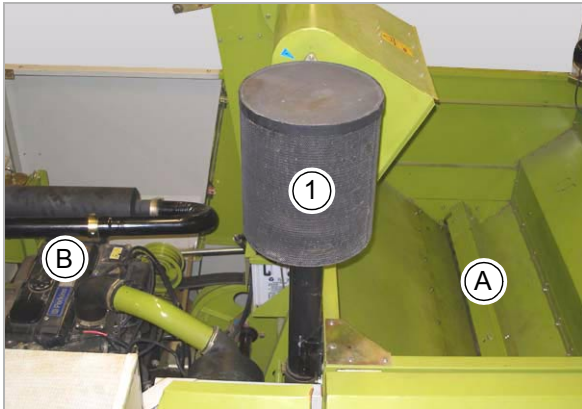
Danger!

Danger of falling! Do not enter in the areas (A) and (B)

Death or serious injuries!

- Maintenance and cleaning must be carried out from outside the vehicle.

- Check and clean the screen (1).



22053

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13.6.24 Changing the air intake hoses

38812

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Caution!

Improperly performed work on the machine or the front attachment can lead to malfunctioning.

Risk of machine damage

- Have adjustment and repairs performed only by an authorised specialist workshop.

- Remove all air intake hoses and install new air intake hoses.

Tightening torque for hose clamp with round pin, with spring = 10 Nm

Tightening torque for hose clamp with worm thread = 7 Nm

13.6.25 Retightening the air intake tube clamps

- Observe the general warnings at the beginning of the "Maintenance" chapter.

**Caution!**

Improperly performed work on the machine or the front attachment can lead to malfunctioning.

Risk of machine damage

- Have adjustment and repairs performed only by an authorised specialist workshop.

- Retighten clamps at both ends of the air intake hoses.
- Replace damaged or porous hoses.

Tightening torque for hose clamp with round pin, with spring = 10 Nm

Tightening torque for hose clamp with worm thread = 7 Nm

13.7 Chassis

13.7.1 Checking the wheel nuts tightening torque

- Tighten all of the wheel nuts (1) on all of the wheels of the machine using a torque wrench.



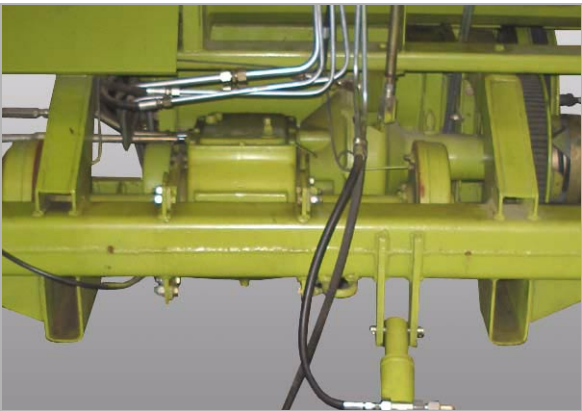
41

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Wheel tightening torque		
Wheel nut drive axle	M 18 x 1.5	325 Nm
Wheel nut steering axle	M 14 x 1.5	135 Nm

13.7.2 Cleaning the surroundings of the drive axle manual gearbox

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Clean surroundings of gearbox on the machine.



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22066

13.7.3 Checking the axle drive oil level

- Park the machine on level ground.
- Observe the general warnings at the beginning of the "Maintenance" chapter.

**Warning!**

Machine operation with non-permitted or polluted lubricants.

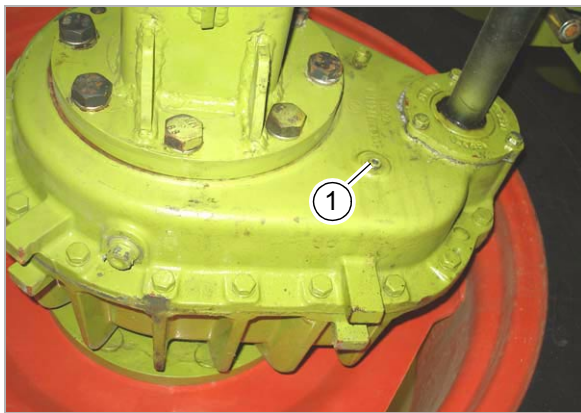
Machine damage.

- Ensure a clean environment.
- Use suitable and clean tools.
- Use approved lubricants.
- Lubricants must be free of pollutants.

- Turn out screw (1).

The oil level must be at the level of the bore at bolt (1).

- Top up oil if necessary.
- Turn in screw (1).

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22067

13.7.4 Draining the axle drive oil

64620

- Park the machine on level ground.
- Observe the general warnings at the beginning of the "Maintenance" chapter.

**Warning!**

Contact with hot liquids or machine parts.

Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.

**Environment!**

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.



22068

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- Remove screw (1).
- Collect the used oil in a sufficiently large container.
- Turn in screw (1).

13.7.5 Topping up the axle drive oil

64622

- Park the machine on level ground.
- Observe the general warnings at the beginning of the "Maintenance" chapter.



Environment!

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.



Warning!

Use of unauthorised spare parts.

Machine damage.

- Spare parts must at least comply with the technical standards required by the manufacturer of the implement!
- We recommend using genuine CLAAS spare parts.

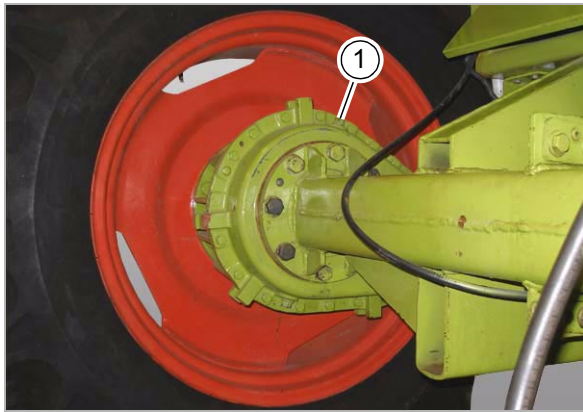


Warning!

Machine operation with non-permitted or polluted lubricants.

Machine damage.

- Ensure a clean environment.
- Use suitable and clean tools.
- Use approved lubricants.
- Lubricants must be free of pollutants.



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22068

- Remove screw (1).
- Fill in new oil.
- Check oil level and top up if necessary.
- Clean screw (1).
- Turn in screw (1).

13.7.6 Checking the drive axle gearbox oil level

64625

- Park the machine on level ground.
- Observe the general warnings at the beginning of the "Maintenance" chapter.



Warning!

Machine operation with non-permitted or polluted lubricants.

Machine damage.

- Ensure a clean environment.
- Use suitable and clean tools.
- Use approved lubricants.
- Lubricants must be free of pollutants.

- Turn out screw (1).

The oil level must be at the level of the bore at bolt (1).

- Top up oil if necessary.
- Turn in screw (1).



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13.7.7 Draining the oil from the drive axle gearbox

- Park the machine on level ground.
- Observe the general warnings at the beginning of the "Maintenance" chapter.



Warning!

Contact with hot liquids or machine parts.

Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.



Environment!

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.



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22069

- Remove screw (1).
- Collect the used oil in a sufficiently large container.
- Turn in screw (1).

13.7.8 Topping up oil in the drive axle gearbox

- Park the machine on level ground.
- Observe the general warnings at the beginning of the "Maintenance" chapter.



Environment!

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.



Warning!

Use of unauthorised spare parts.

Machine damage.

- Spare parts must at least comply with the technical standards required by the manufacturer of the implement!
- We recommend using genuine CLAAS spare parts.

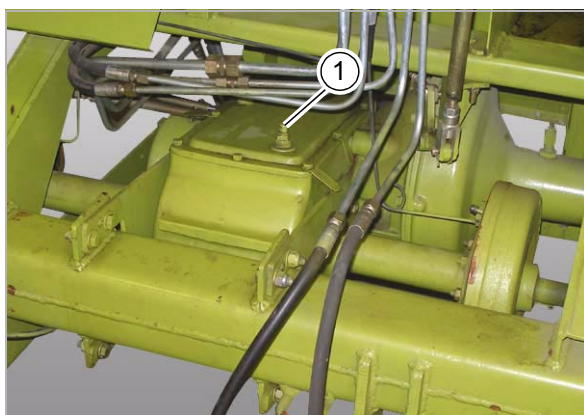


Warning!

Machine operation with non-permitted or polluted lubricants.

Machine damage.

- Ensure a clean environment.
 - Use suitable and clean tools.
 - Use approved lubricants.
 - Lubricants must be free of pollutants.
-
- Remove screw (1).
 - Fill in new oil.
 - Check oil level and top up if necessary.
 - Clean screw (1).
 - Turn in screw (1).



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13.8 Brake

64884

13.8.1 Checking the brake fluid level and topping up



Warning!

Incorrect handling of brake liquid.

Medium-grade injuries.

- Observe the instructions on handling of brake fluid on the container.
- Wear safety gloves.
- Collect brake fluid in a suitable container.
- Dispose of used brake fluid in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.



Danger!

Insufficient brake system maintenance.

Death or serious injury.

- Check the brake system thoroughly at regular intervals.
- Adjustment, repairs and service work on the brake system may be performed only by authorised specialist workshops.
- Check the level of the brake fluid at regular intervals.

Only use the specified type of brake fluid and change the brake fluid at the recommended intervals.

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Open the lid (1).
- Top up brake fluid up to the specified mark.
- Close the lid (1).



Danger!

Machine loses brake fluid.

Death or serious injuries!

- In case of loss of brake fluid, there is a leak in the brake system.
- Have the brake system inspected by an authorised workshop.



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21637

13.8.2 Adjusting the parking brake

- Observe the general warnings at the beginning of the "Maintenance" chapter.

**Danger!**

Improperly adjusted brake system.

Death or serious injuries!

- Adjustment, repairs and service work on the brake system may be performed only by authorised specialist workshops.
- Comply with instructions.



21637

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Check the adjustment of the parking brake (1).

The parking brake is correctly adjusted if the brake takes effect after the first 3 to 4 teeth are actuated.

- **Ensure** that the ratchet still engages securely in the segment even after prolonged use of the machine.
- If required, adjust parking brake.
- If necessary, change segment.

13.9 Drive belts / drive chains

13.9.1 General warnings

In the following sections of this chapter, the general warnings below are referred to by means of instructions.



Danger!

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.



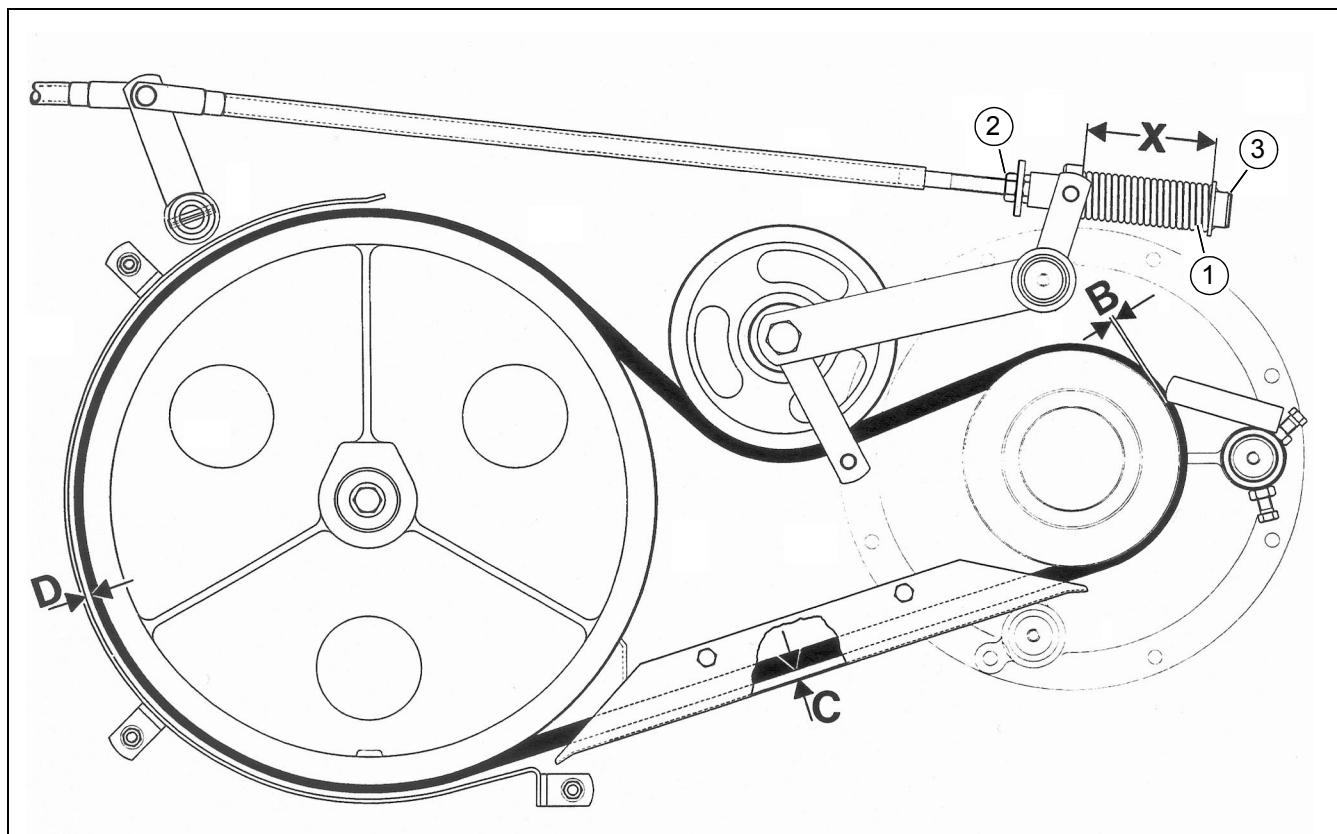
Danger!

Machine components may run on although the drive has been shut down.

Death or serious injury.

- Never touch any machine parts that are running on.
- Wait until all machine parts have stopped moving.

13.9.2 Adjusting the main drive



22253

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- Observe the general warnings at the beginning of the chapter.

**Warning!**

Pinch points during assembly work.
Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Adjust the spring-loaded cylinder (1):
 - Loosen nut (2).
 - Turn the cylinder barrel (3) until the dimension (X) has been set.

Dimension (X) = 150 mm

- Tighten nut (2).

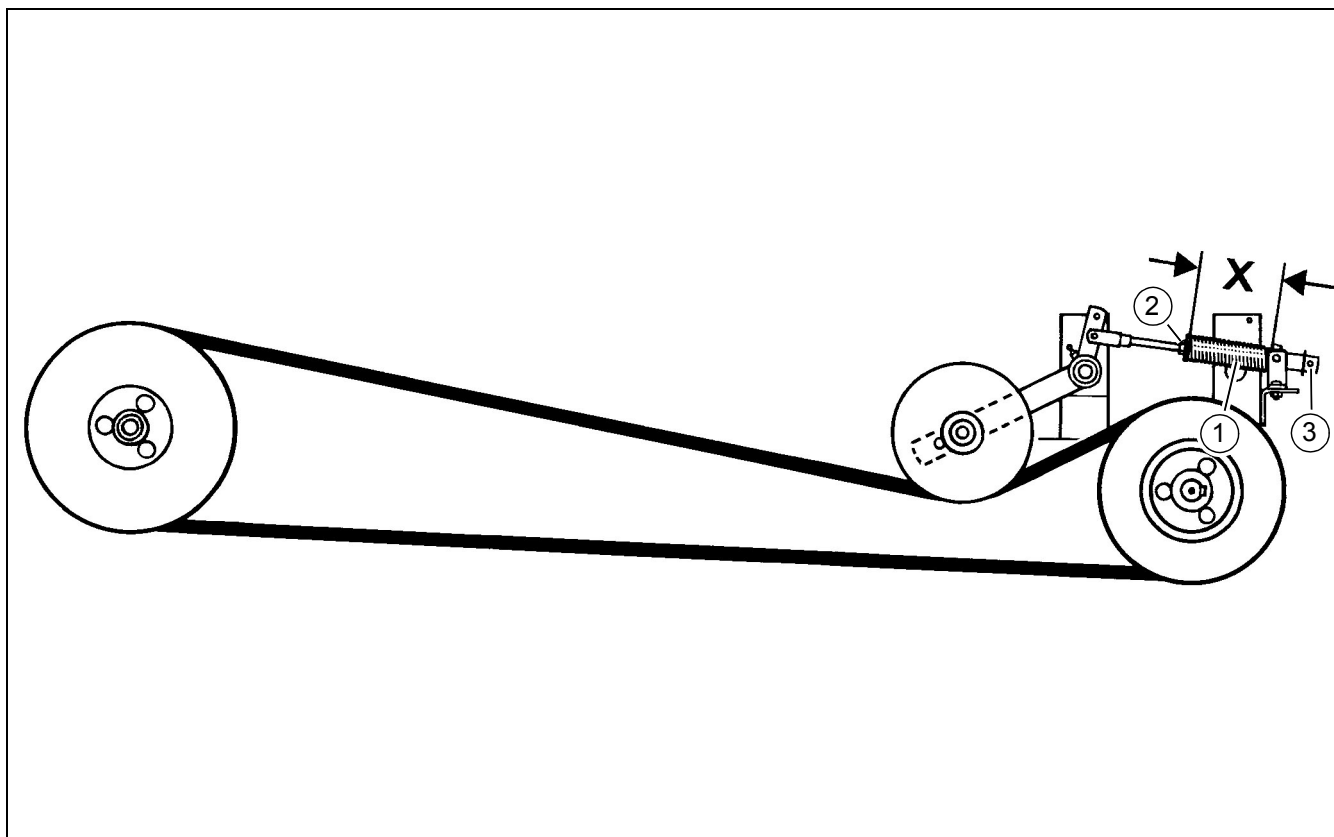
To avoid increased belt wear, you must adjust the belt guide.

- Press the jockey pulley firmly against the belt.
- With the belt tensioned, set the dimensions (B), (C), and (D) between the belt back and the belt guide.

Dimension (B) = 2 mm**Dimension (C) = 10 mm****Dimension (D) = 5 mm**

- Tighten all the bolts.
- Carry out a test run and check belt tension.

13.9.3 Adjusting the threshing drum drive



22255

52

- Observe the general warnings at the beginning of the chapter.



Warning!

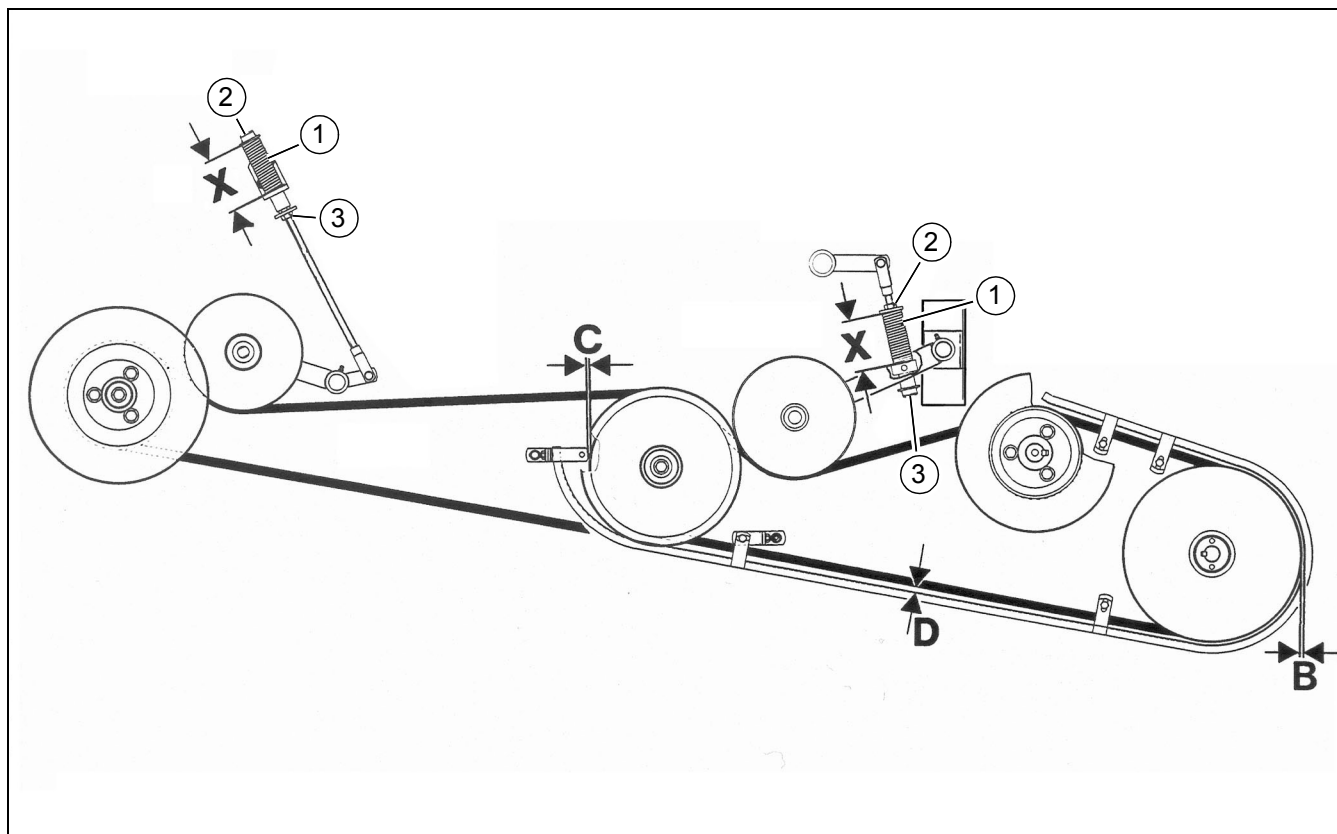
Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Adjust the spring-loaded cylinder (1):
 - Loosen nut (2).
 - Turn the cylinder barrel (3) until the dimension (X) has been set.
Dimension (X) = 135 mm
 - Tighten nut (2).
- Carry out a test run and check belt tension.

13.9.4 Adjusting the front attachment drive



22256

53

- Observe the general warnings at the beginning of the chapter.

**Warning!**

Pinch points during assembly work.
Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Adjust the spring-loaded cylinder (1):
 - Loosen nut (2).
 - Turn the cylinder barrel (3) until the dimension (X) has been set.

Dimension (X) = 100 mm

- Tighten nut (2).

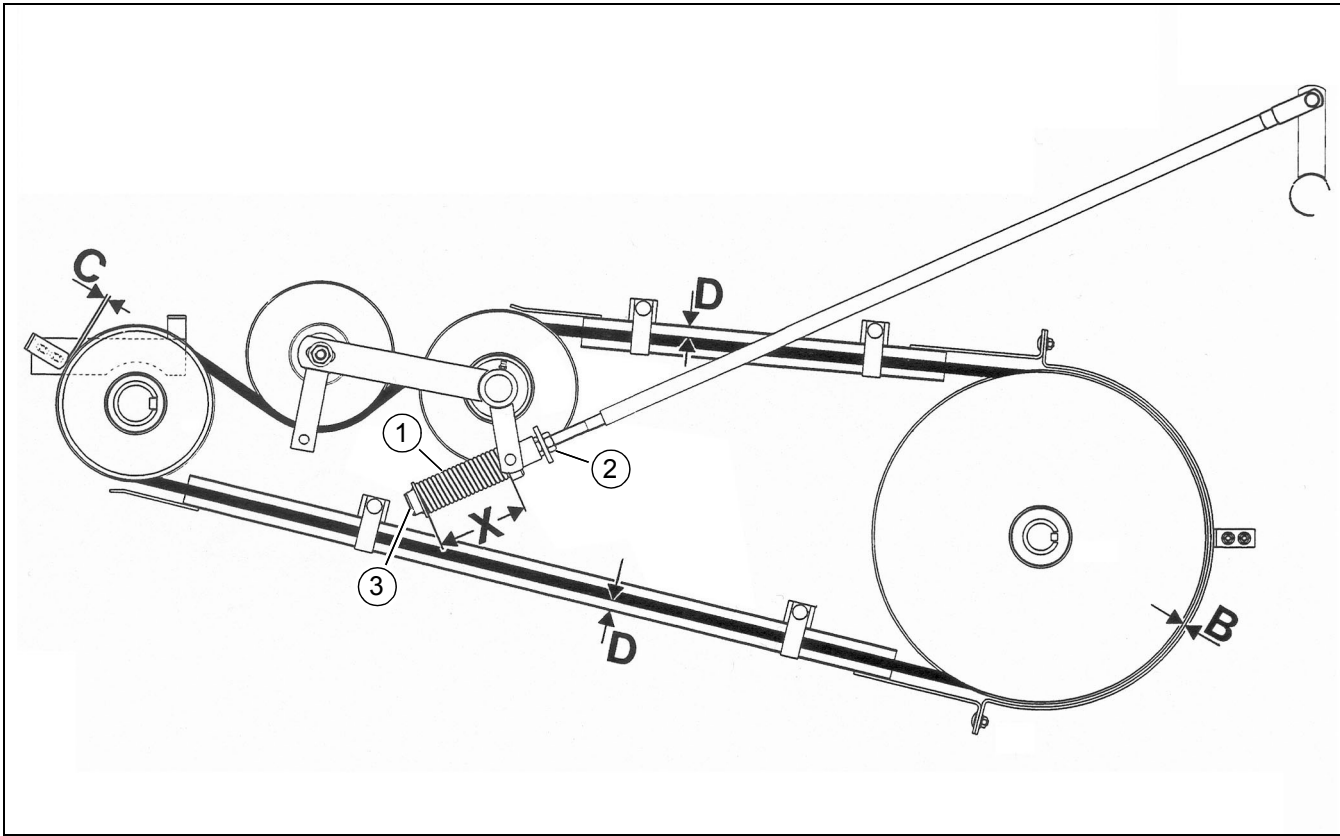
To avoid increased belt wear, you must adjust the belt guide.

- Press the jockey pulley firmly against the belt.
- With the belt tensioned, set the dimensions (B), (C), and (D) between the belt back and the belt guide.

Dimension (B) = 5 mm**Dimension (C) = 2 mm****Dimension (D) = 10 mm**

- Tighten all the bolts.
- Carry out a test run and check belt tension.

13.9.5 Adjusting the grain tank unloading drive



22257

54

- Observe the general warnings at the beginning of the chapter.



Warning!

Pinch points during assembly work.
Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Adjust the spring-loaded cylinder (1):
 - Loosen nut (2).
 - Turn the cylinder barrel (3) until the dimension (X) has been set.
Dimension (X) = 100 mm
 - Tighten nut (2).

To avoid increased belt wear, you must adjust the belt guide.

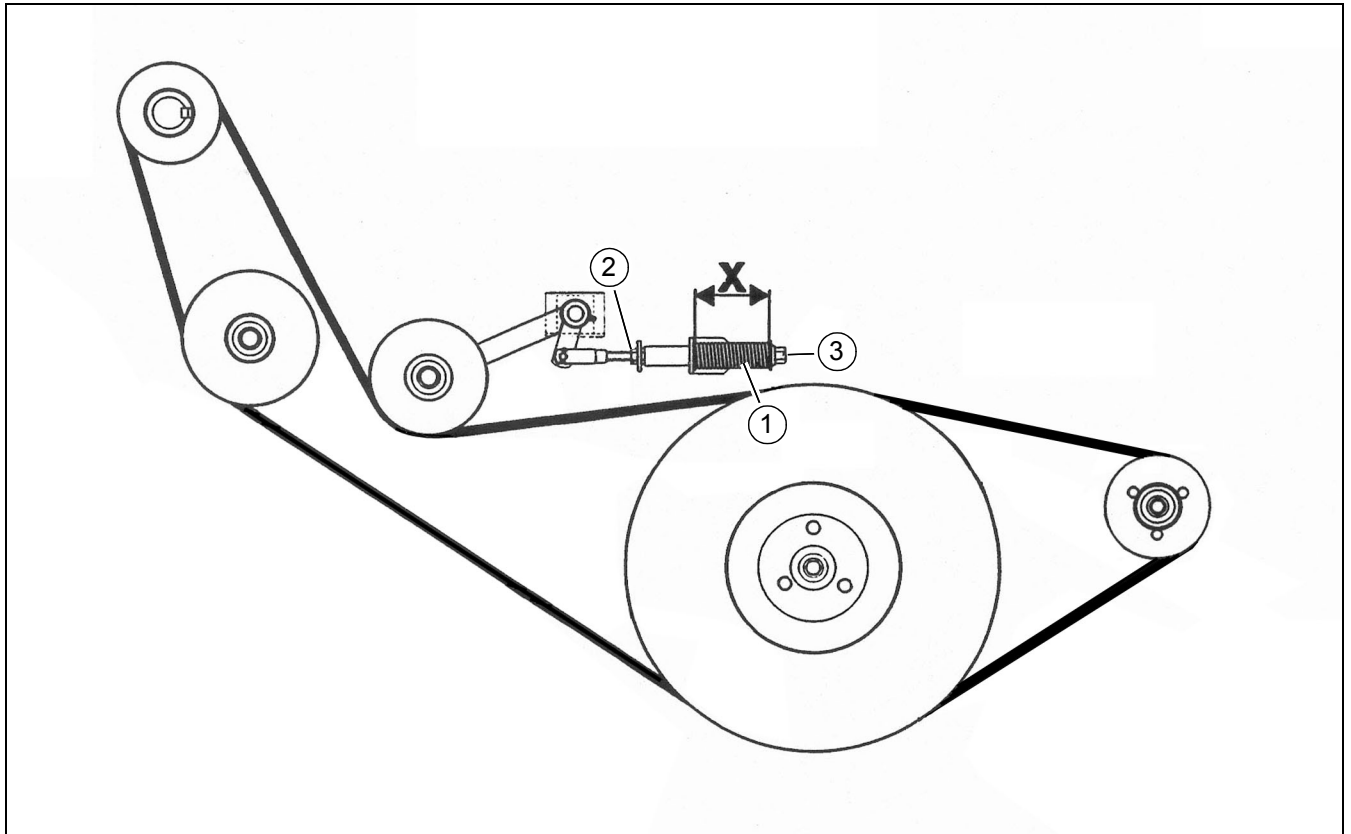
- Press the jockey pulley firmly against the belt.
- With the belt tensioned, set the dimensions (B), (C), and (D) between the belt back and the belt guide.

Dimension (B) = 3 mm

Dimension (C) = 2 mm

Dimension (D) = 10 mm

- Tighten all the bolts.
- Carry out a test run and check belt tension.

13.9.6 Adjusting the sieve pan drive22258 **55**

- Observe the general warnings at the beginning of the chapter.

**Warning!**

Pinch points during assembly work.

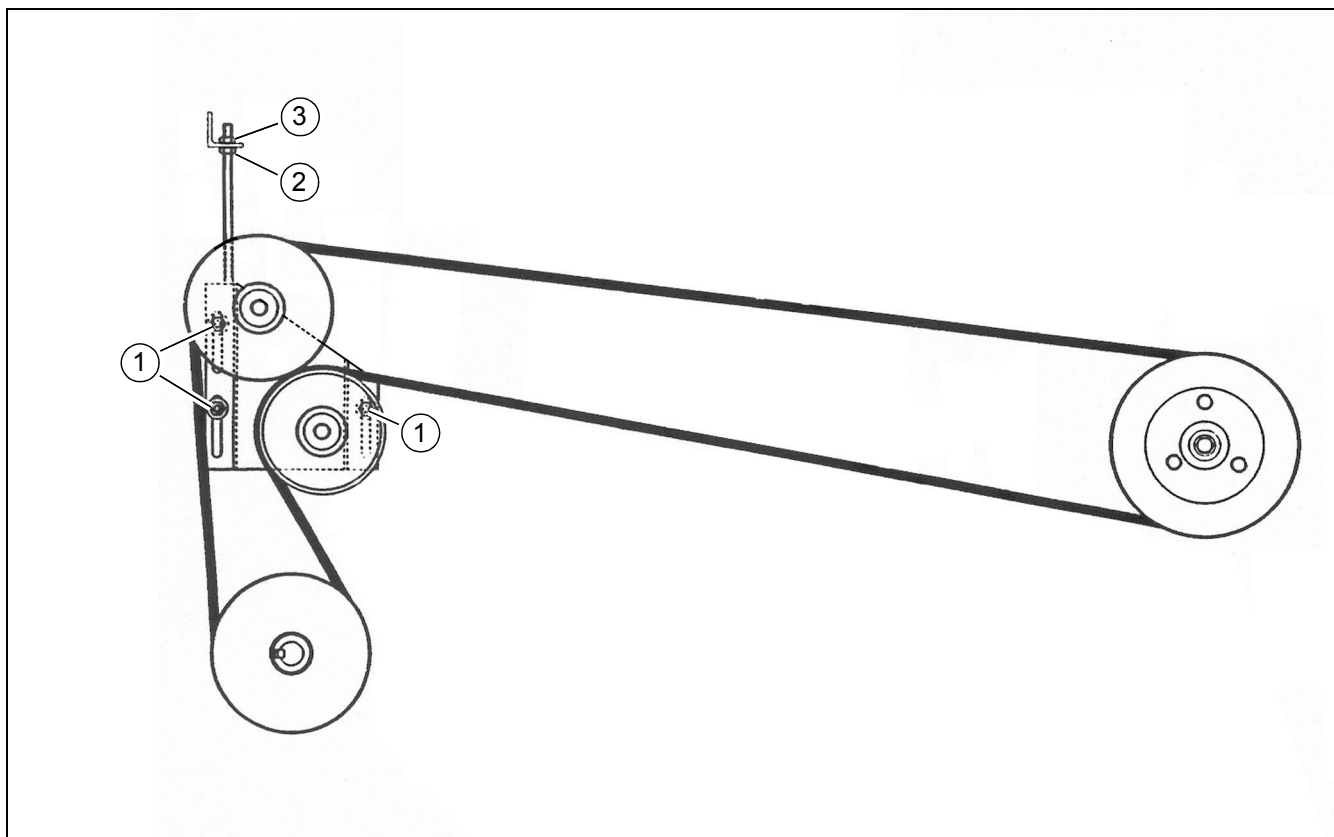
Bruises of limbs.

- Keep limbs out of the hazard area.
 - Use suitable tools.
- Adjust the spring-loaded cylinder (1):
 - Loosen nut (2).
 - Turn the cylinder barrel (3) until the dimension (X) has been set.

Dimension (X) = 100 mm

- Tighten nut (2).
- Carry out a test run and check belt tension.

13.9.7 Adjusting the grain elevator drive



22259

56

- Observe the general warnings at the beginning of the chapter.



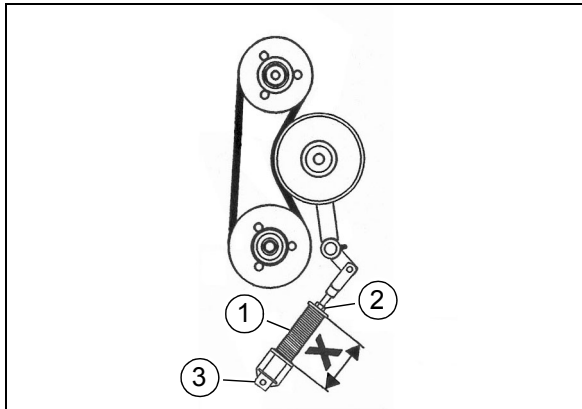
Warning!

Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Loosen nuts (1).
- Turn nuts (2) and (3) until the belt is tensioned.
- Lock nuts (2) and (3).
- Tighten nuts (1).



22260

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13.9.8 Adjusting the fan drive

- Observe the general warnings at the beginning of the chapter.

**Warning!**

Pinch points during assembly work.

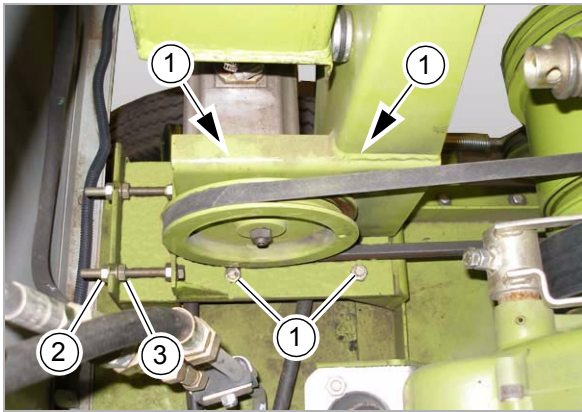
Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Adjust the spring-loaded cylinder (1):
 - Loosen nut (2).
 - Turn the cylinder barrel (3) until the dimension (X) has been set.
Dimension (X) = 100 mm
 - Tighten nut (2).
- Carry out a test run and check belt tension.

13.9.9 Adjusting the hydraulic pump drive

- Observe the general warnings at the beginning of the chapter.
- Slightly loosen the bolts (1).
- Loosen and then turn the nuts (2) and (3) until the belt is tensioned.
- Lock nuts (2) and (3).
- Bolt down bolts (1).
- Carry out a test run and check belt tension.



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13.9.10 Adjusting the 1st gear of ground drive

- Observe the general warnings at the beginning of the chapter.
- Slacken off bolt (1).
- Slide the jockey pulley until the belt is tensioned.
- Tighten the clamping screw of the jockey pulley (1).
- **Tightening torque = 130 Nm**



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24193

13.9.11 Adjusting the 2nd gear of ground drive

- Observe the general warnings at the beginning of the chapter.

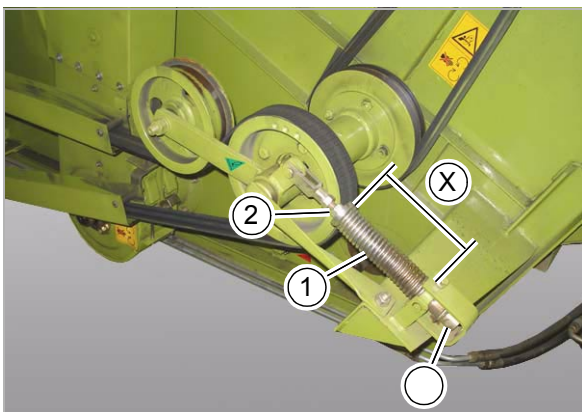


Warning!

Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.



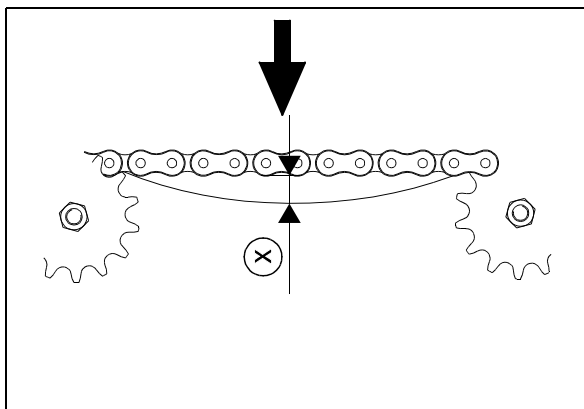
60

24197

- Adjust the spring-loaded cylinder (1):
 - Loosen nut (2).
 - Turn the cylinder barrel (3) until the dimension (X) has been set.
 - **Dimension (X) = 135 mm**
 - Tighten nut (2).
- Carry out a test run and check belt tension.

13.9.12 Chain on the knife drive: adjust

- Observe the general warnings at the beginning of the "Maintenance" chapter.



857

**Warning!**

Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Check the chain tension with thumb pressure in the middle of the slack span.

The dimension (X) must be 2 % of the distance between sprocket axles, under reduced loading of the tight span.

61

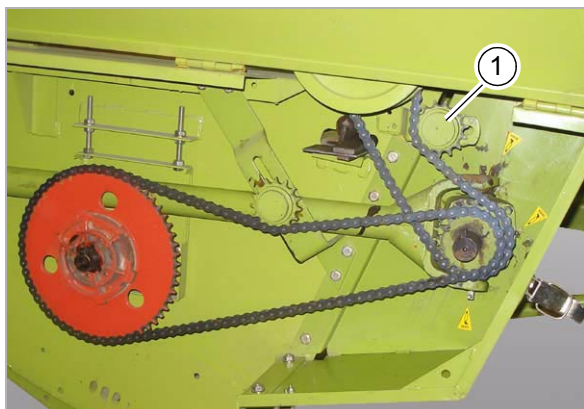
Example:

measured distance between axles 200 mm

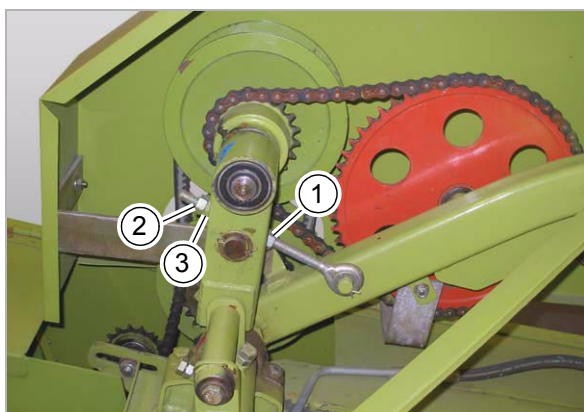
200 mm: 100 (%) x 2 (%) = 4 mm

Dimension (X) = 4 mm

- Loosen the chain tension wheel (1).
- Tension and tighten the chain using the chain tension wheel (1).



22419

62

22420

63

- Loosen nuts (1) and (2).
- Tension the chain with the nut (3).
- Tighten the nuts (1) and (2).

13.9.13 Tensioning intake auger drive chain

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Warning!

Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Check the chain tension with thumb pressure in the middle of the slack span.

The dimension (X) must be 2 % of the distance between sprocket axles, under reduced loading of the tight span.

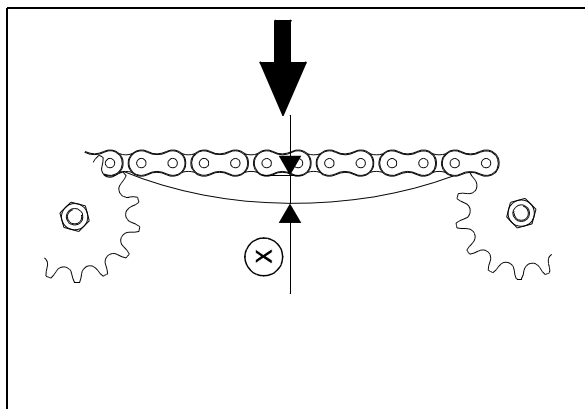
Example:

measured distance between axles 200 mm

200 mm: 100 (%) x 2 (%) = 4 mm

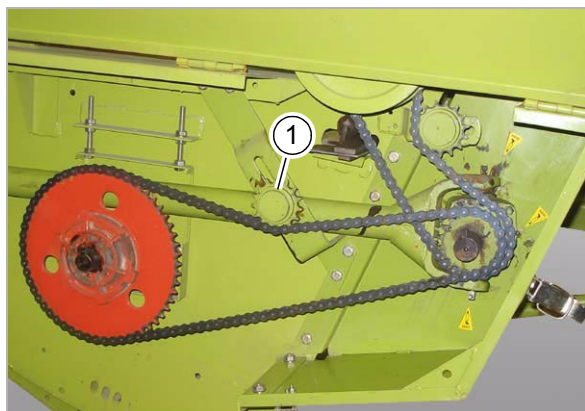
Dimension (X) = 4 mm

- Loosen the chain tension wheel (1).
- Tension and tighten the chain using the chain tension wheel (1).



857

64

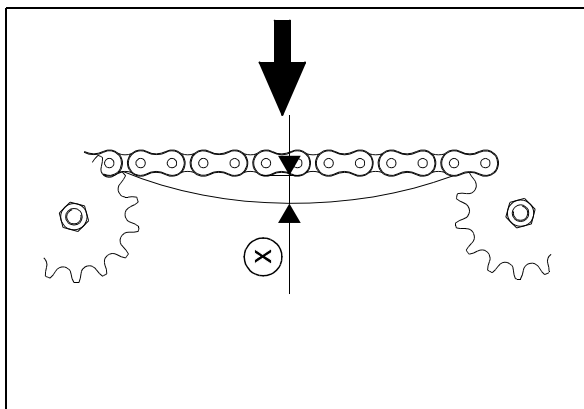


22419

65

13.9.14 Adjusting the reel drive chain

- Observe the general warnings at the beginning of the "Maintenance" chapter.



857

66**Warning!**

Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Check the chain tension with thumb pressure in the middle of the slack span.

The dimension (X) must be 2 % of the distance between sprocket axles, under reduced loading of the tight span.

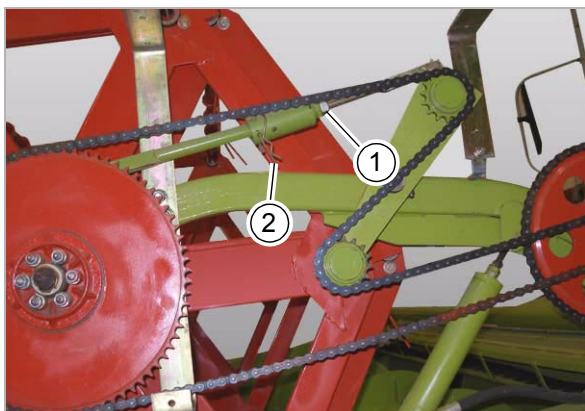
Example:

measured distance between axles 200 mm

200 mm: 100 (%) x 2 (%) = 4 mm

Dimension (X) = 4 mm

- Slacken off nut (1).
- Reposition the spring clip (2) in another position.
- Tighten nut (1).



22426

67

13.9.15 Adjusting the grain elevator drive chain

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Warning!

Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Check the chain tension with thumb pressure in the middle of the slack span.

The dimension (X) must be 2 % of the distance between sprocket axles, under reduced loading of the tight span.

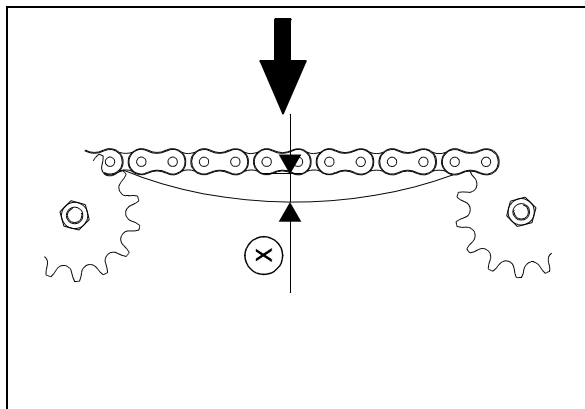
Example:

measured distance between axles 200 mm

200 mm: 100 (%) x 2 (%) = 4 mm

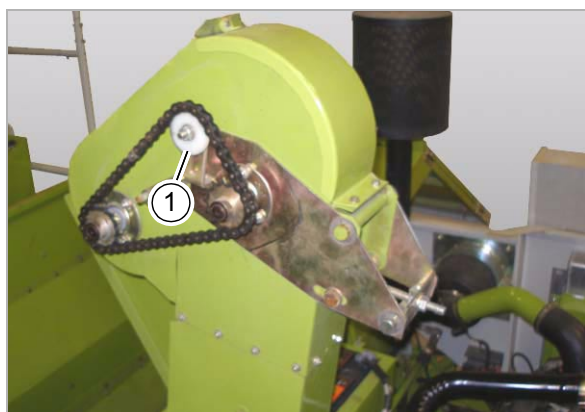
Dimension (X) = 4 mm

- Loosen the block tensioner (1).
- Tension the chain using the block tensioner (1).
- Turn the block tensioner (1) further in the event of one-sided wear.



857

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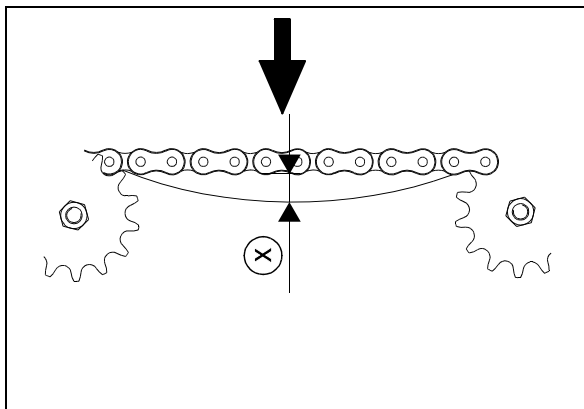


22403

69

13.9.16 Adjusting the returns elevator drive chain

- Observe the general warnings at the beginning of the "Maintenance" chapter.



857

**Warning!**

Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Check the chain tension with thumb pressure in the middle of the slack span.

The dimension (X) must be 2 % of the distance between sprocket axles, under reduced loading of the tight span.

70

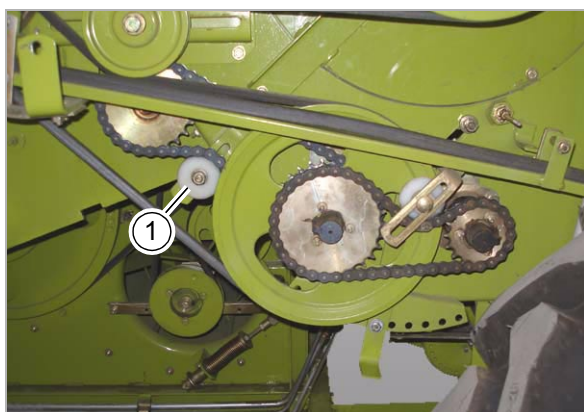
Example:

measured distance between axes 200 mm

200 mm: 100 (%) x 2 (%) = 4 mm

Dimension (X) = 4 mm

- Loosen the block tensioner (1).
- Tension the chain using the block tensioner (1).
- Turn the block tensioner (1) further in the event of one-sided wear.



22384

71

13.9.17 Adjusting the collecting auger drive chain

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Warning!

Pinch points during assembly work.

Bruises of limbs.

- Keep limbs out of the hazard area.
- Use suitable tools.

- Check the chain tension with thumb pressure in the middle of the slack span.

The dimension (X) must be 2 % of the distance between sprocket axles, under reduced loading of the tight span.

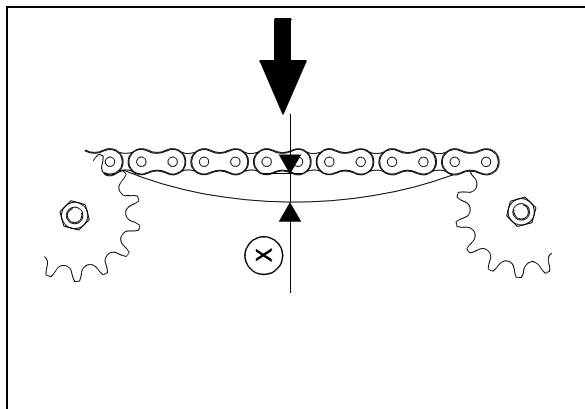
Example:

measured distance between axles 200 mm

200 mm: 100 (%) x 2 (%) = 4 mm

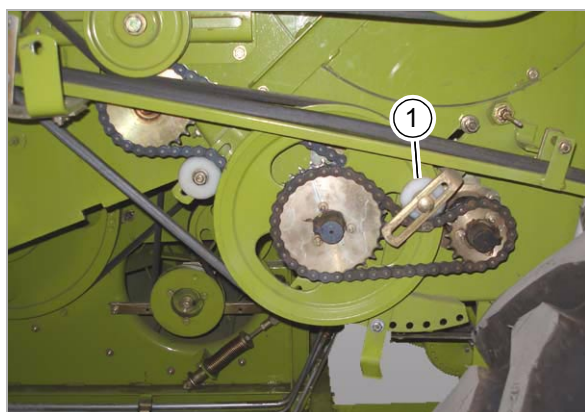
Dimension (X) = 4 mm

- Loosen the block tensioner (1).
- Tension the chain using the block tensioner (1).
- Turn the block tensioner (1) further in the event of one-sided wear.



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22384

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13.10 Hydraulic system

13.10.1 Relieving the accumulator pressure

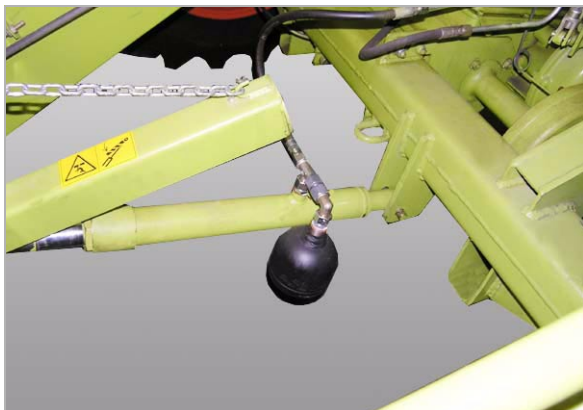
- Observe the general warnings at the beginning of the "Maintenance" chapter.

**Danger!**

Pre-loaded energy accumulators (spring, accumulator, hydraulic cylinder).

Death or serious injury.

- Only have authorised and qualified workshops carry out work on energy accumulators.

**74**

21510

13.10.2 Checking the hydraulic system oil level

- Park the machine on level ground.
- Lower the front attachment completely.
- Fully lower the reel.
- Observe the general warnings at the beginning of the "Maintenance" chapter.



Warning!

Machine operation with non-permitted or polluted lubricants.

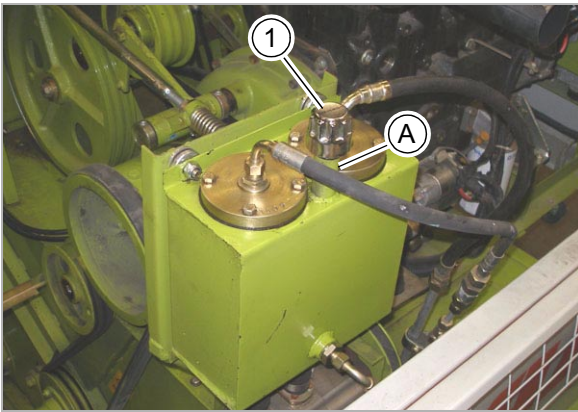
Machine damage.

- Ensure a clean environment.
- Use suitable and clean tools.
- Use approved lubricants.
- Lubricants must be free of pollutants.

- Read the oil level on the gauge rod (1).

The oil must not be higher than the FULL mark (maximum) and must not drop below the SAFE mark (minimum) on the oil dipstick.

- If necessary, refill with oil at (A).



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13.10.3 Changing the hydraulic system oil / oil filter

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- Park the machine on level ground.
- Observe the general warnings at the beginning of the "Maintenance" chapter.

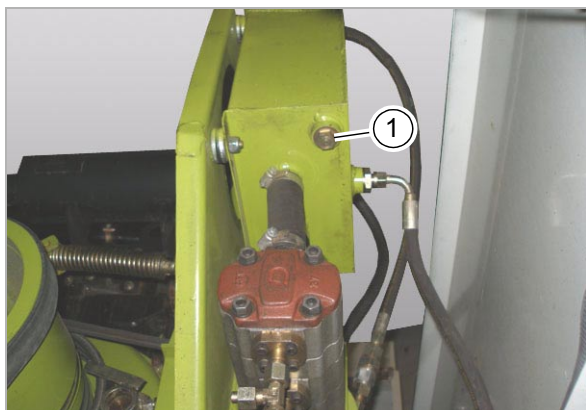


Warning!

Contact with hot liquids or machine parts.

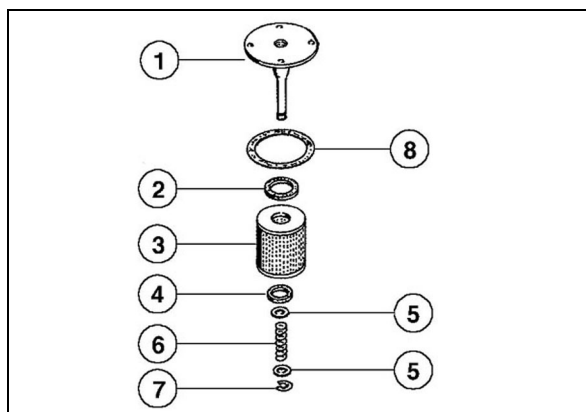
Danger of burns

- Wear suitable protective clothing.
- Let liquids or machine parts cool down.
- Comply with instructions.



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22299

**Environment!**

Lubricants and fuels end up in the environment.

Environmental pollution.

- Lubricants and fuels must be collected and stored in suitable containers and disposed of in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.

- Remove screw (1).
- Collect the used oil in a sufficiently large container.
- Tighten bolt (1).

**Warning!**

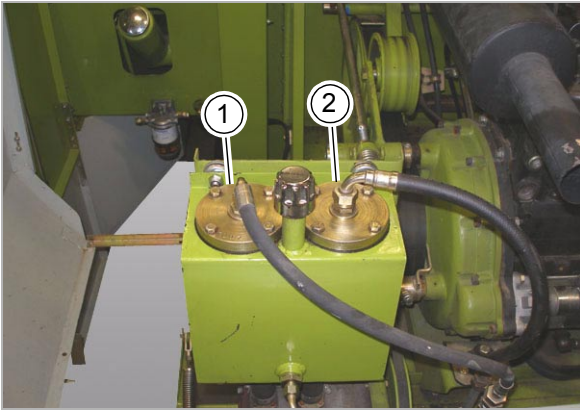
Use of unauthorised spare parts.

Machine damage.

- Spare parts must at least comply with the technical standards required by the manufacturer of the implement!
- We recommend using genuine CLAAS spare parts.

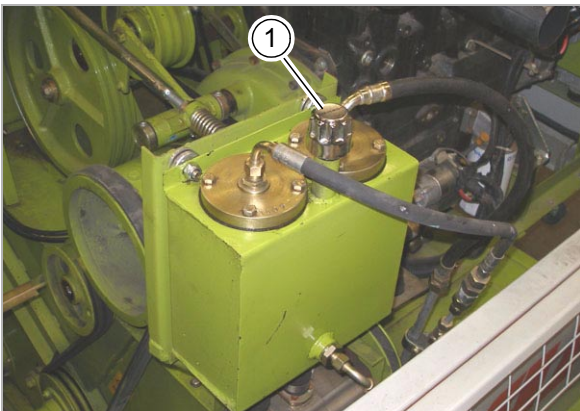
Pos.	Designation
1	Filter housing top
2	Felt washer
3	Filter
4	Felt washer
5	Washer
6	Compression spring
7	Circlip
8	Seal

- Clean filter head (1).
- Replace sealing rings (2), (4) and (8).
- Replace filter element (3).



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22268

- Insert the return filter (1) and supply filter (2).
- Tighten the return filter (1) and supply filter (2).
- Screw on the hose again.



Warning!

Machine operation with non-permitted or polluted lubricants.

Machine damage.

- Ensure a clean environment.
- Use suitable and clean tools.
- Use approved lubricants.
- Lubricants must be free of pollutants.

- Unscrew cover (1).
- Fill new hydraulic oil into the oil tank.

Use a filling screen!

Fill in hydraulic oil slowly!

- Correct oil level.
 - Start the machine.
 - Start the diesel engine.
 - Let diesel engine run at min. no-load speed for about 10 seconds.
 - Stop the diesel engine.
 - Observe the general warnings at the beginning of the "Maintenance" chapter.
 - Check the hydraulic tank oil level and top up if necessary.
 - Repeat this process until topping up is not necessary any more following a check.

13.11 Electric system / Electronics

65777

13.11.1 Checking the battery electrolyte level

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Environment!

Handling of used batteries.

Environmental pollution.

- Dispose of old batteries in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.



21428

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Danger!

Incorrect handling of batteries.

Death or serious injury.

- Be careful with battery gases, they are highly explosive.
 - Avoid sparks and naked flames in the vicinity of a battery!
 - Remove the covers (vent caps) when recharging the battery to prevent the accumulation of highly explosive gases.
 - Be careful when handling battery acids, they are caustic.
-
- Unscrew all covers (1).
 - Check electrolyte level.
The electrolyte level must be approx. 10 mm above the inside plates.
 - If necessary, top up distilled water.
 - Fit all covers (1).

13.12 Feeder unit

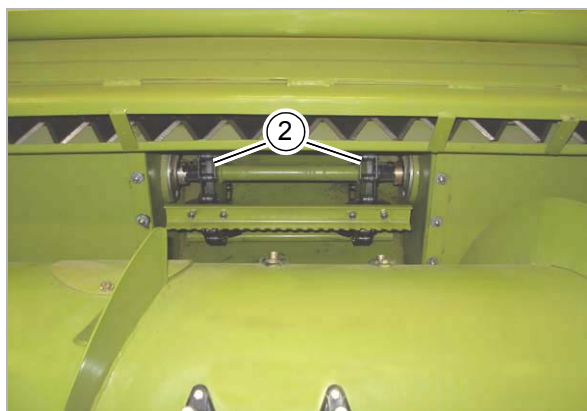
65860

13.12.1 Adjusting the feeder chains

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Check the tension of the feeder chains (1) on the feed rake conveyor through the flaps (2), with the front attachment installed.

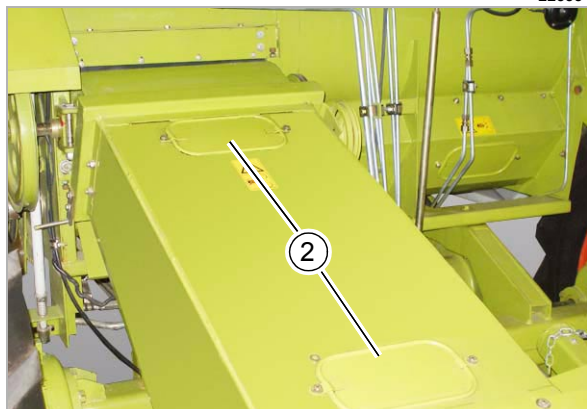
The feeder chains are set correctly if the feeder bars are just above the ground but do not touch it.

- If necessary adjust the feeder chains.



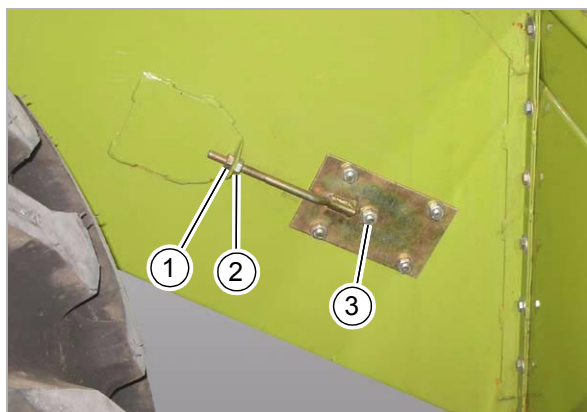
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- Adjust the feeder chains.
 - Loosen nuts (1) and (3) on both sides.
 - Adjust nut (2) until the chains on both sides are uniformly tensioned.
 - After tensioning, tighten the nuts (1) and (3) on both sides.
 - Close flaps.

13.13 Threshing mechanism

13.13.1 Cleaning the stone trap

- Lower the feeder as far as possible.
- Observe the general warnings at the beginning of the "Maintenance" chapter.

**Danger!**

Front attachment, reel and feeder unit may drop in an uncontrolled way.

Death or serious injury.

- Fit the safety locks.
- Keep a safe distance from the hazard area.

**Danger!**

Machine components may run on although the drive has been shut down.

Death or serious injury.

- Never touch any machine parts that are running on.
- Wait until all machine parts have stopped moving.

- Remove guard (1).
- Clean the stone trap (2).
- Fit guard (1).



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22339



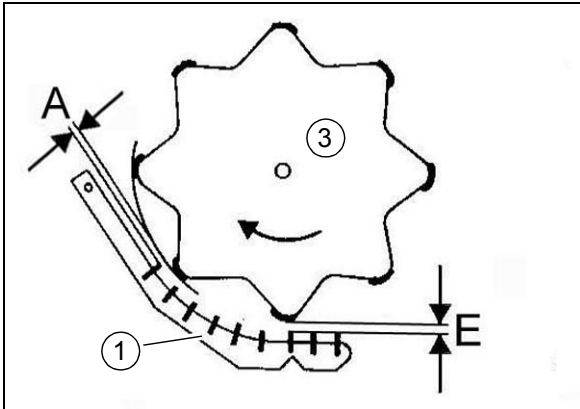
85

Picture without the feeder unit

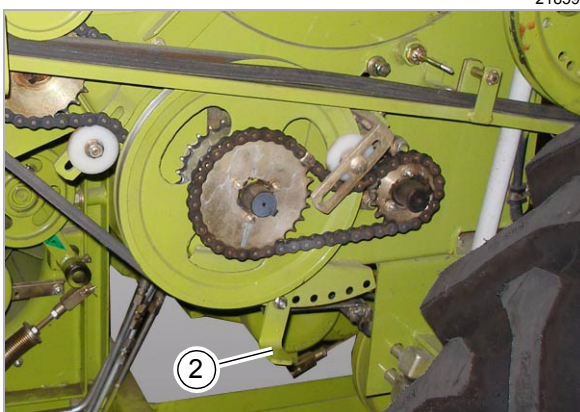
22340

13.13.2 Adjusting the distance of the threshing concave

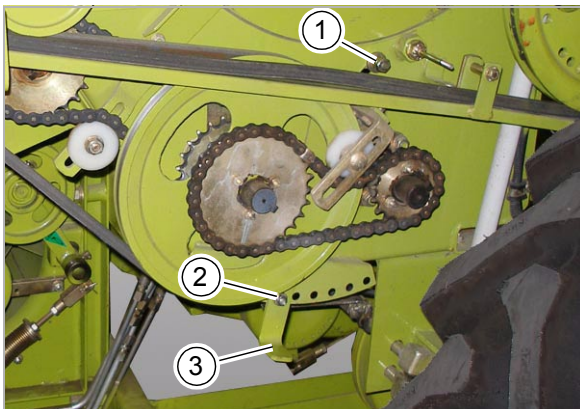
The threshing concave (1) can be set to the crop using the lever (2). By moving the lever (2), the dimensions (A) and (E), between the threshing concave (1) and threshing drum (3), can be adjusted.



86



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- Observe the general warnings at the beginning of the "Fieldwork settings" chapter.



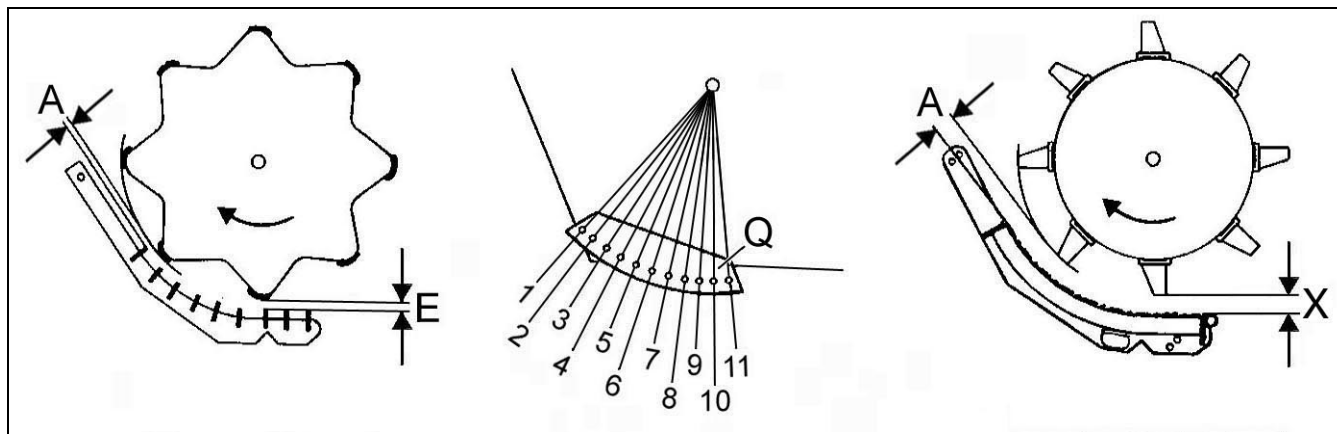
Danger!

Machine components may run on although the drive has been shut down.

Death or serious injury.

- Never touch any machine parts that are running on.
- Wait until all machine parts have stopped moving.

- Loosen nuts (1).
- Unscrew bolt (2).
- Set the threshing concave according to the table below using the lever (3).
- Attach the lever (3) in the appropriate hole using the bolt (2).
- Tighten and lock the nuts (1).



21836

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Hole (Q)	Dimension (A) mm	Grain concave Dimension (E) mm	Rice / soya concave Dimension (X)
1	4.0	9.0	11.0
2	4.5	9.5	11.5
3	5.0	10.0	12.0
4	5.5	11.5	12.5
5	6.0	13.0	13.0
6	7.0	15.0	16.0
7	8.0	18.0	20.0
8	10.0	22.0	25.0
9	12.0	25.0	30.0
10	14.0	28.0	33.0
11	16.0	31.0	38.0

**Note!**

Dimensions (E) and (X) are not being reached at the respective setting.

Uneconomic use of machine.

Crop loss and inadequate crop quality.

- Check the threshing concave and threshing drum for wear, have it replaced by a specialist workshop if necessary.

13.14 Separation

65886

13.14.1 Cleaning the auger troughs

Two inspection holes facilitate checking and cleaning once the protective guards (1) have been removed.

- Observe the general warnings at the beginning of the "Maintenance" chapter.



Danger!

Machine components may run on although the drive has been shut down.

Death or serious injury.

- Never touch any machine parts that are running on.
- Wait until all machine parts have stopped moving.

- Remove the protective guards (1).
- Clean the augers and auger troughs.



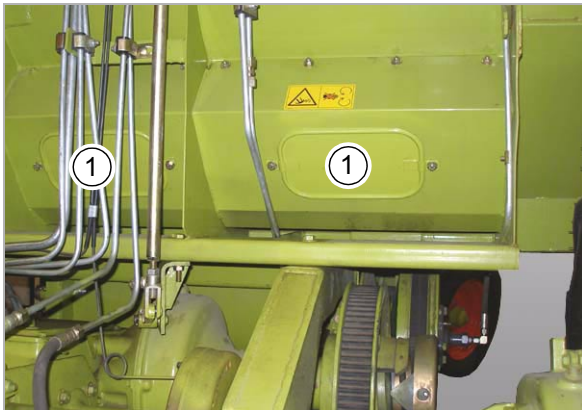
Caution

Unbalanced threshing and separating rotors.

Machine damage.

- Uniformly clean the rasp bars and cover plates from the inside.

- Install the protective guard (1).



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66358

13.14.2 Checking the deflector curtain

Two inspection holes facilitate checking and cleaning once the protective guards (1) have been removed.

- Observe the general warnings at the beginning of the "Maintenance" chapter.

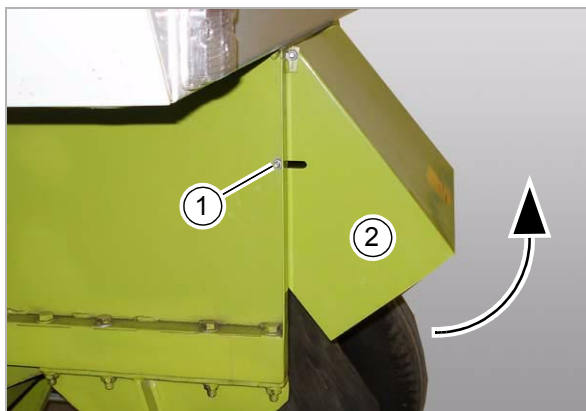


Danger!

Machine components may run on although the drive has been shut down.

Death or serious injury.

- Never touch any machine parts that are running on.
- Wait until all machine parts have stopped moving.



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21944

- Loosen the bolt (1) on both sides of the machine.
- Swing the flap (2) upwards and secure in the top-most position with the bolts (1).



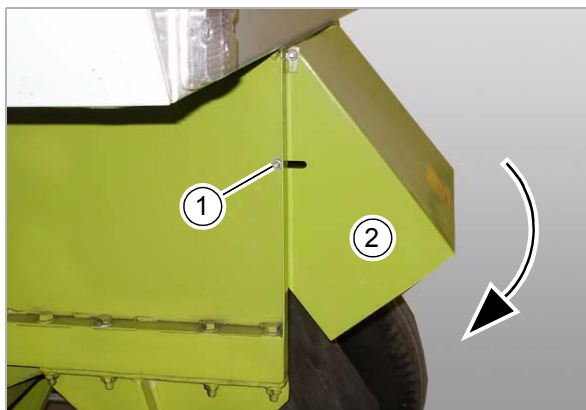
92

22558

The deflector curtain (1) behind the preparation floor catches every last grain and deflects them forward to the sieve.

If the deflector curtain is worn, the grain is thrown too far to the rear of the sieve and can no longer be promptly separated.

- Check flawless condition of deflector curtain and replace it if necessary.



93

21944

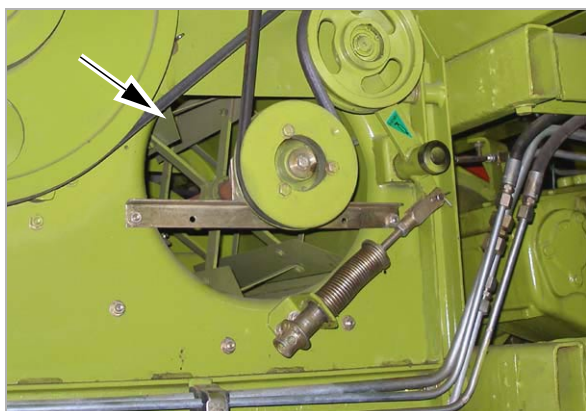
- Loosen the bolt (1) on both sides of the machine.
- Swing the flap (2) downwards and secure in the desired position with the bolts (1).

13.15 Cleaning unit

65940

13.15.1 Cleaning the fan

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- If necessary, remove dirt with an aid.



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22377

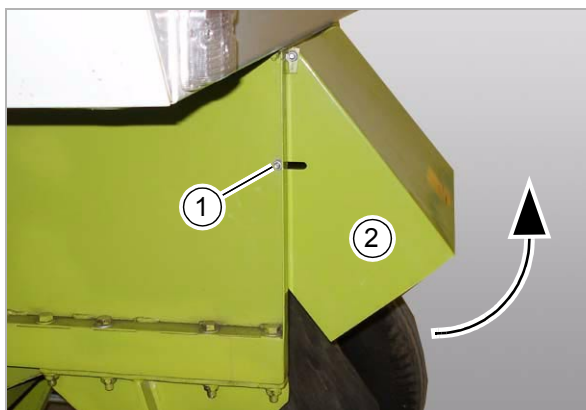
13.15.2 Cleaning the preparation floor

65936

- Observe the general warnings at the beginning of the "Maintenance" chapter.

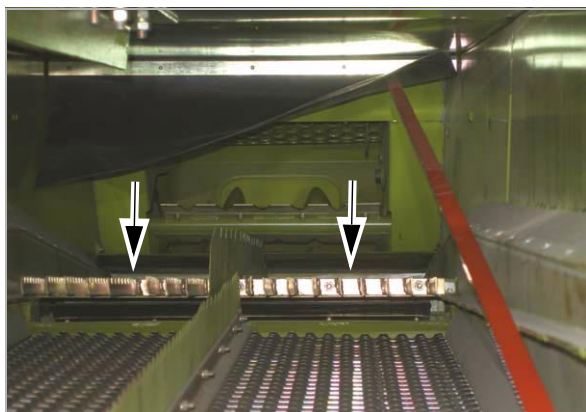
The preparation floor must be checked / cleaned if the straw is moist and full of weeds. If necessary, remove dirt with an aid.

- Loosen the bolt (1) on both sides of the machine.
- Swing the flap (2) upwards and secure in the top-most position with the bolts (1).



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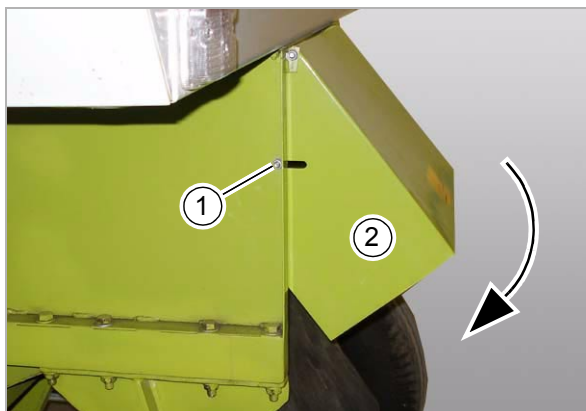
21944



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22371

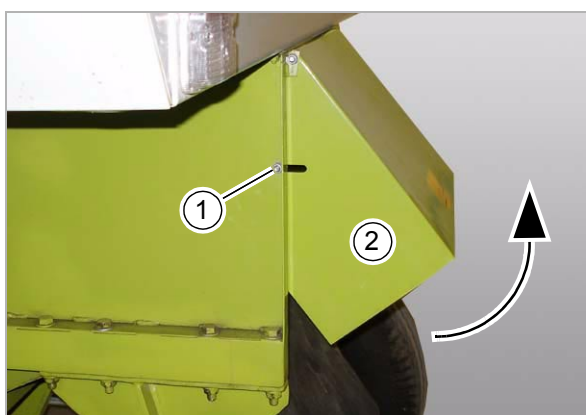
- If necessary, remove dirt with an aid.



97

21944

- Loosen the bolt (1) on both sides of the machine.
- Swing the flap (2) downwards and secure in the desired position with the bolts (1).



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21944

13.15.3 Cleaning the sieves

65948

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Loosen the bolt (1) on both sides of the machine.
- Swing the flap (2) upwards and secure in the top-most position with the bolts (1).

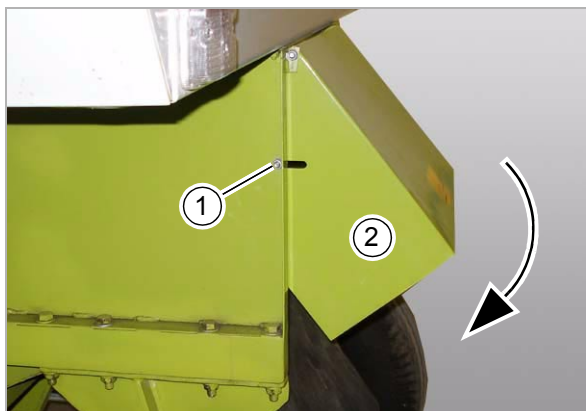
This makes the sieves more easily accessible.



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21910

- Clean the sieves.



21944

- Loosen the bolt (1) on both sides of the machine.
- Swing the flap (2) downwards and secure in the desired position with the bolts (1).

13.16 Grain delivery

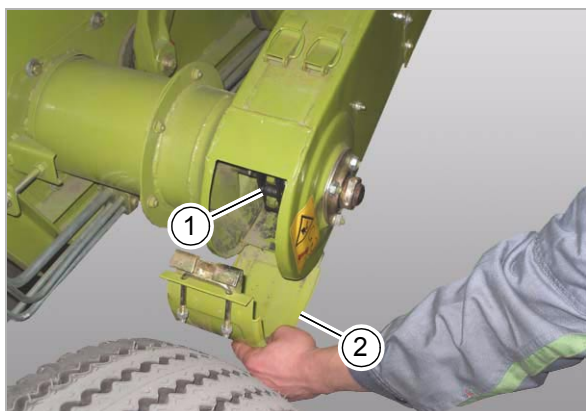
65954

13.16.1 Adjusting the returns elevator chain

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Check the tension of the returns elevator chain (1) with the flap (2) open.

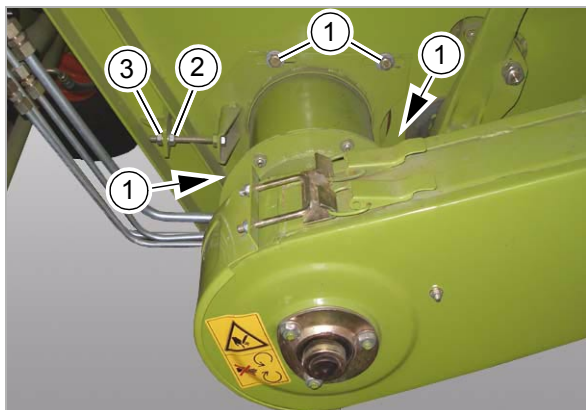
The returns elevator chain is correctly adjusted if the delivery plates do not scrape against the elevator housing and the chain can still be moved by hand on the side at the lower sprocket.

- If necessary, adjust the returns elevator chain.



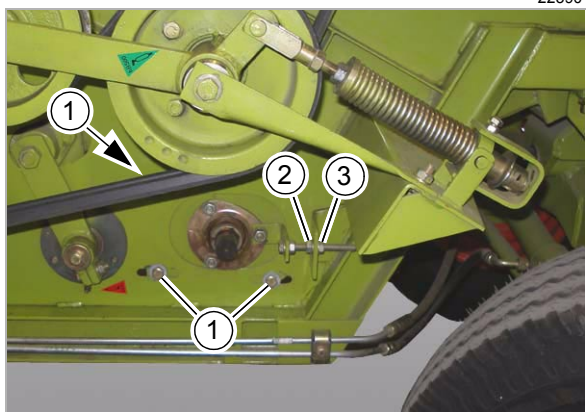
101

22383



102

22390



103

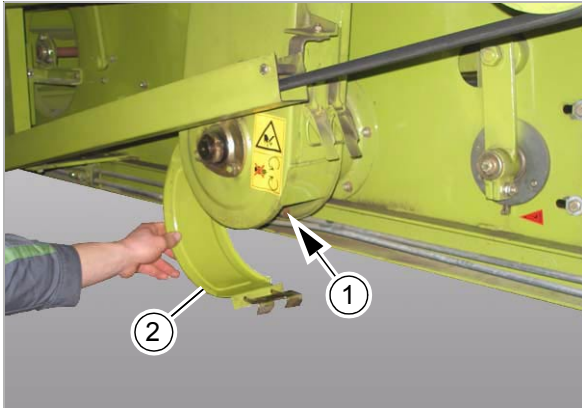
22391

13.16.2 Adjusting the grain elevator chain

- Observe the general warnings at the beginning of the "Maintenance" chapter.
- Check the tension of the grain elevator chain (1) with the flap (2) open.

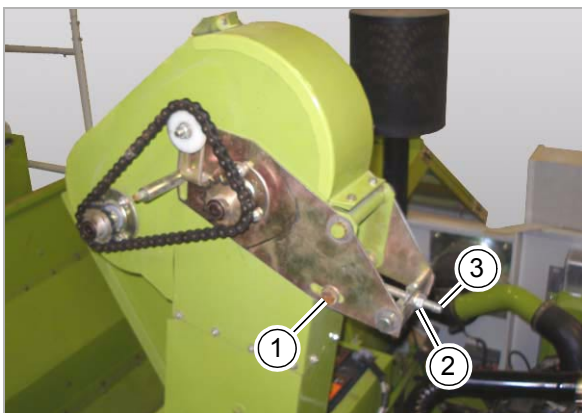
The grain elevator chain is correctly adjusted if the delivery plates do not scrape against the elevator housing and the chain can still be moved by hand on the side at the lower sprocket.

- If necessary, adjust the grain elevator chain.



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22402



105

22403

- Adjust the grain elevator chain.
 - Loosen the bolt (1) and the nut (2).
 - Adjust the bolt (3) until the grain elevator chain is tensioned.
 - Tighten the bolt (1) and nut (2).

13.16.3 Cleaning the grain tank

- Observe the general warnings at the beginning of the "Maintenance" chapter.

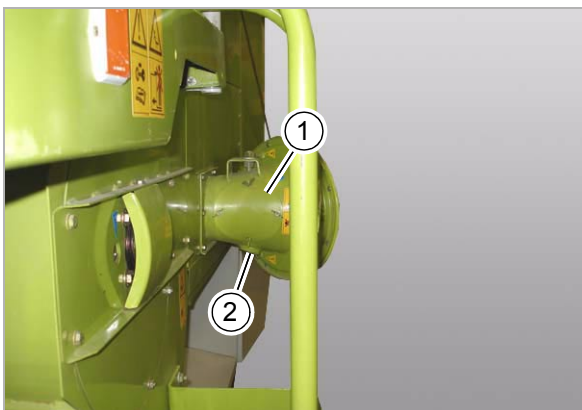


Warning!

Sharp edges and pointed machine parts.

Slight injuries.

- Do not touch sharp edges of the unloading augers.
- Wear safety gloves.



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22405

- Unscrew and remove the flap (1).
- Unscrew the screw plug (2).
- Clean the grain tank.
- Screw on the screw plug (2).
- Screw on the flap (1).

14 Lubrication chart

14.1 Lubrication points

66341

14.1.1 General warnings

**Danger!**

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.

5009

14.1.2 Lubricants

For the lubrication of the machine or front attachment, a distinction is made between grease and chain oil.

Grease

Only use proprietary grease.

CLAAS proprietary grease:

AGRIGREASE EP 2

EP 2 Grease DIN 51502:

KP2K-25

NLGI2

AGRIGREASE LC 00/000

DIN 51502:

MP 00/000K-45

NLGI 00/000

Chain oil

Only use rapeseed-oil-based chain oil.

14.1.3 Greasing cycles



Danger!

Only undertake repair, maintenance and cleaning work and the correction of malfunctions when the machine is stopped.

Death or serious injuries!

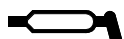
- Diesel engine OFF.
- Apply the parking brake.
- Remove ignition key.
- Loosen and remove the cable clamps on the battery.
- Secure the machine with wheel chocks.
- Ensure that the machine cannot be put into operation by a third party.

Grease point number	Working hours					Remark
	10	50	100	250	500	
1	•					3 lubrication points
2	•					in very dusty conditions if needed
3	•					
4	•					
5	•					in very dusty conditions if needed
6	•					in very dusty conditions if needed
7		•				
8		•				
9		•				
10		•				
11		•				
12		•				
13		•				
14			•			
15			•			in very dusty conditions if needed
16			•			in very dusty conditions if needed
17			•			
18			•			in very dusty conditions if needed
19			•			
20			•			
21			•			
22			•			
23			•			3 lubrication points
24			•			3 lubrication points
25			•			in very dusty conditions if needed
26			•			
27			•			

Grease point number	Working hours					Remark
	10	50	100	250	500	
28			•			
29			•			
30			•			
31					•	
32					•	
33					•	
34					•	

Lubricant symbols in figures

The following symbols are used in figures:

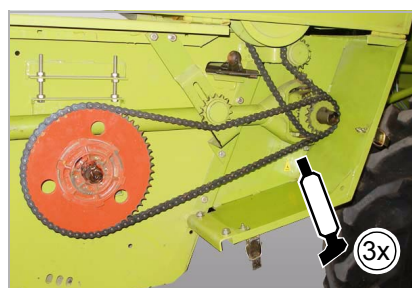


Grease the grease point.
For grease see Lubricants Chart.

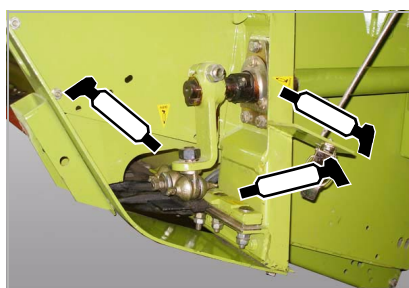


Grease the grease point.
For chain oil see Lubricants Chart.

14.1.4 Lubrication points - 10 h on the left



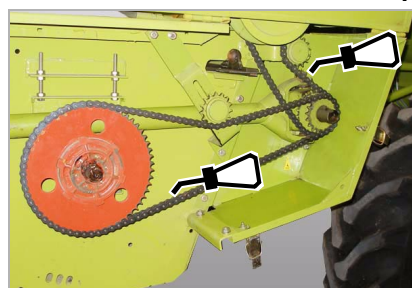
21721 1



21723 3



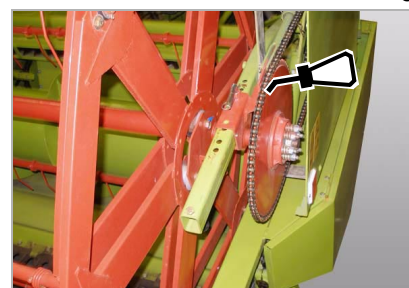
21726 5



21721 2



21502 4



21730 6

14.1.5 Lubrication points - 50 h on the left



21578



21726 7



21728 9



21508 8



21691 10

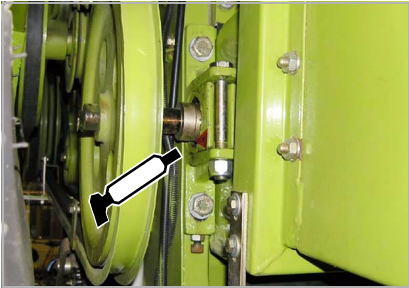
14.1.6 Lubrication points - 50 h on the right



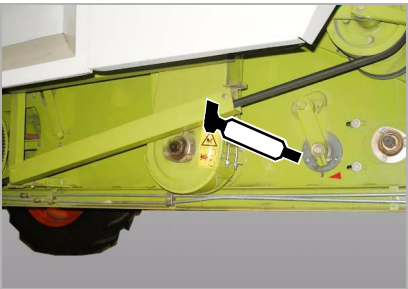
21585



21727 11

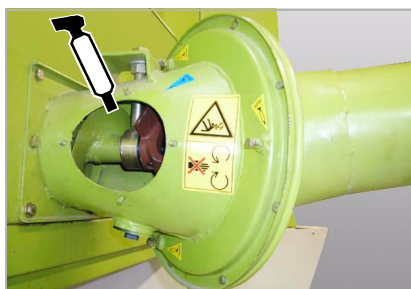
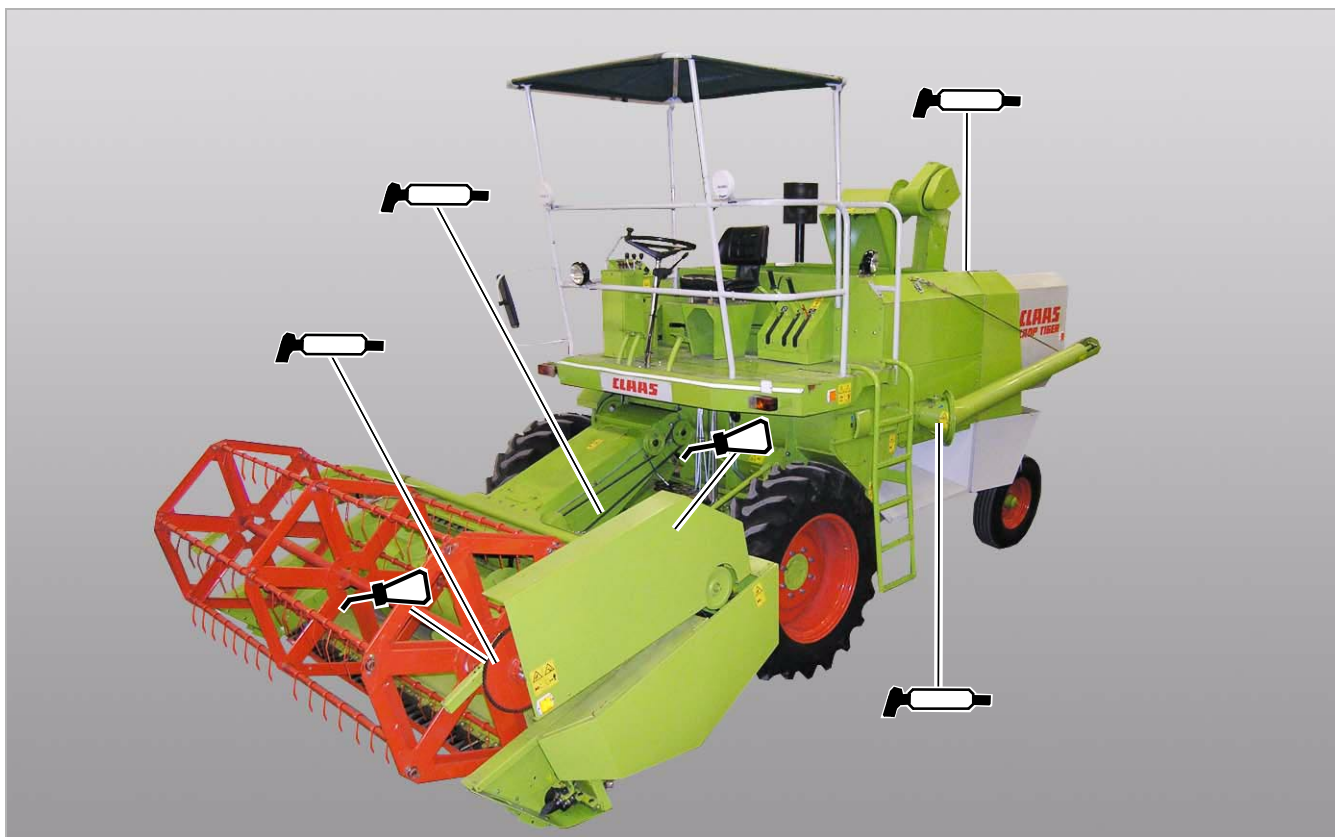


21693 13



21507 12

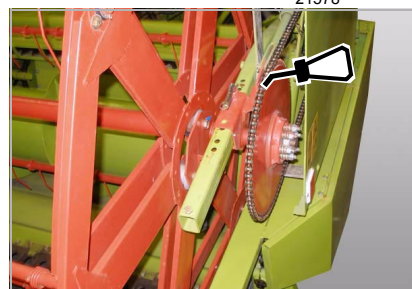
14.1.7 Lubrication points - 100 h on the left



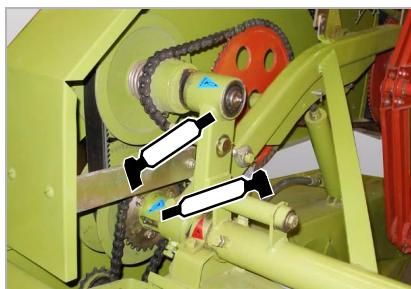
21724 14



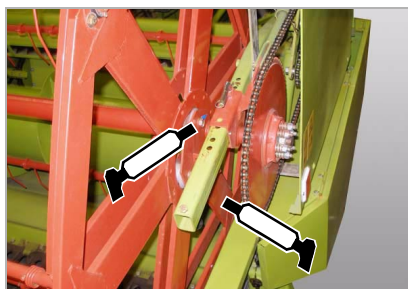
21726 16



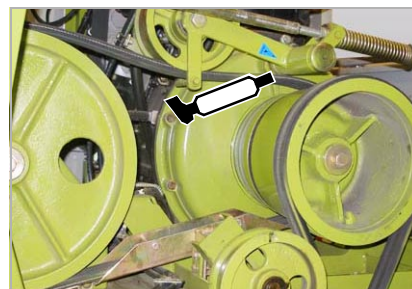
21578 18



21726 15



21730 17



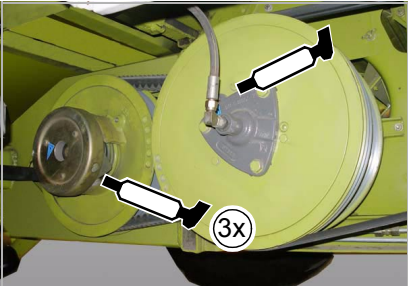
21737 19



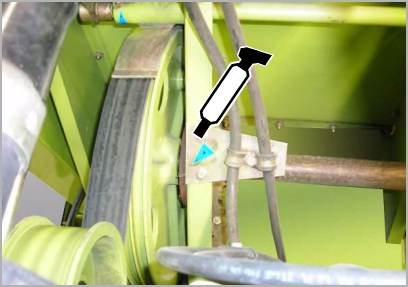
21578



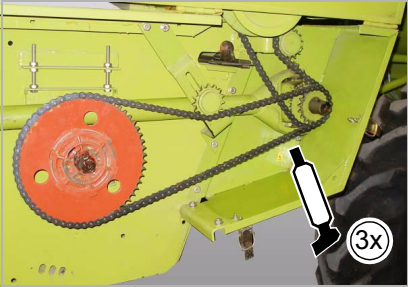
21430 20



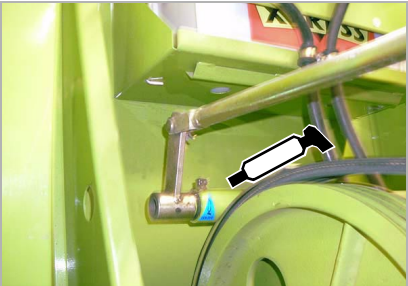
21749 23



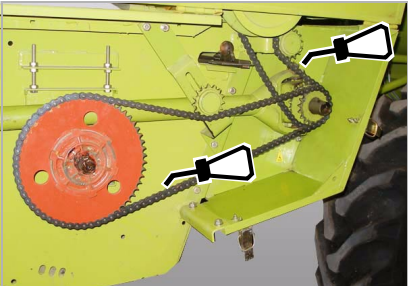
21739 21



21721 24



21738 22

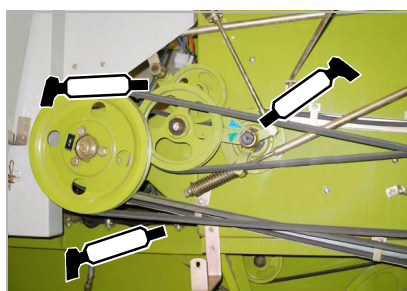


21721 25

14.1.8 Lubrication points - 100 h on the right



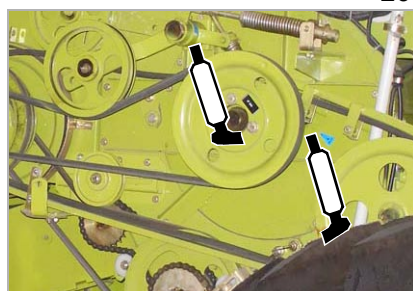
21463 26



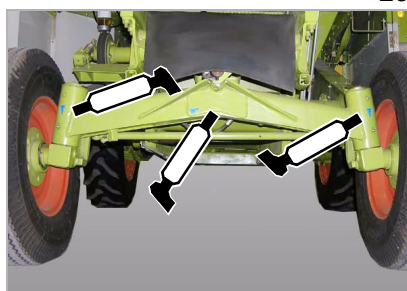
21733 28



21740 30



21731 27

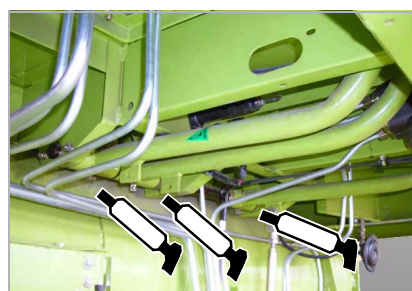


21736 29

14.1.9 Lubrication points - 500 h on the left

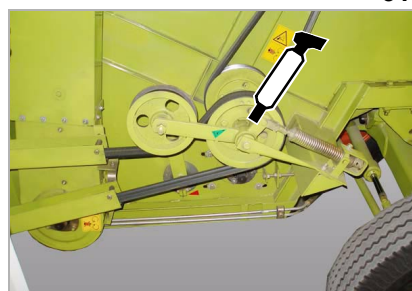


21578



21742

31

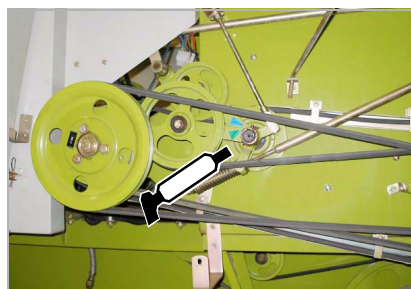


21744

32

14.1.10 Lubrication points - 500 h on the right

21585

21733 **33**21745 **34**

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