



Direct cutting system

X-Disc 6200

(from serial no.: 943 320)

Order no.: 150 000 056 02 en





EC Declaration of Conformity



We,

Maschinenfabrik Bernard Krone GmbH

Heinrich-Krone-Str. 10, D-48480 Spelle

hereby declare as manufacturer of the product named below, on our sole responsibility,
that the

Machine: **Direct cutting system**

Type / Types: **X-Disc 6200**

to which this declaration refers is in compliance with the relevant provisions of

EC Directive 2006/42/EC (Machinery)

The signing Managing Director is authorised to compile the technical documents.

Spelle, 17.05.2010

Er.-Ing. Josef Horstmann
(Managing Director, Design and Development)

Year of manufacture:

Machine No.:

**Dear customer,
Dear customer,**

You have now received the operating instructions for the KRONE product which you have purchased.

These operating instructions contain important information for the proper use and safe operation of the machine.

If these operating instructions should become wholly or partially unusable, you can obtain replacement operating instructions for your machine by stating the number given overleaf.

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Foreword**Dear Customer!**

By purchasing the direct cutting system, you have acquired a quality product made by KRONE. We are grateful for the confidence you have invested in us in buying this machine.

It is important to read the operating instructions very carefully before you start operating the machine to allow you to use the direct cutting system to its full capacity.

The contents of this manual are laid out in such a way that you should be able to perform any task by following the instructions step by step. It contains extensive notes and information about maintenance, how to use the machine safely, secure working methods, special precautionary measures and available accessories. This information and these instructions are essential, important and useful for the operational safety, reliability and durability of the direct cutting system.

**Note**

In the operating instructions which follow, the direct cutting system will also be referred to as the "machine".

Please note:

The operating instructions are part of your machine.

Only operate this machine after you have been trained to do so and according to these instructions.

It is essential to observe the safety instructions!

It is also necessary to observe the relevant accident prevention regulations and other generally recognised regulations concerning safety, occupational health and road traffic.

All information, illustrations and technical data in these operating instructions correspond to the latest state at the time of publication.

We reserve the right to make design changes at any time and without notification of reasons.

Should you for any reason not be able to use these operating instructions either wholly or partially, you can receive a replacement set of operating instructions for your machine by quoting the number supplied overleaf.

We hope that you will be satisfied with your KRONE machine.

Maschinenfabrik Bernard Krone GmbH

Spelle

To this Document

2 To this Document

2.1 Validity

These operating instructions apply to the direct cutting system of the series:
X-Disc 6200

2.1.1 Direction Information

Direction information in this document such as front, rear, right and left always applies in the direction of travel.

2.2 Identifying Symbols in the Operating Instructions

The safety instructions contained in this manual which could result in personal injury if not followed are identified by the general danger sign:

2.3 Identification of the hazard warnings

Danger!



DANGER! - Type and source of the hazard!

Effect: Danger to life or serious injuries.

- Measures for hazard prevention

Warning !



WARNING! - Type and source of the hazard!

Effect: Injuries, serious material damage.

- Measures for hazard prevention

Caution!



CAUTION! - Type and source of the hazard!

Effect: Property damage

- Measures for risk prevention.

General function instructions are indicated as follows:

Note!



Note - Type and source of the note

Effect: Economic advantage of the machine

- Actions to be taken

Instructions which are attached to the machine need to be followed and kept fully legible.

3 Safety

3.1 Purpose of Use

The direct cutting system of the X-Disc 6200 series is a front attachment unit specially for the KRONE forage harvester BiG X. It is designed to cut cereal crops with fine halms.

3.2 Intended Use

The direct cutting system may be attached only to carrier vehicles for which the relevant adapter frame is released (observe operating permission of the carrier vehicle). It is built exclusively for customary use in agricultural work (intended use) - see also Introduction chapter entitled "Purpose of Use".

Any use of the machine for other purposes is deemed not to be in accordance with intended use. The manufacturer shall not be liable for any resulting damage; the user alone shall bear the risk.

Operation in accordance with intended use also includes observing the operating, maintenance and service instructions specified by the manufacturer.

Unauthorised modifications to the machine may affect the properties of the machine or disrupt proper operation. For this reason, unauthorised modifications shall exclude any liability of the manufacturer for consequential damage.

3.3 Service life of the machine

- The service life of this machine strongly depends on proper use and maintenance as well as the operating conditions.
- Permanent operational readiness as well as long service life of the machine can be achieved by observing the instructions and notes of these operating instructions.
- After each season of use, the machine must be checked thoroughly for wear and other damage.
- Damaged and worn parts must be replaced before placing the machine into service again.
- After the machine has been used for five years, carry out full technical inspection of the machine. According to the results of this inspection, a decision concerning the possibility of reuse of the machine should be taken.
- Theoretically, the service life of this machine is unlimited as all worn or damaged parts can be replaced.

3.3.1 Personnel Qualification and Training

The machine may be used, maintained and repaired only by persons who are familiar with it and have been instructed about the dangers connected with it. The operator must define areas of responsibility and monitoring of personnel. Should personnel lack the required knowledge, they must receive the required training and instruction. The operator must ensure that the contents of these operating instructions have been fully understood by personnel.

Repair work not described in these operating instructions should only be performed by authorised service centres.

3.3.2 Dangers in Case of Non-compliance with the Safety Instructions

Failure to follow the safety instructions could result in personal injury and environmental hazards as well as damage to the machine. If the safety instructions are not respected, this could result in the forfeiture of any claims for damages.

Failure to follow the safety instructions could result, **for example**, in the following hazards:

- Endangering of persons due to not protected working areas.
- Breakdown of important machine functions
- Failure of prescribed methods for repair and maintenance
- Endangering of persons due to mechanical and chemical effects
- Damage to the environment due to leaking hydraulic oil

3.3.3 Safety-conscious work practices

Always observe the safety instructions set out in these operating instructions, all existing accident prevention rules and any internal work, operating and safety rules issued by the operator.

The safety and accident prevention regulations of the responsible professional associations are binding.

The safety instructions provided by the vehicle manufacturer should also be observed.

Observe the applicable traffic laws when using public roads.

Be prepared for emergencies. Keep the fire extinguisher and first aid box within reach. Keep emergency numbers for doctors and fire brigade close to the telephone.

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3.4**Safety Instructions and Accident Prevention Regulations**

- 1 Please follow all generally applicable safety and accident prevention regulations in addition to the safety instructions contained in these operating instructions!
- 2 The attached warning and safety signs provide important information for safe operation. Pay attention to these for your own safety!
- 3 When using public roads, make sure to observe the applicable traffic regulations!
- 4 Make sure that you are familiar with all equipment and controls as well as with their functions before you begin working with the machine. It is too late to learn this when you are using the machine for work!
- 5 The user should wear close fitting clothes. Avoid wearing loose or baggy clothing.
- 6 Keep the machine clean to prevent the danger of fire!
- 7 Before starting or moving the machine, make certain that nobody is in the vicinity of the machine! (Watch for children!) Make sure that you have a clear view!
- 8 Carrying passengers during operation and transport on the working implement is not permitted.
- 9 Couple implements correctly! Attach and secure implements to specified devices only!
- 10 When attaching or detaching implements, place the supporting devices in the correct positions!
- 11 Special care is required when coupling and uncoupling the cutting system onto or from the forage harvester.
- 12 Always attach ballast weights properly to the fixing points provided!
- 13 Observe permitted axle loads, gross weight and transport dimensions!
- 14 Check and install transport equipment, such as lighting, warning devices and protective equipment!
- 15 Actuating mechanisms (ropes, chains, linkage, etc.) for remotely operated devices must be designed in such a way that, in whatever transport and working position, they cannot trigger accidental movements.
- 16 Ensure that the cutting system is in the prescribed condition for on-road travel and lock in place in accordance with the manufacturer's instructions!
- 17 Never leave the driver's seat when the vehicle is moving!
- 18 Always drive at the correct speed for the prevailing driving conditions! Avoid sudden changes in direction when travelling uphill or downhill or across a gradient!
- 19 Hitched implements and ballast weights affect the driving, steering and braking response of the machine. Make sure that you are able to brake and steer the machine as required!
- 20 Take into account the extension radius and/or inertia of an implement when turning corners!
- 21 Take the cutting system into operation only when all protective devices have been attached and set in the required position!
- 22 Keep safety equipment in good condition. Replace missing or damaged parts.
- 23 Keep clear of the working range of the machine at all times!
- 24 Do not stand within the turning and swivel range of the implement!
- 25 Never operate the hydraulic folding frames if anyone is inside the swivel range!

Safety

- 26 Parts operated by external power (e.g. hydraulically) can cause crushing and shearing injuries!
- 27 Before leaving the forage harvester, lower the cutting system onto the ground, apply the parking brake, switch off the engine and remove the ignition key!
- 28 Nobody may stay between the forage harvester and the cutting system without the vehicle being secured against rolling off through the parking brake and wheel chocks!
- 29 Observe all additional information related to safety in the operating instructions for the forage harvester.

3.5

Attached devices

- 1 Special care is required when coupling and uncoupling the cutting system onto or from the forage harvester!
- 2 The cutting system may only be attached to the forage harvester for which it is intended.
- 3 Do not work on the cutting system until the engine has been stopped and the ignition key has been removed. All operating levers should be in the neutral position and no hydraulic lines should be under pressure.
- 4 Only perform jobs under the raised cutting system when it is securely supported.
- 5 The direct cutting system must only be used on public roads with the transport carriage designed for that purpose.

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3.6**PTO Operation**

- 1 Use only PTO shafts specified by the manufacturer!
- 2 The guard tube and guard cone of the PTO shaft and the PTO guard must be attached and in good working condition (on the implement side, too)!
- 3 Make sure that the required tube covers are in place for PTO shafts in transport and working position!
- 4 Before installing or detaching PTO shafts, disengage the PTO, switch off the engine and remove the ignition key!
- 5 When using PTO shafts with an overload safety or free-running coupling which are not shielded by the guard on the tractor, mount the overload safety or free-running coupling on the implement side!
- 6 Always make sure that the PTO shaft is properly installed and secured!
- 7 Attach chains to prevent the PTO shaft guard from rotating with the shaft!
- 8 Before switching on the PTO, make sure that the selected PTO speed of the forage harvester matches the permissible speed of the implement!
- 9 Before switching on the PTO shaft make sure that no person is in the danger zone of the device!
- 10 Never switch on the PTO if the engine is switched off!
- 11 No one should be in the vicinity of the rotating PTO or PTO shaft when the PTO is in use.
- 12 Always switch off the PTO shaft when the angle is too large or the PTO shaft is not required!
- 13 Caution! After disengaging the PTO danger due to the flywheel running on! Keep away from the implement during this time. Do not work on the machine until it has come to a standstill.
- 14 Cleaning, lubricating or adjusting PTO driven implements or the PTO shaft only with PTO disengaged, engine switched off and ignition key withdrawn!
- 15 Place the disconnected PTO shaft onto the support provided!
- 16 After detaching the PTO shaft, attach the protective cover to the PTO end!
- 17 If damage occurs, correct this immediately before using the implement!

**Note**

The instructions of the manufacturer must be observed with regard to the PTO shaft. (separate operating instructions)

3.7 Maintenance

- 1 Always make certain that the drive and the engine are switched off before doing any repairs, maintenance or cleaning! - Remove the ignition key!
- 2 Regularly check that nuts and bolts are properly seated and tighten if necessary!
- 3 When performing maintenance work with the machine raised, always secure it with suitable supporting elements!
- 4 Oils, greases and filters must be disposed of correctly!
- 5 Always disconnect the power supply before working on the electrical system!
- 6 If protective devices and guards are subject to wear, check them regularly and replace them in good time!
- 7 When performing electrical welding work on the vehicle and mounted devices, turn power supply off at main battery switch or disconnect generator cable and battery!
- 8 Replacement parts must at least comply with the technical requirements set by the manufacturer of the implements! This is guaranteed by original KRONE spare parts!
- 9 When replacing working tools with cutting edges, use suitable tools and gloves!

3.8 Unauthorised Conversion/Modification and Spare Parts Production

Conversions or modifications of the machine are permitted only with prior consultation with the manufacturer. Original spare parts and accessories authorised by the manufacturer help to ensure safety. Use of other parts may void liability for resulting damage.

3.9 Inadmissible Modes of Operation

The operating safety of the delivered machine is guaranteed only when it is used as intended in compliance with the introductory section "Intended use" of the operating instructions. The limit values listed in the data charts should not be exceeded under any circumstances.

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4 Machine Description

4.1 Machine overview

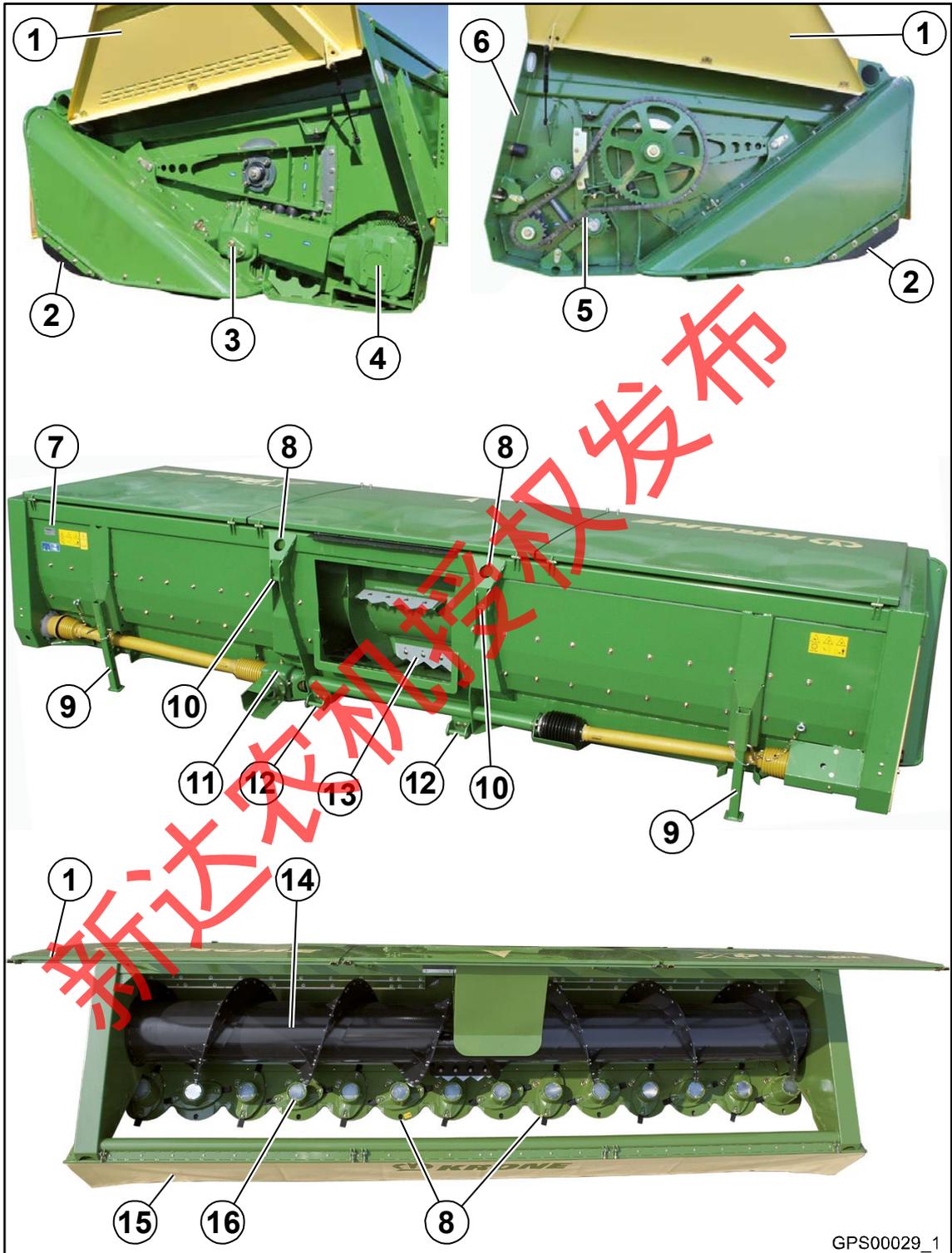


Fig. 1

1) Protective cover	2) Rubber strip	3) Cutterbar drive gear
4) L-corner gearbox	5) Drive chains	6) Special key SafeCut
7) Type plate	8) Stop point	9) Parking support
10) Locating bolt	11) Main angular gearbox	12) Pendulum frame holder
13) Infeed sheets	14) Auger conveyor	15) Guard cloth
16) Mower drums		

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Machine Description

4.2 Identification Plate

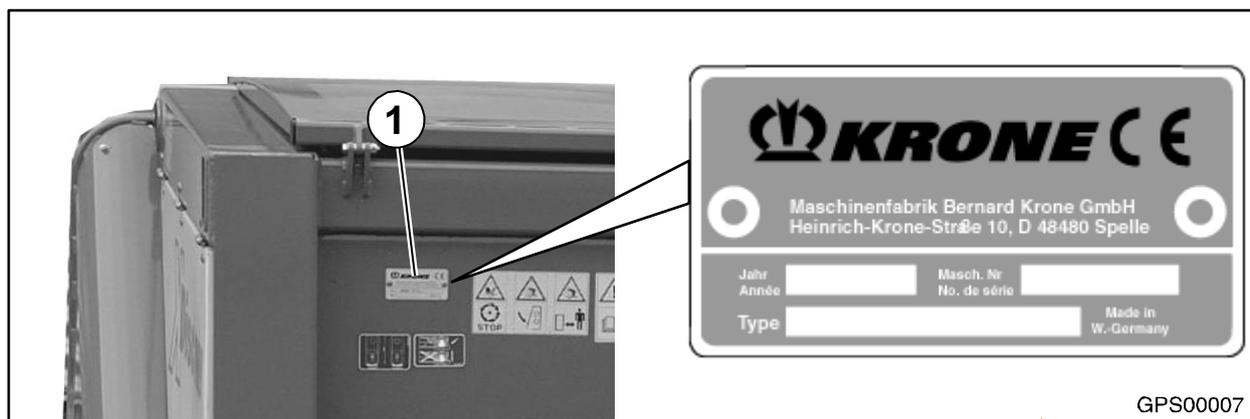


Fig. 2:

The machine data are specified on the type plate (1).

4.3 Information Required for Questions and Orders

Year	
Mach. No.	
Type	



Note

The entire identification plate represents a legal document and should not be altered or rendered illegible!

When asking questions concerning the machine or ordering spare parts, be sure to provide type designation, machine number and the year of manufacture of the relevant machine: To ensure that these data are always available, we recommend that you enter them in the fields above.



Note

Authentic KRONE spare parts and accessories authorised by the manufacturer help to ensure safety. The use of spare parts, accessories or additional equipment not manufactured, tested or approved by KRONE will exclude any liability for consequential damage.

4.3.1 Contact

Maschinenfabrik Bernard Krone GmbH
Heinrich-Krone-Strasse 10
D-48480 Spelle (Germany)

Telephone: + 49 (0) 59 77/935-0 (Head Office)
Fax.: + 49 (0) 59 77/935-339 (Head Office)
Fax.: + 49 (0) 59 77/935-239 (Spare parts - domestic)
Fax.: + 49 (0) 59 77/935-359 (Spare parts - export)
Email: info.ldm@krone.de

4.4 Introduction

The KRONE cutting system is equipped with all the necessary safety devices (protective devices). However, it is not possible to eliminate all potential hazards on this machine as this would impair its full functional capability. Hazard warnings are attached to the machine in the relevant areas to warn against any dangers. The safety instructions are provided in the form of so-called warning pictograms. Important information on the position of these safety signs and what they mean is given below!



Danger! - Danger zone of the machine

Effect: Danger to life or serious injuries.

- Immediately replace damaged or illegible adhesive labels.
- Following repair work, always attach appropriate adhesive safety stickers to all the replaced, modified or repaired components.
- Never clean areas carrying an adhesive safety label using a high-pressure cleaner.
- Familiarise yourself with the statement of the warning pictograms. The adjacent text and the selected location on the machine provide information on the special danger spots on the machine.

4.4.1 Re-Ordering the Adhesive Safety and Information Labels



Note

Every adhesive safety and information label is assigned an order number and can be ordered directly from the manufacturer or from an authorized dealer (see Section "Contact").

4.4.2 Affixing the Adhesive Safety and Information Labels



Note - Affixing an adhesive label

Effect: Adhesion of the label

- The surface for affixing the adhesive label must be clean and free of dirt, oil and grease.

4.5 Position of the Adhesive Safety Stickers on the Machine

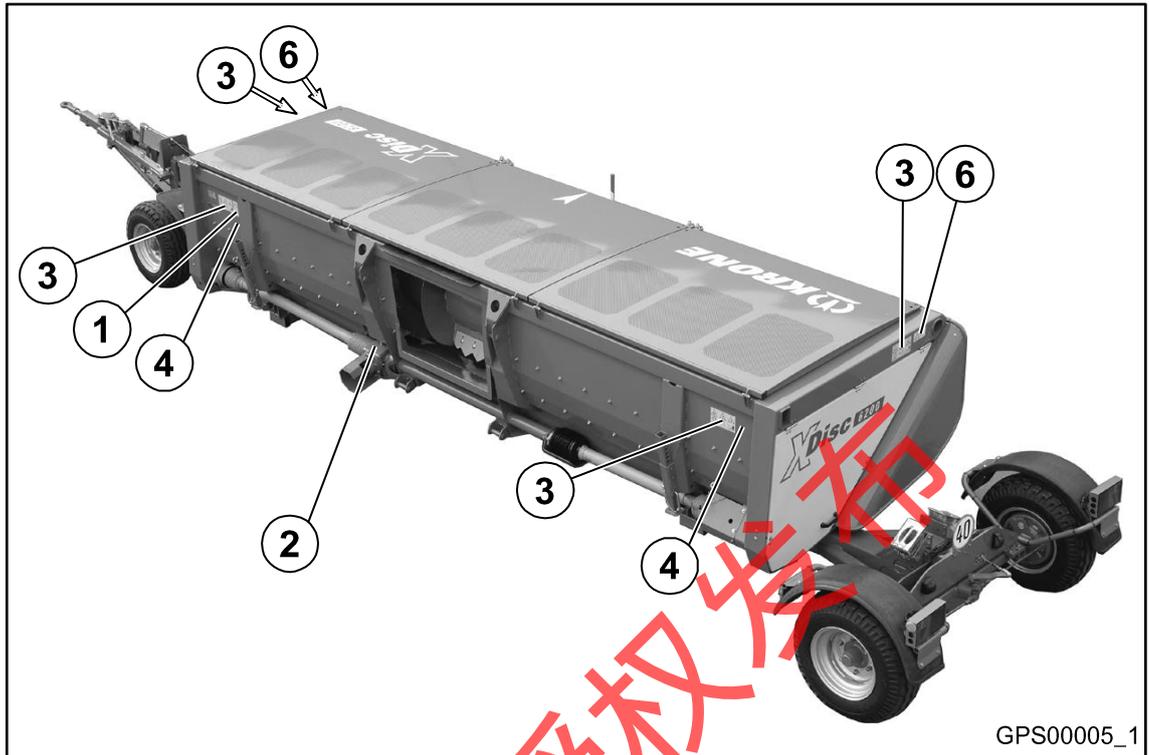
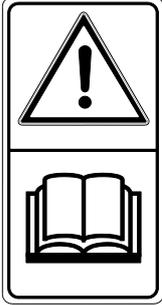
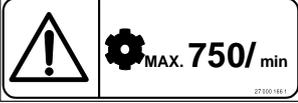
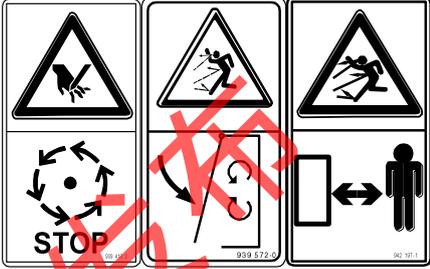
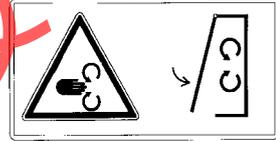


Fig. 3

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<p>1) Before starting the machine, read and observe the operating instructions and safety instructions.</p>  <p>Order no. 939 471-1 (1x)</p>	<p>2) The PTO speed must not exceed 750 rpm!</p>  <p>Order No. 27 000 166 1 (1x)</p>
<p>3) Order No. 939 576-0 (4x)</p> <p>a) Caution: some machine parts will stay in operation for an extended period of time before being switched off completely. Do not touch any moving parts of the machine. Wait until they have come to a complete stop.</p> <p>b) Move the protective devices into position prior to start-up.</p> <p>c) When the machine is running, keep your distance.</p>	 <p>3a 3b 3c</p>
<p>4) Do not enter the danger zone between the front attachment unit and the machine.</p>  <p>Order No. 942 312-0 (2x)</p>	<p>6) Close the protective equipment before putting into operation.</p>  <p>Order No. 942 002 4 (2x)</p>

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Machine Description

4.6 Technical data

All information, illustrations and technical data in these operating instructions correspond to the latest state at the time of publication. We reserve the right to make design changes at any time and without notification of reasons.

Type		X-Disc 6200
Working width	[mm]	6200
Number of mower drums (low)		12
Number of mower drums (high)		2
Drive speed	[rpm]	750
Service weight	[kg]	2650

4.7 Lubricants

4.7.1 Filling Quantities and Lubrication Designations for Gearboxes



Environment! - Disposing of consumables and storage

Effect: Environmental damage

- Keep consumables in suitable containers according to statutory provisions.
- Dispose of used consumables according to statutory provisions.

Lubricants	Filling quantity [litres]	Filtered lubricants	Bio-degradable lubricants
L-corner gearbox	2.9	PAO Mobil SHC 630	On request
Main angular gearbox	1.7	API GL4 SAE 90	
Cutterbar drive gear	0.7		
Cutterbar	14		

5 Commissioning



Danger! - Incorrect assembly

Effect: Danger to life, serious injuries or serious damage to the machine.

- Only authorised service centres may assemble the machine.
- The machine must be assembled with special care.
- Always heed the applicable accident prevention regulations.
- Use only safe and sufficiently dimensioned lifting equipment and load-securing equipment.
- The machine may be taken into operation only after all the safety devices have been installed.
- If unauthorised modifications are made to the machine, the manufacturer is released from liability for any resulting damage.

5.1 Checklist for Initial Operation

The following points must be checked and observed.

- Check whether the front attachment for the forage harvester has been released (observe the operating licence of the forage harvester).
- Lubricate the front attachment thoroughly.
- Check the oil level in the gearboxes.
- Check the screws for firm attachment.
- Check the cutter blades for damage and to make certain they are correctly seated.
- Check the tension of the drive chain(s).
- Completely install the protective equipments and lock them.
- Adapt the adapter frame of the front attachment to the pendulum frame of the forage harvester.

5.2 Attachment to the forage harvester



Note

The KRONE direct cutting system X-Disc is specially designed for attachment to the KRONE forage harvester Big X. Attachment to other harvesters is not permitted without the consent of KRONE.

Commissioning

5.3 Stop points



Warning! - Stop and transportation equipment inadequately dimensioned.

Effect: Danger to life, serious injuries or serious damage to the machine

Use only adequately dimensioned stop and transportation equipment (crane, ropes)!

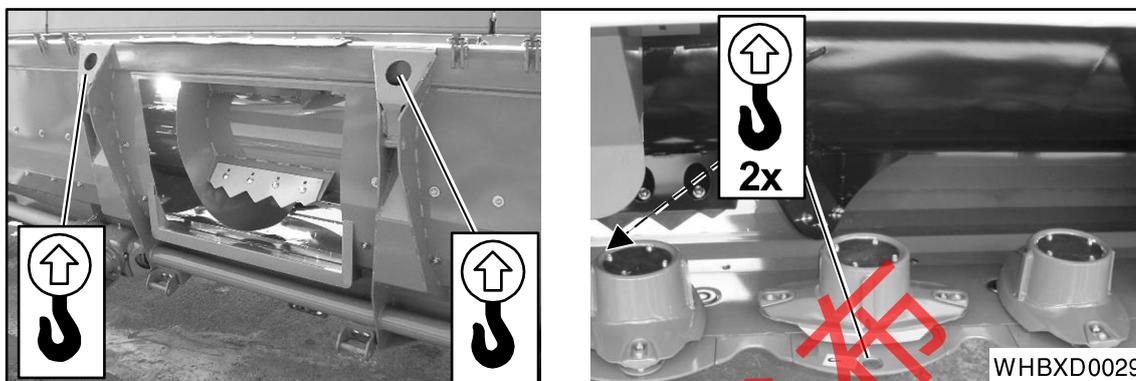


Fig. 4

- For transporting from one place to another onsite, (e.g. loading) brace the lifting tool against the illustrated points.

5.4 Parking the machine

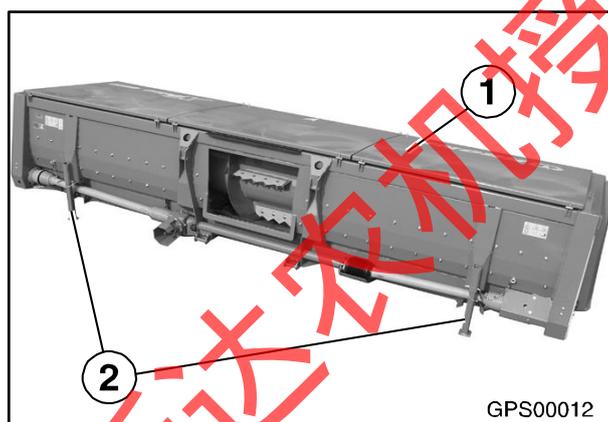


Fig. 5

- Lower the cutting system (1) with the parking supports (2) extended and secured on a solid and level surface.

5.4.1 Adjusting the adapter frame



Note

When attaching the machine for the first time and whenever changing the forage harvester, the adapter frame must be adjusted.



Note

Make the adjustment equally on the right and left of the adapter frame.

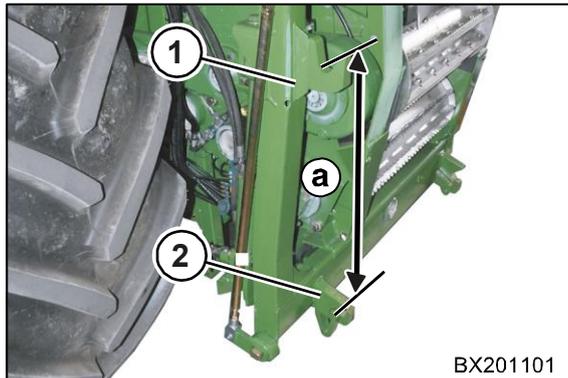


Fig. 6

Measure the axle base "a" between holding claw (1) and locking hook (2) on the pendulum frame of the forage harvester.



Fig. 7

Check the axle base "a" between the holding bolt (1,3) of the adapter frame on the machine and, if necessary, adapt it to the size of the pendulum frame (forage harvester).

- Loosen the screw connections (2) and shift the pendulum frame holders (3) to the correct distance.
- Tighten the screw connections (2).
- Before moving the forage harvester forward, fold down the protective cover (4).

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6

Start-up



DANGER! – Attaching / removing and operating the machine

Effect: Danger to life or serious injuries.

- The machine may only be attached to the forage harvester for which it is intended!
- Use extreme caution when attaching the machine to or detaching it from the forage harvester! The accident prevention regulations must be complied with absolutely.
- The machine is suitable for and intended for cutting crops growing on the ground!
- Maintain an adequate safety distance from the cutting tools during operation.
- The glide skids must rest on the ground before start-up and during work!
- Stones and other objects may be hurled up, even when the machine is used as intended. For this reason, no one is permitted in the danger zone. Special care should be taken when working near roads and buildings.
- Check the guard cloths regularly. Worn or damaged guard cloths must be replaced!
- The protective equipment on the machine, e.g. cloths and hoods, protects against flying stones and similar objects, and prevents access to hazardous areas. For this reason you must always move them to their protective position before starting work.
- Do not enter the area between the forage harvester and the machine while the machine is being converted from the transport to the working position and vice versa.

6.1

Checking and Observing Before Start-Up

- Check the oil level in the gearboxes.
- Lubricate the front attachment thoroughly before start-up.
- Check the screws for firm attachment.
- Check the cutter blades for damage and to make certain they are correctly seated.
- Check the tension of the drive chain(s).
- Completely install the protective equipments and lock them.
- Adapt the adapter frame of the front attachment to the pendulum frame of the forage harvester.
- Lock the pendulum frame of the forage harvester.
- Align the cutting system.
- Before starting to move, make certain there are no loose parts on the vehicle. Parts that could get lost during movement must be attached or covered.
- Keep persons out of the danger zone. If persons do approach the danger zone, please turn off the machine immediately.
- Never allow the machine to run unsupervised.



Note

For more information on the pendulum frame, see operating instructions of the forage harvester.

Start-up

6.1.1 Attaching the Machine



Danger! - Coupling

Effect: Danger to life or serious injuries.

When making the coupling, ensure there is no one between the forage harvester and the machine.



Note

Check that the pendulum frame hooks correctly into the holding bolts (1) and the locking hooks on both sides.

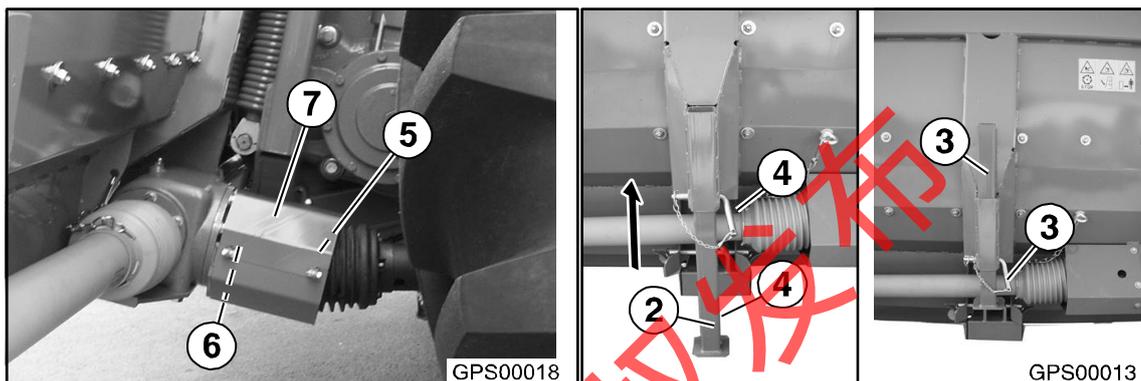


Fig. 8

- Push the joint fork (5) onto the drive journal (6) of the main angular gearbox until the lock engages.
- Close the protective cover (7)
- Remove the bolts (3) from both sides of the parking supports (2).
- Move parking supports (2) upwards and secure them in place with bolts (3) in the lowest bore hole (4).



Note

For more information on attaching the machine, see the operating instructions of the forage harvester or the transport trailer respectively.

6.1.2 Aligning the Cutting System

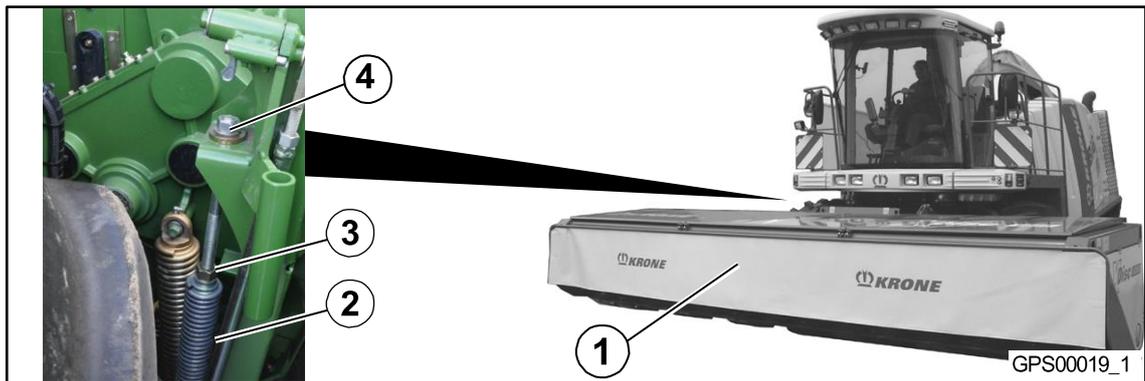


Fig. 9



Note

When attaching the cutting system for the first time and whenever changing the forage harvester, the cutting system must be aligned.

The cutting system (1) must be aligned horizontally to the forage harvester.

- Raise the cutting system (1) with the lifting hydraulics and check that it is aligned horizontally. If necessary, compensate for any lateral inclination by changing the pre-tension on the compression spring (2).



DANGER! – Unexpected actions on the machine.

Effect: Danger to life, injuries or damage to the machine

- Switch off the engine, remove the ignition key, and secure the machine from rolling away.

- Loosen hexagonal nut (3)
- Change the pre-tension of the compression spring (2) by turning the hexagonal nut as appropriate (4)
- Counter hexagonal nut (3) again



Note

For additional settings to operate the cutting system, see the operating instructions "Self-propelled forage harvester BiG X".

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7 Driving and Transport



DANGER! – Road travel, carrying passengers, driving conduct

Effect: Danger to life, injuries or damage to the machine.

- The direct cutting system may only be used on public roads with the designated transportation trailer. The transportation trailer is described in a separate set of operating instructions.
- It is forbidden to carry passengers on the machine.
- When driving on roads, the general requirements or special conditions of the Road Traffic Type Approval Law (StVZO) and the Road Traffic Law (StVO) must be observed.
- The driving speed of the forage harvester must to be adapted to local conditions.

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8 Operation

8.1 From transport into working position



Danger! - Lowering the machine into working position

Effect: Danger to life, injuries or damage to the machine.

- Do not lower the machine until you are absolutely sure that neither persons, animals nor objects are in the swivel range of the machine.
- Keep persons out of the danger zone. If persons do approach the danger zone, turn off the machine immediately.
- Never leave the machine running unsupervised.
- Check the safety devices each time before the machine is used. Replace damaged safety devices immediately.
- Do not work on the front attachment until the engine has been stopped and the ignition key has been removed. All operating levers should be in the neutral position and no hydraulic lines should be under pressure.
- Always check the attachment before use and after driving into an obstacle. Worn, damaged or deformed blades must be replaced immediately. This also applies to holders.
- Do not switch on the drive until the front attachment is in the working position.

8.1.1 Working position



Fig. 10
Lower the cutting system (1) down to the ground.



Note

- Before any start-up, check the guard cloth (2) and the rubber strips (3) (right and left machine side). Replace damaged safety devices (2,3) immediately.

Driving in headland position:

- Set the lifting height to max. 40 cm via the display of the forage harvester (see operating instructions of the forage harvester, chapter "Lifting Gear" - Setting and Securing Lifting Height for the Headland Position)



DANGER! – Rapidly rotating cutting discs/blade drums

Effect: Danger to life or serious injuries.

- For mowing, the lifting height of the cutting system must be set to max. 40 cm (measured between ground and cutter bar front edge).
- Set the ground pressure to between 3 % and 5 % via the display on the forage harvester (see operating instructions of the forage harvester info centre, chapter "Lifting Gear")



Note

The lower the bearing pressure, the lower the wear at the ground skids.



DANGER! – Observe drive speed

Effect: Danger to life or serious injuries

- Do not exceed the maximum drive speed of 750 rpm.
- **Set max. drive speed (750 rpm) of the front attachment drive on the forage harvester via the display (see operating instructions for the forage harvester).**
- Switch on cutting drum (see operating instructions for the forage harvester).
- Switch on drive of the cutting system / feed drive rollers.
- Drive into the crop with the forage harvester.
- The driving speed depends on the particular application conditions (ground conditions, the height and nature of the crop).

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8.2 Detaching the machine



DANGER! – Unexpected movements of the machine

Effect: Danger to life, serious injuries

- No one is permitted inside the danger zone.
- Place the machine on solid and level ground only and with the parking supports extended.
- You should not unhitch the machine until the engine has been switched off and the ignition key has been removed.
- Secure the forage harvester to prevent it from rolling back.
- Use extreme caution when attaching implements to or detaching them from the forage harvester! The accident prevention regulations must be complied with absolutely.
- When detaching the machine, do not walk between the forage harvester and the machine!

- Lifting cutting system



Note

Stop the machine.

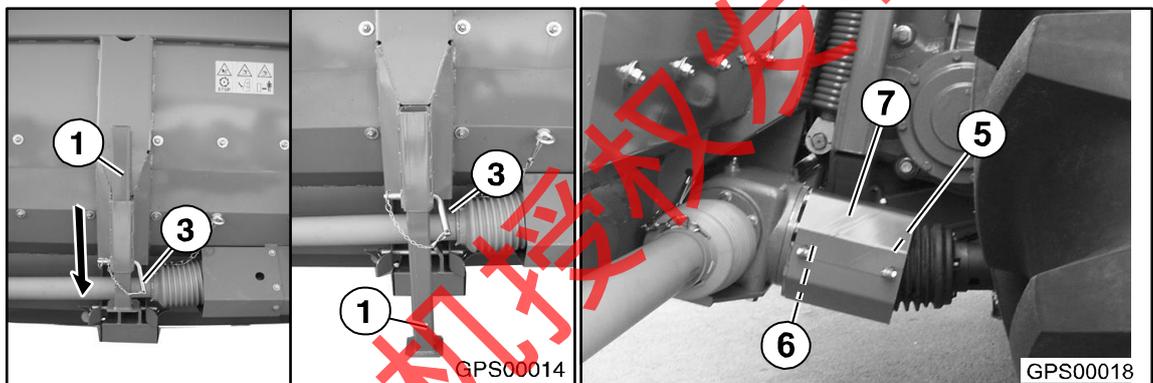


Fig. 11

- Remove the socket pins (3) and pull the parking supports (1) downwards from the machine
- Secure the position with the socket pins (3)
- Pull the joint fork (5) off the drive journal (6) of the main angular gearbox
- Lower the cutting system with the forage harvester hydraulics to the ground



Note

Additional information on uncoupling is available in the forage harvester's operating instructions.

9 Settings



Danger! - When performing repair, maintenance or cleaning work or when making technical modifications to the machine, drive elements may start moving (caution: cutting discs continue to run).

Effect: Danger to life, injuries or damage to the machine.

- Move the machine to the working position and lower it to the ground
- Switch off the forage harvester engine and remove the ignition key.
- Secure the forage harvester against accidental start-up and against rolling away.
- Switch off the PTO and disengage it.
- After the repair, maintenance, cleaning work or technical modifications are completed, mount all protective covers and protective devices properly again.
- Avoid skin contact with oils, greases, cleaning agents and solvents.
- In the event of injuries or burns due to oils, cleaning agents or solvents, contact a doctor immediately.
- All other safety instructions must also be followed to avoid injuries and accidents.



Danger! - When performing repair, maintenance or cleaning work or when making technical modifications to the machine, drive elements may start moving (caution: cutting discs continue to run).

Effect: Danger to life or serious injuries

- Switch off the drive and disengage PTO.
- Switch off the forage harvester engine and remove the ignition key.
- Secure the forage harvester against accidental start-up and against rolling away.
- When working under or with the raised machine, always secure it with suitable supporting elements.
- Close shut-off valve on lifting cylinder of forage harvester!
- After all repair, maintenance and cleaning tasks are complete, all protective covers and protective devices must be put in place again.

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9.1 Adjusting the distance between the scraper bars and the auger conveyor

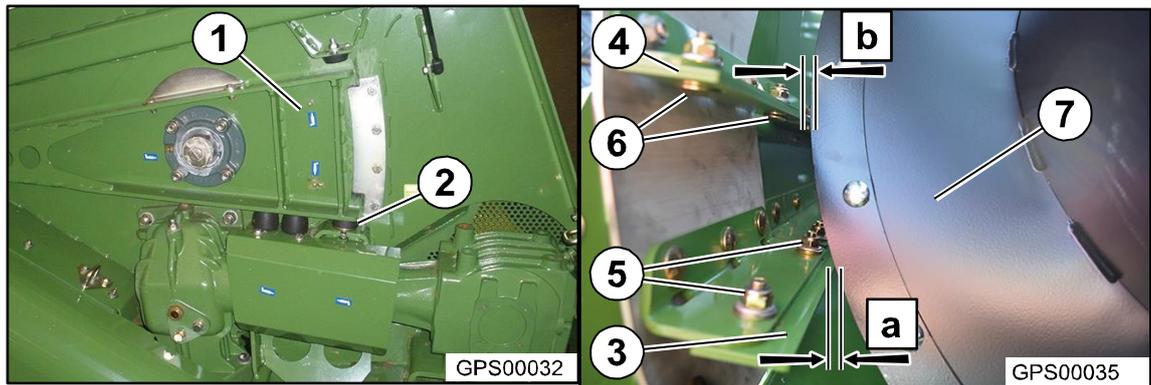


Fig. 12

The hopper has two scraper bars (3), one on the right and one on the left of the transfer opening. They remove the crop from the auger. To ensure the best result when removing the crop, the scraper bars can be set via oblong holes.

Before setting the scraper bars:

- Make sure that the auger or rocker arm (1) rests on the bump stop (2).

To set the lower scraper bar (3):

- Unscrew screw connections (5) and set the distance from scraper bars (3) to auger spiral (7) to dimension $a=3-6$ mm.
- Tighten screw connections (5).

To set the upper scraper bar (4):

- Unscrew screw connections (6) and set the distance from scraper bars (4) to auger spiral (7) to dimension $b=4-7$ mm.
- Tighten screw connections (6).

After setting the scraper bars:

- Turn auger manually and check whether the auger can be rotated freely and does not collide with the scraper bars.

The scraper bars (3, 4) are subject to natural wear. Therefore they must be checked once a year at the latest before the beginning of the season and they must be replaced, if necessary.

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9.1.1 Set Ground Skid



Note

The height of the skids must be adapted to the tyre size of the forage harvester in that way that the skids in the rear skid area are still resting evenly on the ground.
The position of the ground skid does not influence the cutting height. Adjust all skids equally.

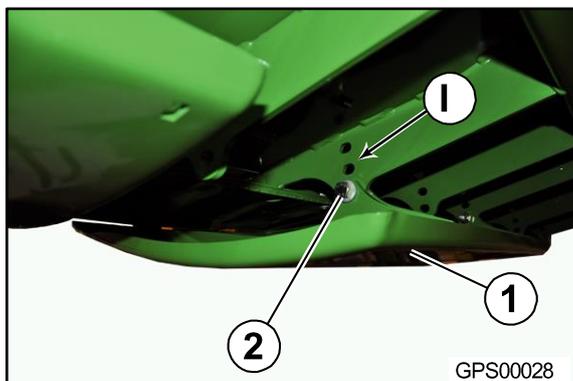


Fig. 13

- Lift the front attachment
- Take note of the danger warnings at the beginning of the chapter
- Loosen screw connections (2) and assemble the ground skid (1) in the desired position (I)
- Tighten screw connections

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10 Maintenance**10.1 Special Safety Instructions**

Danger! - When performing repair, maintenance or cleaning work or when making technical modifications to the machine, drive elements may start moving (caution: cutting discs continue to run).

Effect: Danger to life or serious injuries

- Switch off the drive and disengage PTO.
- Switch off the forage harvester engine and remove the ignition key.
- Secure the forage harvester against accidental start-up and against rolling away.
- When working under or with the raised machine, always secure it with suitable supporting elements.
- Close shut-off valve on lifting cylinder of forage harvester!
- After all repair, maintenance and cleaning tasks are complete, all protective covers and protective devices must be put in place again.



Danger! - When checking the cutter blades and retaining bolts only sporadically

Effect: Danger to life, injuries or damage to the machine.

- Always check the mowing units for damaged, missing or worn blades, retaining bolts, leaf springs and cutting discs/blade drum before starting operation. replace any parts that are damaged, missing or worn!
- Always replace missing and damaged blades in sets to prevent unbalanced rotation!
- Never mount unevenly worn blades on a drum/disc!
- Whenever a blade is changed, also inspect the fasteners and replace them, if necessary!

10.1.1 Test run

Danger! - Testing the machine after repair, maintenance or cleaning work and after technical intervention.

Effect: Danger to life or serious injuries

- The machine must be in working position
- Do not switch on the drives until the machine is resting on the ground and you are absolutely sure that neither persons, animals nor objects are in the danger zone.
- Start a trial run of the machine from the driver's seat only.

10.2 Spare Parts

Danger! - Using non-approved spare parts.

Effect: Danger to life, serious injuries or loss of warranty claims as well as exclusion of liability

- Use only authentic KRONE spare parts and accessories authorised by the manufacturer. The use of spare parts, accessories or additional equipment not manufactured, tested or approved by KRONE will exclude any liability for consequential damage.

**Note**

To ensure problem-free operation of the machine and to reduce wear and tear, specific maintenance and upkeep intervals must be observed. These include cleaning, greasing, lubricating and oiling parts and components.

10.3 Maintenance table

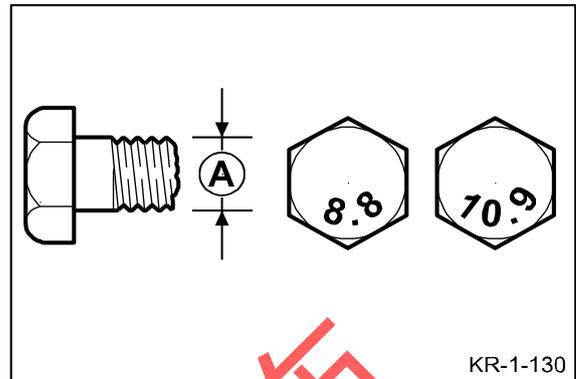
Maintenance work	Maintenance interval					
	Once after 10 hours	Before the beginning of the season	Every 10 hours but at least 1x daily	Once after 50 hours	Every 50 hours	Every 200 hours
Main angular gearbox						
Oil level check		X	X			
Oil change		X		X		X
L-corner gearbox						
Oil level check		X	X			
Oil change		X		X		X
Cutterbar drive gear						
Oil level check		X	X			
Oil change		X		X		X
Cutterbar						
Oil level check		X	X			
Oil change (not required)						
Cutter blades						
Check		X	X			
Cutting discs / mower drums						
Check		X	X			
Rotary hub						
Check		X	X			
Drive chains						
Check the pretension		X	X			
Tightening screws / nuts						
All screws		X				X
Wear sheets for trough						
Check for wear		X			X	
Scraper bars						
Check distance between scraper bars and conveyor auger		X				X
Infeed sheets						
Check for wear		X				
Safety devices						
Check guard cloth for damage and wear		X	X			
Check rubber strips for damage and wear		X	X			

10.4 Tightening Torques

The tightening torque M_A is stated in Nm (unless otherwise indicated).

A Ø	5.6	6.8	8.8	10.9	12.9
	M_A (Nm)				
M 4		2.2	3	4.4	5.1
M 5		4.5	5.9	8.7	10
M 6		7.6	10	15	18
M 8		18	25	36	43
M 10	29	37	49	72	84
M12	42	64	85	125	145
M14		100	135	200	235
M14x1.5			145	215	255
M 16		160	210	310	365
M16x1.5			225	330	390
M 20			425	610	710
M 24			730	1050	1220
M 24x1.5	350				
M 24x2			800	1150	1350
M 27			1100	1550	1800
M 27x2			1150	1650	1950
M30			1450	2100	2450

A = Thread size
(The stability class can be seen on the head of the screw.)



NOTE

The table above does not apply to countersunk screws with a hexagonal socket head if the countersunk screw is tightened with the hexagonal socket head.



Note

Self-locking nuts must always be replaced.

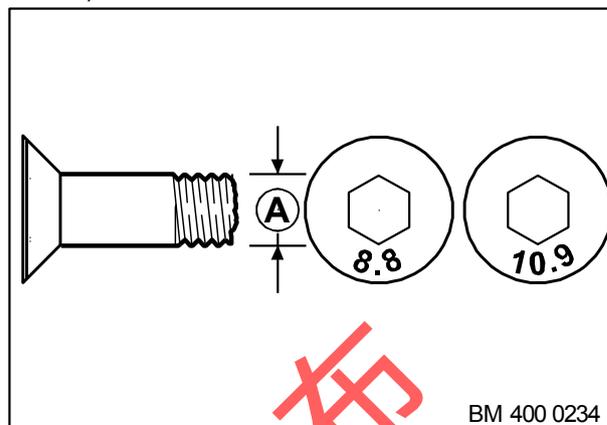
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10.5 Tightening Torques (Countersunk Screws)

The tightening torque M_A is stated in Nm (unless otherwise indicated).

A Ø	5.6	8.8	10.9	12.9
	M_A (Nm)			
M 4		2.5	3.5	4.1
M 5		4.7	7	8
M 6		8	12	15
M 8		20	29	35
M 10	23	39	58	67
M 12	34	68	100	116
M 14		108	160	188
M 16		168	248	292
M 20		340	488	568

A = Thread size
(The stability class can be seen on the head of the screw.)



NOTE

The table above applies only to countersunk screws with hexagonal socket heads and metric threading that are tightened by the hexagonal socket head.



Note

Self-locking nuts must always be replaced.

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10.6 Main angular gearbox

**Note**

Check the oil level and change the oil while the gearbox is in a horizontal position!

**Note**

The used oil must be disposed of correctly

Oil Quality / Amount of Oil: Refer to Chapter Technical Data "Lubricants"

Interval for oil level check and oil change: refer to chapter Maintenance "Maintenance Table"

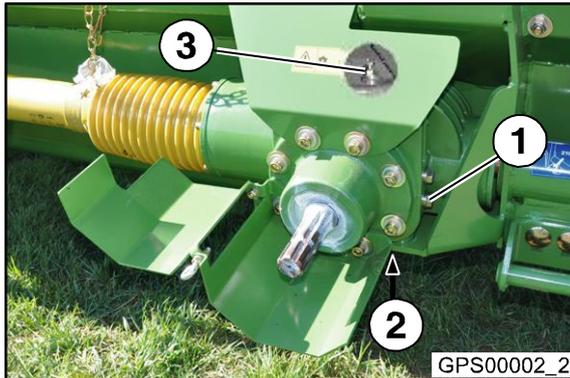


Fig. 14

- 1) Inspection screw / control hole 2) Drain plug
3) Filler plug / oil filling hole

Oil level check:

- Screw out inspection screw.
- Oil level up to control hole.

If the oil reaches the control hole:

- Screw in the inspection screw and tighten it securely.

If the oil does not reach the control hole:

- Screw out filler plug.
- Top up oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

Oil change:

Collect escaping oil in a suitable container.

- Screw out oil drain plug and drain the oil.
- Screw out inspection screw and filler plug.
- Screw in oil drain plug and tighten it securely.
- Top up new oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

10.7 L corner gearbox



Note

Only use gearbox oil (PAO Mobil SHC 630).



Note

Check the oil level and change the oil while the gearbox is in a horizontal position!



Note

The used oil must be disposed of correctly

Oil Quality / Amount of Oil: Refer to Chapter Technical Data "Lubricants"

Interval for oil level check and oil change: refer to chapter Maintenance "Maintenance Table"



Fig. 15

- 1) Inspection screw / control hole 2) Drain plug
3) Filler plug / oil filling hole

Oil level check:

- Screw out inspection screw.
- Oil level up to control hole.

If the oil reaches the control hole:

- Screw in the inspection screw and tighten it securely.

If the oil does not reach the control hole:

- Screw out filler plug.
- Top up oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

Oil change:

Collect escaping oil in a suitable container.

- Screw out oil drain plug and drain the oil.
- Screw out inspection screw and filler plug.
- Screw in oil drain plug and tighten it securely.
- Top up new oil via oil filling hole until the control hole is reached.
- Screw in the inspection screw and the filler plug and tighten them securely.

10.8 Cutter bar drive gear

**Note**

Check the oil level and change the oil while the gearbox is in a horizontal position!

**Note**

The used oil must be disposed of correctly

Oil Quality / Amount of Oil: Refer to Chapter Technical Data "Lubricants"

Interval for oil level check and oil change: refer to chapter Maintenance "Maintenance Table"

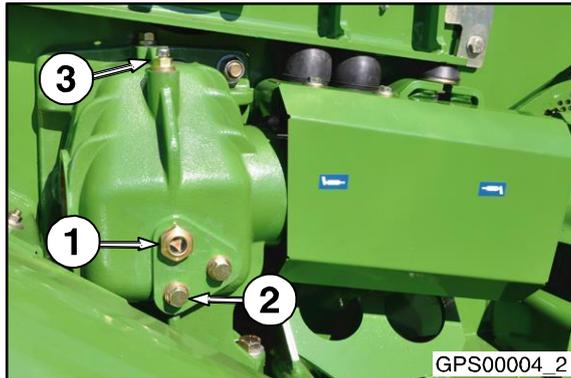


Fig. 16

1) Viewing glass

2) Drain plug

3) Filler plug / oil filling hole

Oil level check:

- Oil level to the centre of the viewing glass.

If the oil does not reach the centre of the viewing glass:

- Screw out filler plug.
- Top up oil via oil filling hole until the centre of the viewing glass is reached.
- Screw in filler plug and tighten it securely.

Oil change:

Collect escaping oil in a suitable container.

- Screw out filler plug.
- Screw out oil drain plug and drain the oil.
- Screw in oil drain plug and tighten it securely.
- Top up new oil via oil filling hole until the centre of the viewing glass is reached.
- Screw in filler plug and tighten it securely.

Maintenance

10.9 Oil level check and oil change on the cutter bar

10.9.1 Oil change



Note

No oil change is required on the cutter bar.

10.9.2 Checking the oil level



Danger! - Rapidly rotating cutting discs/blade drums.

Effect: Danger to life or serious injuries.

Lower guards. Nobody should be in the danger zone around the machine.

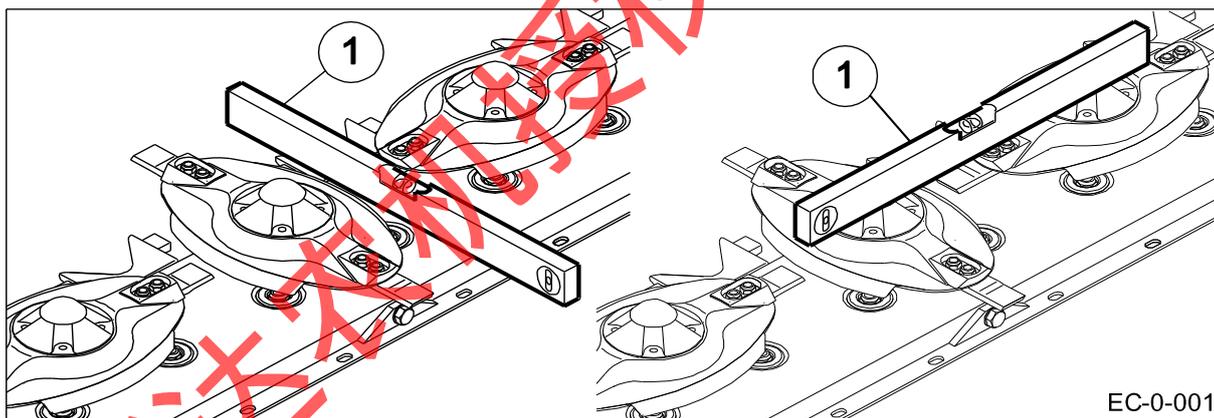


Danger! - Rapidly rotating cutting discs/blade drums.

Effect: Danger to life or serious injuries.

- Switch off the engine and remove the ignition key.
- The cutting discs/blade drums continue to run!
- Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.

10.9.3 Aligning the Cutter Bar



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Fig. 17

Oil level check

- Align the cutter bar using a spirit level (1).

Crosswise

- Lay the spirit level on top of the cutting disc hub parallel to the direction of travel.

Lengthwise

- Lay the spirit level (1) on top of two mower discs.

- Allow the machine to run briefly. Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop

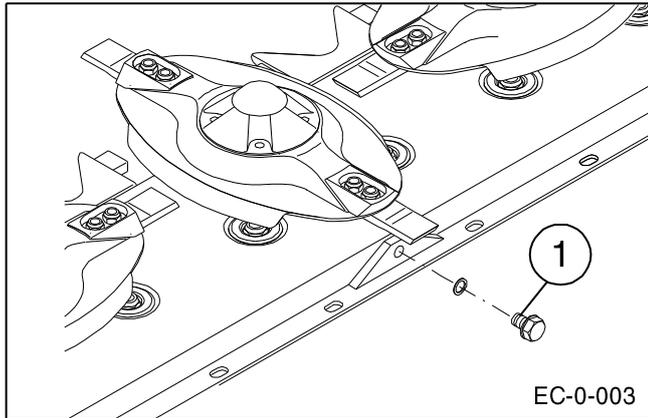


Fig. 18:

Check the oil level before every use

- Remove the oil level inspection screw (1) from the cutting disc hub
- The oil level must be up to the bore hole. If required, top up the oil (SAE 90)
- Screw in the oil level inspection screw (1) again and tighten securely

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10.10 Checking the Cutter Blades and Blade Holder

**Warning! - Missing and damaged cutter blades and cutter blade retainers.**

Effect: Danger to life, serious injuries or damage to the machine

- Check cutter blades at least once per day and check retaining bolts every time you change the blades or after contact with foreign objects.
- Immediately replace missing or damaged cutter blades and cutter blade retainers

10.10.1 Cutter Blades

The borehole on the cutter blades may spread due to wear.

**Danger! - Insufficient thickness of material on the cutter blades.**

Effect: Danger to life or serious injuries.

- The cutter blades must be replaced at the latest when the wear limit is reached (see mark (1) on the cutter blade; dimension a less than or equal to 13 mm).

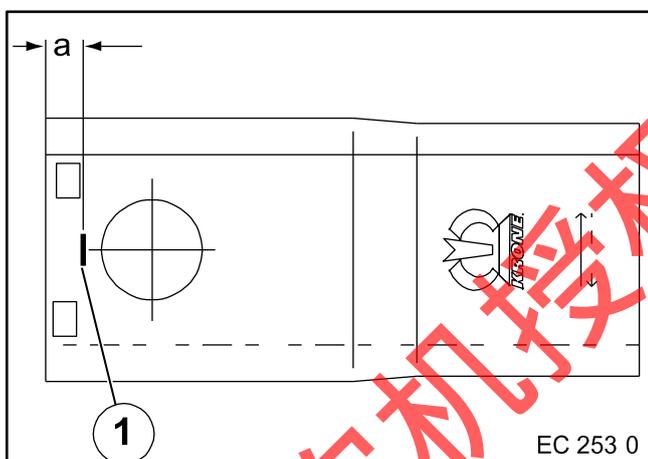


Fig. 19

**Note - The cutter blades can be turned around and used on both sides.**

- When cutter blades are missing or damaged, they must be replaced as a complete set. This prevents dangerous unbalanced rotation

10.10.2 Blade screw connection

**Danger! - Insufficient thickness of material on the retaining bolts.**

Effect: Danger to life or serious injuries.

- At every blade changing check the thickness of the holding bolts material.
- Damage or worn retaining bolts must always be replaced by sets on each cutting disc/blade drum!
- The material thickness of the retaining bolts must not be less than 14 mm at the weakest point.

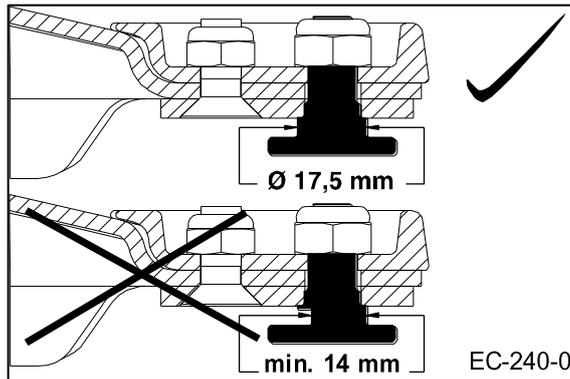


Fig. 20

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10.10.3 Blade Quick-Fit Device



Danger! - Insufficient thickness of material on the retaining bolts.

Effect: Danger to life or serious injuries.

- At every blade changing check the thickness of the holding bolts material.
- Damage or worn retaining bolts must always be replaced by sets on each cutting disc/blade drum!
- The material thickness of the retaining bolts must not be less than 14 mm at the weakest point.
- The material thickness of the leaf spring must not be less than 3 mm at the weakest point.

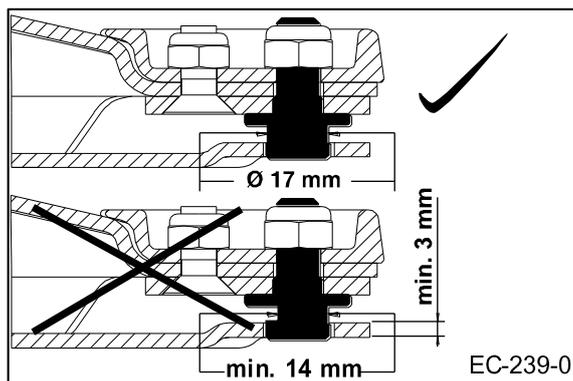


Fig. 21

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10.10.4 Periodical Inspection of the Leaf Springs

**Danger! - Worn application seam on the leaf springs.**

Effect: Danger to life or serious injuries.

- Check the leaf springs for damages at least once a day or after contact with foreign objects.
- The abrasion limit of the leaf springs will be achieved if the application seam (1) is worn on one point.

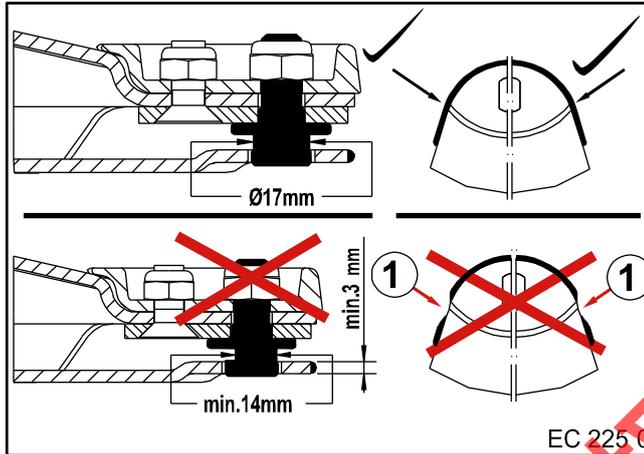


Fig. 22

**Note**

Use only original Krone spare parts to replace the leaf springs.

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10.10.5 Periodical Inspection of the Cutting Discs / Blade Drums



Danger! - Deformed Cutting Discs / Blade Drums

Effect: Danger to life or serious injuries.

- Check the cutting discs or blade drums for damages at least once per day or after contact with foreign objects.
- In case of deformed cuttings discs or drums, the dimension of $A = 48 \text{ mm}$ must never be exceeded.

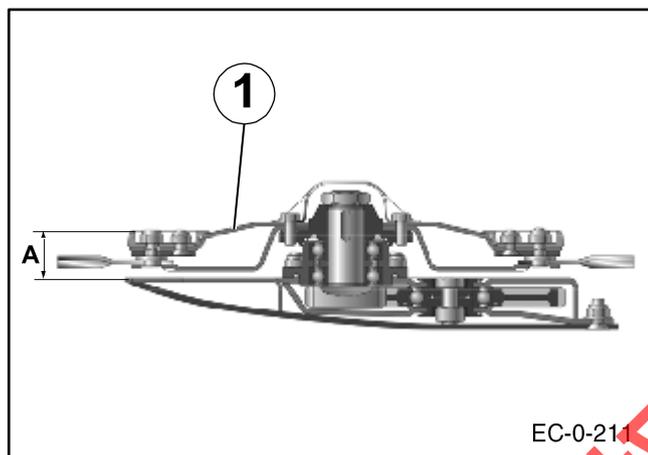


Fig. 23



Note

The cutting discs or drums must be replaced by Original Krone spare parts only.

10.10.6 Abrasion Limit

**Danger! - Abrasion on the cutting discs / blade drums**

Effect: Danger to life or serious injuries.

- The abrasion limit (2) will be achieved if the min. material thickness of 3 mm is no longer given.

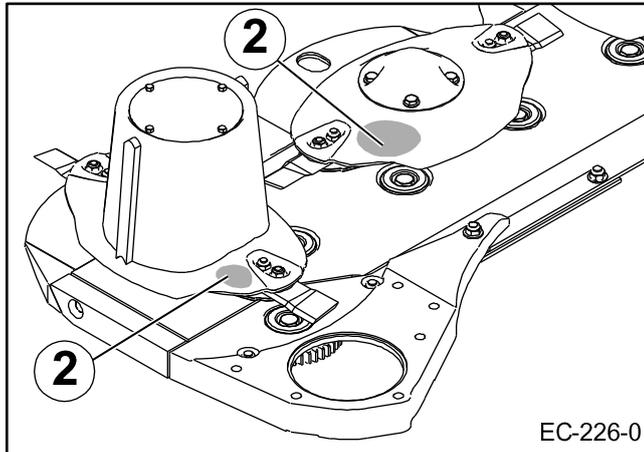


Fig. 24

**Note**

If cutting discs or blade drums show deformations or wear in form of abrasions (2) or similar, these components have to be replaced by Original Krone spare parts .

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10.11 Blade Changing on Cutting Discs

**Danger! - Rapidly rotating cutting discs/blade drums.**

Effect: Danger to life or serious injuries.

- Switch off the engine and remove the ignition key.
- The cutting discs/blade drums continue to run!
- Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.

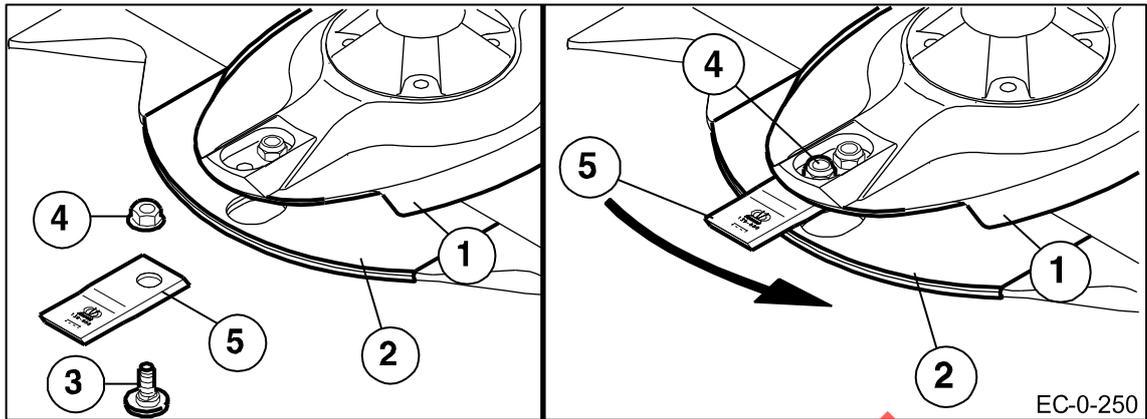
**Danger! - Cutter blades coming loose**

Effect: Danger to life or serious injuries.

- After changing the blades check that they fit perfectly and that they can move freely.
- Whenever a blade is changed, also inspect the fasteners and replace them, if necessary!
- Always replace missing and damaged blades in sets to prevent unbalanced rotation!
- Never mount unevenly worn blades on a drum/disc!

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10.11.1 Blade Screw Connection



Pic. 25

- Fold up safety device
- Clean the area
- Remove damaged or worn blades
- To fit the blades, insert the blade (5) between the wear skid (2) and the cutting disc (1)
- Insert the retaining bolt (3) from below through the wear skid, the blade and the cutting disc
- Place the locknut (4) on the retaining bolt from above and tighten it firmly (tightening torque refer to chapter "Torques")
- Repeat the process for all blades
- After fitting the blades, fold the safety device down again



Note

- The cutter blades of anticlockwise rotating cutting discs / blade drums are different to those of clockwise rotating ones. Make certain the direction of rotation is correct when installing!
- The arrow on the cutter blades must match the direction of rotation of the corresponding cutting discs / blade drums
- The locknut (4) used to secure the retaining bolts must not be used more than once

Order No. for clockwise rotating blade: 139-889

Order No. for anticlockwise rotating blade: 139-888

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10.11.2 Blade Quick-Fit Device

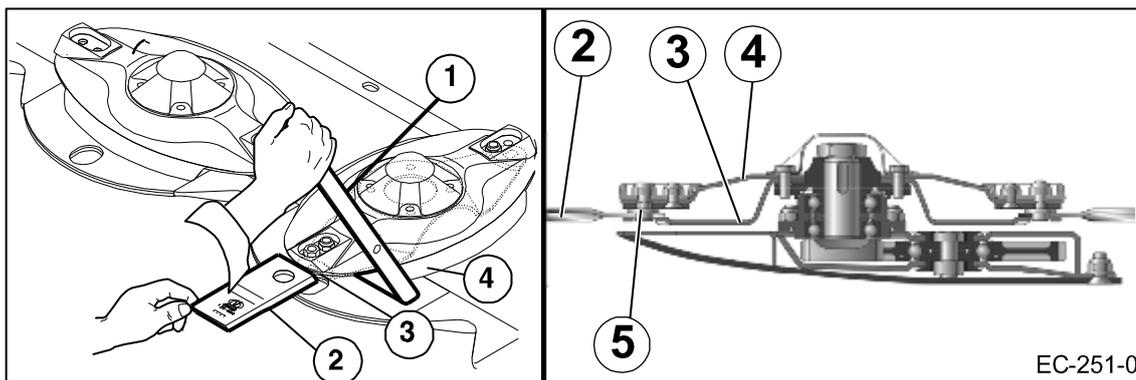


Fig. 26

- Clean the area.
- Remove damaged or worn blades.
- Push the special tool (1) {blade key} between the cutter disc (4) and leaf spring (3) and press down with one hand.
- Guide a new blade (2) onto the retaining bolt and allow the blade key to return upwards.
- After fitting the blades, fold the protective device down again.



Note

- The cutter blades of anticlockwise rotating cutting discs / blade drums are different than those of clockwise rotating ones. Make certain the direction of rotation is correct when installing!
- The arrow on the cutter blades must match the direction of rotation of the corresponding cutting discs / blade drums.
- The hex nut (4) used to secure the retaining bolts must not be used more than once.

Order No. for clockwise rotating blade: 139-889

Order No. for anticlockwise rotating blade: 139-888

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10.12

Replacing the linings



Caution! - If the linings are checked irregularly.

Effect: Damage to the machine

- Always check the mowing unit for damaged linings prior to start-up and replace linings, if necessary!
- Adjust the welding current and the welding material to the cutter bar material and to the lining or carry out a trial welding if necessary. •

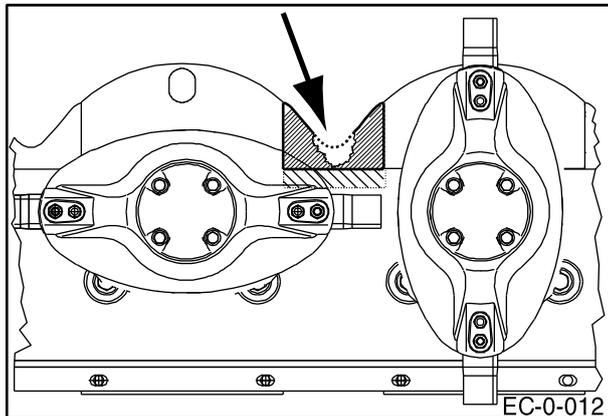


Fig. 27

- Open the welding seams of the old lining.
- Remove the lining
- Deburr the contact surface.

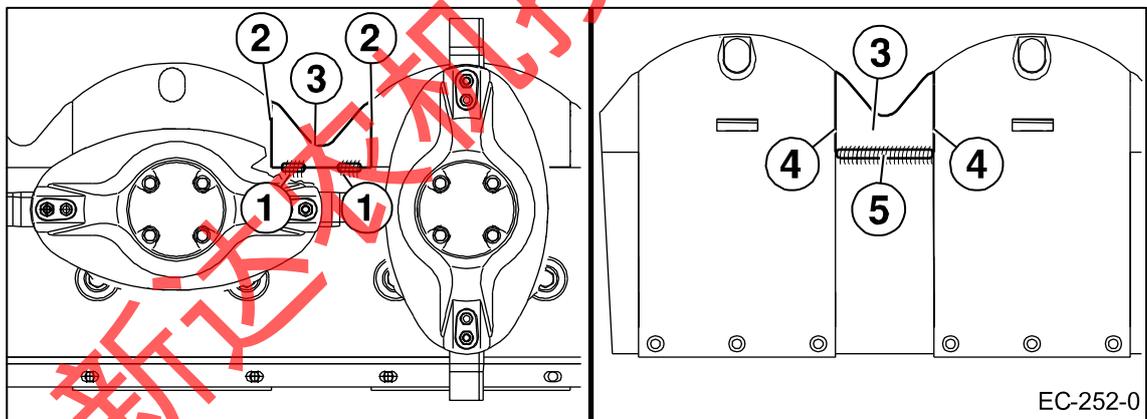


Fig. 28

- Adapt the new lining (3).
- Weld short I seams on the **upper surface** of the cutter bar in the areas marked (1) (each should be approx. 30 mm).
- Do not weld the edges (2).
- On the **lower surface** of the cutter bar, weld the lining (3) to the cutter bar along the whole length in area (5).
- Do not weld the edges (4).

10.13 Rotary hub with shear fuse (optional)

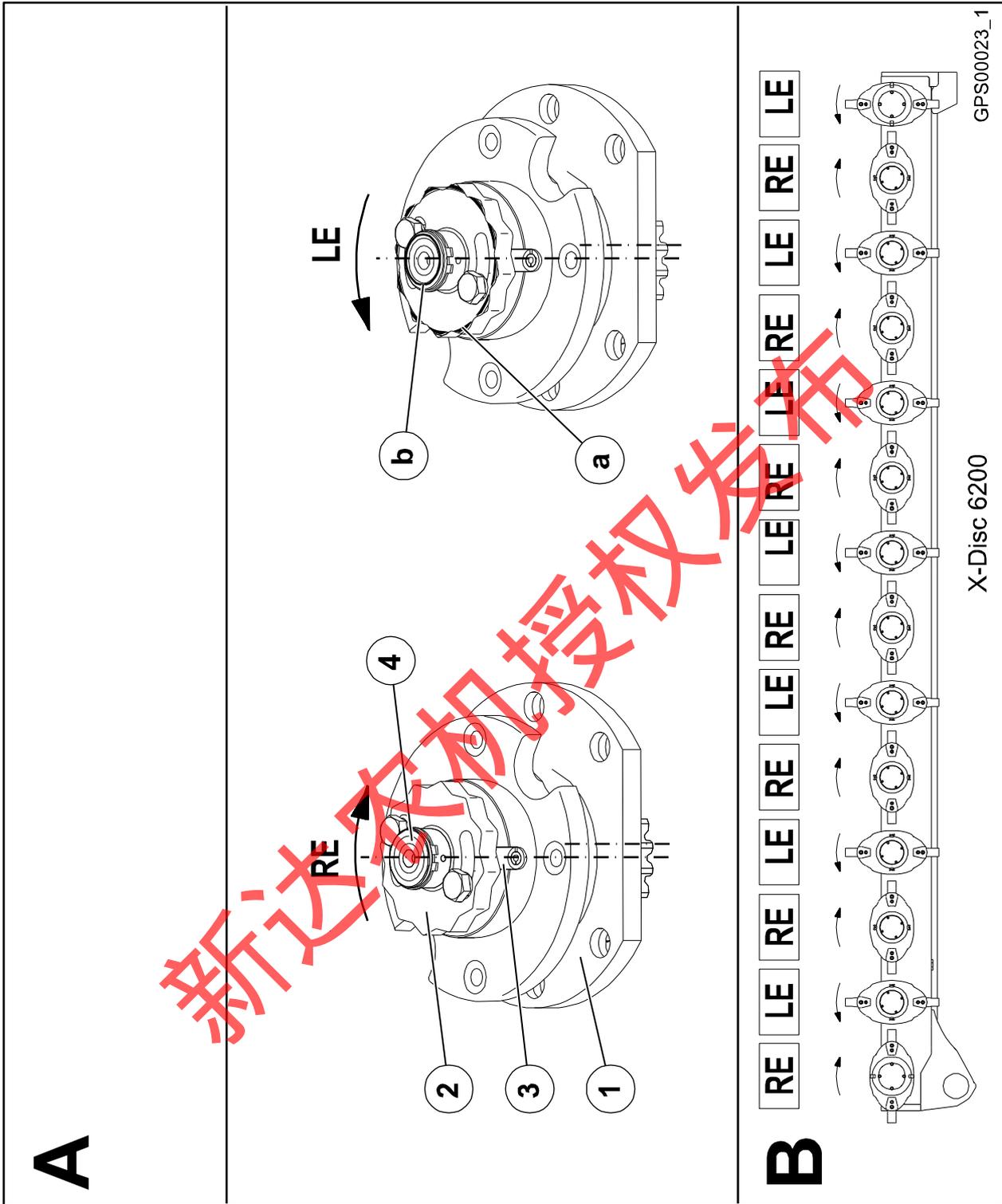


Fig. 29
A= Direction of rotation to the middle (not provided)

**Danger! - Rapidly rotating cutting discs/blade drums.**

Effect: Danger to life or serious injuries.

- Switch off the engine and remove the ignition key.
- The cutting discs/blade drums continue to run!
- Do not leave the driver's cab until the cutting discs/blade drums have come to a complete stop.

Explanation of abbreviations:

A= Direction of rotation "A" to the middle

B= Direction of rotation "B" in pairs

RE= Eccentric bearing housing (clockwise threading, without identifying groove).

LE= Eccentric bearing housing (anticlockwise threading), with identifying groove.

For protection against overload on the mowing units, the rotary hubs (1) are secured with nuts (2) and shear pins (3).

If the machine strikes obstacles (for example stones), the 2 shear pins in the rotary hub will be sheared off. The rotary hub and nut turn upward on the pinion shaft.

- The cutting discs or drums which move crop to the left (as seen in the direction of travel) (LE) have left-handed threading.
- The cutting discs or drums which move crop to the right (in the direction of travel) (RE) have right-handed threading.

To distinguish between right-hand (clockwise) threading (RE) and left-hand (anti-clockwise) threading (LE), the nuts (2) and pinion shaft (4) for left-hand threading (LE) have a distinctive groove (a, b).

- Left-handed (LE) nuts (2) have distinctive grooves (a) on the bevel.
- Left-handed (LE) pinion shafts (4) have a distinctive groove (b) on the face.

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10.13.1 After Shearing Off



Caution! - Correct installation position of the bearing housing not observed.

Effect: Damage to the machine

- Right rotating (RE/RZ) cutting discs and drums always have right-handed pinion shafts and nuts (no groove mark on the pinion shaft and nut).
- Left rotating (LE/LZ) cutting discs and drums always have left-handed pinion shafts and nuts (with groove mark on the pinion shaft and nut).

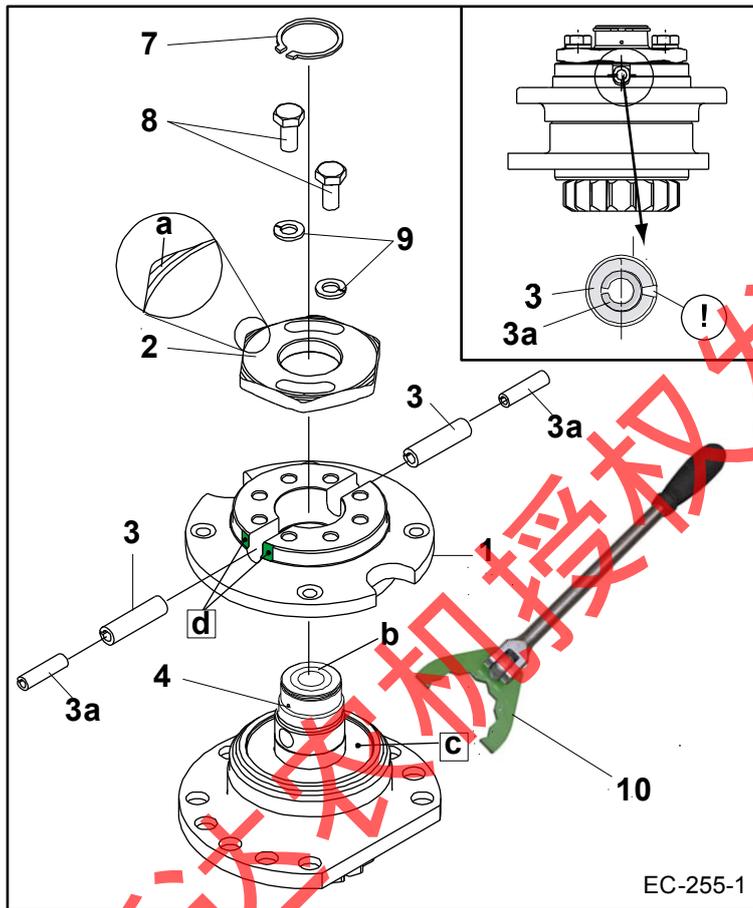


Fig. 30

- Remove the cutting disc or drum.
- Remove retaining ring (7).
- Unscrew the hexagon head bolts (8).
- Use the special key (10) included with delivery to remove the nut (2).
- Remove the hub (1).
- Remove the damaged shear pins (3).
- Check the nut and hub for damage. Replace damaged parts with KRONE original replacement parts.
- Fill the space above the bearing with grease (c).
- Place the hub on the pinion shaft.
- Drive the new shear pins (3) through the hub (1) and shaft (4).



Note - Note the position of the shear pins!

- Drive the shear pins (3) into the hole from outside until the end of the pin reaches the surface of the hub (d).
- The slots of the shear pins (3) must be mounted facing each other horizontally (see detail (I)).
- Install the nut (2) using the special key (10) included with delivery (tighten to a tightening torque of 300 Nm).
- Install and tighten the hexagon head bolts (8) with detent edged washers.
- Install the retaining ring (7).
- Install the cutting disc (5) or blade drum (6).



Note

The special key SafeCut is located in a support behind the right protective cover of the machine.

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10.14 Hopper wear plates

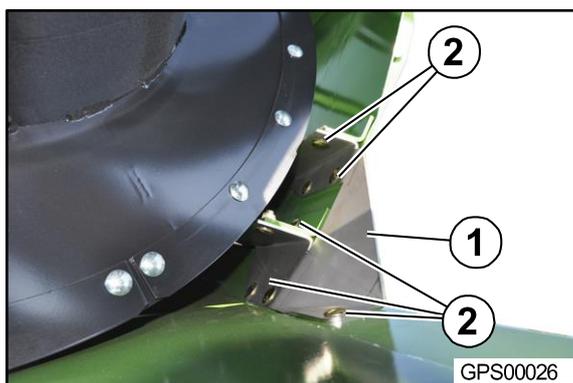


Fig. 31

The wear plate (1) of the hopper is subject to natural wear caused by the crop and must therefore be checked for wear once a year, at the latest before the start of the season, and replaced if required.

When cutting highly abrasive crop, the wear plate must be checked for wear several times a year and replaced if required.

To do this:

- Loosen the screw connections (2) and replace the wear plate with a new wear plate
- Tighten the screw connections (2)

10.15 Rubber Strip



Fig. 32

The rubber strips (1) (right and left machine side) are subject to a natural wear caused by the crop. They must therefore be checked for wear and damage before every use and they must be replaced, if necessary.

Replacing rubber strips:

- Unscrew the screw connections (2) and replace the rubber strips by new ones.
- Tighten screw connections (2).

10.16 Drive chains

**Note**

Check the pretension of the drive chains every 10 hours of operation and correct if necessary.

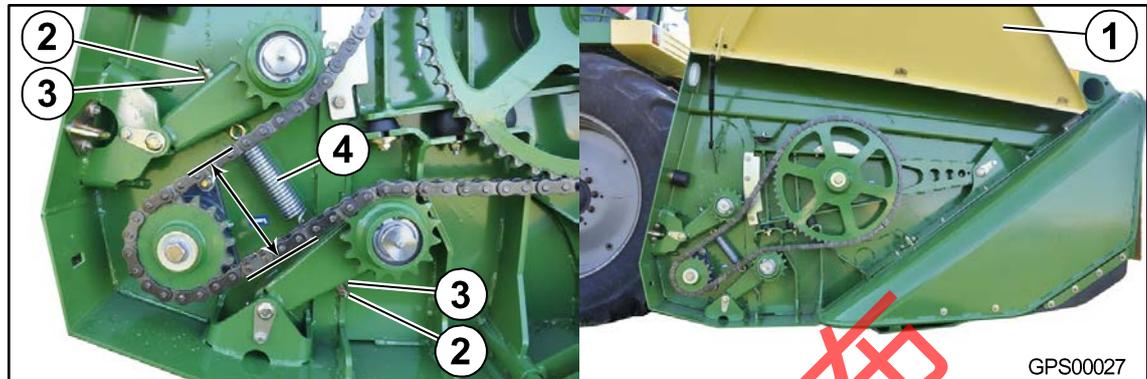


Fig. 33

- Open the protective cover (1) on the right-hand side of the machine
- Loosen the counter nut (2) and turn the hexagonal nut (3) to correct the pretension of the chain in the upper and lower areas so that the spring path between the eye screw is 150-180 mm
- Tighten the counter nut (2)

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11 Maintenance – lubrication chart

11.1 Special Safety Instructions



Danger! - When performing repair, maintenance or cleaning work or when making technical modifications to the machine, drive elements may start moving (caution: cutting discs continue to run).

Effect: Danger to life, injuries or damage to the machine.

- Move the machine to the working position and lower it to the ground
- Switch off the forage harvester engine and remove the ignition key.
- Secure the forage harvester against accidental start-up and against rolling away.
- Switch off the PTO and disengage it.
- After the repair, maintenance, cleaning work or technical modifications are completed, mount all protective covers and protective devices properly again.
- Avoid skin contact with oils, greases, cleaning agents and solvents.
- In the event of injuries or burns due to oils, cleaning agents or solvents, contact a doctor immediately.
- All other safety instructions must also be followed to avoid injuries and accidents.

11.2 PTO shaft

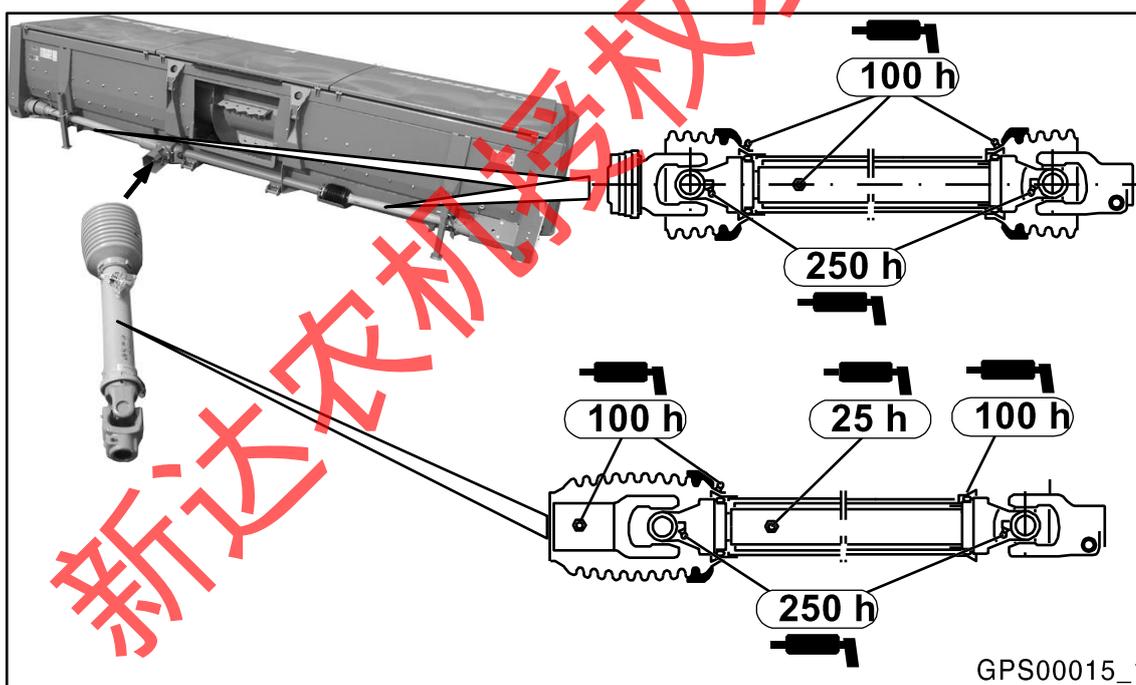


Fig. 34

Lubricate the cardan shafts at the intervals indicated in the drawing with a multi-purpose grease. Follow the operating instructions of the PTO shaft manufacturer.

11.3

Lubrication Chart

The lubrication points mentioned below must be lubricated after the operating hours indicated.

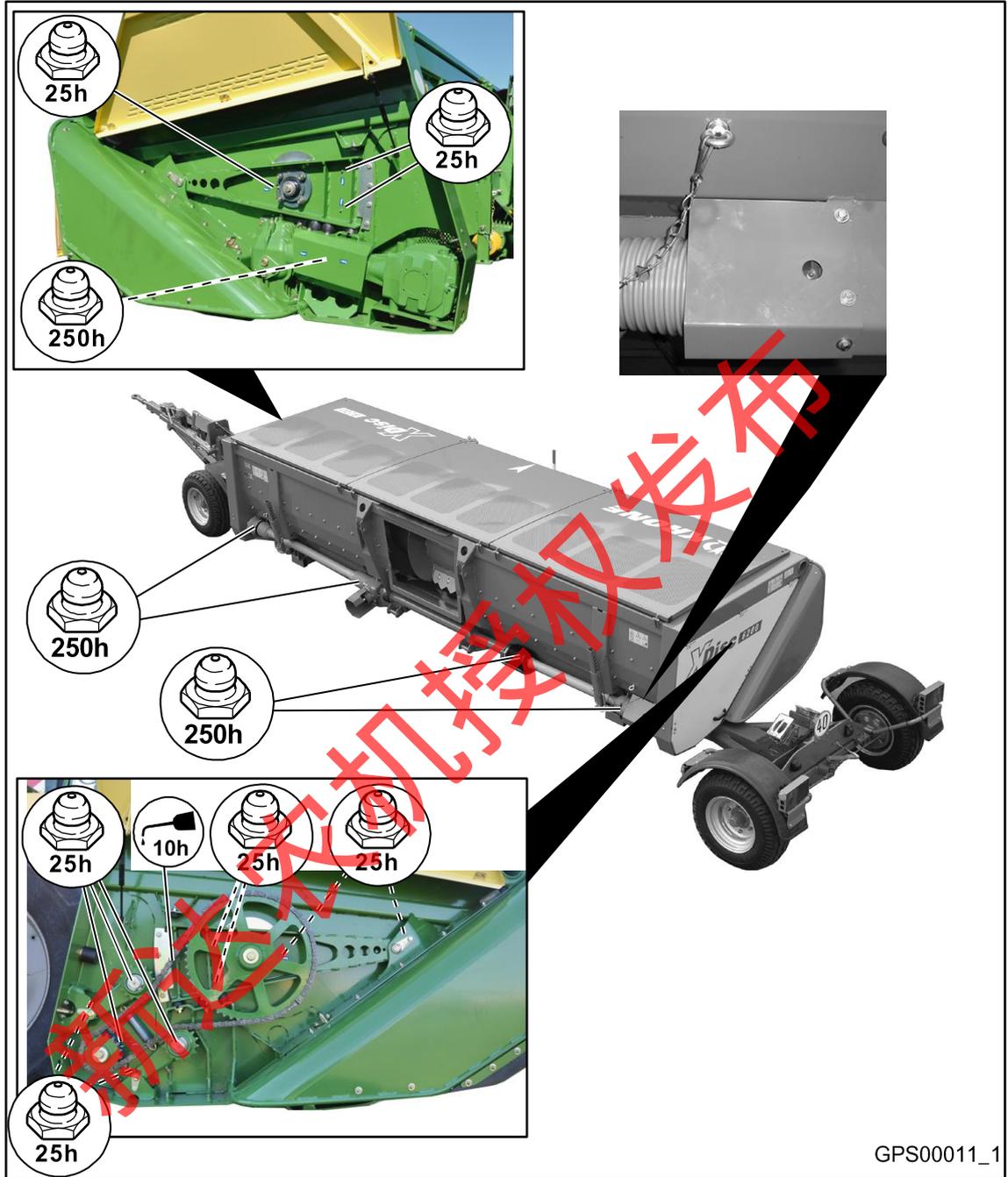


Fig. 35

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12 Placing in Storage

- Park the machine in a dry location, but not in the vicinity of artificial fertilisers or livestock buildings.
- Before placing the machine in winter storage, clean inside and outside thoroughly. If you use a high-pressure cleaner to do this, do not keep a stream of water directed at bearing points. After cleaning is completed, lubricate all lubrication points. Do not wipe off any grease that comes out of bearing points. The hardened grease will provide additional protection against moisture.
- Disassemble the PTO shaft. Lubricate the inner tubes and the guard tube with grease. Grease the lubrication points on the cross joint and on the bearing rings of the guard tubes.
- Oil all joint points!
- Touch up damaged paint and preserve all uncoated areas thoroughly with rust protection agent.
- Check all movable components such as deflector rollers, joints, tension rollers, etc. to make certain they move easily. If necessary remove, clean, grease and remount. If necessary, replace with new parts.
- **Use only original KRONE replacement parts.**

Perform the necessary repair tasks during the time immediately after the harvest season. Draw up a list of all replacement parts you will need. This will make it easier for your KRONE dealer to process your orders and you will be certain that your machine will be ready for use at the beginning of the next season.

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13 Before the Start of the New Season

13.1 Special Safety Instructions



Danger! - When performing repair, maintenance or cleaning work or when making technical modifications to the machine, drive elements may start moving (caution: cutting discs continue to run).

Effect: Danger to life, injuries or damage to the machine.

- Move the machine to the working position and lower it to the ground
- Switch off the forage harvester engine and remove the ignition key.
- Secure the forage harvester against accidental start-up and against rolling away.
- Switch off the PTO and disengage it.
- After the repair, maintenance, cleaning work or technical modifications are completed, mount all protective covers and protective devices properly again.
- Avoid skin contact with oils, greases, cleaning agents and solvents.
- In the event of injuries or burns due to oils, cleaning agents or solvents, contact a doctor immediately.
- All other safety instructions must also be followed to avoid injuries and accidents.



Danger! - When performing repair, maintenance or cleaning work or when making technical modifications to the machine, drive elements may start moving (caution: cutting discs continue to run).

Effect: Danger to life or serious injuries

- Switch off the drive and disengage PTO.
- Switch off the forage harvester engine and remove the ignition key.
- Secure the forage harvester against accidental start-up and against rolling away.
- When working under or with the raised machine, always secure it with suitable supporting elements.
- Close shut-off valve on lifting cylinder of forage harvester!
- After all repair, maintenance and cleaning tasks are complete, all protective covers and protective devices must be put in place again.

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13.2 Test run.



Danger! - Testing the machine after repair, maintenance or cleaning work and after technical intervention.

Effect: Danger to life or serious injuries

- The machine must be in working position
 - Do not switch on the drives until the machine is resting on the ground and you are absolutely sure that neither persons, animals nor objects are in the danger zone.
 - Start a trial run of the machine from the driver's seat only.
-
- Lubricate the machine thoroughly. Remove any condensation water which may have collected in the bearings.
 - Check oil level in the gearbox(es) and top up if necessary.
 - Check all screws to make certain they are tight or retighten them if necessary.
 - Check all electrical connection cables and the lighting. Repair or replace if necessary.
 - Check the entire setting of the machine and correct if necessary.
 - Re-read the operating instructions thoroughly.



Note

Use vegetable oils and greases.

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14 Disposal of the machine**14.1 Disposal of the machine**

After the service life of the machine has expired, the individual components of the machine must be disposed of properly. The applicable country-specific, current waste disposal guidelines and the legal laws must be observed.

Metal parts

All metal parts must be brought to a metal recycling centre.

The components must be freed from operating fluids and lubricants (gear oil, oil from hydraulic system, ...) before being scrapped.

The operating fluids and lubricants must be brought separately to an environmentally friendly disposal point or recycling centre.

Operating fluids and lubricants

Operating fluids and lubricants (diesel fuel, coolant, gear oil, oil from hydraulic system, ...) must be brought to a disposal point for waste oil.

Synthetic materials

All synthetic materials must be brought to a recycling centre for synthetic materials.

Rubber

Rubber parts (hoses, tyres, ...) must be brought to a rubber recycling centre.

Electronic scrap

Electronic parts must be brought to a disposal point for electronic scrap.

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